START

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL NO 1035

OCTOBER
1983

MICRO PHOTO DIVISION
BELL & HOWELL
BH

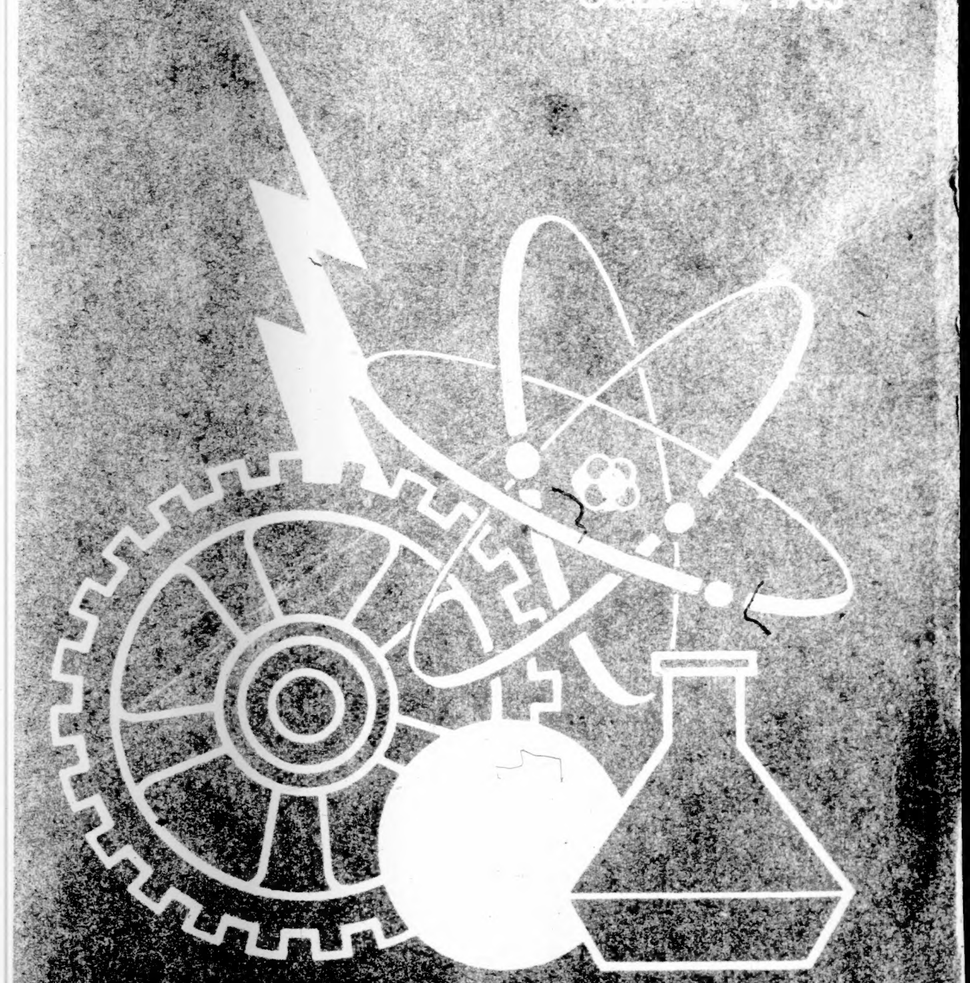
OFFICIAL GAZETTE

OF THE

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

October 4, 1983



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 4, 1983 Volume 1035 Number 1

CONTENTS

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1035 OG	2
Board of Appeals Decisions	1035 OG	2
Location of Board of Appeals, Board of Patent Interferences and the Office of the Solicitor	1035 OG	2
Reissue Applications Filed	1035 OG	2
Request for Reexamination Filed	1035 OG	2
Information in Oath/Declaration Necessary to Identify the Specification in Accordance with 37 CFR 1.63	1035 OG	3
Notice of Availability for Licensing	1035 OG	3
Recordation of Trade Name	1035 OG	4
Errata	1035 OH	4
Patent Certificates of Correction	1035 OG	5
Disclaimers	1035 OG	5
Disclaimers and Dedications	1035 OG	5
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1035 OG	6
Condition of Patent Applications	1035 OG	7
Reexaminations		1
Defensive Patent Publication (103,501)		3
Reissue Patents Granted (31,400)		5
Plant Patents Granted (5,113)		9
Patents Granted		
General and Mechanical (4,407,021)		11
Chemical (4,407,661)		229
Electrical (4,408,088)		343
Design Patents Granted (270,774)		439
Index of Patentees		PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees		PI 48
Index of Applicants of Defensive Publications		PI 51
Classification of		
Patents (Including Reissues and Reexaminations)		PI 53
Designs, Plants and Defensive Publications		PI 56
Geographical Index of Residence of Inventors		
Patents (Including Reissues)		PI 57
Designs, Plants and Applicants of Defensive Publications		PI 58
Change of Address Form and Subscription Order Form		Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $3.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

Board of Appeals Decisions Rendered in the Month of Aug. 1983

Affirmed	197
Affirmed in Part	25
Reversed	63
Total	285

Location of Board of Appeals, Board of Patent Interferences and the Office of the Solicitor

This is to advise you that the Patent and Trademark Office recently relocated the Board of Appeals, Board of Patent Interferences, and the Office of the Solicitor. Listed below are the new locations and the mailing addresses to be used for these areas:

Board of Appeals
Location: Crystal Gateway 2, Room 10A01
1225 Jefferson Davis Hwy.
Arlington, Va. 22202
Mailing Address: Clerk of the Board
CG2-10C09
Washington, D.C. 20231

Board of Patent Interferences
Location: Crystal Gateway 2, Rm. 10C01
1225 Jefferson Davis Hwy.
Arlington, Va. 22202
Mailing Address: CG2-10C01
Washington, D.C. 20231

Office of the Solicitor
Location: Crystal Gateway 2, Rm. 12C01
1225 Jefferson Davis Hwy.
Arlington, Va. 22202
Mailing Address: CG2-12C01
Washington, D.C. 20231

Use of the Arlington, Va. address for mailing purposes may result in an unpredictable delay. Use the specified mailing address only.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Aug. 30, 1983.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,277,937, Re. S.N. 513,463, Filed July 13, 1983, Cl. 56/17.5, CONVERTIBLE ROTARY MOWER-VACUUM SWEEPER, Woodrow W. Luick, Corpus Christi, Tex., Owner of Record: *Inventor,* Attorney or Agent: G. Turner Moller, Ex. Gp.: 333

4,279,605, Re. S.N. 513,669, Filed July 14, 1983, Cl. 474/82, FRONT DERAILLEUR FOR A BICYCLE, Tetsufumi Egami, Owner of Record: *Shimano Industrial Co. Ltd., Osaka, Japan,* Attorney or Agent: Ellsworth H. Mosher, Ex. Gp.: 352

4,306,871, Re. S.N. 513,326, Filed July 13, 1983, Cl. 444/82, REAR DERAILLEUR AND CONTROL WIRE GUIDE, Masashi Nagano, Owner of Record: *Shimano Industrial Co. Ltd., Osaka, Japan,* Attorney or Agent: Ellsworth H. Mosher, Ex. Gp.: 352

4,317,327, Re. S.N. 513,321, Filed July 15, 1983, Cl. 56/396, PUSHED DETHATCHING UNIT, Charles W. Doering, Owner of Record: *Brinly-Hardy Co., Inc., Louisville, Ky.,* Attorney or Agent: Frank C. Leach, Jr., Ex. Gp.: 333

4,355,100, Re. S.N. 513,799, Filed July 14, 1983, Cl. 430/544, SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL, Hiroshi Sugita, et al., Owner of Record: *Konishiroku Photo Industry Co., Ltd., Tokyo, Japan,* Attorney or Agent: Douglas B. Henderson, Ex. Gp.: 166

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,362,627, Reexam. No. 90/000,434, Requested: Aug. 17, 1983, Cl. 417/354, VENTILATOR, Hermann Papst, Owner of Record: *Papst-Motoren KG, St. Georgen, Black Forest, Germany,* Attorney or Agent: Michael S. Striker, Ex. Gp.: 343, Requester: Papst-Motoren GmbH & Co. KG, c/o Fitch, Even, et al., Chicago, Ill.

3,579,540, Reexam. No. 90/000,439, Requested: Aug. 30, 1983, Cl. 260/33.4, METHOD FOR PROTECTING NON-POROUS SUBSTRATES AND FOR RENDERING THEM WATER REPELLANT, Howard G. Ohlhausen, Owner of Record: *Inventor,* Attorney or Agent: Seymour Rothstein, Ex. Gp.: 140, Requester: Howard G. Ohlhausen, Scottsdale, Ariz.

4,127,416, Reexam. No. 90/000,440, Requested: Aug. 31, 1983, Cl. 106/73.2, METHOD OF PRODUCING A CERAMIC PRODUCT, Roland John Lumby, et al., Owner of Record: *Requester,* Attorney or Agent: Holman & Stern, Chartered, Ex. Gp.: 113, Requester: Lucas Industries, Ltd., Birmingham, England

4,337,805, Reexam. No. 90/000,436, Requested: Aug. 22, 1983, Cl. 141/71, AGRICULTURAL BAG LOADING APPARATUS, William C. Johnson, et al., Owner of Record: *AG-Bag Corp., Arlington, Nebr.,* Attorney or Agent: Michael A. O'Neil, Ex. Gp.: 243, Requester: American Bag All Corp., Fawn Grove, Pa.

4,382,820, Reexam. No. 90/000,442, Requested: Sept. 6, 1983, Cl. 106/90, STRUCTURAL COMPOSITION FOR MACHINE TOOL BODIES AND MEMBERS, Kiyoshi Inoue, Owner of Record: *Inoue-Japan Research, Inc., Yokohamashi, Japan,* Attorney or Agent: Karl F. Ross, Ex. Gp.: 113, Requester: Thad F. Kryshak, Milwaukee, Wis.

4,396,251, Reexam. No. 90/000,441, Requested: Aug. 31, 1983, Cl. 350/349, PLEOCHROIC COLOR DISPLAY DEVICE, Akio Mukoh, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan,* Attorney or Agent: William I. Solomon, Ex. Gp.: 250, Requester: Owner

Information in Oath/Declaration Necessary to Identify the Specification in Accordance with 37 CFR 1.63

Section 1.63 of 37 CFR requires that an oath or declaration "identify the specification to which it is directed." Since filing dates are now granted on applications with the oath or declaration being filed later with a surcharge, the question has arisen as to what information must be supplied in the oath or declaration to identify the specification to which it is directed and to comply with the rule.

The declaration form suggested by the Office includes spaces for filling in the names of the inventors, title of invention, application serial number, filing date, foreign priority application information and United States priority application information. While this information should be provided, it is not essential that all of these spaces be filled in in order to adequately identify the specification in compliance with 37 CFR 1.63.

The following combinations of information supplied in an oath or declaration are acceptable as minimums for identifying a specification:

(1) name of inventor and application serial number;
(2) name of inventor, attorney docket number which was on the application as filed, and filing date of the application;
(3) name of inventor, title of invention and filing date;
(4) name of inventor, title of invention and reference to a specification which is attached to the oath or declaration at the time of execution and filed with the oath or declaration;
(5) name of inventor, title of invention and a statement by a registered attorney or agent that the application filed in the PTO is the application which the inventor executed by signing the oath or declaration.

If the oath or declaration is filed with an "attached" specification as indicated in item (4) above, it must be accompanied by a statement that the "attached" specification is a copy of the specification and any amendments thereto which were filed in the Office in order to obtain a filing date for the application. Such statement must be a verified statement if made by a person not registered to practice before the Office.

Oaths or declarations which do not meet the requirements set forth above will not be accepted as complying with 37 CFR 1.63 for completing an application. Any variance from the above guidelines will only be considered upon the filing of a petition for waiver of the rules under 37 CFR 1.183 accompanied by a petition fee (37 CFR 1.17(h)). Supplemental oaths or declarations in accordance with 37 CFR 1.67 will be required in applications in which the oaths or declarations are not completely filled in but contain sufficient information to identify the specifications to which they apply as detailed above.

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Sept. 12, 1983.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY

SN 4-578,938 (4,354,192). RADIO RANGING.
SN 4-624,666 (4,360,812). FM-CW FUZE.
SN 5-953,292 (4,369,811). NULL BALANCING FOR FLUIDIC SENSORS AND AMPLIFIERS.
SN 6-074,634 (4,357,713). METHOD AND APPARATUS FOR REDUCTION OF MODAL NOISE IN FIBER OPTIC SYSTEMS.
SN 6-111,738 (4,373,553). BROAD BAND FLUERIC AMPLIFIER.
SN 6-133,735 (4,335,655). METHOD AND APPARATUS FOR DETONATING EXPLOSIVE IN RESPONSE TO DETONATION OF REMOTE EXPLOSIVE.
SN 6-142,548 (4,362,106). FLOW DEFLECTOR FOR AIR DRIVEN POWER SUPPLY.
SN 6-153,461 (4,350,315). DEVICE TO DE-SPIN OBJECTS WITH VERY HIGH SPIN.
SN 6-158,556 (4,345,460). MULTI-CALIBER PROJECTILE SOFT RECOVERY SYSTEM.
SN 6-169,004 (4,341,158). APPARATUS FOR ELIMINATING POWER SOURCE RISE TIME EFFECTS IN A TIME FUZE SYSTEM.
SN 6-175,543 (4,367,474). FREQUENCY-AGILE, POLARIZATION DIVERSE MICROSTRIP ANTENNAS AND FREQUENCY SCANNED ARRAYS.
SN 6-176,319 (4,348,649). MICROWAVE POWER PULSE GENERATOR.
SN 6-198,673, (4,379,296). SELECTABLE-MODE MICROSTRIP ANTENNA AND SELECTABLE-MODE MICROSTRIP ANTENNA ARRAYS.
SN 6-216,232 (4,375,082). HIGH SPEED RECTANGLE FUNCTION GENERATOR.

SN 6-217,881 (4,381,002). FLUIDIC-CONTROLLED OXYGEN INTERMITTENT DEMAND FLOW DEVICE.
SN 6-230,177 (4,360,896). WRITE MODE CIRCUITRY FOR PHOTOVOLTAIC FERROELECTRIC MEMORY CELL.
SN 6-278,263 (4,382,678). MEASURING OF FEATURE FOR PHOTO INTERPRETATION.
SN 6-290,138 (4,392,348). DEVICE FOR BLEEDING MOTOR GASES THRU MOTOR POLE PIECE.
SN 6-311,368 (4,385,055). 2-ACETYL-AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES AS ANTIMALARIALS.
SN 6-316,574 (4,393,048). PROTECTIVE GEL COMPOSITION FOR WOUNDS.
SN 6-316,575 (4,391,799). PROTECTIVE GEL COMPOSITION FOR TREATING WHITE PHOSPHORUS BURN WOUNDS.
SN 6-348,538 (4,391,993). THERMOLYSIS OF TETRAALKYLAMMONIUM BOROHYDRIDES TO BIS (TETRAALKYLAMMONIUM) DECAHYDRODECARBORANES.
SN 6-385,999. WIDE RANGE DOPPLER DEMODULATOR IN FM RADAR.
SN 6-393,223. METHOD FOR DETECTING THE PRESENCE OF A GAS IN AN ATMOSPHERE.
SN 6-411,074. POWER SUPPLY CONDITIONER FOR FLUIDIC SYSTEMS.
SN 6-437,607. PHASE SCANNED MICROSTRIP ARRAY ANTENNA.
SN 6-504,117. SPIN SAMPLE READER.
SN 6-514,113. SOLID FUEL RAMJET TUBULAR PROJECTILE FOR DIRECT FIRE CANNON.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-500,833. REPAIR OF TISSUE IN ANIMALS.

Department of Treasury
United States Customs Service

(T.D. 83-179)

Recordation of Trade Name: "Players & Spectators A Drinking and Gaming Establishment"

Agency: U.S. Customs Service, Treasury

Action: Notice of Recordation

Summary: On May 17, 1983, a notice of application for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "PLAYERS & SPECTATORS A DRINKING AND GAMING ESTABLISHMENT," was published in the Federal Register (48 FR 22252). The notice advised that before final action on the application, consideration would be given to relevant data, views, or arguments submitted in opposition to the recordation and received not later than July 18, 1983. No responses were received in opposition to the application.

Accordingly, as provided in section 133.14, Customs Regulations (19 CFR 133.14), the trade name "PLAYERS & SPECTATORS A DRINKING AND GAMING ESTABLISHMENT" is recorded as the trade name used by Players & Spectators, Inc., a corporation organized under the laws of the State of Washington, located at East 27 Augusta, Spokane, Wash. 99207. The trade name is used in connection with a combined restaurant, tavern and amusement game services and franchise business.

Date: Sept. 2, 1983

For Further Information Contact: Harriet Lane, Entry, Licensing and Restricted Merchandise Branch, U.S. Customs Service, 1301 Constitution Ave., N.W., Washington, D.C. 20229 (202-566-5765).

DONALD W. LEWIS,
Aug. 25, 1983. *Director, Entry Procedures and Penalties Division.*

Erratum

The following registration number, listed in the "Trademarks Registrations Issued" section of the Official Gazette of Feb. 23, 1982 was inadvertently issued:

1,190,770 TMOG Feb. 23, 1982

Consequently, the certificate of registration bearing the above-identified number was not issued on the date indicated, and this registration number has been vacated.

MARK K. NEUMAN,
Sept. 7, 1983. *Director, Trademark Examining Operation.*

Erratum

The following registration number, listed in the "Trademarks Registrations Issued" section of the Official Gazette of Aug. 23, 1983 was inadvertently issued:

1,248,844 TMOG Aug. 23, 1983

Consequently, the certificate of registration bearing the above-identified number was not issued on the date indicated, and this registration number has been vacated.

MARK K. NEUMAN,
Sept. 7, 1983. *Director, Trademark Examining Operation.*

PATENT NOTICES

Certificates of Correction for the Week of Oct. 4, 1983

Re. 31,243	4,354,009	4,387,775	4,393,752
Re. 31,290	4,360,657	4,387,950	4,393,804
3,913,294	4,361,375	4,388,339	4,394,235
3,972,934	4,361,546	4,388,505	4,394,242
4,167,612	4,361,746	4,389,060	4,394,294
4,192,640	4,363,999	4,389,460	4,394,428
4,201,584	4,366,062	4,389,530	4,394,513
4,256,961	4,366,718	4,389,676	4,395,165
4,289,570	4,368,187	4,389,713	4,395,244
4,293,436	4,368,879	4,390,501	4,395,251
4,295,222	4,370,329	4,390,543	4,395,277
4,296,234	4,372,754	4,390,698	4,395,572
4,297,220	4,373,348	4,390,819	4,395.702
4,301,078	4,373,487	4,390,833	4,395,772
4,308,754	4,375,264	4,390,957	4,395,890
4,322,640	4,376,759	4,391,011	4,396,043
4,328,358	4,381,541	4,391,117	4,397,077
4,330,507	4,382,028	4,391,213	4,397,602
4,343,918	4,383,076	4,392,496	4,397,774
4,345,944	4,386,199	4,392,940	4,397,904
4,353,813	4,387,732	4,393,696	4,398,017

Disclaimers

3,523,794.—*Vincent J. Miceli,* Conklin, N.Y. DEVELOPERS CONTAINING SILVER HALIDE SOLVENTS. Patent dated Aug. 11, 1970. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,869,205.—*Charles F. Gallo,* Penfield, N.Y. ILLUMINATION SOURCE FOR XEROGRAPHIC EXPOSURE. Patent dated Mar. 4, 1975. Disclaimer filed Mar. 3, 1983, by the assignee, *Xerox Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,324,839.—*Robert B. Frye,* Menands, N.Y. SILICONE RESIN COATING COMPOSITION. Patent dated Apr. 13, 1982. Disclaimer filed Aug. 24, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1 through 11 of said patent.

Disclaimers and Dedications

3,332,755.—*Ira Kukin,* West Orange, N.J. FUEL ADDITIVE. Patent dated July 25, 1967. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims and dedicates to the Public the entire term of said patent.

4,035,530.—*Stephen H. Stoldt,* Dover, N.J. METHOD OF INHIBITING SULFIDATION AND MODIFYING DEPOSITS. Patent dated July 12, 1977. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims and dedicates to the Public the entire term of said patent.

4,042,348.—*Robert P. Bennett,* Bridgewater; *Matthew J. O'Connor,* Flanders; *Alfred E. Kober,* Hopatcong, and *Ira Kukin,* West Orange, N.J. METHOD OF CONDITIONING FLUE GAS TO ELECTROSTATIC PRECIPITATOR. Patent dated Aug. 16, 1977. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims and dedicates to the Public the entire term of said patent.

4,043,768.—*Robert P. Bennett,* Bridgewater, and *Matthew J. O'Connor,* Flanders, N.J. METHOD OF CONDITIONING FLUE GAS TO ELECTROSTATIC PRECIPITATOR. Patent dated Aug. 23, 1977. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims and dedicates to the Public the entire term of said patent.

4,057,398.—*Robert P. Bennett,* Bridgewater, and *Ira Kukin,* West Orange, N.J. PROCESS FOR REDUCING THE FUSION POINT OF COAL ASH. Patent dated Nov. 8, 1977. Disclaimer and Dedication filed Mar. 10, 1983, by the assignee, *Economics Laboratory, Inc.*

Hereby enters this disclaimer to all claims and dedicates to the Public the entire term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents . . . . . Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

OCTOBER 4, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,449,280 (126th)
ADHESIVE COMPOSITION CONTAINING HIGH MOLECULAR WEIGHT POLYAMIDES, EPOXY RESINS AND CURING AGENTS
Robert A. Frigstad, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Reexamination Request No. 90/000,236, Aug. 2, 1982.
Reexamination Certificate for Patent No. 3,449,280, issued Jun. 10, 1969, Ser. No. 24,882, Apr. 27, 1960.
Int. Cl.[3] C08K *3/20*
U.S. Cl. 523—402

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–12** is confirmed.

1. A composition of matter which provides, when cured as a coating on smooth metal surfaces, unusually good resistance to peel forces and high resistance to chemical attack, said composition comprising by weight 13–98 parts of methanol-soluble nylon polyamide, 2–87 parts of epoxy resin, and a curing agent for epoxy resin in amount sufficient to harden the epoxy resin to a thermoset state, said polyamide being a long chain synthetic polymer which has recurring carbonamide groups as an integral part of the main polymer chain and is capable of forming strong cold drawn fibers.

B1 4,229,211 (125th)
LADLE HEATING SYSTEM
Donald D. Battles, Atlanta, Ga., assignor to The Cadre Corporation, Doraville, Ga.
Reexamination Request No. 90/000,274, Oct. 19, 1982.
Reexamination Certificate for Patent No. 4,229,211, issued Oct. 21, 1980, Ser. No. 92,374, Nov. 8, 1979.
Continuation-in-part of Ser. No. 22,687, Mar. 21, 1979, Pat. No. 4,229,211.
The portion of the term of this patent subsequent to Sep. 22, 1997, has been disclaimed.
Int. Cl.[3] F27B *14/14*
U.S. Cl. 266—44

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

Claim **21** is determined to be patentable as amended:

Claim **22** dependent on an amended claim, is determined to be patentable.

21. In a combination with apparatus for heating ladles or the like, a seal assembly for movement into sealing abutment with the rim of *a* [the] ladle, said seal assembly comprising a support frame and a layer of compressible refractory fiber material supported by said support frame and arranged in a configuration to engage the rim of the ladle and form a seal about the rim of the ladle, *duct means extending through said compressible refractory fiber material for exhausting gases from the ladle, and a burner mounted to said seal assembly for directing a flame into the ladle, whereby the fiber material of the seal assembly can form a seal about the rims of ladles of different sizes and shapes and compensate for the build up of slag on the rims of the ladles and for chips or cracks in the rims of the ladles.*

B1 4,270,596 (124th)
TUBE MAT HEAT EXCHANGER
Michael F. Zinn; Steven E. Krulick, and Ronald W. Leonard, all of Spring Glen, N.Y., assignors to Bio-Energy System, Inc., Ellenville, N.Y.
Reexamination Request No. 90/000,291, Nov. 22, 1982.
Reexamination Certificate for Patent No. 4,270,596, issued Jun. 2, 1981, Ser. No. 17,728, Mar. 5, 1979.
Int. Cl.[3] F28F *1/22, 1/16, 9/04*
U.S. Cl. 165—1

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–28** having been finally determined to be unpatentable, are cancelled.

New claims **29–56** are added and determined to be patentable.

29. A heat exchanger element comprising
(a) a plurality of flexible elongated rollout mats integrally extruded of elastomeric material;
(b) each of said mats comprising
i. a plurality of flexible parallel fluid-conducting tubes,
ii. a plurality of flexible webs in each mat connecting and spacing adjacent pairs of tubes, and
iii. a pair of tear lines connecting each web to its associated pair of tubes;
(c) first and second hollow manifolds;
(d) at least two longitudinally spaced portions of the tubes on each mat being torn free of said webs along said pair of tear lines; and
(e) the tube end portions being connected to said manifolds through respective holes in the manifold walls to define closed fluid-conducting paths from the first to the second manifold.

DEFENSIVE PUBLICATIONS

PUBLISHED OCTOBER 4, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T103,501

DEWATERING OF FLUE GAS DESULFURIZATION SULFITE SOLIDS

Forrest C. Garrison, 510 Central Dr., Apt. 514-A, Chattanooga, Tenn. 37421, and William L. Wells, 3522A Taft Hwy., Signal Mountain, Tenn. 37377

Filed Nov. 24, 1982, Ser. No. 444,127

Int. Cl.[3] **C01B** *17/00*

U.S. Cl. 423—242

5 Sheets Drawing. 31 Pages Specification

The dewatering capabilities of sulfite sludges from flue gas desulfurization facilities are substantially improved by the addition of relatively small amounts of sodium thiosulfate additive, or additives derived from or related to sodium thiosulfate, into the scrubber slurry liquor. As an added embellishment, these predetermined amounts of said additives are greater than those required for effecting substantial scale inhibition in the scrubber innards. Subsequently, conventional dewatering of the sulfite sludge to about 80 to 90 percent solids directly produces a waste product disposable in both an economically and an environmentally acceptable manner, in that the thixotropic characteristics of such sludges which are associated therewith upwards to about 70-percent solids therein are completely eliminated.

REISSUES

OCTOBER 4, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,400

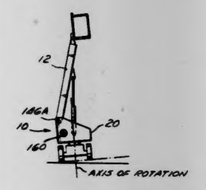
SELF PROPELLED AND EXTENSIBLE BOOM

Rallie P. Rallis, Cerritos; Richard E. Cullity, La Mirada, and Lyle R. Tamplin, Anaheim, all of Calif., assignors to Mark Industries, Carson, Calif.

Original No. 4,226,300, dated Oct. 7, 1980, Ser. No. 13,689, Feb. 21, 1979. Application for reissue Oct. 26, 1981, Ser. No. 315,221

Int. Cl.³ B66F *11/04*

U.S. Cl. 182—2 **11 Claims**



14. In a lift, the combination of a self propelled frame; a boom; and

a body mounted on said frame so as to be selectively rotatable thereon about an axis of rotation; said rotatable body including

(a) a counterwieght body with a center of gravity, said counterweight body being fixed to said rotatable body so as to comprise the peripheral portion thereof which is most remote from the axis of rotation, and

(b) means for pivotally attaching said boom to said rotatable body adjacent to said counterweight body so that the counterweight body center of gravity is always disposed between the boom pivotal attachment and the axis of rotation,

and in which the frame has four wheels rotatably attached thereto, the lift having a track in which is determined thereby, and in which the counterweight body is disposed on the rotatable body with respect to the axis of rotation so that the rotation of the rotatable body rotates the counterweight body center of gravity within the track of the lift.

Re. 31,401

ELECTRONIC TIMEPIECE

Yasuo Kusumoto, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

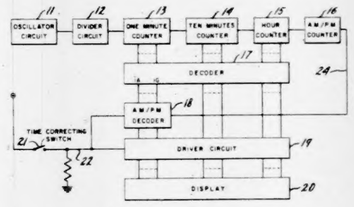
Original No. 4,142,359, dated Mar. 6, 1979, Ser. No. 752,440, Dec. 20, 1976. Application for reissue Mar. 4, 1981, Ser. No. 240,476

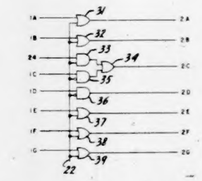
Claims priority, application Japan, Dec. 19, 1975, 50-151665

Int. Cl.³ G04C *19/00*

U.S. Cl. 368—69 **7 Claims**

1. An electronic timepiece, comprising: an oscillator circuit for generating a repetitive time standard signal; a divider circuit receptive of the repetitive time standard signal for dividing the same and for developing a repetitive output signal having a repetition rate defining a unit of time; a time counter circuit connected to receive the dividing circuit output signal for counting the same and for developing a count representative of time; an AM/PM counter circuit connected to said time counter circuit and responsive to the count developed therein for developing a count indicative of whether the time is AM or PM; display means having a plurality of digit display positions for displaying time; decoder means connected to said time counter circuit for developing decoded output signal groups each for enabling a respective digit display position of said display means to enable said display means to display the time represented by the count developed by said time counter circuit; AM/PM decoder means receptive of one decoded output signal group from said decoder means and receptive of a control signal and connected to receive the count developed by said AM/PM counter circuit for developing the applied decoded output signal group as an output signal and *responsive to the control signal* for developing an output signal effective to display a character representative of AM and for developing an output signal effective to display a character representative





of PM according to whether or not the control signal is applied to said AM/PM decoder means and according to whether or not the count developed by said AM/PM counter *circuit* represents AM or PM; *a driving circuit receptive of the decoder means output signal groups for driving said display means to display time and receptive of the output signals developed by said AM/PM decoder means for driving said display means to display characters representative of AM and PM;* and means for *selectively* developing said control signal.

Re. 31,402

ELECTRONIC TIMEPIECE

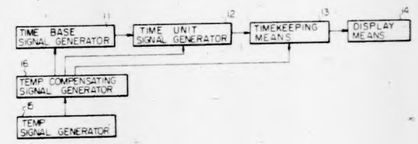
Yukio Hashimoto, Niiza, and Shigeru Morokawa, Higashiyamato, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Original No. 3,978,650, dated Sep. 7, 1976, Ser. No. 517,231, Oct. 23, 1974. Application for reissue Sep. 6, 1978, Ser. No. 939,941

Claims priority, application Japan, Oct. 24, 1973, 48/119605; Oct. 30, 1973, 48/121994; Nov. 15, 1973, 48/128549; Nov. 26, 1973, 48/132379

Int. Cl.³ G04F *5/00*; G04B *17/20*

U.S. Cl. 368—159 **26 Claims**



1. An electronic timepiece which is provided with a time reference signal having an output signal time count unit signal generator, a time counting mechanism and a time display mechanism, the electronic timepiece further comprising:

a temperature signal generator for generating a temperature signal [said generator], *said temperature signal generator being timed to oscillate intermittently by the output signal of said timekeeping means and* including an oscillator circuit having an output different from that of said time reference signal generator, wherein the ratio of output oscillation frequencies changes with temperature variation;

means for transmitting said temperature signal intermittently *in response to the output signal of said timekeeping means;*

memory means for storing the temperature signal generated by said temperature *signal* generator [until a subsequent temperature signal is generated and for delivering said stored temperature signal when the subsequent temperature signal is received by the memory], *said memory means being controlled by the output signal of said timekeeping means so as to keep the temperature signal until a subsequent temperature signal is supplied;*

a signal converter for generating a temperature compensating signal *in response to the temperature signal stored in said memory means,* wherein said compensating signal compensates for the variations of the output frequency of said time reference signal generator caused by temperature variations; and

a time reference signal frequency variable controller for synthesizing the output signal of said time reference signal generator and that of said signal converter by compensating for the changes of the output frequency of said time reference signal generator caused by the temperature variations and for delivering a resultant signal to said time unit signal generator.

Re. 31,403

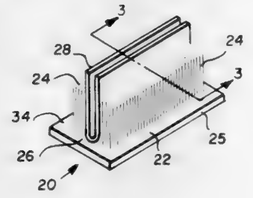
WEATHERSTRIP AND METHOD FOR SEALING A GAP

Allen J. Burrous, Hemlock, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Original No. 4,214,930, dated Jul. 29, 1980, Ser. No. 42,999, May 29, 1979. Application for reissue May 10, 1982, Ser. No. 376,670

Int. Cl.[3] **D04H** *11/00;* **E06B** *7/22*

U.S. Cl. 156—60 **14 Claims**



1. A weatherstrip for sealing a gap between members movable relative to one another between non-aligned and aligned positions, said weatherstrip comprising:

A. a backing strip for securing said weatherstrip to one of said members;

B. at least one sealing body having one surface portion thereof fixed to one face of said backing strip and extending longitudinally thereof and cooperating therewith for forming a sealing assembly, said sealing body extending from said face toward the other of said members to substantially close said gap between said members; and

C. A flexible film fixed adjacent one edge portion thereof to said sealing assembly with said film transverse to said one face, the opposite free edge portion of said film extending beyond said opposite free surface portion of said sealing body for a substantial distance whereby said free edge portion of said film is bent over at least a part of said free surface portion of said sealing body when said members are moved to said aligned position.

Re. 31,404

METHOD OF PRODUCING UNDERCUT TUBULAR PLASTIC ARTICLES

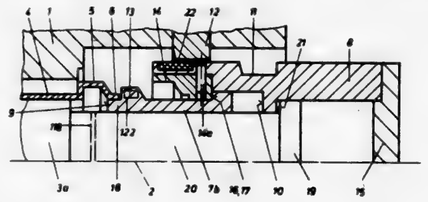
Anton Anger, Linz, Austria, assignor to Österreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg, Linz, Austria

Original No. 4,127,632, dated Nov. 28, 1978, Ser. No. 707,628, Jul. 22, 1976. Application for reissue Sep. 11, 1979, Ser. No. 74,414

Claims priority, application Austria, Jul. 29, 1975, 5878/75; Oct. 10, 1975, 7770/75

Int. Cl.[3] **B29D** *23/00*

U.S. Cl. 264—573 **13 Claims**



1. A method of making a tubular pipe fitting of the type having a longitudinally extending axis and having a predetermined wall thickness throughout and wherein two outer circumferentially extending annular portions having first inner diameters flanking an intermediate circumferentially extending annular portion having a larger second inner diameter defining a circumferentially extending annular groove for receiving a gasket, packing or the like, the difference between the radii of said outer annular portions and the radius of said intermediate annular portion being within a range of more than to at least equal to said thickness, comprising the steps of introducing plasticized synthetic plastic material into a mold whose cavity has a configuration matching that of the fitting, the mold being shiftable between an open position to facilitate removal of the fitting and a closed position to form the cavity and facilitate formation of the fitting, the mold cavity being defined by a core having a first core part for cooperating in forming one of the outer annular portions and a second core part for cooperating in forming the other of the annular portions together with the intermediate annular portion, the core parts being axially shiftable relative to one another between a first position at which the core parts cooperate in forming the mold cavity and second position at which the second core part is adapted to be stripped from the intermediate annular portion of the fitting, the mold cavity also being defined by a first outer mold part radially shiftable between a first position at which it cooperates in forming part of the cavity for one of the outer annular portions and part of the second intermediate annular portion and second radial position away from the fitting to permit stripping of the core, the mold cavity also being defined by a second outer mold part shiftable axially between a first position at which it cooperates in forming part of the cavity for the other of the outer annular portions and the remainder of the intermediate annular portion and a second axial position away from the fitting to permit stripping of the core, the mold cavity surrounds the core including a larger portion with an outer diameter corresponding to said second inner diameter and two smaller portions flanking said larger portion and having outer diameters corresponding to said first diameters whereby the introduced material is converted into said fitting; exposing the exterior of the fitting by shifting the first and second outer mold parts to their respective second position, at least in the region of said intermediate portion and one of said outer portions; maintaining the latter one outer portion of the exposed fitting in a state in which it can undergo elastic deformation; and moving the fitting and the second core part relative to each other in a direction to force the larger portion of the core through said latter one outer portion of the fitting whereby this one outer portion expands during the passage of said larger portion therethrough and thereupon contracts so that its inner diameter is again less than the inner diameter of said intermediate portion.

9. A method for forming a hollow thermoplastic article, having an enlarged bell end with an inner annular groove therein, and a body portion having at least a longitudinal section thereof of smaller inner diameter than the diameter of said inner annular groove of said bell end, which comprises the steps of:

introducing molten plastic into a hollow article forming mold means including a cavity means and core means which cavity and core means together, in closed position, define said bell end and said body portion, said core means being movable, with respect to said cavity means, from a closed position to at least one partially retracted position and thence to a fully retracted position clear of said cavity means and said cavity means being openable to enable said article to be ejected from said cavity means;

cooling the molten plastic of at least a first part of said body portion, while said mold means is in closed position, to a first temperature range within which said plastic forming said first part of said body portion is substantially rigid and non-deformable and,

cooling the molten plastic forming said bell end, while said mold means is in closed position, to a second temperature range in which said plastic forming said bell end remains resiliently deformable, said second temperature range being substantially higher than said first temperature range;

in sequence, partially retracting said core means to thereby remove said core means defining said bell end with some elastic deformation of said bell end while the plastic forming said bell end lies within said second higher temperature range and is still readily deformable and said first part of said body portion lies within said first lower temperature range and then, fully retracting said core means; and

ejecting said formed thermoplastic article from said cavity means before said bell end has cooled to a substantially rigid condition to allow said bell end to recover to its undeformed shape.

13. A method for forming a thermoplastic article having an enlarged bell end with an inner groove and a body portion having at least a section thereof of smaller inner diameter than the diameter of said inner groove, which comprises the steps of:

heating thermoplastic material to a temperature where said material is resiliently deformable;

molding said material to form said article by disposing the heated thermoplastic material around a first and second molding means, said first molding means forming said bell end of said hollow and said second molding means forming said body portion of said hollow;

cooling said second molding means to cause the thermoplastic material adjacent to said second molding means to cool to a temperature range where said thermoplastic material is substantially rigid and non-deformable;

cooling said first molding means to cause said thermoplastic material adjacent to said first molding means to be cooled to a second temperature range in which said thermoplastic material remains resiliently deformable, said second temperature range being substantially higher than said first temperature range;

withdrawing said first molding means causing elastic deformation of said bell end; and

withdrawing said second molding means and allowing said bell end to recover to its undeformed shape before said bell end has cooled to a substantially rigid condition.

Re. 31,405

CERAMIC FOAM CEMENT

Robert J. Paisley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Original No. 4,297,140, dated Oct. 27, 1981, Ser. No. 165,647, Jul. 3, 1980. Application for reissue Sep. 29, 1982, Ser. No. 427,682

Int. Cl.[3] **C04B** *33/00*

U.S. Cl. 501—84 **15 Claims**

1. A foamable particulate ceramic cement capable of forming a sintered cordierite foamed ceramic mass and consisting esentially, by weight, of:

1-40% cordierite grog,

99-60% ceramic base material and an effective amount of a foaming agent to effect foaming of the cement upon firing to produce the foamed ceramic mass,

the base material being raw ceramic material that has an analytical molar composition consisting essentially of about:

1.7-2.4 MO·1.2-2.4 Al_2O_3·4.5-5.4 SiO_2 wheein MO and at least 45% MnO, and

the grog being ceramic material that has been previously first and comminuted, and that has an analytical molar composition consisting essentially of about:

1.7-2.4 RO·1.9-2.4 Al_2O_3·4.5-5.2 SiO_2 wherein RO comprises, as mole % of RO, MnO in an amount of 0% up to a mole % that is about 20 mole % lower than the mole % of MO that is MnO and the balance is substantially MgO.

Re. 31,406

OXYGEN PERMEABLE CONTACT LENS COMPOSITION, METHODS AND ARTICLE OF MANUFACTURE

Norman G. Gaylord, New Providence, N.J., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

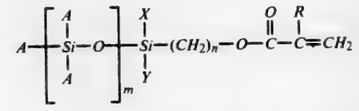
Original No. 3,808,178, dated Apr. 30, 1974, Ser. No. 263,541, Jun. 16, 1972. Continuation of Ser. No. 931,355, Aug. 7, 1978, abandoned. Application for reissue Dec. 11, 1980, Ser. No. 215,486

Int. Cl.[3] **C08F** *230/08;* **G02C** *7/04*

U.S. Cl. 526—279 **18 Claims**

2. As a new article of manufacture, a contact lens having increased oxygen permeability *in comparison with poly(methylmethacrylate)*, said lens being fabricated from [the copolymer composition of claim 1,] *a solid copolymer of comonomers consisting essentially of:*

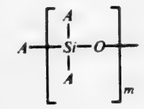
(a) about 10 to 60 parts by weight of a polysiloxanylalkyl ester of the structure



wherein

(1) X and Y are selected from the class consisting of C_1-C_5 alkyl groups, phenyl groups and Z groups,

(2) Z is a group of the structure



(3) A is selected from the class consisting of C_1-C_5 *alkyl groups and phenyl groups,*

(4) R is selected from the class consisting of methyl groups and hydrogen,

(5) m is an integer from one to five, and

(6) n is an integer from one to three; and

(*b*) *about 40 to 90 parts by weight of an ester of a* C_1-C_{20} *monohydric alkanol and an acid selected from the class consisting of acrylic and methacrylic acids,*

said lens having a refractive index of from 1.35 to 1.50.

3. The contact lens of claim 2 wherein said solid copolymer of comonomers includes as a comonomer a minor amount of a cross-linking monomer.

7. The contact lens of claim 3 wherein said solid copolymer of comonomers includes as a comonomer a minor amount of a wetting monomer.

Re. 31,407

COMPUTER MONITORING SYSTEM

Eugene L. Furtman; Charles B. Ross; Richard D. Ashby, all of McLean, Va., and Steven D. Berliner, San Jose, Calif., assignors to Tesdata Systems Corporation, MacLean, Va.

Original No. 4,166,290, dated Aug. 28, 1979, Ser. No. 904,654, May 10, 1978. Application for reissue Aug. 13, 1980, Ser. No. 177,555

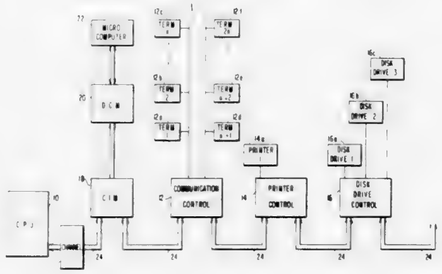
Int. Cl.³ G06F *11/00*

U.S. Cl. 364—200 **23 Claims**

16. A system for monitoring the performance of peripheral devices connected to a central processing unit channel of the type which carries data, addresses, commands, status information and a plurality of condition flags, comprising:

a channel interface module connected as a peripheral device to said channel, said channel interface module comprising data selector means for receiving all said data, address, command and status information on said channel and providing same on a bus line output thereof, a signal level circuit for receiving selected condition flags on said channel and providing condition strobes at an output thereof, an event means for receiving said condition flags and providing input event codes representing selected sequences and combinations of said condition flags; and

a data collection module connected to said channel interface module and receiving all information on said bus line output, said condition strobes and said input event codes, said data



collection module comprising a packet memory for storing packets of information about selected peripheral devices whenever said selected peripheral devices are accessed on the channel, and means responsive to an address on said bus line for selectively controlling the entry of information pertaining to the peripheral device identified by said address into said packet memory.

PLANT PATENTS

GRANTED OCTOBER 4, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,113

MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 10, 1982, Ser. No. 376,769

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a soft golden tan color, being of a shade generally near Orange Buff 507/3, the bud and flower resembling the variety Over The Rainbow (U.S. Plant Pat. No. 3,472) in form and size but having more petals; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of flowers borne usually one to the stem.

5,114

ROSE PLANT

Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.

Filed Jan. 25, 1982, Ser. No. 342,120

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded to upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers which resemble Sheri Anne (miniature — U.S. Plant Pat. No. 3,826) in form and color, the flowers of the present variety being born usually in loose sprays on relatively long stems (sometimes born singly) suitable for cutting, the flowers retaining good color and quality for several days as cut flowers; and further characterized by a vigorous healthy plant with semi-glossy to matt foliage, the plant being easy to propagate from softwood cuttings and by budding.

5,115

MINIATURE ROSE PLANT

Ernest D. Williams, 1510 Lebanon Ave., Dallas, Tex. 75208

Filed May 10, 1982, Ser. No. 376,289

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of a rich dark red color, being of a shade generally near Chrysanthemum Crimson 824/1, the buds and flowers resembling the variety Beauty Secret (not patented) in form and size but being darker red in color; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne usually singly on rather stiff wirey stems.

5,116

BUTTERNUT TREE—LOUMIS CULTIVAR

William K. Erickson, Bowling Green, Mo., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.

Filed Feb. 2, 1982, Ser. No. 345,098

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of *Juglans cinerea,* substantially as illustrated and described, characterized by (a) the formation of a large tree of medium vigor, (b) extremely high nut productivity wherein average sized nuts are frequently borne in clusters of approximately five or more, (c) the propensity for the nuts to readily separate from the hull when opened, (d) the formation of buds which exhibit good winter hardiness, (e) the formation of flowers which exhibit good resistance to frost, (f) the relative absence of damage by casebearer insects, and (g) resistance to Witches'-Broom disease.

PATENTS

GRANTED OCT. 4, 1983

ERRATA

For CLASS	See PATENT NO.
073–046	4,407,171
089–001	4,407,180
604–020	4,407,282
604–136	4,407,283
604–385	4,407,284
383–005	4,407,443
502–025	4,407,725
502–161	4,407,726
502–115	4,407,727
502–060	4,407,728
502–200	4,407,729
502–208	4,407,730
502–203	4,407,731
502–208	4,407,732
502–174	4,407,733
502–009	4,407,734
502–010	4,407,735
502–230	4,407,736
502–243	4,407,737
502–334	4,407,738
428–010	4,407,780
381–120	4,408,094
381–024	4,408,095
381–107	4,408,096
381–015	4,408,097
381–011	4,408,098
377–002	4,408,118
324–065	4,408,128
382–061	4,408,181
360–074	4,408,317
372–098	4,408,334

PATENTS

GRANTED OCTOBER 4, 1983

GENERAL AND MECHANICAL

4,407,021

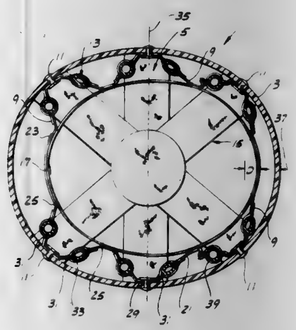
SUSPENSION SYSTEM FOR HEADGEAR

Douglas R. Kralik, and Hal D. Mitchell, both of Rolla, Mo., assignors to Figgie International Inc., Willoughby, Ohio

Filed Mar. 30, 1981, Ser. No. 249,114

Int. Cl.³ A42B *3/02*

U.S. Cl. 2—416 **15 Claims**



1. A suspension system for the skirt of protective headgear having an outer shell, said system comprising a head band adapted to fit around a wearer's head, and a plurality of tension members secured at ends thereof, constituting their outer ends, to tne shell at spaced intervals around the inner surface of the sheil adjacent the skirt thereof and at their inner ends to the head band at spaced intervals therealong for holding the head band spaced from the inner surface of the shell, each tension member being formed of inelastic and relatively inextensible strips material, with a portion of the strip material being formed for permitting extension and contraction of the tension member and having elastically deformable means associated therewith for enabling extension of the tension member within a limited range of extension upon tensioning thereof, whereby with the headgear worn by a wearer and upon application of an impact load to the front, back, or sides of the headgear, the shell moves relative to the head in the direction of the force with resultant tensioning and elongation of certain of the tension members, the range of elongation of the tension members being such as to prevent engagement of the shell with the wearer's head and the elastically deformable means of the elongated tension members deforming to attenuate the shock upon the wearer from the applied load, and whereby, upon termination of the impact load, the elongated tension members contract and the shell is moved in the opposite direction relative to the head, each tension member having a transversely extending pocket receiving the respective elastically deformable means therein, said deformable means being laterally squeezed upon extension of the tension member from an unstressed condition in which it holds the sides of the pocket apart to a generally flattened condition enabling elongation of the tension member, said tension members being constituted by a single relatively long length of said strip material secured to the shell and the head band at spaced intervals, and a plurality of relatively short lengths of said strip material, one short length for each pair of adjacent tension members, stitched to said relatively long length of strip material to form said pockets, one for each tension member.

4,407,022

FEMUR COMPONENT FOR AN ARTIFICIAL HIP JOINT

Gunther Heimke, Weinheim, and Peter Griss, Plankstadt, both of Fed. Rep. of Germany, assignors to Steinzeug- und Kunststoffwerke Friedrichsfeld GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 63,681, Aug. 6, 1979, abandoned. This application Jun. 16, 1981, Ser. No. 274,208

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834155

Int. Cl.³ A61F *1/03*

U.S. Cl. 3—1.913 **9 Claims**



1. An artifical hip joint having an elongated shaft to be anchored in a femur without the use of cement, the cross-sectional outline of said shaft being generally rectangular, two of the oppositely disposed sides of said shaft being each provided with at least two outwardly projecting force-transmitting steps, the remaining two opposite sides of the shaft being smooth, each of the two steps on each of the opposite sides of the shaft being transversely inclined with respect to a plane which passes through the axis of the shaft and which is generally parallel with the planes of the smooth sides of the shaft in equal and opposite directions with respect to each other and said plane to transmit components of compression forces to the tissue of the femur to prevent rotation of the shaft about its long axis, and also in the direction of the shaft axis.

4,407,023

TWO-PIECE SNAP-TOGETHER FLOOR AND CEILING PLATE

C. W. Norton, 4032 Hampstead Rd., La Canada-Flintridge, Calif. 91011

Filed Jun. 29, 1981, Ser. No. 278,633

Int. Cl.³ E03C *1/04*; F16L *5/00*

U.S. Cl. 4—191 **2 Claims**

1. A plumbing sealing device, comprising:

oppositely positioned first and second separate sections, each of said sections having a notch defined substantially in the center thereof,

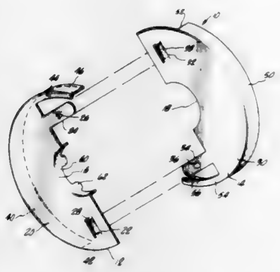
each of said sections having a face portion,

a downwardly extending wall integral with each of said face portions,

said walls disposed at an angle to said face portions, a sleeve integral with each of said face portions of said sections,

a flange extending outwardly from the face portion of each of said sections,

a securing means integral with each of said flanges,



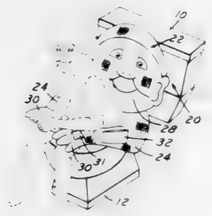
whereby said flanges are adapted to fit within said sleeves defined in said face portions to occasion connection of said first and second sections.

4,407,024

TOILET SEAT LID COVER

Helga Schneider, 3865 Spanish Oaks Dr., West Bloomfield, Mich. 48033

Filed Dec. 23, 1981, Ser. No. 333,673
Int. Cl.³ A47K *13/14*
U.S. Cl. 4—242 **6 Claims**



1. A toilet seat lid cover comprising a pocket adapted to be removably secured as a cover over a toilet seat lid and a pair of generally arcuate laterally opposed shape-retaining flexible arms extending from an open edge of said pocket, said arms being of arcuate configuration and length so as to be adapted to lie upon and substantially cover a toilet seat with said pocket removably secured over the toilet seat lid and the lid in the raised position.

4,407,025

WATER-CONSERVING TOILET

Arnold Hennessy, 182 Niles St., Wellington, Ontario, Canada K0K 3L0, and John D. Inch, P.O. Box 118, Lansdowne, Ontario, Canada

Continuation of Ser. No. 90,370, Nov. 1, 1979, Pat. No. 4,310,934. This application Jan. 4, 1982, Ser. No. 336,809
Claims priority, application Canada, Nov. 14, 1978, 316190
Int. Cl.³ E03D *1/00, 1/08, 3/10, 11/02*
U.S. Cl. 4—321 **10 Claims**

1. A toilet which includes:

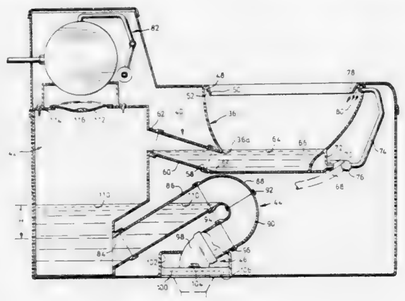
a bowl for receiving waste;

a waste outlet extending laterally from the bowl and defining a first, shallow trap arranged so that a relatively shallow body of liquid is normally retained in the bowl for preventing gaseous communication through the trap;

a flush system arranged, when operated, to deliver a charge of flushing liquid into the bowl in a direction to cause said body of liquid and waste to be discharged through said outlet;

an enlarged chamber communicating with said bowl outlet for receiving waste from said bowl;

an outlet extending outwardly from said chamber and adapted for connection to a sewer inlet, said chamber



outlet defining a second trap of substantial height capable of preventing reverse flow of sewer gas into said chamber in use; and,

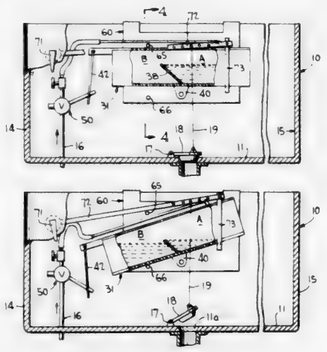
means communicating with said chamber and adapted to relieve increasing gas pressure caused by liquid entering the chamber from the bowl, whereby back pressure resistance to flushing of liquid from the bowl is reduced.

4,407,026

FLUSH CONTROL MECHANISM FOR TOILET TANK

Robert E. Myers, 1446 Fourth St., Monongahela, Pa. 15063

Filed Aug. 4, 1982, Ser. No. 405,157
Int. Cl.³ E03D *1/02*
U.S. Cl. 4—365 **10 Claims**



1. A reliable and easily adjusted flush control mechanism for a toilet tank which includes a drainage opening, a stopper for the drainage opening, a trip chord attached to the stopper and a main water supply pipe, said flush control mechanism including a pivotable control element, a manually-operable trip lever mechanism, a fill water valve element and an adjustable valve element,

said pivotable control element comprising (a) a weightbox which is pivotally mountable about a generally horizontal axis located above the main water level in the toilet tank, said weightbox including a baffle which extends traversely therein to divide the interior into a water inlet chamber and a water outlet chamber, a drain hole which communicates with the water outlet chamber, a vent hole, and a water inlet hole which communicates with the water inlet chamber; (b) an attachment means to enable the weightbox to rotate about the generally horizontal axis, (c) a connector means for connecting the weightbox to the control arm of the fill water valve element, and (d) a fresh water infill tube which connects the water inlet hole with a secondary nozzle of the fill water valve element,

said manually-operable trip lever mechanism including a trip lever arm which extends within the toilet tank and to which the trip chord is attached, and a lifting arm which is located within the toilet tank and is capable of rotating the weightbox about the generally horizontal axis;

said fill water valve element being connectable with the main water supply pipe and nozzle for delivering fresh water directly into the toilet tank, a secondary nozzle for connection with the fresh water infill tube of the pivotable control element, and a control arm which opens or closes both said primary and secondary nozzles and is connectable with the connector means of the pivotable control element; and

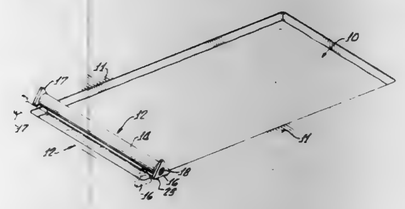
said adjustment valve element being connected between the secondary nozzle of the fill water valve element and the weightbox of the pivotable control element for adjusting the flow of fresh water from the fill water valve element to the water inlet chamber of the weightbox.

4,407,027

POOL-COVER APPARATUS AND METHOD

George M. Colon, Jr., 32072 Sea Island Dr., Laguna Niguel, Calif. 92677

Filed Aug. 10, 1981, Ser. No. 291,512
Int. Cl.³ E04H *7/02*
U.S. Cl. 4—502 **14 Claims**



1. A pool-cover apparatus which comprises:

(a) an elongated roller element adapted to have a flexible pool cover wrapper therearound,

(b) first and second end frames,

(c) means to rotatably connect the ends of said roller element to said respective end frames, and

(d) first and second wheels rotatably mounted on each of said end frames at regions spaced from the regions of connection of said roller-element ends to said end frames said wheels being located and mounted in one surface of each of said frames so that the entire pool-cover apparatus may be pushed along the decking from a storage area to a location adjacent the pool, with only said wheels contacting the decking and rolling therealong,

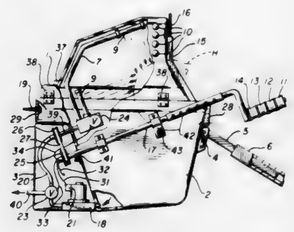
(e) each of said frames providing a second surface angularly spaced from said first surface whereby each of said frames may be manually tilted to a braking position at which said wheels are removed from engagement with the decking, and said second surface is engaged with said decking, said regions of connection of said roller-element ends to said end frames are so located that, when said frames are in their tilted braking positions, said roller element and pool cover may rotate freely so as to unwind said pool cover.

4,407,028

ENERGY WATER-SAVER HOME SHAMPOOER

William D. Nolan, 3100 Grant St., Wichita Falls, Tex. 76308

Filed Feb. 13, 1981, Ser. No. 234,254
Int. Cl.³ A54D *19/04*
U.S. Cl. 4—516 **3 Claims**



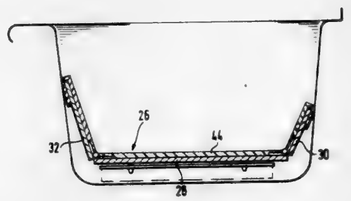
1. Apparatus for applying solutions to the human head comprising: a cabinet with an upper closure mounted on a lower housing having front, rear, side walls and means for mounting said cabinet on a support structure, said front wall having inclined means mounted thereon to support the back of the user in a semi reclining position, said front wall having a cutout surface area adapted to receive and support the user's head and neck in a desired position within the cabinet, in further combination with a liquid resevoir in said housing and means for pumping liquid from said resevoir to a valve mounted externally of the rear wall of said housing, in further combination with a conduit connecting said valve with a second valve inside said cabinet connected to lower and upper applicators via a manifold, in further combination with rotating means causing circular movement of said applicators about the user's head, in further combination with a handle located adjacent said front wall for operating said rotating means whereby the user may rotate the applicators to any desired position as desired, in still further combination with valve actuator means to selectively control via said second valve the application of liquid from said lower applicator and said upper applicator, said actuator means being located in said handle, in further combination with a baffle mounted on said closure for resting on the user's face and pivoted means for pivoting the closure from an open to closed position.

4,407,029

RECLINING PLATFORM FOR BATHTUB UNITS

Peter Schmidt, D-7989 Enkenhofen, Gde. Argenbühl, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,055
Claims priority, application European Pat. Off., Apr. 3, 1982, 82102874
Int. Cl.³ A47K *3/12*
U.S. Cl. 4—564 **10 Claims**



1. A reclining platform for bathtub units, of the type having a base, a bracket plate, and a lift frame and lift device positioned between the base and bracket plate, the reclining platform comprising an oblong, essentially retangular base plate

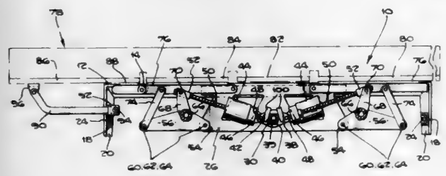
extended in a plane and four hinged plates positioned at front and side edges of the base plane and pivotable upward; one front hinged plate being wider, measured in the longitudinal direction of the base plate, than the front hinged plate opposite it; spring means holding all of the hinged plates close to the base plate for urging the hinged plates to lie at least approximately on a common plane that coincides with the plane of base plate; every two adjacent hinged plates having recesses therebetween and wedges at least partially filled into the recesses, said wedges being flexible.

4,407,030

SAFETY DEVICE FOR AN ADJUSTABLE BED

Franklin E. Elliott, Torrance, Calif., assignor to Maxwell Products, Inc., Cerritos, Calif.

Filed Feb. 9, 1981, Ser. No. 233,007
Int. Cl.³ A61G 7/00
U.S. Cl. 5—66 **15 Claims**



1. A safety device for an adjustable bed comprising:
means for adjusting said bed including linkage means subjected to a mechanical force;
an electric motor for driving said linkage means;
a connector plate for connecting said motor to said adjustable bed; and
a sensing element mounted upon said connector plate for engaging said electrical motor and for undergoing a change of state as said mechanical force applied to said linkage means undergoes a change of state, whereby said motor is disabled upon a change of said mechanical force.

4,407,031

ELASTOMER MATTRESS WITH STIFFENER ELEMENTS

August Michiels, Duprestraat 123, B-1090 Jette-Brussels, Belgium

Filed Jan. 7, 1981, Ser. No. 223,147
Claims priority, application Belgium, Jan. 11, 1980, 198934
Int. Cl.³ A47C 27/16
U.S. Cl. 5—462 **7 Claims**



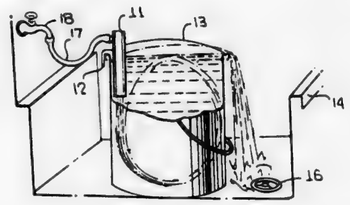
1. In a mattress comprising a pair of spacially displaced elastomer sheets, said sheets cooperating with end members to define a chamber having a longitudinal axis and being of substantially constant depth between said sheets, the improvement comprising:
inner members disposed within said chamber, said inner members being comprised of elastomeric material and extending generally transverse to the longitudinal axis of the chamber, said inner members defining a pair of oppositely disposed surfaces having an undulating contour, said undulating surfaces contacting the inwardly facing surfaces of said sheets in a plurality of spacially displaced regions which extend between said end members, the regions of maximum height on each of said inner member undulating surfaces lying in planes which are substantially transverse to the chamber axis, said inner members further including stiffener elements contained therein and extending in a direction transverse to said chamber axis.

4,407,032

WASHING METHOD USING A FLUIDIC OSCILLATOR

Peter Bauer, Germantown, and Julian Lazrus, Bethesda, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.

Division of Ser. No. 136,860, Apr. 3, 1980, Pat. No. 4,325,235, which is a division of Ser. No. 576,713, May 12, 1975, Pat. No. 4,227,550, which is a division of Ser. No. 356,416, May 2, 1973, abandoned. This application Dec. 17, 1981, Ser. No. 331,849
Int. Cl.³ D06F 7/00, 39/06
U.S. Cl. 8—158 **8 Claims**



1. The method of washing clothes in a body of wash liquid comprising the steps of:
(a) inducing amd maintaining a continuous circulating flow in a vertical plane in said body of liquid, said flow being sufficiently strong to carry and circulate articles therewith;
(b) agitating articles carried by said flow at least once during each circulation by introducing pressurized pulses of liquid into the path of said flow;
(c) continuously overflowing surface liquid from said body of liquid; and
(d) discharging the overflowing liquid from the circulating water.

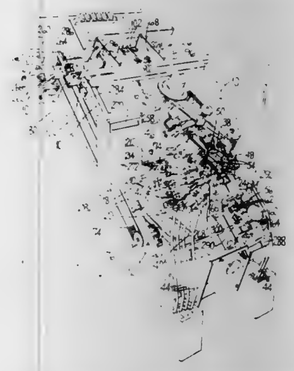
4,407,033

COMBINATION TOE AND SIDE LASTING MACHINE

Derek H. Garner; Frank C. Price, both of Leicester; Philip Reader, Thornton; David W. Whittingham, Blaby; Anthony M. White, Oadby; Joseph A. Shutt, Rearsby, and Nicholas J. Campling, Loughborough, all of England, assignors to USM Corporation, Farmington, Conn.

Filed Dec. 18, 1981, Ser. No. 332,253
Claims priority, application United Kingdom, Dec. 20, 1980, 8040923
Int. Cl.³ A43D 21/00, 3/00
U.S. Cl. 12—10.1 **29 Claims**

1. A machine for performing a combined toe and side lasting operation on shoe uppers, comprising
a last support, for supporting, bottom facing down, a last on which a shoe upper and insole are assembled,
a plurality of grippers arranged about last support for gripping material portions of an upper and tensioning it about its last,
and toe end lasting means, comprising wiper plates by which lasting marginal portions of the toe region of the upper can be wiped over and pressed against corresponding marginal portions of the insole, wherein the last support and grippers are mounted on a support arrangement which is bodily movable between an operative position, in which a last, with an upper tensioned thereon as aforesaid, is supported with the shoe bottom in a wiping plane (as determined by the wiper plates), and an out-of-the-way position, and further wherein, with the support arrangement in its operative position, the toe end lasting means is caused to operate to move the wiper plates to an "interrupt" position in which leading marginal portions thereof engage and clamp marginal portions of the upper against corresponding marginal portions of the insole in the region of the periphery of the insole only, the grippers being caused to release the upper as it is so clamped, and the machine also comprising
two side lasting assemblies by which lasting marginal portions of the opposite side regions of the upper can be wiped over and pressed against corresponding marginal portions of the insole, and
adhesive applying means, comprising two nozzles movable relative to the shoe bottom whereby to cause adhesive to be applied progressively between the lasting marginal portions of the upper and corresponding marginal portions of the insole, in which machine the nozzles are mounted on a further support arrangement which is movable, beneath the level of the toe end lasting means, along a rectilinear path to cause the nozzles supported thereby to apply adhesive progressively along toe and side portions of the shoe bottom, after the inwiping movement of the wiper plates has been interrupted, and prior to such movement being continued, and also prior to operation of the side lasting assemblies, the support arrangement for the last support and grippers being mounted for movement heightwise of the machine between its operative and out-of-the-way positions, and said further support arrangement for the nozzles being movable as aforesaid when the first-mentioned support arrangement has been moved to its out-of-the-way position.



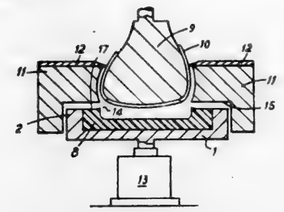
4,407,034

MANUFACTURE OF SHOES

George T. Ralphs, Bradford-on-Avon, England, assignor to C & J Clark Limited, Street, England

Filed Jul. 7, 1980, Ser. No. 166,113
Claims priority, application United Kingdom, Apr. 21, 1980, 801307
Int. Cl.³ A43D 9/00, 13/08
U.S. Cl. 12—142 RS **9 Claims**

1. A process for manufacturing shoes comprising the steps of:
(1) moulding an out-sole having a raised peripheral portion by injection of a first substance in a first cavity defined between a sole mould having a peripheral rim and a lid, said raised marginal portion extending above said rim of said sole mould;
(2) providing a lasted upper spaced from said out-sole;
(3) moving side moulds having a surface facing said raised portion of said out-sole over said rim of said sole mould while said out-sole is positioned in said sole mould so that said surface of said side moulds sealingly engages said raised margin portion to form a sealed joint between said rim of said sole mould and said surface and to define a second cavity formed by said lasted upper, said out-sole and said side moulds; and



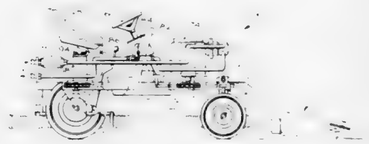
(4) joining said lasted upper to said out-sole by injecting a second substance into said second cavity.

4,407,035

MODULARIZED PNEUMATIC TRACTOR WITH DEBRIS LIQUEFIER

Albert Lindqvist, P.O. Box 2606, Christiansted, St. Croix, V.I. 00820

Filed Apr. 30, 1982, Ser. No. 373,412
Int. Cl.³ B08B 9/08
U.S. Cl. 15—3 **10 Claims**



1. A modularized tractor including:
a main chassis;
seat, left back wheel, right back wheel, front wheel assembly, and scoop assembly modules;
means for removably connecting said modules to said main chassis;
a pneumatic motor carried by said main chassis;
pneumatic tube means coupled to said motor and adapted for coupling to a source of compressed air;
means coupling said pneumatic motor to said left and right back wheels for moving said tractor;
means carried by said main chassis and coupled to said front wheel assembly for steering such assembly; said scoop assembly comprising a scoop which is enclosed except for a sludge inlet opening and a liquefied sludge outlet opening opposed to said inlet opening;
at least one jet orifice supported inside said scoop and directed at said sludge outlet opening;
an exhaust tube having first and second ends, said first end being coupled across said outlet opening in said scoop to receive the outflow from said scoop, said second end being adapted for coupling to an exhaust pump; and,
tube means coupled to said at least one jet orifice and adapted for coupling to a source of hydraulic fluid at high pressure.

4,407,036

APPARATUS FOR REMOVAL OF MOLD FROM THE EXTERIOR OF MEAT PRODUCTS

Henry Y. Kuhl, Kuhl Rd., Flemington, N.J. 08822

Filed Jul. 9, 1982, Ser. No. 396,963
Int. Cl.³ A22C 17/08
U.S. Cl. 15—3.13 **10 Claims**

10. An apparatus for removal of mold from the exterior of meat products comprising:
(a) a conveyor means extending longitudinally adapted to

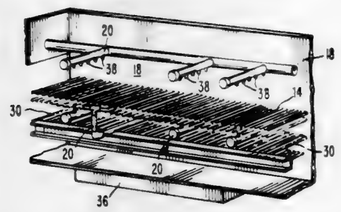
carry meat products for processing thereof to effect removal of mold from the exterior thereof, said conveyor means further including:

(1) a lower conveyor member extending approximately horizontally and longitudinally to support meat products thereabove for processing, said lower conveyor member including and endless wire belt conveyor;

(2) an upper conveyor member extending approximately horizontally and longitudinally above said lower conveyor member and the meat products traveling thereon, said upper conveyor member including an endless wire belt conveyor, said upper conveyor member moving at approximately the same rate of speed as said lower conveyor member, said upper conveyor member adapted to rest upon the upper surface of the meat products and said lower conveyor means to hold the meat products in place during processing thereof by gravitational weight of said upper conveyor member thereon;

(b) an entry station adjacent said conveyor means adapted to be the location of initial placement of meat products thereon;

(c) a cleaning station positioned along said conveyor means at a location adjacent to and downstream from said entry station, said cleaning station including a refrigerated water



delivery means adapted to spray refrigerated water under pressure onto the meat products to remove any mold adhering to the exterior thereof, said cleaning station including a tank means positioned below said conveyor means to hold and recirculate refrigerated water, said refrigerated water delivery means being adapted to maintain the water at 65°–75° F., said refrigerated water delivery means including a plurality of nozzles deployed in an array completely surrounding said conveyor means and the meat products traveling thereon;

(d) an air station positioned along said conveyor means at a location adjacent to and downstream from said cleaning station, said air station adapted to blow air under pressure over meat products traveling upon said conveyor means for drying thereof;

(e) a heating station positioned along said conveyor means at a location adjacent to and downstream from said air station, said heating station adapted to blow heated air under pressure over meat products traveling upon said conveyor means to complete drying and warming thereof; and

(f) an exit station positioned along said conveyor means at a location adjacent to and downstream from said heating station, said exit station providing the location for removal of cleaned meat products.

4,407,037

MOLD CLEANING APPARATUS

Mern S. Kemble, 130 Entrance Dr., New Kensington, Pa. 15068

Filed Aug. 25, 1981, Ser. No. 296,063
Int. Cl.³ B08B *9/08*
U.S. Cl. 15—93 R **21 Claims**

1. A mold cleaning apparatus comprising:

cutter assembly means for removing undesired material from said mold;

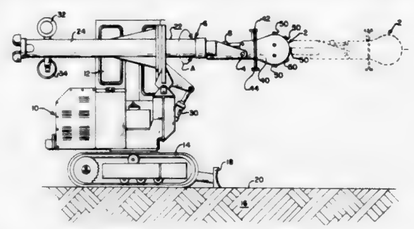
boom means pivotally supporting said cutter assembly;

said cutter assembly means including a shaft member, a plurality of generally radially projecting cutter members fixedly secured to said shaft, said cutter members having a cutter blade mounted at the outer extremity thereof;

each of said cutter members having a resilient connecting link interposed between said cutter blade and said shaft;

power means for effecting axial rotation of said shaft;

mounting means securing said cutter members to said shaft;



said resilient connecting links having one end portion secured to a said cutter blade and another end portion secured to said mounting means;

said mounting means having a series of mounting members secured to said shaft member at axially spaced positions; and

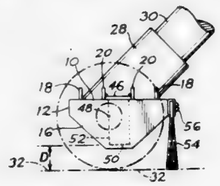
each said mounting member connecting a plurality of said cutter members to said shaft.

4,407,038

MAGNETIC SWEEPER

Gerald A. Haase, 1005 Country Club Rd., Lake Oswego, Oreg. 97034

Filed Nov. 27, 1981, Ser. No. 325,230
Int. Cl.³ B03C *1/30;* **H01F** *7/02*
U.S. Cl. 15—105 **3 Claims**



1. A magnetic sweeper, comprising:

(a) a transversely elongated, unitary non-magnetic body having an outwardly projecting handle member centrally mounted on its top surface,

(b) the body configured with at least one magnet retaining pocket on each side of the handle, each pcoket having an open side for removable reception of a permanent magnet,

(c) each magnet configured with one side surface having a given area and a second side surface disposed 90 degrees relative to the first side and having a larger surface area, and

(d) wheels on the opposite ends of the body mounted for rotation on a transverse axis,

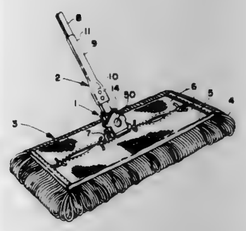
(e) the pockets on said body arranged to support said one side surface of each magnet a predetermined distance inward of the outer circumference of the wheels and the second, larger side surface a predetermined greater distance inward of the outer circumference of the wheels, whereby in one position of the body the said one side surfaces of the magnets are positioned in a predetermined distance above and facing an underlying surface to be swept, and in a second position of the body, rotated 90 degrees from said first position, the said larger second side surface of the magnets are positioned a predetermined greater distance above and facing an underlying surface to be swept.

4,407,039

DUST MOP HANDLE ATTACHMENT DEVICE

Theron V. Moss, Cleveland, Tenn., assignor to SECO Industries, Inc., Cleveland, Tenn.

Filed Sep. 20, 1976, Ser. No. 724,956
Int. Cl.³ B25G *3/24*
U.S. Cl. 15—144 A **2 Claims**



1. A device for attaching a handle to an accessible shaft of a dust mop frame, comprising:

a plate-like clip member having an integral forwardly extending leg and a pair of integral tab-like portions laterally positioned respectively on opposite sides of said leg with said leg located laterally between said tab-like portions, said tab-like portions being offset relative to said leg to define the effective boundaries of a space that is relatively open at the forward-most end of said space for receiving the shaft,

closure means mounted for movement relative to said clip member and cooperable with said leg and tab-like portions thereof for closing said open forward-most end of said space thereby to hold the shaft in said space, and

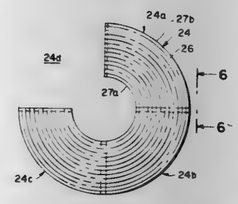
mounting means extending generally rearwardly of said clip member for mounting said clip member to a handle, said mounting means comprising a rigid connector member having at least one opening therein, and further comprising tubular connector means for coupling said connector member at said at least one opening, said means for connecting comprising a portion of said tubular connector means mechanically deformed into said at least one opening, said at least one opening extending through said rigid member, and said portion at least substantially filling a cross-sectional area extent of said opening.

4,407,040

PAD DRIVE FOR ROTARY SCRUBBER

Stephen Scharf, Melville, N.Y., assignor to Universal Brush Company Ltd., Babylon, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,180
Int. Cl.³ B24B *29/00*
U.S. Cl. 15—230.17 **21 Claims**



1. A pad drive assembly for detachably gripping a selected maintenance pad to be rotatably driven by a floor maintenance machine comprising

a rigid, substantially circular back support defined by two faces, one of which is substantially planar and a substantially rigid pad drive of substantially planar configuration comprised of a plurality of mating sectors and defined by two substantially planar faces,

one of the last mentioned planar faces being attached to said one face of said back support for rotation therewith,

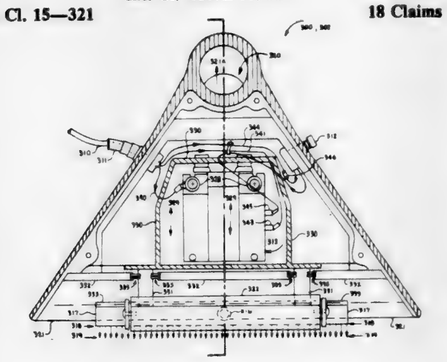
the other planar face of said pad drive being formed with a plurality of upstanding, substantially rigid pins that extend therefrom and that are adapted detachably to grip a selected maintenance pad and rotatably drive the same.

4,407,041

CLEANING SYSTEM HAVING IMPROVED CLEANING SOLUTION RECOVERY

Aaron Goldsmith, 21821 Burbank Blvd., Woodland Hills, Calif. 91367

Continuation of Ser. No. 162,577, Jun. 24, 1980, Pat. No. 4,385,413. This application Jul. 31, 1980, Ser. No. 174,270
Int. Cl.³ A47L *11/00*
U.S. Cl. 15—321 **18 Claims**



1. A carpet cleaning system comprising:

means for agitating a surface to be cleaned, including beater means for agitating the carpet being cleaned;

means for dispensing a cleaning fluid on the surface to be cleaned, including means for dispensing the agitated cleaning fluid from said beater means to provide acceleration between the agitated cleaning fluid being dispensed and the carpet being cleaned;

means for recovering the cleaning fluid dispensed by said dispensing means; and

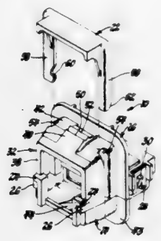
means for mounting said dispensing means next to said recovery means.

4,407,042

GROMMET ASSEMBLY WITH PANEL ATTACHING MEANS

Stephan H. Schramme, Cortland, and Mark A. Kelley, Warren, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 2, 1981, Ser. No. 307,769
Int. Cl.³ H01B *17/14;* **H02B** *1/10;* **F16L** *5/02*
U.S. Cl. 16—2 **4 Claims**



1. A grommet assembly having means for attaching the

grommet assembly to an apertured bulkhead panel or the like comprising;

a shank which is insertable into a panel aperture and which has a rearward portion sized so as to substantially locate the shank horizontally and vertically in the aperture,

a flange at a rearward end of the shank for locating the rearward portion of the shank in the panel aperture,

a rigid projection at one side of the shank which is spaced from the flange for engaging a backside of the panel,

a flexible arm opposite the rigid projection which is attached to a forward end of the shank and projects toward the flange,

said flexible arm having longitudinally spaced projections for engaging the backside of the panel,

a pair of slots in the shank which are spaced from and generally parallel to the flange, and

a U-shaped retainer which slides into the pair of slots and which has portions for engaging the backside of the panel and securely fastening the grommet assembly to the panel.

4,407,043

UNDER CARRIAGES FOR SLIDING DOORS HAVING SYMMETRICAL WEIGHT DISTRIBUTION

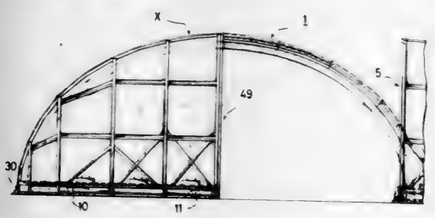
Erwin Möllmann, Neueromasch 6, 4520 Melle 1, Fed. Rep. of Germany

Filed Jan. 13, 1981, Ser. No. 224,660

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001341

Int. Cl.³ E05D *13/02*

U.S. Cl. 16—100 **5 Claims**



1. Under carriages in combination with and for supporting and displacing heavy-weight sliding doors at two spaced positions, said carriages arranged to run on a trackrail embedded in concrete, each of said carriages comprising two track wheels situated one behind another upon the trackrail, each of said track wheels having flanges to overlap the trackrail on both sides thereof, a rigid beam engaging each of said track wheels, and having a spheroidal seat bearing in a central point thereof between said two track wheels, a calotte having a plane upper surface and engaging said spheroidal seat bearing, and each of the sliding doors having a frame provided with a recess for receiving loosely the plane upper surface of said calotte, so as to secure an entraining connection between each of the sliding doors and a respective one of said carriages, whereby each of said carriages bearing a corresponding portion of the heavy-weight of the sliding doors.

4,407,044

HINGE

Kazuo Iseki, Tokyo, Japan, assignor to Ohta Company Limited, Tokyo, Japan

Division of Ser. No. 178,427, Aug. 15, 1980, Pat. No. 4,347,645. This application Nov. 20, 1981, Ser. No. 323,596

Claims priority, application Japan, Aug. 18, 1979, 54-113966[U]; May 6, 1980, 55-61637[U]

Int. Cl.³ E05D *7/04*

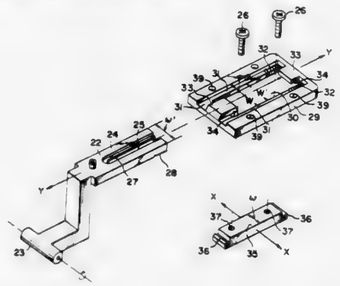
U.S. Cl. 16—237 **7 Claims**

1. A hinge comprising:

a stationary base for mounting directly to a furniture wall, said base being formed centrally with an opening;

a central insert which is smaller in width than said opening, said insert having a pair of transversely extending and upwardly facing projections, and being fitted in said opening at the bottom of said base;

a pair of projections extending inwardly from the transverse edges of said opening, and each formed with a downwardly facing groove in which one of said projections of said insert is engaged slidably;



said base having a pair of arm receiving grooves each formed with a plurality of teeth therein;

an L-shaped arm having a bifurcated portion slidably received in said arm receiving grooves, formed with a plurality of teeth engaged with said teeth in said arm receiving grooves, and defining an elongated slot therein; and

a plurality of screws extending through said slot, and threadedly connected with said insert, whereby said arm is movable in four longitudinal and transverse directions for fine positional adjustment relative to said base.

4,407,045

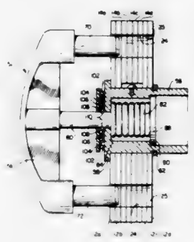
LADDER HINGE AND MULTI-POSITION LOCKING MECHANISM THEREFOR

Leland H. Boothe, 247 South 600 East, Alpine, Utah 84003

Filed Dec. 21, 1981, Ser. No. 333,229

Int. Cl.³ E05D *11/10;* **F16C** *11/10*

U.S. Cl. 16—327 **28 Claims**



1. An improved hinge for collapsible ladders, said hinge being of the type wherein first and second members each have a head portion and a ladder stringer-engaging portion, the first and second members being pivotally engaged for rotation about a pivot axis extending generally perpendicularly through said head portions and having respective first locking apertures which are radially spaced from the pivot axis and can be selectively aligned and mis-aligned by mutual rotation of said first and second member about the pivot axis, and at least one locking pin which is selectively translated through the locking apertures, when aligned, from an unlocked to a locked position thereby preventing mutual rotation of the first and second members, the improved hinge further comprising:

a hub member having a longitudinal axis corresponding to the pivot axis and having a guide aperture defined therein about the longitudinal axis;

a guide shaft disposed in the hub member for both axially slidable translation between extended and retracted positions along the longitudinal axis through the guide aperture and rotation about the longitudinal axis;

a handle member securing together the guide shaft and a proximal end of the locking pin such that a distal end of the locking pin is translatable through the locking apertures when aligned;

bias means for applying an axial bias force to the guide shaft to urge the guide shaft toward the retracted position;

axial detent means responsive to the guide shaft being moved to its extended position for maintaining the guide shaft in the extended position in opposition to the bias force while permitting rotation of the guide shaft, the detent means comprising:

a first detent bore defined through one of said hub member and said guide shaft and at least a first detent recess defined in the other of said hub member and said guide shaft such that said first detent bore and first recess are axially aligned when the guide shaft is in the extended position and are angularly aligned when the locking apertures in said first and second members are aligned;

a first detent member disposed in the first detent bore and having a projecting portion configured to match the first detent recess; and

first means disposed in the first detent bore for urging the projecting portion of the said first detent member radially toward the first detent recess; and

wherein the distal end of the locking pin is spaced from at least the first member in the extended position of the guide shaft and is snapped into abutment with the first member through the locking aperture in the second member upon disengagement of the detent means by rotation of the shaft.

4,407,046

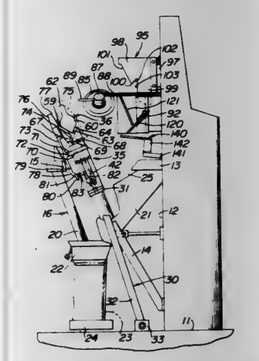
POULTRY CUTTING APPARATUS

Stanley Wright, Cherry Hill, N.J., assignor to Precision Automation Co., Inc., Cherry Hill, N.J.

Filed Nov. 16, 1981, Ser. No. 321,438

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **9 Claims**



1. A poultry cutting apparatus comprising a poultry mandrel mounted for shifting movement along a path forwardly and rearwardly into and out of a forward carcass loading position, said mandrel having at least one slot facing laterally of said path, a clamp mounted for movement rearwardly and forwardly into and out of clamping relation with said mandrel and movable with said mandrel in clamping relation therewith for holding a carcass on the mandrel, forward cutting means at a forward region of said path for cutting of a carcass upon rearward mandrel movement, rearward cutting means at a rearward region of said path for movement into said one slot and cutting of said carcass, said carcass being released upon forward clamp movement away from and out of clamping relation with said mandrel, said one slot opening through said mandrel transversely of said path, said rearward cutting means comprising a pair of shear action blades mounted for extension into and retraction from said one mandrel slot and combining upon shearing action to pass entirely through said one mandrel slot, and die cutting portions on said shear action blades for die cutting coaction with said mandrel.

4,407,047

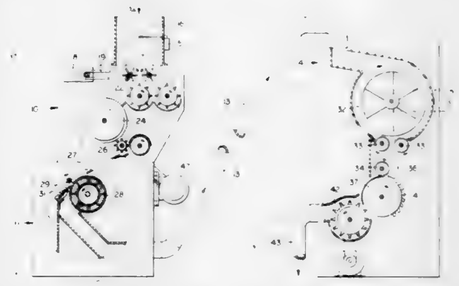
COTTON GINNING SYSTEM EMBODYING A LINT CLEANER AND PROCESS OF OPERATING THE SAME

Donald W. Van Doorn; Tommy W. Webb, and James B. Hawkins, all of Columbus, Ga., assignors to Lummus Industries, Inc., Columbus, Ga.

Filed Nov. 19, 1980, Ser. No. 208,159

Int. Cl.³ D01B *1/06;* **D01H** *5/32*

U.S. Cl. 19—64.5 **7 Claims**



1. In a process of operating a cotton ginning system which includes a seed cotton feeder having driven feed means for delivering seed cotton to a gin and a lint cotton cleaner having a driven feed works for delivering the lint received from the gin to a driven worker such as a saw, the steps of:

(a) continuously sensing the rate of motion of the feeder feed means and from said sensing thereof obtaining signals representative of the amount of seed cotton being delivered by the feeder to the gin, and

(b) utilizing said signals while the system is in operation to vary the rate of motion of the lint cleaner feed works to deliver predetermined desired batt thickness of lint cotton from the lint cleaner feed works to the saw.

4,407,048

BUCKLE FOR FASTENING TOGETHER THE PARTS OF A SHOE

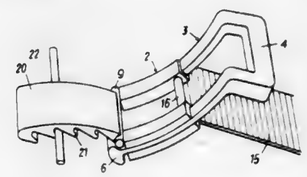
Erwin Bucheder, Köflach, Austria, assignor to Koflach Sportgerate Gesellschaft m.b.H., Koflach, Austria

Filed May 28, 1981, Ser. No. 268,114

Claims priority, application Austria, Jun. 27, 1980, A 3390/80

Int. Cl.³ A43C *11/00*

U.S. Cl. 24—69 SK **11 Claims**



1. A buckle for fastening together the parts of a shoe, partic-

ularly of a skiing boot or mountaineering boot, comprising an elongated tensile element, a tightening lever pivoted on a hinge pin that is transverse to the longitudinal axis of the tensile element, which is adapted to be secured to the surface of the shoe, and an abutment adapted to be connected to the shoe and cooperating with the tightening lever, said lever and abutment being on different parts of the shoe and being engageable to draw the shoe parts toward each other when said lever is swung to a closed position, characterized in that the tightening lever comprises first and second parts, which are longitudinally displaceable relative to each other and are guided relative to each other, that the tensile element is adapted to be secured to said first part of the lever, and that the second part of the tightening lever constitutes a handle which, after the lever has been swung to the closed position, can be displaced relative to said first part toward the tensile element longitudinally beyond the hinge pin of the tightening lever.

4,407,049

BUCKLE FOR BELTS OR THE LIKE

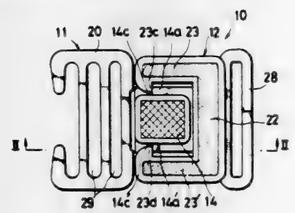
Yoshihiro Kanzaka, Nyuzen, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 277,642

Claims priority, application Japan, Jul. 18, 1980, 55-101539[U]

Int. Cl.³ A44B *19/00*

U.S. Cl. 24—230 AS **7 Claims**



1. A buckle for fastening together loose ends of a belt or the like, the buckle comprising: a male part and a female part, said parts each having a belt-end retainer connected to one of the ends of the belt, said male part comprising a plug member and said female part comprising a receptacle member releasably engageable with said plug member; said plug member having opposite flat side portions and a raised head portion defining therebetween a generally U-shaped groove to permit said raised head portion to flex resiliently, said head portion including a pair of sloped shoulders which are inclined progressively upwardly and a button portion lying in a plane parallel to said flat side portions; said receptacle member having a transverse closed rear-end flange portion, two oppositely disposed side flange portions having their respective one ends integrally connected to opposite ends of the rear-end flange portion and having their respective other ends free, and a guide channel formed coextensively with said flange portions, said side flange portions having at their respective free ends a pair of inwardly projecting lugs which project inwardly towards one another and which are spaced apart by a gap at the front end of said receptacle member, said lugs being configured to releasably engage with said shoulders of said head portion upon insertion of said plug member into said receptacle member to thereby releasably couple together said male and female parts.

4,407,050

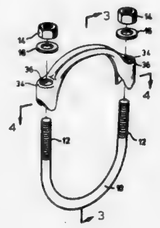
CLAMPS

Hermann F. Offterdinger, 1109-5170 Lakeshore Rd. East, Burlington, Ontario, Canada L7L 1C4

Continuation-in-part of Ser. No. 215,608, Dec. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 47,659, Jun. 11, 1979, abandoned. This application Feb. 11, 1982, Ser. No. 347,811

Int. Cl.³ F16L *33/10*; B65D *63/00*

U.S. Cl. 24—277 **20 Claims**



8. A clamp saddle member for a clamp of the type which encircles a clamp-receiving member on which it is clamped, the clamp comprising:

a clamp bolt member, and

a clamp saddle member formed from a piece of sheet metal, the bolt member and the saddle member cooperating with one another to encircle the clamp-receiving member,

the bolt member including means for tightening the clamp about the clamp-receiving member,

the clamp saddle member having a bight portion of arcuate shape so as to have a concave side for engagement with the clamp-receiving member and an opposite convex side,

the saddle member having two integral spaced bolt-receiving portions at the respective ends of the arcuate bight portion which receive the bolt member and the tightening means for the application of clamping force to the clamp by the said tightening means,

wherein the said arcuate saddle bight portion consists of a portion of the sheet metal piece that has been bent to closed tubular form with the radially outer wall portion thereof collapsed toward the radially inner wall portion, so that the bight thereby consists of two immediately adjacent thicknesses of the metal sheet and is of open-sided channel transverse cross-section with the channel opening at the radially outer convex side.

4,407,051

SLIP-IN DRAPERY HOOK

Richard B. Ryan, Libertyville, Ill., assignor to Richard Ryan & Associates, Inc., Northbrook, Ill.

Continuation-in-part of Ser. No. 172,835, Jul. 28, 1980, Pat. No. 4,344,210, which is a continuation-in-part of Ser. No. 73,668, Sep. 10, 1979, Pat. No. 4,261,080. This application Jun. 18, 1982, Ser. No. 389,666

Int. Cl.³ A44B *13/00*

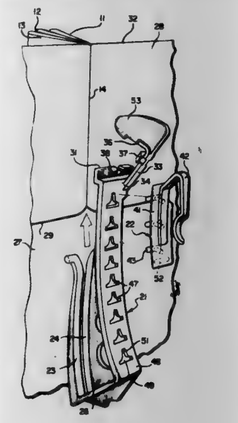
U.S. Cl. 24—369 **8 Claims**

1. A drapery support for a drapery having a preformed pleat comprising:

a vertical elongated base, having an upper and a lower end;

attaching means adjacent the lower end of said base for attaching said base to the rear surface of said drapery at a location opposite said pleat, with the upper end of said base adjacent the upper edge of said drapery;

clamp means associated with the upper end of said base for engaging the upper edge of said drapery; and



a hook assembly for engaging a traverse rod or the like, said assembly being adapted to be removably secured to said base at a selected location along its length.

4,407,052

STUFFING ATTACHMENT FOR A CONTINUOUSLY OPERATING CRINKLING UNIT

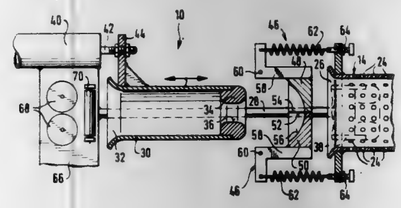
Klaus G. Kühn, Winterweg 52, 8751 Obernau, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,252

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926478

Int. Cl.³ D06C *23/04*; D06J *1/02*

U.S. Cl. 26—2 R **8 Claims**



1. A stuffing attachment for a continuously operating crinkling unit having a compression tube with an axis which runs in a straight line in its starting zone and receptive of continuous strip-form material, the attachment comprising: a stuffing ring; means mounting the stuffing ring for displacement in the direction of the straight-line axis of the compression tube between an inner dead point, at which the stuffing ring is located inside the compression tube and an outer dead point, at which the stuffing ring is located outside the compression tube; the side of the stuffing ring facing the compression tube being torus-shaped and said stuffing ring having an aperture in a plane normal to its direction of travel, through which the strip-form material passes; clamping means located upstream of the compression tube and having a variable size passage opening, which can be opened so wide that the stuffing ring can pass completely through to stuff the material into the compression tube, and which can be shut to such an extent that it grips the strip to prevent it from being pulled back by the movement of the stuffing ring, said clamping means comprising at least two movable clamping jaws of which the mutually opposed clamping surfaces limit the passage opening, the sides of the clamping jaws which face away from the compression tube forming a concave surface; and means mounting said clamping jaws for pivotable movement about a bearing point fixed relative to the attachment, said means mounting said clamping jaws including means pressing the clamping jaws in a resilient manner having at least one spring.

4,407,053

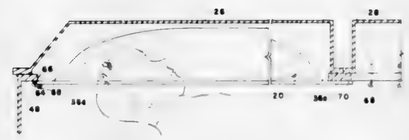
COVER FOR CASKETS

Alease E. Ball, 6715 Parsons Ave., Baltimore, Md. 21215

Filed Nov. 24, 1981, Ser. No. 324,536

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—14 **1 Claim**



1. In combination, an elongate casket having a bottom and first and second sides and first and second ends, forming an opening, first and second tops hinged to the first side for longitudinally abutting over the opening and enclosing a body within the casket; means for detachably securing the second top shut, leaving a viewing opening; said first and second sides and first end and second top forming fixed overhangs around said viewing opening; means for closing the viewing opening for restricting contagion and odors and access to a body in the casket while preserving a selected degree of visual access to said body; means for locking said means for closing the viewing opening, said means for closing the viewing opening comprising a cover having out wardly convex shape and proportioned for permitting said first top to close over the cover, said cover being of transparent material, said cover having margins therearound and having proportion for installation in said viewing opening beneath said second top with said margins therearound beneath respective of said fixed overhangs, the means for locking including a plurality of hooks on said margins, said plurality of hooks engageable from a position beneath the cover at said first side and said first end, the means for locking including a padlock, and said margins having clipped-corner shapes adjacent said second top.

4,407,054

METHOD OF MAKING ELECTROMECHANICAL TRANSDUCERS USING IMPROVED FLEXIBLE COMPOSITE PIEZOELECTRIC MATERIAL

George G. Zipfel, Jr., Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 28, 1980, Ser. No. 201,473

Int. Cl.³ H01L *41/22*

U.S. Cl. 29—25.35 **12 Claims**

1. A method of making a flexible composite piezoelectric material by steps comprising polarizing particles of a piezoelectric material that are dispersed in a prepolymer material by applying an electric field to said prepolymer material, while simultaneously inducing a dipole moment in said particles, wherein said prepolymer material at least partially polymerizes during said polarizing,

CHARCTERIZED IN THAT the shear modulus of the at least partially polymerized material after said polarizing is (less than 20 pounds per square inch) sufficiently small that the hydrostatic piezoelectric response of said composite is substantially stable over time, and wherein said electric field is in the range of 100 to 1,000 kilovolts per meter, and the ratio of the major-to-minor axes of said piezoelectric particles is less than 2 to 1, and wherein said

piezoelectric material is selected from the group consisting of lithium sulfate monohydrate and tartaric acid.

4,407,055

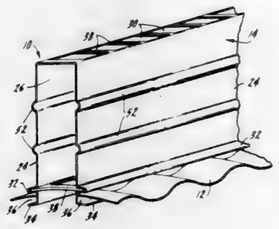
METHOD OF MAKING SURFACE DRAINAGE CULVERT

Shelton R. Rossberg, Houston, Tex., assignor to Ramco Steel, Inc., Houston, Tex.

Division of Ser. No. 284,065, Jul. 16, 1981, Pat. No. 4,365,911, which is a continuation-in-part of Ser. No. 168,309, Jul. 10, 1980, abandoned. This application Aug. 27, 1982, Ser. No. 412,104

Int. Cl.[3] **B21D** *53/00;* **B21K** *29/00;* **B23D** *15/26*

U.S. Cl. 29—157 R **8 Claims**



1. A method of fabricating a surface drainage culvert of the type having a pipe section which is cut longitudinally forming an aperture along its upper surface and having an upstanding, longitudinal grate assembly received within the aperture, the method comprising the steps of:

a. forming the aperture by cutting a series of longitudinally spaced slots in the pipe with unslotted pipe portions separating each said slot,

b. fabricating a grate assembly comprising an apertured end face, an open end, and a pair of spaced parallel sidewalls forming between the sidewalls a longitudinal inlet drainage passage, said sidewalls further having a longitudinal guide formed adjacent the open end of the grate assembly, said guide comprising a channel in each sidewall, said channels facing one another and extending outwardly from said drainage passage,

c. inserting the grate assembly within the aperture with the longitudinal guide channel walls contiguous to the outer surface of the pipe, and

d. inserting spacer means in said guide channels to maintain the spacing of said sidewalls at said aperture and to lock the grate assembly within said aperture.

4,407,056

METHOD AND APPARATUS FOR MANUFACTURING METAL SECTIONS

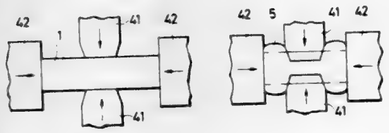
Kazuo Watanabe; Hideki Tokita, both of Kitakyushu, and Koe Nakajima, Nakama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 81,814, Oct. 4, 1979, abandoned. This application Dec. 30, 1981, Ser. No. 335,669

Claims priority, application Japan, Apr. 7, 1978, 53-40280

Int. Cl.[3] **B21B** *15/00*

U.S. Cl. 29—527.7 **12 Claims**



1. A method of manufacturing metal sections, comprising:

hot-forging a substantially quadrangular cross-section starting material in the longitudinal direction thereof into a blank having a concave portion therein in the middle of the long sides of the cross-section and upstanding flange portions at the ends of the long sides of the cross-section by applying, while moving the starting material in the direction of the length, forging pressure to the opposite surfaces defining the long sides of the cross-section and along a length of the starting material, which forging pressure is applied substantially perpendicular to the longitudinal axis of the starting material and being uniform from one end of the length to near the other end, and then gradually decreasing to said other end, while at the same time applying further forging pressure to the opposite surfaces of the starting material defining the end surfaces of the cross-section and in a direction substantially perpendicular to the longitudinal axis of the starting material, said further pressure being sufficient for at least preventing material of the starting material from flowing toward the ends of the cross-section of the starting material, repeating the application of forging pressures on the succeeding lengths of the starting material and applying the uniform forging pressure to the portion of the preceeding length to which the gradually decreasing forging pressure has been applied for forming a substantially uniform cross-section throughout the entire length of the blank; and

hot rolling the blank into a generally H-shaped metal section having the desired cross-section.

4,407,057

METHOD OF PRODUCING A FLAT THIN FILM TYPE OXYGEN SENSOR

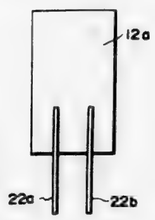
Shinji Kimura, Yokohama; Hiroshi Takao, Kamakura; Satoshi Ambe, Yokosuka, and Yoshio Akimune, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 162,001, Jun. 23, 1980, Pat. No. 4,347,114. This application Apr. 16, 1982, Ser. No. 369,079

Claims priority, application Japan, Jun. 26, 1979, 54-79736

Int. Cl.[3] **G01N** *27/58;* **H01G** *9/04, 9/24*

U.S. Cl. 29—570 **6 Claims**



1. A method of producing a solid oxygen sensor, comprising the steps of:

(a) applying a material of a first electronically conductive electrode layer in a paste condition onto a surface of an unfired partition layer leaving a plurality of independent portions of said surface uncovered with the paste;

(b) applying a material of an oxygen ion conductive electrolyte in a paste condition onto the outer side of the layer of the first electronically conductive electrode material on said partition layer;

(c) applying a material of a second electronically conductive electrode layer in a paste condition onto the outer side of the layer of the oxygen ion conductive electrolyte material leaving a plurality of independent portions of the outer side of the layer of electrolyte material uncovered with the material of the second electrode layer, the material of said second electrode layer being the same as that of said first electrode layer;

(d) applying a material of a porous protective layer in a paste condition onto the outer side of the layer of the second electrode material to provide an unfired multi-layered article; and

(e) firing said article to form a solid article.

4,407,058

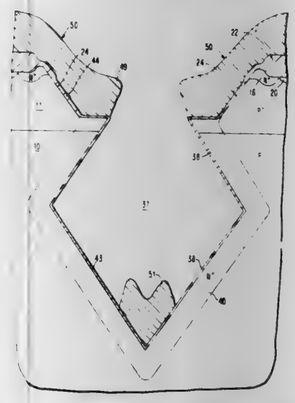
METHOD OF MAKING DENSE VERTICAL FET'S

Joseph J. Fatula, Jr., Poughkeepsie, N.Y.; Paul L. Garbarino, Ridgefield, Conn., and Joseph F. Shepard, Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1981, Ser. No. 266,231

Int. Cl.[3] **H01L** *21/225*

U.S. Cl. 29—571 **9 Claims**



1. A method of forming a dense vertical FET device including:

providing a dielectrically isolated region in a substrate of monocrystalline silicon;

forming a first region of opposite conductivity to the conductivity of the substrate in a surface of the dielectrically isolated region to function as one of drain and source regions of the FET;

anisotropically chemical etching through the first region of opposite conductivity and into the substrate to a selected depth to produce a first recess surrounded at its upper end by the first region of opposite conductivity and having converging walls and a substantially flat bottom wall with the length of each of the converging walls in the substrate beneath the first region of opposite conductivity being the desired length of a gate channel of the FET;

forming a first layer of silicon dioxide over the converging walls and the bottom wall of the first recess in the substrate;

forming a second layer of a material selected from the group consisting of silicon nitride and polycrystalline silicon over the layer of silicon dioxide;

forming a third layer of silicon dioxide over the second layer of material;

removing each of the first layer, the second layer, and the third layer from at least a portion of the bottom wall of the first recess to expose at least the portion of the bottom wall of the first recess while leaving each of the first layer, the second layer, and the third layer on at least the converging walls of the first recess;

etching an enlarged recess in the substrate through the exposed portion of the bottom wall of the first recess not protected by the first layer, the second layer, and the third layer;

diffusing an impurity of opposite conductivity to the conductivity of the substrate into the walls of the enlarged recess to form a second region of opposite conductivity to the conductivity of the substrate to function as the other of the source and drain regions of the FET and a plate of a storage capacitor;

removing each of the first layer, the second layer, and the third layer from the converging walls of the first recess after the second region of opposite conductivity is formed only when the second layer is silicon nitride;

providing a gate oxide for the gate channel of a layer of silicon dioxide by forming a layer of silicon dioxide over the converging walls of the first recess after removal of the first layer, the second layer, and the third layer when the second layer is silicon nitride and by using the first layer of silicon dioxide when the second layer is polycrystalline silicon;

and forming electrical contacts to each of the first region of opposite conductivity and the gate channel.

4,407,059

METHOD OF PRODUCING SEMICONDUCTOR DEVICE

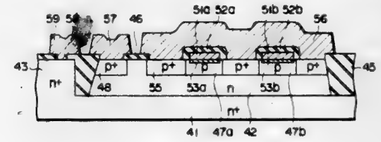
Yoshitaka Sasaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 20, 1981, Ser. No. 294,749

Claims priority, application Japan, Aug. 25, 1980, 55-116562

Int. Cl.[3] **H01L** *21/225*

U.S. Cl. 29—571 **13 Claims**



1. A method of producing a semiconductor device, comprising the steps of:

forming an oxidation-resistive insulating film having one or more openings on a semiconductor substrate of a first conductivity type;

forming an impurity-doped polysilicon pattern in at least the opening of the insulating film by etching using a mask substantially equal in size to the opening;

forming a silicon oxide film on the exposed surface of the polysilicon pattern by thermal oxidation;

removing the oxidation insulating film; and

depositing a conductive material and, then, patterning said conductive material layer for forming an interconnection electrode layer insulated from the polysilicon pattern by the silicon oxide film.

4,407,060

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

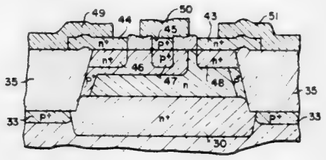
Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed May 13, 1981, Ser. No. 263,281

Claims priority, application Japan, May 14, 1980, 55/63571

Int. Cl.[3] **H01L** *21/265, 21/268*

U.S. Cl. 29—576 E **8 Claims**



1. A method of manufacturing a semiconductor device having a semiconductor substrate, comprising the steps of:

(a) forming an insulating layer having a window on the semiconductor substrate, the window extending through the insulating layer to the semiconductor substrate;

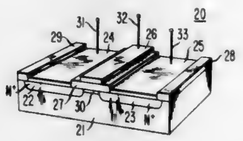
(b) forming a semiconductor layer containing an impurity on the insulating layer and in the window;
(c) melting the semiconductor layer underlying the window and the semiconductor substrate adjacent to the semiconductor layer underlying the window by irradiating the semiconductor layer with a high energy beam such that said impurity is diffused into a portion of the semiconductor substrate; and
(d) selectively etching the semiconductor layer to form a contact electrode contacting the portion of the substrate diffused with said impurity.

4,407,061

FABRICATION PROCEDURE USING ARSENATE GLASSES

William H. Grodkiewicz, New Providence; Shobha Singh, Summit, and LeGrand G. Van Uitert, Morristown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 4, 1981, Ser. No. 270,504
Int. Cl.³ C03C *3/12, 3/26;* B05D *1/34*
U.S. Cl. 29—576 B **45 Claims**



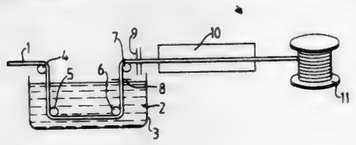
1. A process for fabricating a device comprising the step of covering at least part of at least one surface with a layer of glass by particle bombardment of a glass target characterized in that the layer of glass consists essentially of 10 to 50 mole percent pentavalent arsenic oxide remainder an oxide substance consisting essentially of at least one metal oxide selected from the group consisting of the oxides of indium, thallium, gallium, boron, zinc, cadmium, copper, germanium, phosphorus, tellurium, lead, bismuth, sodium, potassium, rubidium, cesium, and tellurium and the glass target is made by heating a mixture consisting essentially of a source of pentavalent arsenic and a source of oxide substance to a temperature between 1225 and 1350 degrees C. for at least five minutes in which the source of pentavalent arsenic is arsenic acid.

4,407,062

METHODS OF PRODUCING SUPERCONDUCTORS

Gordon R. Sutcliffe, Millbank; Stephen J. Warden, Erdington, and Donald Humpherson, Great Barr, all of England, assignors to Imi Kynoch Limited, Birmingham, United Kingdom

Filed Jun. 24, 1981, Ser. No. 276,994
Claims priority, application United Kingdom, Jul. 15, 1980, 8023113; Feb. 18, 1981, 8105136
Int. Cl.³ B05D *5/12*
U.S. Cl. 29—599 **8 Claims**



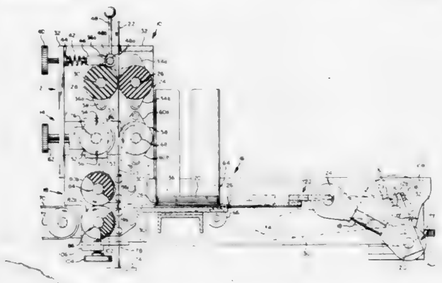
1. A method of insulating an intermetallic compound superconducting wire product which comprises the steps of coating an intermetallic superconductor wire precursor with a coating from an aqueous mixture consisting essentially of sodium silicate, China clay and calcium carbonate, drying the coated wire precursor after coating and winding the dried wire precursor around a former, heating the wire and former to form an insulating ceramic from the coating and reacting the components of the intermetallic compound in the precursor to form the intermetallic superconducting compound in the wire.

4,407,063

METHOD AND APPARATUS FOR FABRICATING BATTERY PLATE ENVELOPES

Peter E. Johnson, 500 Crescent Valley Dr., Corvallis, Oreg. 97330

Continuation-in-part of Ser. No. 250,892, Apr. 3, 1981, abandoned. This application Oct. 13, 1981, Ser. No. 311,002
Int. Cl.³ H01M *2/14*
U.S. Cl. 29—623.2 **20 Claims**



1. A method for fabricating battery plate envelopes from a sheet formed of microporous plastic material having a width greater than that of the battery plate to be enveloped, comprising:
pushing a battery plate edgewise into the sheet to fold the sheet about the battery plate with edges overlapping the battery plate on both sides;
feeding the folded sheet with the battery plate therein into the interface between a pair of opposed pressure rollers, each of which includes a pair of axially aligned sealing wheels; and
continuously sealing the overlapping edges of the sheet by compressing the edges into one another between the sealing wheels, the compressive force being applied uniformly along the entire extent of said overlapping edges and being within the range of the plastic flow of the material.

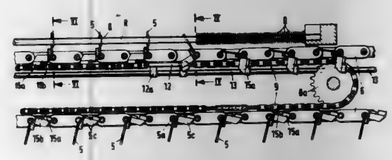
9. An apparatus for fabricating battery plate envelopes from a folded sheet of microporous plastic material having facing folds and having a width which is greater than that of the battery plate to be enveloped, said apparatus comprising:
a pair of opposing rotatably mounted pressure rollers having parallel axes, each of said rollers including two sealing wheels which are axially spaced on each of said rollers by a distance greater than the width of the battery plate but less than the width of the folded sheet, each of said sealing wheels being radially aligned with one of the sealing wheels mounted on the other of said pressure rollers, said aligned rollers being arranged such that the clearance therebetween remains constant throughout the entire rotational travel of said rollers thereby defining a constant sealing wheel interface, said sealing wheels being adapted to receive the side edges of the folded sheet at their interface; and
means for rotating said rollers so that the edges of the sheet are compressed into each other by said sealing wheels, thereby continuously sealing the edges to form an envelope.

4,407,064

APPARATUS FOR PULLING TRANSVERSE FINS ONTO A PLURALITY OF PIPES

Peter Denner; Egon Ernst, both of Ratingen, and Alfred Jockel, Essen, all of Fed. Rep. of Germany, assignors to Balcke-Dürr Aktiengesellschaft, Ratingen, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,311
Claims priority, application Fed. Rep. of Germany, May 26, 1979, 2921415
Int. Cl.³ B23P *15/26*
U.S. Cl. 29—726 **13 Claims**



1. An apparatus for pulling transverse fin plates onto a plurality of pipes which are arranged fixed in position alongside of each other by carriers which are operatively swingably supported at two ends thereof to respective endless carrier conveyor chains between a working position engaging the fin plates and a release position which releases the fin plates, the carriers being provided with at least one support foot which holds the carriers in the working position, the at least one support foot being supported on support members of a control device which holds the carriers in the working position along a transport path where the fin plates are pulled on the pipes until the release of the transverse fin plates, and the control device releases the carriers for swinging at a point of release as a function of the spacing between the fin plates and the thickness of the transverse fin plates and which have already been pulled on the pipes, the point of release moving opposite to the direction of motion of the carrier conveyor chains, the improvement wherein
the transport path is subdivided into a transport region and a control region, respectively, by different respective support formations on said support members, said different respective support formations constitute support means for the holding of the carriers in the working position via the at least one support foot in the transport region and in the control region, respectively,
the control device includes a first of the support members comprising a control slide with one of said different respective support formations defining said control region and disposed exclusively at an end of the transport path, and a plurality of second of the support members disposed in said transport region, said first and second support members include said different respective support formations,
the at least one support foot includes at least one support foot means for supporting said carriers, respectively, via said one of said different respective support formations on said control slide, the latter constituting means for precisely releasing said at least one support foot means and said carriers, respectively, and
other of said different respective support formations of said second support members comprise said support means for providing a different support of said at least one support foot means with more play and less friction per unit path than that of said one of said different respective support formations of said control slide.

4,407,065

MULTIPLE SHEATH CABLE AND METHOD OF MANUFACTURE

Stanley J. Gray, 8502 E. 121st St., Bixby, Okla. 74008

Division of Ser. No. 112,933, Jan. 17, 1980, Pat. No. 4,317,003. This application Sep. 4, 1981, Ser. No. 299,473
Int. Cl.³ H01B *13/20*
U.S. Cl. 29—828 **9 Claims**



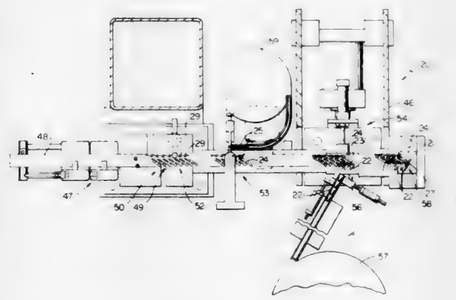
1. A method of manufacturing multiple sheath cable in long lengths comprising the steps of:
(a) applying a first continuous metal sheath to an insulated conductor of the desired length;
(b) splicing the first continuous metal sheath at locations radially and longitudinally spaced from any conductor splice joints;
(c) reducing the diameter of the first metal sheath to tightly grip the insulated conductor; and
(d) applying second and subsequent metal sheaths to the first sheath repeating steps (a), (b) and (c).

4,407,066

APPARATUS AND METHOD FOR FORMING AN ELECTRICAL SWITCH ASSEMBLY OR THE LIKE

James C. Gunter, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 64,724, Aug. 8, 1979, Pat. No. 4,312,122. This application May 29, 1981, Ser. No. 268,346
The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.
Int. Cl.³ H01R *43/04;* B23P *23/00*
U.S. Cl. 29—882 **30 Claims**



1. In a method for forming electrical switch assemblies each of which comprises a terminal member and a switch blade secured together at a station in an apparatus, the improvement comprising the steps of feeding an elongated strip of switch blade material to said station with a first feeding means of said apparatus, forming said strip of switch blade material into a plurality of switch blades serially interconnected together upstream from said station, serially feeding terminal members to said station with a second feeding means, serially securing a terminal member and a switch blade together at said station with a securing means, and serially separating each switch assembly from said strip of material downstream from said station with separating means.

16. In an apparatus for forming electrical switch assemblies each of which comprises a terminal member and a switch blade secured together at a station in said apparatus, said apparatus

having a frame means, the improvement wherein said apparatus has first feeding means carried by said frame means for feeding an elongated strip of switch blade material to said station, said apparatus having forming means carried by said frame means for forming said strip of switch blade material into a plurality of switch blades serially interconnected together upstream from said station, said apparatus having second feeding means carried by said frame means for serially feeding terminal members to said station, said apparatus having securing means carried by said frame means for serially securing a terminal member and a switch blade together at said station, said apparatus having separating means carried by said frame means for serially separating each switch assembly from said strip of material downstream from said station.

4,407,067

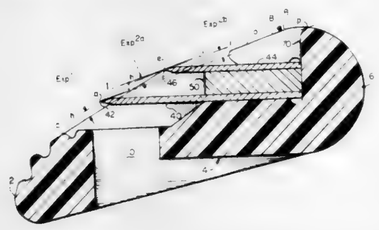
SHAVING IMPLEMENT

Robert A. Trotta, Winthrop, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 194,551, Oct. 6, 1980, Pat. No. 4,354,312. This application Sep. 3, 1981, Ser. No. 298,728

Int. Cl.³ B26B *21/22*

U.S. Cl. 30—50 **6 Claims**



1. A shaving implement comprising a platform member, a cap member, and blade means disposed therebetween, said platform member comprising a blade support portion, a guard portion mounted forwardly of said blade support portion, and a back portion upstanding from said blade support portion, said guard and back portions defining parallel opposite lengthwise edges of said platform member, said cap member comprising a series of fingers extending from said back portion forwardly toward said guard portion, said fingers being separated from each other by recesses therebetween, said fingers including a first skin-engaging point and said recesses being defined in part by a cap member wall comprising a second skin-engaging point, and said blade means comprising a first blade member having a first cutting edge disposed rearwardly of said guard portion, a second blade member having a second cutting edge disposed rearwardly of said first cutting edge, and spacer means for maintaining said first and second blade members in spaced parallel relationship, said first and second cutting edges each having a blade tangent angle in the range of 20°-32° and a span in the range of 0.030 to 0.080 inch, said first blade member having an exposure of 0.0015±0.0015 inch, and said second blade member having alternating first and second exposures along its length, said first exposure being determined by a first tangent line extending from said first cutting edge to said first skin-engaging point, and said second exposure being determined by a second tangent line extending from said first cutting edge to said second skin-engaging point.

4,407,068

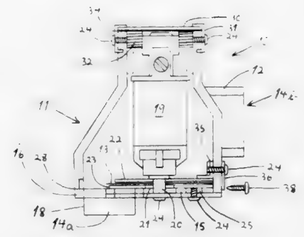
HAIR CUTTER WITH VACUUM

Timothy W. Wilson, 2303 5th Ave. South, Apt. 2, Minneapolis, Minn. 55404

Filed Mar. 15, 1982, Ser. No. 357,847

Int. Cl.³ B26B *19/44*

U.S. Cl. 30—133 **3 Claims**



1. Hair cutting apparatus comprising,

a. a main body case,

b. an electric motor mounted in said case, and having a rotary shaft with an axis of rotation,

c. said case having a nozzle opening therein and located in radially offset relation to the axis of rotation of the motor shaft,

d. a nozzle mounted in said case surrounding said opening and having its lower end constructed to permit engaging the surface of a person's head to ride thereon,

e. a cutter blade connected to the motor shaft and mounted to rotate in a path across the upper end of said nozzle to cut off hair extending through said nozzle, the length of the hair cut being determined by the distance between the lower end of the nozzle and the cutter blade path,

f. means for adjusting the distance between the lower end of the nozzle and the path of the cutter blade,

g. a vacuum opening in said case above the nozzle and located on the opposite side from the nozzle opening communicating with said nozzle opening to draw hair through the nozzle into the path of the cutter blade, and cause the hair to stand up in the path of the cutter blade and also draw off the cut hair, and

h. a pair of support plates disposed on opposite sides of said cutter blade, said plates being provided with aligned, notched-out segments located in diametrically opposed relation to the vacuum opening and in registration with each other and with the nozzle opening to surround the major portion of the cutter blade path and expose only the outer end portion of the cutter blade to the hair as it enters said opening through the nozzle, thus providing substantially uniform maximum cutter speed for cutting all of the hair.

4,407,069

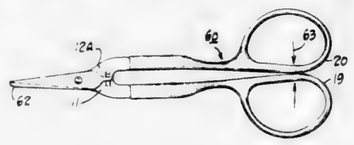
SCISSORS WITH CUSHIONED STOP

John A. Conners, Fairfield, Conn., assignor to The Scott & Fetzer Company, Shelton, Conn.

Filed Dec. 8, 1981, Ser. No. 328,651

Int. Cl.³ B26B *13/20*

U.S. Cl. 30—254 **13 Claims**



1. Scissors comprising, in combination:

first and second blades made from flat stock of substantially uniform thickness and each having a cutting edge and an inner side surface;

pivot means acting between said blades and establishing a pivot axis for the blades for cutting cooperation of said cutting edges by sliding past one another substantially parallel to said inner side surfaces;

a handle on the end of each blade opposite the respective cutting edge;

stop means establishing the closed position of the scissors;

said stop means including a first stop surface unitary with said first blade;

a second stop surface unitary with said second blade and abuttable with said first stop surface to limit the closed position of said blades;

a third stop surface unitary with said second blade;

a fourth stop surface unitary with said first blade and abuttable with said third stop surface to limit the closed position of said blades at substantially the same time as abutment between said first and second stop surfaces;

each of said stop surfaces and said entire stop means lying within the thickness of said two blades;

said stop means including at least two shear cuts in said first blade establishing said first stop surface, and a bend in the material of said first blade between said two shear cuts to establish the blade material therebetween bent out of the thickness of said first blade and with said first stop surface at least partially out of the thickness of said first blade;

resilient means including at least one of said handles or said stop means being resilient;

said first and second stop surfaces and said third and fourth stop surfaces being located close to said pivot axis relative to the length of said handles to establish substantially face-to-face abutment therebetween with the cutting edges closed yet the handles still slightly spaced apart and with each cutting edge protected by said inner side surface of the other blade; and

the blades presenting minimal opposition to movement of said handles until said stop surfaces engage and then the subsequent stressing of said resilient means establishing a cushioned stop of movement of said handles.

4,407,070

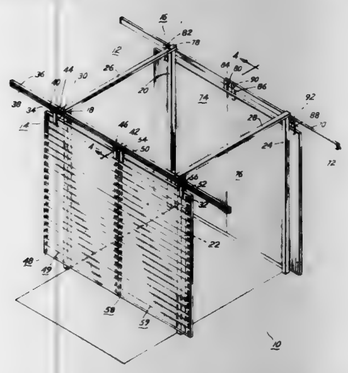
ANIMAL MEASURING APPARATUS

Henry E. Lowe, 21725 Allegheny St., Cassopolis, Mich. 49031

Filed Jun. 12, 1981, Ser. No. 273,204

Int. Cl.³ G01B *5/02*

U.S. Cl. 33—169 R **9 Claims**



1. An animal measuring apparatus comprising a first vertically disposed panel having two vertical sections horizontally moveable relative toward and away from one another, a second vertically disposed panel having two vertical sections horizontally moveable relative to one another and being positioned parallel with and spaced from said first panel, and a measuring scale disposed on at least one of said panels for determining the size and/or physical stature of an animal positioned in front of said last mentioned panel.

4,407,071

INTERNAL DIAMETER MEASURING DEVICE FOR PIPES

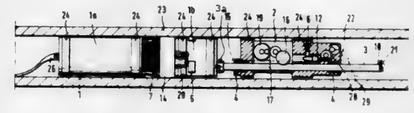
Dieter Boeder, Duesseldorf, and Karl-Josef Wiemers, Bochum, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 230,050

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003415

Int. Cl.³ G01B *5/12, 7/12*

U.S. Cl. 33—178 E **3 Claims**



1. An improved internal diameter measuring arrangement for pipes, gun barrels and the like, wherein the arrangement is slidably axially movable through the bore of the pipe, gun barrel or the like, the improvement comprising in combination the following features:

(a) a measuring sled axially slidably movable along the bore walls of the to be measured pipe;

(b) said measuring sled includes first clamping jaw means and is adapted to be fixedly mounted in said pipe by means of said first clamping jaw means;

(c) said measuring sled further including a portion operatively coaxially connected thereto which is rotatable relative to the measuring sled;

(d) in that portion of said measuring sled which is nonrotatably mounted in said pipe there is operatively mounted means for rotating said rotatable portion of said measuring sled about the pipe axis;

(e) said rotatable portion of said measuring sled having a plurality of feeler fingers operatively mounted thereon which extend past the outer periphery of said rotatable portion of said measuring sled and which are biased against the bore walls of the pipe; said feeler fingers being operatively connected to electrical pulse emitting means which are adapted to emit electrical pulses representative of the measurements carried out by the feeler fingers and transmit such pulses to an evaluation unit;

(f) the measuring sled is connected via a toothed rack to a support which is fixable within said pipe and is adapted to be axially moved therethrough, said fixable support includes adapting ring means coaxially mounted thereon for slidably supporting said support within the pipe;

(g) the support further includes second clamping jaw means operatively mounted thereon and adapted to be biased outwardly for fixing said support in a predetermined position in the pipe; and

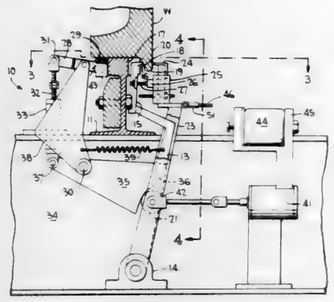
(h) the support includes a step motor which is operatively connected via gear means to said toothed rack in such a way that when said first clamping jaws of said measuring sled are biased against the bore walls and said second clamping jaw means of said support are not biased thereagainst the support is adapted to be axially reciprocally moved through said pipe, whereas when said first clamping jaws of said measuring sled are not biased against the bore walls of the pipe and said second clamping jaws of the support are biased thereagainst, the measuring sled is adapted to be axially reciprocally moved through said pipe.

4,407,072

THIN FLANGE AND LOOSE WHEEL DETECTION SYSTEM

Paul T. Hoskins, Jr., Spencer, N.C., assignor to Southern Railway Company, Washington, D.C.

Filed Nov. 13, 1981, Ser. No. 321,129
Int. Cl.³ B61K 9/12; B61L 11/02
U.S. Cl. 33—203.11 **10 Claims**



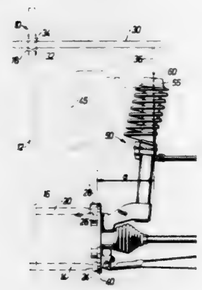
1. A system for detecting the thickness of a flange of a railroad wheel which is reduced from a predetermined thickness, comprising a pair of relatively movable contact means for respectively bearing against the inner face of the flange and the back face of the rim of the railroad wheel, means for operating said contact means to effect said relative movement thereof upon a passing by of said wheel, switch means actuated upon relative movement of said contact means toward one another to a spacing which is less than said predetermined thickness, and means connected to said switch means for signalling a reduced flange thickness condition upon said relative movement.

4,407,073

MEASURING APPARATUS FOR CHECKING A SPRING STRUT APPERTAINING TO THE FRONT WHEEL SUSPENSION OF A VEHICLE

Lars-Erik Nilsson, and Tommy Löfling, both of Hedemora, Sweden, assignors to Aktiebolaget Samefa, Kungsoer, Sweden

Filed Jul. 8, 1981, Ser. No. 281,276
Int. Cl.³ G01B 5/14
U.S. Cl. 33—203.18 **8 Claims**



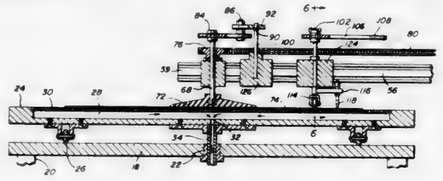
1. Measuring apparatus for checking a so-called spring strut of the type which is used in the front wheel suspension of a vehicle equipped with disc brakes incorporating a brake disc exposable by removal of a corresponding vehicle wheel and tyre, the measuring apparatus being designed to detect any displacement relative to the wheel of an upper fixing of the associated spring strut in the vehicle bodywork which may arise, and which is an indication of possible deformation of the strut and means a serious fault in the setting of the wheel and thus also in the steering geometry of the vehicle, the measuring apparatus comprising an upright, a base part which is attached to and projects out from the upright, the base part being equipped with fixing means removably fixable on the outer face of the exposed brake disc for supporting the upright on the brake disc and substantially parallel to the plane of the brake disc, a measuring arm which is adjustably mounted on the upright and which extends out from the upright in a direction perpendicular to said plane of the brake disc, said measuring arm carrying an indicator or pointer arrangement, the arrangement being such that the centre of the said upper fixing of the spring strut can be sought out by the pointer arrangement by moving the measuring arm, so that the perpendicular distance (a) between the plane of the brake disc and the centre of said upper fixing can be read from the position of the pointer arrangement on the measuring arm.

4,407,074

APPARATUS FOR CUTTING AND/OR SCRIBING CIRCLES AND OVALS

Buford B. Ledbetter, 1312 Southern Pky., Clarksville, Tenn. 37040

Filed Jun. 27, 1980, Ser. No. 163,861
Int. Cl.³ B43L 11/02
U.S. Cl. 33—27 H **9 Claims**



1. An apparatus for scribing circles and ovals of different width-to-length ratios, said apparatus including a table mounted for rotation about a first predetermined upright axis, a mounting arm supported above said table, generally paralleling the latter and extending along a path paralleling a radius of the axis of rotation of said table, an upright shaft journalled from said mounting arm for rotation about a second upright axis, means drivingly connecting said table and shaft for rotation of said shaft at twice the speed of rotation of said table, a support mounted on said mounting arm for guided movement therealong, a scribe tool carried by said support for engagement with and scribing a workpiece disposed on said table for rotation therewith, and motion converting and drive means operatively connected between said upright shaft and support for effecting oscillation of said support along said arm responsive to and in timed relation with rotation of said shaft.

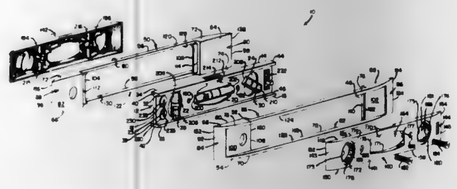
4,407,075

ILLUMINATED SPIRIT VIAL AND LEVEL

Carl H. MacDermott, Bridgewater, and Richard S. Brown, Jr., Pembroke, both of Mass., assignors to Louis Rains, Weymouthport and Arthur Albert Smith, Jr., Norwell, both of, Mass.

Filed Dec. 3, 1981, Ser. No. 326,849
Int. Cl.³ G01C 9/32
U.S. Cl. 33—348.2 **9 Claims**

1. Illuminated spirit level suitable for use by carpenters and other tradespersons comprising:
(a) an elongated body member having spaced-apart parallel, planar work contacting surfaces;
(b) at least one spirit vial cavity located in said elongated body member;
(c) at least one tubular-shaped spirit vial mounted in each said at least one spirit vial cavity, a cylindrical-shaped plug located in at least one end of said at least one tubular-shaped spirit vial;
(d) a light source centrally disposed in said cylindrical-



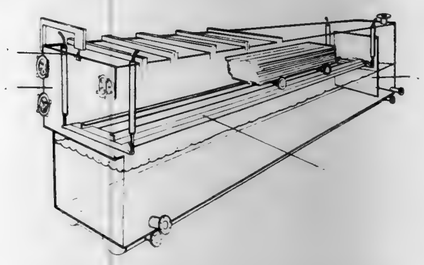
shaped plug extending into said tubular-shaped spirit vial; and
(e) means for energizing the light source intermittently as desired.

4,407,076

PROCESS FOR TREATING WOOD

Magnus F. O. Estberg, Rimbo, Sweden, assignor to Kenogard AB, Stockholm, Sweden

Filed Oct. 14, 1981, Ser. No. 311,409
Claims priority, application Sweden, Oct. 17, 1980, 8007297
Int. Cl.³ F26B 3/00, 7/00, 5/04
U.S. Cl. 34—9.5 **10 Claims**



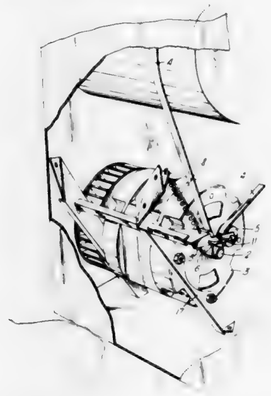
1. In the process of removing water or solvent from impregnated materials selected from the group of wood and other cellulose-based products by treating the impregnated materials with a high-boiling oil drying medium under reduced pressure conditions, the improvement which comprises accelerating said removal and reducing oil retention in said impregnated materials, by the sequential steps of:
(a) establishing a drying zone that includes a reservoir of a high-boiling oil drying medium and liquid-free zone of reduced pressure below 25 kPa thereabove, said high-boiling oil selected from the group consisting of linseed oil, tall oil, soybean oil, colza oil and mineral oils, and having a boiling point above 250° C., and said reservoir being maintained at a temperature of 60°–110° C.,
(b) introducing said impregnated material into said drying zone and immersing said impregnated material in said reservoir of high-boiling oil,
(c) thereafter removing said impregnated material from contact with said reservoir of high-boiling oil and maintaining it in said liquid-free zone of reduced pressure for a period of time,
(d) repeating steps (b) and (c) in sequence at least three times, said impregnated material being withdrawn from said high-boiling oil drying medium at least 20% of the total time that it is in said drying zone, and
(e) ceasing the process when about as much water or solvent as introduced with the impregnated materials has been evaporated.

4,407,077

BELT DRIVE SYSTEM

Dennis E. Smith, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand

Filed Sep. 21, 1981, Ser. No. 304,059
Claims priority, application New Zealand, Oct. 24, 1980, 195362
Int. Cl.³ F26B 11/04
U.S. Cl. 34—108 **4 Claims**



1. In a drive system for driving and driven rotatable members having a high ratio of diameters so that one rotatable member is relatively small with respect to the other, a flexible endless drive belt operably engaging said rotatable members so that they rotate together, and idler pulleys engaging said belt to assist in maintaining engagement of said belt with said rotatable members, the improvement comprising an idler pulley support arm pivotally supported at one end on a support member fixed with respect to the smaller rotatable member, a pair of idler pulleys rotatably mounted in fixed spaced relationship on the other end of said support arm closely adjacent and in substantially symmetrical relationship with the smaller rotatable member with the belt passing between them in engagement with the adjacent portions of their peripheral surfaces so that the belt engaging peripheral faces of said pulleys are spaced a distance apart substantially the same as the diameter of the smaller rotatable member in engagement with said belt and a straight line passing through the centers of rotation of said pulleys is substantially normal to the portions of the belt between said pulleys and the smaller rotatable member, and a spring means resiliently urging said arm about its pivot axis towards the larger rotatable member to maintain tension on said belt and substantially prevent reversal of direction of said driving member from materially effecting power transmission between the rotatable members.

4,407,078

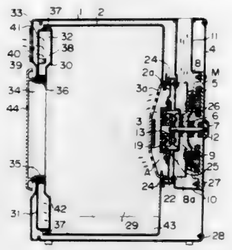
DRIVE SYSTEM FOR ROTARY DRUM TYPE DEHYDRATING APPARATUS

Kojiro Takeyama, Kawanishi, and Toru Shimotake, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 8, 1981, Ser. No. 271,269
Claims priority, application Japan, Jun. 16, 1980, 55-81914
Int. Cl.³ F26B 11/04
U.S. Cl. 34—133 **9 Claims**

1. A drive system for a rotary drum type drying apparatus including an outer case having a rear surface member, a rotary drum encased in said outer case and having a rear wall, a filter disposed in the central portion of said rear wall and allowing air to be discharged from said rotary drum therethrough and a blower fan positioned adjacently to said filter, comprising:

an axial air-gap induction motor mounted rearwardly of said blower in the central portion of said rear surface member and including a rotor and a rotor shaft, said blower fan being supported by said rotor or said rotor shaft; and



a speed reduction gear unit disposed in a space defined between said filter and said blower fan and having an input connected to one end of said rotor shaft and an output connected to the central portion of said rear wall of the rotary drum.

4,407,079

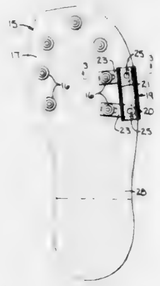
GOLF AID DEVICE

Lee M. Chiroff, 8027 S. 56th St., Franklin, Wis. 53132

Filed Jun. 4, 1981, Ser. No. 269,407

Int. Cl.³ A63B *69/36*; A43B *5/00*

U.S. Cl. 36—127 **2 Claims**



1. In combination with a golf shoe having a plurality of spikes threaded into the sole thereof, an attachment for securement to the shoe of a golfer worn on the foot that will assume the stance position closest to the target when addressing the ball, said attachment comprising a roll bar disposed beneath the sole of the shoe and spaced outwardly from the spikes adjacent to the outside edge of the shoe, said roll bar having an arcuate surface sloping toward said outside edge upon which the golfer can pivot following an impact with the ball and during the subsequent follow-through of the golf swing, a pair of linkage members attached to the roll bar and connected to corresponding spikes, said linkage members being pivotally connected to the roll bar to accommodate varying distances between the corresponding spikes as likely presented on different shoes.

4,407,080

PIVOTALLY MOUNTED RIPPING TEETH ASSEMBLY ON DOZER BLADE

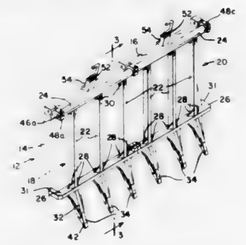
Donald B. Mann, 8811 131st Ave. Northeast, Lake Stevens, Wash. 98258

Continuation-in-part of Ser. No. 163,981, Jun. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 933,075, Aug. 11, 1978, Pat. No. 4,241,525. This application Jul. 1, 1981, Ser. No. 279,549

The portion of the term of this patent subsequent to Dec. 30, 1997, has been disclaimed.

Int. Cl.³ E02F *3/76*

U.S. Cl. 37—117.5 **8 Claims**



1. In an assembly adapted to be pivotally secured to a blade on heavy equipment, such as a bulldozer, in either a deployed or undeployed position, and including a rigid rectangular frame having (i) a plurality of teeth projecting from one transverse edge and (ii) mounting means for pivotally securing the frame to the blade, the improvement comprising:

a tubular mounting sleeve secured to the edge of the frame opposite the teeth and a pair of forwardly projecting hangers fastened to the upper edge of the blade at opposite sides thereof, each hanger being releasably received by ears which are secured to the upper edge of the blade and receiving a pin projecting from opposite ends of the mounting sleeve so that the frame may be pivoted between the deployed position in which the frame lies along the front face of the blade and the undeployed position in which the frame projects upwardly above the upper edge of the blade.

4,407,081

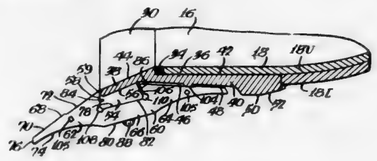
BUCKET TOOTH ATTACHMENT MEANS

Charles B. Hanson, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 7, 1981, Ser. No. 328,129

Int. Cl.³ E02F *9/28*

U.S. Cl. 37—141 T **3 Claims**



1. A bucket for use in conjunction with earth-working and material handling implements, comprising:

(a) a pair of transversely spaced sidewall plates;

(b) a backwall plate joining together said sidewall plates to define a scoop-shaped opening, one edge of said backwall plate being recessed relative to the leading edges of said sidewall plates;

(c) cutting-edge plate means carried between the leading edges of said sidewall plates ahead of said one edge of said backwall plate, said cutting-edge plate means having a plurality of downwardly extending transversely spaced tongue portions positioned immediately inward of the leading edges of said sidewall plates and a forward portion which extends outward from said one edge of said backwall plate and a rearward portion which extends immediately below said backwall plate,

(d) generally flat reversible bucket tooth means having two oppositely disposed beveled portions removably mounted to said tongue portions, said tooth means having a transverse groove formed in the upper surface thereof intermediate to said beveled portions for receipt of said tongue portions therein as said tooth means is transversely moved into engagement therewith, the upper surfaces of said beveled portions having undercut sections on both sides of said groove and the lower surface of said rearward portion of said cutting-edge plate includes a downwardly projecting protrusion for contact with said undercut sections.

4,407,082

TAG

William J. Stehouwer, Lansing, Mich., assignor to A. J. Sparks, Grand Rapids, Mich.

Filed Nov. 13, 1981, Ser. No. 320,939

Int. Cl.³ G09F *3/18*; A44C *3/00*; B65D *77/10*; B32K *1/06*

U.S. Cl. 40—10 C **18 Claims**



1. A nursery tag comprising:

a polymeric body for carrying indicia thereon; and

a tie extending centrally from an edge of said body and having an end overlapping a relatively small portion of said body, said tie having a flexible wire core surrounded by a resilient polymeric material, said tie integrally ultrasonically bonded to said body in the overlying portion of said body and tie.

4,407,083

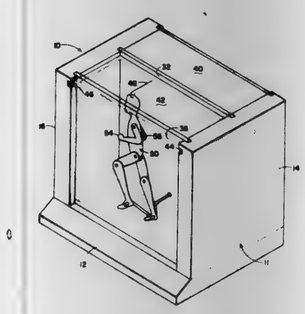
ANIMATED FIGURE AMUSEMENT DEVICE

Jimmy D. Hartgrave, 320 W. 17th, Apt. 108, Tulsa, Okla. 74119

Filed Mar. 8, 1982, Ser. No. 355,854

Int. Cl.³ G09F *19/08*

U.S. Cl. 40—414 **7 Claims**



1. An action-type decorator item comprising housing means, first and second compartments provided in the housing means, power supply means mounted within the first of said compartments, movable figurine means suspended in the second of said compartments, means operably connected between the power supply means and figurine means for transmitting motion to the figurine means to achieve a life-like movement therefor, the figurine means comprising a body simulating an animal having at least the legs thereof pivotally secured to the torso thereof whereby the action of the figurine simulates a natural movement, the legs being operably connected with the power supply for movement thereby, and including crank shaft means operably connected between the power supply means and legs for transmitting said movement thereto.

4,407,084

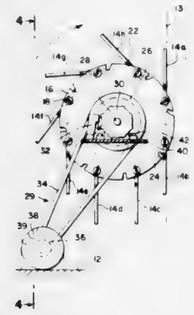
APPARATUS FOR STORING A PLURALITY OF SIGNS AND AUTOMATICALLY DISPLAYING SAID SIGNS AT PREDETERMINED TIMED INTERVALS

Robert E. Uihlein, Uniondale, and Walter C. Severson, East Meadow, both of N.Y., assignors to Signs by Severson Rent A Sign, Inc., Uniondale, N.Y.

Filed Aug. 2, 1982, Ser. No. 404,038

Int. Cl.³ G09F *11/02*

U.S. Cl. 40—475 **3 Claims**



1. Apparatus for storing a plurality of signs and automatically displaying them at timed intervals which comprises:

(a) a rectangular box-like housing having a front window display area;

(b) an elongated shaft rotatably mounted through the bearings;

(c) a plurality of panels, each panel having a copy placed on each side, pivotally mounted off center at each end, around the periphery of the discs so that the panels will turn with the discs so they can be displayed when they reach the front display area;

(d) means for rotating the elongated shaft comprising:

(1) a motor mounted within the housing;

(2) a first pully mounted on shaft of motor;

(3) a second pully mounted on the elongated shaft;

(4) a V-belt rotatably mounted between the first pully and the second pully so that the motor rotates the elongated shaft; and

(e) means for starting and stopping the rotation of the elongated shaft at timed intervals whereby two panels on the discs will be in a proper vertical position in the front window display area in the rectangular box-like housing for viewing comprising:

(1) a brake connected to the motor;

(2) a cam having a plurality of high points and a plurality of low points around its periphery in the same number as the panels, the cam mounted to one end of the elongated shaft;

(3) a microswitch having a roller that engages the cam, the microswitch mounted within the housing and electrically connected between a power source and the motor with the brake, so that when a low point on the cam engages the roller the microswitch will be in a normally closed position allowing the voltage to go directly to the motor to turn the cam and at the same time disengage the brake;

(4) a relay mounted within the housing and electrically

connected between the power source and the motor with the brake; and

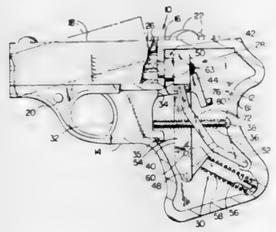
(5) a timer mounted within the housing and electrically connected between the microswitch and the relay, so that when a high point on the cam engages the roller the microswitch will be in a normally open position disconnecting the voltage to the motor and sending an electrical impulse into the timer whereby when predetermined time is reached the timer will send the impulse into the relay causing the relay to activate, supplying voltage to the motor until low point on the cam is reached again which will disconnect both the timer and the relay allowing the voltage again to go directly to the motor via the microswitch to turn the cam and at the same time disengage the brake until the next timing cycle begins again.

4,407,085

HANDGUN FIRING MECHANISM

Robert L. Hillberg, 26 Mount Sanford Rd., Cheshire, Conn. 06410, and Frederick F. Stevens, 177 Brett Rd., Fairfield, Conn. 06430

Filed Oct. 2, 1981, Ser. No. 308,427
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 R **13 Claims**



12. In a handgun having a frame and a firing mechanism including a trigger supported on the frame for movement between ready and firing positions, a hammer assembly supported on the frame for movement between striking and tripping positions, and a mainspring normally biasing the hammer toward its striking position, the hammer assembly including a hammer and a sear pivotally supported on the hammer and engageable with another part of the firing mechanism for moving the hammer assembly from its striking position to its tripping position and releasing the hammer in its tripping position in response to movement of the trigger from its ready position to its firing position, the improvement wherein said sear has two legs and is pivotally supported on said hammer at the junction of said legs, one of said legs being engageable with said other part, said handgun includes means independent of said other part and engageable with the other of said legs for releasing said sear from engagement with said other part at said tripping position to allow said hammer to move to its firing position in response to the biasing force of said mainspring, and means for biasing said one leg toward said other part and maintaining it in engagement with said other part until said sear is released from engagement with said other part by engagement of said other leg with said independent means.

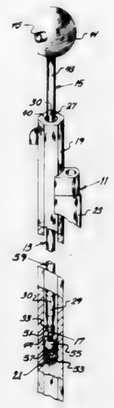
4,407,086

WEAPON

William J. Hasselmann, 2818 Orlando Dr., Pittsburgh, Pa. 15235

Filed May 21, 1981, Ser. No. 265,906
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—90 **5 Claims**

1. For use with a muzzle-loading gun for removal of a musket ball undesirably lodged in the breech of said gun, the instrument comprising a ramrod, having a ball starter secured at one end thereof and a screw-jag tool secured at the opposite end thereof, said ball starter and said tool each being secured at said one end and at said opposite end respectively, firmly but manually removable, said one end and the end of said ball starter which is secured to said one end being provided with mating threads which are engaged when the ball starter is secured to said one end, said opposite end and the end of said screw-jag tool secured to said opposite end being provided with mating threads which are engaged when said screw-jag tool is secured to said opposite end, and the screw-jag tool



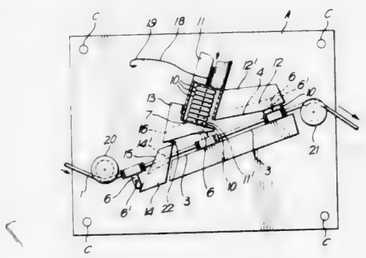
being provided with a second thread for screwing into the ball, the direction of said mating threads of said ball starter and of said one end and of said screw-jag tool and of said opposite end, and the direction of said second thread, being such that the engagement of the threads of said ball starter and of said one end and of said screw-jag tool and of said opposite end are effected by turning the starter and tool in the same direction (clockwise or counterclockwise) with reference to the axis of the ramrod and the engagement of the screw-jag tool with the ball is effected by turning the screw-jag tool in the same direction.

4,407,087

METHOD FOR ATTACHING SNELLS TO A FISHING LINE, AND AN APPARATUS FOR CARRYING OUT THE METHOD

Per Huse, Haslum, Norway, assignor to O. Mustad & Son A/S, Oslo, Norway

Filed Feb. 4, 1981, Ser. No. 231,567
Claims priority, application Norway, Mar. 3, 1980, 800598
The portion of the term of this patent subsequent to Jul. 1, 1998, has been disclaimed.
Int. Cl.³ A01K *91/00*
U.S. Cl. 43—4 **5 Claims**



1. A method of attaching detachable snells to a fishing line

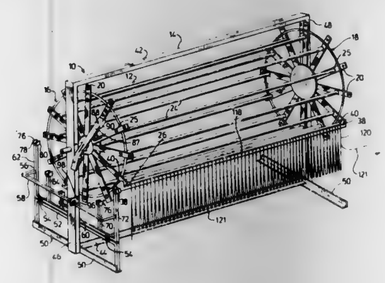
while the line system is being set out from a moving vessel at sea, the snell and the line having cooperating coupling members consisting of a peg rotatably attached to the line and having opposing stop studs at the middle section thereof, and a radially elastic ring attached to one end of the snell which is detachably fastened to the peg by being pressed down over the peg past the stop studs into a locked position behind the studs, the line with its pegs oriented in the same direction being pulled through a device for connecting the coupling members, characterized in that the pegs are guided past a discharge opening on a magazine for the rings such that an end of each peg is brought into engagement with the opening of a discharged ring and carries the ring along with it, the ring being pressed down further into a locked position on the peg in that the ring and the peg are guided between two converging surfaces, a pressure surface for the ring having a guide/clearance groove for the peg and a backstop surface for the peg.

4,407,088

METHOD AND APPARATUS FOR SUPPLYING TRAWL

Thomas A. Robertson, Sheldrake Lake, R.R. No. 3, Armdale, Halifax County, Nova Scotia, Canada B3L 4J3

Filed Jul. 2, 1981, Ser. No. 279,823
Int. Cl.³ A01K *79/00*
U.S. Cl. 43—4.5 **9 Claims**



1. Apparatus for supplying a trawl comprising:

a supporting frame,

a hook rack assembly including a plurality of pivotally mounted hook racks circumferentially spaced apart in parallel arrangement, said hook rack assembly being rotatably mounted in said supporting frame for rotary advancement of each hook rack to an operative position for supplying trawl, and

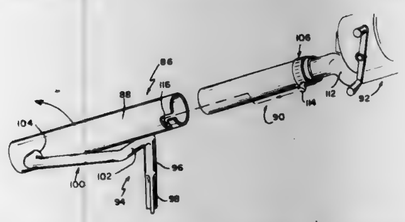
means to hold said assembly against rotation when a hook rack is in said operative trawl supplying position.

4,407,089

FISHING ROD HOLDER

Joseph A. Miller, 2308 N. 23rd St., Lafayette, Ind. 47904

Filed Mar. 27, 1981, Ser. No. 248,404
Int. Cl.³ A01K *97/10*
U.S. Cl. 43—21.2 **6 Claims**



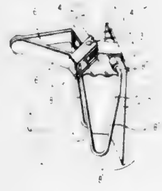
1. A fishing rod attachment including a first portion for retaining a butt and handle portion of the fishing rod, a stem portion having a first section, a second section which is generally perpendicular to the first section and is pivotally connected to the first portion and provides a region upon which the first portion rests in a use position and away from which rest region the first portion is pivotal to aid in insertion and removal of the rod from the first portion, the first portion further including, at an end of the cylinder remote from the pivotal connection, a somewhat L-shaped slot, and a strap adjustably attached to the handle portion of the fishing rod having a projection for engagement into the slot to lock the rod handle and the first portion together selectively to prevent inadvertent disengagement of the rod from the rod attachment.

4,407,090

NEEDLEWORK TOY

Kwan-sung Pyo, 619-I, Kilum-dong, Sungbook-ku, Seoul, and Moon-sung Park, 9-289, Hongun-dong, Sudaemoon-ku, Seoul, both of Rep. of Korea

Filed Sep. 4, 1981, Ser. No. 299,414
Claims priority, application Rep. of Korea, Jul. 13, 1981, 81-4969
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—118 **1 Claim**



1. A toy animal mechanism, comprising:

(a) a press plate (2) having a support arm (3) extending laterally outwardly from an upper edge thereof.

(b) a spring wire (9) having two U-shaped portions joined by a connecting section (8'''), and defining a generally wedge-shaped space (10) between legs of the U-shaped portions,

(c) an air bellows (12) having a crying whistle (11) mounted therein disposed within said wedge-shaped space,

(d) clamping means (2') mounting the spring wire connecting section to the press plate proximate the support arm,

(e) a pair of U-shaped levers (4) each having an elongate foreleg plate (6) extending outwardly therefrom,

(f) a pin member (7) pivotally coupling leg ends of said levers to an outermost end of the support arm, and

(g) apertures (5) individually provided in a leg of each lever remote from said pin member for receiving free leg ends of the U-shaped portions of the spring wire,

(h) whereby upon installation within the body of a toy animal with each elongate plate extending into a foreleg of the animal, the squeezing of the animal body acts to compress the air bellows and thereby activate the crying whistle, and to simultaneously pivot the levers and plates about the pin member to simulate foreleg movement.

4,407,091

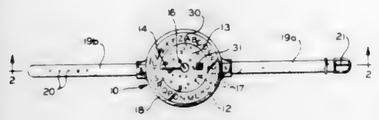
WRIST ATTACHED RATTLE AND EDUCATIONAL DEVICE FOR INFANTS

Gary W. Moody, 1010 Parkside Blvd., Toledo, Ohio 43607

Filed Jul. 27, 1981, Ser. No. 287,319
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—193 **4 Claims**

1. An infant's rattle comprising a relatively small closed container providing substantial wall area, a quantity of pebble-like materials within said container to hit against the walls

thereof upon a shaking movement, strap means for attaching the container to an infant's wrist whereby loss or misplacement of the rattle is avoided and the normal movement of the infant's arm automatically produces the desired sound, a transparent cover for the top of said container, a lateral flat flange on said



container adjacent to and within said transparent cover, a circular row of indicia of the alphabet displayed on said flange, and a manually actuated pointer for said row rotatably connected to said transparent cover for affording and educational feature to the rattle.

4,407,092

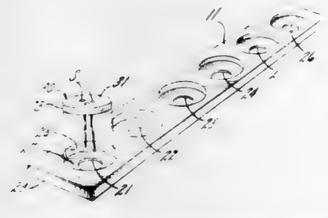
HYDROPONIC ASSEMBLY AND WAFER FOR USE THEREIN

R. Louis Ware, 1739 Chestnut Ave., Glenview, Ill. 60025

Division of Ser. No. 59,140, Jul. 20, 1979, Pat. No. 4,299,054. This application Jul. 27, 1981, Ser. No. 287,520

Int. Cl.³ A01G *31/00*

U.S. Cl. 47—64 **11 Claims**



1. A hydroponic assembly comprising at least one growing station formed from planar material having a through opening surrounded by a land surface and gripping means extending vertically therefrom,

a liquid container for supporting said growing station and for containing nutrient solution disposed therebeneath,

a wafer of dry compressed growing medium supported on the land surface of the growing station,

a seed receiving surface disposed on a top side of said wafer,

a wick communicating with the wafer and extending downwardly into the nutrient solution,

the wafer upon receiving nutrient solution through the wick by capillary action being capable of expanding into a porous block extending upwardly to a substantial height above said land surface to provide vertically extending lateral area so that the contained root structure will receive constant aeration.

4,407,093

VENTILATING WINDOW

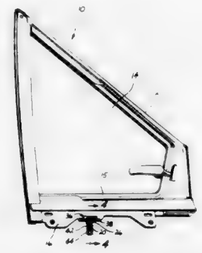
Steve A. Spretnjak, Elkhart, Ind., and Colin Anthony, Aurora, Canada, assignors to Excel Industries, Elkhart, Ind.

Filed Sep. 29, 1982, Ser. No. 428,422

Int. Cl.³ B60J *1/14*

U.S. Cl. 49—391 **2 Claims**

1. A ventilating window assembly for mounting in a window opening within a vehicular housing, said assembly including a rigid frame having a lower horizontal member, a glass panel located within said frame, said lower frame member having a generally circular opening therethrough, a pivot rod having opposite flat sides and connected at one end to said glass panel, said rod extending through said lower frame member opening and defining in conjunction with the periphery of the lower frame member opening opposite spaces between said rod sides and opening periphery, said glass panel being rotatable between a closed position and an open position with respect to said frame, the improvement comprising a washer including upper and lower surfaces and having a central opening, spaced projections located upon one said washer surface at opposite



sides of said central opening therein, said washer fitted upon said rod with the rod extending through said washer central opening and said projections fitting into said spaces between the rod sides and said lower frame member opening periphery, said washer being rotational with said rod within said lower frame member opening and constituting means for restricting lateral movement of said rod within the lower frame member opening.

4,407,094

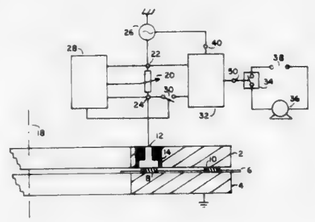
APPARATUS FOR AUTOMATIC LAPPING CONTROL

Emeric S. Bennett, Chardon, and Franz L. Sauerland, Shaker Heights, both of Ohio, assignors to Transat Corp., Shaker Heights, Ohio

Filed Nov. 3, 1981, Ser. No. 317,778

Int. Cl.³ B24B *49/04*

U.S. Cl. 51—165 R **8 Claims**



1. Control apparatus for a machine for precision machining, having at least one reference surface, one machining surface, and at least one piezoelectric resonator between said surfaces, comprising:

a. at least one electrode able to be inserted in and insulated from one of said surfaces;

b. automatic control means for sensing the resonance frequency of said piezoelectric resonator and for terminating the machining process when said resonance frequency reaches a target frequency;

c. impedance sensing means for sensing the presence and absence of a piezoelectric resonator at the electrode face and for:

deactivating said automatic control means in the absence of a piezoelectric resonator at the electrode face, and

activating said automatic control means in the presence of a piezoelectric resonator at the electrode face.

4,407,095

DEVICE FOR ABRASIVE CLEANING OF BLANKS SHAPED AS BODIES OF REVOLUTION

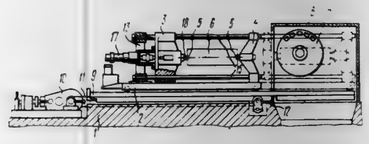
Konstantin S. Tolstopyatov, ulitsa Pervomaiskaya, 30, kv. 24, Elektrostal Moskovskoi oblasti; Anatoly A. Lukyanov, ulitsa Rogozhskaya, 100b, Noginsk Moskovsoi oblasti; Alexandr L. Pyatibrat, ulitsa Mayakovskogo, 13, kv. 16, Elektrostal Moskovskoi oblasti; Igor S. Pryanishnikov, ulitsa Nikolaeva, 23, kv. 44, Elektrostal Moskovskoi oblasti; Gennady N. Maslov, ulitsa Pervomaiskaya, 34/19, kv. 25, Elektrostal Moskovskoi oblasti; Nikolai G. Bobovnikov, ulitsa Sovetskaya, 1, kv. 43, Elektrostal Moskovskoi oblasti; Petr V. Gubin, ulitsa Nikolaeva, 23, kv. 20, Elektrostal Moskovskoi oblasti; Viktor I. Burmakin, ulitsa Stalevarov, 5, kv. 2, Elektrostal Moskovskoi oblasti; Nikolai B. Marchenkov, ulitsa Yalagina, 22, kv. 37, Elektrostal Moskovskoi oblasti; Alexandr F. Chirkin, ulitsa Stalevarov, 8a, kv. 50, Elektrostal Moskovskoi oblasti; Mikhail U. Zemtsov, ulitsa Delegatskaya, 9, kv. 110, Moscow, and Ernst L. Tonaevsky, ulitsa Sovetskaya, 64, kv. 9, Noginsk Moskovskoi oblasti, all of U.S.S.R.

PCT No. PCT/SU79/00066, § 371 Date Apr. 14, 1981, § 102(e) Date Mar. 31, 1981, PCT Pub. No. WO81/00534, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 14, 1979, Ser. No. 253,519

Int. Cl.³ B24B *5/04*

U.S. Cl. 51—112 **3 Claims**



1. A device for abrasive cleaning of blanks shaped as bodies of revolution, comprising a wheelhead with a rotating tool, a movable table mounting a headstock and a footstock carrying centers for a blank and a blank rotation drive, characterized in that a second wheelhead is mounted opposite to the first wheelhead, and the table is provided with a steady stand and two guides disposed in a vertical plane passing through the line of the centers and rigidly connected with the footstock and the stand, the headstock being mounted on the guides and adapted to move along them.

4,407,096

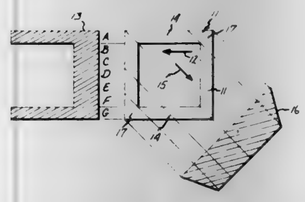
METHOD AND APPARATUS FOR SURFACE GRINDING

Clarence I. Steinback, Minneapolis, Minn., assignor to Acrometal Products, Inc., Minneapolis, Minn.

Continuation of Ser. No. 149,905, May 15, 1980, abandoned. This application Jan. 21, 1982, Ser. No. 341,497

Int. Cl.³ B24B *21/04, 1/00*

U.S. Cl. 51—328 **4 Claims**



1. A method of precision planar surface grinding a workpiece with an endless abrasive belt of predetermined width, comprising the steps of:

(a) imparting continuous circulating movement to the endless abrasive belt through a grinding area to define a region of abrasive workpiece engagement extending over the entire width of the belt;

(b) rotating the workpiece in a plane that is substantially parallel to the region of abrasive workpiece engagement of said endless abrasive belt to present a grinding surface of predetermined maximum transverse dimension to the region of abrasive workpiece engagement;

(c) effecting relative back and forth reciprocating movement between the workpiece and said region of abrasive workpiece engagement along a line that is substantially parallel to said plane of rotation, said relative movement being of sufficient magnitude that the rightmost edge of the belt reaches the leftmost edge of the rotating workpiece and the leftmost edge of the belt reaches the rightmost edge of the rotating workpiece, so that during each reciprocating stroke the entire grinding surface of the workpiece moves through the entire width of the region of abrasive workpiece engagement, whereby every point on the workpiece is abrasively engaged by every point of the endless abrasive belt.

4,407,097

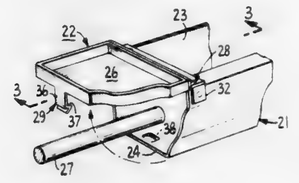
RAIN GUTTER CONSTRUCTION

Jack H. Allen, 223 SE. 122nd Ave., Portland, Oreg. 97233

Filed Feb. 15, 1980, Ser. No. 122,072

Int. Cl.³ E04D *13/00*

U.S. Cl. 52—11 **13 Claims**



1. A rain gutter construction comprising

a straight length of gutter formed for mounting along and under the eaves of a building, and

means providing access to the interior of said straight length of gutter from an end thereof,

said means comprising a member mounted for selective movement between a first position forming part of the gutter for retaining water therein and a second position permitting access to the interior of said straight length of gutter by an elongated cleaning tool.

4,407,098

LIQUID STORAGE TANK WITH STEEL-REINFORCED CONCRETE EXTERIOR

Wilfried Krabbe, Dreieich-Buchschlag, Fed. Rep. of Germany, assignor to Philipp Holzman AG, Frankfurt, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,913

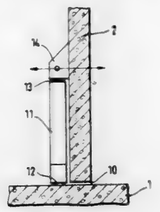
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1980, 3026465

Int. Cl.² E04B *1/98*

U.S. Cl. 52—167 **6 Claims**

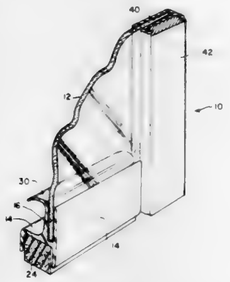
1. A tank for storage of liquid, especially supercooled liquid, comprising an inner tank to hold liquid and being supported on a base plate, a reinforced concrete wall surrounding said inner tank and separately supported by said base plate, with the reinforced concrete wall supported by polygonal swing plates (11) which are located at their planes parallel to said concrete wall (2) and at a distance from it, with one side of the polygo-

nal swing plate bearing on the base plate (1) and an opposite side or angle of the polygonal swing plate bearing against the



outside of the concrete wall to support the concrete wall with its bottom above the base plate.

4,407,099
WINDOW
James A. McLaughlin, Dover, Mass., assignor to Titanseal Corporation, Dedham, Mass.
Filed Mar. 23, 1981, Ser. No. 246,572
Int. Cl.³ E06B *3/28*
U.S. Cl. 52—202 **2 Claims**

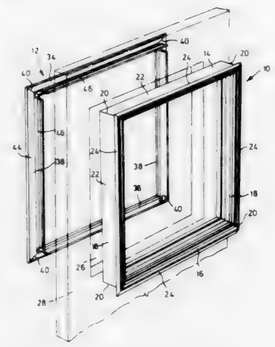


1. An extruded plastic unitary window framing strip of the type formed of extruded wall segments of about the same thicknesses and comprising a U-shaped channel therein forming means to receive the bottom edge portion of a window pane wherein said U-shaped channel is formed of

(a) a first long wall which is relatively resilient and normally slants, from bottom to top, towards

(b) a second long wall such that the distance separating said walls at the bottom thereof is about three times the width of the distance normally separating said long walls at the top thereof; said framing strip also comprising of second and lower channel opening the opposite direction from said U-shaped channel, a top end segment of which comprises in part a bottom wall of said U-shaped channel; said second long wall rising out of said top segment and forming a reinforcing member for said top segment at an intermediate position about halfway between side walls of said lower channel and thereby forming means to rigidify said top segment of said lower channel, and wherein said second long wall bears a handle extending in a direction away from said first long wall, and wherein said second long wall comprises a relatively wide base structure at the bottom thereof, and wherein said handle, on being used to lift said window, forms means to act as a lever to tighten said rigid wall against said window.

4,407,100
WINDOW FRAME ASSEMBLY WITH FRAME SHAPED LOCKING MEMBER
Alfred G. Huelsekopf, Newmarket, Canada, assignor to Com-Dor Supply Limited, Downsview, Canada
Filed Oct. 14, 1980, Ser. No. 196,479
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—212 **2 Claims**



1. A window frame assembly comprising:

(a) a first intermediate frame comprising a plurality of longitudinally elongated first frame lengths which butt and are secured at opposite ends to form corners of the first intermediate frame, said first intermediate frame being adapted to be inserted within a window opening in a close fitting relationship and having a flange on one side thereof for bearing against a peripheral edge of the window opening to prevent direct passage of the first intermediate frame through the window opening, locking channel formed in and extending about the periphery of the first intermediate frame, said locking channel being arranged to be accessible from the other side of said frame when the first intermediate frame is mounted in a window opening,

(b) a second intermediate frame comprising a plurality of second frame lengths which butt and are secured at opposite ends to form corners of the second intermediate frame, each of said lengths being coextensive with a corresponding length of said first intermediate frame, each of the lengths of the second frame having a one-piece locking tongue formed integrally therewith and projecting therefrom each tongue being adapted to be inserted within the locking channel of its associated first frame member, the locking tongues of each second frame length extending continuously along a major portion of the length thereof and being spaced a short distance from one another at the corners of the second intermediate frame so as to be independently flexible to facilitate the insertion of the locking tongues within the locking channels when the second intermediate frame is interconnected to the first intermediate frame.

4,407,101
BASE CONSTRUCTION FOR PANEL
Paul L. Propst, Holland; Donald A. Richardson, Kentwood, and Carl B. Hinrichs, Grand Haven, all of Mich., assignors to Stow/Davis Furniture Company, Grand Rapids, Mich.
Filed Nov. 10, 1980, Ser. No. 205,690
Int. Cl.³ E04F *19/04*; E04B *2/74*
U.S. Cl. 52—126.3 **27 Claims**

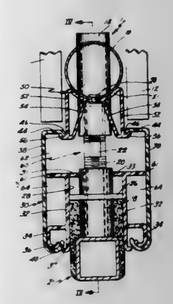
1. In a wall panel base constructin comprising:

a wall panel support means for supporting said wall panel;

foot means supporting said wall panel support means;

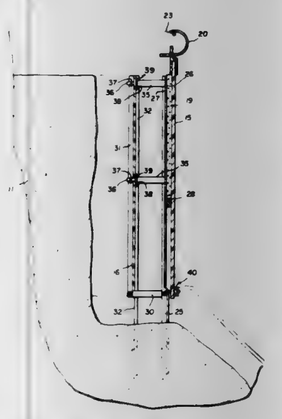
adjustment means variably spacing said support means above said foot means defining a void therebetween;

removable cover means for covering said void; and



a floor seal means enveloping said foot means and extending the length of said wall panel base construction, said floor seal means engaging said floor and extending between said floor and said cover means over the spacing range of said adjustment means.

4,407,102
CONCRETE AND RESIN SWIMMING POOL WALL
John D. Boyack, 5340 Ridge Rd. West, Spencerport, N.Y. 14559
Filed Mar. 16, 1981, Ser. No. 244,106
Int. Cl.³ E02D *27/34*; E04B *1/98*; E04H *9/02*
U.S. Cl. 52—169.7 **15 Claims**



1. A swimming pool wall comprising:

a. a vertical resin wall formed of a continuous strip of resin material located at the inside surface of said pool wall;

b. vertically oriented C-shaped channels periodically adhered to the outside surface of said resin wall;

c. T-head stakes interlocked with said channels and driven into ground to support said resin wall;

d. horizontal arms extending outward from said stakes in the region of the bottom of said resin wall;

e. braces extending vertically upward from the outer ends of said arms to be approximately parallel with said stakes and spaced from said stakes;

f. a continuous strip of resin form upheld by said arms and supported vertically against said braces to be approximately parallel with and spaced from said resin wall;

g. latches extending from said stakes and through said form to latch onto and uphold said braces;

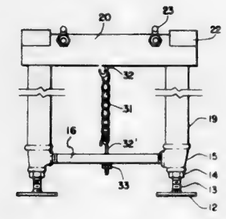
h. bars driven vertically into ground and positioned adjacent the inside of said form between said braces;

i. a horizontal strip positioned around the inside surface of the bottom region of said resin wall and screwed to said stakes through said resin wall;

j. a resin coping nose slidably mounted on the top region of said resin wall; and

k. concrete filling the space spanned by said latches and extending continuously along said pool wall between said resin wall and said form and resting on ground below said bottom region of said resin wall.

4,407,103
MOBILE UNIT SUPPORT
Robert R. Miller, 1425 Clifford St., Ridgecrest, Calif. 93555
Filed May 6, 1982, Ser. No. 375,389
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—292 **8 Claims**



1. A structural support device for a framework of a structure comprising:

A. two flat bases;

B. legs attached to and extending perpendicularly upward from each flat base;

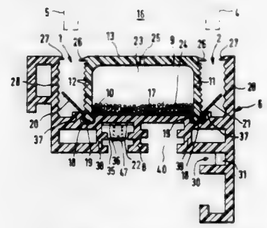
C. a spacer attached to each of said legs near the bases of the legs for holding said legs a predetermined distance apart;

D. a frame support assembly adapted to entrap each of said legs and to fasten to the framework of the structure to be supported;

E. means attaching said frame support assembly to said spacer in a manner whereby separation of the legs from their frame support assembly is made impossible; and

F. means attached to said frame support assembly adapted to provide cantilever support.

4,407,104
BRICK PANEL INSULATION WITH LOAD BEARING CLIP
Gerald T. Francis, 25257 W. Eight Mile Rd., Detroit, Mich. 48240
Filed Oct. 2, 1980, Ser. No. 192,943
Int. Cl.³ E04B *1/38, 2/00*
U.S. Cl. 52—309.4 **2 Claims**



1. A brick panel wall construction including a plurality of brick panels, said brick panels being secured to supporting structure, each brick panel including an insulating plastic foam backing board having a plurality of bricks secured thereto in a pattern, said brick panels including tongue and groove joints in

their longitudinal edges such that a tongue at one edge of a first brick panel being accommodated in a groove in the adjacent edge of a second panel;

at least one load bearing member being sandwiched between the tongue and groove joint between adjacent brick panels and means for attaching said member to said supporting structure, said member including a protruding lip extending into a joint area between the bricks on the adjacent panels; and

mortar applied to the spaces between the bricks on said backing boards and to the joint area between bricks of adjacent panels to cover the protruding lip of said load bearing member wherein said member providing the load bearing support for the bricks that are secured to said backing boards.

4,407,105

MULTI-PANE INSULATING GLASS AND METHOD FOR ITS PRODUCTION

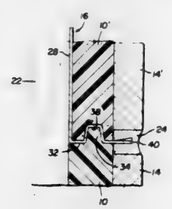
Wilhelm Frank, Rohrer Strasse 120, 7022 Leinfelden-Echterdingen 1, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,826

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1979, 2948017; Nov. 29, 1979, 2948018

Int. Cl.³ E06B *3/66*

U.S. Cl. 52—397 **20 Claims**



1. An improved multi-pane insulating glass arrangement of the type having at least two parallel panes, a frame, the frame including a plurality of elongated plastic sectional rods interconnected at each end, the sectional rods having walls defining an elongated pane holding groove, each pane having edges engageably received in the holding grooves of the frame, an adhesive sealant mounted between at least a portion of a wall of the sectional rod defining the groove and the pane engaged therein, and a foil type vapor seal mounted between the panes, the improvement wherein each of the plastic sectional rods comprises a first sectional rod portion and a second sectional rod portion, said first sectional rod portion overlying at least part of said second sectional rod portion intermediate the parallel panes, and the foil type vapor seal being mounted intermediate the first and second sectional rod portions.

4,407,106

COMPLEX COLUMN

Rene A. Beck, Pully, Switzerland, assignor to Gram S.A., Fribourg, Switzerland

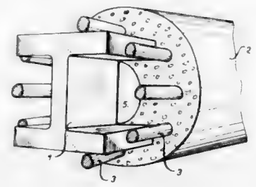
Filed Mar. 31, 1981, Ser. No. 249,364

Claims priority, application Switzerland, May 16, 1980, 3829/80

Int. Cl.³ E04C *3/34*

U.S. Cl. 52—722 **8 Claims**

1. In a complex column comprising a core formed of a metal profile embedded in a mass of concrete, both ends of the core being exposed at the ends of the column; the improvement in which said column has a hollow center extending the length said column, said core having a web that is exposed within and extends across the hollow center of the column, the interior



and exterior surfaces of the column apart from the core being of exposed concrete.

4,407,107

HORIZONTAL BALING APPARATUS AND METHOD

George F. Smith, Jr., Spartanburg, S.C., assignor to Hergeth, Incorporated, Spartanburg, S.C.

Continuation-in-part of Ser. No. 186,193, Sep. 11, 1980, Pat. No. 4,360,997. This application Apr. 29, 1981, Ser. No. 258,871

Int. Cl.³ B65B *11/58, 63/02*

U.S. Cl. 53—528 **11 Claims**



1. Baling and bagging apparatus comprising:

(a) a horizontal bale compression means including a baling chamber and a compression ram mounted for reciprocal movement with respect thereto, said baling chamber being defined by two end walls, a bottom wall, a top wall and two side walls, said top and side walls being moveable between a closed baling position and an open position; one said end wall being spaced apart from said compression ram to receive bagging material in overlying relation to a face of same, peripheral edge portions of said bagging material being secured out of said baling chamber for subsequent wrapping about portions of a bale to be formed, a face of said compression ram defining the other of said end walls and receive bagging material in overlying relationship thereacross, said ram defining peripheral means for receiving peripheral edge portions of bagging material therein and holding same during bale formation, said bottom wall being provided with lip means to receive a leading edge of bagging material and hold same in place during formation of bale thereover, said lip means comprising an element secured to said bottom wall and extending across same, said element having an inclined surface on the ram side of same and defining a lip therebeneath on the opposite side of same to receive said leading edge and clamp means located on opposite sides of said bottom wall to secure other peripheral edge portions of said material outside said baling chamber whereby said material is held taut during bale formation; and

(b) means for applying strapping around said bagging after same has been wrapped about said bale and while said bale remains in the baling chamber, whereby a substantially completely wrapped bale of material may be removed from said apparatus.

4,407,108

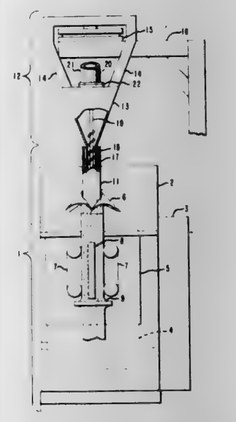
APPARATUS AND METHOD FOR POWDER BAGGING

Stephen R. Craig, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 29, 1980, Ser. No. 220,852

Int. Cl.³ B65B *9/12, 57/14*

U.S. Cl. 53—451 **8 Claims**



1. Apparatus for automatically filling bags, which have been automatically formed on a vertical-form-fill-seal machine, with a predetermined weight of particulate material comprising a feeder means for providing a supply of particulate material, dispensing a quantity of said particulate material, and measuring the weight of said particulate material dispensed, said feeder means comprising primary support means suitable for mounting on stationary structure or ground, weighing means mounted on said primary support means, secondary support means suspended from said weighing means, a hopper for holding a quantity of said particulate material which quantity is greater than said predetermined weight, said hopper mounted on said secondary support means, said hopper having means at or near the top for introducing said particulate material and having means at or near the bottom for dispensing said particulate material into an open bag which has been formed on a vertical-form-fill-seal machine, said weighing means being situated to measure the total weight of said secondary support means, said hopper and said particulate material in said hopper.

4,407,109

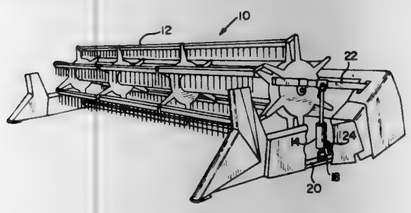
HYDRAULIC CIRCUIT FOR LIFTING THE REEL OF AN AGRICULTURAL HARVESTER

William C. Swanson, Clarendon Hills; Eugene J. Krukow, Cordova, and Norman G. Stroup, Orion, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Nov. 28, 1980, Ser. No. 210,962

Int. Cl.³ A01B *63/22*

U.S. Cl. 56—11.9 **2 Claims**



1. In an agricultural harvester having a front mounted reel mounted for hydraulically controlled vertical adjustment, including a reservoir and a source of fluid for supplying said hydraulically controlled reel,

the combination of a pair of single acting hydraulic cylinders, one of each of said pair having a first end pivotally mounted to a header frame and second end pivotally attached to a moveable reel support beam;

a rotary flow divider having a pair of fluid transfer devices and a pair of outlet ports, each of said pair connected to one of said single acting hydraulic cylinders;

a control valve having three operating positions interposed between said source of fluid and said rotary flow divider for allowing control of said flow; and

a check valve located downstream of said control valve and upstream of said rotary flow divider arranged to prevent flow from said rotary flow divider to said control valve, said check valve pilot operated to allow flow from said rotary flow divider to said control valve when said control valve is positioned to allow flow from said rotary flow divider to said reservoir;

said rotary flow divider comprising:

a first transfer device having a given volume of hydraulic fluid capacity and an inlet port communicating with said control valve and an outlet port communicating with one of said pair of hydraulic cylinders;

a second transfer device having a volume of hydraulic fluid capacity equal to that of said first transfer device and an inlet port communicating with said control valve and an outlet port communicating with one of said pair of hydraulic cylinders;

a common shaft interconnecting said first transfer device and said second transfer device whereby said first and second transfer devices will deliver said equal volume of fluid capacity to said hydraulic cylinders when either of said transfer devices is connected to said source of fluid pressure through said control valve;

a first rephasing valve for allowing fluid to bypass one of said pair of fluid transfer devices from one of said single acting hydraulic cylinders to said source of fluid pressure; and

a second rephasing valve for allowing fluid to bypass one of said pair of fluid transfer devices from one of said single acting cylinders to said source of fluid pressure;

each of said rephasing valves set to open when the fluid volume is greater from one of said pair of hydraulic cylinders when said control valve is open allowing flow from said hydraulic cylinders to said source of fluid pressure.

4,407,110

FRAME FOR CROP HARVESTING HEADER

Irwin D. McIlwain, Lancaster, and Lawrence M. Halls, New Holland, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 28, 1981, Ser. No. 306,552

Int. Cl.³ A01D *55/32*

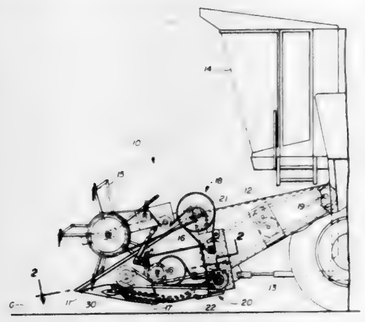
U.S. Cl. 56—14.4 **18 Claims**

1. In a crop harveting header adapted to be connected to a crop harvesting machine for severing standing crop material and conveying the severed crop material to the crop harvesting machine for further harvesting treatment, said header having a transverse frame; two forwardly extending, spaced apart sidewalls defining the width of said header; a transverse cutterbar extending between said sidewalls for severing standing crop material, said cutterbar being positioned forwardly of said frame; a plurality of attachment ribs transversely spaced between said sidewalls, said ribs being connected at opposing ends to said cutterbar and to said frame to provide support for said cutterbar along the width of said header; and a floor member extending rearwardly from said cutterbar above said support ribs along substantially the entire width of said header, an improved transverse frame comprising:

an upper transverse main beam;

a lower transverse main beam affixed to and positioned below said upper beam;

a plurality of fore-and-aft extending channel members, each said channel member corresponding to one of said attachment ribs and having a rearward end affixed to said lower beam, a forward end spaced forwardly of said rearward end and terminating between said cutterbar and said lower beam, and two spaced apart, generally vertical flange portions adjacent said rearward end, each said channel member housing a connection area adjacent said lower beam, each said connection area including pivot connection means for pivotally attaching corresponding attach-



ment ribs to form a crop harvesting header in which the cutterbar is vertically movable relative to said frame and the floor member will flex with the cutterbar and rigid connection means for rigidly connecting corresponding attachment ribs to form a crop harvesting header having a non-flexible cutterbar and floor member such that said cutterbar is not vertically movable relative to said frame, each corresponding said attachment rib being attachable to one of said pivot connection means and said rigid connection means for selectively constructing said header; and

front transverse connection members interconnecting the forward end of adjacent channel members.

4,407,111

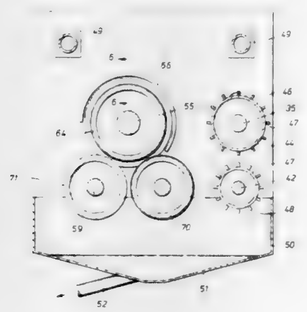
INFIELD MOBILE SYRUP EXTRACTOR

Arlen G. Brune, and Nelson Schmidt, both of Columbus, Tex., assignors to Gus Glasscock, Houston, Tex.

Filed Aug. 26, 1981, Ser. No. 296,436

Int. Cl.³ A01D *45/10*

U.S. Cl. 56—16.4 **4 Claims**



1. An apparatus for recovering a desirable syrup product from a stalk crop wherein individual stalks, after cutting from the ground, are fed into said apparatus and wherein the apparatus comprises:

(a) a pair of self-adjusting input rollers which cooperatively rotate relative to one another for engaging a stalk which is fed between said rollers and wherein said rollers include means for advancing a stalk therebetween;

(b) syrup squeezing roller means spaced from said input rollers and positioned to receive the stalks, wherein said squeezing roller means includes a pair of oppositely rotated spaced rollers having outer surfaces, which outer surfaces are grooved and mesh with one another and wherein said rollers crush the stalk crop therebetween for extracting the syrup from the stalk crop;

(c) bottom located syrup collection means for recovering liquid dripping from crushed stalks;

(d) chopper means for pulverizing the stalk crop; and

(e) blower means for ejecting the drier material recovered from stalks after recovery of syrup therefrom.

4,407,112

GRASS MOWER

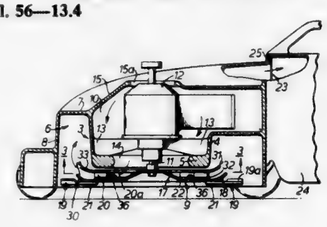
Ian C. Shepherd, Mulgrave; Ian G. Pearson, Hampton, and Donald C. Gibson, Beaumaris, all of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Filed Jul. 6, 1978, Ser. No. 922,452

Claims priority, application Australia, Jul. 12, 1978, PD0813

Int. Cl.³ A01D *53/00, 87/10*

U.S. Cl. 56—13.4 **4 Claims**



1. A rotary grass mower of the type having a hollow body with a horizontally rotatable cutting member therein, said cutting member being connected to the lower end of shaft coupled to a motor for driving the shaft and cutting member and wherein a downwardly depending skirt of the body defines the outer wall of a volutoid annular region above the periphery of the cutting member, the cutting member being in the form of a disc with cutting blades extending to the vicinity of the body skirt and said body having an opening therein above said disc, air blower means operatively connected to said motor for causing a strong flow of air to be drawn from outside the mower downwardly through said opening and then outwardly across the upper surface of said disc and upwardly into the volutoid annular region wherein is formed an energetically-swirling, tangential flow of air having an upward component effective in suspending and carrying grass clippings around the volutoid annular region and discharging them tangentially through a discharge opening leading from said volutoid annular region, said blower means comprising an annular horizontally disposed plate arranged above the disc and separated therefrom by vertically disposed blower blades which are attached to both the plate and the disc so that in operation air is drawn axially downwardly along the drive shaft past said opening in said body and into a central blower intake opening defined by said annular plate.

4,407,113

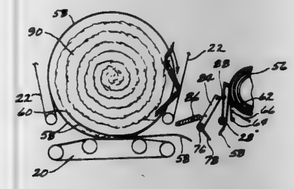
METHOD AND MEANS FOR WRAPPING ROUND BALES

Grant M. Core, Rte. #3, Knoxville, Iowa 50138

Filed Jun. 15, 1981, Ser. No. 273,468

Int. Cl.³ A01D *39/00*

U.S. Cl. 56—341 **8 Claims**



1. In combination with a round bale baling machine having a frame, which supports on said frame, a baling chamber; and a wrapping device for wrapping a flexible sheet around a formed bale in said baling chamber, said wrapping device comprising,

a shaft means on said frame forwardly of said baling chamber, and a roll of wrapping material on said shaft,

a plate means adjacent said roll for separating a layer of said material as such layer unwinds from said roll,

guide means on said frame for directing said layer to said baling chamber,

cutting means for selectively cutting said layer to separate the portion of said layer in said baling chamber from said roll,

power means operatively secured to said roll for providing said roll with an initial rotational motion; and

said power means being an electric motor with an overriding clutch operatively imposed between said motor and said roll so that said roll can rotate when said motor is not operational.

4,407,114

AGRICULTURAL IMPLEMENT

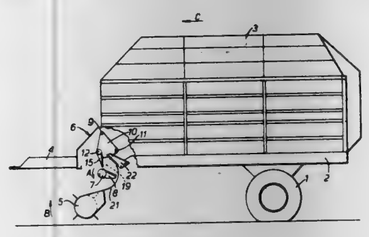
Petrus W. Zweegers, Nieuivendijk 46, Geldrop, Netherlands

Filed Jun. 24, 1981, Ser. No. 277,016

Claims priority, application Netherlands, Jul. 1, 1980, 8003790

Int. Cl.³ A01D *87/00, 55/20*

U.S. Cl. 56—344 **6 Claims**



1. An agricultural implement, particularly a pick-up wagon, comprising a pick-up member (5) for picking-up crop lying on the ground, an advance mechanism located behind the pick-up member (5) viewed in the intended direction of displacement of the crop and having fingers (15) movable to and fro in a passage for displacing the crop towards stationary cutters (22) mounted in said passage behind the range of the movement of the fingers and a plurality of rotating cutters (8) rotatable about an axis (7), so that said rotating cutters (8) during rotation will pass through said passage and together with said moving fingers will displace the crop towards said stationary cutters (22) which have been disposed such that cutting edges of said stationary cutters (22) extend substantially tangential to a circle described by the free ends of said rotatable cutters (8) which move between the fingers (15) of the advance mechanism.

4,407,115

HAYMAKING MACHINE

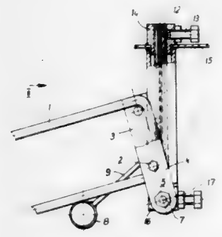
Ulrich Wessel, and Albrecht Scherer, both of Gottmadingen, Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG (Branch Establishment Fahr), Gottmadingen, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,574

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028350

Int. Cl.³ A01D *78/00, 80/02*

U.S. Cl. 56—370 **4 Claims**



1. In a haymaking machine having two raking wheels mounted rotatably upon a machine frame about respective approximately vertical axes so as to be driven in the same sense or in opposite senses, and an array of prongs on each of said wheels engageable with crops material and deflectible against elastic force, the improvement which comprises for each prong:

a tube piece extending parallel to the axis of rotation of the respective wheel and secured thereto;

a torsion spring formed by a stack of spring-steel strips extending in said tube piece;

means for securing one end of said stack to said tube piece, the other end of said stack being free to rotate relative to said tube piece; and

means for connecting a respective prong to said other end of said stack with the prong extending outwardly from the respective axis of the respective wheel so that each torsion spring presents the same spring characteristic to the prong in both senses of rotation of the respective wheel.

4,407,116

APPARATUS OR STRANDING WIRE

Werner Henrich, Am Wachtgipfel, D-6349 Hörbach, Fed. Rep. of Germany

Filed Sep. 18, 1981, Ser. No. 303,382

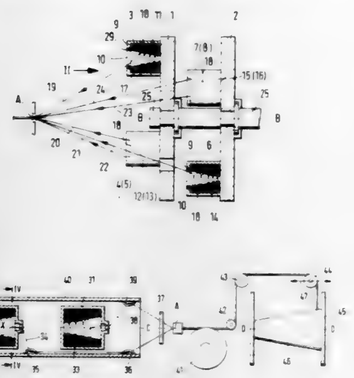
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035208

Int. Cl.³ D07B *3/04, 3/06*

U.S. Cl. 57—13 **16 Claims**

1. In an apparatus for stranding wire and the like, the combination of at least one support rotatable about an axis of rotation, means non-rotatably mounted on each said support for retaining loosely therein a plurality of bundles of wound wire to be stranded, said bundles of wound wire each having an axis thereof substantially parallel to said axis of rotation, each wire bundle being retained against rotation around its axis, and means for guiding the wire directly taken off from the interior

of a bundle in a said retaining means to a stranding point such that each bundle maintains its original outline and remains in



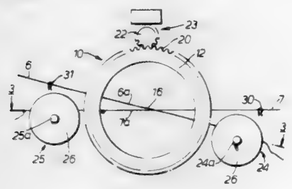
position within its respective receptacle as wire is taken off from the bundle.

4,407,117

JOINING OF YARNS BY SPLICING

Russell K. Garnsworthy, 1 Fenland Ct., Highton, Victoria, Australia

Filed May 5, 1981, Ser. No. 260,553
Claims priority, application Australia, May 5, 1980, PE3407
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **18 Claims**



1. A method for the splicing of two twisted staple yarns by untwisting portions of each yarn, drafting said portions to part the yarns and form two beards and retwisting the beards to form a splice, characterized in that the untwisting is effected by rolling the yarns between two surfaces at nip point to rotate the yarns.

4,407,118

GAS TURBINE ENGINE FUEL CONTROL SYSTEM

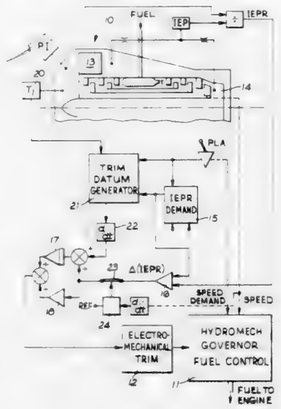
Robert G. Burrage, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 30, 1981, Ser. No. 279,031
Claims priority, application United Kingdom, Jul. 10, 1980, 8022567
Int. Cl.³ F02C *9/28*
U.S. Cl. 60—39.281 **1 Claim**

1. A fuel control system in an engine said system including a hydromechanical speed governor fuel control influenced by a control input element operable by an operator of said engine, wherein said influence of said control input element is varied by an electro-mechanical trim device controlled by an electronic control circuit responsive to at least one engine parameter, said circuit includes:

error signal generating means for producing an error signal representing any difference between a desired and an actual value of said engine parameter;

a proportional-plus-integral controller circuit means, responsive to said error signal and including an integrator, for producing an output signal which is applied to said electromechanical trim device;



means for generating a trim datum signal dependent on the control input; and

a differentiating circuit to which the trim datum signal is applied, the output of the differentiating circuit being applied to the input of said integrator.

4,407,119

GAS GENERATOR METHOD FOR PRODUCING COOL EFFLUENT GASES WITH REDUCED HYDROGEN CYANIDE CONTENT

Richard A. Biddle; Calvin W. Vriesen, both of Newark, Del., and Ernest S. Sutton, Landenberg, Pa., assignors to Thiokol Corporation, Va.

Division of Ser. No. 35,956, May 4, 1979, Pat. No. 4,298,412.
This application Mar. 12, 1981, Ser. No. 243,020
Int. Cl.³ C06D *5/06*
U.S. Cl. 60—219 **1 Claim**

1. A process for the generation of a gas having a temperature of less than about 575° C. and less than about 0.7 mole % HCN which comprises:

(a) compounding and curing a gas generant composition consisting essentially of a binder component, a polynitrate ester plasticizer component, N,N'-dihydroxyethane diamide, and a HCN scavenger component selected from cupric oxalate, ferrous oxalate, Fe_3O_4, or mixtures thereof;

(b) igniting the gas generant composition of step (a) to generate combustion gases; and

(c) causing the combustion gases generated in step (b) to pass through a coolant bed of sodium bicarbonate, ammonium tartrate or guanidine carbonate.

4,407,120

THRUST REVERSER GEARED LINKAGE

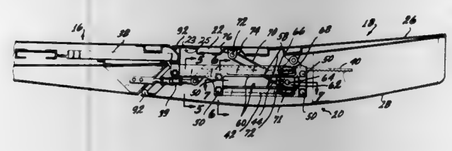
Richard H. Timms, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Aug. 25, 1980, Ser. No. 180,671
Int. Cl.³ F02K *1/00, 3/02;* B64C *15/00*
U.S. Cl. 60—226.2 **5 Claims**

1. An improved thrust reversing apparatus for reversing the fan or total gas stream of turbofan jet engine having a central plug nozzle, surrounded by a cowl which forms a duct therebetween, said cowl having a fixedly positioned forward section and an aft translatable cowl section, an opening is formed between said cowl sections when said aft cowl section is translated aft comprising:

a plurality of rotatable blocker doors associated with said aft translatable cowl section for substantially reversing the normally rearward directed flow of said gas stream when rotated to a deployed position and defining a portion of the duct when in a stowed position; and

mechanism for rotating each of a plurality of blocker doors, said mechanism comprising a pinion gear rotatable about



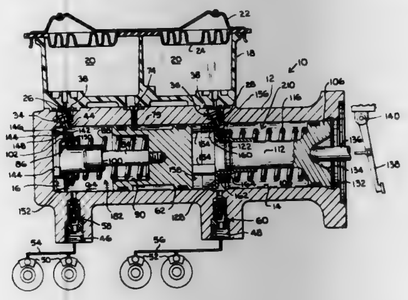
an axle shaft, a pair of opposing gear racks for engagement with said pinion gear, one of said racks fixedly attached to the forward cowl section, and at least one link member pivotly attached to said pinion gear at an off center location at a first end and to one of said blocker doors at a second end, whereby the translation of the translatable cowl section rotates the pinion gear along the racks about said axle shaft causing the attached link member to translate and rotate causing the blocker doors to rotate into and block off the duct.

4,407,121

MASTER CYLINDER

Donald A. Crumb, Mishawaka, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 29, 1981, Ser. No. 258,827
Int. Cl.³ B60T *11/20*
U.S. Cl. 60—562 **13 Claims**



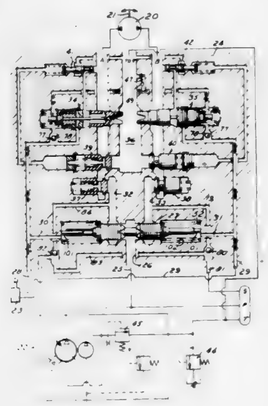
1. A master cylinder comprising a piston reciprocably received in a bore defined by a housing and cooperating with the latter to bound a variable-volume pressure chamber, said housing defining an inlet communicating liquid into said pressure chamber, a valve device disposed in said inlet having an operating stem extending into said bore, tilting of said operating stem moving said valve device between open and closed positions, first resilient means for yieldably biasing said piston to a nonbraking location, said piston being movable to a braking location in response to an operator input force to contract said pressure chamber, and valve actuating means associated with said piston for opening and closing said valve device in response to respective movement of said piston between said nonbraking location and said braking location, characterized by said valve actuating means including an annular spring seat disposed in said bore and engaging a surface bounding said pressure chamber, said spring seat opposing said first resilient means, a shaft received in said pressure chamber and reciprocable in unison with said piston, a valve actuating collar slidably carried on said shaft and movably received in said annular spring seat, said shaft and said valve actuating collar including coacting abutment means for defining a first relative position thereof, said valve actuating collar in said first relative position engaging said operating stem to open said valve device when said piston is in said nonbraking position, second resilient means interposed between said spring seat and said actuating collar to urge the latter to move in follow-up relationship in said first relative position with said piston as said piston moves from said nonbraking position toward said braking position, whereby said operating stem tilts to close said valve device, and said valve actuating collar defines an aperture therein, said annular spring seat including an axially extending leg movably extending through said aperture to engage said surface.

4,407,122

POWER TRANSMISSION

Vinod K. Nanda, Rochester, Mich., assignor to Vickers, Incorporated, Troy, Mich.

Filed May 18, 1981, Ser. No. 264,342
Int. Cl.³ F15B *7/04*
U.S. Cl. 60—452 **5 Claims**



1. A hydraulic control system comprising

a hydraulic actuator having opposed openings adapted to alternately function as inlets and outlets for moving the element of the actuator in opposite directions,

a load sensing variable displacement pump for supplying fluid to said actuator,

meter-in valve means to which the fluid from the pump is supplied,

a pair of lines extending from said meter-in valve means to said respective openings of said actuator,

said meter-in valve means being pilot controlled by alternately supplying fluid at pilot pressure to said meter-in valve means for selectively controlling the flow of fluid to the lines and thereby direction of movement of the actuator,

meter-out valve means separate from and operable independently of said meter-in valve means associated with each opening of the actuator for controlling the flow out of said actuator,

said meter-out valve means being pilot operated by the pilot pressure,

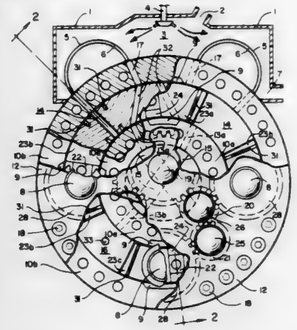
and means for sensing the outlet pressure being directed to the actuator when the meter-in valve means is operated and providing a pressure proportional to outlet pressure on said meter-in valve means opposing the force of pilot pressure tending to actuate the meter-in valve means.

4,407,123

HOT GAS STIRLING CYCLE PISTON ENGINE

George R. Morgan, 1831 S. Berthed Pl., Tucson, Ariz. 85710

Filed Oct. 20, 1980, Ser. No. 198,586
Int. Cl.³ F02G 1/04
U.S. Cl. 60—525 1 Claim



1. A hot gas Stirling cycle engine in which a plurality of gases are alternately expanded and compressed in closed thermodynamic systems comprising:

a toroidal cylinder with four double-ended pistons which oscillate around the central axis in a fixed phase relationship;

a transmission means operatively coupling each piston with a respective rotatable crankshaft, each of the crankshafts being mounted perpendicular to the central axis of the toroidal cylinder;

an output shaft located in the proximity of and parallel to the cylinder axis, and operatively coupled to each of said rotatable crankshafts;

said pistons and their respective crankshafts being radially disposed and equally spaced within said cylinder;

a first working space defined by a first piston and an adjacent second piston in which heated gas expands to perform work in moving said pistons;

a second working space defined by the second piston and an adjacent third piston in which a cooled gas is compressed;

a third working space defined by the third piston and an adjacent fourth piston in which a cooled gas in compressed;

a fourth working space defined by the fourth and first piston in which a heated gas expands to perform work in moving said pistons;

a first heating means external of said cylinder providing a heat source for gas flowing into said first working space, a second heating means external of said cylinder providing a heat source for gas flowing into said fourth working space;

a first regenerator-cooler unit located near the axis of the toroidal cylinder and located in a gas passage connecting the first and third working spaces;

a second regenerator-cooler unit located near the axis of the toroidal cylinder and located in a gas passage connecting the second and fourth working spaces;

whereby a first working gas is heated by said first heating means, flows into said first working space where it expands to perform work, flows through the first regenerator-cooler to said third working space where it is compressed, and thereafter flows through said first regenerator-coder and thence to said heater to cyclically perform a first Stirling cycle,

wherein a second working gas is heated by said second heating means, flows into said fourth working space where it expands to perform work, flows through the second regenerator-cooler to said second working space where it is compressed, and thereafter flows through the second regenerator-cooler and thence to said heater to cyclincally perform a second Stirling cycle;

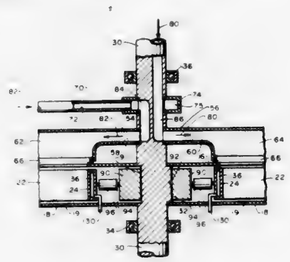
wherein said first and second cycles are 180° out of phase with one another.

4,407,124

MEMORY POWER ENGINE

Ronald L. Pelley, Box 385, Fillmore, Calif. 93015

Filed Jan. 5, 1981, Ser. No. 222,305
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 6 Claims



1. A mechanism for transforming heat energy into mechanical energy comprising:

one or more deformably shape memory elements responsive to form change at a predetermined transition temperature;

means for sequentially directing heating and cooling fluids to the surfaces of the shape memory elements whereby deformation of the shape memory elements may occur below said transition temperature and recovery may occur above said transition temperature;

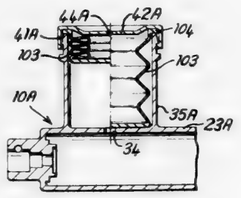
means of heating the ends or attachment points of said elements whereby the shape memory material at or near said ends or attachments will be assured of being above the transition temperature during the shape memory element recovery; and means attached to each element for deforming said element and for receiving and utilizing the energy output of each said element as it transfers through said transition temperature.

4,407,125

LIQUID PRESSURE APPARATUS

David Parsons, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 676,474, Apr. 13, 1976, abandoned.
This application Jun. 1, 1978, Ser. No. 911,477
Claims priority, application United Kingdom, Apr. 14, 1975, 15283/75
Int. Cl.³ B60T 11/30
U.S. Cl. 60—584 2 Claims



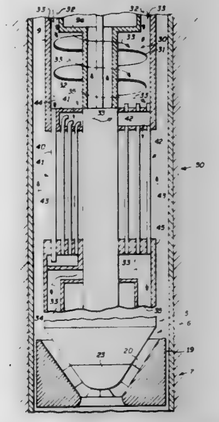
1. A method of assembling friction clutch release apparatus on a motor vehicle, the apparatus comprising a driver operable master cylinder which has a driver operable piston slidable in it and a liquid pressure outlet port, and a slave cylinder which has an inlet and an output thrust member, the apparatus being operable by displacement of liquid under pressure from the master cylinder to the slave cylinder to generate a clutch release thrust by way of the output thrust member, there being a liquid reservoir which forms a liquid containing chamber and which has a port which communicates with the liquid containing chamber below the normal level of liquid contained therein, said port being in communication with a port in the master cylinder which is open when the master cylinder piston is at the end of its stroke remote from the master cylinder outlet so that the liquid containing chamber of the reservoir is in communication with the bore of the master cylinder between the master cylinder piston and the liquid pressure outlet, and being closed when liquid is displaced under pressure from the master cylinder through the liquid pressure outlet by movement of the master cylinder piston towards the liquid pressure outlet, and a vent port which communicates with the liquid containing chamber of the reservoir above the normal level of liquid contained therein and which places the space within the liquid containing chamber that is above the normal level of liquid therein in communication with an air space which is at a pressure which is substantially atmospheric, wherein the method comprises filling the apparatus with liquid, bleeding that apparatus before that apparatus is installed on a motor vehicle, and providing an impermeable barrier to prevent leakage of liquid through said vent port during shipment and installation on a motor vehicle, said impermeable barrier being provided by closing the vent port temporarily after the apparatus is bled.

4,407,126

THERMOSYPHON BOILER FOR A GEOTHERMAL PUMPING SYSTEM

Andrej M. R. Aplenc, Jackson, Miss., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,498
Int. Cl.³ F03G 7/00
U.S. Cl. 60—641.4 4 Claims



1. An improved geothermal pumping system of the type having a boiler for vaporizing a working fluid with thermal energy from geothermal brine and a turbine driven pumping unit which is disposed in the geothermal brine and which is driven by the vaporized working fluid, wherein the improvement comprises:

means for separating liquid droplets from the vaporized working fluid emitted from said boiler;

means for collecting said liquid droplets;

a first plurality of tubes, operatively coupled to said liquid collecting means and disposed in a heat transfer relationship to an upwardly flowing geothermal fluid, for evaporating the collected liquid; and

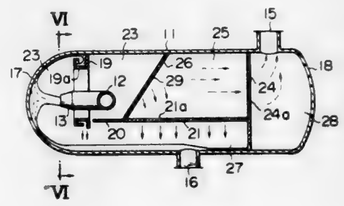
a second plurality of tubes, responsive to the vaporized working fluid emitted from said boiler and to the output of said first plurality of tubes and disposed in a heat transfer relationship to the upwardly flowing geothermal brine, for superheating the evaporated liquid emitted from said first plurality of tubes and the vaporized working fluid emitted from said boiler.

4,407,127

FLASHING APPARATUS OF GEOTHERMAL POWER PLANTS

Yoshihiro Shiraki, Tokyo, and Tokumitsu Kojima, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Sep. 14, 1981, Ser. No. 302,089
Claims priority, application Japan, Sep. 22, 1980, 55-130752
Int. Cl.³ F03G 7/04
U.S. Cl. 60—641.5 4 Claims



1. A flashing apparatus for a geothermal power plant comprising:

a horizontal cylindrical container closed at both ends by end plates one of which has a hemi-spherical surface, said container being provided with an underground hot water inlet at a central portion of a peripheral wall of said container;

a nozzle connected to said hot water inlet and directed towards said hemi-shperical surface of said one end plate;

means for catching and removing hot water drain after the hot water has been ejected against said hemi-spherical surface of said one end plate, said means being located near said one end plate and disposed concentrically with said nozzle;

a first partition plate attached to an inner peripheral surface of said container and provided with a plurality of through holes;

a second partition plate located horizontally in said container and connected to a lower end of said first partition plate so as to define a flashing chamber between said first partition plate and said one end plate, said drain catching means being positioned in said flashing chamber, said second partition plate having an extension extending horizontally and being provided with a plurality of through holes to thereby define a drain discharge chamber between said extension and a lower peripheral wall of said container;

a drain outlet provided for the lower peripheral wall of said container to remove the drain in said drain discharge chamber;

a third partition plate provided with a plurality of through holes and located near the other one of said end plates so as to define a steam discharge chamber between said third partition plate and said other end plate and also define a chamber for separating and removing water drops contained in flashed steam generated in said flashing chamber between said first and third partition plates and said extension of said second partition plate; and

a steam outlet provided for an upper peripheral wall of said container to feed steam in said steam discharge chamber into a steam turbine of the geothermal power plant.

4,407,128

FUEL BURNERS

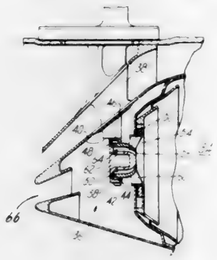
William C. T. Kwan, Derby, England, assignor to Rolls-Royce Limited, London, England

Filed Sep. 11, 1980, Ser. No. 186,267

Claims priority, application United Kingdom, Sep. 13, 1979, 7931778

Int. Cl.³ F02C *7/22*

U.S. Cl. 60—737 **10 Claims**



1. A gas turbine fuel burner comprising a fuel manifold arranged to receive fuel from a fuel feed arm, a flow passage having a surrounding outer surface, the flow passage comprising an annular converging section supplied with air, and fuel from the fuel manifold for mixing of fuel and air and having a diverging section supplied with further air and a throat located therebetween, said flow passage being defined in part at its outer surface by an annular intermediate member, said annular intermediate member having a portion converging to said throat and a portion diverging downstream of said throat, said annular converging section of said flow passage being defined between the converging portion of said annular intermediate member and a hollow inner member, said hollow member having a closed downstream end and an open upstream end, the downstream end of said inner member being located at said throat of said flow passage, first radial swirling means in said inner member for supplying air to said annular converging section of said flow passage, second axial swirling means in said annular intermediate member downstream of said throat for supplying air to said diverging section of said flow passage, and fuel swirling means in said annular intermediate member upstream of said throat for supplying fuel from said fuel manifold to said annular converging section of said flow passage.

4,407,129

CLOSED LOOP SOLAR COLLECTING SYSTEM OPERATING A THERMOELECTRIC GENERATOR SYSTEM

Barry W. Johnston, 1622 Que St., NW., Washington, D.C. 20009

Division of Ser. No. 146,424, May 5, 1980, Pat. No. 4,354,483, and a continuation-in-part of Ser. No. 43,799, May 30, 1979, Pat. No. 4,286,579. This application Apr. 13, 1982, Ser. No. 368,085

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.8 **4 Claims**

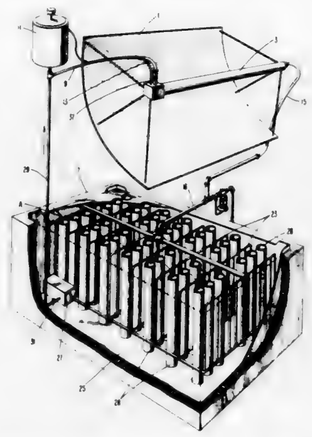
1. A combined solar energy collecting and electric energy generating system, comprising:

a closed loop solar energy collector system which includes a fluid receiver for collecting solar energy;

fluid supply means, connected to said fluid receiver for supplying a quantity of vaporizable heat transfer fluid to said fluid receiver;

means attached to said receiver for precisely metering a quantity of heat transfer fluid into said receiver from said supply means; and

a heat exchanger means, connected to said fluid receiver for absorbing heat energy from the heat transfer fluid which is vaporized in said receiver and transferring said heat energy to a working fluid circulating in said heat exchanger in thermal contact with said heat transfer fluid, the vaporized heat transfer fluid condensing after releasing its latent heat of vaporization to said heat exchanger, the condensed fluid flowing under pressure provided by the vaporized fluid entering said heat exchanger means, to said supply means; and



an electric energy generating system including a fluid-powered electrical generator system connected in fluid flow relationship to said heat exchanger to receive said heated working fluid, said working fluid thereby driving said generator, and means for returning exhausted working fluid from said generator system to the heat exchanger means.

4,407,130

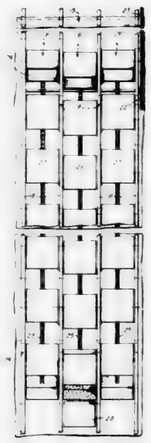
DRIVE OPERATED BY RECEPTACLES ALTERNATELY WATER FILLED AND RENDERED BUOYANT

William R. Jackson, Rocky Dundee Rd., West Buxton, Me. 04093

Filed Jun. 19, 1981, Ser. No. 275,322

Int. Cl.³ F03B *9/00*

U.S. Cl. 60—496 **13 Claims**



1. Apparatus for use in a relatively deep body of water or other fluid to provide a drive, said apparatus including at least two units, the lower end of one close to the lower end of the other, each unit including supporting structure within said body, upper and lower sprockets rotatably connected to said structure, chains trained about said sprockets, and a series of open ended receptacles attached to said chains and uniformly spaced from each other with all receptacles opening in the trailing direction, said units closely spaced with the chain courses that are to travel upwardly proximate, means to deliver a stream of buoyant fluid under pressure into an ascending receptacle of one of the units thereby to render that receptacle buoyant, said one unit the main and the other unit an auxiliary unit, said receptacles so positioned that the ascending ones of the auxiliary unit may receive buoyant fluid bypassing lower ascending receptacles of the main unit or escaping from the proximate sides thereof.

4,407,131

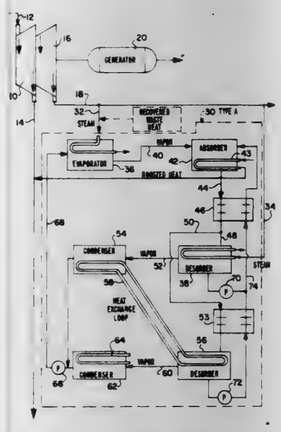
COGENERATION ENERGY BALANCING SYSTEM

William H. Wilkinson, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 13, 1980, Ser. No. 177,680

Int. Cl.³ F01K *17/06*

U.S. Cl. 60—648 **25 Claims**



1. A steam and electrical power cogeneration system for an industrial plant comprising in combination:

(a) means for generating electrical power from steam, said means including a source of steam and a turbine having at least one high pressure extraction stage and at least one lower back-pressure stage,

(b) means for extracting steam from said at least one high pressure stage to supply high pressure process steam needs for said plant,

(c) means for discharging steam from said at least one back-pressure stage to supply low pressure process steam needs for said plant, and

(d) means for boosting low pressure steam to a higher pressure and temperature to supply a portion of said high pressure process steam needs for said plant, said boosting means requiring a source of heat for operation, said source of heat provided by heat energy from a portion of said low pressure steam from said back-pressure stage.

4,407,132

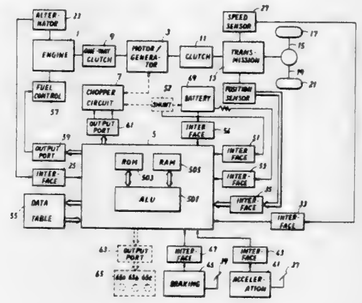
CONTROL APPARATUS AND METHOD FOR ENGINE/ELECTRIC HYBRID VEHICLE

Shiro Kawakatsu, Suita, and Shoji Honda, Toyonaka, both of Japan, assignors to Daihatsu Motor Co., Ltd., Ikeda, Japan

Continuation of Ser. No. 123,057, Feb. 25, 1980, Pat. No. 4,305,254. This application Dec. 14, 1981, Ser. No. 330,433

Int. Cl.³ F02B *73/00*

U.S. Cl. 60—716 **1 Claim**



1. An apparatus for controlling a hybrid vehicle having wheels, an internal combustion engine having a throttle, throttle control means for controlling an opening degree of said throttle, an electric motor, a battery for supplying an electric power to said electric motor, motor control means for controlling said electric power fed from said battery to said electric motor, transmitting means for transmitting a driving power of at least said internal combustion engine and said electric motor to said wheels of said hybrid vehicle, and speed adjustment means for being operated for speed adjustment of said hybrid vehicle, comprising:

revolution number providing means responsive to the movement of said hybrid vehicle for providing data concerning the number of revolutions determinable as a function of the speed of said movement of said hybrid vehicle and adaptable to the number of revolutions of said internal combustion engine and the number of revolutions of said electric motor;

required torque data providing means for determining required torque required by said hybrid vehicle in response to the data provided by said revolution number providing means and the output of said speed adjustment means; and

control means for controlling said throttle control means and said motor control means in a manner that when said required torque exceeds a predetermined upper limit value of a torque range of said internal combustion engine and when said data concerning the number of revolutions determinable is within a predetermined range of the number of revolutions of said internal combustion engine in which said internal combustion engine is permitted to operate said internal combustion engine will be operated at said predetermined upper limit value and said electric motor will be operated at a motor torque equal to a difference between said required torque and said predetermined upper limit value.

4,407,133

SELF-CONTAINED PORTABLE TEMPERATURE-CONTROLLED CHAMBER FOR MEDICATIONS AND THE LIKE

Glenn V. Edmonson, 1434 Roxbury Rd., Ann Arbor, Mich. 48104

Filed Aug. 10, 1981, Ser. No. 291,794

Int. Cl.³ F25B *21/02;* **F25D** *3/08*

U.S. Cl. 62—3 **13 Claims**

1. A personal, self-contained, manually portable tempera-

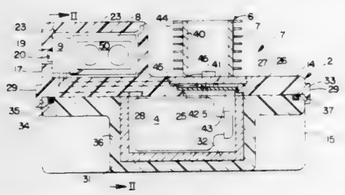
ture-controlled chamber for medications and the like, comprising:

an insulated housing having a cavity shaped to receive a receptacle of temperature-sensitive material therein;

a thermoelectric element mounted in said housing, and having first and second heat-transfer faces; one of said faces being in heat-transfer relation with said housing cavity, for transferring heat therebetween;

a heat exchanger connected with said housing, having a first portion thereof in heat-transfer relation with the other of said thermoelectric element heat-transfer faces, and a second portion thereof communicating with ambient atmosphere for exchanging heat therewith;

a source of portable electric power mounted in said housing to provide a self-contained unit that can be hand-held and



manually transported; said electrical power source being electrically connected with said thermoelectric element;

means for reversing the polarity of the electric power applied to said thermoelectric element, whereby said thermoelectric element can selectively heat or cool said housing cavity to maintain the receptacle of temperature-sensitive material therein at a desired temperature range; and

a multiple-set-point temperature controller apparatus mounted on said housing, including means for sensing the temperature in said housing cavity; said temperature controller apparatus having portions electrically connected between said electric power and said thermoelectric element to control electric current flow therebetween, and thereby automatically maintain the temperature within said housing cavity at the desired temperature range by selective heating and/or cooling.

4,407,134

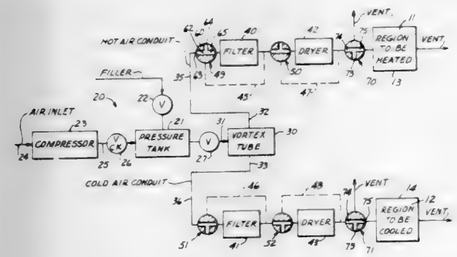
AIR CONDITIONING SYSTEM

Alvin A. Snaper, 2800 Cameo Circle, Las Vegas, Nev. 89107

Filed Nov. 19, 1981, Ser. No. 323,054

Int. Cl.³ F25B *9/02*

U.S. Cl. 62—5 **11 Claims**



1. A conditioner system for air comprising: a source of air under pressure, said source comprising a compressor and a pressure tank having an inlet and an outlet, valve means to admit air under pressure, and valve means adapted to hold air in said tank or to release it to the inlet of the vortex tube; a vortex tube of the type which whirls air and in the process raises the temperature of the air in one region and cools it in other regions, said vortex tube including an inlet receiving air under pressure from said source, a hotter air outlet discharging the hot air from one region and a colder air outlet discharging the colder air from the other region; and a conduit means for conveying air from one of said outlets to a region to be treated by air conveyed by the conduit means from the respective outlet; valve means for selectively directing hot, cold or hot and cold air to the region to be treated, whereby said region is treated with a blast of hot, cold or hot and cold air as a result of releasing air flow, said pressure tank to rapidly heat or cool said treated region.

4,407,135

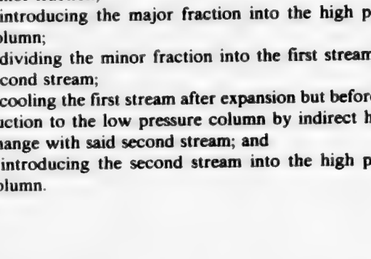
AIR SEPARATION PROCESS WITH TURBINE EXHAUST DESUPERHEAT

Ravindra F. Pahade, North Tonawanda, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 9, 1981, Ser. No. 328,817

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—13 **17 Claims**



1. In a process for the separation of air by rectification wherein feed air at greater than atmospheric pressure is cooled substantially to its dew point and is subjected to rectification in a high pressure column and a low pressure column, and wherein a first stream, having an oxygen concentration of from about 10 percent to that of air, is warmed by partial traverse against said cooling feed air, said first stream then sequentially being expanded and introduced into said low pressure column, the improvement comprising:

(1) withdrawing from said high pressure column a second liquid stream;

(2) cooling said first stream after expansion but before introduction into the low pressure column by indirect heat exchange with said second stream; and

(3) returning said second stream to the high pressure column.

12. In a process for the separation of air by rectification wherein feed air at greater than atmospheric pressure is cooled substantially to its dew point and is subjected to rectification in a high pressure column and a low pressure column, and wherein a first stream having a composition substantially that of air is warmed by partial traverse against said cooling feed air, said first stream then sequentially being expanded and introduced into said low pressure column, the improvement comprising:

(A) dividing the cooled feed air into a major fraction and a minor fraction;

(B) introducing the major fraction into the high pressure column;

(C) dividing the minor fraction into the first stream and a second stream;

(D) cooling the first stream after expansion but before introduction to the low pressure column by indirect heat exchange with said second stream; and

(E) introducing the second stream into the high pressure column.

4,407,136

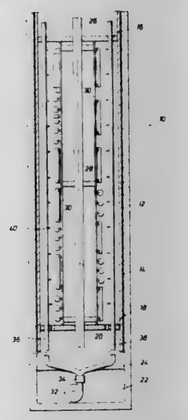
DOWNHOLE TOOL COOLING SYSTEM

Scipio de Kanter, Missouri City, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Mar. 29, 1982, Ser. No. 363,327

Int. Cl.³ F25D *17/02*

U.S. Cl. 62—64 **5 Claims**



1. A method of cooling electronic components in a downhole tool comprising the steps of:

(a) initially filling a sump within a downhole tool with liquid refrigerant;

(b) moving a portion of the refrigerant from the sump to be applied directly to the surfaces of electronic components in a chamber above the sump by vaporizing said refrigerant in said sump by contacting said liquid refrigerant in said sump directly with at least some of said electronic components;

(c) constraining the flow of vapor from the liquid refrigerant vaporized by absorbing heat from said electronic components, and directing the vapor against a cooling surface means to be converted into droplets of condensed refrigerant; and

(d) flowing said condensed refrigerant droplets across said electronic components and vaporizing the liquid refrigerant to cool said components.

4,407,137

FAST DEFROST HEAT EXCHANGER

Richmond S. Hayes, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

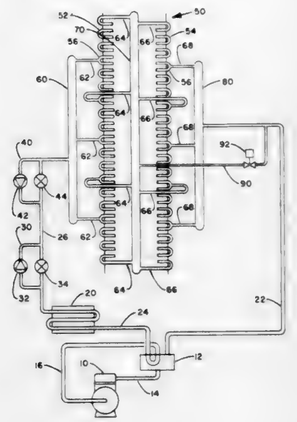
Filed Mar. 16, 1981, Ser. No. 244,412

Int. Cl.³ F25D *21/00*

U.S. Cl. 62—80 **11 Claims**

9. A method of controlling the routing of refrigerant through a multi-row heat exchanger to allow for effective heat transfer and to promote rapid defrosting wherein the heat exchanger has multiple coil rows, a first header connected to a first coil row, a second header connected to a second coil row and an intermediate header for connecting the first coil row to the second coil row and wherein frost accumulates primarily on the first coil row which comprises the steps of:

routing the refrigerant between the first and second headers by directing flow through the coil rows and the intermediate header to have effective heat transfer between refrigerant flowing through the heat exchanger and air flowing thereover; and circuiting refrigerant directly to the intermediate header from which it flows through the first coil row to the first



header to promote rapid melting of frost accumulated on the first coil row during defrost.

4,407,138

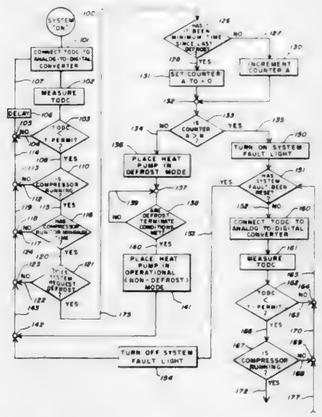
HEAT PUMP SYSTEM DEFROST CONTROL SYSTEM WITH OVERRIDE

Dale A. Mueller, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 30, 1981, Ser. No. 278,944

Int. Cl.³ F25D *21/02, 21/06*

U.S. Cl. 62—126 **20 Claims**



1. An outdoor coil defrost control system (hereinafter "defrost control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said defrost control system comprising:

outdoor air temperature sensing means (hereinafter "TODAS") having an output indicative of outdoor air temperature (hereinafter "TODA");

outdoor coil temperature sensing means (hereinafter "TODCS") having an output indicative of the temperature of said outdoor coil (hereinafter "TODC");

enclosure temperature sensing means (hereinafter "STAT")

having an output indicative of a demand for heating or cooling of the enclosure;

means (hereinafter "COM") operatively associated with said compression means and adapted to have an output indicative of the operation of said compression means; and

controller means including counting means and timing means and having operative connections to said TODA, TODC, STAT and COM so as to receive the outputs thereof, said controller being effective to place said system into an initial outdoor coil defrost mode of operation when all of the following four events have occurred:

(a) TODC is less than T_{PERMIT}, where T_{PERMIT} is a preselected value,

(b) COM output indicates operation of said compression means,

(c) COM output indicates said compression means has operated for a preselected minimum time, and

(d) TODC is less than TODA by a preselected constant;

thereafter said controller being effective to place said system into a non-defrost mode of operation when defrost terminate conditions have occurred; and thereafter said controller being effective to prevent the initiation of an outdoor coil defrost mode of operation whenever said controller has determined that said system has been placed into the defrost mode of operation more than a predetermined number of consecutive defrost intervals is less than a predetermined minimum time have occurred.

4,407,139

METHOD FOR CONTROLLING AN AIR CONDITIONING SYSTEM

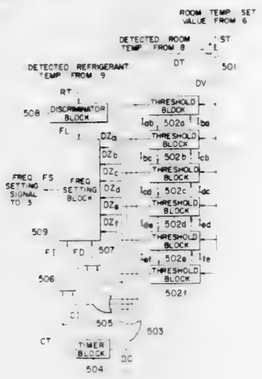
Yuuichi Ide, and Harunobu Nukushina, both of Fuji, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 7, 1981, Ser. No. 309,413

Claims priority, application Japan, Oct. 13, 1980, 55-142769

Int. Cl.³ F25B *1/00*

U.S. Cl. 62—215 **6 Claims**



1. A method for controlling an air conditioning system including a frequency-variable power source device for providing an AC electric power of a variable frequency, and a compressor driven by said AC electric power, the air conditioning power of said conditioning system being dependent on the frequency of said AC electric power, said method comprising the steps of:

detecting the temperature of the air to be conditioned,

providing a set value for the air temperature,

determining a deviation for the detected temperature with reference to the set temperature,

determining a frequency set value in accordance with said deviation, and

providing a frequency setting signal indicative of said frequency set value used to determine the frequency of said AC electric power,

said step of determining the frequency set value comprising:

defining, in advance, a plurality of temperature deviation zones, each zone being defined by upper and lower threshold values,

determining, by comparing said deviation with said upper and lower threshold values, the zone in which said deviation is in,

determining an initial frequency set value in accordance with said deviation,

changing the frequency set value when said deviation transits from one of the zones to another, and

changing the frequency set value when said deviation continues to be within one of the zones corresponding to a relatively great deviation over a predetermined length of time.

4,407,140

VACUUM APPARATUS

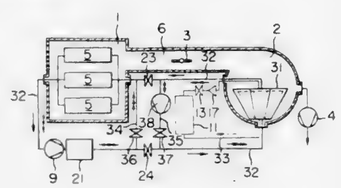
Masakazu Kobayashi, Tokyo, Japan, assignor to Kyowa Vacuum Engineering, Ltd., Tokyo, Japan

Continuation of Ser. No. 164,031, Jun. 30, 1980, Pat. No. 4,353,222. This application Jul. 29, 1982, Ser. No. 403,163

Claims priority, application Japan, Jul. 4, 1979, 54-85262; Feb. 23, 1980, 55-21871

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—268 **3 Claims**



1. A freeze drying apparatus comprising:

(a) a closed-type vacuum chamber with a first vacuum chamber and a second vacuum chamber defined therewithin, a valve being disposed between said first vacuum chamber and said second vacuum chamber, a vacuum pump being operatively connected to said second vacuum chamber;

(b) a shelf means received within said first vacuum chamber for cooling or heating objects-to-be-freeze dried carried thereon and including brine flow means;

(c) a condensing means received within said second vacuum chamber and including refrigerant flow means and brine flow means therewithin, the outer surface of said condensing means in all or in part forming a vapor condensing surface;

(d) a brine pipe line for recycling brine between said shelf means and said condensing means;

(e) a refrigerant pipe line for recycling refrigerant between said condensing means and a refrigerator installed outside of the closed-type vacuum chamber; and

(f) brine pump operatively connected to said brine pipe line for moving brine therethrough.

4,407,141

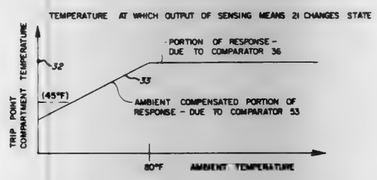
TEMPERATURE SENSING MEANS FOR REFRIGERATOR

Stephen W. Paddock, Knight Township, Vanderburg County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 4, 1982, Ser. No. 336,771

Int. Cl.³ G01K *13/00*; G05D *23/00*; G08B *17/00*

U.S. Cl. 62—130 **21 Claims**



1. In a refrigeration apparatus having a cabinet defining a refrigerated compartment and an access opening to said compartment, a door selectively closing said access opening, and means for refrigerating said compartment, the improvement comprising:

a first temperature sensor carried by said door for sensing the temperature within the refrigerated compartment;

a second temperature sensor carried by said door and arranged to be primarily responsive to the ambient temperature exteriorly of said refrigeration apparatus adjacent said door; and

over-temperature indicator circuit means for providing an ambient-compensated signal of the temperature condition within said compartment in accordance with the sensed temperature of said first and second temperature sensors jointly.

4,407,142

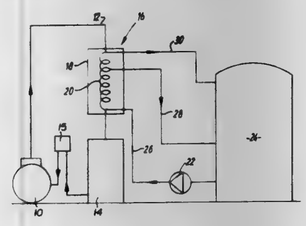
HEAT RECOVERY

Kevin G. O'Reilly, Hyde, England, assignor to Hall & Kay Engineering Limited, Hyde, England

Filed Sep. 22, 1981, Ser. No. 304,460

Int. Cl.³ F25B *27/02*

U.S. Cl. 62—238.6 **10 Claims**



1. A heat recovery system for a refrigeration plant, a heat engine, or like apparatus, such apparatus having a compressor for moving a superheated refrigerant to and through a condenser, the heat recovery system comprising:

a heat exchanger means operatively arranged between the compressor and the condenser, so that the refrigerant flows through the heat exchanger means,

two heating loads, one of the loads being at a higher temperature than the other,

means for circulating a fluid heat transfer medium between the higher temperature load and a first part of the heat exchanger means for transfering superheat from the refrigerant to the higher temperature load, and

additional means for circulating a fluid heat transfer medium between the lower temperature load and a second part of the heat exchanger means for transferring latent heat from the refrigerant to the lower temperature load.

4,407,143

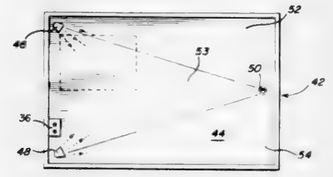
FROSTED CONDIMENT HOLDER

John J. Wolfe, P.O. Box 497, Savannah, Tenn. 38372

Filed Apr. 22, 1981, Ser. No. 256,593

Int. Cl.³ F28G *9/00*

U.S. Cl. 62—303 **9 Claims**



1. A condiment holder comprising a top plate containing at least one opening therein, a condiment container inserted into said opening, a refrigerant path placed adjacent said top plate and in heat exchange communication therewith so as to cool said top plate and form a layer of frost thereon, means positioned below said top plate and forming an enclosure for the space below the plate whereby the refrigerant path cools the enclosed space and the portion of the container therein, means for collecting condensate from said frost layer formed on said top plate, said collecting means including a fluid discharge means for directing fluid on said collecting means to clean said collecting means from contaminants formed thereon, said collecting means including a drain means to remove said condensate and discharged fluid from said condiment holder.

4,407,144

STORAGE CHAMBER WITH EXPENDABLE REFRIGERATION SYSTEM

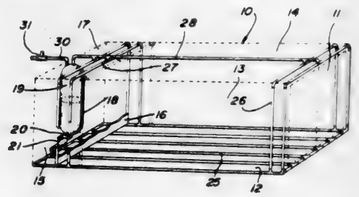
David Garside, Quebec, Canada, assignor to Concool International Ltd., Georgetown, Cayman Islands

Filed Nov. 25, 1981, Ser. No. 324,987

Claims priority, application United Kingdom, Nov. 28, 1980, 8038314

Int. Cl.³ F25D *3/12*

U.S. Cl. 62—384 **14 Claims**



1. In a refrigerated storage container including: an insulated storage chamber having four walls, at least one of which has at least one access door therein, a floor and a roof; a pressurized liquid carbon dioxide reservoir in a direct heat exchange relationship with the interior of the chamber, the reservoir including an upper gaseous space and a vent from the gaseous space having a pressure relief valve therein adapted to maintain a substantially constant pressure in the reservoir such that the temperature of the liquid carbon dioxide in the reservoir is controlled;

the improvement wherein the liquid carbon dioxide reservoir comprises a network of linked liquid containing units

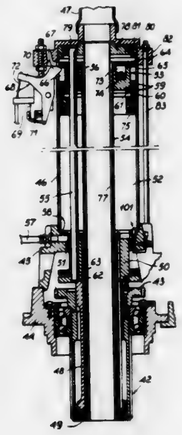
including horizontal units in the floor of the chamber being filled with liquid carbon dioxide and connected to at least one vertical riser unit in at least one wall of the chamber, the vertical riser unit being at least partially filled with liquid carbon dioxide and being connected to vent heat generated carbon dioxide gases via the pressure relief valve.

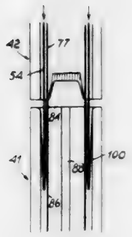
4,407,145

KNITWORK DRAWING DEVICE IN A DOUBLE CYLINDER CIRCULAR KNITTING MACHINE

Francesco Lonati, Brescia, Italy, assignor to Lonati S.p.A., Brescia, Italy

Filed Jul. 10, 1978, Ser. No. 923,416
Claims priority, application Italy, Jul. 14, 1977, 25773 A/77; Mar. 24, 1978, 21614 A/78
Int. Cl.³ D04B *9/10, 15/88, 15/92*
U.S. Cl. 66—14 **6 Claims**





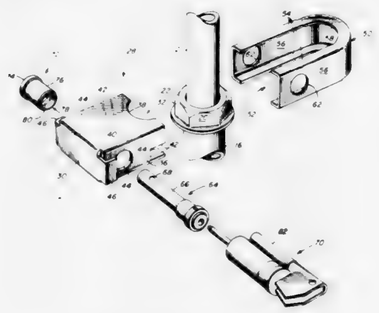
1. In a circular knitting machine having an upper and a lower needle cylinder defining a stitch-formation area therebetween, and needles in said upper and lower needle cylinder, a knitwork drawing device comprising a cylindrical chamber coaxial with said upper and lower needle cylinder, a fluid-operated piston slidable within said cylindrical chamber, a hollow rod secured to said piston and extending at least partially within one of said needle cylinders, said rod having open ends, knitwork retaining means arranged at said stitch-formation area, said knitwork retaining means having a cross dimension smaller than said hollow piston rod and being rotatable with the knitwork, means for delivering pressure fluid into said cylindrical chamber to operate said piston and for discharging pressure fluid therefrom, wherein said knitwork retaining means comprise a tubular member arranged inside said hollow rod and spaced therefrom and a locking member coaxial with said hollow rod and said tubular member, one of said members being axially movable with respect to the other to lock the knitwork therebetween, and wherein said hollow rod is movable past said stitch-formation area to engage and tension the knitwork which is being knitted by said needles and locked by said locking member and said tubular member, and further comprising a fixed tube coaxial with said upper and lower needle cylinder and defining said cylindrical chamber, a suction duct communicating with the interior of said tubular member at a position away from said stitch-formation area, at least one guide rod for said piston arranged within said tube and extending through said piston at an offcentered position, said guide rod being rotatable with said needle cylinders.

4,407,146

GAS METER LOCK ASSEMBLY

Anker J. Nielsen, Jr., Holden, Mass., assignor to Omco, Inc., Holden, Mass.

Continuation of Ser. No. 98,553, Nov. 29, 1979, abandoned. This application Aug. 4, 1981, Ser. No. 290,079
Int. Cl.³ F16B *41/00;* **F16L** *55/00*
U.S. Cl. 70—232 **10 Claims**



7. In a reusable lock assembly adapted to prevent unauthorized disconnection of a gas line where the gas line is threadably connected to a gas meter, the gas line being conventionally connected by an internally threaded connection nut revolvably retained on the gas line, the connection nut being threadably engaged to an externally threaded gas meter inlet pipe, the lock assembly further including (a) a hollow male shroud having surfaces forming an open end and a closed end, the open end surfaces shaped to fit around and enclose approximately one-half of the internally threaded connection nut, the male shroud having two aligned transverse bolt lock holes formed therein adjacent to and substantially parallel to the closed end, (b) a hollow female shroud having surfaces forming an open end and a closed end, the open end surfaces shaped to fit around and enclose approximatey one-half of the internally threaded connection nut, the female shroud having two aligned transverse bolt lock holes formed therein adjacent to and substantially parallel to the open end, the female shroud being sized and shaped to telescopically assembled over the male shroud and to be non-destructibly disassembled from said male shroud, the connection nut being substantially entirely enclosed by the assembled male and female shrouds, the four bolt lock holes being aligned when the shrouds are telescopically assembled, (c) an end cap positioned in an adjacent pair of the bolt lock holes, the end cap opening within the telescoped shrouds and having an internal annular locking ball retaining groove, and (d) a bolt type lock positioned in the other adjacent pair of the bolt lock holes, the bolt type lock having locking balls which are adapted to be extended into the end cap retaining groove to become locked therein, the improvement therein comprising:

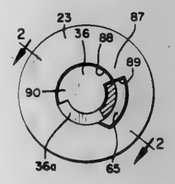
the male shroud having a pair of ears extending from the extreme edges of its closed end, said ears extending out and away from each other and then back towards the bolt lock holes, said ears having leading edges, one of which is disposed closely adjacent to the bolt type lock, and the other one of which is disposed closely adjacent to the end cap, said female shroud and said male shroud being telescopically assembled in locked engagement when said bolt type lock and end cap are received in said bolt lock holes and said bolt type lock is locked to said end cap, said female shroud and said male shroud being non-destructibly separable from one another when said bolt type lock and said end cap are unlocked from each other and are withdrawn from said bolt lock holes.

4,407,147

PERIPHERAL KEY TUMBLER LOCK

Wayne F. Larson, Salem, Oreg., assignor to Supra Products, Inc., Salem, Oreg.

Filed Dec. 22, 1980, Ser. No. 218,720
Int. Cl.³ E05B *29/02*
U.S. Cl. 70—365 **14 Claims**



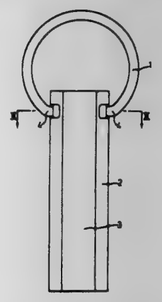
1. A lock comprising:
a stationary cylinder,
plural first rotary discs in said cylinder having their peripheries immediately adjacent the interior surface of said cylinder,
plural second rotary discs in said cylinder for actuating a locking member and having their peripheries immediately adjacent the interior surface of said cylinder,
a latching means latching said second discs, but not said first discs, against movement,
said first discs normally retaining said latching means in latching condition, but operable when moved to predetermined positions to enable said latching means to unlatch.

4,407,148

KEY HOLDER

Jean P. Rousseau, 98 Rue de Miromesnil, 75008 Paris, France

Filed Mar. 19, 1981, Ser. No. 245,416
Claims priority, application France, Jun. 27, 1980, 80 14464
Int. Cl.³ A44B *13/00, 15/00;* **A47G** *29/10*
U.S. Cl. 70—456 R **7 Claims**



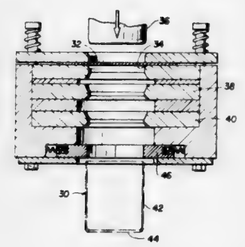
1. A key holder which comprises a rigid gapped ring having a gap which is defined between two mutually facing tips, a thin-walled metal sheath provided near one end with two transverse apertures of asymmetric form which permits the transverse introduction of the tips into the apertures from one side only of the sheath so that the sheath then bridges the gap, and a slide which is longitudinally slidable in the sheath and comprises two locking ribs, the slide being slidable in the sheath between an opening position, in which the ribs are clear of the apertures to permit the tips to be introduced into and removed from the apertures to allow keys to be fitted on to and removed from the ring, and a closing position in which the ribs are situated at the side of the apertures through which the tips are introduced and removed and partially mask the apertures to prevent the tips from being removed from the apertures so that the ring is closed by the sheath and any keys fitted to the ring are kept on the ring.

4,407,149

PROCESS FOR FORMING A DRAWN AND IRONED CONTAINER

John R. Smith, Richmond, Ohio; William D. Bingle, Rochester, Pa., and Lowell W. Austin, Weirton, W. Va., assignors to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 233,569, Feb. 11, 1981, Pat. No. 4,374,902. This application Sep. 30, 1982, Ser. No. 430,959
Int. Cl.³ B21D *22/28*
U.S. Cl. 72—47 **8 Claims**



1. A process for forming a drawn and ironed container from flat sheet steel comprising,
electroplating a nickel-zinc alloy coating of substantially uniform thickness to both sides of a sheet or strip of flat rolled steel of a gauge suitable for drawing and ironing, wherein the thickness of the nickel-zinc alloy coating on both sides of the base metal is within the range of about 0.5 to about 5.0 microinches, said coating containing zinc in the amount of about 2 to 12 percent by weight with the remainder being nickel and impurities,
drawing the nickel-zinc coated steel into a cup having sidewall and bottom wall thicknesses substantially equal to the thickness of the coated steel, and
ironing the sidewalls of the drawn cup to reduce the sidewall thickness and increase the height to produce a drawn and ironed can body.

4,407,150

APPARATUS FOR SUPPLYING AND CONTROLLING HYDRAULIC SWAGING PRESSURE

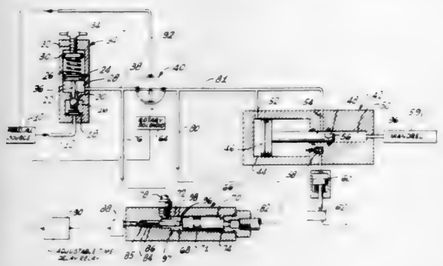
John W. Kelly, Burbank, Calif., assignor to Haskel Engineering & Supply Company, Burbank, Calif.

Filed Jun. 8, 1981, Ser. No. 271,373
Int. Cl.³ B21D *22/10*
U.S. Cl. 72—61 **21 Claims**

1. In an apparatus for forming leak-proof joints between tubes and a tube sheet by the internal application of hydraulic swaging pressure through a mandrel inserted within said tubes, a mechanism for supplying and controlling the swaging pressure comprising:
pressure source means for pressuring a fluid;

pressure reduction valve means arranged to receive pressurized fluid from said pressure source means for reducing the pressure of said fluid to a selected level;

control valve means connected to said reduction valve means for selectively permitting or interrupting the flow of said fluid from said reduction valve means to said mandrel;



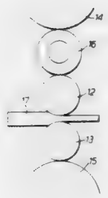
pressurization sensor means connected to the input and output sides of said control valve means and responsive to the pressures of said input and output sides for generating a control signal when a predetermined comparative relationship exists between said pressures; and

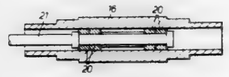
actuator means for causing said control valve means to interrupt said flow in response to said control signal.

4,407,151
ROLLING MILL

Robert W. Gronbech, Sheffield, England, assignor to Davey-Loewy Limited, Yorkshire, England

Filed Jul. 13, 1981, Ser. No. 282,717
Claims priority, application United Kingdom, Jul. 17, 1980, 8023335; Sep. 23, 1980, 8030666
Int. Cl.³ B21B *29/00*
U.S. Cl. 72—241 **7 Claims**





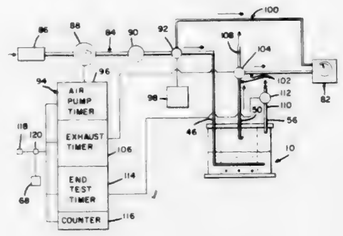
1. In a rolling mill for rolling elongate material, which mill has at least four rolls including two work rolls and a back-up roll for each said work roll, and in which one of said rolls of said mill has axially adjustable stiffness,

the improvement in which said one roll is hollow with an axial bore therein, and in which said bore contains a plurality of support discs, each of which is a close fit within said bore and each of which is axially adjustable within said bore.

4,407,152
BREATH TEST SIMULATOR AND METHOD

Richard U. Guth, 439 N. 46th St., Harrisburg, Pa. 17111

Filed Oct. 19, 1981, Ser. No. 312,766
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—1 G **31 Claims**



1. A breath test simulator including a first closed chamber, a second closed chamber surrounded by the first chamber with a common wall between the chambers, a series of diffusion holes extending through the wall to communicate the chambers and extending around the common wall at a level, a bubble generator in the first chamber surrounding the common wall at a level below the level of the diffusion holes, an outlet pipe opening into the top of the second chamber, a liquid temperature sensor in the second chamber, at least one liquid heater in each chamber, said sensor and heaters being located below the level of the diffusion holes, a temperature control for supplying energy to the heaters when the temperature sensed by the sensor is below a set point temperature, and means for moving liquid in the chambers to reduce temperature anomalies, whereby upon filling of the chambers with an ethyl alcohol solution to a level normally above the level of the dispersion holes, gas flowed through the bubble generator bubbles up through the liquid in the first chamber, collects in the top of the first chamber to eject liquid from the first chamber into the second chamber and increase the bubble column of liquid in a second chamber above the level of dispersion holes and to eject head space gases from the second chamber, sputters through the dispersion holes into the second chamber and bubbles up through the bubble column in the second chamber, so as to be brought into equilibrium with the liquid in the second chamber and assure the formation of an equilibrium concentration of ethyl alcohol vapor within the gas, and is flowed from the simulator through the outlet pipe.

21. In a simulator having two closed chambers and liquid in the chambers, the method of generating an effluent having a vapor in equilibrium with the liquid comprising the steps of:

A. Controlling the temperature of the liquid in the chambers;

B. Bubbling gas up through the liquid in a first chamber;

C. Sputtering such gas from the first chamber through dispersion holes and into the liquid in the second chamber;

D. Bubbling the gas in such second chamber up through the liquid in such chamber;

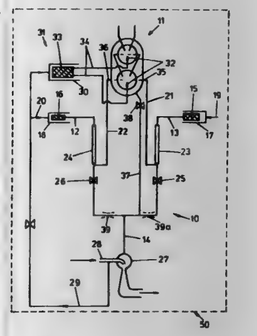
E. Collecting the gas at the top of such second chamber; and

F. During said bubbling and sputtering steps forming a vapor in such gas to bring such gas at the top of the second chamber in eqilibrium with the liquid in the second chamber.

4,407,153
FLUERIC PARTIAL PRESSURE SENSORS

Owen D. Furlong, East Coker, and Leonard Moore, Somerton, both of England, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Mar. 13, 1981, Ser. No. 243,499
Claims priority, application United Kingdom, Mar. 17, 1980, 8008917
Int. Cl.³ G01N *7/00*
U.S. Cl. 73—23 **7 Claims**

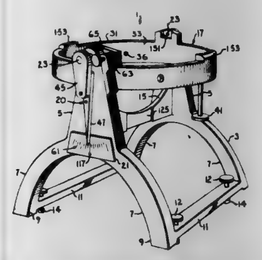


1. A flueric partial pressure sensor including a flueric bridge having two legs, one of said legs sensing a reference gas and the other of said legs sensing a sample gas, means in said legs to provide an asymmetric flow rate through said legs to provide a constant pressure output signal for a predetermined constant partial pressure value of one of the gases in the sample gas mixture at varying absolute pressure.

4,407,154
BOWLING BALL WEIGHING AND BALANCING DEVICE

Charles A. Hardman, 3326 W. 8th St., and Orville M. Burns, Jr., R.R. 4, both of Lawrence, Kans. 66044

Filed Sep. 14, 1981, Ser. No. 301,478
Int. Cl.³ G01M *1/04, 1/12*
U.S. Cl. 73—66 **11 Claims**



1. A method for determining a degree of weight imbalance of a spherical object between each of three sets of hemispheres of the object which are those heimspheres which are opposed to each of three orthogonal planes which intersect at a geometric center of the object, the method comprising the steps of:

(a) positioning the object into a cradle which is freely and pivotally held between two opposed standards for free rotation over a continuous range of positions about an axis of rotation therebetween with a first rotated position being that position where a center of gravity of said cradle lies in a vertical plane which includes the axis of rotation thereof, said cradle having an indicator thereon which registers with a field positioned on said standard to determine the degree of rotation of said cradle relative to said standard;

(b) rotating the object within said cradle such that said vertical plane is coincident with one of said orthogonal planes when said cradle is in said first position thereof; said one of said orthogonal planes becoming a comparison plane;

(c) allowing said cradle to freely rotate relative to said stand;

(d) measuring the degree of rotation of said cradle relative to said stand;

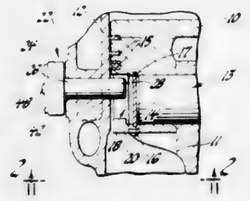
(e) comparing the measured degree of rotation with a predetermined schedule to ascertain the weight imbalance between the two halves opposed to the comparison plane; and

(f) repeating steps (b) through (e) for each of the other two orthogonal planes.

4,407,155
ENGINE OPERATION RELATED EVENT TIMING SYSTEM

Arthur R. Sundeen, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1981, Ser. No. 312,004
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—116 **8 Claims**



1. In an internal combustion engine, apparatus for timing the occurrence of an engine operation related event in respect to the top or bottom dead center position of the piston, comprising:

means for defining a pair of time intervals extending between the occurrence of the engine operation related event and the passage of the piston through a reference position before the event as the piston moves toward the dead center position and after the event as the piston moves away from the dead center position, respectively; and

means for utilizing the difference in duration between the pair of time intervals as an indication of the time relationship between the occurrence of the engine operation related event and the arrival of the piston at the dead center position, the sense of the difference indicating whether the event occurred before or after the arrival of the piston at the dead center position and the magnitude of the difference indicating the time difference between the occurrence of the event and the arrival of the piston at the dead center position.

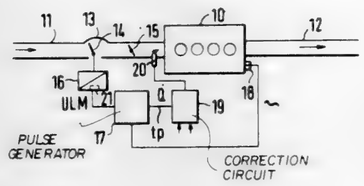
4,407,156
AIR FLOW RATE MEASURING DEVICE IN AN INTERNAL COMBUSTION ENGINE

Michael Horbelt, Schwieberdingen; Herbert Arnold, Eberdingen, and Lothar Winkelmann, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 3, 1981, Ser. No. 270,271
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021117
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **4 Claims**

1. An air flow rate measuring device for an internal combus-

tion engine having an air intake tube, said air intake tube provided with a baffle valve, said baffle valve connected to a signal generating circuit, a damping means associated with said



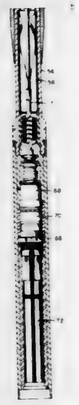
signal generating circuit comprising at least one series circuit provided with a resistor, a capacitor and a junction point therebetween, and said junction point being coupled via a diode having a reference potential.

4,407,157

APPARATUS FOR MEASURING THE DIAMETER OF A BOREHOLE

Heinz D. Lichtenberg, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 5, 1981, Ser. No. 290,134
Int. Cl.³ E21B *49/00*
U.S. Cl. 73—151 **9 Claims**



1. A borehole caliper apparatus comprising:
an elongated body member adapted to traverse said borehole;
and electric coil assembly including first and second electric coils mounted within a section of said body member for simultaneously emitting an alternating magnetic flux field around each of said coils of said coil assembly;
a first collar member fixedly attached to said body member;
a second collar member longitudinally slidably mounted about said body member, said second collar member being constructed of highly conductive material and slidable within the magnetic flux field of one of said first and second electric coils;
a plurality of borehole-engaging members bridgingly supported between said frist and second collar members; and
circuit means for generating an electrical signal functionally related to the eddy current loading on said one coil in response to the movement of said second collar member within said magnetic flux field of said one coil, said signal being representative of the diameter of said borehole.

4,407,158

FLOW ANALYZER

Peter D. Petroff, Condominium Park Blvd., 2305 Laurel St., Santurce, P.R. 00913

Division of Ser. No. 264,644, May 18, 1981, Pat. No. 4,344,329, which is a division of Ser. No. 104,540, Dec. 17, 1979, Pat. No. 4,295,197, which is a division of Ser. No. 905,196, May 12, 1978, Pat. No. 4,211,111, which is a division of Ser. No. 811,557, Jun. 30, 1977, Pat. No. 4,116,061, which is a division of Ser. No. 602,974, Aug. 8, 1975, Pat. No. 4,070,563. This application Aug. 13, 1982, Ser. No. 407,996
The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.
Int. Cl.³ G01F *1/52*
U.S. Cl. 73—196 **6 Claims**



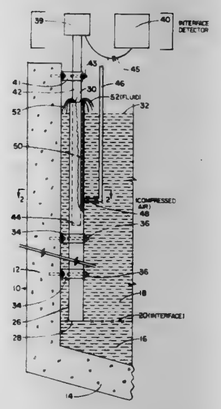
1. The method of identification of, and measurement of magnitude and location of, inflow and infiltration into a first sewer pipeline having an entrance end connected to, and receiving flow from, a first manhole, and said first sewer pipeline having an exit end connected to a second manhole, and wherein there is a second sewer pipeline having an exit pipe supplying flow to said first manhole comprising:
(A) placing liquid height measurement transducers into the exit end regions of sad first and second pipelines;
(B) responsive to a said transducer in the end region of a said second pipeline, making a series of spaced-in-time, time identifiable measurements of the magnitude of flow out of said second pipeline into said first manhole for a series of discrete times during an average dry, no rainfall, period of a day;
(C) responsive to a said transducer in the end region of said second pipeline, making a like time related series of flow measurements out of said second pipeline for a like period of a day during which rainfall occurs, including measurements from the time that a rainfall commences, and extending for a period beyond the end of the rainfall;
(D) responsive to a said transducer in the end region of said first pipeline, making a like timed and time identifiable series of magnitude of flow measurements out of said first pipeline into said second manhole for an average dry day;
(E) responsive to a said transducer in the end region of said first pipeline, making a like timed and time identifiable series of magnitude of flow measurements out of said first pipeline into said second manhole for the period of measurement defined in paragraph (C);
(F) combining the values of like timed flow measurements obtained as per paragraphs (B), (C), (D) and (E), wherein combined wet day flow measurement values bear opposite signs, combined dry day flow measurement values bear opposite signs, and the signs of wet and dry day measurements for one of said pipelines are of opposite signs, whereby a combination value for a rain period measurement is representative of "inflow" into said first sewer pipeline, and a combination value for a period following a rainfall is representative of "infiltration" into said first pipeline; and
(G) said liquid height transducer being positioned within the exit end region of each said pipeline at a point from the exit end of that pipeline equal to at least 0.8 times the interior diameter of a said pipeline, and the region between the point of measurement and exit end of the pipeline in which said height is being measured is unobstructed by a weir, and wherein each said liquid height measurement transducer comprises a pressure transducer providing a signal output proportional to liquid height, and it is placed adjacent to the bottom of said exit end region of a said pipeline.

4,407,159

APPARATUS AND METHOD FOR DETECTING AN INTERFACE FROM A REMOTE LOCATION

Casimir S. Wytaniec, 3511 N. Lavergne, Chicago, Ill. 60641

Filed Jan. 19, 1981, Ser. No. 226,035
Int. Cl.³ G01F *23/22*; G05D *9/00*
U.S. Cl. 73—290 R **29 Claims**



1. A method for using a conventional interface detecting instrument having a detector portion with a tube having upper and lower openings to detect an interface between two fluids remote from the interface, comprising the steps of:
(a) locating the tube in the fluids,
(b) positioning one of the openings in the tube substantially at the interface,
(c) locating the detector portion in the tube between the upper and lower ends and remote from the interface, and
(d) introducing a drive fluid into the tube to cause at least one of the fluids to be drawn in from the opening substantially at the interface and flow from the interface, past the detector portion and out of the other opening of the tube,
whereby the detector portion may make a reading of the fluid flowing past it, and the flow of fluid caused by the introduction of the drive fluid keeps the detector portion free of contaminants.

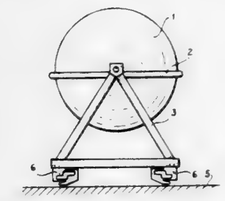
4,407,160

DEVICE FOR DETERMINING THE QUANTITY OF THE CONTENTS OF A TANK MOUNTED IN A FRAME WHICH RESTS ON A BASE WITH FOUR POINTS OF SUPPORT DISPOSED IN THE CORNERS OF A RECTANGLE

Reindert van de Velde, Breugel, Netherlands, assignor to Bavaria B.V., Lieshout, Netherlands

Filed Apr. 3, 1981, Ser. No. 250,668
Claims priority, application Netherlands, Apr. 3, 1980, 8001996
Int. Cl.³ G01F *23/20*; G01L *1/22*
U.S. Cl. 73—296 **3 Claims**

1. Device for determining the quantity of the contents of a tank mounted in a frame which rests on a base with four points of support disposed in the corner points of a rectangle, characterized in that two adjacent points of support of the tank frame are constituted by force measuring elements, each consisting of a generally block-shaped body of metal, in which an opening is cut out such that at the lower and upper side of the body two relatively thin elongated and substantially horizontally extending material portions are formed which are connected to each other at both ends by thicker material portions disposed at the vertical sides of the body, whereas at the lower side of the body a foot is formed which protrudes from one vertical side towards the vertical axis of the body, and with which the body rests on the base, and the supporting frame of the tank is affixed on the upper side of the body near its other vertical side and two strain gauges aligned in spaced apart relation with each other in the direction to the vertical axis of the body are adheared to one of the thin horizontal material portions so that by the deformation of said material portion as a result of the weight of the tank the one strain gauge is under strain of tension and the other under strain of longitudinal compression, the pairs of strain gauges of the two force measuring elements being connected in a resistor bridge to which a read out member is coupled by means to obtain a zero deflection and an end scale calibration of the read out member.

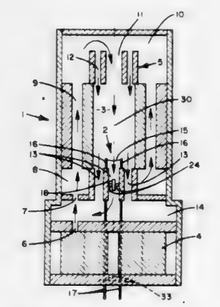


4,407,161

FLUID JET DISPLACEMENT DETECTOR

Carl M. Ferrar, East Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 11, 1982, Ser. No. 347,764
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—505 **16 Claims**



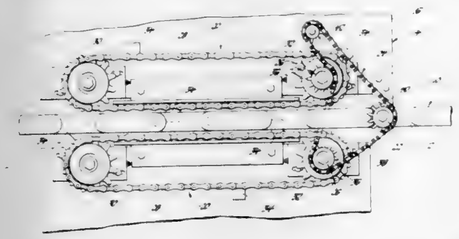
1. An angular rate sensor comprising:
a housing;
means for forming a fluid jet having a flow path within the housing and having a substantially spatially symmetric fluid velocity profile;
a temperature sensitive element positioned in the housing in the path of the jet;
means for heating the temperature sensitive element to an operating temperature;
means for oscillating the temperature sensitive element through the path of the fluid jet in a plane generally perpendicular to the path of the jet; and
means for generating signals corresponding to temperature variations of the temperature sensitive element as the element traverses the flow path of the fluid jet.

4,407,162

CHAIN MOTION MEASURING DEVICE

Ulric Landenberger, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 15, 1982, Ser. No. 358,345
Int. Cl.³ G01P *3/00*
U.S. Cl. 73—527 **3 Claims**



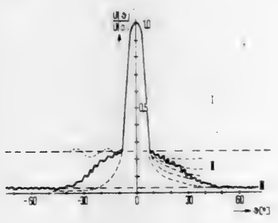
1. A chain motion measuring device for precisely measuring the actual speed and travel of a chain formed of interconnected links, said device comprising a pair of closed-loop primary drive means adapted to be engaged in staggered fashion and driven by the chain links whereby one of said primary drive means is always continuously fully engaged and driven by the chain without hesitation or jumping due to chain link pitch variation, measuring means for measuring speed and travel, closed-loop secondary drive means for uninterruptedly driving said measuring means, and separate overrunning drive means for separately drivingly connecting each of said primary drive means to said secondary drive means so that continuous drive is maintained from one of said primary drive means to said secondary drive means and thereby from the chain to said measuring means by operation of the overrunning drive means associated with said one primary drive means overrunning the other overrunning drive means when the other primary drive means becomes momentarily disengaged from the chain links because of chain link pitch variation whereby said measuring means is caused to give a true reading of actual chain speed and travel at all times regardless of chain link pitch variations.

4,407,163

METHOD FOR PROCESSING ULTRASONIC ECHO SIGNALS OF BOTH DIRECTIONALLY REFLECTING AS WELL AS NON-DIRECTIONALLY SCATTERING OBJECTS, PARTICULARLY FOR ULTRASONIC IMAGE PROCESSING IN THE FIELD OF SUBSTANCE OR TISSUE INVESTIGATION

Eckart Hundt, Haar, and Elmar Trautenberg, Fuerth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 15, 1981, Ser. No. 264,130
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019436
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—607 **17 Claims**



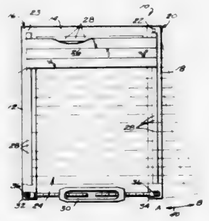
1. A method for processing ultrasonic echo signals of directionally reflecting as well as non-directionally scattering objects, particularly for ultrasonic image processing in the field of substance and tissue examination, said method comprising: combining ultrasonic echo signals from various scanning directions, and being characterized by the steps of evaluating the signals proceeding from directional reflection and from non-directional scattering of ultrasonic scanning pulses to produce respective preliminary images in accordance therewith, and producing a resultant image by coupling of the respective preliminary images, the evaluating step being characterized in that the maximum of the signal intensity is sought for each object point from the partial images gained from various scanning directions; in that, in that case in which a significant maximum is found for an object point, the image point representing said object point is further processed for producing a preliminary image as a signal generated by an echo signal of a reflecting object surface; and in that all remaining echo signals are processed for producing a preliminary image as signals generated by non-directionally scattering object areas.

4,407,164

IMPART MACHINE FOR DETERMINING HEAT SETTING CONDITIONS

Forbes Imlah, Clarksville, Va., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Jul. 1, 1982, Ser. No. 394,438
Int. Cl.³ G01N *3/08, 33/36*
U.S. Cl. 73—831 **14 Claims**



1. A device adaptable for assisting in the prediction of the effects that selected treatments will have upon textile fabric comprising:

a frame defining an interior area;

means for securing a textile fabric to said frame across said interior area; and

impart means for angularly displacing at least a portion of said frame thereby varying the dimensional characteristic of said interior area.

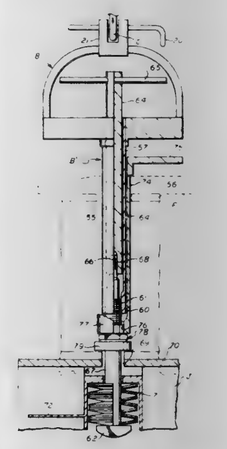
4,407,165

APPARATUS FOR ACCURATELY PRELOADING AUGER ATTACHMENT MEANS FOR FRANGIBLE PROTECTIVE MATERIAL

Alan M. Lovelace, Washington, D.C., and Kenneth E. Wood, Long Beach, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1981, Ser. No. 248,746
Int. Cl.³ G01L *5/00*
U.S. Cl. 73—862.54 **7 Claims**

1. Means for resiliently attaching, under accurate, predetermined preload, a first, surface-protecting part and a second part to be protected thereby comprising spring means attached to said first part, a screw extending from said spring means through said second part, a nut on said screw, and a preloading tool having a plurality of telescoped elements, a first of said telescoped elements having means engaging said screw to resist turning thereof, a second of said telescoped elements having means applying a measured preload force to said screw and said spring means, and a third of said telescope elements having means for screwing said nut against said second part to retain said preload force.

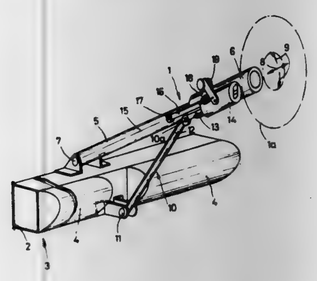


4,407,166

LONGITUDINALLY AND ANGULARLY ADJUSTABLE STEERING COLUMN

Dieter Protze, Wolfsburg, and Udo Voigt, Cremlingen, both of Fed. Rep. of Germany, assignors to Volkswagenwerk AG, Wolfsburg, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,739
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016212
Int. Cl.³ B62D *1/18;* G05G *5/22*
U.S. Cl. 74—493 **4 Claims**



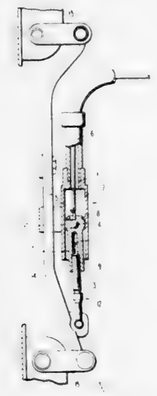
1. In a longitudinally and angularly adjustable vehicle steering column having an axis and including first and second steering column parts telescopically and relatively non-rotatably coupled to one another; said first steering column part being secured to a vehicle frame for swinging motion about a horizontally oriented axis; a steering wheel relatively non-rotatably mounted on said second steering column part; a steering column-supporting strut having first and second strut parts movable relative to one another; said first strut part being in engagement with said steering column and said second strut part being secured to said vehicle frame for swinging motion about a horizontally oriented axis; and tightening means for immobilizing said steering column in a set longitudinal and angular position thereof; the improvement wherein said first and second strut parts are bar-like components articulated to one another; said first strut part extending parallel to said axis of said steering column; a locking bar mounted on only one of the two said steering column parts and extending substantially parallel to said axis, said tightening means comprising a clamping sleeve mounted on the other of the two steering column parts; said first strut part and said locking bar projecting into said clamping sleeve and being slidable relative thereto in a released state of said tightening means; said tightening means further comprising means cooperating with said clamping sleeve for simultaneously immobilizing said locking bar and said first strut part in said clamping sleeve.

4,407,167

SLIDING GUIDE MECHANISM

Heinz Koukal, Sindelfingen, and Hermann Grimm, Ostelsheim, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,732
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936817
Int. Cl.³ F16C *1/14, 1/22*
U.S. Cl. 74—501 R **8 Claims**



1. A sliding guide mechanism which includes a flexible cable means for transmitting tensile and compressive forces, a sliding member having at least one end zone which is slidingly movably guided in a fixed guide sleeve, characterized in that at least the end zone of the sliding member has an approximately spherical shape, a bore means is provided in the end zone of the sliding member for enabling a suspension mounting of an end of the flexible cable means, and in that an axially extending bore means is provided in a remaining zone of the sliding member for enabling a coupling of the sliding member to an adjusting element for adjusting the slide guide means.

4,407,168

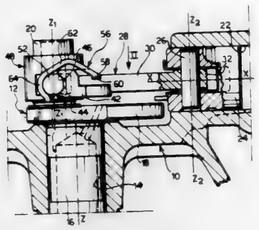
CRANK MECHANISM FOR SMALL, SINGLE-CYLINDER, RECIPROCATING ENGINES, PARTICULARLY REFRIGERATOR COMPRESSORS

Norbert Andrione, and Federigo Peruzzi, both of Turin, Italy, assignors to Aspera S.p.A., Castelnuovo Don Bosco, Italy

Filed Jun. 10, 1981, Ser. No. 272,237
Claims priority, application Italy, Jun. 20, 1980, 67969 A/80
Int. Cl.³ G05G *1/00*
U.S. Cl. 74—579 E **3 Claims**

1. In crank mechanism for small, single-cylinder, reciprocating machines in which the crankshaft has a projecting crank pin coupled to an eye at the big-end of a connecting rod, an eye at the little end of the latter being coupled to a gudgeon pin connected to a piston, and in which the eye at the little-end is slidable axially of the gudgeon pin and is kept centred relative to the piston by resilient means, the improvement wherein the eye at the big-end of the connecting rod is defined by a bush

which is rotatably coupled to the crank pin and has a pair of diametrically-opposing pins, and wherein the end of the connecting rod associated with the big-end is fork-shaped, and the



arms of the fork are each articulated to one of the pins about a pivot axis perpendicular to both the axis of the crank pin and the longitudinal axis of the connecting rod.

4,407,169

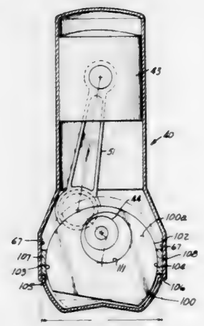
COUNTERWEIGHT SYSTEM FOR POSITIVE DISPLACEMENT PISTON TYPE DEVICE

Balan R. Menen, 529 N. Hart, Orange, Calif. 91101

Continuation of Ser. No. 98,702, Nov. 29, 1979, abandoned. This application Mar. 2, 1982, Ser. No. 354,068

Int. Cl.³ F16F *15/26*

U.S. Cl. 74—604 **9 Claims**



1. A counterweight system for a positive displacement piston type device, said device including a cylinder having an axis, a piston slidably mounted in said cylinder for axial reciprocation therein along said cylinder axis, a crankshaft having an axis of rotation normal to said cylinder axis, a crankthrow laterally spaced from said axis of rotation, and a connecting rod joined by bearings to said piston and crankthrow, said counterweight system comprising:

a slideway having a slideway axis normal to said crankshaft axis and parallel to said cylinder axis;

an eccentric journal on said crankshaft offset from said crankshaft axis so as to orbit around said crankshaft axis when the crankshaft is turned, said eccentric journal having a journal axis parallel to and spaced from the crankshaft axis;

a counterweight slidably mounted in said slideway for axial reciprocation therein along a path parallel to said cylinder axis;

bearing means on said counterweight having an established center of rotation relative to said counterweight, said bearing means being fully engaged to said eccentric journal whereby said journal rotates around said center of rotation of said bearing means;

said counterweight being free for wagging oscillatory arcuate motion laterally relative to said slideway axis in a plane normal to said journal axis, said counterweight having a center of gravity which is also the center of rotation of its wagging motion, said center of gravity being offset from said crankshaft axis, and from said center of rotation of said bearing means,

whereby reciprocation of said piston turns said crankshaft, which in turn causes said eccentric journal to orbit and cause said bearing means also to orbit, said slideway constraining translational movement of said counterweight to that which is parallel to said slideway axis, said center of gravity moving along a straight line parallel to said cylinder axis.

4,407,170

SPEED CHANGE DEVICE

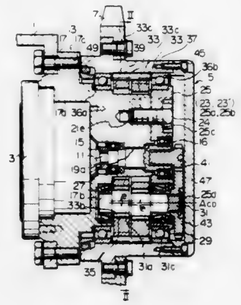
Kiyozumi Fukui, Gifu, Japan, assignor to Teijin Seiki Company, Limited, Osaka, Japan

Continuation of Ser. No. 116,750, Jan. 30, 1980, Pat. No. 4,348,918. This application May 20, 1982, Ser. No. 380,342

Claims priority, application Japan, Feb. 21, 1979, 54-19394; Aug. 31, 1979, 54-110236

Int. Cl.³ F16H *1/28*

U.S. Cl. 74—805 **9 Claims**



1. A speed change device which comprises:

an input shaft;

a plurality of rotatably mounted crankpins which are coupled to said input shaft so that the rotary movement of said input shaft is transmitted into a rotational movement of said crankpins;

an eccentrically revolving pinion which has a plurality of pin holes formed therein, and which are circumferentially spaced from each other, and outer gear teeth formed on a periphery thereof;

said crankpins being inserted into said pin holes so that the eccentric revolutional movement of said pinion is generated by means of said rotational movement of said crankpins; and

a hub surrounding said outer gear teeth of said pinion and having inner gear teeth which mesh with said outer gear teeth, said speed change gear being characterized in that:

said pinion having a plurality of through holes, each through hole being formed in a space between adjacent pin holes thereof;

a support block arranged to permit a relative rotation to occur between said hub and said support block, having a plurality of column portions formed thereon and loosely inserted into said through holes of said pinion, and wherein the opposite ends of said block rotatably support said crankpins;

said through holes in said pinion and said column portion of the said support block including a first portion extending circumferentially and a second portion extending radially and inwardly from said first portion; and

at least one bearing which is mounted between said support block and said hub so that the relative rotational movement of said support block and said hub is permitted.

4,407,171

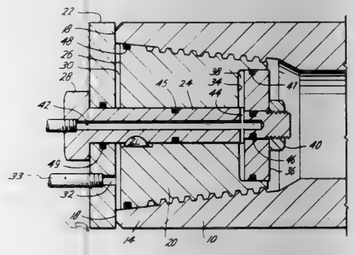
APPARATUS AND METHOD FOR HYDROSTATICALLY TESTING SEALING FACE SURFACES OF TUBULAR JOINTS

Malvern M. Hasha, 11002 Twain Dr., Montgomery, Tex. 77356, and Brian B. Hasha, 17211 Ash Butte, Houston, Tex. 77090

Filed Jul. 10, 1981, Ser. No. 282,088

Int. Cl.³ G01M *3/08*

U.S. Cl. 73—46 **40 Claims**



1. An apparatus for testing a sealing face surface of a pipe comprising

means for engaging a test pad against said sealing face surface of said pipe; and

means for applying pressure to the juncture between said test pad and said sealing face surface to test said sealing face surface of said pipe for seal integrity against leakage, and

wherein the sealing face surface of the pipe, in the case of a male end of a threaded pipe, is the shoulder at the end of the threaded portion, and in the case of a female end of such threaded pipe, is the extreme end edge, and in the case of an unthreaded pipe, is the extreme end edge thereof.

4,407,172

METHOD FOR REPAIRING HARD ALLOY-TIPPED SAW BLADES

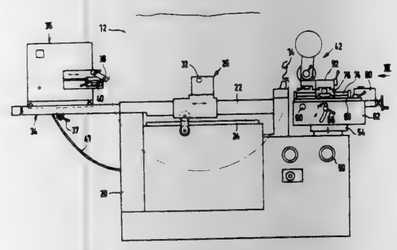
Ernst Beck, Maselheim, and Peter Lenard, Biberach an der Riss, both of Fed. Rep. of Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Fed. Rep. of Germany

Division of Ser. No. 190,451, Sep. 24, 1980, Pat. No. 4,366,728. This application Jul. 8, 1982, Ser. No. 396,296

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940730

Int. Cl.³ B23D *63/00*

U.S. Cl. 76—112 **1 Claim**



1. A method for repairing hard-alloy-tipped saw blades having hard-alloy-plates comprising the steps of:

(a) placing a saw blade on a blade support, said saw blade being turnable with respect to said blade support;

(b) turning said saw blade to a position where a selected plate is in working range of a brazing tool;

(c) brazing off said selected plate from its corresponding plate seat by using said brazing tool;

(d) reconditioning said plate seat without removing said saw blade from said blade support;

(e) brazing a new plate onto said plate seat by using said brazing tool;

(f) turning said saw blade to a position where said selected plate is in working range of a grinding tool; and

(g) grinding said new plate, said saw blade remaining on said blade support for the grinding thereof.

4,407,173

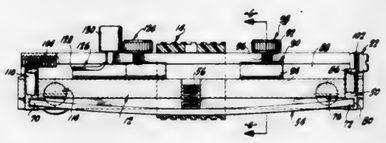
DEVICE FOR REMOVING INSULATION FROM AN INSULATED CONDUCTOR

Robert B. Hendry, Nevada City, Calif., assignor to Reon Manufacturing Company, Nevada City, Calif.

Filed May 11, 1981, Ser. No. 262,592

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 R **8 Claims**



1. A device for removing insulation from an insulated conductor comprising:

a. cutting means intended for cutting the insulation, said cutting means being mounted on a structure base said cutting means including a first and second cutting blade mounted adjacent to one another on said structural base, said cutting base forming a space for confirming the insulated conductor such that the insulation of the insulated conductor may contact said cutting means while occupying said space;

b. a finger intended for exerting pressure on the insulation of the insulated conductor while being confined to said space adjacent said cutting means; said finger being mounted to said structural base;

c. means for moving said finger in relation to said cutting means, said means for moving said finger in relation to said cutting means including a resilient bar having a first end portion and a second end portion said bar being connected to said finger at said first end portion of said bar and being connected to said structural base at said second end portion thereof such that said first end portion of said bar and said finger are forced toward said first and second blades; and

d. means for moving said first end portion of said bar away from said first and second cutting blades.

4,407,174

TOOL FOR STRIPPING ELECTRICAL CONDUCTORS

Rainer Schulze, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,987

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1980, 8015246[U]

Int. Cl.³ H02G *1/12*

U.S. Cl. 81—9.5 A **6 Claims**

1. A tool for stripping the sheathing from sheathed conductors, comprising

(a) a pair of articulated clamping jaws for holding an end of a sheathed conductor during stripping operations, a first

of said clamping jaws being provided on a main body to which the second of said clamping jaws is pivotably connected, said pivotable clamping jaw having a portion extending backwards from the pivot point and provided at its rear extremity with a cam surface;

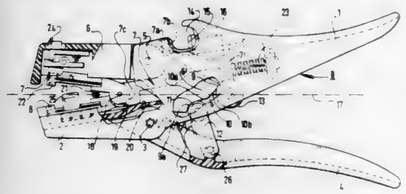
(b) a pair of longitudinally movable, articulated stripping jaws adjacent the inner sides of said clamping jaws, said stripping jaws having cutting edges for cutting into said sheathing and for stripping said sheathing from said conductors;

(c) pulling means on said main body connected to said stripping jaws for pulling said stripping jaws in a direction longitudinal to a conductor held in said clamping jaws;

(d) cutting means in said main body comprising a movable blade operable by said pulling means;

(e) a member pivotably connected by one end thereof to said main body and extending longitudinally backward away from said clamping jaws;

(f) a driving arm pivoted at one end thereof to said member, the free end of said driving arm engaging said cam surface on said pivotable clamping jaw; and



(g) a projecting member on said pulling means adjacent said cam surface, so located that when said main body and said pivoted member are urged together, the free end of said driving arm first moves along said cam surface to simultaneously close said articulated clamping jaws and said stripping jaws and then engages said projecting member on said pulling means to pull said cutting jaws in a longitudinal direction to strip said sheathing from the end of a conductor held by said clamping jaws and to move said movable blade;

(h) said cam surface comprising:

(i) a first cam surface portion arranged to be engaged by said driving arm during stripping of said sheathing, said first cam surface portion being at a relatively shallow angle to the longitudinal center axis of said tool; and

(ii) a second cam surface portion arranged to be engaged by said driving arm during cutting movement of said movable blade, said second cam surface portion being at a relatively steep angle to said longitudinal center axis and extending at an angle to the longitudinal axis of said driving arm in every position of said clamping jaws and said stripping jaws.

4,407,175

TOOL FOR ROTATING THREADED FASTENERS

Douglas I. Graham, 86 Yew Tree Dr., Guildford, Surrey, England GU1 1NZ

Filed Sep. 2, 1981, Ser. No. 298,909
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—57.39 6 Claims

1. A wrench head for use with a rachet-wrench for rotating a fastener, said rachet-wrench including an elongated handle, a rachet mechanism attached to said handle and a key-like shaft depending from said rachet mechanism, said wrench head comprising:

(a) housing means;

(b) rotatable drum means located in said housing means;

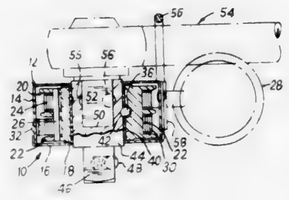
(c) a flexible member normally wound around said drum means and including a first end fixed to said drum means and a second end extending through an opening in said housing means, pulling of said second end causing rotation of said drum means;

(d) a resilient means connected between said drum means and said housing means to resiliently resist said pulling of said second end of said flexible member;

(e) said rotatable drum means including an opening formed therein;

(f) a stub shaft means removably placed in said drum means opening;

(g) means carried by said drum means for releasably retaining said stub shaft means in said drum means opening, said releasably retaining means also allowing rotation of said



drum means with respect to said stub shaft means in a first direction and preventing such rotation in a second direction;

(h) receptacle means formed in one end of said stub shaft means which releasably receives said key-like shaft of said rachet-wrench;

(i) key means depending from the other end of said stub shaft means which fixedly engages a receptacle formed in a standard socket member; and

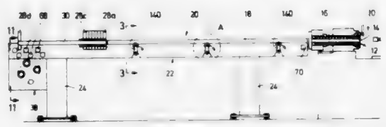
(j) means on said housing means which releasably retains said elongated handle of said rachet-wrench in a fixed orientation with respect to said wrench head.

4,407,176

FEEDING DEVICE FOR BARSTOCK ON TURNING MACHINES AND THE LIKE

Helmut F. Link, Aichwald, Fed. Rep. of Germany, assignor to Index-Werke KG Hahn & Tessky, Esslingen, Fed. Rep. of Germany

Filed Jun. 26, 1981, Ser. No. 277,893
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024766
Int. Cl.³ B23B *13/00, 13/02, 13/04, 13/08*
U.S. Cl. 82—2.5 14 Claims



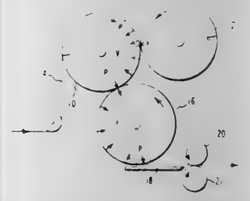
1. A feeding system for barstock on turning machines, said system having support means extending in the feeding direction, at least three holders for holding and slideably guiding a length of said barstock, said holders being carried by said support means for sliding movement in the feeding direction, and coupling means interconnecting the holders for moving the holders close together and apart, characterized in that said coupling means are in the form of guiding means (**122,126, 128, 130**) comprising rigid elements for maintaining said holders (**28a, 28b, 28c**) parallel to each other and for synchronously driving the holders together and apart and maintaining equidistant interholder spacing.

4,407,177

ON-LINE CORNER ROUNDER

Alfred J. Schmidt, Aston, Pa., and Michael H. Shearon, Cecil County, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 159,794, Jun. 16, 1980, abandoned. This application May 24, 1982, Ser. No. 381,216
Int. Cl.³ B26F *1/12*
U.S. Cl. 83—300 9 Claims



1. In an apparatus having a roll over which a web is advanced continuously as sheets are cut therefrom, the improvement comprising provision of

a transport roll located adjacent said cutting roll, said transport roll having a peripheral surface located to receive successive abutting cut sheets, and

a pair of spaced, cam-actuated, corner-rounding assemblies associated with said transport roll, there being an assembly at each side of the path of transport,

said transport roll being coupled to the cutting roll for rotation in synchronism therewith, each corner-rounding assembly including a die located beneath the level of said surface, a punch and means mounting the punch for reciprocation radially from a normal position in said die outwardly to a position beyond said level and back to the normal position, said die being fixed to said transport roll for rotation therewith,

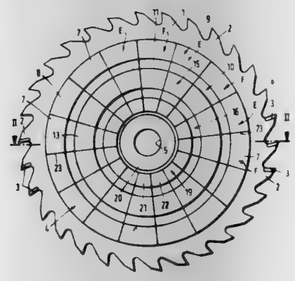
said punch being positioned to spread abutting sheets at their edges during its outward movement, there being a radially disposed bar beneath the punch for positioning the sheets as corners are cut during movement of the punch back to its normal position.

4,407,178

CIRCULAR SAW BLADES

Josef Störzer, Horb-Nordstetten, Fed. Rep. of Germany, assignor to Ledermann GmbH & Co., Horb, Fed. Rep. of Germany

Continuation of Ser. No. 66,686, Aug. 15, 1979, abandoned. This application Sep. 23, 1981, Ser. No. 304,910
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835714
Int. Cl.³ B27B *33/08*
U.S. Cl. 83—835 1 Claim



1. A metal circular saw blade that assures wobble-free, clean cuts for sawing wood and cutting grooves into wood and material similar to wood, said saw blade having a cutting zone and a central mounting bore, wherein the improvement in combination therewith comprises:

an annular carrying zone extending substantially between said central mounting bore and said cutting zone, said carrying zone being comprised of a stiff annular disc of thin light metal of substantially uniform thickness defining first and second sides; the annular disc being divided into alternating wedge-shaped segments of a first and second type, each wedge-shaped segment being defined by an arc in the range of 15° to 30°;

wherein: the first type of segment is defined by a first pattern comprising first and second embossments; the first and second embossments alternating with one another in the radial direction; the first embossments being raised with respect to the second embossments when viewed from the first side of the carrying zone and being lower with respect to the second embossments when viewed from the second side of the carrying zone; the first embossments being substantially wider in a radial direction than the second embossments; and the first and second embossments being joined to one another by surfaces which slope obliquely with respect to the sides of the annular carrying zone;

wherein: the second type of segment is defined by a second pattern which is identical with, but reversed with respect to the first pattern, the second pattern comprising first and second embossments; the first and second embossments alternating with one another in the radial direction; the first embossments being raised with respect to the second embossments when viewed from the second side of the carrying zone and being lower with respect to the second embossments when viewed from the first side of the carrying zone; the first embossments being substantially wider in the radial direction than the second embossments, and the first and second embossments being joined to one another by surfaces which slope obliquely with respect to the sides of the annular carrying zone;

and wherein: the cutting edge includes radial notches, each of which has a cutting tooth therein which tooth has a width which extends the tooth beyond the embossments in a direction perpendicular to the first and second sides;

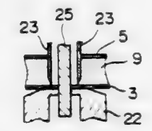
whereby, the resulting blade has an enhanced cutting capacity and enhanced cooling while being relatively stiff and stable when cutting due to the first and second embossments extending over the carrying zone.

4,407,179

PROCESS AND APPARATUS FOR CUTTING AN ELONGATE COMPLEX STRUCTURE

Katsuhiko Iwase, Kaminoyama, and Minoru Saito, Murayama, both of Japan, assignors to IG-Technical Research Inc., Higashine, Japan

Filed Sep. 10, 1981, Ser. No. 300,862
Claims priority, application Japan, Oct. 6, 1980, 55-139618; Oct. 15, 1980, 55-144165
Int. Cl.³ B26D *1/00, 3/00*
U.S. Cl. 83—865 41 Claims



1. A process for cutting a complex structure composed of a facing of hard material, a core of foamed material and a liner of flexible material, which comprises cutting the liner and the core by a pair of first upper cutters (**23**) arranged in parallel with each other in the direction of the width of the complex structure, then advancing a second upper cutter (**24**) between

the pair of the first cutters (23) to cut the facing, and retracting the first and second cutters (23) and (24) from the respective cutting positions.

4,407,180

AIRCRAFT LOAD LOCK, ESPECIALLY BOMB LOCK INCLUDING CENTRAL OPERATING MEANS

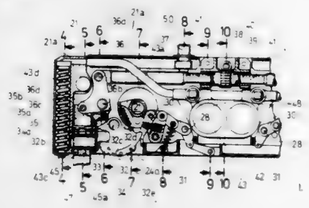
Karl Regnat, Siegertsbrunn, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,700

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019782

Int. Cl.³ F41F *5/02*

U.S. Cl. 89—1.5 B **11 Claims**



1. A load lock for attaching a load having load holding means (33) to an aircraft, comprising lock housing means (1) and operational components in said lock housing means, said operational components including load suspending means (32) operatively arranged in said locking housing means in a given plane for cooperation with said load holding means, first drive means (28, 30, 31) operatively arranged substantially in said given plane in said lock housing and connected to said load suspending means (32) for controlling said load suspending means (32) in its cooperation with said load holding means (33), load securing means (34, 35, 36, 45, 46) operatively arranged in said lock housing means (1) for clawing or clamping a load suspended from the lock by the load suspending means (32), second drive means (37, 38, 39, 40) operatively arranged substantially in said given plane in said lock housing means and connected to said load securing means (34, 36) for performing said clawing or clamping depending on the direction of operation of said second drive means, and fuzing means (24) including operating means (22, 29) for said fuzing means operatively arranged laterally in said housing and connectable to a load for arming or fuzing said load, whereby all of said operational components are constructed and arranged symmetrically relative to said given plane so that said load lock assures an external operability and serviceability on each side of the aircraft even if a load is held in the load lock, wherein said load securing means comprise journal means (47) operatively held in said lock housing means and claw means (45, 45*a*, 46) journalled to said journal means for holding a load in a steady position, and wherein said second drive means comprise worm gear means (38, 40), wedging means (35) operatively arranged to force said claw means into a load clawing position, and linkage means (36, 37) connecting said worm gear means to said wedging means for applying a wedging force to said wedging means in response to rotation of said worm gear means in one direction, whereby said linkage means operate to transmit pressure, said load lock further comprising spring means (44) operatively connected to said claw means for returning the claw means into a rest position when the wedging force is released.

4,407,181

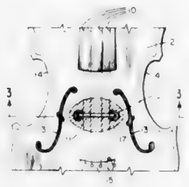
PROCESS FOR IMPROVING THE TONAL QUALITY OF STRINGED INSTRUMENTS

Thomas H. Thomas, R.F.D. #2 Box 19, Litchfield, Me. 04350

Filed Jan. 12, 1981, Ser. No. 224,114

Int. Cl.³ G10D *1/02, 3/02*

U.S. Cl. 84—275 **2 Claims**



1. A process of improving the tonal quality of any commercially made completed stringed instrument, such as, a violin or cello with an adequately thick belly which comprises the steps of:

1. playing the instrument;
2. removing the bridge and strings of the instrument;
3. reducing the thickness of the belly directly under the feet of the bridge on the outer surface at the belly by a few thousandths of an inch;
4. putting the bridge back on the instrument and restringing, retuning, and replaying the instrument;
5. repeating steps 2–4 as many times as necessary until the tonal quality of the instrument is at its optimum; and
6. shaving down surrounding portions of the belly in such a manner as to preserve its smoothly convex, curved surface.

4,407,182

MUSICAL INSTRUMENT STAND

Americole R. Biasini, Bellingham, Wash., assignor to Allsop, Inc., Bellingham, Wash.

Filed Oct. 9, 1981, Ser. No. 310,036

Int. Cl.³ G10G *5/00*

U.S. Cl. 84—453 **18 Claims**



1. A musical instrument support stand adapted for storage substantially entirely within the instrument during periods of non-use, comprising:

(a) base means for supporting a musical instrument stand;

(b) post means secured at a first end to said base means and having a free distal end for projection within the interior of a musical instrument, and,

(c) musical instrument support means received on said post and adjustable over the length thereof, having an outer geometry complementary to the interior geometry of said musical instrument, for supporting receipt of said musical instrument thereon.

4,407,183

METHOD AND APPARATUS FOR HYDRAULICALLY CONTROLLING SUBSEA EQUIPMENT

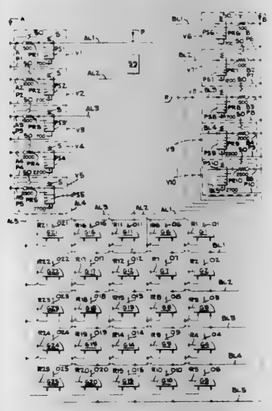
Lionel J. Milberger, Spring; Charles E. Horn, and Marvin H. Kluttz, both of Houston, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Jun. 29, 1979, Ser. No. 53,160

Claims priority, application United Kingdom, Sep. 27, 1978, 38283/78

Int. Cl.³ F01B *25/26*

U.S. Cl. 91—1 **15 Claims**



1. Apparatus for remote individual control of a relatively large number of hydraulically-actuated operators using a smaller number of hydraulic lines between a surface control center and a subsurface device containing said operators, said apparatus comprising:

means for connecting said apparatus to a source of hydraulic fluid pressure,

a plurality of hydraulic AND-gates each having an output and a pair of inputs, each of said AND-gates providing an output pressure only when a pressure in simultaneously applied to both of said inputs, said gates being arranged in a matrix of rows and columns;

first and second signal pressure lines;

control means for coupling predetermined values of fluid pressure from said fluid source to said first and said second signal lines;

means for applying signals from said first pressure line to a first input of each of the gates in a predetermined row when the pressure in said first pressure line is within a corresponding predetermined range;

means for applying signals from said second pressure line to a second input of each of the gates in a predetermined column when the pressure in said second line is within a corresponding predetermined range; and

means for coupling the output of each of said gates to a corresponding one of said operators so that only one of said operators is pressurized at a time.

4,407,184

PNEUMATIC SERVO BOOSTER

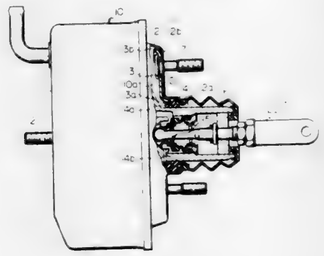
Hiromi Ando, Tokyo, and Kiyoshi Tateoka, Fujisawa, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Nov. 20, 1980, Ser. No. 209,214

Claims priority, application Japan, Nov. 26, 1979, 54-163425

Int. Cl.³ F15B *9/10;* **F16J** *15/18*

U.S. Cl. 91—376 R **1 Claim**



1. A pneumatic servo booster comprising:

a shell housing formed of front and rear shells;

a valve body incorporating therein a valve mechanism, said valve body sealingly extending through and being slidably supported by said rear shell;

a seal member positioned between said rear shell and said valve body, said seal member having therein an annular groove;

a reinforcing plate provided on the inner surface of said rear shell, said reinforcing plate comprising an annular member having an inner circumferential end snugly fitted within said annular groove in said seal member without being integrally attached thereto and acting to position said seal member; and

mounting bolts passing through said reinforcing plate and said rear shell for mounting the booster.

4,407,185

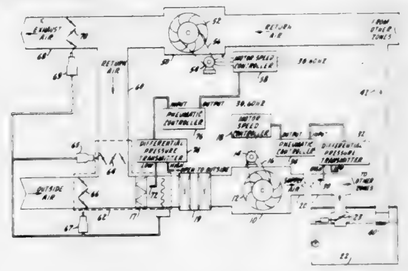
RETURN AIR FLOW CONTROL FOR VARIABLE AIR VOLUME SYSTEM

Roger W. Haines, Laguna Hills, Calif., and Mark A. Purinton, South Glens Falls, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 23, 1982, Ser. No. 351,634

Int. Cl.³ B64D *13/00;* **F25B** *29/00*

U.S. Cl. 98—1.5 **6 Claims**



1. A variable air volume conditioning system for maintaining the inflow of outside air above a predetermined rate regardless of the volume of the air being supplied to a conditioned space, said system comprising:

a. a duct system including a supply duct for delivering supply air to a conditioned space and a return duct for returning a portion of the air supplied to said conditioned space;

b. a plenum chamber in said duct system, said chamber

having an outside air inlet, a return air inlet, and an outlet communicating with said supply duct;

c. air conditioning means for attempering the stream of mixed outside air and return air downstream from said plenum chamber;

d. a supply air fan associated with said supply duct;

e. a return air fan associated with said return duct; and

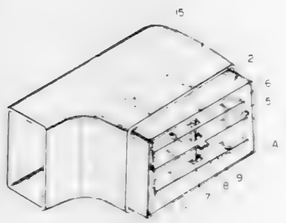
f. means, interconnected between said plenum chamber and said return air fan, for sensing the static pressure in said plenum chamber and for controlling the speed of the return air fan so as to maintain the plenum chamber pressure at a substantially constant negative level relative to a fixed reference level.

4,407,186

FLOW OUTLET STRUCTURE FOR AUTOMOTIVE AIR CONDITIONER

Masao Izumi; Hideki Maruyama, both of Fujisawa, and Hiroshi Yoshida, Zama, all of Japan, assignors to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 6, 1981, Ser. No. 250,939
Claims priority, application Japan, Apr. 7, 1980, 55-46769[U]
Int. Cl.³ B60H *1/00*
U.S. Cl. 98—2 **6 Claims**



1. A flow outlet structure for an automotive air conditioner, comprising:

a duct having one end communicable with said air conditioner to receive conditioned air therefrom, and an opposite end;

an air outlet coupled with the opposite end of said duct, said air outlet including a fluidic element means having a solenoid valve for urging the flow of conditioned air passing through said air outlet to deflect in a first direction when said solenoid valve is energized and in a second direction when said solenoid valve is not energized; and

a louver fitted in the outlet opening and having a plurality of parallel pivotable slats for swingable movement in a direction normal to said first and second directions, said plurality of slats being disposed at a downstream end of said air outlet with respect to the flow of conditioned air.

4,407,187

AIR CONTROL DEVICE
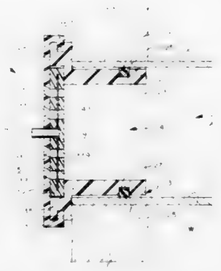
Robert W. Horney, 2402 Maple Rd., Corinth, Miss. 38834

Filed Dec. 15, 1981, Ser. No. 330,964
Int. Cl.³ F24F *13/12*
U.S. Cl. 98—41 SV **4 Claims**

1. An air control device for use in conjunction with the air passageway of an air flow duct to control the flow of air therethrough, said air control device comprising:

(a) a stationary plate means for being attached to said air flow duct transverse of said air passageway, said stationary plate means having a substantially flat face and a plurality of circular apertures therethrough, the longitudinal axes of said apertures being at an oblique angle with respect to said face; and

(b) a movable plate means for covering said plurality of apertures of said stationary plate means, said movable plate means having a substantially flat face and a plurality of circular apertures therethrough and being movable between a first position in which said plurality of apertures through said movable plate means are fully out-of-alignment with said plurality of apertures through said



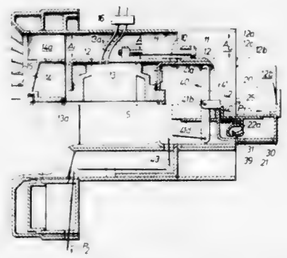
stationary plate means and a second position in which said plurality of apertures through said movable plate means are fully aligned with said plurality of apertures through said stationary plate means, the longitudinal axes of said apertures being at a right angle with respect to said face.

4,407,188

SETTABLE SHUTTER DEVICE

Olov Thörn, Torshälla, Sweden, assignor to Pax Electro Products AB, Hälleforsnäs, Sweden

Filed Apr. 13, 1981, Ser. No. 253,531
Claims priority, application Sweden, Apr. 11, 1980, 8002743
Int. Cl.³ F24F *7/013*
U.S. Cl. 98—116 **13 Claims**



1. A settable shutter device particularly for use with a ventilator comprising an annular channel defined by an outer casing and a concentric inner casing located about the axis of said ventilator, said ventilator comprising an apparatus body and means to mount said apparatus body within said inner casing, said shutter device comprising a plurality of shutter blades adapted to control air flow through said annular channel, each of said shutter blades having the shape of an annular segment defined by a pair of radial sides, a longer outer transverse edge and a shorter inner transverse edge, each of said shutter blades comprising an elongated extension extending generally radially from said inner edge and, when mounted, radially towards the ventilator axis, said extension having a transverse extent less than the transverse extent of said inner transverse edge, each of said shutter blade extensions having a portion bent out of planes radial to said ventilator axis, means to pivotally mount said blades each about its own axis closely spaced to the periphery of said inner casing, each said blade axis being generally tangential to said inner casing, respective opening means formed in said inner casing to permit said elongated blade extensions to pass therethrough to the inside of said inner casing, each of said blades comprising stabilizing means to

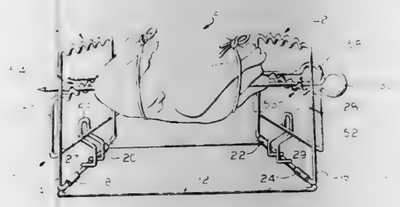
stabilize the position of each said blade in said opening means, driver means for controlling the motion of said blades and to determine any set position of said blades between two limit positions where said channel is completely open or completely closed, said driver means being located concentrically inside said inner casing, means to permit motion of said driver means axially of said ventilator axis, spring means normally urging said blades toward one of said limit positions, said driver means being formed with circumferentially arranged actuating means engaging the inner ends of all said blade extensions in all positions of said blades with respect to said channel and in all corresponding positions of driver means.

4,407,189

ROAST SPIT

Wade Bentson, San Francisco, Calif., assignor to AMCO Corporation, Chicago, Ill.

Filed Jul. 12, 1982, Ser. No. 397,547
Int. Cl.³ A47J *37/04*
U.S. Cl. 99—421 HH **5 Claims**



2. A folding wire frame rack comprising a rectangular base having a main support panel connected by hinges to each of an opposed pair of ends, each of said main panels having a support edge opposite said hinges and formed of opposed peaks and valleys which cooperate to form a plurality of skewer support positions, a secondary panel welded to each of said main panels in positions which form support edges having opposed peaks and valleys along upper edges of said secondary panels, the support edges of said main panels and secondary panels being generally parallel, said secondary panels having lower edges which are displaced from the hinged locations where said main panels join the ends of said rectangular base, and latching means comprising upstanding locking supports welded to each of said ends in positions where the lower edges of said secondary panels snap into a locking position when said main panels are moved to an open position.

4,407,190

BALE DISCHARGE GATE LATCH ASSEMBLY FOR CYLINDRICAL BALER

Leo G. Cheatum, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 28, 1982, Ser. No. 382,884
Int. Cl.³ B30B *5/06*; A01D *43/02*; E05C *3/16*
U.S. Cl. 100—88 **2 Claims**

1. In a cylindrical baler comprising:

a front section;

a bale discharge gate pivotably mounted to said front section;

a hydraulic cylinder for moving said bale discharge gate back and forth between a closed position for bale formation and an open position for bale discharge;

a latch assembly including:

(1) a latch member fixed to said front section,

(2) a latch hook on said gate for engaging and disengaging said latch member, and

(3) an actuator means connected at one end to said latch hook and at the other to said hydraulic cylinder for engaging and disengaging said latch hook with said latch member responsive to the retraction and extension respectively of said cylinder, said actuator means comprising lost motion means for permitting the full retraction of said cylinder without moving said latch hook;

the improvement wherein:

said actuator means comprises an arm connected at one end to said cylinder and having a stop fixed thereon; and



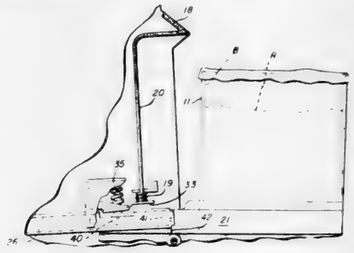
said lost motion means includes (1) a sleeve fixed to said latch hook for slidably receiving the other end of said actuator arm therein and (2) a spring on said arm and extending between said stop and one end of said sleeve, said spring biasing said arm relative to said sleeve.

4,407,191

WEIGHT INDICATOR FOR REFUSE COMPACTOR

Robert A. Brenner, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 24, 1981, Ser. No. 305,323
Int. Cl.³ B30B *15/00*
U.S. Cl. 100—99 **16 Claims**



1. In a refuse compactor having a receptacle into which refuse is placed for compaction and subsequent disposal, and means for mounting the receptacle for selective reciprocative rectilinear movement for selective disposition of the receptacle in a recessed compaction position and an accessible position, the improvement comprising

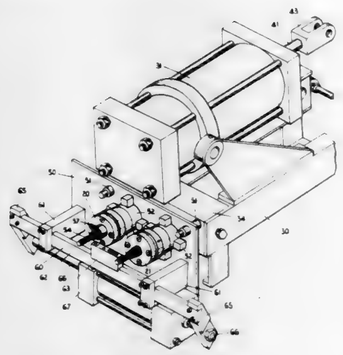
indicating means indicating the weight of the refuse previously placed in the receptacle upon movement of the receptacle from the compacting position to the accessible position to provide an indication of the additional amount of refuse which may be further placed in the receptacle in said accessible position before reaching a desired maximum weight.

4,407,192

MARKING MEANS FOR HOSE COUPLING EXPANSION ATTACHMENT MACHINE

Lyndall W. Lyon; Phillip G. Reneau, and Paul G. Coppock, all of Battle Creek, Mich., assignors to The Citation-Walther Corporation, Grand Rapids, Mich.

Filed Oct. 23, 1981, Ser. No. 314,189
Int. Cl.³ B23P *19/04;* **B44B** *5/00*
U.S. Cl. 101—7 **4 Claims**



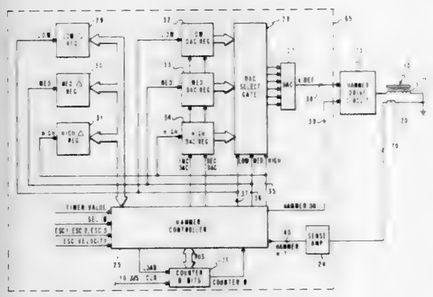
1. In a hose coupling expansion attachment machine including means for internally expanding a circular cylindrical hose coupling having a rotatable female external end section in the end of a hose to attach it thereto, the improvement which comprises a marking means on the front of said machine adjacent said expanding means so as to be in marking alignment with the curved periphery of said rotatable female external end section of said hose coupling, said marking means being linearly moveable between a non-marking position and a marking engagement position so that as said marking means passes into and through said marking position, said female end section will be rotated to provide the desired marking on the curved periphery of said female end section whereby the marking operation is accomplished simultaneously with the internal expansion of said hose coupling.

4,407,193

SOLENOID IMPACT PRINT HAMMER WITH UNIFORM FREE FLIGHT TIME

David A. Hall, and George P. Olson, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,702
Int. Cl.³ B41J *7/92*
U.S. Cl. 101—93.01 **5 Claims**



1. In an impact printer comprising means responsive to a driving signal for driving a print hammer against a print wheel to impact said print wheel against a printing medium and means for disengaging said driving means from said print hammer at a point prior to impact, the improvement comprising:

means for controlling the amplitude of the driving signal to said means for driving said print hammer against said print wheel;

means for storing a delay value representing the desired ideal time at which said print hammer should impact said printing medium;

means for sensing the actual time at which said print hammer impacts said printing medium;

means for storing a time value representing the average deviation from the ideal time at which the print hammer previously impacted said printing medium;

means for calculating a new average deviation from the ideal time based on the previous average deviation from the ideal time, the actual time and the ideal time;

means for storing a predetermined time range;

means for comparing said new average deviation from the ideal time to said predetermined time range; and

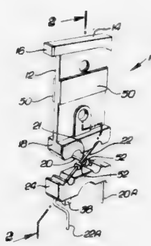
means responsive to said means for comparing for adjusting said means for controlling the amplitude of said driving signal when said new average deviation from the ideal time is not within said predetermined time range.

4,407,194

PRINT HAMMER

Val K. Jezbera, Thousand Oaks, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Continuation of Ser. No. 122,064, Feb. 5, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,747
Int. Cl.³ B41J *9/30*
U.S. Cl. 101—93.34 **15 Claims**



1. In a print hammer for use in a hammer bank assembly which has a plurality of hammers interleaved with a plurality of spaced magnets, said hammer including a body comprising a pair of thin metal flag panels and a wire coil sandwiched between said flag panels, a pair of crossed spring wires extending from said panels, each of said spring wires being electrically connected to a different end of said coil, and a foot section through which said spring wires extend, the improvement wherein said spring wires are substantially as flexible in a direction lateral to their direction of travel when energized in said hammer bank assembly as they are in the direction of hammer travel.

4,407,195

SCREEN PRINTING MACHINE

David Jaffa, Franklin Lakes, N.J., assignor to Precision Screen Machines, Inc., Hawthorne, N.J.

Filed Aug. 7, 1980, Ser. No. 176,067
Int. Cl.³ B41F *15/10*
U.S. Cl. 101—123 **8 Claims**

1. A screen printing machine having a plurality of adjacent printing stations, said screen printing machine comprising:

a supporting frame,

a rail mounted on said supporting frame,

a plurality of pallet assemblies spaced from said rail,

a drive means including a motor for operatively interconnecting and displacing said pallet assemblies along a path defined by said rail,

a printing head mounted on said frame for movement between an operative printing position at each of the printing stations and an inoperative non-printing position spaced from each of said printing stations,

means for selectively indexing said pallet assemblies to successive printing stations and stations separated by at least one intermediate printing station,

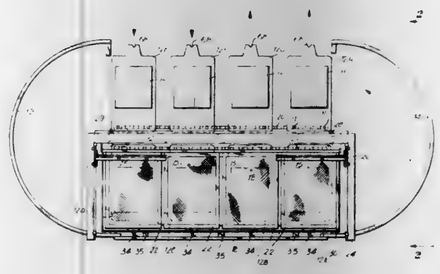
said means for selectively indexing said pallet assemblies between successive and spaced apart printing stations comprising:

a ram stop cam driven by said motor,

said ram stop cam having a single notch in the periphery thereof,

a ram stop link assembly responsive to the movement of said printing head between said printing position and said non-printing position,

a ram stop lever pivotally mounted on said ram stop link assembly, and



a cam follower mounted on said ram stop lever and positioned to selectively engage said notch in the ram stop cam periphery,

first and second stop means integral with said ram stop cam and said ram stop lever, respectively, for engaging first and second portions of said ram stop link assembly,

third stop means on said ram stop link for displacing said pallet assemblies at least two positions,

an index arm pivotally mounted on said ram stop link assembly,

an index control sprocket,

a second sprocket coupled to and rotatable with said cam stop cam,

said index control sprocket being larger in diameter than said second sprocket by an integer that determines the spacing between which said pallet assemblies are indexed,

a chain trained about said first and said second sprockets,

an index pin selectively positionable in said first sprocket for rotation therewith, and

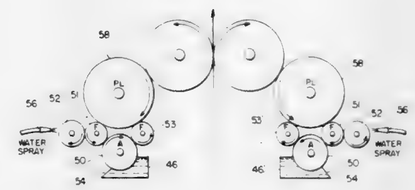
said index pin being positionable to engage and displace said index arm whereby said index arm engages said third stop means and angularly displaces said ram stop lever and said pallet assemblies are displaced at least two positions.

4,407,196

METHOD OF ENHANCING INKING IN OFFSET PRESSES

Harshad D. Matalia, Easton, Pa., and Menashe Navi, New York, N.Y., assignors to American Newspaper Publishers Association, Easton, Pa.

Continuation-in-part of Ser. No. 125,827, Feb. 29, 1980, abandoned. This application Mar. 24, 1982, Ser. No. 361,276
Int. Cl.³ B41F *7/12, 7/30, 31/06, 7/36*
U.S. Cl. 101—142 **1 Claim**



1. Method of enhancing high viscosity inking in a rotary newspaper web offset printing press system of the type applying high viscosity ink to both sides of the web; providing a press system with dual printing units, one on each side of the web, each printing unit including a blanket cylinder, a plate cylinder contacting said blanket cylinder, and an inking and dampener component contacting said plate cylinder, each component having an ink reservoir with an inking cylinder rotatably positioned therein, a pair of form rollers rotatably contacting said inking cylinder and a water reservoir with a watering cylinder rotating positioned therein so as to contact one of said form rollers; said plate cylinder independently contacting said pair of form rollers;

A. Defining a plurality of repository cells each conformed as a truncated pyramid within the surface of each inking cylinder and each watering cylinder, such that there are 200–360 cells per linear inch;

B. Immersing said inking cylinder repository cells by rotating each said inking cylinder within its ink reservoir where the ink has a hydrocarbon base and a viscosity in the range 3,500–5,000 centipoises and immersing said watering cylinder in said water reservoir by means of a spray dampener;

C. Reverse angle scraping of excess ink from the surface of each said inking cylinder;

D. Further rotating said inking cylinder and inking cylinder repository cells against the surfaces of said pair of form rollers and rotating said watering cylinder against one of pair of form rollers;

E. Rotating each said form roller against the surface of said plate cylinder, printing by rotating said blanket cylinders against opposite sides of a newspaper web moving therebetween such that the speed of rotating said inking cylinder, plate cylinder and blanket cylinder is at speed of printing up to 2,500 lineal feet per minute;

F. Sequentially immersing each inking cylinder and watering cylinder within said reservoirs.

4,407,197

DEVICE AND METHOD OF MONITORING DAMPENING AND INKING EQUILIBRIUM IN OFFSET PRINTING UNITS

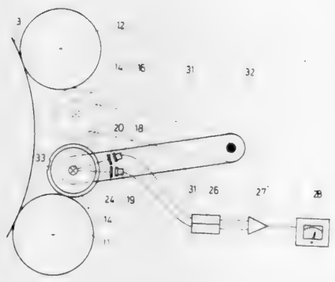
Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Division of Ser. No. 206,625, Nov. 13, 1980, abandoned, which is a continuation of Ser. No. 933,617, Aug. 14, 1978, abandoned. This application Apr. 15, 1982, Ser. No. 368,647

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736663

Int. Cl.³ B41F *7/26, 31/10, 33/00*

U.S. Cl. 101—148 **6 Claims**



1. Device for testing dampening liquid and ink equilibrium in offset printing units having a plurality of dampening liquid applicator rollers defining a dampening film flow path and a plurality of ink applicator rollers defining an ink film flow path, comprising a solitary test roller disposable in at least one of the flow paths and having an outer casing surface partly of hydrophilic and partly of oleophilic construction, means for effecting contact between said solitary test roller and at least one roller of the respective pluralities of dampening liquid and ink applicator rollers so as to form a corresponding film thereon and means cooperating with said test roller for sensing and evaluating the thickness of the dampening liquid and the ink films, respectively, and thereby testing dampening liquid and ink equilibrium, said test roller being pivotally mounted and being contactable alternately with the one ink applicator roller and the one dampening liquid applicator roller, and said outer casing surface of said test roller being formed with a region extending in axial direction of said test roller and being non-wettable by the dampening liquid and the ink.

4,407,198

ARRANGEMENT FOR SECURING PURE SKEW ADJUSTMENT OF A PLATE CYLINDER IN A SHEET-FED ROTARY PRINTING PRESS

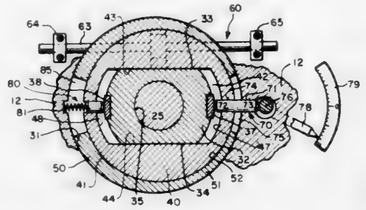
Claus Simeth, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 368,904, Apr. 15, 1982. This application Aug. 9, 1982, Ser. No. 406,347

Int. Cl.³ B41F *13/24;* **F16H** *13/06*

U.S. Cl. 101—248 **6 Claims**

1. An arrangement for securing pure skew adjustment of a cylinder, for example, a plate cylinder in a sheet-fed rotary printing press, relative to an adjacent cylinder, comprising, in combination, a frame including side plates, first and second cooperating cylinders having their axes normally arranged in a plane and journalled in the side plates of the frame, the first cylinder having a drive end and a remote end and having stub shaft projecting coaxially therefrom, a bearing at the drive end, a bearing assembly at the remote end fitted within a cylindrical opening in the frame, said bearing assembly including a cylinder bearing telescoped over the shaft and having flat support surfaces thereon facing radially outward in opposite directions, a guide bearing having a cylindrical outer surface and having a central window extending axially therethrough for receiving the cylinder bearing, the window defining a pair of flat way surfaces facing radially inward and spaced parallel to one another for snug reception of the flat support surfaces on the cylinder bearing, the window also defining side walls spaced apart sufficiently to permit freedom of adjustment of the cylinder bearing along the way surfaces, an eccentric sleeve fitted between the opening in the frame and the cylindrical outer surface of the guide bearing, means for rockably adjusting the



eccentric sleeve to move the first cylinder toward and away from the second cylinder thereby to vary the degree of impression between them, adjusting means for positioning the cylinder bearing with respect to the way surfaces thereby to adjustably skew the first cylinder with respect to the second, and means secured to the frame for holding the guide bearing in a phase position in which the way surfaces therein are constantly oriented perpendicular to the plane which contains the axes of the cylinders notwithstanding the rocking movement of the sleeve.

4,407,199

MANDREL ASSEMBLY FOR DEMOUNTABLE PRINTING CYLINDERS OF DIFFERENT LENGTHS

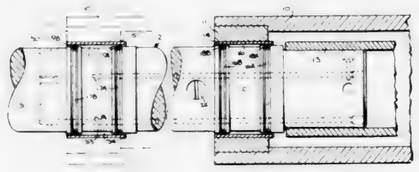
Lester I. Moss, Hackensack, N.J., assignor to Mosstype Corporation, Waldwick, N.J.

Continuation-in-part of Ser. No. 207,976, Nov. 18, 1980, which is a continuation-in-part of Ser. No. 194,616, Oct. 6, 1980. This application Aug. 12, 1981, Ser. No. 292,129

The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.

Int. Cl.³ B41F *27/06*

U.S. Cl. 101—375 **5 Claims**



1. A mandrel assembly for supporting either a long or a short standard printing cylinder in a printing machine having bearings, each cylinder having annular end heads projecting radially inward from the inner surface of the cylinder at either end thereof provided with circular bores coaxial with the cylinder anr being demountable on said assembly, said assembly comprising:

A. a tube receivable within the cylinder to be mounted;

B. left and right journals joined to opposing ends of the tube and extending axially therefrom for insertion in said machine bearings, each journal having first and second expansible sleeves thereon in side-by-side relation, the first sleeve fitting into the bore of an end head of the short cylinder, the second sleeve fitting into the bore of an end head of the long cylinder, each sleeve surrounding an annular hydraulic chamber formed on the journals; and

C. first and second hydraulic systems associated with the chambers for said first and second sleeves, each system including an internal longitudinal duct in the journal filled with hydraulic fluid and communicating with the related chamber, and means to subject the fluid to pressure to effect expansion of the related sleeve.

4,407,200

DETONATOR SUCH AS AN ELECTRICAL MECHANICAL OR FLAME-SENSITIVE DETONATOR

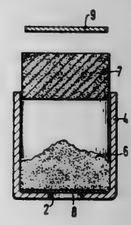
Richard Bender, Lauf, and Eugen Feuerstake, Eltersdorf, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed May 13, 1981, Ser. No. 263,308

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019975

Int. Cl.³ F42C *19/12*

U.S. Cl. 102—202.5 **5 Claims**



1. In a process for the production of electrical, mechanical or flame-sensitive detonators in housings, including a primary igniting medium and secondary explosive wherein the explosive is initially compressed to a shaped member having a compressed density of about 1,7gm/cm³; the improvement comprising: prepressing a plastic-bound explosive selected from the group consisting of octagen, hexogen or hexonite with a high temperature-resistant, thermoplastic material as a binder medium at a temperature of up to about 393° K.; pressing the primary igniting medium into the housing at a usual compressive pressure, said primary igniting medium being selected from the group consisting of loose lead azide, lead trinitroresorcinate or silver azide; said primary igniting medium being pressed with the prefinished explosive material shaped member as a press ram into the housing against the primary charge; and fastening the former through suitable fastening means.

4,407,201

RETARD SENSOR AND ENERGY CONVERTER

Norman E. Jensen, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 4, 1981, Ser. No. 260,242

Int. Cl.³ F42C *15/24*

U.S. Cl. 102—248 **3 Claims**

3. Munition arming apparatus comprising, in combination:

a first fixed contact;

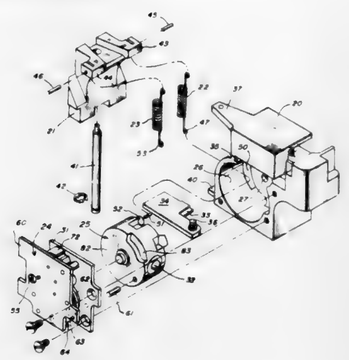
a second contact effective upon engagement with said first contact to perform an arming function;

a rotor carrying said second contact for movement into engagement with said first contact;

an initial mass linearly moveable between first and second position;

flexing spring means connected to said mass in said rotor for causing rotation of said rotor in a first direction when said mass is in said first position, and in a second direction when said mass is in said second position;

latch means normally preventing rotation of said rotor in said first direction; and



means disabling said latch means when said mass is in said second position.

4,407,202

HYDRAULICALLY ACTUATED RAILWAY CAR DUMPING SYSTEM

Dennis L. McCormick, 551 Emerson Ave. West, Mendota Heights, Minn. 55118

Filed Apr. 3, 1980, Ser. No. 136,807

Int. Cl.³ B60P *1/16;* **B61D** *9/02, 9/06*

U.S. Cl. 105—271 **18 Claims**

1. For use in a railroad dump car which includes movable means for causing dumping of contents of the dump car, the improvement comprising:

hydraulic reservoir means for providing hydraulic fluid;

pump means driven by a source of power associated with the railroad dump car for pumping hydraulic fluid under pressure from the hydraulic reservoir means;

hydraulic accumulator means for receiving the hydraulic fluid from the pump means and storing the hydraulic fluid under pressure;

hydraulic actuator means for moving the movable means to cause dumping of contents of the dump car; and

means for selectively causing the hydraulic accumulator means to supply pressurized hydraulic fluid to the hydraulic actuator means causing the hydraulic actuator means to move the movable means to cause dumping of contents of the dump car.

18. A side dumping railway car comprising in combination:

a plurality of wheels;

a car frame carried on said wheels;

a dump body pivotally connected to the car frame;

hydraulic actuator means comprising a plurality of hydraulic cylinders, each hydraulic cylinder connected to a pivot point on said car frame at one end of the cylinder and to a pivot point on the dump body at the other end of the

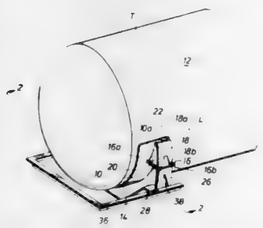
cylinder, to permit tilting of the dump body relative to the car frame;
reservoir means for providing oil;
oil accumulator means for accumulating pressurized oil;
tilt control valve means connected between the accumulator means and the hydraulic actuator means for selectively providing pressurized oil from the accumulator means to the hydraulic actuator means to operate the hydraulic actuator means; and
an air to oil pressure intensifier on said car adapted to pump oil from the reservoir means to the oil accumulator means.

4,407,203

RAILROAD TANK CAR LIFT LUG

Wayne D. Harbin; Marvin Stark, and Kenneth W. Britt, all of Houston, Tex., assignors to Richmond Tank Car Company, Houston, Tex.

Filed May 11, 1981, Ser. No. 262,591
Int. Cl.³ B61K *5/00*; B61D *5/00*
U.S. Cl. 105—462 **8 Claims**



1. A railroad tank car lift lug for receiving and securing a lifting device to a tank car, comprising:
a bolster pad mounted adjacent an end of the tank car;
a vertically disposed bolster web depending from said bolster pad, said bolster web having a substantially horizontal extending upper edge;
a substantially horizontal base plate mounted on said extended upper edge of said bolster web with an inner edge of said horizontal base plate secured to said bolster pad;
a substantially vertical lift lug plate with an upper edge secured to said bolster pad and a lower edge secured to said base plate;
a pair of generally triangular lift lug webs each having a lower edge secured to said base plate, an outer edge secured to said lift lug plate and an inner edge secured to said bolster pad; and
said lift lug plate having an opening adjacent said lower edge of said lift lug plate.

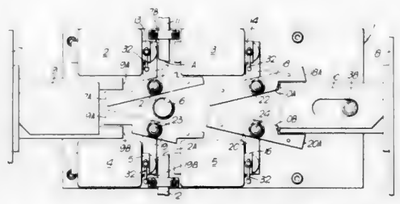
4,407,204

DOOR-LOCKING MECHANISMS FOR SECURITY ENCLOSURES

Geoffrey M. Ward, Wombourne, England, assignor to Chubb & Son's Lock and Safe Company Limited, London, England

Filed Nov. 25, 1981, Ser. No. 324,745
Int. Cl.³ E05G *1/04*; E05B *63/00*; E05C *1/04*
U.S. Cl. 109—59 R **12 Claims**

1. A door for a security enclosure having a locking mechanism comprising a main boltwork and a plurality of independently-operable locks for resisting withdrawal of the boltwork when in its thrown condition, wherein at least one of said locks can be selectively negated independently of the other locks; the or each such negatable lock having a bolt coupled to a movable locking member such that throwing the lock bolt moves the respective locking member into a locking position to resist withdrawal of the main boltwork; and further comprising control means in respect of the or each such negatable lock which are selectively operable, only while the respective lock bolt is thrown, to withdraw the respective locking member



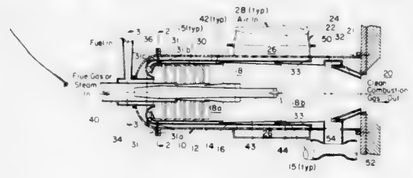
from its said locking position and to resist subsequent withdrawal of the respective lock bolt.

4,407,205

REGENERATIVELY COOLED COAL COMBUSTOR/GASIFIER WITH INTEGRAL DRY ASH REMOVAL

Albert H. Beaufrere, Huntington, N.Y., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Apr. 30, 1982, Ser. No. 373,582
Int. Cl.³ F23D *1/02*
U.S. Cl. 110—264 **10 Claims**



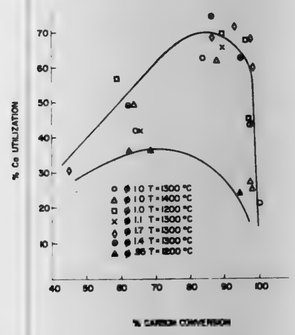
1. A coal combustor/gasifier comprising:
(a) a pressure vessel, said pressure vessel having a closed end and an open end and being adapted to make a pressure tight connection at said open end to a second stage combustor;
(b) an inner shell, formed from a high temperature, corrosion-erosion resistant material, substantially concentric with said pressure vessel, and defining a combustion volume having a closed end, a mixing/combustion zone adjacent to said closed end, and an ash separation-removal zone opening into the throat of said second stage combustor, and also defining with said pressure vessel a plenum through which air flows, between said pressure vessel and said inner shell, said inner shell also having;
(1) a plurality of axially spaced slots for diverting air flow from said plenum along the inner surface of said inner shell in the direction of said second stage combustor, whereby the boundary layer at said inner surface is stabilized and said inner shell is cooled; and
(2) an additional opening adjacent said closed end of said volume for admitting a flow of combustion air into said volume;
(c) air inlet means for introducing a flow of air into said plenum;
(d) first swirler means adjacent said additional opening for imparting a swirling motion to said combustion air;
(e) fuel inlet means for introducing a flow of fuel into said mixing/combustion zone, said fuel inlet means further comprising second swirler means for introducing a swirling motion opposite that of said combustion air in said fuel flow, said swirling motions being such that the opposed swirls assure that said fuel and said combustion air are well mixed in said mixing/combustion zone, and such that a residual swirl tending to move ash formed in said mixing/combustion zone to said boundary layer is established in said separation-removal zone; and
(f) ash removal means adjacent said open end for withdrawing said flow of air along the inner surface and the ash entrained therein.

4,407,206

PARTIAL COMBUSTION PROCESS FOR COAL

William Bartok, Westfield, and Howard Freund, Somerville, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 10, 1982, Ser. No. 376,725
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **8 Claims**



1. A process for partially combusting coal which contains greater than about 1 wt.% sulfur, wherein the generation of SO_x is minimized, which process comprises:
(a) providing a coal containing more than about 1 wt.% sulfur and containing organically bound calcium to sulfur in a ratio of at least about 0.8 to 1;
(b) burning the coal to about 80% to 95% carbon conversion at temperatures greater than about 1,100° C. in a first combustion zone in the presence of an oxidizing agent but under reducing conditions such that the equivalence ratio of coal to oxidizing agent is less than 1.5 but greater than or equal to 1.0;
(c) separating the resulting solid effluent from the gaseous effluent from the first combustion zone;
and
(d) burning the gaseous effluent at a temperature from about 1,000° C. to about 1,500° C. in a second combustion zone under oxidizing conditions.

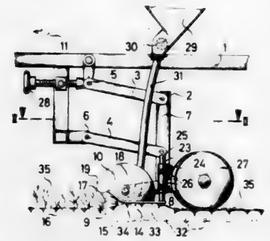
4,407,207

DRILL HAVING DISK FURROW OPENERS

Heinz Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany, assignor to Amazonen Werke H. Dreyer, Hasbergen-Gaste, Fed. Rep. of Germany

Continuation of Ser. No. 27,321, Apr. 5, 1979, abandoned. This application Dec. 1, 1982, Ser. No. 445,827
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814883
Int. Cl.³ A01C *5/00*
U.S. Cl. 111—85 **6 Claims**

1. A drill comprising a frame, a disk furrow opener, a seed tube extending downwardly from the frame to terminate on the side of the disk furrow opener opposite the side opening the soil, mounting means joining the furrow opener to the frame, the disk furrow opener being rotatably mounted on the mounting means and being disposed at an acute angle alpha to the line of travel of the drill, the mounting means being movable in a verticle plane, a runner secured to the mounting means having a sliding surface disposed above the bottom edge of the disk and on the side of the disk opposite side on which the seed tube terminates, for enabling the soil particles or cohering pieces of soil lifted by the disk furrow opener to fall back unturned into the seed furrow produced by the furrow opener, the runner being disposed at an acute angle alpha' to the line of travel



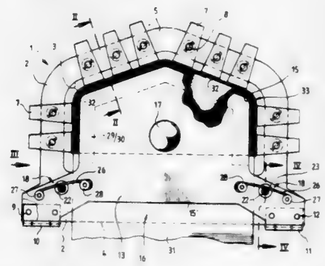
which is slightly greater than the acute angle alpha between the share disk and the line of travel, and means for controlling the depth of penetration of the furrow opener connected to the frame.

4,407,208

TEMPLATE FOR TOPSTITCHING JOINED WORKPIECE PARTS

Horst Meyer, Bad Salzuflen, Fed. Rep. of Germany, assignor to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 334,824
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1981, 8109780[U]
Int. Cl.³ D05B *21/00*
U.S. Cl. 112—121.12 **5 Claims**



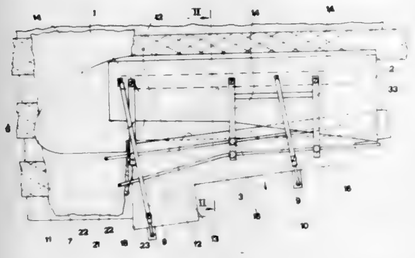
1. A template for topstitching joined workpiece parts on a sewing machine comprising:
stitch forming means including a needle;
a bed plate;
an upstanding stud formed with a stitch hole cooperating with said needle; and
template feeding and guiding means, said template comprising further:
a lower plate formed with a guide groove embracing said stud;
an upper plate pivoted at said lower plate by hinge means;
clamping means for holding said two plates in pressed relation for clamping said workpiece parts interposed between said plates;
track means cooperating with said feeding means;
an opening being formed by said plates in the area of said hinge means for loading said workpiece parts by a loading plate.

4,407,209

WORKPIECE FOLDING GUIDE FOR CUTTING AND SEWING MACHINES

Giuseppe Saetti, Costermano, Italy, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 27, 1981, Ser. No. 296,685
Claims priority, application Italy, Sep. 5, 1980, 40069 A/80
Int. Cl.³ D05B *35/04*
U.S. Cl. 112—147 **4 Claims**



1. A workpiece folding guide for receiving workpieces from a conveyor and presenting them in a folded condition to a sewing and cutting machine, said workpiece folding guide comprising:

(a) a first plate element operatively connected to the conveyor for receiving a workpiece thereunder from said conveyor;

(b) a second plate element extending parallel with and connected in vertically spaced relation to said first plate element;

(c) a third plate element (3) connected to said first and second plate elements and supported to extend parallel with and between the latter including:

(i) telescopic members (9) connected to said first and second plate elements for selectively changing its operating position between the latter;

(ii) an edge extending at an angle oblique to the direction of movement of a workpiece through the guide; and

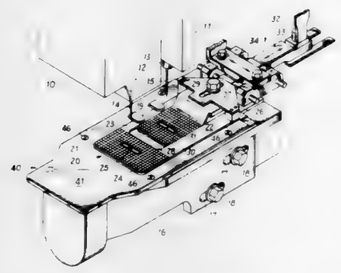
(d) means operatively associated with the upper surface of said third plate element (3) for pressing a workpiece into frictional contact therewith during advance and the folding of the workpiece within said folding guide.

4,407,210

TWIN NEEDLE WITH ADJUSTABLE THROAT PLATE AND FEED PLATE

Wilhelm H. Jung, Mechanicsville, and George P. Diacont, Jr., Richmond, both of Va., assignors to AMF Incorporated, White Plains, N.Y.

Filed Apr. 9, 1982, Ser. No. 367,148
Int. Cl.³ D05B *1/08*
U.S. Cl. 112—167 **11 Claims**



1. In a sewing machine having a spaced pair of needles reciprocally driven for sewing and means for changing the space between said needles,

throat plate means providing a spaced pair of needle holes each aligned with a different one of said needles and means for changing the space between and realigning said needle holes when the space between said needles is changed,

feed plate means above said throat plate means and moved for feeding material during sewing,

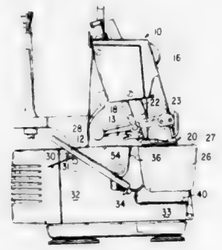
said feed plate means having a spaced pair of slots aligned to continuously expose said spaced pair of needle holes during sewing and means for changing the spacing between and realigning said slots when the space between said needles is changed.

4,407,211

CONVERTIBLE BED FOR OVEREDGE SEWING MACHINE

Hiroshi Kiyoshima, Utsunomiya, Japan, assignor to The Singer Company, Stamford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,758
Claims priority, application Japan, Sep. 2, 1980, 55-124501[U]
Int. Cl.³ D05B *73/10*
U.S. Cl. 112—260 **1 Claim**



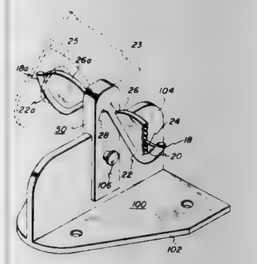
1. An overedge sewing machine comprising a frame, said frame including a bed (12) having a work supporting surface (13), said work supporting surface (13) supported in part by a vertical side wall (32) and an adjacent vertical front wall (42), said bed (12) further including an extension (33) to said vertical side wall (32) and a portion (26) projecting laterally from said extension (33) beyond said sewing machine on the opposite side of said extension (33) from said vertical front wall (42), said projecting portion (26) forming with said extension (33) an upper surface (27) coplanar with said work supporting surface (13) of said bed, said upper surface (26) having slots (51) therethrough in the direction of said vertical side wall (32), said projecting portion (26) having a cross section for accommodation in a cylinder of work material, said frame supporting sewing instrumentalities including a sewing needle (23) movable into an opening (35) in said extension (33) for cooperation with other of said sewing intrumentalities in the formation of stitches, said bed supporting a work feeding system for feeding a work material in a line of feed relatively to said sewing instrumentalities and substantially parallel to said vertical side wall (32), said feeding system including a feed bar (46) supported in said bed and having an end (47) thereof jutting from said bed to said opening (35) in said extension (33) to said vertical side wall (32), a feed dog (20) supported on the end of said feed bar (46), said feed dog (20) extending into said slots (51) in said upper surface (27), a first and second groove (36, 40) in said vertical side wall (32) and in said extension (33) about said laterally projecting portion, said first groove (36) extending through said vertical side wall (32) behind said sewing needle (23), a bridge (44) extending from said vertical side wall (32) around said first groove (36) to said extension (33) of said vertical side wall (32), said bridge (44) forming one wall of said first groove (36), a pivot pin (30) extending from said vertical side wall (32) of said bed adjacent the work supporting surface (13) thereof, a work support plate (28) with a top surface (54) having an edge adjacent said vertical side wall (32), said top surface (54) including a finger (29) adapted to fit into said first groove (36) behind said sewing needle (23), said work support plate (28) pivotable on said pivot pin (30) from a first position with said top surface (54) coplanar with said work supporting surface (13) of said bed (12) and said upper surface (27) of said projecting portion (26) to a second position with said top surface (54) and said finger (29) separated from said upper surface (27) and with said grooves (36, 40) about said laterally projecting portion (26) exposed to accommodate an edge of a cylinder of work material.

4,407,212

TACK HOOK ASSEMBLY FOR SAIL BOATS

Robert C. Anderson, Jr., 26 Lark St., Gloversville, N.Y. 12078

Filed Oct. 26, 1981, Ser. No. 314,683
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—108 **11 Claims**



1. A tack hook assembly for attaching a sail to the bow of a sailboat, wherein the tack hook is mounted on the sailboat and an eye hole is located at the tack of the sail, said assembly comprising:

an upright support member having two opposed ends, the first end having mounting means for affixing said member to the bow of the sailboat;

a rigid lateral member attached to the second end of said upright support member and extending outwardly therefrom, said lateral member having a first substantially convex-shaped section wherein the curved outer section thereof extends generally in a downward direction;

a resilient member spanning a space defined by the curved inner section of the first convex-shaped portion and extending to a point near the lateral member, said resilient member having a second substantially convex-shaped portion wherein the curved outer section thereof extends generally in an upward direction, such that the combination of said first convex-shaped portion and said second convex-shaped portion provide a substantially biconvex configuration, and the total distance between the apexes of the two convex-shaped portions is greater than the diameter of said eye hole.

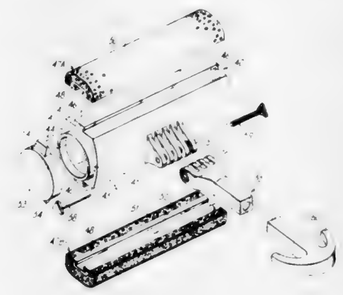
4,407,213

CLEANING IMPLEMENT FOR BOATS

Peter R. Evans, 4 Hengrave Close, Stoke Park, Ipswich, Suffolk, England

Continuation of Ser. No. 205,706, Nov. 10, 1980, abandoned. This application Nov. 3, 1982, Ser. No. 438,839
Claims priority, application United Kingdom, Nov. 15, 1979, 7939540; Apr. 24, 1980, 8013475
Int. Cl.³ B63B *59/08*
U.S. Cl. 114—222 **4 Claims**

1. A hand-manipulable cleaning implement, for cleaning the bottom of a boat while the boat remains in the water, which comprises an elongated handle; a cleaning head, including a single elongate hollow stock, which is attached to, and elongate transversely of said handle, said hollow stock being provided with a filler aperture, a removable filler cap for closing said aperture, and a plurality of external, circumferentially spaced, longitudinal mounting rails for receiving respective different cleaning devices comprising strips of resilient material attached to channel-shaped mounts for detachably secured engagement with the respective mounting rails, whereby said strips extend longitudinally of said hollow stock; wherein said mounting rails of said cleaning head are of identical form and the mounts of said cleaning devices are of identical form so that said cleaning devices are interchangeable and any cleaning



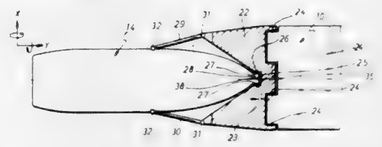
device may be attached on any selected mounting rail; and said filler aperture being large enough to permit throughpassage of and such hollow stock being large enough to permit storage therein of said cleaning devices; said filler cap being removable for permitting the introduction, through the said filler aperture into said stock, of either said detachable cleaning devices and of a desired quantity of water to adjust the buoyancy of the stock of the cleaning head during use to optimize the cleaning action of the implement in cleaning a boat bottom by movement of said cleaning head over the boat bottom as a result of manipulation of said handle.

4,407,214

NON-ROLL TUG-AND-BARGE LINKAGE

Masasuke Kawasaki, 1002 Michigan Ave., Slidell, La. 70458

Continuation-in-part of Ser. No. 138,642, Apr. 8, 1980, abandoned. This application Dec. 19, 1980, Ser. No. 218,052
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—249 **46 Claims**



1. An apparatus for coupling first and second vessels, the apparatus minimizing roll of one vessel relative to the other while permitting freedom of movement for pitching and heaving of one vessel relative to the other, comprising:

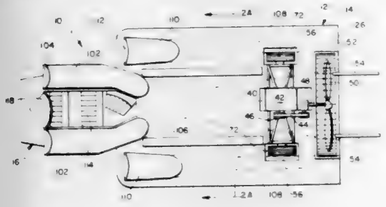
a linkage frame pivotally secured to one end of the first vessel along a substantially horizontal axis, the linkage frame defining a recess generally facing the second vessel and comprising elongated, inner opposing surfaces;

mating means for aligning one end of the second vessel between the inner opposing surfaces of the linkage frame such that the mating means and the inner opposing surfaces engage to minimize roll of the second vessel relatively to the first vessel; and

means for securing the second vessel to the linkage frame such that freedom of movement of the second vessel

relatively to the first vessel for pitching and heaving is permitted.

4,407,215
UNIQUE FAN-POWERED WATER VESSEL
Reno R. J. Cyr, 51 Burton St., Cranston, R.I. 02920
Filed Dec. 14, 1981, Ser. No. 330,559
Int. Cl.³ B63B *1/38*
U.S. Cl. 114—289 **11 Claims**



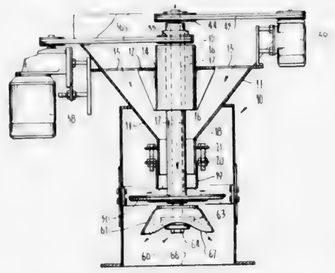
1. A multi-purpose air powered boat having a hull including an essentially flat bottom main section and an upper surface in turn supporting a power housing generally centrally disposed and in turn including an air propellor mounted at the rear thereof and a power supply for rotating said propellor supported by said power housing, said flat bottom main section including a centrally disposed relatively narrow depth, open bottom air tunnel of substantial width longitudinally extending from a point proximate the front to the rear of said main section and a pair of secondary air tunnels positioned on opposite sides of said central tunnel and proximate the side edges of said main section, said secondary tunnels extending into the said flat bottom a depth substantially greater than and of a width substantially less than said central tunnel, and air scoop means disposed at the front of said boat for separately receiving air flow into said tunnels when said boat is forwardly driven by said propellor wherein air is forced between said flat bottom and the supporting water surface to form an air cushion to reduce the frictional contact therebetween primarily by said main tunnel and to provide high velocity air flow of a supporting nature to the tunnels, and whereby the lateral extent of said air cushion is controlled by the air flow through said secondary air tunnels, said air scoop means including separate air scoops connected to the front of each of said tunnels, and wherein said air scoop means include substantially tubular uninterrupted passageways directly merging into said tunnels and of a cross-sectional extent so as to move air through the tunnels to which they are associated at a speed at least equal to that at which the air moves through said passageways, the air scoop passageway means connected to said main tunnel permitting a substantially larger volume of air to be directed thereto than the individual air scoops permit to be directed to said secondary tunnels.

4,407,216
FRAME SYSTEM FOR KAYAK
William E. Masters, 138 Norris Ave., Liberty, S.C. 29657
Filed May 14, 1981, Ser. No. 263,562
Int. Cl.³ B63B *35/72*
U.S. Cl. 114—347 **19 Claims**



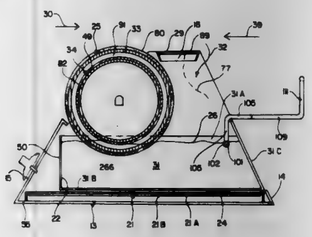
1. A kayak comprising:
(a) an elongated hull, said hull having a bow portion and a stern portion, and having an upper wall and a lower wall;
(b) a framework disposed within said hull, said framework including: a first frame member disposed in said bow portion and extending substantially between said upper wall and said lower wall; a second frame member disposed in said stern portion and extending substantially between said upper wall and said lower wall;
(c) means for longitudinally aligning said first and said second frame members, said aligning means being positioned generally longitudinally of said hull between said first and second frame members; and
(d) seat means disposed on top of said aligning means for holding said aligning means against said lower wall of said hull, wherein said seat means has a longitudinal tunnel formed in the bottom thereof, said aligning means being received in said tunnel in contact with said seat means, said aligning means including portions extending fore and aft of said seat means, said portions having covered recesses contacting, respectively, said first and second frame members for aligning said frame members.

4,407,217
DISTRIBUTION AND TREATMENT MEANS
Frederick D. Jackson, Dandenong, Australia, assignor to Jaybee Engineering Pty. Limited, Dandenong, Australia
Filed Mar. 29, 1982, Ser. No. 363,071
Int. Cl.³ B05B *3/10*
U.S. Cl. 118—24 **9 Claims**



1. Apparatus for coating discrete articles comprising:
supply means having a downwardly directed delivery means for discharging a continuous feed of articles;
a rotating plate beneath said supply means for receiving the articles, said plate rotating at a speed sufficient to force articles off the edge of the plate in an even peripheral distribution; and
a rotating coating assembly located below said plate, the assembly having a downwardly flared rotating annular skirt and fluid feed means extending within the skirt, said fluid feed means having radially outwardly directed apertatures for applying fluid to the interior of the skirt, said skirt rotating at a rate sufficient for fluid to move down the skirt to its lower edge and be expelled outwardly therefrom to strike the articles falling from the rotating plate and about the periphery of the skirt, the lower edge of said annular skirt being in the form of a continuous curve varying in the axial direction of the skirt to form an axial zone of fluid through which the articles fall for coating.

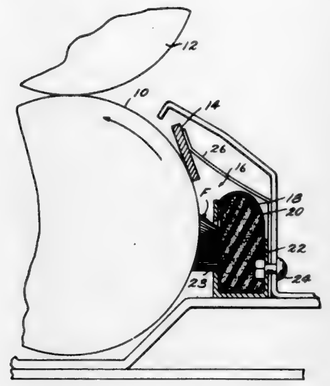
4,407,218
APPARATUS AND METHOD FOR APPLYING HOT WAX TO SKIS
Dale Ordas, 1520 38th St., Sacramento, Calif. 95825
Continuation-in-part of Ser. No. 243,367, Mar. 13, 1981, abandoned. This application Aug. 19, 1982, Ser. No. 409,650
Int. Cl.³ B05C *1/08*
U.S. Cl. 118—59 **10 Claims**



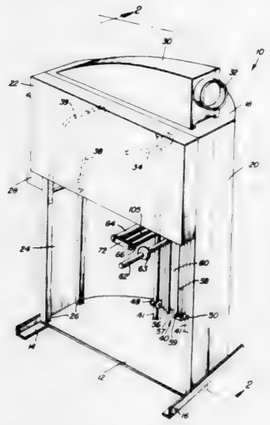
1. Apparatus for applying hot wax to skis comprising:
a housing;
a roller tiltably mounted to move from a lower functional position to an upper non-functional position journalled for rotation in said housing;
a fluid tight top opening chamber removably disposed in said housing below said roller for retaining hot ski wax therein;
a portion of said roller extending into the opening of said chamber, said chamber being removable upon the tilting upward of said roller;
said roller comprising a first outer drum freely rotatable about an inner drum having heating means adapted to heat the inner surface of said outer drum, whereby passing a ski over the outer surface of said outer drum and into tangential contact therewith after said outer drum has rotated through hot wax in said chamber, uniformly deposits hot wax on said ski also including a platen mounted in said housing parallel to and spaced from said roller above said chamber, whereby said ski is adapted to be passed into contact therewith either before or after contact with said roller in an unobstructed manner;
and means to tilt said roller.

4,407,219
PILE BRUSH FOR CONDITIONING A MOVING SURFACE
John C. Dellevdet, Brugge, Belgium, assignor to Schlegel Corporation, Rochester, N.Y.
Filed Jul. 14, 1981, Ser. No. 283,149
Int. Cl.³ B05C *11/105*
U.S. Cl. 118—60 **5 Claims**

1. In a fusing system for fusing toner images in an electrostatic copying machine in which a roll surface is used to fix the toner images to copy sheet material, an improved device engageable with the roll for conditioning the surface thereof comprising a liquid-retaining reservoir in the form of a core of compressible, resilient sponge-like material, a woven sheet wrapped around and encasing said reservoir, the portion of said sheet adjacent said roll surface having a brush-like fibrous textile pile layer thereon formed by filaments extending through said sheet, said filaments having outer ends in contact with said roll surface and having inner portions disposed on the side of said sheet facing said reservoir and in wicking contact with said reservoir to thereby conduct liquid from the core to the surface of the roll, the remainder of said sheet being free of pile.



4,407,220
CEMENT SPRAYING MACHINE FOR TIRES
Lloyd W. Fesmire, 580 W. Church St., Lexington, Tenn. 38351
Filed May 14, 1981, Ser. No. 264,184
Int. Cl.³ B05B *1/28, 13/00*; B05C *13/02*
U.S. Cl. 118—64 **6 Claims**

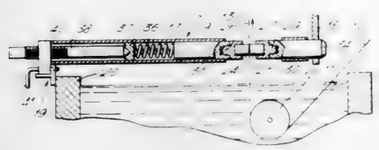


1. A machine for applying a coating of cement to the exterior surface of a tire preparatory to recapping the tire comprising a generally vertically disposed cover defined by a top support and depending front, side and end covers having an opening in a lower portion thereof to enable insertion and removal of tires, said cover including vent means communicating with the interior of the upper portion of the cover for exhausting material from the cover, tire carrier means in said cover for movement between a tire loading and discharging lowered position and a cement applying elevated position and means in said cover above the opening for applying cement to the exterior surface of the tire when in elevated position so that cement fumes will be exhausted from the cover through the vent means.

4,407,221
COATING OF WIRE

Colin D. Peel, Auckland, New Zealand, assignor to New Zealand Wire Industries Limited, Auckland, New Zealand

Filed Dec. 19, 1980, Ser. No. 218,280
Claims priority, application New Zealand, Jan. 22, 1980, 192668
Int. Cl.³ B05C *11/02*
U.S. Cl. 118—109 **12 Claims**

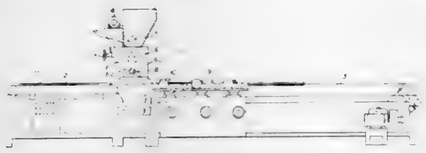


1. A cartridge for use in wiping a filament emerging from a coating bath, said cartridge comprising:
an elongate, tubular housing member having a lateral opening;
first and second wiper members each supported by said housing member and positioned within said lateral opening;
means slidably mounting at least one of said wiper members for movement relative to the other said wiper member and longitudinally of said housing member;
resilient biasing means carried by said housing and urging said movable wiper member towards and into juxtaposition with the other said wiper member, said biasing means including adjustment means carried by the housing and adapted to be actuated from a position exterior of said coating bath, said resilient biasing means and said adjustment means extending axially of said housing; and
means carried by said housing member for supporting said cartridge above said coating bath with said wiper members positioned in the path of movement of said filament and which permit ready release of said cartridge from said coating bath without substantially disturbing that filament.

4,407,222
COATING SYSTEM FOR SEMI-FLUID COATING COMPOSITION COMPRISING CEMENT AND AGGREGATE

Tadao Kimura, and Hideoki Toriyama, both of Iwakunishi, Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1981, Ser. No. 295,067
Int. Cl.³ B05C *5/00, 11/02*
U.S. Cl. 118—110 **1 Claim**

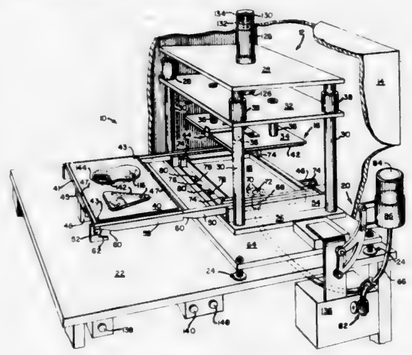


1. A coating system for a semi-fluid coating composition comprising cement and aggregate, characterized in that a hopper containing said coating composition to be supplied on a base material having a sheet form is provided at a position so as to locate a coating composition outlet port of said hopper above a base material conveyor, said base material moving past the hopper on said conveyer, and that at least one levelling roller for leveling said composition having a diameter of 10 to 200 mm is provided above said base material conveyor in front of said material outlet port along the advancing direction of the base material for rotating in the same direction as the advancing direction and at a higher peripheral speed than the speed of the base material conveyor.

4,407,223
CONTOUR CEMENTING MACHINE

Robert W. Morin, Salem; Jeffrey M. Lewis, Lynn, and Richard Bobrycki, Saugus, all of Mass., assignors to Boston Machine Works Company, Lynn, Mass.

Filed Jan. 11, 1982, Ser. No. 338,642
Int. Cl.³ B05C *1/02*
U.S. Cl. 118—212 **6 Claims**



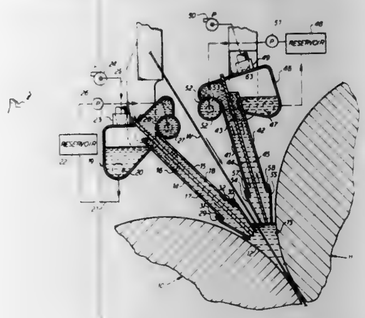
1. A contour cementing machine comprising:
(a) a housing;
(b) a cover for said housing;
(c) a die structure mounted in said housing, said die structure including a horizontally movable workplate and a vertically movable die plate;
(d) a tray removably disposed in said housing in operative association with said die structure,
(e) means for maintaining a predetermined level of cement in said tray;
(f) said machine being pneumatically actuated and designed for applying latex cement in complex shapes to flat workpieces deposited on said horizontally movable workplate;
(g) said workplate designed for movement between a work-applying position and a cementing position and said die plate designed for vertical displacement between two operative positions: a cement pick up position, and a cement applying position; and
(h) rolling means to facilitate the movement of said workplate from its said work-applying position to its said cementing position, said rolling means not supporting said workplate in its said cementing position.

4,407,224
APPARATUS FOR HIGH SPEED SIZE APPLICATION

Robert J. Alheid, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 228,262, Jan. 26, 1981, Pat. No. 4,358,484. This application Jun. 9, 1982, Ser. No. 386,744
Int. Cl.³ B05C *3/04*
U.S. Cl. 118—405 **4 Claims**

1. An apparatus for applying a sizing composition or the like continuously to both sides of a paper web which comprises:
a pair of counter-rotating rolls defining a nip therebetween,
means for directing a paper web through said nip,
a pair of applicator means, one on each side of said web,
each applicator means including:
a housing,
a baffle within said housing dividing the interior of said housing into isolated parallel fluid flow passages, terminating near said nip,
a distributor arranged to deliver sizing composition into one of said flow passages for forming a pond of sizing composition at said nip,
a reservoir for sizing composition,

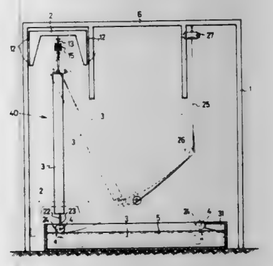


means connecting said reservoir to one of said flow passages,
vacuum means connected to the other of said flow passages for withdrawing sizing composition from said pond, and
means for delivering the sizing composition thus withdrawn back to said reservoir.

4,407,225
MORTAR TREATING APPARATUS

Takao Kataishi, and Nobufumi Yokoi, both of Tokyo, Japan, assignors to Misawa Home Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 325,899
Claims priority, application Japan, Jul. 23, 1981, 56-115680
Int. Cl.³ B05C *13/00*
U.S. Cl. 118—425 **5 Claims**

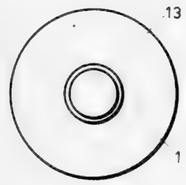


1. A mortar treating apparatus comprising a mortar tank, an immersing mechanism disposed above said tank and adapted for immersing a reinforcement frame for a concrete panel into mortar contained in said tank, said immersing mechanism including a first engaging portion for suspending the reinforcement frame so that the reinforcement frame hangs vertically downwardly therefrom, and a second engaging portion engageable with the lower end portion of the reinforcement frame, and means for moving at least one of the first and second engaging portions to transfer the reinforcement frame from a vertical state to a horizontal state, wherein the reinforcement frame can be immersed into said tank.

4,407,226
DEVICE FOR MANUFACTURING A MAGNETIC RECORDING MEDIUM

Yoshiro Nakamatsu, 1-10-309, Minami Aoyama 5-chome, Minato-ku, Tokyo, Japan

Division of Ser. No. 256,316, Apr. 22, 1981. This application Feb. 25, 1982, Ser. No. 352,252
Claims priority, application Japan, May 8, 1980, 55-59984
Int. Cl.³ B05B *5/02*
U.S. Cl. 118—623 **1 Claim**

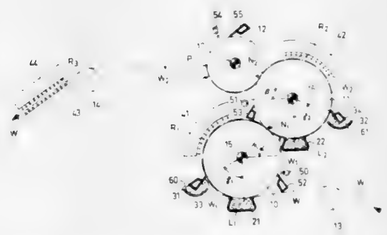


1. A device for manufacturing a recording medium constituting a recording disc provided with a magnetic coating thereon and with said coating containing magnetic particles, said device comprising:
(a) means for coating said disc with a magnetic coating so that the latter has a thickness which decreases from a maximum to a minimum radially inwardly from the outer periphery toward the center of said disc to provide correspondingly increasing recording density from the outer periphery toward the center of said disc,
(b) and means for orienting said magnetic particles on said coated disc relative to the surface of said disc generally inversely to the change in thickness of said coating so that said particles are essentially non-oriented at the periphery of said disc in the area of maximum coating thickness and increase in orientation radially inwardly toward the center of said disc to a maximum uniform orientation in the area of minimum coating thickness to provide a recording medium having an essentially constant output from the disc periphery radially inwardly to the inner termination of said magnetic coating.

4,407,227
SURFACE SIZING AND COATING APPARATUS FOR A PAPER WEB OF A PAPER MACHINE

Pekka Mauranen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Nov. 20, 1981, Ser. No. 323,427
Claims priority, application Finland, Nov. 28, 1980, 803709
Int. Cl.³ B05C *3/18*
U.S. Cl. 118—642 **14 Claims**



1. Surface sizing and coating apparatus for a paper web of a paper machine having first, second and third coating rollers positioned to form first and second coating nips with each other through which the web to be coated is arranged to pass,

said first and second coating rollers forming a first coating nip and said second and third coating rollers forming a second coating nip, said web having spaced opposite surfaces, said surface sizing and coating apparatus comprising

first coating supply means on said first coating roller for supplying a coating directly on a surface of said web;

first doctor coating means on said first roller disposed after said first coating supply means in the running direction of said web, said first coating nip being disposed after said first doctor coating means in said running direction;

second coating supply means on said second coating roller for supplying a coating directly on the opposite surface of said web; and

second doctor coating means on said second roller disposed after said second coating supply means in the running direction of said web, said second coating nip being disposed after said second doctor coating means in said running direction.

4,407,228

DEVELOPING APPARATUS

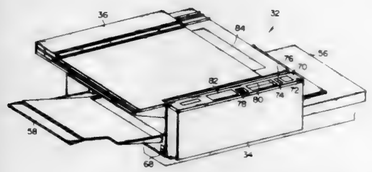
Toshimasa Takano, Sagamihara; Hideo Mukai, and Masahiro Hosoya, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 5, 1981, Ser. No. 308,791

Claims priority, application Japan, Oct. 6, 1980, 55-139627

Int. Cl.³ G03G *15/06*

U.S. Cl. 118—651 **22 Claims**



1. A developing apparatus used with an image forming system provided with a photosensitive layer on which a static latent image is impressed and which is formed of first and second portions having different surface potentials, said developing apparatus comprising:

a developing roller which is rotatably arranged and fitted with a large number of hairs for feeding a developing agent to the surface of the photosensitive layer in contact therewith, said developing agent being attracted to the first portion of the surface of the photosensitive layer with a strong attractive force and to the second portion of said surface with a weak attractive force; and

means for electrically removing that portion of the developing agent which is attracted to the second portion with a weak attractive force.

4,407,229

DIP TANK HOIST

Dale Sanborn, South Waterford, Me. 04081

Filed Jul. 20, 1981, Ser. No. 284,977

Int. Cl.³ B05C *3/09*

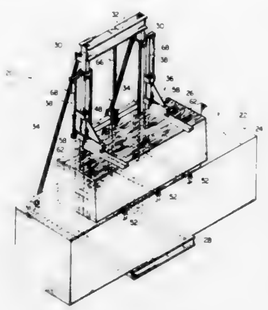
U.S. Cl. 118—702 **14 Claims**

1. A hoist for dipping a package of work product into a tank of liquid, said hoist comprising:

a pair of stationary vertical posts adapted to have their lower end portions received in and fixed relative to a tank such as aforesaid and their upper end portions extending upwardly out of said tank,

a carriage slidably supported on said two posts for vertical movement relative thereto, said carriage having a set of generally horizontal prongs at its lower end for receiving a package of work product placed thereon, said carriage also having at least one clamp located upwardly from said set of prongs movable vertically relative to said carriage into and out of engagement with a package of work product placed on said prongs,

means for moving said clamp vertically relative to said carriage into and out of engagement with a package of work product placed on said prongs, and



means for moving said carriage vertically relative to said posts to move said carriage into and out of the tank with which said hoist is associated.

4,407,230

GAS-FEED NOZZLE FOR A PYROLYTIC PARTICLE COATING APPARATUS

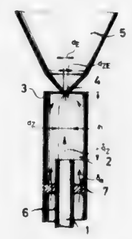
Eike Barnert, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 186,700, Sep. 12, 1980, abandoned. This application Jun. 4, 1982, Ser. No. 385,097

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937652

Int. Cl.³ B05B *1/34*; C23C *11/00*

U.S. Cl. 118—716 **2 Claims**



1. A gas feed nozzle apparatus for supplying a decomposable coating-producing gas and a dilution gas to an apparatus for the coating of fuel kernels for use in a nuclear reactor, having a central channel for supplying said coating-producing gas and a surrounding channel of annular cross-section for said dilution gas defined by the wall of said central channel and an outer containing wall which is prolonged beyond the mouth of said central channel, said outer containing wall terminating in a constriction leading into an upwardly flaring entrance of a reaction vessel and comprising the improvement which consists in that:

the diameter (d_E) of the opening of said constriction (**4**) is in the range from 3 to 10 mm;

the diameter (d_z) of said central channel (**1**) is at least 1.225 times said diameter (d_E) of said constriction opening but does not exceed 3.5 times said constriction opening diameter, and

the spacing between the end of the inner channel wall forming the mouth thereof and said constriction is in the range of 20 to 70 mm.

4,407,231

MOVEMENT ACTIVATED ODOR CONTROL ANIMAL LITTER

David W. Colborn, Pleasanton; Thomas S. Coyne, Livermore; Carolyn P. Emrie, Pleasanton, and Barbara H. Munk, Berkeley, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Sep. 28, 1981, Ser. No. 306,466

Int. Cl.³ A01K *1/015*; C11B *9/00*

U.S. Cl. 119—1 **19 Claims**



8. An animal litter formed by the steps comprising:

providing a quantity of absorbant particles;

suspending a quantity of frangible microcapsules containing a fragrance or a deodorizer in a carrier liquid to form a slurry, said slurry including an adhesive agent; and,

spraying the slurry having said frangible microcapsules suspended therein onto at least some of said absorbant particles to substantially intactly affix said frangible microcapsules onto said at least some of said particles.

4,407,232

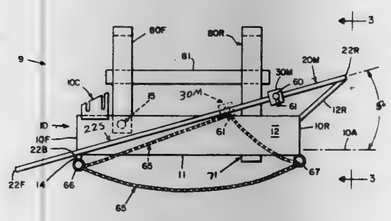
APPARATUS FOR IMMOBILIZING ANIMALS OF RANDOMLY ENCOUNTERED SIZES

Gerald J. Konz, R.R. #1 (Box 72), Minden, Iowa 51553

Filed Mar. 8, 1982, Ser. No. 356,123

Int. Cl.³ A01K *19/00*; A61D *3/00*

U.S. Cl. 119—103 **12 Claims**



1. Apparatus for immobilizing animals of randomly encountered sizes to permit the performance of castration or other tasks, said apparatus comprising:

A. a cradle member extending longitudinally along a substantially horizontal central-axis located along floor means and disposed between laterally separated upright sides thereof whereby the cradle member will support the vertebrae of a randomly encountered animal placed supinely along said central-axis, said cradle member having, for accommodating the supinely placed animal's head and shoulders, a forward portion terminating at a fore-end and also having, for accommodating the animal's rump, a rearward portion terminating at an aft-end;

B. a forwardly and downwardly convergent canopy member attached to the cradle member and overlying only the forward portion thereof, whereby said canopy member will overlie the head, but not the frontlegs, of the supine animal and restrict the animal's head from forward and lateral movements;

C. forwardly and downwardly extending inclined-rail means attached to and laterally offset from the cradle member, said inclined-rail means lying substantially parallel to an imaginary vertical-plane passing through the cradle member central-axis, said inclined-rail means having a finite rearward-length extending rearwardly of the canopy member and wherein a major proportion of said rearward-length is disposed at higher elevation than the cradle member upright sides;

D. coupling means non-rotatably and reciprocatably slidably associated along the rearward-length of the inclined-rail means;

E. a restrainer-bar extending rigidly laterally and horizontally from the coupling means so as to overlie the cradle member and the supine animal, said restrainer-bar being adapted to press firmly against the supine animal's upstanding hindlegs as the operator manipulated the coupling means forwardly an downwardly along said inclined-rail means rearward-length; and

F. reflex resistance means to resist rearward reflexes asserted by the supine animal's upstanding hindlegs against the forwardly moved restrainer-bar.

4,407,233

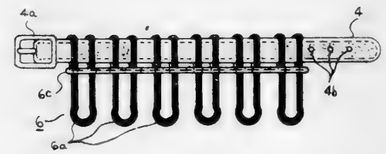
SAFETY COLLAR FOR PETS

Eleanor Bozzacco, 213 Baldwin St., Orange, N.J. 07050

Filed Dec. 31, 1981, Ser. No. 336,418

Int. Cl.³ A01K *27/00*

U.S. Cl. 119—106 **17 Claims**



1. A safety device for pets comprising in combination:

a basic collar comprising one or more straps for securing the device around the neck of an animal;

one or more flexible members depending from one long edge of said collar in a direction transverse to the principal length direction of said basic collar straps, the distance which said flexible members extend beyond said edge substantially exceeding the width of said basic collar straps, said one or more flexible members being at least partially formed of material having a reflectivity for visible light striking the exposed surface of said material which is characterized by values of candlepower per square foot approximately within a range 52 to 164 for light entering at angles within the range $-4°$ to $+40°$, as observed at angles within the range 0.2° to 0.5°, wherein said one or more flexible members comprise a plurality of elongated depending strips or strands of material spaced-apart at intervals around at least a portion of said collar.

4,407,234

PORTABLE AND ADJUSTABLE APPARATUS FOR CLEANING, GROOMING, AND OTHERWISE TREATING DOGS AND OTHER ANIMALS OF SIMILAR SIZE

Joseph F. Kleman, 38 Main St., Locust Gap, Pa. 17840

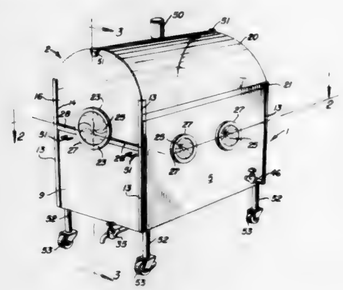
Filed Jul. 13, 1981, Ser. No. 283,085

Int. Cl.³ A01K *13/00*

U.S. Cl. 119—158 **1 Claim**

1. Apparatus for cleaning, grooming and otherwise treating dogs and other animals of similar size comprising, in combination,

a rectangular main housing of sufficient volume to accommodate the animal;
said rectangular main housing including a pair of fixed, spaced parallel side walls and front and rear spaced parallel end panels;
said front panel being divided at approximately the horizontal center-line of the apparatus into lower and upper panel sections;
said end panels being retained at the vertical edges thereof in guide channels on said side panels and being temporarily removable;
a dome-shaped cover disposed atop said rectangular main housing;
said dome-shaped cover including a transparent portion;
a bottom member with a drain disposed in said main housing;
a horizontally extending vertically adjustable perforate platform carried by said main housing and disposed above the bottom member thereof;



a transversely extending adjustable supporting and restraining sling attached to said main housing above the perforate platform therein;
said transversely extending, adjustable supporting and restraining sling being adapted to make contact with the underside of the animal;
the upper horizontal edge of said lower front panel section and the lower horizontal edge of the upper front panel being provided with opposed and matching semi-circular recesses forming between them a circular aperture which permits the passage therethrough of the head of the animal;
an iris-shaped closure of flexible waterproof material being disposed in said circular aperture and expandable and contractible by means of a circular adjusting ring;
each of the side walls of said main housing having at least one aperture for receiving a hand and forearm of the operator of the apparatus; and
means for supplying water to the interior of said main housing.

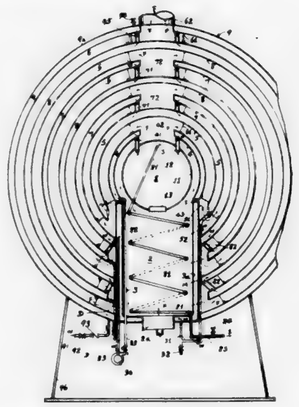
4,407,235

SAFETY BOILER WITH HIGH EFFICIENCY

Shye-Yih Deng, 10-4 Fl., No. 62, Chang-Chun Rd., Taipei, Taiwan

Filed Mar. 31, 1982, Ser. No. 363,581
Int. Cl.³ F22B *7/00*
U.S. Cl. 122—161 **1 Claim**

1. A safety boiler with high efficienty comprising:
a vaporizing chamber, positioned centrally within the boiler, which is provided with several atomizers respectively connected to a pressurized water jacekt and a steam pipe being poked into said chamber to lead steam into a coil in a combustion chamber for superheating the steam;
said pressurized water jacket surrounding said vaporizing chamber, which is centrally formed with a top flue hole atop thereon;
a combustion chamber heated by a burner and positioned under said vaporizing chamber;
a preheated water jacket, surrounding said combustion chamber, which is provided with water pipe communicated with said water jacket surrounding said pressurized water jacket and provided with a boosting pump to suck water from said preheated jacket and boost water into said pressurized water jacket;
a water jacket, surrounding said pressurized water jacket, which is formed with an annular flue hole between its lowest perimeter with said preheated water jacket;
a plurality of water jacket combinations each comprising an inner top-opened water jacket communicated with its inner water jacket and an outer bottom-opened water jacket communicated with its outer water jacket, being subsequently developed outwards;



a plurality of sandwiched flues each respectively partitioned between each two neighbouring water jackets, each sandwiched flue comprising a flue baffle, connecting the two neighbouring water jackets and being made as radial type or spiral type; and
an outmost water jacket, communicated with its inner water jacket and connected outwards with a stack which is communicated with said flues, being supported by a frame connected thereunder;
said vaporizing chamber and each said water jacket being respectively formed with a maintenance hole; the flue holes of each water jacket combination being made counter-current so that one flue hole of one water jacket is approaching said flue stack and another flue hole of another water jacket of the jacket combination is approaching said combustion chamber or burner for reciprocatively passing flue gas within the flues partitioned between the water jackets.

4,407,236

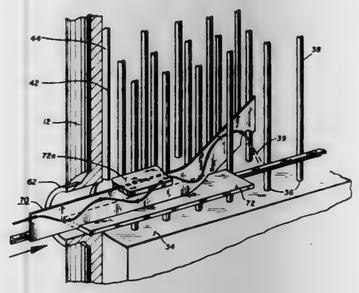
SLUDGE LANCE FOR NUCLEAR STEAM GENERATOR

Glen E. Schukei, South Windsor, and Frank J. Formanek, West Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sep. 21, 1981, Ser. No. 303,698
Int. Cl.³ F22B *37/52*
U.S. Cl. 122—390 **8 Claims**

1. A system having the end function of injecting fluid at high pressure into a body of sludge collected on the upper side of a tube sheet of a heat exchanger above which its tube bundle forms a free lane aligned with a handhole through the steam generator shell and the tubes form lanes at angles to the free lane, including,
a thin metallic strip having high resiliency,

at least one capillary tube attached to the metallic strip along the length of the strip,
a nozzle formed on the end of the capillary tube and positioned at the front end of the strip for movement down the free lane above the tube sheet,



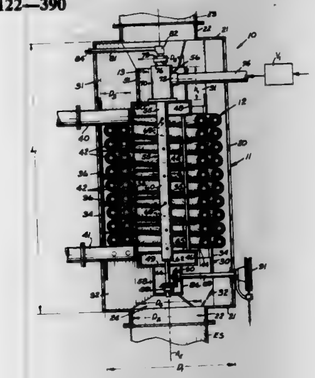
a source of high pressure fluid connected to the rear end of the capillary to supply fluid to the nozzle,
and a diverter structure positioned in the free lane above the tube sheet to engage the metallic strip and capillary combination to direct it down a tube lane which extends at an angle from the free lane.

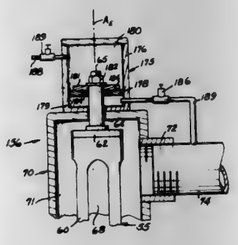
4,407,237

ECONOMIZER WITH SOOT BLOWER

John H. Merritt, Jr., Atlanta, Ga., assignor to Applied Engineering Co., Inc., Orangeburg, S.C.

Division of Ser. No. 235,667, Feb. 18, 1981, Pat. No. 4,346,674.
This application Apr. 29, 1982, Ser. No. 372,997
Int. Cl.³ F22B *37/52*
U.S. Cl. 122—390 **9 Claims**





1. An economizer construction for use in recovering heat from flue gases passing upwardly through a vertical stack via a heat transfer fluid and adapted to be cleaned with a pressurized fluid comprising:
a housing defining a generally vertically extending flue gas passage therethrough about a generally vertical central axis;
a helically wound heat transfer coil positioned in said flue gas passage for placing the heat transfer fluid in a heat exchange relation with the flue gases passing through said flue gas passage, said heat transfer coil defining a generally vertically extending opening centrally therethrough concentrically of said central axis and having a first prescribed diameter; and
a soot blower assembly including an elongate soot blower lance having an outside diameter smaller than said first prescribed diameter of said central opening through said heat transfer coil, mounting means for rotatably positioning said soot blower lance within said central opening through said coil so that the longitudinal axis of said lance is generally coaxially oriented along said central axis; drive means for selectively rotating said lance about said central axis, and fluid supply means for supplying the pressurized cleaning fluid to said lance, said lance defining a fluid passage therein in communication with said fluid supply means and defining a plurality of orifices therein for directing streams of the pressurized cleaning fluid from within said fluid passage across said central opening and onto said heat transfer coil to clean same and said mounting means including gas bearing means attached to said lance and control means for supplying pressurized fluid to said gas bearing means to operate said gas bearing means so that said gas bearing means rotatably supports said lance while pressurized cleaning fluid is supplied to said lance; wherein said lance includes a mounting shaft on the upper end thereof and wherein said gas bearing means includes a gas housing defining a fluid chamber therein into which said mounting shaft rotatably extends; a lower bearing plate mounted in said fluid chamber and dividing said fluid chamber into a lower subchamber below said lower bearing plate and upper subchamber above said lower bearing plate, said lower bearing plate defining a central opening therethrough through which said mounting shaft rotatably extends into said upper subchamber; an upper bearing plate attached to said mounting shaft in said upper subchamber so that said lance is supported thereby with said upper bearing plate overlying said lower bearing plate, said lower bearing plate defining fluid passages therethrough and said control means constructed and arranged to supply the pressurized cleaning fluid into said lower subchamber whereby the pressurized cleaning fluid passes through said fluid passages in said lower bearing plate to lift said upper bearing plate off of said lower bearing plate and maintain separation between said bearing plates when the pressurized cleaning fluid is supplied to said lance so that said lance is rotatably supported.

4,407,238

METHANOL DISSOCIATION USING A COPPER-CHROMIUM-MANGANESE CATALYST

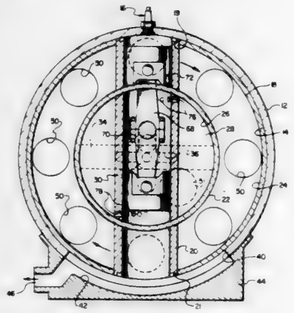
Heeyoung Yoon, McMurray, Pa., assignor to Conoco Inc., Stamford, Conn.

Filed Oct. 26, 1981, Ser. No. 315,115
Int. Cl.³ C01B *1/13*; C10G *13/02*
U.S. Cl. 123—3 **7 Claims**

1. A method of endothermic dissociation of methanol to hydrogen and combustion thereof in an internal combustion engine comprising the steps of:
(a) providing a liquid methanol fuel, said liquid fuel being substantially methanol and comprising no substantial amount of water and comprising molecular oxygen in at most an insubstantial amount,
(b) providing catalytic reactor means, said catalytic reactor

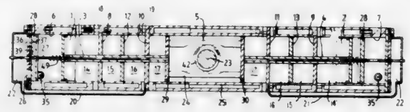
means containing a catalyst consisting essentially of manganese, copper and chromium,
(c) providing an internal combustion engine means,
(d) vaporizing said liquid fuel to form a vapor fuel,
(e) dissociating said vapor fuel in said catalytic reactor means to form a hydrogen rich gaseous fuel,
(f) mixing said hydrogen rich gaseous fuel with air to form a gaseous combustion mixture comprising hydrogen and oxygen,
(g) combusting said gaseous combustion mixture in said internal combustion engine means,
whereby methanol is dissociated to hydrogen which is then combusted in said internal combustion engine.

4,407,239
ROTARY ENGINE
Richard G. Wass, 781 Rancho Simi Dr., Covina, Calif. 91724
Filed Apr. 10, 1981, Ser. No. 252,847
Int. Cl.³ F02B *57/06*
U.S. Cl. 123—44 C **9 Claims**



1. A rotary engine comprising:
a fixed engine housing having an internal chamber, said internal chamber having an inner wall, said internal chamber being cylindrical and having a longitudinal center axis;
a cylinder each end of which is open, said ends of said cylinder being located within said internal chamber in a close fitting manner, said cylinder being rotatable on a first axis of rotation relative to said fixed engine housing, said first axis of rotation coinciding with said longitudinal center axis of said fixed engine housing;
a primary output shaft attached to said cylinder and extending exteriorly of said fixed engine housing, the rotational axis of said primary output shaft coinciding with said first axis of rotation;
a pair of opposing pistons being movably mounted within said cylinder, said pair of opposing pistons being connected together about a connecting shaft assembly, said connecting shaft assembly extending exteriorly of said internal chamber and including an auxiliary power output shaft, said auxiliary power output shaft having a second axis of rotation, said second axis of rotation being spaced from said first axis of rotation, said connecting shaft assembly extending through an access opening assembly within said cylinder;
fuel/air mixture firing means mounted within said engine housing, each said end of said cylinder to be positionable directly adjacent said fuel/air mixture firing means;
an inlet port assembly including an interior chamber formed within said engine housing for conducting of a fuel/air mixture into said cylinder, said interior chamber being totally confined within said internal chamber and centrally disposed about said longitudinal center axis, said interior chamber being spaced from said inner wall; and
an outlet port assembly formed within said engine housing for discharging of exhaust gases from said cylinder.

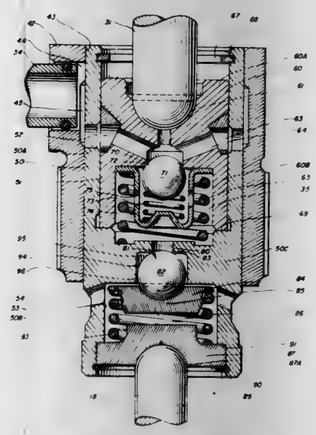
4,407,240
OPPOSED PISTON INTERNAL COMBUSTION ENGINE WITH SPECIAL SCAVENGING MEANS
Bertram W. Fromson, Maison Des Landes S.B., Jersey, Channel Islands
PCT No. PCT/GB80/00016, § 371 Date Sep. 19, 1980, § 102(e) Date Sep. 19, 1980, PCT Pub. No. WO80/01588, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 25, 1980, Ser. No. 199,726
Claims priority, application United Kingdom, Feb. 3, 1979, 7903864; Jul. 2, 1979, 7922896
Int. Cl.³ F02B *75/24, 75/28*
U.S. Cl. 123—56 BC **14 Claims**



1. A reciprocating piston machine comprising a cylinder having a head at one end, a closing wall at the other end and a fixed partition therebetween defining a first pumping chamber with the closing wall, at least one main piston slidably mounted between the partition and the cylinder head and defining a combustion chamber with the cylinder head and a second pumping chamber with the fixed partition, a piston rod secured to said main piston and extending through said partition, at least one subsidiary piston secured to said piston rod within said first pumping chamber and slidable relative thereto conjointly with the movement of said main piston, said main piston having a compression stroke on movement toward said head and a power stroke on movement toward said closing wall said subsidiary piston having a compression stroke conjointly with the power stroke of said main piston, a scavenging piston freely disposed in the combustion chamber about at least one guide rod between the cylinder head and the main piston, said scavenging piston being in axial slidable engagement with said guide rod and the walls of said cylinder, means located about said guide rod for normally biasing said scavenging piston toward said cylinder head said at least one guide rod extending axially through said cylinder head, means for supplying a charge to said first and second pumping chambers for compression therein, conduit means from said pumping chambers to said combustion chamber for introducing the compressed charge into said combustion chamber between the cylinder head and the scavenging plate on the power stroke of said main piston, said compressed charge driving said scavenging plate towards the main piston to scavenge combustion, products from the combustion chamber and allow said combustion chamber to fill with compressed charge, said scavenging plate having valve means permitting return of the scavenging plate through the compressed charge in the combustion chamber on the compression stroke of said main piston.

4,407,241
EXPANDABLE HYDRAULIC TAPPET WITH A VARIABLE EXIT VALVE
Gordon K. Butler, Crothersville, and Don E. Beeson, Columbus, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Dec. 31, 1980, Ser. No. 221,767
Int. Cl.³ F01L *1/24*
U.S. Cl. 123—90.16 **20 Claims**

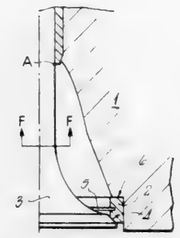
1. A pressure controlled expandable hydraulic tappet for use in an internal combustion engine to selectively vary the effective profile of a camshaft by extending the drive train between said camshaft and a camshaft operated mechanism, said tappet comprising:
a housing having an internal piston receiving means;
expandable piston means reciprocally disposed within said housing, said piston means defining a load cell chamber having an inlet port and an exit port;
a supply of hydraulic fluid connected to said inlet port;
inlet valve means interposed said fluid supply and said chamber and biased to assume a closed position, said valve means opening to admit hydraulic fluid into said chamber expanding said piston means when a predetermined valve opening force is exerted on the upstream side of said valve means and said inlet valve means resuming a closed position and entrapping said fluid within said chamber when the valve closing force downstream of said valve means exceeds said valve opening force;
exit valve means connected to said exit port for selectively sealing or opening said chamber, said exit valve opening



to effect exiting of hydraulic fluid from said chamber at a predetermined rate when pressure within said chamber exceeds said predetermined amount, said exit valve means having flow throttling means within said tappet for controling the rate of closing of said exit valve and for controlling the flow rate at which fluid exits through said exit valve means, said exit valve means including an exit ball, a mating seat to accommodate in sealing relation said exit ball, and an exit valve counter-bore extending downstream from said seat, said exit valve counter-bore having a diameter slightly greater than the diameter of said exit ball, said exit ball being disposed for reciprocal movement substantially within said counter-bore and defining in combination with said counter-bore an annular passageway that limits the fluid flow rate therethrough; and
bias means for closing said exit valve and sealing hydraulic fluid within said chamber when the pressure within said chamber is below a predetermined amount.

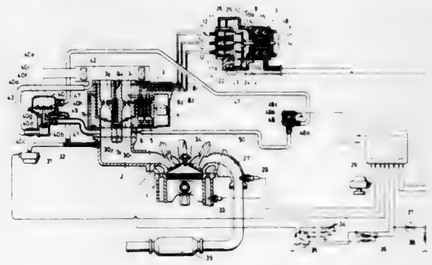
4,407,242
VALVE SEATS
Alfred E. G. Blum, Greatford, England, assignor to Massey-Ferguson-Perkins Limited, London, England
PCT No. PCT/GB80/00137, § 371 Date May 8, 1981, § 102(e) Date May 4, 1981, PCT Pub. No. WO81/00737, PCT Pub. Date Mar. 19, 1981
PCT Filed Sep. 8, 1980, Ser. No. 261,228
Claims priority, application United Kingdom, Sep. 8, 1979, 7931261
Int. Cl.³ F01L *3/22*
U.S. Cl. 123—188 S **12 Claims**

1. An engine valve seat comprising a body with an annular inner peripheral portion that carries a frusto-conical valve face adapted to be engaged by a valve member that is coaxial with and is movable along the axis of said frusto-conical valve face characterized in that said inner peripheral portion is cantilev-



ered over at least the full width of said valve face (4) as measured radially of said axis so that said valve face (4) is deflected in bending and shear when subject to valve gas and inertia seating forces.

4,407,243
AIR/FUEL RATIO CONTROL SYSTEM HAVING FUNCTION OF CONTROLLING SUPPLY OF SECONDARY AIR INTO INTAKE PIPE OF INTERNAL COMBUSTION ENGINE
Kazuo Otsuka, Higashikurume; Shin Narasaka, Yono, and Shumpei Hasegawa, Niiza, all of Japan, assignors to Honda Motor Co., Ltd., Tokyo, Japan
Filed Aug. 20, 1981, Ser. No. 294,464
Claims priority, application Japan, Aug. 27, 1980, 55-118879
Int. Cl.³ F02B *3/00, 33/00*
U.S. Cl. 123—179 G **2 Claims**



1. In an air/fuel ratio control system for performing feedback control of the air/fuel ratio of an air/fuel mixture being supplied to an internal combustion engine having an intake pipe, the system including:
means for detecting the concentration of an exhaust gas ingredient emitted from said engine,
fuel quantity adjusting means for producing said mixture being supplied to said engine, and
an electrical circuit operatively connecting said concentration detecting means with said fuel quantity adjusting means in a manner effecting feedback control operation to control the air/fuel ratio of said mixture to a predetermined value in response to an output signal produced by said concentration detecting means,
said electrical circuit including a circuit for detecting the operating condition of said engine,
the combination which comprises:
a secondary air supply passage communicating said intake pipe of said engine with atmospheric air;
a secondary air control valve arranged across said secondary air supply passage and having a diaphragm defining a

negative pressure chamber on one side thereof and a control chamber on an opposite side thereof,

said secondary air control valve being responsive to negative pressure introduced into said negative pressure chamber to open said secondary air supply passage;

orifice means communicating said negative pressure chamber with said control chamber;

a check valve arranged to allow movement of air only from said negative pressure chamber to said control chamber;

a negative pressure passage communicating said negative pressure chamber with said intake pipe of said engine;

a control passage communicating said control chamber with said intake pipe to substantially instantaneously render said secondary air control valve inoperative by equalizing the pressures within the chambers thereof;

a solenoid valve arranged to close said control passage;

a sensor for detecting the rotational speed of said engine;

solenoid valve control means for controlling said solenoid valve in response to an output signal produced by said engine rotational speed sensor;

said solenoid valve control means including said engine operating condition detecting circuit,

said engine operating condition detecting circuit being arranged to be supplied with said output signal of said engine rotational speed sensor for control of the air/fuel ratio of said mixture;

said solenoid valve control means being operable to open said solenoid valve for a predetermined period of time after the rotational speed of said engine has increased across a predetermined value which is higher than the cranking speed of said engine but lower than the idling speed of said engine,

whereby said secondary air control valve is substantially instantaneously completely closed for said predetermined period of time upon opening of said solenoid valve.

4,407,244

APPARATUS FOR CONTROLLING THE PROPORTION OF AIR AND FUEL IN THE AIR-FUEL MIXTURE OF THE INTERNAL COMBUSTION ENGINE

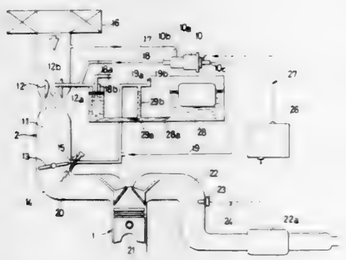
Motonobu Akagi, Kariya; Toshio Tanahashi, and Kichiro Kato, both of Susono, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jun. 22, 1982, Ser. No. 390,890

Claims priority, application Japan, Jun. 27, 1981, 56-100110

Int. Cl.³ F02M *7/24, 23/04*

U.S. Cl. 123—339 **4 Claims**



1. An apparatus for controlling the proportion of air and fuel in the air-fuel mixture of an internal combustion engine having an intake manifold, a main system fuel passage and a slow system fuel tube, comprising:

a carburetor including an air horn tube having a venturi tube with a main nozzle and a throttle valve connected to the intake manifold of an internal combustion engine, said venturi tube having a main system fuel tube opening into said main nozzle at a first end thereof and communicating with a main system fuel passage through a second end thereof, said slow system fuel tube opening into a slow system fuel supply port formed near said throttle valve of the air horn tube at a first end thereof and communicating with said slow system fuel passage through a second end thereof, a main system air-bleeding passage connected to said main system fuel tube for supplying air thereto, and a slow system air-bleeding passage connected to said slow system fuel tube for supplying air thereto;

an electromagnetic control valve including a box-shaped housing formed with a magnetic material and provided with an air-inlet port, a first outlet port connected to said main system air-bleeding passage and an air-bleeding passage, a tubular iron core supported on said housing at opposite ends thereof, having a first passage and a second passage communicating with said first outlet port and with said second outlet port, respectively, and being formed separately with each other and internally of the iron core, at least one first valve opening formed in a part of the iron core provided with said first passage so as to allow communication between said first outlet port and said air-inlet port, and at least one second valve opening formed in a part of the core provided with said second passage so as to allow communication between said second outlet port and said air inlet port, a bobbin having a solenoid wound partially along the longitudinal length thereof and having a first valve element and a second valve element which are formed so as to open and close the at least one first valve opening and the at least one second valve opening, respectively, formed in said iron core, spring means urging said bobbin in a longitudinal direction of said iron core, and at least one pair of permanent magnets fixed to said housing at a position corresponding to said solenoid formed on said bobbin and so disposed that the direction of the magnetic flux is perpendicular to said solenoid; and

control means for applying analog electric signals to said solenoid, wherein the first valve element and the second valve element are in a positional relationship such that said first valve element starts opening said at least one first valve opening a predetermined time after said second valve element has started opening said at least one second valve opening when the bobbin is caused to slide on said iron core against the resilient force of said spring means due to application of said analog electric signals to said solenoid.

4,407,245

SHUTOFF APPARATUS FOR FUEL INJECTION PUMPS

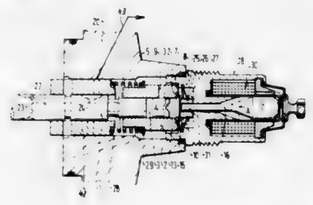
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,077

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3034605

Int. Cl.³ F02D *31/00*

U.S. Cl. 123—359 **4 Claims**



1. A shutoff apparatus and/or overspeeding protection means for fuel injection pumps of internal combustion engines, said pump comprising a high-pressure portion connected with a low-pressure portion via an electromagnetically actuatable control device, a high pressure chamber controlled by a distribution piston and a displaceably supported annular cylinder, an electromagnet having a housing, said electromagnet including actuation means arranged to engage said annular cylinder and axially aligned with said distribution piston, means slidably supported in said annular cylinder to seal said high-pressure chamber, said means slidably supported in said annular cylinder being arranged to be urged by a spring means against a stop on said housing, said annular cylinder including an axial bore which intersects a lateral means defining a slot, a pin in said slot arranged to engage said annular cylinder, said actuation means arranged to contact said pin, and said annular cylinder being normally held against a stop means by a compression spring, a normally closed relief bore in said annular cylinder located above said high-pressure chamber.

4,407,246

IGNITION SIGNAL GENERATING DEVICE FOR USE IN CONTACTLESS IGNITION SYSTEM

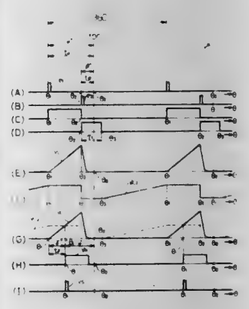
Kimihiro Boyama, Sunto, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed Apr. 8, 1981, Ser. No. 252,055

Claims priority, application Japan, Apr. 11, 1980, 55-47780; Apr. 25, 1980, 55-55119

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—415 **6 Claims**



1. An ignition signal generating device for use in a contactless ignition system for an internal combustion engine comprising;

a first signal generating circuit to generate a first signal at a first position corresponding to the maximum advanced ignition position of said internal combustion engine;

a second signal generating circuit to generate a second signal at a second position corresponding to the minimum advanced ignition position of said internal combustion engine;

a first triangular wave generating circuit to generate a first triangular wave having a given inclination rising during the period from the first signal generating position to the second signal generating position;

a monostable multi-vibrator triggered by said second signal to generate a square wave signal of a given duration τ_1;

a second triangular wave generating circuit to generate a second triangular wave having a given inclination rising during the period from a falling position of an output signal of said monostable multi-vibrator at least to said first signal generating position with the maximum value of said triangular wave being maintained until said second signal is generated;

and an ignition signal generating circuit to produce an ignition signal to determine an ignition position of said internal combustion engine when the signal levels of said first and second triangular waves are equal to each other.

4,407,247

CLOSED LOOP TYPE AIR-FUEL RATIO CONTROL SYSTEM OF AN INTERNAL COMBUSTION ENGINE

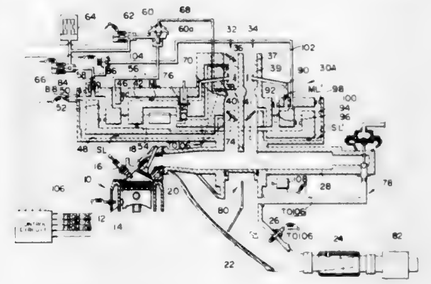
Kenji Masaki, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 21, 1981, Ser. No. 313,630

Claims priority, application Japan, Oct. 22, 1980, 55-147731

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—438 **6 Claims**



1. In an internal combustion engine having at its intake section a two-barrel type carburetor including a primary fuel supply system having a primary main fuel supply line and a primary slow fuel supply line and a secondary fuel supply system having a secondary main fuel supply line and a secondary step fuel supply line, and at its exhaust section a three-way catalytic converter disposed in an exhaust tube of said engine, a closed loop type air-fuel ratio control system comprising:

an exhaust gas sensor for producing an information signal representative of the air-fuel ratio of the engine inlet mixture by sensing the engine exhaust gas;

a control unit for producing a command signal by processing said information signal issued from said exhaust gas sensor;

first means for controlling the amount of air fed to said primary main fuel supply line in accordance with the command signal from said control unit;

second means having first and second conditions which take place selectively, said first condition being a condition wherein said second means controls the amount of air fed to said primary slow fuel supply line in accordance with the command signal from said control unit, said second condition being a condition wherein said second means controls the amount of air fed to either of said secondary main fuel supply line and said secondary step fuel supply line in accordance with the command signal from said control unit, and

third means for causing said second means to assume selectively said first and second conditions in accordance with the load applied to the engine.

4,407,248

ELECTRONICALLY CONTROLLED CARBURETOR

Yuzo Takeuchi, Nagoya; Toshihide Kimura, Aichi, and Shigetaka Takada, Obu, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Jan. 20, 1982, Ser. No. 341,087

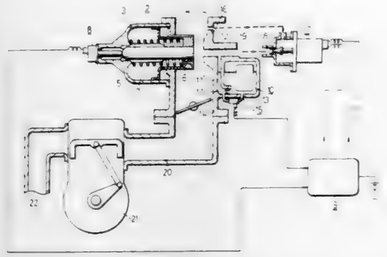
Claims priority, application Japan, Jan. 26, 1981, 56-10495

Int. Cl.³ F02B *33/00*; F02M *7/00*

U.S. Cl. 123—439 **3 Claims**

1. An electronically controlled carburetor for an internal combustion engine for a vehicle comprising a variable venturi for varying the venturi cross-section and concurrently varying the amount of air metered into said venturi in response to the engine operating conditions, an air flow sensor for sensing the displacement of said variable venturi and producing related electrical signals in response to changes in air flow through said venturi, a main fuel nozzle for discharging metered fuel

into said venturi, a fuel flow sensor for sensing pressure differential of fuel across a main fuel jet communicating with said main fuel nozzle, said fuel flow sensor producing related electrical signals in response to changes in fuel flow through said main fuel jet, an air bleed controlling actuator for controlling



the amount of air to be bled into said main fuel nozzle, and a control circuit responsive to the output signals from said air flow sensor and said fuel flow sensor for driving said air bleed controlling actuator, whereby the amount of air bleed may be controlled so as to set the ratio of air-to-fuel at an arbitrary fixed value at all times.

4,407,249

FUEL INJECTION PUMP FOR SELF-IGNITING INTERNAL COMBUSTION ENGINES

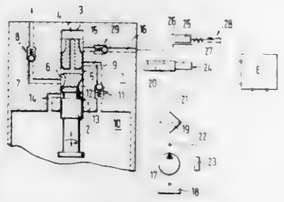
Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,957

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 2017275

Int. Cl.³ F02M *41/00*

U.S. Cl. 123—449 **6 Claims**



1. A fuel injection pump for a self-igniting internal combustion engine having a pump work chamber, said pump further having at least one metering piston functioning synchronously with the engine for determining a metered injection quantity, said pump further having a distributor driven synchronously with at least one pump piston, said distributor delivering said metered injection quantity to a work chamber during an intake stroke of said pump piston and to injection lines leading to the engine during a compression stroke of said pump piston, characterized in that said at least one metering piston confining volume of metered fuel is preferably disposed upstream of said distributor, said metering piston is actuated for its metering movement by a controlled fuel flow to said volume and is actuated for its displacement movement of the metered fuel to be fed into said pump work chamber by a controlled release of a restoring force means and further that the stroke of said metering piston is determined by electrical means, said electrical means being triggered by a control device whereby the metered injection quantity is determined, said electrical means comprising a travel transducer and a magnetic valve associated with said metering piston, and magnetic valve having a first position during the compression stroke when fuel is supplied from a supply pump to said metering piston and a second position at which a connection leading from the metered volume ahead of said metering piston to said pump work chamber is opened upon completion of the metering stroke of the metering piston, the connection being further controlled by a control edge of said pump piston and opened during the intake stroke when said metered injection quantity driven by the restoring force means is supplied to said work chamber.

4,407,250

FUEL INJECTION SYSTEM

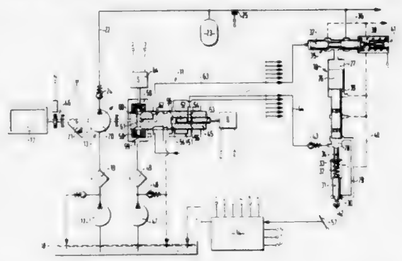
Franz Eheim, Stuttgart; Gerald Höfer, Weissach-Flacht, and Heins Links, Baiersbronn, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 15, 1981, Ser. No. 225,166

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001166

Int. Cl.³ F02M *41/06*; F02D *1/02*

U.S. Cl. 123—450 **30 Claims**



1. A fuel injection system for internal combustion engines comprising a plurality of pump nozzles and a high pressure servo fluid source;

each said pump/nozzle including a servo piston, said servo piston including a large diameter portion and a small diameter portion serving as a pump piston, a pump work chamber below said small diameter portion and a servo pressure chamber above said large diameter portion, said servo pressure chamber receiving via a servo pressure line servo fluid from said high pressure servo fluid source for driving said servo piston;

a control apparatus for injection onset arranged to control the flow of servo fluid from said high pressure source to said servo pressure chamber for driving said servo piston in proportion with the cycles of the engine;

and a fuel metering apparatus arranged to determine the fuel quantity of the fuel to be injected and storing up said fuel in said pump work chamber below said pump piston;

said control apparatus and said fuel metering apparatus being driven by a common drive means and combined into a common structural unit comprising a single rotating distributor means;

said fuel metering apparatus comprising a variable stroke metering piston provided with a supply chamber which is alternatively connected via the distributor means with the fuel source and with a pump work chamber.

4,407,251

FUEL-SUPPLY CONTROL SYSTEM

Keiichi Nakanishi, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Aug. 4, 1981, Ser. No. 290,075

Claims priority, application Japan, Oct. 17, 1980, 55-144458

Int. Cl.³ F02B *33/00, 3/00*

U.S. Cl. 123—472 **17 Claims**

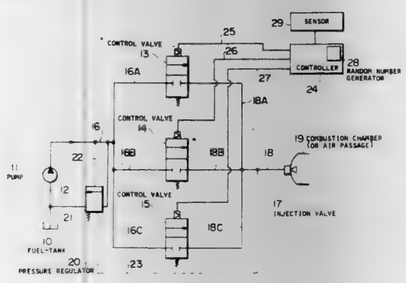
1. A fuel supply control system for an engine comprising:

(a) a fuel supply line to supply fuel to the engine;

(b) at least two control valves arranged in the fuel supply line, the control valves being connected in parallel with each other and changing between open and closed states when energized by drive pulses;

(c) a sensor for detecting an engine operating condition and producing an output signal indicative thereof;

(d) a generator producing signals corresponding to a random designation sequence for designating the control valves in a random sequence, the number of the different signals equal to the number of the control valves; and



(e) a controller responsive to the output signal of the sensor for generating said drive pulses, the duty cycle of the drive pulses variable with the engine operating condition, said controller operative for distributing each of said drive pulses to a random one of the control valves designated by the random designation signals of the generator to open the designated control valve so that the control valves are opened in a random sequence.

4,407,252

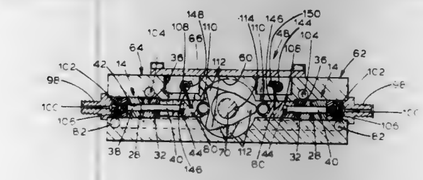
FUEL INJECTION SYSTEM

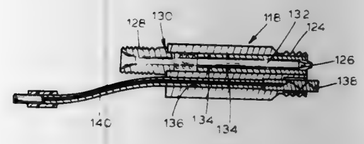
Monte M. Dilliner, Lineville, Iowa, assignor to Oscar E. Jones; Ted Lowe, both of Des Moines, Iowa and Robert H. Robinson, Fairfield, Ill., a part interest

Filed Jun. 4, 1981, Ser. No. 270,639

Int. Cl.³ F02M *59/30, 61/18*

U.S. Cl. 123—504 **17 Claims**





1. A fuel injection system for an internal combustion engine having a cylinder and a combustion chamber therefor, an access port to said combustion chamber, a source of fuel supply, a fuel conduit connected to said source of supply and a means for supplying fuel from said source of supply to said fuel conduit, said system comprising:

a pump body having a through bore defining a first and second end,

a high pressure seal mounted in said body at a predetermined point spaced inwardly from said first end to define a fuel receiving chamber,

a low pressure seal mounted in said body intermediate said second end and said high pressure seal,

a plunger having a metering end and a drivable end and journalled through and supported in said seals free of contact with said pump body and reciprocable relative thereto in a working stroke with the metering end of said plunger designed to move in said chamber between said high pressure seal and said first end,

each of said seals being of a material having low friction properties so that said plunger in reciprocation requires no lubrication from the fuel pumped or from other sources,

a valved fuel inlet line to said chamber connected to said fuel conduit,

a fuel injector mounted in the access port to said combustion chamber, said injector comprising:

a body member provided with a through fuel passageway,

an adjustable spring loaded nozzle assembly in said passageway supported in spaced seal members free of contact with said body member, and

said seal members being of a material having low friction properties so that said nozzle assembly in operation requires no lubrication from the fuel pumped or from other sources,

a valved fuel outlet line from said chamber to said injector, and

means for acting against the drivable end of said plunger to vary the length of stroke thereof for ejecting selectively varied precise amounts of fuel through said outlet line to said injector at a rate proportional to desired engine speeds.

4,407,253

FUEL INJECTION PUMP FOR SELF-IGNITING INTERNAL COMBUSTION ENGINES

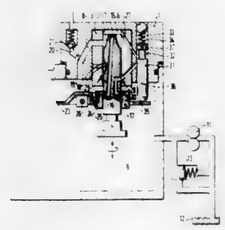
Manfred Bauer, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 25, 1981, Ser. No. 247,445

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013087

Int. Cl.³ F02M *37/04*

U.S. Cl. 123—506 **16 Claims**



1. In a fuel injection pump for supplying fuel to injection nozzles of self-igniting internal combustion engines, having: housing means within which a bore and a suction chamber are defined; a pump piston mounted for reciprocating movement within the bore as a function of engine rpm, said housing means and piston defining a pump work chamber in said bore, a plurality of pressure lines, each adapted to be connected at one end to the housing means for communicating with the work chamber and at the other end to an injection nozzle, and a fuel injection quantity control device for changing the fuel quantity delivered by said fuel injection pump into said pressure lines as a function of engine parameters, the improvement comprising:

a relief conduit containing a throttle, the relief conduit being connected to the work chamber and to the suction chamber for passage therethrough of a partial fuel quantity during a part of the compression stroke of the piston,

said relief conduit being controlled by at least one control edge of the piston and a control element actuated by said fuel injection quantity control device both arranged in line to one another for delivery of the partial fuel quantity to the suction chamber, when the piston has executed a predetermined pre-stroke of its compression stroke, during which time the remaining fuel has reached the injection pressure, and

a control slide further controlling the cross section of said relief conduit in line to said control edge and said control element to selectively block or throttle the fuel flow through said relief conduit.

4,407,254

INTAKE HEATING APPARATUS OF AN INTERNAL COMBUSTION ENGINE

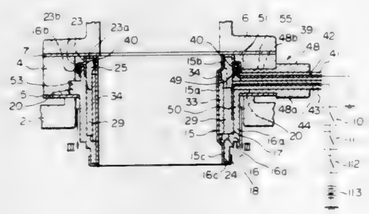
Keigo Kato, and Yosio Kuroiwa, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

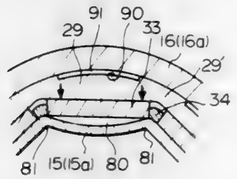
Filed Jan. 27, 1982, Ser. No. 343,342

Claims priority, application Japan, Oct. 5, 1981, 56-157535; Oct. 5, 1981, 56-157537

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—549 **9 Claims**





1. An intake heating apparatus of an internal combustion engine comprising a hollow heater vessel, which is placed in an intake passage between a fuel supply means and a cylinder of the engine to heat an intake, said hollow heater vessel comprising: an inner pipe having therein a mixture passage which is aligned with the intake passage; an outer pipe in which said inner pipe is press-fitted; a plurality of periphery spaced PTC elements located between said inner pipe and said outer pipe; and an annular elastic electrode which is connected to an external electrical power supply and is located between the PTC elements and the outer pipe, so that the electrode comes into contact with the PTC elements, whereby the inner pipe is heated by heating the PTC elements to heat the intake passing through the heater vessel, wherein the improvement comprises means for preventing the PTC elements from being broken when and after the inner pipe is press-fitted in the outer pipe.

4,407,255

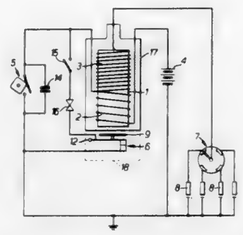
APPARATUS FOR SUPPLYING HIGH VOLTAGE PULSES

James G. Butler, 2, Station Ter., Penarth, Glamorgan, Wales

Filed Jul. 14, 1980, Ser. No. 168,087

Int. Cl.³ F02P *3/02*

U.S. Cl. 123—595 **10 Claims**



1. A retrofit ignition conversion apparatus for backfitting a conventional non-vibrator ignition transformer (17) equipped with a magnetically transparent housing-end for supplemental operation as a vibrator type ignition transformer for supplying a continuous stream of high-voltage pulses from said ignition transformer (17) secondary coil (3) comprising;

(a) a contact breaker (5) connected to a primary winding (2),

(b) a means (15) for connecting a voltage source (4) to said primary winding (2),

(c) said means (15) constituting an isolating switch,

(d) a vibrator switch (6) adapted to be physically mounted (18) to said conventional ignition transformer (17) and electrically connected to said primary winding (2), said vibrator switch (6) being normally biased closed under mechanically elastic pressure inherent in many such known vibrator switch structures,

(e) a magnetically attractive means (9) associated with said vibrator switch (6) and disposed outside said conventional transformer (17) casing in sufficient proximity to the transformer case end to insure functional magnetic coupling with said magnetically attractive means (9) such that said vibrator switch (6) will be caused to move to an open condition against said elastic closing bias when a magnetic field passes through the transformer core whereby when said switch (6) and said primary winding (2) are connected to a voltage source (4), the opening and closing of said switch (6) will result in a stream of high voltage pulses from said ignition transformer (17) secondary winding (3),

(f) said retrofit apparatus further comprising said contact breaker (5) connected in parallel with the series combination of said isolating switch (15) and said vibrator switch (6) such that when said isolating switch (15) is opened, said conventional ignition transformer will operate independently of said retrofit system.

4,407,256

CAPACITOR DISCHARGE IGNITION SYSTEM AND METHOD OF MANUFACTURE THEREOF

Ronald J. Wolf, Zanesville, Ind., assignor to Wabash, Inc., Wabash, Ind.

Division of Ser. No. 171,705, Jul. 24, 1980, Pat. No. 4,333,442, and a continuation-in-part of Ser. No. 105,234, Dec. 19, 1979, abandoned. This application Nov. 18, 1981, Ser. No. 322,405

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—599 **9 Claims**

1. In a capacitor discharge ignition system for use with and positioned adjacent a flywheel having two permanent magnets rotated in synchronism with the operation of a two cylinder engine, a capacitor discharge ignition sub-assembly for mounting on a ferromagnetic core, the capacitor discharge ignition sub-assembly comprising:

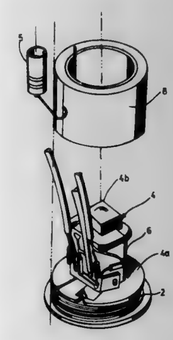
an auxiliary coil;

an ignition transformer including a primary coil and two secondary coils;

a coil support member, said auxiliary coil and said primary and second coils being concentrically disposed on said coil support member about a common axis;

electrical circuitry means interconnecting said auxiliary coil and said primary coil and being responsive to said auxiliary coil for providing energy to said primary coil in response to induced electrical energy in said auxiliary coil as a result of the rotating magnetic field; and

a housing for receiving and enclosing said auxiliary coil, said ignition coil and said circuitry means, said auxiliary coil



being disposed about a first portion of said coil support member, said ignition transformer being disposed about a second portion of said coil support member adjacent said first portion and said electrical circuitry means being disposed about said auxiliary coil and between said auxiliary coil and said housing,

said primary coil being disposed directly about said second portion of said coil support member and said two secondary coils being disposed one atop the other and about said primary coil, said primary coil being contiguous with the entirety of one of said secondary coils and contiguous with a predetermined portion of the second of said secondary coils.

4,407,257

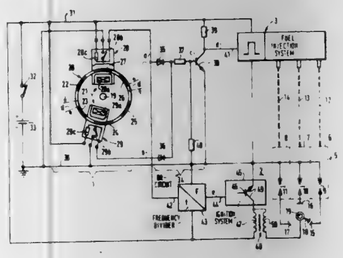
METHOD AND APPARATUS FOR CONTROLLING AN IGNITION SYSTEM

Darwin O. Taft, Bainbridge, and Howard E. Van Sicien, Jr., Sidney, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Dec. 17, 1981, Ser. No. 331,866

Int. Cl.³ F02P *7/00*

U.S. Cl. 123—612 **16 Claims**



1. A method of controlling an ignition system for an internal combustion engine, said ignition system of the type having means for generating electrical energy, means for storing electrical energy, a plurality of spark plugs, and means for distributing and discharging said stored electrical energy to each of said spark plugs in timed relation to the operating cycle of said engine, said distributing and discharging means including a plurality of switching devices equal to the number of spark plugs, each device operatively connected to a respective spark plug and an electromagnetic pulse generator for generating electric pulses in timed relation to the operating cycle of the engine, each pulse adapted to operate a respective switching device in timed relation to the operating cycle of the engine, the method comprising:

generating with said electromagnetic pulse generating means and for each operating cycle of the engine a number of trigger pulses greater than the number of spark plugs; and

distributing only the number of trigger pulses equal to the number of spark plugs to a respective switching device for each operating cycle of the engine to permit discharge of said stored energy through each of said spark plugs in timed relation to the operating cycle of the engine.

4,407,258

IGNITION AND FUEL INJECTION PULSE GENERATING SYSTEM FOR ODD-NUMBERED MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

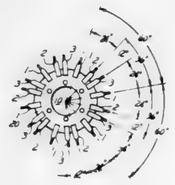
Walter Ruf, Schieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,460

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1980, 3045716

Int. Cl.³ F02P *5/00*

U.S. Cl. 123—617 **5 Claims**





1. For combination with an internal combustion engine (5) having an odd number of cylinders,

a control pulse generating system to provide

(a) ignition control pulses for spark plugs (9, 10, 11) of the engine (5), and

(b) fuel injection control pulses for a fuel injection system (3),

in which a larger number of ignition control pulses (U44) than fuel injection pulses (U41) are required for application to the engine, and the timing of said ignition control pulses and of said fuel injection pulses is different,

said control pulse generating system having a drive shaft (19) coupled to the engine (5) rotating in synchronism therewith at half engine speed,

and comprising, in accordance with the invention,

a signal generator (1) including

a rotor (20) having a plurality of blocking vane or gate portions (22, 23, 24, 25, 26, 27) separated by vane gaps or openings,

a first signal generator unit (28) and a second signal generator unit (29), each unit being positioned to be selectively covered by the vanes or gates, or left uncovered by the vane gaps or intervening openings, and generating pulses (U28, U29) corresponding to coverage of the respective generator unit by said vane;

wherein the number of vanes is twice the number of cylinders of the engine (5);

the position, and the dimension, and the rotation of the rotor, relative to the generators, are so arranged and selected that the first pulses (U28) generated by the first generator (28) extend over the pulse gaps of the second pulses (U29) from the second generator (29);

at least one vane (23, 26) having its leading edge—with respect to the direction of rotation of the rotor—foreshortened by a dimension (d) so that the pulse generated by the first signal generator (28), upon passage of the foreshortened vane or gate (23, 26) commences only when part of the pulse gap of the second generator (29) has already elapsed;

an OR-function gate (34), having the first and second pulses from the first and second pulse generator (28, 29) applied thereto and providing said fuel injection control pulses (U41) as a function of the overlap of the pulse gaps of the pulses applied to the OR-function gate (34);

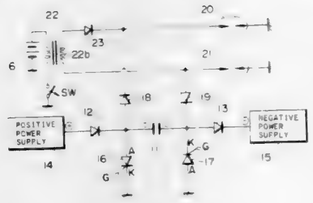
and circuit means (42, 43) responsive to the trailing flanks of the pulses from one (28) of said pulse generators (28, 29) for providing said ignition control pulses (U44).

4,407,259

PLASMA IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toshimi Abo, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1981, Ser. No. 333,748
Claims priority, application Japan, Jan. 8, 1981, 56-764
Int. Cl.³ F02P *3/08*
U.S. Cl. 123—620 **16 Claims**



1. A plasma ignition system for an internal combustion engine having a plurality of plasma ignition plugs and comprising:

(a) a first means for generating a high DC voltage surge immediately before every ignition timing, said means operative for generating a spark discharge at each plasma ignition plug connected thereto;

(b) a capacitor;

(c) a second means for charging a plasma ignition energy into said capacitor;

(d) a third means for generating a first trigger signal at every ignition timing;

(e) a pair of electrical switching elements, each connected between either end of said capacitor and ground, each said switching element operative for grounding the corresponding end of said capacitor upon receipt of said first trigger signal from said third means; and

(f) a fourth means, connected between both ends of said capacitor and the plasma ignition plugs, for providing a discharge path of said capacitor through one of the plasma ignition plugs where the spark discharge has occurred whereby plasma ignition is established in said plugs.

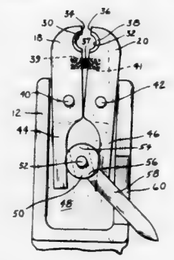
4,407,260

ARCHERY BOWSTRING RELEASE DEVICE

Leon W. Lyons, 1122 Dewitt Ave., Niles, Mich. 49120

Division of Ser. No. 62,701, Aug. 1, 1979, Pat. No. 4,282,851.
This application Nov. 24, 1980, Ser. No. 210,121
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—35 A **3 Claims**

1. An archery bowstring release device comprising a housing, jaws pivoted intermediate their ends to said housing and having ends projecting from said housing and said ends provided with confronting string-receiving notches, spring means normally separating the projecting ends of said jaws, said jaws being shiftable between a string-retaining position and a string-releasing position, each of said jaws including an elongated leg within the housing, and manually shiftable means pivotally connected to said housing and having a part projecting from



said housing, said shiftable means including a member having radial projections positioned between and engaging said jaws in a string retaining first position during bowstring drawing and aiming, said member being pivotable to a second position upon rotation of said shiftable means to disengage said radial projections from the jaws whereby said projecting string-engaging jaw ends may be spring-released and separated.

4,407,261

ARROW LOCK

Kenneth L. Elliott, 2101 W. Detroit, Chandler, Ariz. 85224

Filed Dec. 24, 1981, Ser. No. 334,447
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—41 A **7 Claims**



1. An arrow lock for mounting on a compound bow, comprising:

a Y-shaped mounting plate having a mounting leg and first and second prong members;

first and second shaft members protruding through said first and second prong members and mounted for rotation therein;

first and second retaining flaps coupled to said first and second shaft members, respectively, each of said flaps having an adjacent edge into which a semicircular notch is cut to define a circular region which secures an arrow when said flaps are closed;

first means coupled to said first and second shaft means for biasing said flaps closed; and

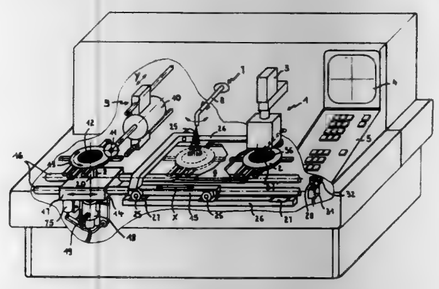
second means coupled to said first and second shaft means for overcoming said biasing means when said bow is drawn causing said flaps to open and release said arrow.

4,407,262

WAFER DICING APPARATUS

Gustav Wirz, Berg, and Franco Pizzagalli, La Chaux-de-Fonds, both of Switzerland, assignors to Les Fabriques d'Assortiments Reunies S.A., Le Locle, Switzerland

Filed Mar. 2, 1981, Ser. No. 239,681
Claims priority, application Switzerland, Mar. 10, 1980, 1853/80
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—13 R **28 Claims**



1. An installation for the sawing of plate materials, so as to form a plurality of elementary platelets, comprising:

an alignment station where the plates are provided with a predetermined orientation;

a sawing station where the plates are sawed into a plurality of elementary platelets;

a cleaning station where the sawed plates are subjected to the action of a cleaning agent; and

a handling device to convey each plate to successive stations of the installation,

said handling device comprising:

at least two independent platforms for receiving the plate and maintaining it in an orientation that is predetermined in relation to said platform;

a first transfer means for successively conveying each platform equipped with a plate at the alignment station to the sawing station, while maintaining the plate's precise orientation;

said first transfer means supporting and orientating said plate properly during the cutting operation and then conveying and depositing said plate at the cleaning station; and

a second transfer means taking each platform at the cleaning station and conveying said each platform to the alignment station to deposit it there;

said handling device comprising means such that sawing of one plate may be carried out during the cleaning of a preceding plate or during alignment of a subsequent plate.

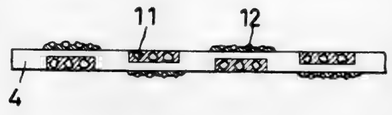
4,407,263

CUTTING BLADE

Yasunori Murata, Nara, Japan, assignor to Diamond Giken Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,338
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—15 **13 Claims**

1. A cutting blade comprising a base plate formed with a plurality of grooves in both sides thereof, said grooves having a depth being at least half of the thickness of said base plate, abrasive grains affixed to said base plate in said grooves and further grains affixed to the surface of the base plate at spaced



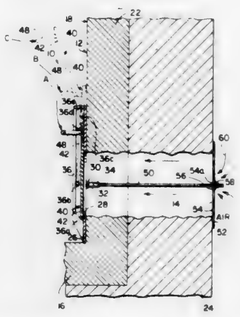
locations midway of each pair of adjoining grooves in both sides of the base plate.

4,407,264

ADJUSTABLE FRESH AIR DAMPER FOR COMBUSTION

Arthur J. Pettorino, 9 Wilshire Dr., Syosset, N.Y. 11791

Filed Dec. 2, 1981, Ser. No. 326,538
Int. Cl.³ F24B *1/18*
U.S. Cl. 126—120 **3 Claims**



1. An adjustable fresh air damper for combustion which comprises:

(a) a front place having a central aperture;

(b) an air intake plate having a plurality to apertures;

(c) a means for holding said front plate against a firebrick inner wall and said air intake plate against an outer wall of a rear wall of a fireplace having an aperture therethrough, said means comprising:

(1) a cross bar with a central boss having a threaded aperture perpendicular to the long axis of said cross bar and facing rearward with each end of said cross bar affixed to said front plate across said central aperture;

(2) a rod with a threaded end placed into said threaded aperture of said central boss of said cross bar and a second threaded end placed through said middle aperture to said air intake plate;

(3) a washer placed onto said second threaded end of said rod; and

(4) a nut threaded onto said second threaded end of said rod;

(d) a slide door that is gravity operated; and

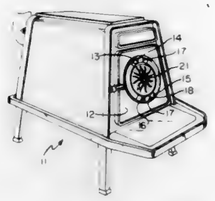
(e) a means for guiding said slide door, affixed to said front plate, so that said slide door can go to an up position exposing said central aperture in said front plate allowing ambient outside fresh air to enter said fireplace and said slide door can go to a down position covering said central aperture in said front plate preventing ambient outside fresh air to enter said fireplace.

4,407,265

WOOD STOVE AIR FLOW REGULATING

Paul E. Brefka, Southborough, Mass., assignor to Energy Harvesters Corporation, Fitzwilliam, N.H.

Filed Dec. 11, 1978, Ser. No. 968,288
Int. Cl.³ F23M *7/00*
U.S. Cl. 126—193 **7 Claims**



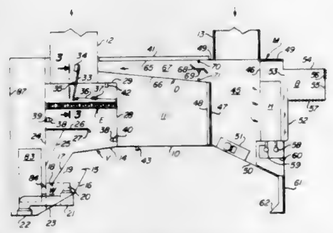
1. In a wood stove door air flow regulating apparatus comprising,
primary and secondary air regulating door means for selectively controlling the flow of air through said door,
and baffle means secured to the inside of said door for coacting therewith to define an air channel while obstructing sparks in the stove combination chamber from exiting through an air inlet in said door selectively covered by said door means,
said door means comprising sectoral plates corresponding substantially to a sector of a circle with each of said plates formed with an opening for accommodating an element about which a plate pivots and a significantly larger opening radially outward therefrom,
at least one of said plates being formed with a stepped portion so that said plates may be mounted in partial overlapping relationship with the radially outwardmost portions thereof being in a common plane,
said plates being mounted in said baffle means and said baffle means being formed with angularly spaced radial protrusions for supporting said radially outwardmost portions of said plates.

4,407,266

METHOD OF AND APPARATUS FOR EXHAUST CONTROL AND SUPPLYING TEMPERED MAKEUP AIR FOR A GREASE EXTRACTION VENTILATOR

Victor D. Molitor, Denver, Colo., assignor to Molitor Industries, Inc., Englewood, Colo.

Filed Jul. 24, 1981, Ser. No. 286,616
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—299 D **24 Claims**



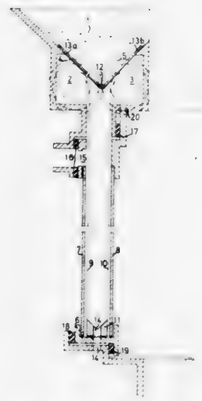
1. A method of supplying tempered makeup air to a room in conjunction with a grease extraction ventilator disposed above cooking equipment in said room and having removal means for removing grease and smoke particles and the like from air mixed with products of cooking, which comprises:
causing heated air and products of cooking from said cooking equipment to pass through said removal means of said grease extraction ventilator;
removing said heated air and remaining products of cooking, after passage through said removal means, through a discharge duct;
conducting fresh air through an intake duct to heat exchange means for tempering the same;
discharging the tempered fresh air into said room;
establishing a source of incoming air;
passing incoming air to said discharge duct inversely in accordance with the temperature of said heated air and products of cooking; and
causing incoming air, which is not passed to said discharge duct, to become a portion of said tempered air for discharge into said room.

4,407,267

METHOD OF REGULATING RADIATION THROUGH WINDOWS

Carl G. Heden, Solna Kyrkväg 11, S-17164 Solna, Sweden

Filed Jul. 9, 1981, Ser. No. 281,705
Claims priority, application Sweden, Jul. 14, 1980, 8005141
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—419 **5 Claims**



1. A method of regulating radiation through double-glazed closures comprising a pair of spaced parallel transparent panes, comprising lowering between the panes a bag of small discrete bodies of porous insulating material with the bag extending at least most of the height of the panes, when it is desired to decrease radiation through the closure, and raising said bag from between the panes when it is desired to increase radiation through the closure.

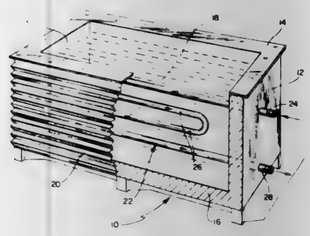
4,407,268

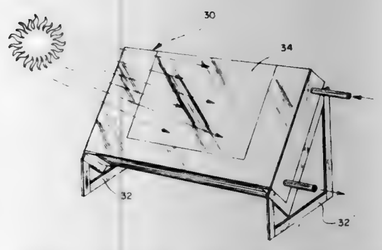
SOLAR FURNACE

Albert C. Jardin, 170 Old Mill Blvd., Warwick, R.I. 02889

Division of Ser. No. 136,896, Apr. 3, 1980, Pat. No. 4,326,501.
This application Jan. 21, 1982, Ser. No. 341,257
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—430 **3 Claims**

1. A solar furnace comprising a watertight tank capable of storing phase change material that changes from solid to semi-solid to liquid form, thickly insulated walls all but one wall of said tank, said one wall being a metallic wall that is exposed to permit solar radiation to be absorbed therethrough directly to said phase change material, said tank having a conduit through one of its outer walls and into and through said phase change material for passing a liquid into and out of said tank, said tank being mounted on a support outside the building for holding the tank at an angle to the horizontal so that the plate will be





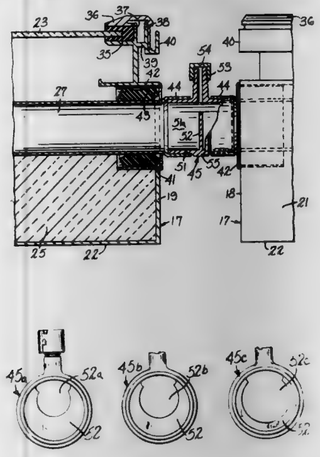
at an angle substantially equal to the latitude of installation plus ten degrees.

4,407,269

SOLAR ENERGY COLLECTOR SYSTEM HAVING BALANCED HEAT-EXCHANGE FLUID FLOW

Thomas P. Hopper, Durham, Conn., assignor to Sunsearch, Inc., Guilford, Conn.

Continuation of Ser. No. 922,751, Jul. 7, 1978, abandoned. This application Jan. 22, 1981, Ser. No. 227,195
Int. Cl.³ F24J *3/02*; F16L *27/04*; D03D *39/00*; F28F *9/02*
U.S. Cl. 126—442 **10 Claims**



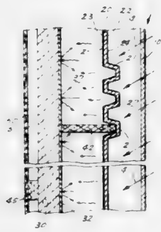
1. An array of solar collectors of the liquid heat-exchange type where each collector comprises spaced-apart first and second headers with conduits extending therebetween, the headers of said collectors being connected in header lines so that heat-exchange fluid introduced into said first header flows through said first header line and said conduits to said second header line and exits therefrom, the fluid input being to one end of said first header line and the output from the other end of said header line, means connecting said headers to form said header lines, said connecting means comprising at least in part coupling members defining a passage therethrough, said coupling members having two ends, each end adapted to be coupled to a header, means in said coupling means intermediate said ends defining a flow restricting orifice, the orifices of said coupling members in the input header line being of progressively decreasing area from the input end, and the orifices of coupling members in said output line being of progressively increasing area from the first collector to balance the flow of liquid passing through said collectors.

4,407,270

SOLAR COLLECTOR

Kenneth A. Riedel, 1601 W. Salem, Indianola, Iowa 50125

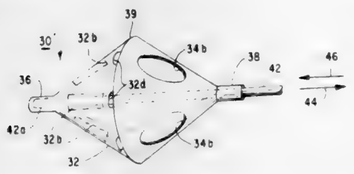
Filed Jun. 4, 1981, Ser. No. 270,222
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **1 Claim**



1. A solar collector, comprising:
a. an external frame;
b. an internal frame installed within said external frame, said internal frame being constructed from a rigid, thermally insulating material;
c. an opaque collector plate means for preventing light ravs from passing therethrough frictionally received within a groove formed on the inside surface of the internal frame, said collector plate having corrugations and said rear surface of said collector plate including textured surface means for helping to cause non-laminar flow of air through said heat transfer chamber;
d. an insulated reflective means installed within said external frame below said collector plate in a spaced apart relationship for receiving heat energy rays from said collector plate for reflecting said heat energy rays back toward said collector plate;
e. a translucent collector cover secured to said external frame above said collector plate in a spaced apart relationship with regard thereto;
f. a heat transfer means including a chamber formed between said collector plate and said reflective member and bounded by said thermally insulating internal frame, said heat transfer chamber being between 1¼ inches and 2¾ inches in width, for helping to cause non-laminar flow of air through said heat transfer chamber and wherein the rear surface of said collector plate has a heat emittive, non-selective coating thereon, and said heat transfer chamber is formed between said rear surface and a reflective surface provided on said reflecting means whereby said non-selective coating will readily release heat energy to the air in said heat transfer chamber;
g. a heat transfer means for transferring heat from said heat transfer chamber, said heat transfer means comprising means for creating airflow through said heat transfer chamber, said heat transfer chamber having an air inlet and an air outlet and a means for forcing air through said heat transfer chamber from said inlet to said outlet;

h. a plurality of baffles disposed in said heat transfer chamber for directing said airflow in a circuitous path from said inlet to said outlet;
i. uneven baffle spacing means for helping to cause non-laminar flow of air through said heat transfer chamber wherein said baffles are unevenly spaced along said heat transfer chamber; and
j. a first dead air space between said collector plate and said collector cover, and a second dead air space means, including a backing member secured to the rear of said external frame in a spaced apart relationship with respect to said reflective member, for forming a second dead air space between said backing member and the rear side of said reflective member, wherein said exterior frame encloses said first and second dead air spaces and said heat transfer chamber, whereby said heat transfer chamber is sandwiched between first and second dead air spaces.

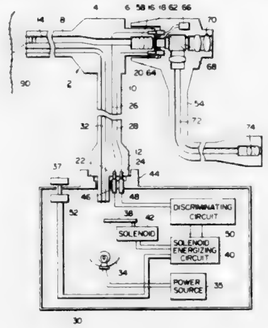
4,407,271
APPARATUS FOR LEFT HEART ASSIST
Peter Schiff, Rte. 7, Cookeville, Tenn. 38501
Continuation-in-part of Ser. No. 172,753, Jul. 28, 1980, abandoned. This application May 26, 1981, Ser. No. 267,374
Int. Cl.³ A61N *1/03*
U.S. Cl. 128—1 D **24 Claims**



1. An assist device for insertion through a body vessel into the region of the aortic arch to assist in the pumping function of the heart comprising:
a flexible elongated cable member having a distal end extending into the artery and having a proximal end extending outside of the body and being adapted to move said distal end when said proximal end is moved;
a non-occlusive umbrella assembly mounted upon said cable member in proximity to said distal end and comprising a hollow collapsible shell incorporating means for normally urging said shell toward the open position, the resilience of said means being chosen to enable movement of said shell to a collapsed position as fluid flows in a first direction against said shell, said shell being adapted to be retained in the open position responsive to fluid flow in a direction opposite said first direction, said shell, when in the open position, being linearly moveable, and non-occlusive, relative to said vessel, to perform a pumping operation and yet to prevent the occurrence of clotting.

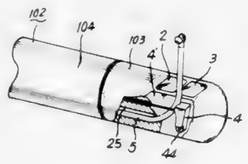
4,407,272
ENDOSCOPE SYSTEM WITH MEANS FOR DETECTING AUXILIARY APPARATUSES
Tatuya Yamaguchi, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1981, Ser. No. 307,306
Claims priority, application Japan, Oct. 8, 1980, 55/140992
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **11 Claims**

1. An endoscope system comprising:
an endoscope including a light guide for transmitting an illumination light, an image guide for transmitting light reflected by a region of interest on which the illumination light from the light guide is projected, and a viewing section for viewing an image of the region of interest transmitted through the image guide;
a light source for supplying illumination light to said light guide of said endoscope;
an auxiliary apparatus capable of being removably attached to said viewing section of said endoscope; and



detecting means for detecting the attachment of an auxiliary apparatus and the kind of said auxiliary apparatus attached to said viewing section of said endoscope and including means for setting the intensity of light fed into said light guide of said endoscope in accordance with the detected attachment of an auxiliary apparatus and as a function of the detected kind of said attached auxiliary apparatus.

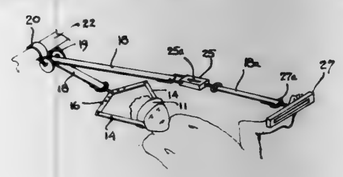
4,407,273
RAISING MEANS FOR GUIDING AN IMPLEMENT OF AN ENDOSCOPE
Teruo Ouchi, Kawagoe, Japan, assignor to Kabushiki Kaisha Medos Kenkyusho, Japan
Filed Feb. 23, 1982, Ser. No. 351,353
Claims priority, application Japan, Feb. 25, 1981, 56-25595[U]; Oct. 13, 1981, 56-152525[U]
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **4 Claims**



1. In an endoscope including
a manipulator unit having an inlet opening formed therein;
a flexible tube connected with and following said manipulator unit;
a front end metal fitting mounted on a front end of said flexible tube;
a channel provided in said flexible tube communicating with said opening formed in said manipulator unit and through which a desired implement, inserted into said inlet opening, can be guided through said flexible tube to said front end metal fitting;
a first optical fibre bundle for illumination extending through said manipulator unit and said flexible tube to an illuminating window formed in said front end metal fitting;
a second optical fibre bundle for observation extending from a viewer unit provided on said manipulator unit through said flexible tube to a viewing window formed in said front end metal fitting;

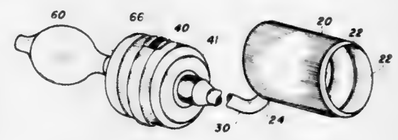
an opening formed in the front end metal fitting laterally of said viewing window and communicating with said channel;
a raiser member located in side-by-side relationship with said viewing window and pivotally supported within said opening; and
a raiser manipulating wire extending from a free end of said raiser member through said front end metal fitting and said flexible tube to said manipulator unit so that said raiser member may be rotated by pulling the wire from the exterior of said manipulator unit;
wherein the front end of said implement introduced through said inlet opening formed in said manipulator unit into the flexible tube is guided by a guiding effect and a pivotal movement of said raiser into a visual field of the viewing window,
the improvement comprising:
raising means characterized by that said raiser member is pivotally supported by a transverse axis extending substantially orthogonally with respect to a vertical plane including the optical central axis of said viewing window and said raiser member further includes a slanted guide groove in the surface thereof in opposed relationship to the open end of said channel, said slanted guide groove being inclined towards said viewing window, wherein said raiser manipulating wire is pulled from the exterior of said manipulator unit and thereby said raiser member is rotated around said transverse axis in a plane substantially parallel to the vertical plane including the optical central axis of said viewing window so that the front end of the implement which creeps up along said slanted guide groove and has been projected outwardly from said front end metal fitting may be guided into the visual field of the view window.

4,407,274
CERVICAL TRACTION DEVICE
Paul H. Goodley, 2210 W. 3rd St., Los Angeles, Calif. 90057
Continuation-in-part of Ser. No. 135,895, Mar. 31, 1980, abandoned. This application Jun. 5, 1981, Ser. No. 270,781
Int. Cl.³ A61H *1/02*
U.S. Cl. 128—69 **13 Claims**



1. In a cervical traction device for use in applying traction to the cervical spine of a user comprising
harness means a portion thereof which fits against the occiput of the user's head,
traction strap means removably attached to said portion of said harness means at a preselected position therealong,
said traction strap being positionable along said portion of said harness means at any selected position thereon,
attachment means fixedly attached to said strap means at each of the opposite ends thereof,
a traction bar positioned above the user's head, the attachment means being removably connected to said traction bar near the opposite ends thereof,
line means attached to said traction bar at a predetermined position therealong,
means for doubling said line means back on itself so that it returns to a position below the user's head,
a force indicator device positioned within view of the user attached at one end to said line means,
second line means attached at one end thereof to the other end of said force indicator device,
force input drive means attached to the other end of said second line means for receiving a force input from the user,
whereby the force applied by the user to said force input drive means is applied to the user's neck in a predetermined symmetrical or asymmetrical manner which is in accordance with the attachment position of said traction strap means, said force being indicated on said indicator device.

4,407,275
ARTIFICIAL ERECTION DEVICE
William S. Schroeder, P.O. Box 607, Coos Bay, Oreg. 97420
Filed Nov. 19, 1981, Ser. No. 322,966
Int. Cl.³ A61F *5/42*
U.S. Cl. 128—79 **7 Claims**



1. A prosthetic device for increasing the blood pressure and volume in a penis creating or maintaining an erect condition comprising:
a. a semi-rigid annular ring having a plurality of flexible individually expandable chambers therein, the inside diameter somewhat smaller than said erect penis with the length substantially shorter, the inside surface planar with said ring when said chambers are relaxed;
b. a multi-port flexible conduit connected to said individual expandable chambers allowing a separated flow path for each chamber while grouping together in one conduit;
c. a ratcheted sequential valve attached to said annular ring with said multi-port flexible conduit for diverting intermittant pneumatic pressure in sequence from a pulsating source to said ring allowing only one chamber to be pressurized at a given time, also a manual valve mechanism to depressurize said chamber when unwanted; and,
d. a flexible bulb creating pneumatic pressure means attached to said valve for providing compressed air to the apparatus in pulsating fashion having an inlet check valve and a first and second outlet check valve, being of a size to fit into ones hand and actuated by squeezing, therefore, increasing the air pressure contained within said inlet check valve providing a one-way inlet path for continuing the source of the pneumatic pressure, said first outlet check valve being disposed with said ratcheted sequential valve for the bellows actuator to supply one-way air thereto, and said second outlet check valve also connected to said ratcheted sequential valve for sequenced one-way direction to said expandable chambers for sequencing said valve and inflating said chamber.

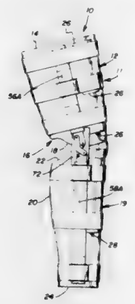
4,407,276
BRACE FOR ARTICULATED LIMBS
Gary R. Bledsoe, Arlington, Tex., assignor to Medical Designs, Inc., Arlington, Tex.
Filed Jan. 22, 1981, Ser. No. 227,381
Int. Cl.³ A61F *3/00, 5/00*
U.S. Cl. 128—80 C **8 Claims**

1. An external bracing apparatus for controlling the degree of motion which is permitted to a person's knee, comprising:
(a) first and second flexible sheets of cushioned material, one of which is adapted for snugly wrapping around the wearer's thigh and the other being adapted for snugly wrapping around the wearer's calf, and the width of each sheet being sufficient to circumferentially envelope at least most of its associated leg member, and the length of each sheet

being sufficient to encompass more than half of the length of the respective leg member, and said flexible sheets being selectively removable and replaceable around the wearer's leg members;

(b) first and second pairs of elongated braces which are adapted to be connected by hinge means, each of the braces being relatively stiff so as to resist both torsion and bending loads, and the first pair of elongated braces being adapted to lie on opposite sides of the wearer's thigh and the second pair of elongated braces being adapted to lie on opposite sides of the wearer's calf;

(c) attachment means carried by said first and second pairs of braces for adjustably positioning and selectively attaching the first and second pairs of elongated braces to attachment means the exterior sides of respective ones of the first and second flexible sheets after said sheets have been wrapped around their associated leg members;



(d) hinge means attached to respective ends of the braces which are adapted to lie on each side of the wearer's leg, and said hinge means being effective for controlling the angle that is formed by the two braces on a given side of the wearer's leg; and

(e) a plurality of non-elastic straps which are selectively attachable to the outside surface of said braces and which are adapted to be wrapped circumferentially around the wearer's leg members, and said straps having connecting means so that they may be placed in tension around the wearer's leg and secured to the elongated braces.

4,407,277

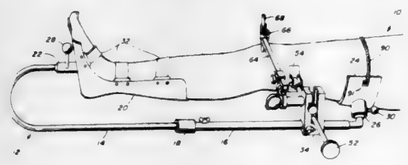
SURGICAL APPARATUS

Arthur E. Ellison, Adams Rd., Williamstown, Mass. 02167

Filed Oct. 27, 1980, Ser. No. 200,789

Int. Cl.³ A61F *13/00*

U.S. Cl. 128—82 **13 Claims**



1. Apparatus for applying and maintaining forces and moments on a knee joint along any one or combination of its degrees of freedom to open said joint during arthroscopic surgical procedures on said knee joint comprising:

an upper leg restraining member adapted for immobilizing longitudinally and rotationally said upper leg;

a lower leg restraining member adapted for immobilizing longitudinally and rotationally said lower leg; and

structural means interconnecting said upper leg restraining member and said lower leg restraining member;

an arthroscope; and

means for attaching said arthroscope to said interconnecting structural means to support said arthroscope in adjustable relation to said knee joint;

said interconnecting structural means adapted for establishing and preserving a relative orientation between said upper leg restraining member and said lower leg restraining member and thereby generating said forces and moments on said knee joint along any one or combination of its said degrees of freedom to open up said knee joint for arthroscopic visualization.

4,407,278

PENILE PROSTHESIS WITH IMPROVED FLUID CONTROL

John H. Burton; Bradford G. Staehle, both of Minnetonka, and Charles C. Kuyava, Brooklyn Center, all of Minn., assignors to American Medical Systems, Inc., Minnetonka, Minn.

Continuation-in-part of Ser. No. 264,202, May 15, 1981, Pat. No. 4,383,525. This application May 3, 1982, Ser. No. 373,481

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—79 **21 Claims**



1. An implantable penile prosthesis comprising:

at least one elongated cylinder adapted to be implanted within a patient's penis, said cylinder having a flexible distal end section for implantation within the pendulous penis which is constructed to rigidize upon being filled with pressurizing fluid, and a proximal, rear end section adapted to be implanted within the root end of the penis;

a fluid reservoir chamber formed within said proximal, rear end section of said cylinder;

pump means manually operable to transfer fluid under pressure from said fluid reservoir chamber to said flexible distal end of said cylinder for achieving an erection; and

externally operable valve means contained within said cylinder for controlling the flow of fluid back and forth between said fluid reservoir chamber and said flexible distal end of said cylinder, said valve means being located within said flexible, distal end section of said cylinder at a position where it will be readily accessible within the pendulous penis for actuation at a distally remote location from the root end thereof, and said valve means incorporating check valve means normally precluding the flow of pressurized fluid from within said flexible distal end section of said cylinder through said valve means back to said fluid reservoir chamber; and

fluid conduit means within said elongated cylinder in fluid flow communication between said fluid reservoir chamber and said valve means.

4,407,279

APPARATUS FOR INHALATION

Wladimir Tschernezky, 15 Belgrave Lodge, 36 Wellesley Rd., London, W.4, England

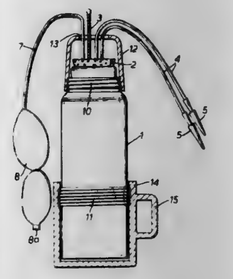
Filed Aug. 27, 1981, Ser. No. 296,954

Claims priority, application United Kingdom, Aug. 29, 1980, 8027934

Int. Cl.³ A61M *15/00*

U.S. Cl. 128—200.11 **9 Claims**

1. Apparatus for inhalation comprising a single vacuum flask for holding a liquid and from which liquid vapour is to be inhaled, closure means for closing one end of the flask after the liquid has been introduced, air supply means, a connecting tube which passes through the closure means and via which air for inhalation is arranged to be fed from the air supply means to a region inside the flask adjacent the end remote from the closure means so as to bubble up through the liquid when contained therein, inhalation tube means which passes through the closure means for collecting the air after it has bubbled up through the liquid and which is adapted at one end thereof remote from the flask to fit to the nostrils whereby direct inhalation of air and vapour into the nostrils is facilitated, a thermometer which passes through the closure means and which is for measuring the temperature of the liquid in the flask, and a measuring cup which is for measuring the amount of liquid to be provided in the flask and which screws over the bottom of the flask.



4,407,280

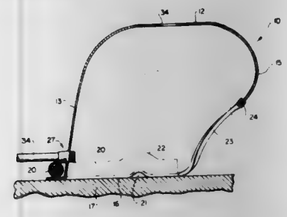
DISPOSABLE HOOD

W. Edgar Trammell, 840 N. 1200 East, Provo, Utah 84601; James E. Young, 2080 E. 4675 South, Salt Lake City, Utah 84117; James R. Chidester, 5780 W. 9600 North, and Ralph S. Walker, 9767 N. 6530 West, both of Highland, Utah 84003

Filed Jun. 16, 1981, Ser. No. 274,182

Int. Cl.³ A61M *16/02*

U.S. Cl. 128—205.26 **8 Claims**



1. A disposable hood of unitary one-piece construction for maintaining a desired gas atmosphere about the head of a patient, said hood comprising

a generally bubble-shaped chamber comprising side, forward and back sidewalls and a top, said sidewalls and top being molded from transparent, optically clear material, with the sidewalls being joined to themselves and to the top in arcuate contours so that the hood has no sharp corners;

a substantially open bottom side for the generally bubble-shaped hood, said bottom side being adapted to rest on the bed on which the patient is laying;

flat extension means extending from the lateral and back edges of the open bottom side of said hood so that the flat extension means are adapted to lie flatwise on the bed;

an opening in the forward sidewall of said hood which is adapted to fit over the neck of a patient whose head is positioned in said hood, with the forward sidewall being formed so as to curve in the general shape of a question mark curving continuously downwardly then inwardly and then downwardly, with the opening for the patient's neck being formed in the lower portion of the inwardly and downwardly curving portions of said forward sidewall;

an aperture in the back sidewall of said hood; and

an attachment means for connecting a flexible conduit or hose to said aperture.

4,407,281

INTRATRACHEAL TUBE

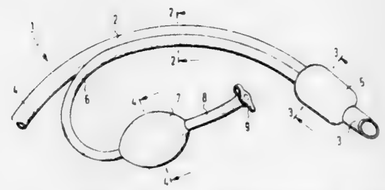
Ludwig Brandt, Heymannstrasse 5, 2000 Hamburg 20, and Hellmut Pokar, Strandweg 9, 200 Hamburg 55, both of Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,251

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1980, 3028568

Int. Cl.³ A61M *15/08, 25/00*

U.S. Cl. 128—207.15 **5 Claims**



1. An intratracheal tube for giving respiration to a patient, specially during a narcosis with a mixture of oxygen and narcotic gas, wherein the intratracheal tube comprises a respirator hose adapted to be pushed in the windpipe of the patient, the forward end of said hose being surrounded by a blocking sleeve permeable to narcotic gas and inflatable from the outside with a filling gas and in inflated state abutting closely on the windpipe wall, wherein the inner space of said blocking sleeve is connected in gas-conveying manner, via a connecting hose, to an inflation port and to a diffusion vessel situated outside the patient, the surface size, wall thickness and material of said diffusion vessel being chosen so as to make it impervious to the filling gas, but pervious to narcotic gas, thereby permitting the outward diffusion of narcotic gas, specially nitrous oxide gas, in an amount corresponding approximately to the amount diffused into said blocking sleeve.

4,407,282

METHOD AND APPARATUS FOR GENERATING SUPEROXIDE AND HYDROXYL IONS IN SOLUTION

Mitchell R. Swartz, 2 Ridgewood Rd., Malden, Mass. 02148

Division of Ser. No. 49,702, Jun. 18, 1979, Pat. No. 4,305,390, which is a continuation-in-part of Ser. No. 879,822, Feb. 21, 1978, Pat. No. 4,181,128, which is a continuation-in-part of Ser. No. 636,290, Nov. 28, 1975, Pat. No. 4,139,348. This application Oct. 24, 1980, Ser. No. 200,554

Int. Cl.³ A61J *3/00*

U.S. Cl. 128—207.21 **27 Claims**

1. A method of generating oxygen in an excited electronic state comprising:

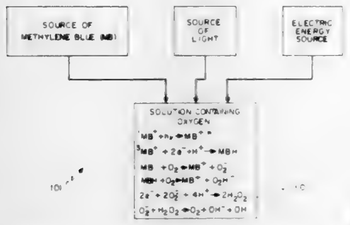
(a) providing a solution containing oxygen;

(b) adding to said solution an electroactive mediator which assumes an excited electronic state when subjected to light and an electronic field concurrently;

(c) directing light into the solution; and

(d) simultaneously applying an electric field to the solution, said light and said electric field serving, in combination,

for conversion of said electroactive mediator to at least one excited electronic state, the thusly activated electroactive mediator reacting with the oxygen in the solution to produce oxygen in an excited electronic state.



4,407,283

SELF-INJECTING SYRINGE

Francis D. Reynolds, Redmond, Wash., assignor to Dale C. Grier, Bellevue, Wash.

Filed Oct. 19, 1981, Ser. No. 312,535
Int. Cl.[3] A61M *5/00*
U.S. Cl. 604—136 **8 Claims**



1. A self-injecting syringe, comprising:

a finger-grip body having first and second ends and an annular sidewall defining an inner chamber, and including an outer surface grip portion adapted to be gripped by fingers of a user;

a first bushing having a first end portion which is slidably received within said chamber, and a second end portion extendable axially from said first end portion out through the first end of said body;

stop means for preventing movement of said bushing out from said body;

an end wall at the second end of said body;

a syringe barrel having a first end connected to the first end of said body, a second opposite end, and a cartridge chamber;

a second bushing within the second end of the syringe barrel adapted for axial movement, said second bushing including a central needle receiving opening;

an end cap at the second end of the barrel;

a first compression spring between the end cap and the second bushing, normally biasing said second bushing rearwardly;

a second compression spring within said inner chamber, bearing at one of its ends against said first bushing and at its opposite end against said end wall, said compression spring normally biasing said first bushing toward said stop means; and

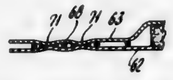
releasable lock means within said body, including a lock member operable to lock said first bushing into a retracted position, said second compression spring being compressed, and said first bushing being spaced axially from said stop means when said first bushing is in its retracted position, and a release trigger means positioned to be contacted by a finger positioned on the grip portion of said body, whereby finger pressure on said trigger means will unlock said lock means, releasing the second compression spring and allowing it to drive the bushing axially within said body until the bushing contacts the stop means.

4,407,284

LAMINATED STRUCTURES HAVING GATHERED AND UNGATHERED MARGINAL PORTIONS AND METHOD OF MANUFACTURING THE SAME

Heinz A. Pieniak, Chicago, Ill., assignor to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Division of Ser. No. 120,194, Feb. 11, 1980, Pat. No. 4,333,782.
This application Jul. 6, 1981, Ser. No. 280,675
Int. Cl.[3] A41B *13/02*; A41D *27/10*; B32B *3/10*
U.S. Cl. 604—385 **23 Claims**



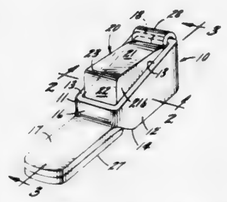
1. A laminated structure having a marginal area with a first portion of said marginal area being gathered and a second portion of said marginal area not being gathered to provide improved fit about a portion of the human body comprising: first and second layers positioned adjacent to one another, said layers being formed of flexible gatherable material, an elastic member disposed between said layers in the marginal area thereof, said elastic member comprising a plurality of longitudinally extending elastic elements, said elements being transversely connected over a portion of their length to define apertures therebetween, said first and second layers being secured together through at least some of said apertures to provide a gathered marginal portion, and an end portion of said elastic member without apertures comprising longitudinally extending elements not transversely connected to provide an ungathered marginal portion.

4,407,285

MICROSURGICAL CLIP FOR BRAIN SURGERY OR THE LIKE

Afred R. Perlin, Highland Park, Ill., assignor to Metatech Corporation, Northbrook, Ill.

Filed Apr. 13, 1981, Ser. No. 253,191
Int. Cl.[3] A61B *17/12*
U.S. Cl. 128—325 **6 Claims**



1. A microsurgical clip for clamping of small blood vessels comprising, in combination, a hollow shell or generally rectangular shape having (a) opposed side walls, (b) a bottom wall and (c) a front wall, the back and top of the shell being open, the shell having (d) a duck bill projecting forwardly at lower edge of the front wall and integral therewith, a cooperating insert of zigzag shape nested in the shell and made up of (1) a top wall, (2) a front wall generally perpendicular thereto and (3) an integral duck bill projecting forwardly at the lower edge of its front wall, the bottom wall being foreshortened to provide a downwardly facing aperture immediately behind the front wall of the shell, the front wall of the insert being vertically dimensioned to extend downwardly through the aperture in the bottom wall so that the duck bill on the insert flatly and conformingly underlies the duck bill on the shell, the insert having its top wall captively hinged between the side walls in

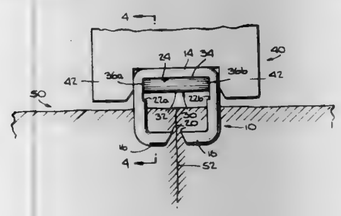
a position adjacent the back of the shell, and an expensible spring seated between the bottom wall of the shell and the top wall of the insert for urging the insert relatively upwardly in the shell thereby biasing the duck bills into resilient clamping engagement with one another, the upper edges of the side walls being angled downwardly from the back toward the front wall, the side walls and the front wall of the shell being relieved by making them of reduced height so that the insert is exposed with the forward portion thereof projecting upwardly from the shell with the result that fingertip application of pinching pressure to the projecting insert causes it to move downwardly with respect to the shell compressing the spring and accompanied by relative spreading of the duck bills for engagement of a blood vessel therebetween, the spacing between the side wall being only a small fraction of the width of a fingertip, and the depth of the relief, and hence the range of spreading movement, being limited to insure that the spring is operated well within its elastic limit.

4,407,286

SURGICAL STAPLES

Douglas G. Nolles, New Canaan, and John O. Crawford, Brookfield Center, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 181,092, Aug. 25, 1980, abandoned.
This application May 13, 1982, Ser. No. 377,860
Int. Cl.[3] A61B *17/04*
U.S. Cl. 128—334 R **8 Claims**



1. The method of applying surgical staples to body tissue comprising the steps of:

positioning an anvil member adjacent to the surface of the tissue to be stapled;

providing a surgical staple having a longitudinal base, two legs at respective opposite ends of the base, and two surfaces on the base transverse to the longitudinal axis of the base, the transverse surfaces facing one another and being spaced longitudinally along the base from one another and from the legs;

positioning the staple so that the base is substantially parallel to the surface of the tissue to be stapled and so that a central portion of the base intermediate the transverse surfaces is in contact with an anvil member surface which faces away from the surface of the tissue;

advancing a staple former substantially perpendicular to the surface of the tissue to bend the staple base around the anvil member so that the legs of the staple penetrate the tissue and so that the transverse surfaces overlap portions of the anvil member surface which face the surface of the tissue to substantially prevent retraction of the staple by the staple former when the staple former is subsequently retracted in a direction opposite the staple former advancing direction; and

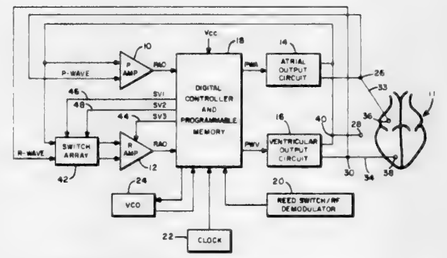
retracting the staple former in the direction opposite the staple former advancing direction to leave the formed staple around the anvil member and in the tissue.

4,407,287

ATRIAL AND VENTRICULAR-ONLY PACEMAKER RESPONSIVE TO PREMATURE VENTRICULAR CONTRACTIONS

Lodewijk-Jozef Herpers, Kerkrade-West, Netherlands, assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 17, 1981, Ser. No. 235,227
Int. Cl.[3] A61N *1/38*
U.S. Cl. 28—419 PG **12 Claims**



1. A pulse generator comprising:

atrial and ventricular terminal means for connection respectively to the atrium and ventricle of a patient's heart;

ventricular pulse providing means connected to said ventricular terminals means for selectively delivering stimulating pulses to said ventricular terminals means at a ventricular timing rate;

atrial and ventricular sensing means connected to said atrial and ventricular terminal means and operative for sensing atrial and ventricular contractions of the patient's heart;

atrial-ventricular (A-V) timing means operatively connected to said atrial sensing means and said ventricular pulse providing means and operative in response to a sensed atrial contraction to cause said ventricular pulse providing means to deliver a stimulating pulse at the end of a first A-V delay interval from said sensed atrial contraction;

counting means for counting ventricular contractions and providing an A-V disable interval signal commencing when a ventricular contraction is sensed following a prior ventricular contraction and in the absence of an intervening atrial contraction; and

means responsive to the A-V disable interval signal for preventing said A-V timing means from responding to a sensed atrial contraction for the duration of the A-V disable interval.

4,407,288

IMPLANTABLE HEART STIMULATOR AND STIMULATION METHOD

Alois A. Langer, Pittsburgh; Steve A. Kolenik, Leechburg; Marlin S. Heilman, Gibsonia, all of Pa.; Mieczyslaw Mirowski, 2405 Velvet Valley Way, Owings Mills, Md. 21117, and Morton M. Mower, Lutherville, Md., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

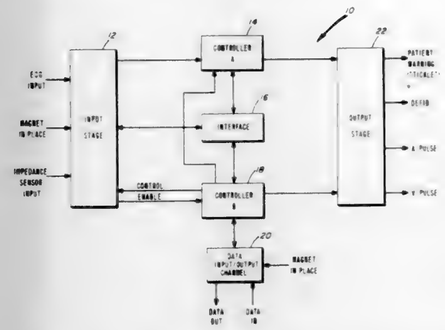
Continuation-in-part of Ser. No. 215,275, Dec. 11, 1980. This application Mar. 16, 1981, Ser. No. 243,801
Int. Cl.[3] A61D *1/36*
U.S. Cl. 128—419 PG **37 Claims**

1. A method of heart stimulation using an implantable heart stimulator capable of detecting a plurality of arrhythmias and capable of being programmed to undergo a single or multi-mode operation to treat a detected arrhythmia, corresponding to said mode of operation the method comprising the steps of:

(a) determining a condition of the heart from among a plurality of conditions of the heart;

(b) selecting at least one mode of operation of the implantable heart stimulator which operation includes a unique

sequence of events corresponding to said determined condition; and



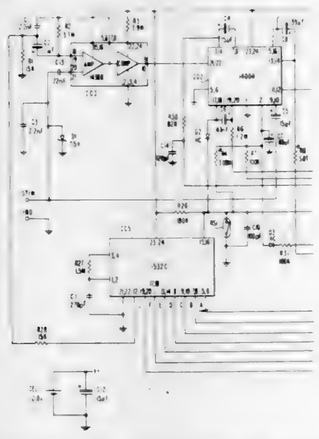
(c) executing said at least one mode of operation of said implantable heart stimulator thereby to treat said determined heart condition.

4,407,289

EXTERNALLY-RESET TACHYCARDIA CONTROL PACER

Tibor A. Nappholz, Drummoyne, and Stephen J. Swift, Hornsby, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Mar. 19, 1981, Ser. No. 245,356
Int. Cl.³ A61N *1/38*
U.S. Cl. 128—419 PG **14 Claims**
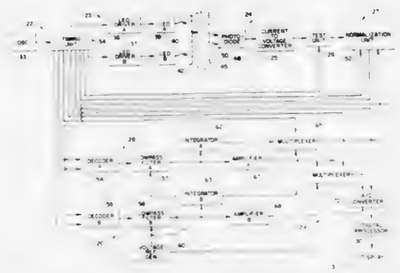


1. A tachycardia control pacer comprising battery means for powering the pacer; means for confirming tachycardia; means responsive to said confirming means for generating at least one heart-stimulating pulse at the end of a time delay following the last heartbeat within a time range which potentially allows tachycardia to be terminated; externally-controlled means for operating independently of said tachycardia confirming means and for controlling the generation of at least two pulses separated by a time interval which is dependent upon the potential of said battery means; said externally-controlled means including a switch operable by a magnet held in the vicinity of the pacer; means for inhibiting operation of said pulse generating means, after said at least two pulses are generated, for as long as said magnet continues to be held in the vicinity of the pacer; program control means for changing the pacer operation in accordance with externally-generated signals which represent programmed parameters, one such change being the selective disablement or enablement of the generation of heart stimulating pulses; said inhibiting means allowing the generation of pulses to be disabled temporarily until a programmed disablement can be effected; means for scanning said time delay during successive cycles of operation of said pulse generating means; said externally-controlled means governing the operation of said program control means to change the range through which said time delay is scanned in accordance with programmed parameters; and means responsive to operation of said externally-controlled means for causing the next time delay to be dependent upon only a time delay controlled by said scanning means.

4,407,290

BLOOD CONSTITUENT MEASURING DEVICE AND METHOD

Scott A. Wilber, Boulder, Colo., assignor to Biox Technology, Inc., Boulder, Colo.

Filed Apr. 1, 1981, Ser. No. 250,956
Int. Cl.³ G01N *33/16*
U.S. Cl. 128—633 **36 Claims**



1. A blood constituent measuring device, comprising:
electromagnetic energy emitting means for emitting electromagnetic energy at a plurality of predetermined wavelengths through a blood-containing sample at a test area;
sensing means for receiving electromagnetic energy from said sample at said plurality of wavelengths;
signal producing means connected with said sensing means to produce output signals responsive to electromagnetic energy received by said sensing means at said plurality of wavelengths;
normalizing means for receiving said output signals from said signal producing means and scaling the same so that the DC components are normalized; and
processing means for receiving said output signals from said normalizing means and producing an output indicative of changes in the thickness of preselected constituents of blood relative to the total change in blood thickness.

4,407,291

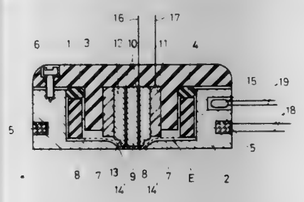
TRANSCUTANEOUS BLOOD OXYGEN MEASURING DEVICE

Bunji Hagihara, 8-17, Fujishirodai 2-chome, Suita, 565; Tamotsu Fukai, Osaka; Kikuo Nomura, Osaka; Kenichi Yoshida, Osaka, and Isao Isshiki, Osaka, all of Japan, assignors to Sumitomo Electric Industries Ltd., Osaka and Bunji Hagihara, Suita, both of, Japan, part interest to each

Continuation-in-part of Ser. No. 34,132, Apr. 27, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 176,033
Claims priority, application Japan, May 12, 1978, 53-63373[U]
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—635 **9 Claims**

1. An electrode assembly for the transcutaneous measure-

ment of partial oxygen pressure in arterial blood including in combination;
an electrode portion having a cathode electrode surrounded by an anode electrode and an insulating means between and supporting said anode electrode and said cathode electrode, each of said cathode electrode and said anode electrode having end portions, said insulating means having a first cylindrical end portion and a second cylindrical end portion extending from said first cylindrical end portion to a second and extended position, said second cylindrical end portion being coaxial with said first cylindrical end portion and having a diameter less than said first cylindrical end portion so as to form a step therebetween, said cathode end portion extending at least to said second position;
heating means, connected to said electrode portion, having a face adapted to contact skin for heating skin in contact therewith, said face having an opening for presenting said second cylindrical end portion of said insulating means and with said end portion of said cathode electrode therein; and



an oxygen permeable membrane disposed between said face of said heating means and the end portions of said electrodes, the membrane covering said end portions of each of said electrodes and defining a space adapted to retain a liquid electrolyte between the end portions of each of said electrodes and said membrane;
wherein said end portion of said cathode electrode is disposed and extends beyond the plane of the end portion of said anode electrode towards said opening, said end portion of said cathode electrode is positioned concentrically with the axis of said opening such that a surface of said membrane away from said electrode portion, in cooperation with the end portion of said cathode electrode, is slightly offset from the plane of said heating face, and further wherein the opening in said heating means has rounded shoulders adjacent the extending portion of said cathode electrode, the rounded shoulders and cathode end portion positioned in proximity to each other and providing a predetermined tension on the membrane therebetween, said cathode end portion contained in said second cylindrical end portion extending into said opening to effect said offsetting and said tensioning.

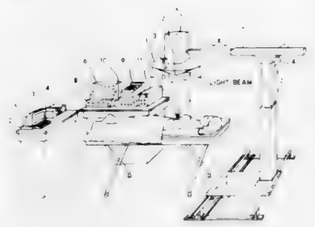
4,407,292

PROCEDURE AND APPARATUS FOR NONCONTACTING MEASUREMENT OF SUBCUTANEOUS TEMPERATURE DISTRIBUTIONS

Jochen Edrich, Waldpromenade 83, Gauting, Fed. Rep. of Germany 8035 J.E.

Division of Ser. No. 66,076, Aug. 13, 1979, Pat. No. 4,275,741. This application Jan. 21, 1981, Ser. No. 226,630
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1978, 2835602
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—653 **4 Claims**

1. An improved apparatus for noncontacting measurement of subcutaneous body temperature distributions in a body, said improved apparatus comprising:
an elliptical reflector for receiving emitted electromagnetic thermal radiation from a subcutaneous point in said body and for focusing said received thermal radiation, said reflector having an aperture diameter of between 50 to 100 cm and an object focal length of between 0.6 and 1.6 times said aperture diameter,
a receiving horn imbedded into the image focal point of said reflector for receiving said focused thermal radiation,
means operatively connected to said receiving horn for generating an output indicative of the subcutaneous body



temperature at said point, said reflector, horn, and generating means being capable of operating in the microwave thermal radiation range of 8 to 36 GHz, and
means for supporting said elliptical reflector with said imbedded receiving horn above said body at a distance equal to the object focal length of said reflector less the depth of the subcutaneous tissue.

4,407,293

ULTRASOUND IMAGING APPARATUS FOR PROVIDING SIMULTANEOUS B-SCAN AND DOPPLER DATA

Joe R. Suarez, Jr., Fremont; Henry L. Schwartz, Los Gatos; Anthony J. Rossetti, San Jose, and Paul D. Corl, Stanford, all of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Filed Apr. 24, 1981, Ser. No. 257,506
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—660 **21 Claims**



1. An ultrasound imaging apparatus comprising:
a hand-holdable housing;
a fluid chamber formed within said housing, one portion of said chamber being defined by a flexible membrane;
a first transducer mounted for oscillatory movement in a first plane within said fluid chamber to provide a B-scan display, said first transducer mounted such that its field of view passes through said membrane;
a second transducer for providing Doppler data mounted within said fluid chamber such that its beam moves within said first plane;
positioning means coupled to said second transducer for positioning said beam of said second transducer in said first plane; and

circuit means for interlacing ultrasound pulses from said first and second transducers to provide an updated B-scan display and Doppler data, said circuit means including means for interrupting transmissions by one of said transducers to enable transmission and reception by said other transducer;

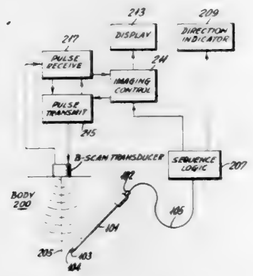
whereby continuous B-scan and Doppler data are provided.

4,407,294

ULTRASOUND TISSUE PROBE LOCALIZATION SYSTEM

David H. R. Vilkomerson, Princeton, N.J., assignor to Technicare Corporation, Solon, Ohio

Filed Jan. 7, 1982, Ser. No. 337,908
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **10 Claims**



1. Apparatus for performing medical procedures upon select, internal body tissues, comprising:

(a) a pulse-echo ultrasound imaging system for imaging a scan area of the body including said tissues, said imaging means including first imaging transducer for acoustic coupling to the exterior of the body;

(b) probe means for insertion into the body in the vicinity of said area in a direction which is independent of the angle and position of said first transducer means;

(c) a plurality of second detector-transducers disposed at selected locations on said probe means for receiving pulses from said first transducer;

(d) circuit means electrically coupled to said detector-transducers for sensing the sequence of arrival of ultrasonic waves at said locations;

whereby the relative directional position of said probe means with respect to said scan area may be determined.

4,407,295

MINIATURE PHYSIOLOGICAL MONITOR WITH INTERCHANGEABLE SENSORS

Robert R. Steuer; Robert K. Rogers, both of Salt Lake City, and Robert H. Horne, Holladay, all of Utah, assignors to DNA Medical, Inc., Salt Lake City, Utah

Filed Oct. 16, 1980, Ser. No. 197,704
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—670 **8 Claims**

1. A physiological parameter measuring system for non-invasive measurement of parameters of the body of a user, said system comprising:

a main housing adapted to be carried on the body of the user;

first connecting means mounted on said housing;

a visual display means mounted in said housing;

signal processing and display circuitry electrically connected to said connecting means and said display means, said signal processing and display circuitry for converting a standarized information signal into an eye-readable format on said visual display means, said standardized information signal representing a physiological parameter value to be converted into an eye-readable format by said signal processing and display circuitry without further transformation;

at least two remote sensors, said sensors being associated with at least two different physiological parameters and adapted to be associated with a different part of the body;

each sensor comprising:

a sensor housing;

sensing means mounted on the housing for detecting at least one desired physiological parameter;



second connecting means;

dedicated circuitry within said sensor housing for transforming said detected physiological parameter into said standardized information signal;

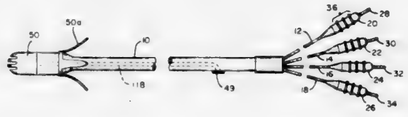
means for conveying said standarized information signal to said second connecting means, said second connecting means adapted to conductively mate with said first connecting means in order to transfer said information signal to said signal processing and display circuitry.

4,407,296

INTEGRAL HERMETIC IMPANTABLE PRESSURE TRANSDUCER

Kenneth M. Anderson, Bloomington, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 12, 1980, Ser. No. 186,373
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—675 **7 Claims**



1. An implantable pressure transducer comprising:

a sealed container having a flexible wall fully filled with a first liquid;

lead-in conductors exposed to the exterior of said container;

a basic pressure transducer having a sensing surface and a vent and coupled to said lead-in conductors, wherein pressure impinging on said sensing surface relative to pressure impinging on said vent may be electrically detected from said lead-in conductors, said transducer fixedly mounted to said container with said first liquid impinging on said sensing surface and with said vent exposed to the exterior of said container;

conductor means for coupling said transducer to associated electronic circuitry, coupled to said lead-in conductors;

connectors electrically coupled to said conductor means;

a vent tube having a first end and a second end, fully filled with a second liquid, said first end sealably coupled to said vent, said second liquid impinging on said vent;

a membrane sealably coupled to the second end of said vent tube whereby the pressure differential between pressure external to said container and to said membrane may be electrically detected from said connectors; and

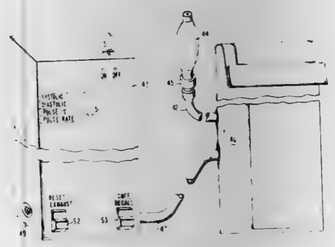
a lead body of a material substantially inert to body fluid encasing said conductor means and said vent tube, said lead body having an aperture wherein said membrane is exposed to the exterior of said lead body, said lead body fixedly mounted to said container and to said connectors.

4,407,297

METHOD AND APPARATUS FOR PERFORMING NON-INVASIVE BLOOD PRESSURE AND PULSE RATE MEASUREMENTS

Michael E. Croslin, Forest Hills Gardens, N.Y., assignor to Medtek Corporation, Carrollton, Tex.

Division of Ser. No. 64,194, Aug. 6, 1979, Pat. No. 4,271,844, which is a continuation-in-part of Ser. No. 499, Jan. 2, 1979, and a continuation-in-part of Ser. No. 774,970, Mar. 7, 1977. This application Nov. 20, 1980, Ser. No. 208,825
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—681 **19 Claims**



1. An instrument for taking blood pressure measurements comprising means for occluding the artery of a patient with a pressurized occluding cuff and for then allowing the pressure to bleed down; pressure transducer means coupled to said cuff for generating a sample of the instantaneous cuff pressure; means for controlling the generation of samples at a rate high enough to insure that at least several samples are generated during each blood pressure pulse of normal duration; and means for (a) registering the value of the sample which is generated at the start of a blood pressure pulse, and maintaining such starting value for the duration of at least several of the succeeding blood pressure pulses, (b) deriving the height of a blood pressure pulse by subtracting the respective starting value registered by said registering means from the largest sample value for the respective blood pressure pulse, and maintaining said height for the duration of at least several of the succeeding blood pressure pulses, and (c) utilizing at least several maintained starting values and heights for determining blood pressure measurements; said number of maintained starting values and heights being substantially less than the number of blood pressure pulses which occur during the course of a blood pressure measurement.

4,407,298

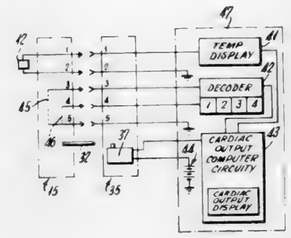
CONNECTOR FOR THERMODILUTION CATHETER

David J. Lentz, Mission Viejo, and Richard B. Houghton, Irvine, both of Calif., assignors to Critikon Inc., Tampa, Fla.

Filed Jul. 16, 1981, Ser. No. 283,716
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—713 **6 Claims**

1. In a thermodilution catheter having respective distal and proximate ends, temperature sensing means at said distal end and connector means at said proximate end for attaching said thermodilution catheter to a cardiac output computer,

the improvement wherein said connector means comprises a plurality of electrically conductive pins, the first and second of said pins being connected to said temperature sensing means, and the third, fourth, and fifth of said pins



being adapted to receive conductive bridging members between said third and fifth pair of pins and between said fourth and fifth pair of pins, said connector further selectively comprising, in correspondence to catheter size, connective bridging members to couple selectively said pins and thereby to indicate catheter size according to the following arrangement:

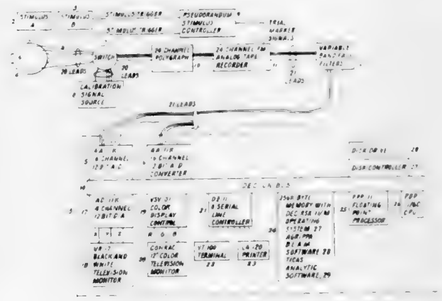
Catheter size	Pins 3–5	Pins 4–5
1	open	open
2	open	closed
3	closed	open
4	closed	closed.

4,407,299

BRAIN ELECTRICAL ACTIVITY MAPPING

Norman D. Culver, Spotswood, N.J., assignor to The Children's Medical Center Corporation, Boston, Mass.

Filed May 15, 1981, Ser. No. 264,031
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—731 **4 Claims**



1. Apparatus for generating a topographic display of information on the electrical activity of the brain, said apparatus comprising

a plurality of electrical-activity transducers adapted to be placed at spaced apart locations on the skull of a patient,

processing means connected to be responsive to said transducers to generate a time sequence of response matrices, the elements of each said response matrix representing the instantaneous amplitudes of responses of said transducers at various locations on the skull,

said processing means including means to generate from said time sequence of response matrices a succession of running-average matrices each corresponding to an average of a plurality of successive response matrices in said sequence, at least two of said running-average matrices corresponding respectively to two averages which include in common at least one of said response matrices,

display means connected to be responsive to said processing means, for displaying said running-average matrices as a time sequence of topographic maps of the skull, the elements of said running-average matrices defining discrete points of said maps.

4,407,300

POTENTIOMETRIC DIAGNOSIS OF CANCER IN VIVO

Robert E. Davis, 125 Hillcrest Dr., Hinsdale, Ill. 60521

Filed Jul. 14, 1980, Ser. No. 168,018
Int. Cl.³ A61B *5/05*
U.S. Cl. 128—734 **3 Claims**

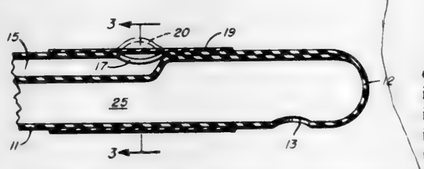
1. A method for scanning and diagnosing the absence or presence and location of malignant cancerous tissue in an area of the body comprising: measuring the presence or absence of a naturally-occurring electromotive force between a first probe in contact with the skin or subcutaneous portions of a body area to be diagnosed for the presence or absence of said malignant tissue, and a second probe which is maintained in contact with an area of normal body tissue, and recording as suspect, areas of malignant growth, at least those body areas which were in contact with said first probe when an electromotive force between −2.0 and −5.0 mv was measured, wherein said naturally-occurring electromotive force arises from an asymetrical distribution of metal atoms or ions about the suspected malignant tissue.

4,407,301

DISC MEMBRANE CATHETER FOR PERFORMING CYSTOMETROGRAMS AND URETHRAL PROFILES

Erwin Streisinger, Maplewood, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jan. 27, 1981, Ser. No. 228,984
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—774 **14 Claims**



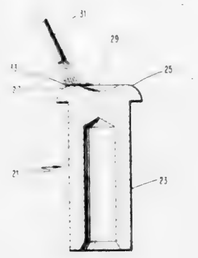
1. A diagnostic catheter for performing cystometrogram (CMG) and urethral pressure profile tests comprising a hollow shaft having a proximal end and a distal end, the distal end being closed, a CMG port in the shaft wall adjacent said distal end in communication with the proximal end of the shaft, an inflation outlet port in said shaft wall, an inflation lumen extending inside said shaft from said inflation outlet port to the proximal end of the shaft, a thin inflatable elastomeric member means located on the outside of said shaft and overlying said inflation outlet port and secured to said shaft about the periphery of said inflation outlet port and said means expandable outwardly only in the localized area proximal of said outlet port, and means for injection of fluid alternatively into the proximal end of the inflation lumen or to the CMG port, and means for measuring the back pressure from the same.

4,407,302

CARDIAC PACEMAKER ELECTRODE TIP STRUCTURE

Michael S. Hirshorn, Double Bay; Loraine K. Holley, Rockdale, and Michael Skalsky, Waverley, all of Australia, assignors to Telectronics Pty., Ltd., Lane Cove, Australia

Filed Apr. 6, 1981, Ser. No. 251,340
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **14 Claims**



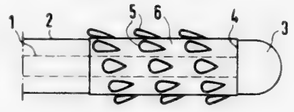
1. A pacemaker electrode having an electrode tip with an external conductive surface for contact with tissue to be stimulated, the improvement comprising means for increasing the microsurface area of said electrode tip to decrease the sensing impedance of said electrode tip, said increasing means comprising at least one roughened area formed on said external surface and at least one concave indentation formed in said external surface for contact with said tissue to be stimulated.

4,407,303

ENDOCARDIAL ELECTRODE ARRANGEMENT

Bengt Akerström, Täby, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,428
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015260
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **14 Claims**



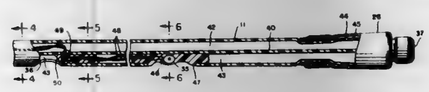
1. An endocardial electrode arrangement for the intracardiac stimulation of the heart, comprising a conductor assembly including an elongated electric conductor having an electric insulation covering, and a distal end, an electrode head which is electrically conductively connected with the distal end of the conductor, serving the purpose of supplying stimulation pulses to the heart, and conductor assembly emplacement means for the placement of the conductor assembly on the heart wall, characterized in that, for the purpose of placement of the conductor assembly said conductor assembly emplacement means comprises loop means consisting essentially of soft, thin material, mounted on the conductor assembly in proximity to the electrode head, said soft, thin material forming loops on different sides of said conductor assembly each loop including two legs and a free end portion connecting the two legs, and the legs and free end portions of the respective loops projecting from the conductor assembly in respective different directions to facilitate emplacement of the conductor assembly by lifting of the loops from the conductor assembly and adherence of blood within the loops to a heart wall, the loop means being constructed so that the free ends of the loops can be lifted from the conductor assembly by a distance greater than the thickness of said material as measured in a direction radially of the conductor assembly.

4,407,304

METHOD OF MOUNTING AN ELECTRICAL LEAD IN A CATHETER BODY

Clement E. Lieber; Robert P. Cooper, both of Yorba Linda, and Michael S. Estes, Irvine, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 160,600, Jun. 18, 1980, Pat. No. 4,329,993.
This application Sep. 11, 1981, Ser. No. 301,146
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—786 **5 Claims**



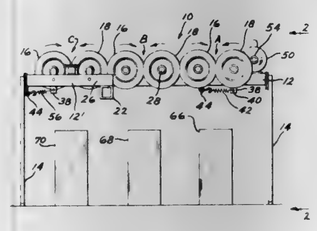
1. A method of mounting an electrical lead in a catheter body having proximal and distal ends and having a plurality of parallel lumens therein, a first one of said lumens being adapted for containing a gas and separated by a longitudinal septum from a second lumen adapted for conducting a liquid; comprising the steps of forming a lateral port in the outer wall of said body at a point intermediate the length thereof, said port communicating only with said second lumen and constituting an opening for the inflow and outflow of a liquid with respect thereto; introducing a tool through said port to form an aperture in said septum, said aperture placing said first and second lumens in communication with each other; then positioning at least one electrical lead in said lumens so that a proximal portion of said lead is disposed in said first lumen on the proximal side of said aperture, a distal portion of said lead is disposed in said second lumen on the distal side of said aperture, and an intermediate portion of said lead extends through said aperture from one lumen to the other; and thereafter closing and sealing said aperture and said second lumen distal to said port by means of a sealant plug introduced through said port into said second lumen, whereby, liquid may thereafter flow through said second lumen between said port and the proximal end of said body without contacting said lead.

4,407,305

TOBACCO LEAF-STRIPPING MACHINE

Calvin D. Patterson, 5201 Bennett La., La Grange, Ky. 40031

Filed Aug. 18, 1982, Ser. No. 409,275
Int. Cl.³ A01D *45/16*
U.S. Cl. 130—31 R **14 Claims**



1. A tobacco leaf-stripping machine comprising:

a. an elevated, elongated workbench including an integrated series of adjacent work stations;

b. each work station including a vertically adjustable guide member on which a tobacco stalk is to be rested in a generally horizontal position, as well as a pair of counter-rotating wheels arranged in a vertical plane on moving centers, said wheels being resiliently biased into rolling frictional contact with each other and centered with respect to the guide member, at least one wheel of each work station being in frictional contact with a complementary wheel of an adjacent work station; and

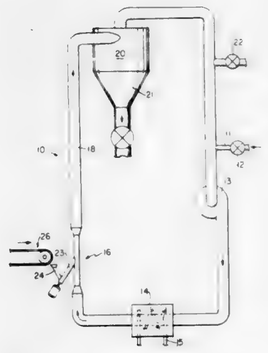
c. a single motor drive means for turning one of the wheels thereby causing all of the wheels in succession to turn, whereby the tobacco leaves are adapted to become pinched between the wheels of a particular work station and thereby caused to be pulled from the stalk and fall into a receptacle located beneath that particular work station.

4,407,306

METHOD FOR EXPANDING TOBACCO WITH STEAM AT HIGH TEMPERATURE AND VELOCITY

Charles H. Hibbitts, Chester, Va., assignor to American Brands, Inc., New York, N.Y.

Filed Dec. 17, 1981, Ser. No. 331,676
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—296 **3 Claims**



1. A method for drying and expanding cut tobacco comprising

(a) providing a stream of gas including steam and air moving at a speed in excess of 100 ft./sec. at a temperature in the range of 500°–700° F. at about atmospheric pressure in an elongated conduit having first and second sections tandemly arranged with the first section having a reduced cross-sectional area so that as the gas passes through said reduced area the pressure at that area is decreased;

(b) introducing cut tobacco having 15-50% moisture content into such reduced pressure area of the first section of the conduit for high speed transport through the first and second sections;

(c) withdrawing the tobacco from the conduit after it has resided therein less than one half second.

4,407,307

PROCESS FOR THE PREPARATION OF TOBACCO AND TOBACCO PREPARED ACCORDING TO THIS PROCESS

Helmut Gaisch, Cormondreche; Patrick D. L. Ghiste, Boudry, and Dieter Schulthess, Neuchatel, all of Switzerland, assignors to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland

Filed Jan. 7, 1982, Ser. No. 337,807
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100715
Int. Cl.³ A24B *3/18, 15/26*
U.S. Cl. 131—308 **7 Claims**

1. Process for the treatment of tobacco comprising the steps of:

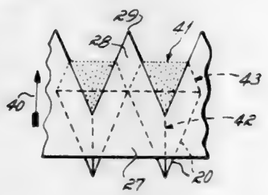
(a) subjecting cured tobacco to aqueous enzyme treatment whereby insoluble protein components are decomposed into soluble fragments,

(b) separating the resulting solution from the tobacco residue, and
(c) subjecting the separated solution to microorganisms capable of metabolically assimilating the soluble protein fragments therein, thereby generating a biomass.

4,407,308
SMOKING ARTICLES
Richard R. Baker, Dibden Purlieu, and Federick J. Dashley, New Milton, both of England, assignors to British-American Tobacco Company Limited, London, England
Filed Mar. 1, 1982, Ser. No. 353,156
Claims priority, application United Kingdom, Mar. 6, 1981, 8107118
Int. Cl.³ A24D *1/02*
U.S. Cl. 131—336 **11 Claims**

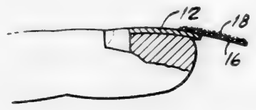
1. A smoking article comprising a rod of smoking material wrapped in a wrapper of which the air permeability due to viscous flow is substantially uniform and is, substantially, not more that 3 Coresta Units and of which the Do/t value is, substantially, in the range of 0.08 to 0.65 cm sec^{-1}.

4,407,309
HAIR STYLING METHOD
James G. McFarland, 1106 Rainbow Trail, Milford, Ohio 45150
Filed Oct. 7, 1981, Ser. No. 309,259
Int. Cl.³ A45D *24/36*
U.S. Cl. 132—45 R **1 Claim**



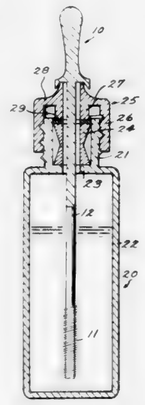
1. The method of cutting or styling haircuts which comprises utilizing a generally flat, rigid, planar comb having multiple teeth, each tooth of which defines an included angle of between 15° and 75°, which method comprises
moving said comb in multiple strokes generally parallel to the contour of the head upwardly toward the crown of the head so as to force hair entrapped between pairs of said teeth of said comb into a crossed pattern as a consequence of said comb movement resulting in hair on the left side of a first tooth engaging and being forced leftwardly relative to that first tooth, while hair on the right side of an adjacent tooth located on the left side of said first tooth is forced to the right to create said crossed pattern of groups of hair entrapped between adjacent pairs of teeth of said comb, cutting said groups of hair entrapped between said teeth of said comb in a plane parallel to said comb so as to form said groups of cut hair into the configuration of truncated pyramids, the individual hairs of said truncated pyramids tending to fall across one another and thereby remain upstanding away from the scalp so as to retain a styled appearance.

4,407,310
SCULPTURED ARTIFICIAL NAIL
Henry C. Jadow, New York, N.Y., assignor to Kristy Wells, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 913,566, Jun. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,502, Jan. 26, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,039
Int. Cl.³ A45D *29/00*
U.S. Cl. 132—73 **7 Claims**



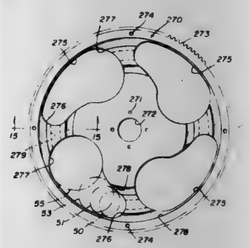
1. A method of forming an artificial nail comprising:
(a) adhesively bonding a granular material comprising methacrylate polymer granules to a substrate located in the position of a nail on a human finger by applying the granules to the substrate in the presence of sufficient cyanoacrylate glue to bond the particles to each other and to the substrate, for establishing on the substrate an adherent layer of bonded granules in which the granules impart depth to the layer and form an outwardly exposed granular surface; and
(b) shaping the produced artificial nail to simulate the appearance of a natural nail.

4,407,311
MAKE-UP UNIT WITH AN ADJUSTABLE WIPER DEVICE
Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France
Filed Oct. 19, 1982, Ser. No. 435,313
Claims priority, application France, Nov. 6, 1981, 81 20808
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **13 Claims**



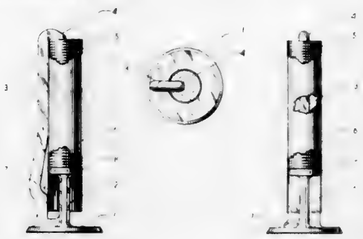
1. In a make-up unit comprising:
(a) a bottle for containing a make-up product, and having a barrel and a neck;
(b) an applicator;
(c) annular wiper means defining an adjustable opening capable of receiving said applicator, said annular wiper means being at least partly accommodated within the neck of the bottle; and
(d) movable manipulating means for variably deforming said annular wiper means to vary the cross-section of its said opening; the improvement comprising:
(e) a peripheral sliding element disposed between said movable manipulating means and the annular wiper means (24, 60) to avoid torsional deformation of the annular wiper means upon movement of said movable manipulating means.

4,407,312
FARE COLLECTION SYSTEM AND COMPONENTS THEREOF
Jose E. Davila, Bourbonnais, and Jim H. Gomez, Kankakee, both of Ill., assignors to General Railway Signal Company, Stamford, Conn.
Filed May 28, 1980, Ser. No. 153,912
Int. Cl.³ G07D *9/04*
U.S. Cl. 133—8 R **19 Claims**



1. A coin singulating and counting device comprising a mounting plate, a coin sizing disk overlying said mounting plate and mounted for rotation with respect thereto, a transfer plate overlying said sizing disk and fixedly mounted with respect to said mounting plate, a coin singulator disk overlying said transfer plate and mounted for rotation with said sizing disk and with respect to said mounting plate and said transfer plate, means for rotating said singulator disk and said sizing disk with respect to said mounting plate and said transfer plate about an axis inclined to the horizontal, said coin singulator disk having at least one open bottom coin singulating pocket therein for receiving coins one at a time from a supply thereof to travel along a first predetermined path on the upper surface of said transfer plate, said transfer plate having an opening therein along said first path and shaped to receive a coin therethrough off said transfer plate and out of said singulating pocket at a predetermined point along said first path, said coin sizing disk having at least one arcuate open bottom coin sizing pocket therein for receiving coins of various sizes one at a time from said singulating pocket through the opening in said transfer plate to travel along a common second predetermined circular path on the upper surface of said mounting plate, said sizing pocket being elongated circumferentially of said second predetermined path and of increasing size in the direction of travel along said second predetermined path and shaped and arranged to receive a coin at a predetermined position therein in accordance with the size of the coin, said mounting plate having a coin exit opening therein along said second path and shaped to receive a coin therethrough off said mounting plate and out of said sizing pocket at a predetermined point along said second path, and mechanism for measuring the distance along said second path between a predetermined point on said sizing disk and the exit of a coin at said coin exit opening for detecting the size of the coin and for counting the coin as the coin passes into said coin exit opening.

4,407,313
COMBINED COIN SAVER, COUNTER AND WRAPPER
Gerard V. Ventura, 131 Richmond Ave., West Haven, Conn. 06516
Filed Feb. 20, 1981, Ser. No. 236,451
Int. Cl.³ G07D *9/06*
U.S. Cl. 133—8 A **3 Claims**



1. A combined coin saver, counter and wrapper comprising a base section having connected thereto a coin support and elongated arm having an upper portion, the base section being of sufficient size to support the coin support and elongated arm in vertical fashion on a horizontal surface, the coin support being of sufficient length extending above the base section and of sufficient diameter to allow a coin wrapper to slide freely on and off the coin support and having an enlarged top relative to its lower portion to support a stack of coins in column fashion, the elongated arm extending above the base section substantially perpendicular to the coin support and column of coins, and the upper portion of the elongated arm extending into the area to be occupied by the column of coins and diameter of the coin support at a height above the coin support so as to represent an exact count of column of coins inserted in a coin wrapper while it is around the coin support.

4,407,314
COMBINED COIN SAVER, COUNTER AND WRAPPER
Gerard V. Ventura, 131 Richmond Ave., West Haven, Conn. 06516
Filed Feb. 20, 1981, Ser. No. 236,452
Int. Cl.³ G07D *9/06*
U.S. Cl. 133—8 A **10 Claims**



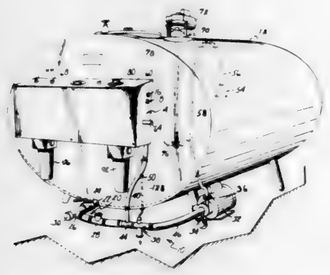
1. A combined coin saver, counter and wrapper comprising a hollow elongated member of sufficient diameter to retain a plurality of coins in straight column fashion in a coin wrapper, said elongated member mounted on a base section containing a coin support having a push means slideably mounted thereon, said push means positioned so as to contact the bottom of the coin wrapper and raise the wrapper while leaving the coin stack stationary, said coin support extending into the inner diameter of the elongated member at a sufficient height to maintain a specific count of the column of coins coextensive with the top of the elongated member when resting on the base section, the diameter of the elongated member being of sufficient size to allow the coin wrapper to freely slide around the

column of coins, and the push means slideably mounted on the coin support so that when in its uppermost position, excess coin wrapper extends equidistant above the top of the elongated member when resting on the base and below the top of the coin support.

4,407,315
APPARATUS FOR CLEANING INTERIOR OF A MILK TANK

Merle D. Haberer, 4057 Main St., Bowdle, S. Dak. 57428

Filed Jun. 12, 1981, Ser. No. 272,911
Int. Cl.³ B08B 9/08
U.S. Cl. 134—58 R **5 Claims**



1. A tank cleaning apparatus for cleaning an interior of a milk tank in a plurality of cleaning cycles, each cycle characterizing a separate cleaning step in which a separate quantity of cleansing fluid is used, and the tank having an outlet proximate a bottom interior surface thereof, the system comprising:

three-way valve means permanently attached to the outlet of the tank, said three-way valve means being operable between a first closed condition wherein milk cannot pass out of the tank outlet, a milk removal condition whereby milk can pass out through the tank outlet and a portion of the three-way valve means to a location for use thereof, and a tank cleaning condition whereby there is a cleansing fluid opening through said three-way valve means from an interior of said tank through said tank outlet to a cleansing fluidds recirculation conduit;

means for supplying a measured quantity of the cleansing fluid to the recirculation conduit supplying the cleansing fluid to the recirculation conduit downstream of the cleansing fluid opening of the three-way valve means;

pump means having an inlet end open to said cleansing fluid recirculation conduit for receiving cleansing fluid from the means for supplying, said pump means being positioned downstream of the cleansing fluid opening of the three-way valve means;

the milk tank having means for dispersing the fluid within the interior of the tank against interior surfaces and the tank having an outlet proximate a bottom interior surface thereof, a dispersing means supply conduit open from an outlet side of said pump means to said dispersing means within the interior of said tank;

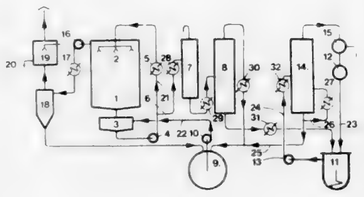
a solenoid operated drain valve in said recirculation conduit between said cleansing fluid opening of the three-way valve means and said pump means inlet, said drain valve having a drain outlet opening at a low point of said recirculation conduit and below said tank outlet, said three-way valve means and said pump means inlet; and

control means operable to control the length of each cycle, the operation of said pump means and the drain valve such that the pump means recirculates the cleansing fluid during each cycle and the drain valve opens draining the fluid at the end of each cycle.

4,407,316
CLEANING INSTALLATION

Ernest Ihringer, Chemin du Liaudoz, 9 CH-1009 Pully, Switzerland

Filed Aug. 20, 1981, Ser. No. 294,564
Claims priority, application Switzerland, Aug. 21, 1980, 6307/80
Int. Cl.³ B08B 3/02
U.S. Cl. 134—104 **6 Claims**

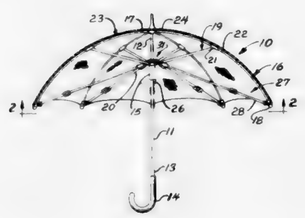


1. Installation for cleaning parts of machines and pieces of all types which have been exposed to jets of paint by means of a water-miscible organic solvent having a boiling point higher than that of water, comprising a treatment chamber operating under reduced pressure, in which said parts and pieces to be cleaned are exposed to jets of hot solvent, said chamber being directly or indirectly connected to devices for recovering and for recycling said solvent, a ventilator mounted on a gas outlet conduit from said treatment chamber, said ventilator connected to a cyclone by means of a refrigerating heat exchanger.

4,407,317
UMBRELLA REVERSAL PREVENTION STRUCTURE

Melvin Crandall, 4207 W. Howard St., Skokie, Ill. 60076

Filed Mar. 16, 1981, Ser. No. 244,158
Int. Cl.³ A45B 25/22
U.S. Cl. 135—27 **10 Claims**



1. For use with an umbrella having a shaft defining an outer end and an inner end, an annular runner coaxially longitudinally movable on the shaft, a plurality of resilient ribs having inner ends connected to said outer end of the shaft and outer ends, a plurality of rigid ribs having inner ends connected to said runner and outer ends connected one each to midportions of said resilient ribs, a flexible sheet cover having a midportion secured to said shaft outer end and a peripheral portion secured to said resilient ribs outer ends, and means for releasably retaining said runner in a disposition wherein the rigid ribs urge the resilient ribs to an inwardly bowed configuration with the cover defining an inwardly concave configuration, the improvement comprising:

a plurality of flexible guys each having an inner end and an outer end, the outer ends of said guys being connected one each to different ones of said resilient ribs outer ends;

means for connecting the inner ends of said guys to said shaft at said shaft outer end; and

adjusting means associated with each of said guys for fixedly adjusting the length thereof to provide a preselected tension in each guy for effectively preventing undesirable displacement of the resilient rib outer ends outwardly from the normal disposition thereof in said bowed configuration thereby to prevent reversal of the inwardly concave configuration in use of the umbrella as from a high wind forced directed outwardly against said cover, said adjusting means comprising means including a first portion comprising means for repetitively adjusting the length of the guys to accommodate changes in the umbrella parameters due to weather conditions, relaxation of the umbrella components, and the like, and a second portion providing a permanent strap length fixation permitting adjustment of the guys by said first portion in both lengthening and shortening directions as desired, said guys comprising straps, said first portion of the adjusting means comprising a buckle including a loop member defining a center opening and a crosspiece extending across said opening to divide said center opening into a pair of strap-passing openings, said outer end of the strap being secured to said crosspiece and including portions extending sequentially through said strap-passing openings, said outer end of each strap including a first portion passed in a first direction through a first of said strap-passing openings, thence in an opposite direction through the second of said strap-passing openings, and thence in said distal portion thereof connected to said outer end of the resilient rib, and a second portion extending back from said distal portion, in said first direction through said second of said strap-passing openings, in said second direction through said first of said strap-passing openings, and thence to the connection to said crosspiece, said distal portion of the strap being retained in an adjustable loop by a releasable holding element encircling said first and second portions adjacent said distal portion.

4,407,318
STICK

Joseph H. Stuever, Oklahoma City, Okla., assignor to Sierra Survival Company, Inc., Ada, Okla.

Filed Sep. 21, 1981, Ser. No. 303,779
Int. Cl.³ A45B 7/00
U.S. Cl. 135—66 **31 Claims**



1. An improved stick comprising:

a plurality of section assemblies having opposite ends, each section assembly comprising:

a section body being cylindrically shaped and having an outer peripheral surface with an external diameter (D-1), opposite ends and a section body opening extending through the section body and intersecting at least one of the ends, a portion of the section body opening forming a storage compartment and the section body opening forming an internal wall having an internal diameter (D-2);

two collars for each section body, each collar being cylindrically shaped and having opposite ends and a collar opening extending through the collar and intersecting the opposite ends, the collar opening forming an internal peripheral annular wall and having an internal diameter (D-3) greater than the external diameter (D-1) of the section body, one end of each section body being insertable a distance into the collar opening in one of the collars and the opposite end of each section body being insertable a distance into the collar opening in one of the other collars in a connected position of the collars and the section body; and

a plurality of connector assemblies for removably connecting one end of one section assembly to one end of another section assembly, each connector assembly comprising:

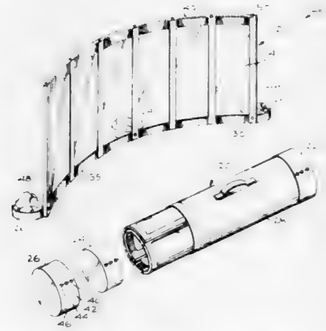
a connector assembly body having opposite ends, an internal storage compartment formed in a portion thereof and adapted for storing items and an access opening formed in a portion of the connector assembly body providing access to the storage compartment, one end of the connector assembly body being removably connectable to one end of one of the section assemblies and the opposite end of the connector assembly body being removably connectable to one end of another section assembly for removably connecting the section assemblies in an end-to-end relationship in a connected position of the connector assembly and the section assemblies; and

a cap removably connectable to the connector assembly body generally near the access opening, the cap being shaped to close the access opening in the connected position of the cap to the body.

4,407,319
WIND SHELTER

George W. Shultz, and Nouelle A. Shultz, both of P.O. Box 611 431 N. Canyon, Camino, Calif. 95709

Filed Nov. 23, 1981, Ser. No. 323,973
Int. Cl.³ A45F 1/00; E04F 10/04
U.S. Cl. 135—87 **1 Claim**



1. A wind shield having at least one frame portion and a pane portion carried within said at least one frame portion, said frame portion having an upper and a lower member joined by side members;

at least one ballast container having a back portion, said back portion having at least one securing aperture therein;

a securing button carried in said lower member of said frame portion and protruding therefrom;

said at least one securing aperture being dimensioned to cooperate with said securing button for easy application and removal of said ballast container to and from said lower member of said at least one frame portion;

said frame portion being flexible along its upper and lower

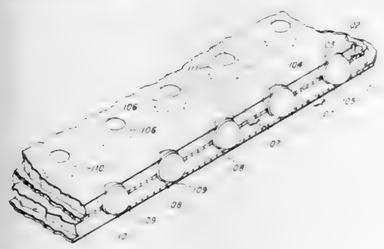
members and said pane portion being flexible whereby said wind shield may be rolled about an axis normal to said upper and lower members of said frame portion;

said wind shield including, in addition, a tube, having a length adequate to receive said wind shield, the number of said ballast containers is at least two and such ballast containers are shaped and dimensioned to form end caps for said tube.

4,407,320
LARGE AREA, FAULT TOLERANT SOLAR ENERGY CONVERTER

Jules D. Levine, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1981, Ser. No. 299,695
Int. Cl.³ H01L *31/04, 31/18*
U.S. Cl. 136—250 **23 Claims**



10. A radiant energy converter system comprising:

a. a plurality of substantially spherical semiconductor cells of a first conductivity type having a surface layer doping of a second conductivity type over a portion of the surface of each cell;

b. aluminum foil bonded to each of said cells in like conductivity regions;

c. conductive means making electrical contact to each cell in regions of opposite conductivity from those contacting said aluminum foil; and

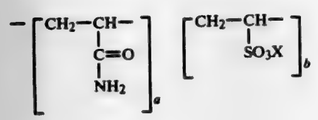
d. insulating means for electrically separating said conductive means from said aluminum foil.

4,407,321
DRAG REDUCING AGENTS

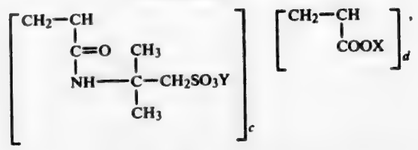
Hans Wilski, Bad Soden am Taunus; Werner Interthal, Rüsselsheim, and Friedrich Engelhardt, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,638
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1979, 2931707
Int. Cl.³ F17D *1/16*
U.S. Cl. 137—13 **4 Claims**

1. Process for reducing the friction pressure drop of aqueous liquids and suspensions in turbulent or pulsating flow by adding from 1 to 1,000 ppm of a drag reducing agent, which comprises using as the drag reducing agent a linear random copolymer of the following formula I



-continued

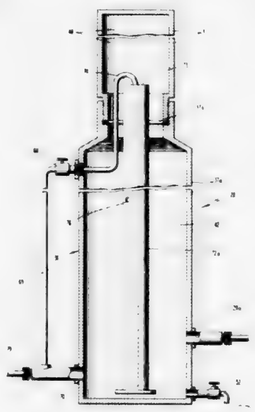


in which X is in a Na^+, K^+ *or* NH_4^+ cation and Y is hydrogen or Na^+, K^+ or NH_4^+ cation, and in which a, b, c and d represent the proportional weight ratios of the comonomers in % and a is in the range of from 30 to 98, b from 0 to 20, c from 0 to 25 and d from 0 to 45, however, wherein the sum of the portions of b and c must be at least 2, the said copolymer being obtained by a polymerization reaction without stirring in an about 15 to 40% by weight aqueous solution, the reaction being started at an initial temperature of about 10° to 30° C. and completing the reaction at about 60° to 95° C. resulting in a polymer in the form of an aqueous, dimensionally stable jelly which has retained a solubility in water and is capable of being cut and which has an elastic resilience of more than 5%.

4,407,322
CHEMICAL FEEDER

Stephen D. Moore, 1230 - 17th Ave. N., Lake Worth, Fla. 33460, and Murrill Maglio, 305 Cypress Ave., West Palm Beach, Fla. 33406

Filed Dec. 2, 1980, Ser. No. 212,105
Int. Cl.³ B01D *11/02*
U.S. Cl. 137—268 **5 Claims**



1. A device for controlled, pressure-actuated feeding of a water-soluble chemical into a water line having a pressure varying between a minimum and a maximum in the line, comprising:

an input coupling to the water line;

a first check valve for preventing flow back through said input coupling;

an output coupling to the water line downstream from said input coupling;

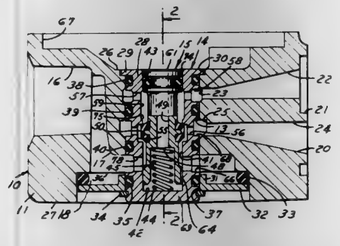
fluid-tight chemical mixing tank means in fluid communication between said input and output couplings for permitting mixing of the chemical and the water therein, said mixing tank means including an elongated vertical cylinder divided into sealingly engageable upper and lower sections, chemical storage means, and a chemical and water mixing chamber, said storage means and said mixing chamber being situated within the cylinder, said fluid communication including fluid passage means through at least a portion of said chemical storage means and into said mixing chamber; and

means for creating a pressure differential between said mixing tank means and said output coupling as a result of a decrease in the water pressure in the line below the maximum, thereby forcing chemical and water from said tank means into the line via said output coupling, said pressure differential creating means including an air reservoir situated in said mixing tank means and a control valve between said tank means and said output coupling, said control valve being set at a restricted flow value with respect to said input coupling, whereby the contents of said tank means are fed through said control valve by the pressure in said air reservoir acting on said contents when the water pressure in the water line decreases below the pressure in said air reservoir, both said chemical storage means and said mixing chamber being subject to the pressures of said air reservoir, wherein said air reservoir is primarily in said upper section; and wherein said chemical storage means is an elongated vertical container extending from near the bottom of the mixing chamber upward through the lower section and into the upper section of the cylinder, said container having an aperture in the wall thereof lying within said lower section and adapted to be within the fluid of said chemical and water mixing chamber during a portion of each filling cycle of said chamber and a tube having its rim at one end sealed to the perimeter of said aperture and the other end of said tube extending close to the bottom of said container.

4,407,323
CARTRIDGE TYPE PILOT VALVE

James A. Neff, Bloomfield Township, Oakland County, Mich., assignor to MAC Valves, Inc., Wixom, Mich.

Filed Mar. 1, 1982, Ser. No. 353,045
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—454.2 **7 Claims**



1. A three-way, normally closed only, pilot air valve including a valve body with a pressurized pilot air inlet port, a cylinder port, and an exhaust port, characterized in that:

(a) said valve body has a bore formed therethrough;

(b) a one-piece tubular valve retainer member, having an axial bore formed therethrough, is releasably mounted in said valve body bore in a position between the inlet port, the cylinder port, and the exhaust port, and it has a tubular side wall and an upper end and a lower end;

(c) a first passageway means is formed through the valve body and the tubular valve retainer member and it connects said pressurized pilot air inlet port to the cylinder port;

(d) a second passageway means is formed through the valve body and the tubular valve retainer member and it connects said exhaust port to the cylinder port;

(e) a first circular sharp edged poppet valve seat is formed in the tubular valve retainer member axial bore in the first passageway means, and a second circular sharp edgeds poppet valve seat is formed in the tubular valve retainer member axial bore in the second passageway means;

(f) a poppet valve spool is movably mounted in said tubular valve retainer member axial bore and movable between a normally closed inoperative position and an open operative position;

(g) said poppet valve spool is provided with a first conical annular valve member element and a longitudinally spaced apart second conical annular valve member element for sealing engagement with the first and second circular sharp edged poppet valve seats, respectively, so that when the poppet valve spool is in the normal inoperative position the first conical annular valve member element is seated on the first circular sharp edged poppet valve seat and the poppet valve spool blocks communication through the first passageway means between the inlet port and the cylinder port through the tubular valve retainer member axial bore while simultaneously the second conical annular valve member is in the unseated position, with communication open between the cylinder port and the exhaust port through the tubular valve retainer axial bore to allow the air under pressure entering said cylinder port to be exhausted out said exhaust port, and when the poppet valve spool is moved to the operative open position the second conical annular valve member element is seated on the second circular sharp edged poppet valve seat and the poppet valve spool blocks communication through the second passageway means, to block exhausting of air from the cylinder port to the exhaust port, and the first conical annular valve member element is unseated to open communication between the pilot air inlet port and the cylinder port through the first passageway means to allow pressurized pilot air to flow from the pilot air inlet port to the cylinder port;

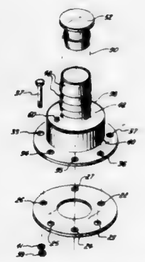
(h) the poppet valve spool is normally biased to the normally closed inoperative position by means which includes a return spring means mounted in the lower end of the tubular valve retainer member axial bore and engaged with the lower end of the poppet valve spool; and,

(i) retainer means releasably secures the tubular valve retainer member in the valve body bore.

4,407,324
VALVE STEM COVER APPARATUS

John P. Caddell, 2310 W. George, Zachary, La. 70791

Filed Feb. 17, 1981, Ser. No. 234,920
Int. Cl.³ F16K *27/08*
U.S. Cl. 137—382 **3 Claims**



1. An apparatus for protecting hand operable valves having a hand wheel attached to a valve stem forming a handwheel and stem assemble, comprising:

a. a valve stem cover having means for securely attaching said cover to the hand wheel and stem assembly and having an open ended nipple section on its upper end for receiving the valve stem therethrough, said nipple section upper end having a plurality of laterally projecting ribbed edges;

b. a tubular flexible rubber-like sleeve section attachable to said nipple at a first end by frictionally engaging said nipple at said ribbed edges forming a connection between

said edges and said first end, the tubular section-nipple connection being a slip-on/off quick release connection;

c. means for enclosing the second end of said tube section to encapsulate with said tube, and said cover, the valve stem.

4,407,325

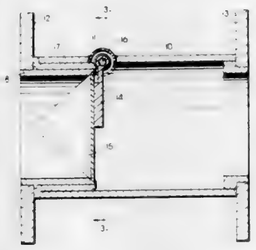
ARCUATE SWING CHECK VALVE

George S. Cherniak, 246 21st Pl., Santa Monica, Calif. 90402

Filed Nov. 9, 1981, Ser. No. 319,806

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—514 **16 Claims**



1. In a swing check valve having a body portion defining a fluid passage therethrough, a valve seat mounted in said body, a pivot member supported by said body, a pivotable sealing member rotatable around said pivot pin for engaging said valve seat for closure of the fluid passage when flow is in one direction and movement away from the valve seat when flow is in the opposite direction, the improvement comprising: said valve seat having non-planar sealing surfaces developed by forming a circular arc through the horizontal diametral plane of a tubular member and extending tangent planes from that arc to the periphery at the intersection of the vertical diametral and the transverse end planes of said member and said pivotable sealing member having an arcuate, saddle shaped configuration with non-planar sealing surfaces mating with those of the valve seat developed by forming a circular arc tangent to the horizontal diametral plane of a corresponding tubular member and extending tangent planes from that arc to the periphery of the member, meeting the periphery at points on the vertical diametral plane spaced apart the outer diameter of the tubular member.

4,407,326

VALVE ACTUATING MECHANISM

Raymond L. Wilhelm, Orange, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 29, 1981, Ser. No. 287,982

Int. Cl.³ F16K *37/00, 31/44*

U.S. Cl. 137—553 **18 Claims**

1. A valve actuating mechanism including value position indicating means, comprising:

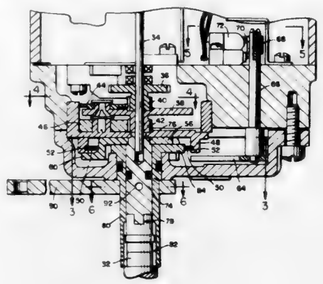
drive means for moving said valve including power means, drive train means from said power means and operated thereby, and output means from said drive train means to said valve;

valve position indicating means;

moving means for moving said valve position indicating means in response to operation of said drive train means, said moving means being operatively associated with said output means;

clutch means operatively associated between said drive train means and said output means and said moving means for operating said output means and for deactivating said drive train means in response to said valve position indicating means reaching a predetermined indicating position and thereby stopping said moving means; and

override means in said output means operatively associated with said clutch means through said moving means for deactivating said drive train means in response to malfunctioning of said valve and thereby prevent movement of said valve indicating means.



4,407,327

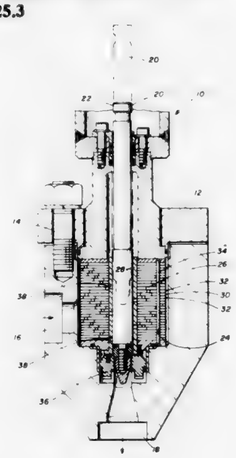
FLOW CONTROL VALVE

Lloyd D. Hanson, and Robert M. Purton, both of Cerritos, Calif., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Apr. 24, 1981, Ser. No. 256,876

Int. Cl.³ F16K *47/12, 47/14*

U.S. Cl. 137—625.3 **5 Claims**





1. An improved pressure control valve including a body having an inlet and an outlet, a valve seat encircling said outlet, a valve member movable in a longitudinal direction in said body toward and away from said seat, and orifice means located in said body between said inlet and outlet and cooperable with said valve member to control flow through said outlet, said orifice means comprising:

a perforated sleeve member located in said body and encircling a portion of said valve member whereby movement of said valve member opens and closes said perforations;

a plurality of orifice discs encircling said sleeve member, each said orifice disc having a plurality of radially and circumferentially spaced orifices extending therethrough;

a plurality of spacer discs encircling said sleeve member in alternating stacked relation with said orifice discs, each said spacer disc having a plurality of radially and circumferentially spaced flow ports extending therethrough, each said port being larger than each said orifice and in fluid communication with at least one of said orifices; and,

each said orifice and spacer disc located in radially displaced position relative to each other serially arranging said ports and orifices forming a multiplicity of elongated curvilinear flow paths through said discs extending generally longitudinally of said valve for dissipating the energy of fluid flowing through said valve.

4,407,328

CLUTCH-BRAKE STEERING MECHANISM FOR TRACTORS

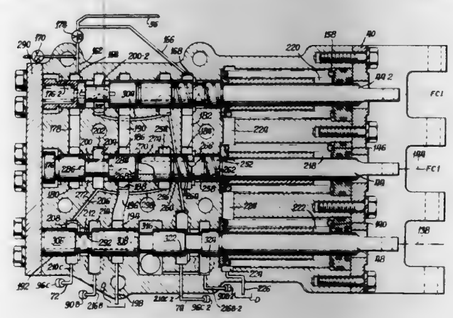
Daniel B. Shore, Niles, and Probir K. Chatterjea, Mount Prospect, both of Ill., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 10,568, Feb. 9, 1979, Pat. No. 4,308,893, which is a division of Ser. No. 708,956, Jul. 26, 1976, Pat. No. 4,164,276, which is a division of Ser. No. 561,119, Mar. 24, 1975, Pat. No. 4,015,619. This application Apr. 9, 1981, Ser. No. 252,533

The portion of the term of this patent subsequent to Apr. 5, 1994, has been disclaimed.

Int. Cl.³ F15B *13/06*

U.S. Cl. 137—625.6 **8 Claims**



1. For use in a pressure fluid system including hi pressure, lo pressure, and metered pressure outlet conduits:

signal-pressure setting valve assembly means (**40**) with a common bore (**176**) therein hydraulically disposed for communicating with said conduits and controllably connecting the hi and lo pressure conduits for producing an actual metered outlet pressure in the outlet conduit in correspondence with a signal pressure as set;

first (**44**) and second (**200**) independently slideable members in the common bore, each having a double spool portion for establishing the respective signal and actual pressures, and having a pressure pickup port intermediate the double spools of each for such signal and actual pressures;

means providing a path of flow along a restrictive orifice (**262,264**) of appreciable length formed along the double spools (**252, 260**) of the first member, in communication with the signal pressure pickup port (**266**) thereof, said path of flow covered by companion sections of the bore so as to fix a generally uniform pressure gradient therealong between hi and lo pressures;

means forming along double spools (**274, 276**), of the second member a path (**286, 272, 284**) of flow covered by said bore and arranged to provide an actual pressure, metered output therefrom, in communication with its actual pressure pickup port (**278**) and with the output from said path under pressure between hi and lo pressures; and

means for communicating (**272**) said output under pressure to and through said metered pressure outlet conduit;

said members each, notwithstanding varying pickup port pressures, constantly changing positions with independent sliding movement thereby maintaining an actual metered outlet pressure in said outlet conduit that is directly related to said signal pressure.

4,407,329

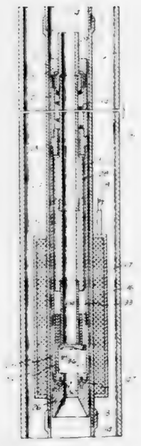
MAGNETICALLY OPERATED FAIL-SAFE CUTOFF VALVE WITH PRESSURE EQUALIZING MEANS

Donald L. Huebsch, 3716 Prestwick Dr., Los Angeles, Calif. 90027, and Louis B. Paulos, 9616 Yolanda Ave., Northridge, Calif. 91324

Continuation-in-part of Ser. No. 140,188, Apr. 14, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,355

Int. Cl.³ E21B *43/12*

U.S. Cl. 137—629 **66 Claims**



1. A magnetically operated valve assembly adapted to be opened by equalizing the pressure differential thereacross comprising:

a tubular housing adapted to be installed in tubing in communication with pressurized fluid at one end;

cutoff valve means supported crosswise of the interior of said housing movable to an open position providing a linear flow passage which is unobstructed from end to end of said valve assembly;

electric coil means coiled concentrically of said tubular housing;

tubular first armature means of magnetic material in axial alignment with said flow passage through said tubular housing, said armature means being reciprocably supported within said coil means and movable between the extended and retracted positions thereof and operable to open said cutoff valve means when the pressure thereacross is substantially equalized; and

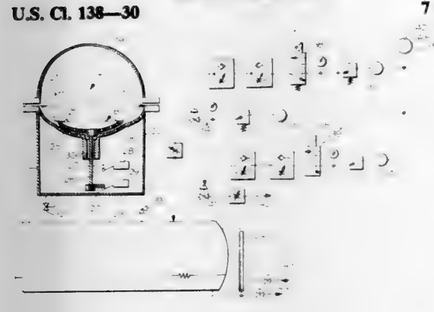
pressure equalizing valve means across small passage means having its opposite ends in communication with the opposite sides of said cutoff valve means and including second armature means of magnetic material positioned to be energized by said coil means and responsive thereto to open said pressure equalizing valve means and thereby effective to equalize the pressure differential across said cutoff valve means.

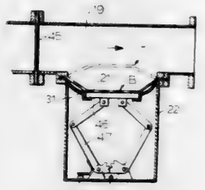
4,407,330

PRESSURE PULSE ABSORBING DEVICE

Haruyoshi Fujiwara, Mihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 116,604, Jan. 24, 1980, abandoned. This application Jan. 26, 1982, Ser. No. 342,920
Claims priority, application Japan, Feb. 2, 1979, 54-11299
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **7 Claims**





1. A pressure pulse damping device for use in a liquid passage, said damping device comprising:

a flexible diaphragm made of an easily deformable material having a small mass and adapted to cover an opening in a bottom wall of the liquid passage, the edge of said diaphragm being adapted to be fixed relative to the wall of the liquid passage;

a chamber beneath said diaphragm and to the interior of which the side of said diaphragm opposite the side facing the liquid passage faces, supporting means supporting said diaphragm between said chamber and said liquid passage for permitting at least a portion of said diaphragm to move out of and into said chamber perpendicular to the plane of the opening and in a radial direction of said liquid passage toward and away from the liquid passage, said supporting means being constituted by a support frame for said diaphragm, said support frame being attached to a portion of said diaphragm and positioned adjacent to the side of said diaphragm opposite the side facing the liquid passage, a support rod fixed to said support frame and extending radially outward from the liquid passage, and a porous plate defining a wall of said chamber for communicating said chamber with said diaphragm, said porous plate having a bore therethrough for radially slidably accommodating said support rod, whereby when the average pressure in the liquid passage is greater than that in said chamber said support rod moves away from the liquid passage and when the average pressure in the liquid passage is less than that in said chamber said support rod moves toward the liquid pressure;

gas contained in said chamber at a pressure equal to the average pressure of the liquid in the passage;

a gas supply means connected to said chamber for providing said chamber with gas whenever at least a portion of said diaphragm reaches a predetermined limit of radial movement away from the liquid passage;

a gas discharge means connected with said chamber for discharging gas from said chamber whenever at least a portion of said diaphragm reaches a predetermined limit of radial movement toward the liquid passage;

means for sealingly closing said chamber whenever said diaphragm moves toward and away from the liquid passage within the range between said limits of radial movement; and

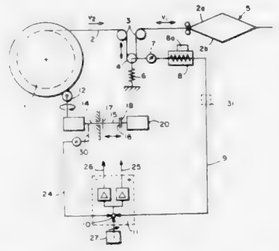
the total capacity of said chamber and said gas supply means being such that the change of shape of said diaphragm in response to a pulse of liquid in said passage causes a change in the pressure of said gas just sufficient to keep the pressure of the liquid in said liquid passage constant.

4,407,331

SPEED REGULATOR FOR THE WARP BEAM OF A WEAVING MACHINE

Walter Rehling, Poststrasse 63, Holzwickede, Fed. Rep. of Germany 4755, and Jaime Rossell, 10, Chemin du Valloni, Lausanne-Pully, Switzerland CH-1012

Filed Sep. 15, 1980, Ser. No. 186,943
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939607
Int. Cl.³ D03D *49/06, 49/10*
U.S. Cl. 139—110 **5 Claims**



1. A speed regulator for a warp beam of a weaving machine comprising:

variable speed drive means for accelerating or breaking a rate of rotation of a warp beam;

means for generating a voltage output proportional to a deflection of a dancer which receives warp thread from a warp beam associated with said drive means;

integrator means for counting and averaging said voltage outputs and generating an averaged voltage representing a desired voltage value;

tachometer means connected to said drive means for generating a voltage proportional to said rate of rotation of a warp beam and representing an actual voltage value; and

regulator means operatively connected to said drive means, said integrator means and said tachometer means for receiving said desired voltage value and said actual voltage value, comparing said voltage values, and selectively actuating said drive means in response to said voltage values to accelerate or brake a rate of rotation of an associated warp beam and thereby maintain tension of an associated warp thread substantially constant.

4,407,332

WEAVERS PLATFORM ASSEMBLY AND CLOTH GUIDE

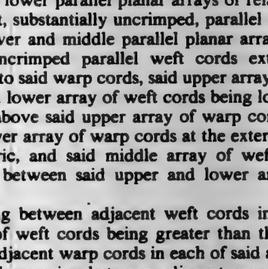
William J. Alexander, III, 41 W. Golden Strip Dr., Mauldin, S.C. 29662

Filed Aug. 5, 1981, Ser. No. 290,145
Int. Cl.³ D03D *49/20*
U.S. Cl. 139—304 **2 Claims**

1. A weavers platform assembly and cloth guide for use with a cloth takeup for a loom comprising:

a horizontal walkway having sides extending transversely between said loom and said cloth takeup having an intermediate portion between ends of said walkway in elevated position to accommodate the passage of cloth therebeneath from the loom to the takeup;

an upright side flange extending along said walkway on each of said sides extending substantially entirely therealong and having integral connection with said sides;



a hollow tubular member having a smooth anti-friction outer wall carried by the upright flanges and having fixed connection with respect thereto;

a portion of said hollow tubular member extending beneath said intermediate portion of said walkway over which said cloth passes for sliding guidance between said loom and said cloth takeup; and

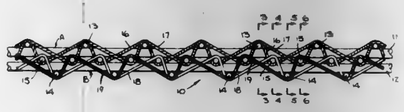
said hollow tubular member extending outside said flanges along the entire length thereof.

4,407,333

BELTING FABRIC

Robert A. Fowkes, Newtown, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,396
Int. Cl.³ D03D *11/00*
U.S. Cl. 139—415 **5 Claims**



1. A belting fabric, comprising:

upper and lower parallel planar arrays of relatively closely adjacent, substantially uncrimped, parallel warp cords;

upper, lower and middle parallel planar arrays of substantially uncrimped parallel weft cords extending transversely to said warp cords, said upper array of weft cords and said lower array of weft cords being located, respectively, above said upper array of warp cords and below said lower array of warp cords at the exterior surfaces of the fabric, and said middle array of weft cords being located between said upper and lower arrays of warp cords;

the spacing between adjacent weft cords in each of said arrays of weft cords being greater than the spacing between adjacent warp cords in each of said arrays of warp cords, the spacing between adjacent ones of said upper weft cords being substantially equal to the spacing between adjacent ones of said lower weft cords, and the spacing between adjacent ones of said middle weft cords being approximately one-half the spacing of adjacent ones of either said upper or said lower weft cords;

each of said upper weft cords, viewed as lying in a vertical plane, being located substantially midway intermediate two adjacent ones of said lower weft cords, viewed as lying in respective vertical planes, and vice versa, and each of said middle weft cords, viewed as lying in a vertical plane, being located substantially midway intermediate one of said upper weft cords and an immediately adjacent one of said lower weft cords;

a plurality of pairs of upper binder cords extending in the warp direction of the fabric and passing, respectively, intermediate selected pairs of adjacent ones of said upper warp cords, and a plurality of pairs of lower binder cords extending in the warp direction of the fabric and passing, respectively, intermediate selected pairs of adjacent ones of said lower warp cords;

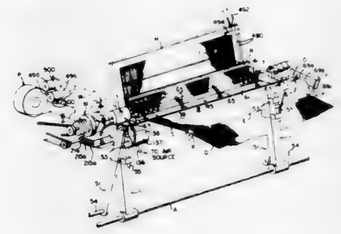
the two binder cords of each of said pairs of upper binder cords being interlaced jointly with each of said upper weft cords and, intermediate each two adjacent upper weft cords, singly each with only a respective one of the two middle weft cords located intermediate those two adjacent upper weft cords, and the two binder cords of each of said pairs of lower binder cords being interlaced jointly with each of said lower weft cords and, intermediate each two adjacent lower weft cords, singly each with only a respective one of the two middle weft cords located intermediate those two adjacent lower weft cords.

4,407,334

METHOD AND APPARATUS FOR POSITIVELY REMOVING WEFT FROM AIR INSERTION GUIDANCE TUBE

Charles W. Brouwer, East Greenwich, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Aug. 6, 1979, Ser. No. 64,021
Int. Cl.³ D03D *47/30*
U.S. Cl. 139—435 **9 Claims**



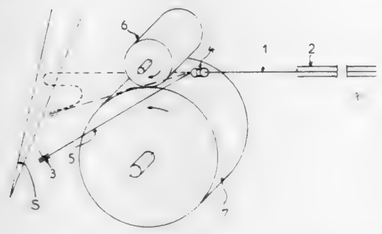
1. In the method of weaving in which a weft strand is projected in substantially free flight into the warp shed of a loom and is guided while in flight across at least a portion of the shed by a plurality of guides disposed in operative position within the shed in interdigitating relation with said warp threads, said guides being moved to and fro along an arcuate path to withdraw them between warp threads to an inoperative position substantially entirely outside the shed and then to return the same within the shed, said guides each having an opening at a common point to permit the projected strand to egress therefrom and remain within the shed during their withdrawal from the shed, the steps of (a) engaging the weft strand after said flight at spaced points along its length while the strand is within said shed and within said guides and (b) bodily displacing the strand laterally outwardly through said egress opening in said guides before said guides are withdrawn from said shed.

4,407,335

PROCESS AND DEVICE FOR THE INSERTION OF A WEFT THREAD INTO THE SPACE BETWEEN TWO LINES OF WARP THREAD

Albert Moessinger, Chemin de l'Eglise Epalinges, 1066 Vaud, Switzerland

Filed Jan. 27, 1981, Ser. No. 228,952
Claims priority, application France, Jan. 30, 1980, 80 02316
Int. Cl.³ D03D *47/36*
U.S. Cl. 139—452 **11 Claims**



1. A process for inserting a weft thread into the space between two layers of warp thread in a weaving loom, the process comprising:

storing in a storage space a specific length of weft thread with one end free,

gripping the stored weft thread at a locking point situated at a distance measured from the free end of the thread, which is at least equal to the pick of weft thread to be inserted,

casting the thread in the shape of a loop into the space between the two layers of warp thread, said loop having one cast strand and one locked strand, and the casting being produced by squeezing the thread between two casting rollers which rotate in opposite directions and which are positioned between the locking point of the locked strand and the free end of the cast strand so that the kinetic energy of the cast strand produces a force which pulls the thread from where it unwinds,

inserting the weft thread between the casting rollers by moving a length of weft thread between a guiding point situated upstream of the common generatrix of the casting rollers and the locking point which is situated downstream of said common generatrix laterally to the common generatrix

so that the weft thread at the time of the casting operation is moved into position between the casting rollers at their common generatrix so that, once cast, the thread moves along the common generatrix to form a loop between the locking point and the cast strand by driving the length of thread out of the storage space.

4. Device for inserting a weft thread into the shed formed by the warp threads in a weaving loom, the device comprising:

means for storing in a storage space a specific length of weft thread with one end free,

a guide for directing said weft thread,

a pair of casting rollers for casting the weft thread into the shed in the shape of a loop with one strand locked and one strand cast by imparting kinetic energy to the thread for the thread to unwind it from the storage space wherein said casting rollers are positioned so that they have a common generatrix downstream of the guide,

a clip arranged downstream of the common generatrix so that the weft thread when laterally moved towards the common generatrix will form an angle with the common generatrix, and

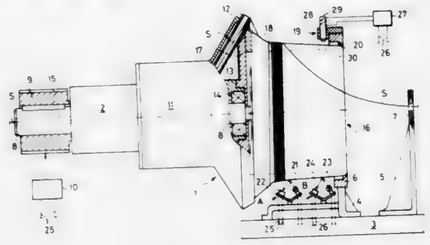
insertion means adapted to laterally move the length of weft thread between the clip and the guide into position at one end of the common generatrix of the casting rollers.

4,407,336

THREAD-FEED DEVICE FOR TEXTILE MACHINES AND METHOD OF OPERATION

Alois Steiner, Rieden, Switzerland, assignor to Ruti Machinery Works Ltd., Ruti, Switzerland

Filed Jun. 16, 1981, Ser. No. 274,217
Claims priority, application Switzerland, Jun. 17, 1980, 4642/80
Int. Cl.³ B65H *47/01*
U.S. Cl. 139—452 **16 Claims**



1. A thread-feed device for textile machines having a stationary winder drum onto which a thread fed from a stationary winding bobbin can be wound by means of a rotatable winder arm for the formation of a thread supply and the thread supply formed can be withdrawn on top, and having a first detection device for automatically controlling the rotary movement of the winder arm as a function of the length of the supply of thread formed, characterized by:

a. a second detection device arranged in the region of the withdrawal end of the winder drum to give a first signal upon each passage of the thread during its withdrawal through its monitoring region,

b. a control unit arranged behind the second detection device for the counting of the first signals and the giving off of a second signal as soon as the number of first signals reaches a predetermined adjustable value corresponding to the required length of thread, and

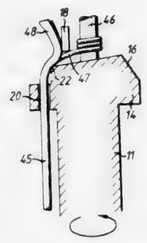
c. a thread gripper means which is operably connected to the control unit and can be controlled by the second signal.

4,407,337

WIRE WRAPPING TOOL FOR WRAPPING INSULATED WIRE

Howard E. Hines, Ipswich; Rex F. G. Hardy, Woodbridge, and David S. Butler, Saxmundham, all of England, assignors to Post Office, London, England

Continuation of Ser. No. 140,561, Apr. 15, 1980, abandoned. This application Aug. 10, 1982, Ser. No. 406,882
Claims priority, application United Kingdom, Apr. 17, 1979, 7913245
Int. Cl.³ B21F *3/04*
U.S. Cl. 140—124 **6 Claims**



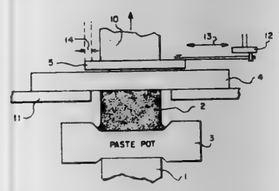
1. A wire wrapping tool comprising a wrapping head adapted for rotation relative to a wrapping post, said head having separate cutting and separate stripping means for removing insulation from a wire and means for guiding wire to be wrapped to said cutting and stripping means, characterized in that the cutting means comprises a cutting edge defined on said head and the stripping means comprises a stripping element disposed downstream from the cutting edge such that in use the wire passes over the cutting edge before reaching the stripping means, the cutting edge and stripping element being arranged generally transverse to the direction of movement of the wire, and the cutting edge being arranged to form a straight longitudinal cut in the insulation on the wire prior to it being stripped by the stripping element.

4,407,338

METERING OF PASTE ONTO A CARRIER TAPE

Klaus Kleinsorgen, Kelkheim, and Erich Münch, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,760
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952234
Int. Cl.³ B65B *3/04*; H01M *4/82*
U.S. Cl. 141—1 **5 Claims**



1. A method of metering paste applied to a tape-like carrier material, in which the metering takes place by means of a scraper device, said method comprising

moving the scraper relative to the paste without contacting the tape and the edge of the scraper nearest the tape is spaced from the tape by a predetermined distance which is less than the thickness of the applied paste, so that said scraper projects into the thickness of said applied paste,

oscillating said scraper in a plane parallel to the tape, and

performing the movement of said scraper at a speed which equals at least the tear velocity between the scraper and the paste.

4,407,339

DOUBLE-WALLED HOLLOW ROD OF FLEXIBLE TUBULAR MATERIAL

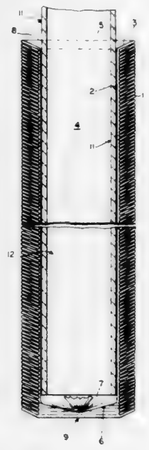
Armin Köstner, Wiesbaden; Richard Lenhart, Wiesbaden-Frauenstein, and Klaus-Jürgen Bittner, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 914,158, Jun. 9, 1978, Pat. No. 4,273,551, which is a continuation-in-part of Ser. No. 413,622, Nov. 7, 1973, abandoned. This application Sep. 22, 1980, Ser. No. 189,477
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1972, 2254731
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—10 **8 Claims**

1. A process for the manufacture of a tubular package filled with pasty material which comprises

(a) positioning a filling tube of a filling device inside the inner tube of a tubular rod of flexible material, said rod comprising an inner tube substantially free from folds and a shirred outer tube, the hollow space of said shirred outer tube constituting a casing for said inner tube and said inner tube being a deshirred length of the tubular rod which is inverted into the hollow space of said shirred outer tube thus forming a double-walled rod, wherein the outside surface of said inner tube and the inside surface of said outer tube are in direct contact, the inner tube being integral with the outer tube at one of its ends and sealed at the other; in a manner such that the filling tube adjoins the seal of the rod, and

(b) feeding pasty material from the filling device through the filling tube into said inner tube of the rod, and simultaneously turning the tube forming the shirred stick inside out under a frictional contact between the outside surface of the deshirred inner tube and the inside surface of the shirred outer tube, whereby the shirred outer tube is progressively unfolded by the pressure exerted in introducing the pasty material.

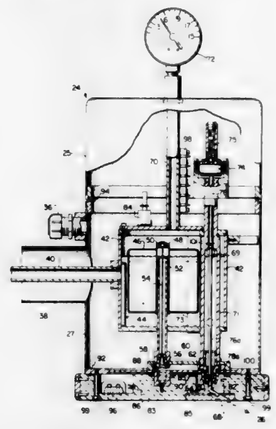


4,407,340

CONTAINER PRESSURIZATION SYSTEM

Eric L. Jensen, and Harry W. Lee, Jr., both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 217,773, Dec. 18, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,671
Int. Cl.³ B65B *31/00*
U.S. Cl. 141—67 **8 Claims**



1. Apparatus for pressurizing containers comprising a source of liquified gas, means for adjusting pressure within said liquified gas source, means for detecting said containers and injector means responsive to said detecting means to supply liqui-

fied gas to said containers, said injector means comprising an intake line in fluid flow relation with said liquified gas source, a chamber in fluid flow relation with said intake line, a float positioned within said chamber, a tube over which said float rides and in fluid flow relation with said chamber, a first valve having a valve stem connected to said float and connected in fluid flow relation to said chamber through said tube, a second valve in fluid flow relation with said chamber for releasing said liquified gas into said containers and means for controlling said second valve.

4,407,341

APPARATUS FOR REMOVING CONTENTS OF DAMAGED AEROSOL CONTAINERS

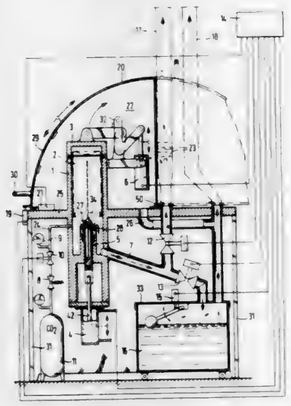
Adolf Feldt, Gross Hansdorf; Ulrich Jarnuszak, Tangstedt; Rolf Kiessling, and Juergen Kock, both of Hamburg, all of Fed. Rep. of Germany, assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 11, 1981, Ser. No. 262,671

Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018795

Int. Cl.³ B65B *3/04*; B67B *7/20*

U.S. Cl. 141—97 **14 Claims**



1. An apparatus for safely emptying aerosol spray cans filled with active ingredient and flammable gaseous propellant which have valve inserts for spraying the active ingredients comprising an explosion-proof casing with a cap, said casing being mounted in a table and being covered by a pivotable bonnet which in its closed position presses down a locking contact which blocks locking means controlling the opening of said bonnet, a discharge pipe connected to the lower end of said casing, a first valve means for venting the gaseous propellant from said discharge pipe to a suction channel, a second valve for draining off the liquid active ingredient from said discharge pipe to a collecting container, clamp means sealed in explosion-proof manner passing through the base of said casing and which is movable relative to said casing for breaking the seal between the spray can placed in said casing and its valve insert, and an automatic control circuit to control said first and second valves, said clamp means, and said bonnet.

4,407,342

TOOL FOR WOOD DOWEL STRIATION

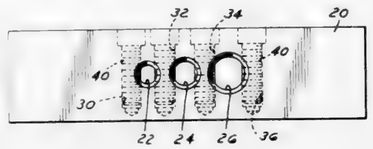
Frederick R. Deaner, Hamilton, N.Y., assignor to Eaton Industries, Inc., Eaton, N.Y.

Filed May 28, 1981, Ser. No. 267,735

Int. Cl.³ B27M *3/28*

U.S. Cl. 144—2 R **2 Claims**

1. A tool for forming striations in a wooden dowel by lineal pressing the outer surface of the dowel which comprises a block having a transverse hole extending through the block to receive axially a dowel, a metal shank having spaced crested annular ridges such as a screw shank extending into said block on an axis perpendicular to the axis of said hole and on each side of said hole, the axes of said shanks being spaced relative



to the axis of said hole so that the annular ridges extend into the sides of the said hole,

whereby when a dowel is forced endwise into and through said hole, said ridges will press axial creases into the surface of said dowel.

4,407,343

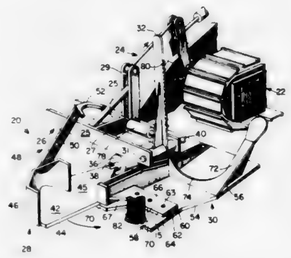
TREE FELLER WITH GRAVITATIONAL BUNCHER

Harry E. Brown, Perry, Fla., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Continuation of Ser. No. 99,242, Dec. 3, 1979, abandoned. This application Jun. 2, 1982, Ser. No. 408,372

Int. Cl.³ A01G *23/08*

U.S. Cl. 144—34 E **17 Claims**



1. A vehicle-mounted tree harvesting machine comprising:

(a) bunching means for accumulating felled trees and including a trough adapted to support and selectively grip the cut ends of the trunks of said trees while the tree tops are supported by the ground, said bunching means being located adjacent one side of said vehicle;

(b) a front feeding shear mounted forward of said bunching means, said shear being supported for movement along a generally horizontal arcuate path from an open position to a closed position, said shear having a cutting edge adapted to cut through a tree as the shear moves towards the closed position, said cutting edge being generally perpendicular to the length of the vehicle in its closed position; and

(c) pushing means mounted on said front feeding shear, said pushing means being adapted to engage a tree above and spaced from the cutting edge of said shear as it cuts through the tree and apply rearward force to initially direct the fall of such tree toward the trough of said bunching means, the tree thereafter completing the fall into said trough principally by gravity acting on such tree, said shear, said pushing means, and said bunching means being aligned so that the falling trees do not land on the vehicle.

4,407,344

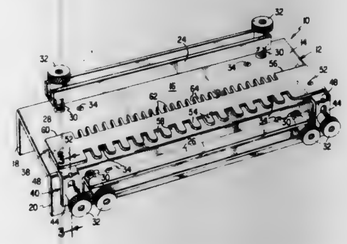
DOVETAIL FIXTURE

William C. Dicke, Easley, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,878

Int. Cl.³ B27F *1/14, 1/10*

U.S. Cl. 144—87 **1 Claim**



1. Dovetail fixture for guiding a cutting tool in cutting mortises and tenons is provided which can be simply used in cutting mortises and tenons at either of two selectable pitches, comprising a base equipped with a horizontal table defining a first work receiving surface and a vertical apron defining a second work receiving surface adapted to support a pair of work pieces in orthogonal abutting relation, a first clamping means adapted to clamp one work piece against said first work receiving surface, a second clamping means adapted to clamp the other work piece against said second work receiving surface, a cutter guiding template having one of its edges formed with a first series of alternating guide fingers and slots at a first pitch and having a second, opposite edge formed with a second series of alternating guide fingers and slots at a second pitch, the template being adapted to overlie one of the work pieces and to be clamped thereupon in a position such that the outer edges of one selected set of slots and fingers is in alignment with the outer surface of the work piece, and a pair of L-shaped angle support brackets pivotally mounted to the template, each support bracket being mounted to the template by means of a single screw generally on the longitudinal center line of the template between the slotted edges so as to be pivotal therearound, each bracket also being selectively mountable on said base to thereby enable selective positioning of the desired series of slots and fingers in tool guiding position.

4,407,345

VENEER LATHE WITH CORD EMBEDDING KNIFE

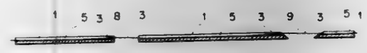
Kaisuji Hasegawa, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan

Filed Apr. 2, 1981, Ser. No. 250,178

Claims priority, application Japan, Apr. 14, 1980, 55-49920

Int. Cl.³ B27L *5/02*

U.S. Cl. 144—211 **6 Claims**



1. A veneer lathe for turning a log to cut off veneer sheet from said log comprising

means for supporting a log to permit said log to rotate about its axis in a predetermined direction;

a veneer cutting knife having a straight edge tangentially oriented relative to the periphery of said log and adapted to counteract the log rotation to cut off a veneer sheet from the log; and

a cord embedding knife having an edge extending in a plane intersecting said straight edge of the veneer cutting knife, said cord embedding knife being provided on a rake face side of the veneer cutting knife to cut into the log upstream of the edge of said veneer cutting knife to form an elongated cut in the veneer sheet cut off from said log and to place a length of cord in said elongated cut,

part of said knife extending downstream of said edge of the veneer cutting knife to restrain firmly said length of cord in the elongated cut.

4,407,346

PNEUMATIC TIRE FOR MOTOR VEHICLES HAVING A LOW POWER ABSORPTION AND A HIGH DIRECTIONAL CONTROL STABILITY

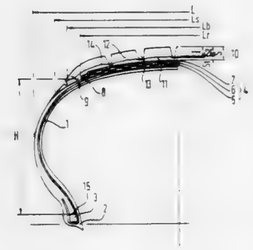
Paolo Bandel, Milan, and Renato Caretta, Viale dei Tigli, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Dec. 1, 1980, Ser. No. 211,843

Claims priority, application Italy, Dec. 12, 1979, 7221 A/79

Int. Cl.³ B60C *1/00, 3/00, 11/00*

U.S. Cl. 152—209 R **7 Claims**



1. A pneumatic tire for vehicle wheels which comprises a radial cord carcass, two sidewalls which determine the section width of the tire, two beads each of which comprises at least one bead core, said radial carcass cords being wound around aid bead core, a tread disposed on the carcass top, a circumferentially substantially inextensible annular reinforcing structure radially interposed between said tread and said carcass, said annular reinforcing structure having a width which is substantially equal to the width of the tread and having its lateral edges lying at the tread shoulders, said tread comprising two layers of different rubber compositions which are radially superimposed one on the other, the radially innermost layer being formed of a composition which has an index of hysteretic loss not higher than 0.010 Joule for each cubic centimeter of composition at a temperature of 25° C. and not higher than 0.006 Joule for each cubic centimeter of composition at a temperature of 70° C. and a modulus of elasticity at an elongation of 100 percent of from 20 to 30 kg per square centimeter, the ratio between the radial distance of the lateral edges of said annular reinforcing structure from the radially outermost point of the bead core, and the width of the tire section being smaller than 0.6.

4,407,347

PNEUMATIC TIRE

Henri J. Mirtain, Compiegne, France, assignor to Pneu Uniroyal Englebert, Clairoix, France

Filed Jan. 13, 1978, Ser. No. 869,397

Claims priority, application France, Feb. 7, 1977, 77 03378

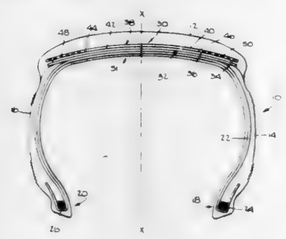
Int. Cl.³ B60C *9/20*

U.S. Cl. 152—361 FP **8 Claims**

1. A pneumatic tire comprising:

(a) a carcass;

(b) a tread portion connected to said carcass; and
(c) a reinforcement belt assembly peripherally enclosing said carcass beneath said tread portion and being substantially coextensive with said tread portion, said reinforcement belt including:
(i) a first layer of at least one ply of tire cord fabric containing cords having a high modulus of elasticity, at least one ply of said first layer being of a width substantially equal to that of the tire tread; and



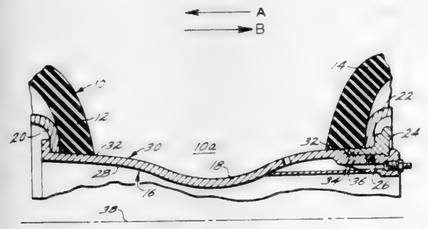
(ii) a second layer of at least one composite ply superimposed upon said first layer, including a central strip portion of metal tire cord fabric in which the cords are oriented at an angle of between 60° to 90° with the equatorial plane of the pneumatic tire and two lateral strips of tire cord fabric which abut said central strip, the cords of said lateral strips possessing a low modulus of elasticity.

4,407,348

MULTI-PIECE WHEEL STRUCTURE

David S. Suckow, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00092, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 23, 1981
PCT Filed Jan. 23, 1981, Ser. No. 278,510
Int. Cl.³ B60B *25/08, 25/18*
U.S. Cl. 152—410 **9 Claims**



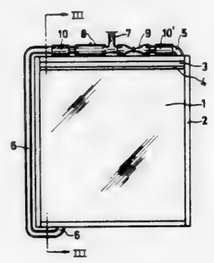
1. A wheel structure (**16**) for a tire (**10**) comprising:
an annular rim base (**18**) disposed about a longitudinal axis (**19**) and having an inner periphery (**28**) and an outer periphery (**39**), said outer periphery (**30**) including a tire mounting surface (**32**) which is engageable with both beads of a tire and a locking surface (**34**), said locking surface (**34**) bounding a locking indentation (**36**) and being disposed radially nearer said longitudinal axis (**19**) than said mounting surface (**32**);
an annular restraining flange (**22**) disposed about said rim base (**18**);
a locking ring (**24**) which is receivable in said locking indentation (**36**) and is engageable with said locking surface (**34**) and said restraining flange (**22**) to prevent axial movement of said restraining flange (**22**) in a first direction (B);
first means (**44,46**) for providing fluid communication between the atmosphere and a tire's interior (**10***a*) when a tire (**10**) is mounted on said tire mounting surface (**32**);
second means (**52**) for providing fluid communication between said first fluid communication means (**44,46**) and said locking surface (**34**); and
means (**26**) for obstructing fluid communication through said second fluid communication means (**52**) when said locking ring (**24**) is engaged with said locking surface (**34**).

4,407,349

SHIELDING WINDOWS

Lars A. Ekström, Djursholm, Sweden, assignor to Raywall Kommanditbolag, Marsta, Sweden

Filed Mar. 30, 1981, Ser. No. 249,088
Int. Cl.³ A47H *1/00;* **E06B** *3/32*
U.S. Cl. 160—98 **6 Claims**



1. A window shield for multi-pane windows comprising a window frame, at least two window panes sealingly mounted at their edges in spaced relationship in said frame to provide a sealed space between said panes and said frame, a piston means disposed within said space in sliding engagement with the inner sides of said panes and oppositely disposed sections of said frame so that said piston means is movable through substantially all of said space, said piston means having a cross-section corresponding to the cross-section of said space, an extendable and retractable shield member within said space mounted at one end to said frame and at the other end to said piston so that said movement of said piston through said space moves said shield member between its retracted position and its extended position, said retracted position being located adjacent one end of the path of movement of said piston, storage means to store said shield in the retracted position, a first conduit connected to said space on one side of said piston means, a second conduit connected to said space on the other side of said piston means, valve means operably connected to said conduits to selectively direct pressurized air to one side of said piston means and relieve the pressure on the other side of said piston means to operate said piston means to selectively extend or retract said shield means, and a source of pressurized air operably connected to said valve means.

4,407,350

APPARATUS FOR STRETCHING AND LINKING A VERTICAL BLIND SLAT-CLOTH

Toshihiro Nakamura, Tokyo, Japan, assignor to Toso Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1982, Ser. No. 374,721
Claims priority, application Japan, May 13, 1981, 56-67971[U]
Int. Cl.³ E06B *9/38*
U.S. Cl. 160—178 R **7 Claims**

1. Apparatus for stretching and linking a vertical blind slat-cloth comprising a weight of a metallic plate, a weight-case of a synthetic resin material for housing said weight together with the bottom part of a slat-cloth, said weight-case having narrowly spaced front and rear walls, widely spaced both side walls, and a bottom wall to define a thin inside space with a top opening, said inside space and said top opening being slightly wider than the slat-cloth, a top guide integrally formed with said weight-case and connected to said both side walls with the intervention of flexible supports, said top guide being formed with a slit slightly wider than the slat-cloth, said support being



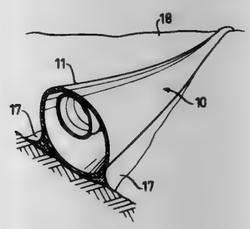
forwardly and rearwardly bendable, a pair of legs integrally formed with said weight-case and projecting from either of said top guide and said weight-case, a pair of coupling pins integrally formed with said weight-case, and couplers secured to linking cords each being adapted to be removably connected to said coupling pin.

4,407,351

METHOD FOR HEAT ABSORPTION FROM A SEA BOTTOM OR THE LIKE

Erik L. Backlund, Frösön, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Apr. 22, 1982, Ser. No. 370,816
Claims priority, application Sweden, Apr. 24, 1981, 8102618
Int. Cl.³ F28F *13/14*
U.S. Cl. 165—1 **1 Claim**



1. A method of heat absorption by means of a pipe conduit laid down on a sea bottom or the like, wherein heat from the bottom and the ambient water is emitted to a working fluid in the conduit, wherein in order to prevent said conduit from floating up from said bottom due to ice-formation, one or more upper or lateral portions of the flow cross-section are heat-insulated against the ambient water, so that ice-formation, if present, is restricted to the bottom side of said conduit to freeze fast said conduit to the bottom, wherein the heat insulation is achieved in that the working fluid in the conduit is caused to stand-still or imparted with a laminar flow in said upper and lateral portions of the flow cross-section and imparted with a turbulent flow in the remaining portion of the flow cross-section.

4,407,352

HIGH EFFICIENCY COKE OVEN REGENERATOR CHECKER BRICK

Donald J. Gerber, Glenshaw, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 6, 1982, Ser. No. 375,444
Int. Cl.³ F28D *17/00*
U.S. Cl. 165—9.1 **6 Claims**

1. A high efficiency coke oven regenerator checker brick, composed of refractory material, comprising:
(a) a vertical front wall, the external face of which is formed of a set of alternate vertical concave and convex radii configurations;
(b) a vertical right side wall, having a greater length than said vertical front wall and projecting rearwardly from the right edge of said front side wall at about a 90° angle, the external and internal faces of which are formed of a set of alternate vertical concave and convex radii configurations;
(c) a vertical rear wall, being equal in length to said vertical front wall and projecting to the left from the rear edge of said right wall at about a 90° angle and running parallel to said front side wall, the external face of which is formed of a set of alternate vertical concave and convex radii configurations;
(d) a vertical left side wall, being equal in length to said vertical right side wall and forming a connection between the left edges of said rear side all and said front wall, projecting from each at about a 90° angle, the external and internal faces of which are formed of a set of alternate vertical concave and convex radii configurations;
(e) forward and rearward intermediate vertical parallel transverse walls perpendicularly connecting said right side wall with said left side wall and spaced at approximately equal intervals, respectively, from said front and rear walls and from one another at a like equal interval;
(f) at least four longitudinal, vertical forward separator walls running parallel to and interposed between said right and left side walls and connecting said front wall and said

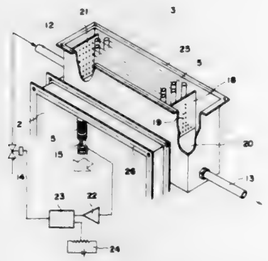


forward transverse wall and having right and left faces which are formed of a set of alternate vertical concave and convex radii configurations and said front longitudinal separator walls forming with themselves and with the internal faces of said right and left side walls at least five forward longitudinal slots;
(g) at least four longitudinal, vertical medial separator walls running parallel to and interposed between said right and left side walls and connecting said forward and rearward transverse walls and having right and left faces which are formed of a set of alternate vertical concave and convex radii configurations and said medial longitudinal separator walls forming with themselves and with the internal faces of said right and left side walls at least five medial longitudinal slots;
(h) at least four longitudinal, vertical rearward separator walls running parallel to and interposed between said right and left side walls and connecting said rear wall and said rearward transverse wall and having right the left faces which are formed of a set of alternate vertical concave and convex radii configurations and said rearward longitudinal separator walls forming with themselves and with the internal faces of said right and left side walls at least five rearward longitudinal slots; and
(i) means, fixed to said checker brick, for elevating said checker brick above an object upon which said checker brick is placed, allowing a horizontal open space between said checker brick and said object upon which said checker brick is placed.

4,407,353
WASTE HEAT RECOVERY DEVICE FOR PREVENTING CORROSION BY SULFUR OXIDES

Tstomu Nakamura, Tokyo; Takashi Nakamoto, Matsudo; Tatuo Asada, Kawasaki; Kozo Taneda, Kodaira; Mitsuo Oshiro, Tokyo; Shigetoshi Takasu, Tokyo, and Masao Kurihara, Yono, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Hokkaido and Suzuki Metal Industry Co., Ltd., Tokyo, both of, Japan

Filed Oct. 29, 1981, Ser. No. 316,429
Claims priority, application Japan, Nov. 17, 1980, 55-161778
Int. Cl.³ B60H *1/00*; B61D *27/00*
U.S. Cl. 165—39 **4 Claims**

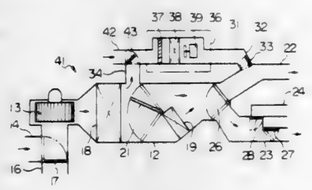


1. A waste heat recovery device for preventing corrosion by sulfur oxide, comprising a heat pipe which is mounted at a heat-receiving side for receiving heat of exhaust gas at one end and which is mounted to a liquid heating section for heating a liquid supplied at the other end, a sensor mounted at the heat-absorbing side of said heat pipe for detecting the temperature of said heat pipe, flow rate controlling means for controlling a flow rate of the liquid supplied to said liquid heating section in response to a differential signal between an output signal from said temperature detecting sensor and a signal representing a dew point of the sulfur oxide, and a liquid discharging means for controlling a level of liquid in said liquid heating section in correspondence to the flow rate of the liquid supplied.

4,407,354
VEHICLE TEMPERATURE CONTROL APPARATUS

Takashi Takishita; Shinji Sutoh; Noriyuki Tanaka; Takashi Kobayashi, and Kenji Furukawa, all of Konan, Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 148,843
Claims priority, application Japan, May 18, 1979, 54-67117[U]
Int. Cl.³ B60H *3/06*, *1/00*
U.S. Cl. 165—42 **5 Claims**



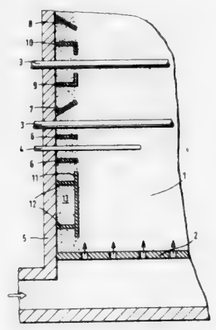
1. A temperature control apparatus for an automotive vehicle including a main duct means having an upper outlet for introducing air into the upper part of the vehicle passenger compartment, heating means disposed in the main duct means, bypass duct means having an outlet which communicates with the upper outlet and air filter means disposed in the bypass duct means, characterized in that the bypass duct means comprises a warm air inlet;

the bypass duct means further comprising a cold air inlet which communicates with the main duct means upstream of the heating means.

4,407,355
METHOD AND APPARATUS FOR DECREASING THE HEAT AND MATERIAL EXCHANGE IN THE DIRECT VICINITY OF THE WALLS OF FLUIDIZED BED REACTORS

Berhard Bonn, Essen; Franz Giertz, Ratingen; Lothar Holl, Essen, and Heinz Schreckenberg, Brilon, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 242,127
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009198
Int. Cl.³ F28D *13/00*
U.S. Cl. 165—104.16 **3 Claims**



1. Apparatus for decreasing the heat, impulse and material exchange in the direct proximity of the walls of a fluidized bed reactor, comprising rib-shaped sheetlike components with a preferred horizontal extension sticking out of the interior reactor walls and operative for increasing resistance to flow of the fluid conducted through the fluidized bed in the vicinity of the walls so that whirls in said proximity of the walls are avoided, wherein the distance of the components away from said interior wall in the direction of flow of the fluid is at most about half as great as the height of said components, lateral thereto, and wherein for the protection of the walls or for heat insulation of the fluidized bed reactor, the fluidized material is used.

2. Apparatus for decreasing the heat, impulse and material exchange in the direct proximity of the walls of a fluidized bed reactor, comprising rib-shaped sheetlike components with a preferred horizontal extension sticking out of the interior reactor walls and operative for increasing resistance to flow of the fluid conducted through the fluidized bed in the vicinity of the walls so that whirls in said proximity of the walls are avoided, wherein the components are disposed parallel to the reactor wall and form with it a slit, and wherein for the protection of the walls or for heat insulation of the fluidized bed reactor, the fluidized material is used.

4,407,356
PORTABLE QUICK CHILLING AND HEATING APPLIANCE

Bruce E. DeLau, 7111 Marshall Ave., Hammond, Ind. 46323

Filed Mar. 9, 1981, Ser. No. 241,677
Int. Cl.³ F28D *7/02*
U.S. Cl. 165—132 **1 Claim**

1. A portable quick chilling and heating appliance for fluids such as beverages comprising, in combination:

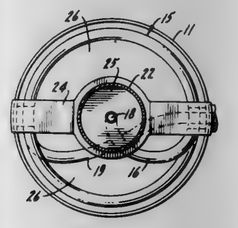
(a) a fluid tight container open at the top and adapted to rest upon a relatively flat support;

(b) a coil of metallic tubing wound in a generally helical configuration about an upstanding axis coinciding substantially with that of said container and having an upper end portion and a lower end portion;

(c) the convolutions of said helical configuration being of a diameter enabling them to be disposed in spaced relation with the inner peripheral wall of said container;

(d) a plurality of rigid spacers fixed to the inner peripheral wall of said container and disposed in positive abutting engagement with said coil to retain same in spaced relation with said inner peripheral wall;

(e) the upper end portion of said coil extending radially and axially of said coil so as to terminate at an intake situated above the top of said container;



(f) the lower end portion of said coil extending radially outward and passing through the wall of said container in fluid tight relation therewith;

(g) an outlet valve connected to said lower end portion of said coil;

(h) a reservoir connected in fluid tight relation to said intake;

(i) a support structure for said reservoir connected to said container and disposed in spaced relation above the helical configuration of said coil; and

(j) said support structure comprising a bridge connected across the open end of said container and defining therewith at least one aperture for loading ice or a heating medium into said container, said loading aperture being situated between said reservoir and the helical configuration of said coil.

4,407,357
THIN SHEET METAL HEAT EXCHANGER

Karl S. H. Hultgren, Rosengarden, S-560 41 Mullsjö, Sweden

PCT No. PCT/SE80/00118, § 371 Date Dec. 23, 1980, § 102(e) Date Dec. 3, 1980, PCT Pub. No. WO80/02322, PCT Pub. Date Oct. 30, 1980
PCT Filed Apr. 22, 1980, Ser. No. 220,028
Claims priority, application Sweden, Apr. 23, 1979, 79035358
Int. Cl.³ F28F *3/04*
U.S. Cl. 165—165 **12 Claims**

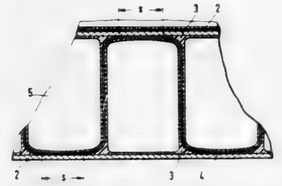


1. Heat exchanger for countercurrent heat exchange between two separated flowing media, consisting of a number of slots with common separating walls of thin sheet metal, preferably aluminium sheet metal, provided with profiles which cross each other on adjacent separating walls and form spacer means at the crossing points, characterized in that its heat exchanger surfaces are formed by the two sides of the separating walls (16) common to the two media, that the profiles consist of a ridge (18) and a depression (19) and are arranged at an angle (γ) in relation to the intended direction of flow through the heat exchanger, the profiles (17) on each individual separating wall (16) running parallel with each other with intermediate flat sheet metal portions (31), and that a ridge on one side of the separating wall corresponds to a depression on its other side, the the height (a) of the ridges (18) above the flat sheet metal portions (31) corresponds to half the depth of the depressions (19), measured from the top of one ridge to the bottom of the adjacent depression, that the distance (e) between the foot (32) of the ridge and its top (33) in the plane of the flat sheet metal portion (31) is the same for the ridges on both sides of the separating wall, whereby the angle (α), which the ridge forms with the flat sheet metal portion in the flow direction, will be the same on both sides of the separating wall, and that the portion of the separating wall which extends from the top (33) of the ridge to the bottom (34) of the depression forms an angle (β) with the flat sheet metal portion (31) in the flow direction which is adapted in relation to the Reynolds number at which the heat exchanger is to be used, so that circulation but not turbulence occurs in the depression at said Reynolds number.

4,407,358
LIGHT-WEIGHT CROSS-FLOW HEAT EXCHANGER UNIT

Herbert Muellejans, Stuttgart, and Hans-Joachim Koetz, Nuertingen, both of Fed. Rep. of Germany, assignors to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 33,075, Apr. 25, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,071
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1978, 2817990
Int. Cl.³ F28F *3/10*
U.S. Cl. 165—166 **7 Claims**



1. A cross-flow heat exchanger unit, comprising:

a plurality of stacked film elements, each said film element corrugated to form a series of alternating ridges and grooves, and said film elements arranged in alternating layers in which said ridges and grooves of each said film element extend substantially transversely to said ridges and grooves of an adjacent said film element;

a substantially flat divider element interposed between each pair of adjacent said film elements, said film and divider elements having contacting surfaces which tough each other and non-contacting surfaces which do not contact each other;

means for bonding together said stacked film elements and said interposed divider element or elements, said bonding means comprising a coating of curable, synthetic resinous material on the non-contacting surfaces of said film and divider elements, which coating completely covers the non-contacting surfaces of at least said film elements to bond said film and divider elements together;

whereby a mechanically rigid heat exchanger block is formed.

4,407,359

PLATE HEAT EXCHANGER

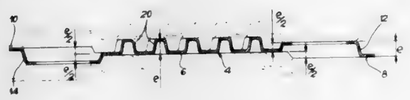
Raymond Berger, Grenoble; Maurice B. de Cachard, La Tronche; Alain Collet, Beaurepaire; Didier Costes, Meudon; Andre Gouzy, Saint Ismier; Guy Dupuy, Beaurepaire; Pierre Caunes, Sassenage, and Claude Chevrier, Meylan, all of France, assignors to Commissariat a l'Energie Atomique and Alusuisse France S.A., both of, France

Filed Jul. 22, 1981, Ser. No. 285,748

Claims priority, application France, Jul. 25, 1980, 80 16472; Apr. 2, 1981, 81 06641

Int. Cl.³ F28F *3/08*

U.S. Cl. 165—167 **14 Claims**



1. A plate heat exchanger comprising a stack of appropriately spaced parallel plates having a central exchange area and two parallel borders which, by their stacking, form two distributor blocks, whereby in a block distribution takes place for one space out of each pair by directly issuing on to the face of the stack and for the other space of each pair by issuing on to a line of passages obtained by perforations elongated in the direction of the flow of fluids from one distributor block to the other and which face one another throughout the stack, wherein the planes of the parallel borders of the plates are displaced on either side of the plane of the central exchange area in such a way that when the stack of plates is formed, one of the borders of one plate is in planar contact with the border of the plate immediately above it, whilst the other border of said plate is in planar contact with the border of the plate immediately below it leading to a concertina structure sealing alternate spaces in each distributor block and wherein the borders of the perforations of the passages are deformed in the direction opposite to the displacement of the border with respect to the central area so as to come into contact with the border of the perforation of the passage in the adjacent plate, the planar contact between the parallel distribution borders extending to the part of the regions located between the passages, but not to the region facing the central exchange area.

4,407,360

BOREHOLE WATER PUMPING SYSTEM WITH SANDTRAP

Joseph T. Hamrick, Roanoke, Va., assignor to Well-Pack Systems, Inc., Fort Worth, Tex.

Filed Dec. 14, 1981, Ser. No. 330,688

Int. Cl.³ E21B *43/02*

U.S. Cl. 166—68 **3 Claims**

1. A system for pumping water from sub-surface formations to the surface through a cased borehole, comprising:

pump means located in the borehole and having lower inlet means and upper outlet means,

a pipe means coupled to said outlet means of said pump means and extending to the surface through the cased borehole for providing a flow path to the surface,

said pipe means being spaced inward from the wall of said cased borehole defining an annulus between said pipe means and the wall of the cased borehole,

means for operating said pump means,

aperture means formed through said pipe means in the borehole relatively near said pump means,

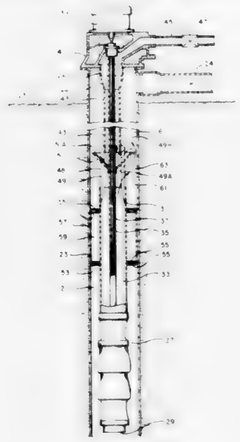
annular packer means located in the borehole between said inlet means of said pump means and said aperture means for engaging the wall of the cased borehole,

sandtrap means comprising structure extending from the interior of said pipe means outward beyond said pipe means into said annulus with its outer periphery spaced inward from the wall of the cased borehole,

said structure dividing said aperture means into lower and upper portions,

the lower portion of said aperture means providing a flow path from said pipe means to said annulus,

said structure causing the water flowing through said lower



portion of said aperture means to flow outward into said annulus and upward between the outer periphery of said structure and the wall of the cased borehole,

the upper portion of said aperture means providing a re-entry flow path from said annulus to said pipe means,

water discharge means at the surface coupled to said annulus,

conduit means at the surface coupled to said pipe means, and

valve means coupled to said conduit means adapted to be opened to allow sand trapped by said sandtrap means to flow upward with water through said pipe means and to be discharged through said conduit means.

4,407,361

TOOL TRAP

D. Wayne Van Winkle, P.O. Box 79727, Houston, Tex. 77079

Filed Aug. 27, 1981, Ser. No. 297,033

Int. Cl.³ E21B *33/068*

U.S. Cl. 166—85 **8 Claims**

3. A tool trap for positioning adjacent the upper end of a lubricator to latch with the fishing neck on the end of a wire line tool comprising:

a. housing means for positioning adjacent the upper end of the lubricator, said housing means having a longitudinal bore therethrough;

b. latch means supported in said housing means for latching with the fishing neck on the end of the wire line tool;

c. latch support means supporting said latch means in the bore of said housing means;

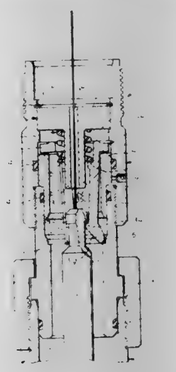
d. spring means abutting said latch means and urging said latch means and support means longitudinally of said housing means bore in one direction;

e. seat means projecting inwardly in the bore in said housing means to limit longitudinal movement of said latch means in said one direction and to position said latch means in tool trapping relation;

f. spring support means supporting said spring means;

g. surface means on said latch means engageable by the fishing neck on the tool to be trapped so that said latch means may be moved longitudinally in the other direction in said housing means bore against the force of said spring means and spread for latching with the fishing neck; and

h. means to move said latch support means and said latch means supported thereby against the force of said spring means to release said latch means from the trapped tool,



said means comprising crank means engaged with said latch support means and extending outwardly of said housing means whereby rotation of said crank means shifts said latch support means and latch means longitudinally of said housing means to move said latch means off said seat means and into the housing bore thereabove to release the latch means from the trapped tool.

4,407,362

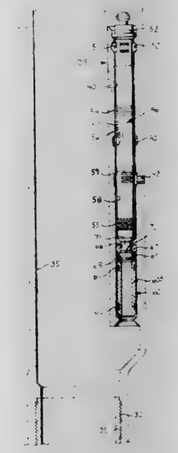
FLOW CONTROL APPARATUS FOR WELLS

Howard D. Bechthold, Plano, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 10, 1981, Ser. No. 272,363

Int. Cl.³ E21B *23/00*

U.S. Cl. 166—117.5 **18 Claims**



1. A well device for controlling flow between the interior and the exterior of a well flow conductor, comprising:

a. a mandrel having a main bore therethrough, a belly offset from said main bore and having a receptacle bore therein for receiving a flow control device, said receptacle bore having lateral port means through the wall thereof communicating the receptacle bore with the exterior of the mandrel, said mandrel being connectable in said well flow conductor with its main bore in axial alignment therewith;

b. seal surface means in said receptacle bore providing spaced annular seal surfaces, one on either side of said lateral port means engageable with said flow control device;

c. sleeve valve means in said receptacle bore slidably movable therein between port-closing and port-opening positions for controlling flow through said lateral port means, said sleeve valve means having spaced seal means thereon engaging said spaced annular seal surfaces in said receptacle bore to block flow through said port means when said sleeve valve means is in port-closing position, said sleeve valve means being movable to port-opening position automatically upon installation of said flow control device in said receptacle bore, said flow control device having spaced seal means thereon engageable with said spaced seal surfaces when said flow control device is in position in said receptacle bore; and

d. means on said sleeve valve means coengageable with means on said flow control device to couple said flow control device to said sleeve valve means upon installation thereof and for moving said sleeve valve means to port-closing position responsive to removal of said flow control device from said receptacle bore.

4,407,363

SUBSURFACE WELL APPARATUS

Neil H. Akkerman, Kingwood, Tex., assignor to AVA International, Houston, Tex.

Filed Feb. 17, 1981, Ser. No. 233,629

Int. Cl.³ E21B *33/128, 34/10, 34/14*

U.S. Cl. 166—183 **64 Claims**



42. Subsurface well apparatus, comprising body means disposable within a well bore and having first and second pressure chambers therein, an actuator having a pressure responsive member sealably reciprocable within the first chamber for shifting the actuator between inactive and active positions, a source of fluid contained within the second chamber, a passageway connecting said first and second chambers, valve means shiftable within the body means between a first position closing the passageway and a second position opening the passageway so that pressure fluid from said source is effective to urge said actuator from normally inactive to active position, and means for causing the valve means to shift from its first to its second position, including means urging said valve means toward its second position, means releasably connected to said body for holding said valve means in its first position, and remotely operable means for releasing the connection of said

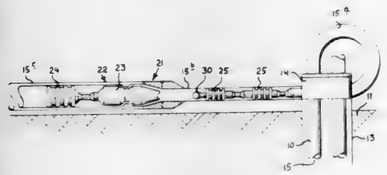
holding means to said body means to permit the valve means to be moved into its second position.

4,407,364

LANDING NIPPLE FOR PUMPDOWN WELL COMPLETION SYSTEM

Russell A. Johnston, Lewisville, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jan. 27, 1981, Ser. No. 228,996
Int. Cl.³ E21B *23/10*
U.S. Cl. 166—217 **10 Claims**



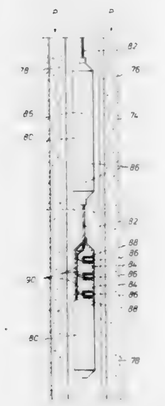
1. A landing nipple for a pumpdown well servicing system parking tool comprising: a first end coupling for connection with a large size flowline; a second opposite end coupling for connection with a small size flowline; a tubular housing secured at opposite ends with said first and second end couplings; and a parking tube secured between said couplings in concentric spaced relation within said housing defining with said housing an annular bypass flow passage within said housing around said parking tube, said parking tube having an internal landing and locking recess profile for releasable locking said parking tool in said parking tube, and said parking tube having longitudinally spaced ports for fluid flow between the bore of said parking tube and said annular flow passage upstream and downstream of a parking tool and large piston unit means locked in said parking tube.

4,407,365

METHOD FOR PREVENTING ANNULAR FLUID FLOW

Claude E. Cooke, Jr., Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Aug. 28, 1981, Ser. No. 297,375
Int. Cl.³ E21B *43/00, 33/14*
U.S. Cl. 166—249 **28 Claims**



1. A method for cementing a well casing in a well which passes through at least one subterranean formation containing pressurized formation fluids, said well casing being inserted in said well so as to define an annulus between said well casing and the wall of said well, said method comprising the steps of:

introducing a cement slurry having a hydrostatic pressure at least equal to the pressure of said pressurized formation fluids into said annulus; and

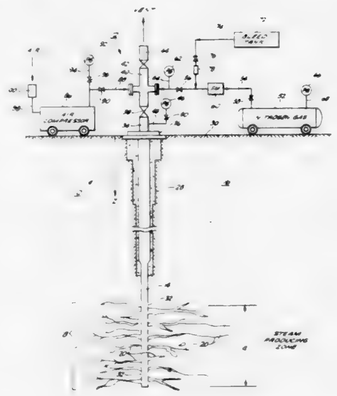
continuously maintaining said hydrostatic pressure of said cement slurry at least equal to the pressure of said pressurized formation fluids until said cement slurry has developed sufficient strength to prevent said pressurized formation fluids from entering said annulus, said hydrostatic pressure being maintained by causing vibration in said well casing.

4,407,366

METHOD FOR GAS CAPPING OF IDLE GEOTHERMAL STEAM WELLS

William C. Lieffers, Fullerton, and Marjorie M. Hatter, Santa Ana, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 7, 1981, Ser. No. 328,195
Int. Cl.³ E21B *33/068, 47/06*
U.S. Cl. 166—250 **22 Claims**



1. A method for capping a geothermal steam well during a period of well non-use, which comprises the steps of:

(a) sealing said geothermal steam well in the vicinity of the wellhead thereof; and

(b) injecting a gas other than steam into said geothermal steam well so as to provide a concentration gradient of said gas and geothermal steam in said well preventing the condensation of substantial amounts of geothermal steam in said geothermal steam well during said period of non-use.

4,407,367

METHOD FOR IN SITU RECOVERY OF HEAVY CRUDE OILS AND TARS BY HYDROCARBON VAPOR INJECTION

Paul H. Kydd, Lawrenceville, N.J., assignor to HRI, Inc., Lawrenceville, N.J.

Continuation of Ser. No. 974,552, Dec. 28, 1978, abandoned.
This application Oct. 14, 1980, Ser. No. 196,771
Int. Cl.³ E21B *43/24, 43/40*
U.S. Cl. 166—267 **1 Claim**

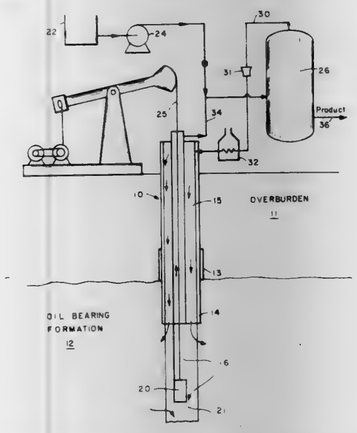
1. A method for recovery of heavy hydrocarbon material such as heavy crude oils and tars from subterranean oil-bearing formation, comprising the steps of:

(a) providing a well hole through overburden into the oil bearing formation and installing casing in at least the overburden portion of the hole;

(b) providing a pressurized heated hydrocarbon solvent vapor and injecting it into the well and into said formation to condense and dissolve and reduce the viscosity of the heavy oil therein and facilitate its flow into the well;

(c) allowing the reduced viscosity oil and condensed solvent liquid mixture to drain into the bottom portion of the well;

(d) pumping the recovered liquids from the well to above ground;



(e) partially distilling the recovered liquid to reclaim at least a portion of the hydrocarbon solvent vapor for reinjection into the well; and

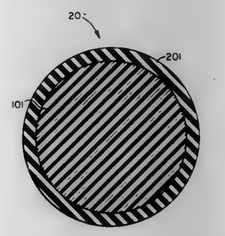
(f) using a portion of the recovered oil as fuel to fire and heat distillation step (e).

4,407,368

POLYURETHANE BALL SEALERS FOR WELL TREATMENT FLUID DIVERSION

Steven R. Erbstoesser, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Jul. 3, 1978, Ser. No. 921,413
The portion of the term of this patent subsequent to Jul. 25, 1995, has been disclaimed.
Int. Cl.³ E21B *33/138, 43/27*
U.S. Cl. 166—284 **12 Claims**



1. A method of treating a subterranean formation surrounding a cased wellbore wherein the casing has an interval provided with a plurality of perforations, said method comprising:

(a) flowing down said casing a liquid having suspended therein a plurality of ball sealers, said ball sealers being sized to seal said perforations and comprising a solid core and a polyurethane elastomer cover; and

(b) continuing the flow of said liquid until at least a portion of said perforations are sealed by said ball sealers.

11. A ball sealer for plugging perforations in a casing penetrating subterranean formations which comprises a syntactic foam core and a polyurethane, elastomer coating which covers the core.

4,407,369

METHOD AND APPARATUS FOR PLACING A CEMENT THERMAL PACKER

Stanley O. Hutchison, Bakersfield, and Glenn W. Anderson, Oildale, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jul. 29, 1981, Ser. No. 287,469
Int. Cl.³ E21B *33/13*
U.S. Cl. 166—291 **2 Claims**



1. An oil well cementing tool assembly attachable along the in-well portion of a tubing conductor for placing cementing material in the annulus between the outside of said tubing conductor and the inside of a casing element along a cased well at selectable locations between the wellhead and bottom of said well, said assembly including members releasably connected within said tool, said members being removable to establish a smooth interior surface through said tool between tubing above and below said tool, comprising:

(a) a collar member having means at one end for connection to the exterior of a tubing conductor, and means at the other end for connection to an additional tubing conductor;

(b) a sleeve member slidably supported within said collar member, and means for releasably retained said sleeve member within said collar member;

(c) individual port means through said sleeve member and said collar member, said port means being in alignment with each other when said assemby is placed within said well to provide a passageway from within said sleeve member to the exterior of said collar member;

(d) an annular seat within said sleeve member and fixed thereto above said aligned ports in said sleeve member and said collar member;

(e) an annular plug member within said sleeve below said seat and below said aligned ports, said plug member being fixedly attached to said sleeve member;

(f) an upward facing packer means fixed to the lower end of said collar member below said aligned ports in said sleeve member and said collar member;

(g) a cylindrical cross-sectional separation plug means adapted to pass through the interior of said tubing conductor, through said collar member, through said annular seat and to stop at a position below said aligned ports in contact with said annular plug member; and

(h) a cylindrical cross-sectional sealing plug means adapted to pass through the interior of said tubing conductor and to become seated in said annular seat to seal said tubing conductor from said sleeve member below said seat;

(i) said separation plug and sealing plug cooperating with said tubing conductor to contain a cementing material during movement along said tubing conductor toward said collar member;

(j) said separation plug, said sealing plug, said sleeve member and said aligned ports therethrough cooperating to pass said cementing material from within said sleeve member to the exterior of said collar member, said cementing material being placed above said packer member and in the annulus between the exterior of said collar and the interior of said cased well;

(k) said sealing plug and said seat being adapted to transmit force from above said collar and within said tubing conductor whereby said force causes release of said releasable retaining means to force said sleeve through said collar and into said additional tubing conductor.

4,407,370

SEPARATOR DEVICE

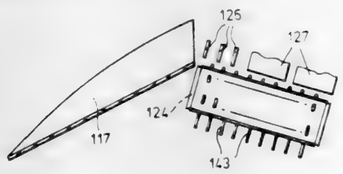
Peter S. Small, and Peter W. Small, both of Forfar, Scotland, assignors to Tonparo Limited, Edinburgh, Scotland

Continuation of Ser. No. 939,113, Sep. 5, 1978, Pat. No. 4,284,145. This application Mar. 5, 1981, Ser. No. 240,986

Claims priority, application United Kingdom, Sep. 10, 1977, 37835/77

Int. Cl.³ A01D *33/02*

U.S. Cl. 171—124 **3 Claims**



1. A separator for separating round root crops from soil and other unwanted material comprising:

a first endless conveyer element having upper and lower runs extending in a longitudinal direction;

a plurality of spaced harvesting members, each comprising at least two elements one of which is a flat plate, secured to said first conveyer element, said harvesting members being arranged on said first conveyer element in a line extending normal to said longitudinal direction, said elements being arranged around said conveyer in rows;

a second endless conveyer element having upper and lower runs, the upper run of said second conveyer element being adjacent to the harvesting members secured to said first conveyer element, the upper run of said second endless conveyer and said harvesting members forming harvesting pockets therebetween, said first and second endless conveyer elements being inclined with respect to the horizontal in a direction transverse to said longitudinal direction;

means for delivering said crop, soil and unwanted material in discrete portions into said harvesting pockets;

means for driving one of said first and second conveyer elements at a higher speed than the other; and

means for driving one row of elements on said harvesting member at a different speed from the speed of another row, round objects comprising part of said crops, soil unwanted material rolling in the direction of incline of said harvesting member out of said harvesting pockets thereby separating said round objects from the rest of said crops, soil and unwanted material.

4,407,371

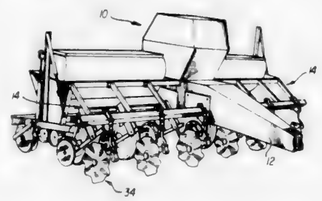
COULTER ATTACHMENT FOR SEED PLANTING APPARATUS

Gregory D. Hohl, R.R. 1, Box 13, Donnellson, Iowa 52625

Filed Jun. 29, 1981, Ser. No. 278,716

Int. Cl.³ A01C *5/06;* **A01B** *35/28*

U.S. Cl. 172—253 **3 Claims**



1. Apparatus for converting a standard towed seed planter, including a frame and an associated tongue for connection to a source of motive power, into a minimum-till or no-till planter comprising:

(a) a framework including a pair of elongate tool support members;

(b) means for readily and detachably securing the framework to the frame and the tongue of the planter and spaced forwardly thereof so as not to interfere with the functions of the planter, which securing means includes:

i. means for attaching one end of each support member to the tongue; and

ii. at least one rearwardly extending brace including a pair of diverging arms carried by each support member for attachment to the planter frame;

(c) at least one coulter having an upper mounting portion rigidly connected to each support member for engaging the ground surface upon application of downward force to the coulter; and

(d) wherein when the framework is secured to the planter frame and tongue, the support members extend laterally from opposed sides of the tongue and are positioned sufficiently forward of the planter so as to maximize the downward force applied to the coulter resulting from torque developed by the weight of the planter about a fulcrum defined at the point of connection between the tongue and the source of motive power.

4,407,372

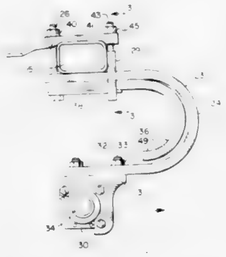
DISK HARROW WITH CUSHION GANG

Henry Rozeboom, Bolingbrook, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Sep. 17, 1981, Ser. No. 303,290

Int. Cl.³ A01B *21/08, 35/28, 61/04*

U.S. Cl. 172—572 **4 Claims**



1. A disk harrow comprising a frame adapted to be towed and having a generally laterally extending rigid supporting beam, a shaft located below said beam and a plurality of spaced disks mounted on such shaft for rotation therewith, at least a pair spaced bearing standards for resiliently mounting said shaft to said beam, each standard comprising a first generally C-shaped spring with the closed portion of the spring facing the direction of travel, said first spring having an upper portion connected to said beam and a substantially horizontal lower portion rotatably supporting said shaft for low disk impact modes, and a second C-shaped spring nested within the first C-shaped spring having its upper end connected to the first spring, a medial portion spaced therefrom generally along the C-periphery, and a free lower end adjacent said lower horizontal portion of said first spring, generally rearward loads on said disks causing a gradual increase in the spring rate acting on said disks with increasing peripheral contact between said first and second springs and vertical loads on said disks causing an abrupt increase in the spring rate upon said free end of said second spring contacting the horizontal portion of said first spring.

4,407,373

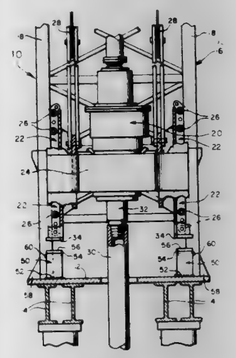
COLLAPSIBLE PEDESTAL FOR DRILLING APPARATUS

Clyde A. Willis, and Jerry K. Lingafelter, both of Wichita Falls, Tex., assignors to Walker-Neer Mfg. Co., Inc., Wichita Falls, Tex.

Filed Jun. 1, 1981, Ser. No. 269,278

Int. Cl.³ B23Q *5/00*

U.S. Cl. 173—141 **7 Claims**



1. In a drilling apparatus comprising a platform, means for supporting a string of down-hole tubulars, means for guiding the vertical movement of the string support means, and means for raising and lowering the string support means in the guide means, the improvement comprising:

at least two support surfaces, each positioned laterally with respect to the string and defined by one of the string support means and the platform; and

at least two collapsible pedestals mounted on the other of the string support means and the platform, each pedestal positioned in alignment with a respective support surface such that the support surfaces come into contact with the pedestals when the string support means is lowered toward the platform, said pedestals having a collapse strength chosen such that the pedestals rigidly support the string support means at a first level above the platform when static, and, in the event the string support means and the string fall from at least a predetermined height, collapse in a controlled, progressive manner, substantially without damage to the guide means, thereby protecting both the platform and the string from excessive loads associated with abrupt deceleration of the string support means and at least substantially reducing the incidence of string breakage due to such abrupt deceleration of the string support means.

4,407,374

DEVICE FOR CONTROLLING THE ORIENTATION OF BORE HOLES

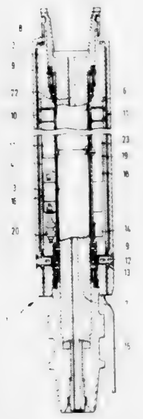
Heinz Wallussek, Herdecke; Martin Wiebe, Hattingen, and Thomas Röder, Herne, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 2, 1981, Ser. No. 230,591

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1980, 3046122

Int. Cl.³ E21B *7/08*

U.S. Cl. 175—24 **18 Claims**



1. Device for controlling the orientation of bore holes, particularly in underground coal mining applications, comprising a drill guide rod adapted to be included in a drill string rearwardly of the drill bit and including an outer elongated element and an inner elongated element coaxial with and turnable in said outer element; inclinometer means on at least one of said elements and operative for generating signals when inclination of said rod indicates deviation from a predetermined bore hole path; pivotably adjustable correcting means including a plurality of gib-shaped correcting members pivotally mounted on said outer element; a plurality of cylinder-and-piston units arranged for engaging said members and pivoting them outwardly away from said outer element to a selectable extent; a generator to be driven by said inner element; and magnetic valves supplied from said generator and controlled by signals received from said inclinometer means to thereby control the operation of said cylinder-and-piston units so as to pivot said gib-shaped correcting members.

4,407,375

PRESSURE COMPENSATOR FOR ROTARY EARTH BORING TOOL

Osamu Nakamura, Tokyo, Japan, assignor to Tsukamoto Seiki Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1981, Ser. No. 293,263

Claims priority, application Japan, May 29, 1981, 56-78490[U]

Int. Cl.³ E21B *10/22*

U.S. Cl. 175—228 **3 Claims**

1. A pressure compensator for being removably installed in the bit body of a rotary earth boring tool, said compensator comprising:

an upper capsule half having a first hemispherical cavity and a step in the edge thereof around the periphery thereof;

a lower capsule half having a second hemispherical cavity

and a step in the edge thereof around the periphery thereof;

said first and second capsule halves having the peripheries abutting each other to form a substantial spherical space with a circumferential groove defined by said steps around the joint between said capsule halves; and



a diaphragm member of distendable material and having a periphery and a reinforcing ring of hard material embedded in the distendable material and extending around said periphery, said ring embedded in said distendable material being positioned in said groove with the edges facing the respective capsule halves being snugly engaged with the steps, and said diaphragm extending across said spherical space and dividing said space into two portions.

4,407,376

UNDER-REAMING PILE BORE EXCAVATOR

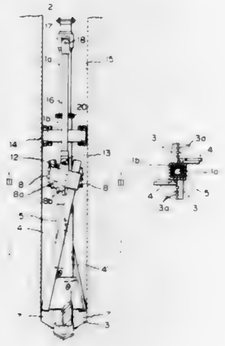
Hachiro Inoue, 13-10, Kokubun 4-chome, Ichikawa-shi, Chiba-ken, Japan

Filed Jun. 26, 1981, Ser. No. 277,817

Claims priority, application Japan, Mar. 17, 1981, 56-037161[U]

Int. Cl.³ E21B *7/28, 10/32*

U.S. Cl. 175—267 **4 Claims**



1. An under-reaming pile bore excavator which comprises:

(a) an inner pipe to which an excavating torque is applied;

(b) an outer pipe telescopically connected to said inner pipe, said outer pipe being rotated together with said inner pipe in either direction;

(c) a plurality of main drill bits fixed to the bottom of said outer pipe at an appropriate bit angle to excavate a straight pile bore;

(d) a plurality of guide rails fixed to said outer pipe at an inclined angle with respect to the axis of said outer pipe, said plurality of guide rails being disposed so as to obliquely cross the axis of said outer pipe;

(e) a plurality of slidable wing bits slidably mounted on said guide rails at an appropriate bit angle to excavate an under-reamed pile bore when moved downward and outward along said guide rails, said slidable wing bits being rotated in a direction opposite to that of said main drill bits; and

(f) a plurality of connecting rods for connecting said slidable wing bits to said inner pipe so that said slidable wing bits can extend in the radial direction along said guide rails,

whereby a straight pile bore is first excavated by said main drill bits with said slidable wing bits fixed in their uppermost position and then the under-reamed pile bore is next excavated by moving said slidable wing bits downward and extending them outward along said guide rails so that a greater ratio of the diameters of the under-reamed pile bore and the straight pile bore can be obtained.

4,407,377

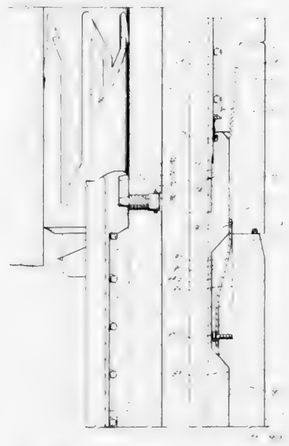
SURFACE CONTROLLED BLADE STABILIZER

Larry R. Russell, 6025 Edgemor, Suite C, Houston, Tex. 77081

Filed Apr. 16, 1982, Ser. No. 368,996

Int. Cl.³ E21B *7/00, 17/00, 34/10*

U.S. Cl. 175—325 **12 Claims**



1. Drill string stabilizer apparatus, comprising tubular body means comprising an upper tubular body and a lower tubular body connected end-to-end, said tubular body means having upper and lower connection means for connecting said tubular body means into a drill string, first sleeve means lining said upper tubular body, second sleeve means disposed slidably annularly inward from said first sleeve means forming a pressure accumulator therebetween, said second sleeve means being biased upwardly by pressure within said accumulator and being adapted to be slidably moved downwardly by pressure within said upper tubular body sufficient to overcome said accumulator pressure, valve means adapted to be open when said second sleeve means is in its upward position and to be closed by downward movement of said second sleeve means, said lower tubular body having plural circularly spaced vertical slots having stabilizer blades slidably disposed therethrough and movable radially between expanded and retracted positions therein, actuator sleeve means movable downwardly to expand said stabilizer blades and movable upwardly to permit inward movement of said stabilizer blades, spring means for moving said stabilizer blades inwardly when said actuator sleeve means is moved upwardly, whereby said stabilizer blades are expanded by increase of pressure within said upper tubular body and are retracted upon decrease of pressure within said upper tubular body.

4,407,378

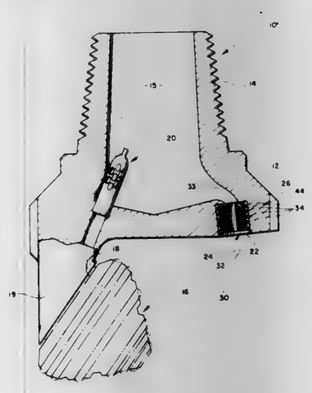
NOZZLE RETENTION METHOD FOR ROCK BITS

Robert D. Thomas, Tonkawa, Okla., assignor to Smith International, Inc.

Filed Mar. 11, 1981, Ser. No. 242,811

Int. Cl.³ E21B *10/18*

U.S. Cl. 175—340 **3 Claims**



1. A fluid nozzle retention device for a rock bit comprising:

a rock bit body having a first pin end and a second cutter end, said bit body forming a fluid chamber in said pin end of said bit body,

a circular nozzle retention cavity formed in said bit body, said cavity having substantially parallel walls, said cavity being in fluid communication with said chamber, and

a circular nozzle body, said body forming a fluid orifice substantially axially through said body communicating with said chamber, said body further forming one or more substantially radially extending fins integral with said body, each of said fins being relatively flexible, a circumference of each fin being slightly larger in diameter than the diameter of said cavity formed in said rock bit body, each fin extends beyond said nozzle body from forty to sixty thousandths of an inch where the diameter of the nozzle body is about one and one-quarter of an inch, insertion of said nozzle body into said cavity deflects each of said one or more flexible fins in an axial direction whereby an edge surface of each fin grips said wall of said nozzle retention cavity retaining said nozzle in said cavity.

4,407,379

HIGH ACCURACY FILLING MACHINES

Timothy R. Pryor, Tecumseh, and Omer L. Hageniers, Windsor, both of Canada, assignors to Diffracto Ltd., Windsor, Canada

Filed Jun. 12, 1981, Ser. No. 273,115

Int. Cl.³ G01G *13/00, 3/14*

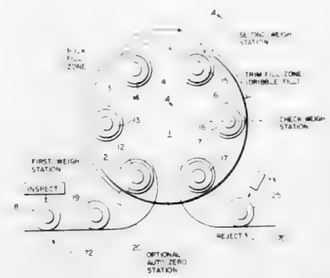
U.S. Cl. 177—52 **34 Claims**

1. In a method of weighing and filling a plurality of containers, the improvement comprising:

providing a plurality of moving weigh members each comprising a moveable member moveable in proportion to the weight of material in a container weighed by the weigh member and a fixed reference member fixed with respect to the weigh member so as to move therewith,

automatically and electro-optically measuring the position of the moveable member of each weigh member relative to the fixed reference member thereof,

determining from the relative position of said moveable member with respect to said fixed reference member the weight of material in the container and,



from said determined weight, terminating, adding to or subtracting from the filling of said container or subsequent fillings of similar containers.

4,407,380

WEIGHING DEVICE FOR FLUENT MATERIAL

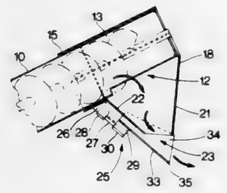
David I. M. Elder, Little Barn, Manor La., Great Chesterford, Saffron Waldon, England

Filed Jun. 10, 1981, Ser. No. 272,394

Claims priority, application United Kingdom, Jun. 17, 1980, 8019809

Int. Cl.³ G01G *11/04*

U.S. Cl. 177—145 **8 Claims**



1. A device for weighing a flow of fluent material, comprising a sensor member having a surface inclined to the horizontal; feed means for feeding said flow of material to said surface; support means for supporting the sensor member and including a cantilever beam supported at one end and lying in a plane substantially parallel to the plane of the sensor member; sensing means including strain gauge means arranged to sense the bending moment in the beam; and comparison means arranged to receive signals from the sensing means corresponding to said bending moment, compare the signals and provide an output signal corresponding to the weight of material engaging the sensor member, the sensor member being arranged so that the flow of material from the feed means passes over said surface after a fall under gravity from the feed means is interrupted by said surface, and the material is discharged from the lower end of said surface, and the arrangement of the beam is such that the bending moment sensed corresponds to the reaction developed in the sensor member in a direction at right angles to the sensor member surface.

4,407,381
UNDERCARRIAGE FOR ADVERSE TERRAIN VEHICLES

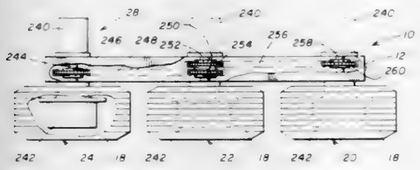
Norman D. Oswald, Duncanville, and Harry S. Mankey, Dallas, both of Tex., assignors to Standard Manufacturing Company, Inc., Dallas, Tex.

Continuation of Ser. No. 115,942, Jan. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 11,857, Feb. 13, 1979, Pat. No. 4,210,218, which is a continuation of Ser. No. 799,328, May 23, 1977, abandoned. This application May 7, 1982, Ser. No. 375,973

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B62D *21/00*

U.S. Cl. 180—6.48 **7 Claims**



1. An undercarriage assembly for supporting and propelling a mechanism, comprising:

an elongate hollow load-bearing frame adapted for connection to the mechanism;

at least three axle members each having a wheel receiving member at one end thereof;

at least three wheel members each mounted on and secured to a wheel receiving end of an axle member outside said frame;

means rotatably supporting the axle members at longitudinally spaced points along the frame with each of the axle members extending through the frame and being rotatably supported in opposite sides of said frame;

the middle wheel member extending below a plane lying tangent to the bottoms of the endmost wheel members to facilitate skid steering of the mechanism;

transmission means positioned within the frame for drivingly interconnecting the middle axle member with at least one of the endmost axle members;

drive means operably connected to the transmission means for actuation thereof whereby the drive means and the transmission means cause concurrent rotation of the interconnected axle members; and

said transmission means further including a planetary gearset drivingly interconnecting each axle and the wheel mounted thereon.

4,407,382
WHEEL HEAD FOR DRIVING WHEELS OF VEHICLES

Peter Dziuba, Ueberlingen, and Manfred Goeft, Friedrichshafen, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen, Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,715

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013431

Int. Cl.³ B62D *55/00*

U.S. Cl. 180—10 **6 Claims**

1. A wheel head for a driven wheel of a vehicle comprising:

a hollow nonrotatable axle having a free end;

a wheel bearing mounted on said free end of said axle;

a wheel hub journaled on said wheel bearng and having an annular housing member extending axially therefrom and projecting outwardly beyond said end, said housing member enclosing a space opening at an extremity of said housing member remote from said axle, said hub being adapted to receive a vehicle wheel for supporting same substantially in the plane of said wheel bearing;

a cover detachably affixed to said housing member at said extremity for enclosing said space and affording access thereto upon removal of said cover, said cover being formed unitarily and in one piece with at least one journal bolt;

a drive shaft extending through said axle and terminating in said space;

speed-reducing planetary gearing in said space connecting said drive shaft to said hub for rotating same, said planetary gearing including:

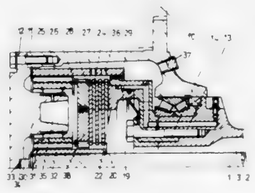
a sun gear on said shaft,

at least one planetary gear meshing with said sun gear and journaled on said bolt, and

a ring gear meshing with said planet gear, and said ring gear being dimensioned to be withdrawn from said space through said extremity upon removal of said cover;

a wheel bearing cap detachably affixed to said end of said axle in said space axially outwardly of said wheel bearing and formed with an annular collar externally engaging said ring gear and angularly coupling same with said axle, said cap being dimensioned to enable withdrawl of said wheel bearing cap from said space upon the detachment thereof said axle; and

a brake operated by a pressure medium disposed between



said wheel bearing cap and said cover and of a diameter less than that of said ring gear for enabling withdrawal of said brake from said space through said extremity upon removal of said cover, said brake comprising:

an annular piston mounted on said wheel bearing cap and disposed within said collar, said piston being axially displaceable upon pressurization of a chamber defined between said piston and said wheel bearing cap and supplied with fluid through a passage in said wheel bearing cap,

a plurality of brake elements angularly coupled with said sun gear,

a plurality of brake elements angularly coupled with said ring gear being interleaved within said ring gear, said piston having only external sealing surfaces receiving respective sealing rings, the piston further having a face extended inwardly from said collar for bearing against said elements,

spring means braced between said piston and said wheel bearing cap for biasing said piston against the force developed by fluid pressure, and

a support disc disposed within said ring gear between said elements and said cover,

said support disc comprises an outer portion angularly connected with said ring gear and an inner portion constituting a piece separate from said outer portion and angularly connected to said sun gear, said portions being axially fixed to the respective gear.

4,407,383
MOTOR VEHICLE

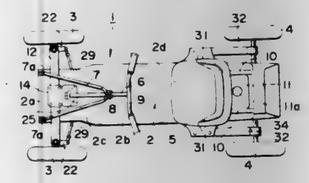
Akito Enokimoto, Asaka; Toshio Tsuchiya, Kawagoe; Tatsuo Masuda, Niiza, and Suwaji Takano, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 83,627, Oct. 11, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,361

Claims priority, application Japan, Oct. 13, 1978, 53-125947

Int. Cl.³ B60R *5/04*

U.S. Cl. 180—54 E **5 Claims**



1. A single-seated motor vehicle having two front wheels and at least one rear wheel, said at least one rear wheel being driven by a power unit, wherein the driver can comfortably place at least either foot on a ground surface while in a seated position, comprising:

a saddle seat for a driver of said vehicle, said seat being spaced upwardly from the level of the uppermost portions of said wheels and disposed substantially at a longitudinal center of a frame of said vehicle;

a steering shaft disposed substantially at a widthwise center of said vehicle frame;

said frame including a floor which is interposed between said steering shaft and said seat and which extends substantially horizontally at a level substantially lower than said level of the uppermost portions of said wheels;

said floor having a substantially constant width along the longitudinal direction thereof which is substantially the same as the width of said seat, and being substantially open at both sides thereof;

said front wheels being arranged in a manner protruding transversely from respectively opposite sides of said floor;

said floor having said substantially constant width defining an open space extending rearwardly of said protruding front wheels and along each side of said floor so as to permit a seated drive of said vehicle to comfortably place each foot on a ground surface at the respective sides of said floor; and

a handlebar fixed to said steering shaft, said handlebar having a length longer than the width of said floor.

4,407,384
POWER ASSISTED STEERING ARRANGEMENTS AND DEVICES FOR USE THEREIN

David Auty, Leeds, England, assignor to Autosteer Developments Limited, Leeds, England

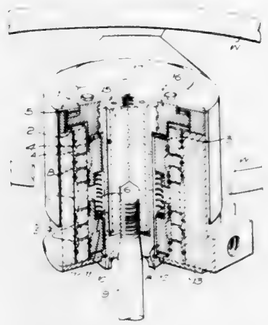
Filed Jun. 16, 1980, Ser. No. 159,905

Claims priority, application United Kingdom, Jun. 30, 1979, 7922800; Feb. 6, 1980, 8003988

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—146 **3 Claims**

1. In an air operated, power assisted steering mechanism including a steering wheel, a steering shaft and a control valve adapted so that the operation of the control valve is derived from rotation of the steering wheel and in particular the valve is of a type having a rotatable drive member, the rotation of which in opposite directions effects movement of the drive member and control component of the valve is opposite relative axial movement for the appropriate directing of the pressure air to an air operated, power assisting steering ram of the mechanism, wherein the actuation of the valve is achieved by a spiral scroll shaft and nut arrangement whereby the rotary action of the steering wheel is converted into relative linear motion of ported sleeve means with respect to valve spool means of the valve, thus closing exhaust ports and opening inlet ports of the valve which are connectable to the power



ram to pressurize same with air thereby to provide air operated power assisted steering, the improvement that the control valve is in a casing forming the hub of the steering wheel and the steering wheel is connected to said drive member and so effects axial movement therewith relative to the steering shaft.

4,407,385
CRUISE CONTROL MODULATOR

Carl W. Hilton, and Harold L. Bullard, both of Muskegon, Mich., assignors to Return on Investment Corporation, Muskegon, Mich.

Filed Nov. 4, 1980, Ser. No. 204,066

Int. Cl.³ B60K *31/00;* **F02D** *31/00*

U.S. Cl. 180—175 **8 Claims**

1. In a vehicle cruise control system of the type including a vacuum actuated servo connected to an engine throttle valve, a source of vacuum and a control means connecting the source of vacuum to the servo for controlling throttle position to maintain a preset vehicle speed, the improvement comprising adjustable modulator means operatively connected to said control means and said servo for automatically limiting opening movement of the throttle by modulating communication of vacuum through said control means to said servo to override said control means so that vehicle speed will drop below the preset vehicle speed which the control means seeks to maintain upon the vehicle encountering an incline to increase fuel efficiency and soften throttle position changes, said modulator means comprising valve means operatively connected to said source of vacuum and said control means for shutting off communication of said source of vacuum with said control means, and wherein said valve means comprises:

a valve housing defining a vacuum inlet, a vacuum outlet and a diaphragm chamber;

a diaphragm positioned within said chamber;

a valve element secured to said diaphragm and closing said

vacuum inlet when in a first position and opening said vacuum inlet when in a second position; and

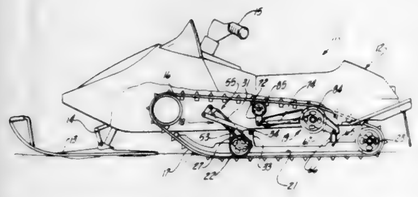
resilient means engaging said diaphragm and biasing said valve element towards its first position.

4,407,386

SNOWMOBILE SUSPENSION UNIT

Toshihiro Yasui, and Wayne L. Warnke, both of Coon Rapids, Minn., assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 31, 1981, Ser. No. 336,417
Int. Cl.³ B62M 27/02
U.S. Cl. 180—193 **5 Claims**



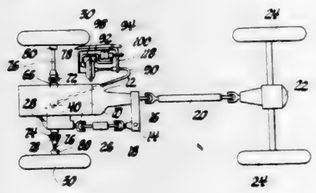
1. In a snowmobile or the like having a body and a ground engaging track, an improved suspension for the forward portion of said track comprising guide means for engaging and locating a forward portion of said track, lever means having a first pivotal connection about a first pivot axis to said guide means, first link means pivotally supported at one end thereof to said body, means pivotally connecting the other end of said first link means to said guide means about a second pivot axis spaced from said first pivot axis, second link means having a first end pivotally connected to said first link means, means pivotally connecting the other end of said second link means to said lever means at a point spaced from said first and second pivot axes for pivotal movement of said lever means upon movement of said guide means relative to said body, suspension means having first and second relatively movable portions adapted to resiliently resist such relative movement, means operatively connecting one of said portions to said body, and means pivotally connecting the other of said portions to said lever means at a point spaced from said first pivot axis for loading of said suspension means upon relative movement of said guide means to the body.

4,407,387

CONTROL SYSTEM FOR SPLIT AXLE DRIVE MECHANISM

Brook A. Lindbert, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 29, 1981, Ser. No. 268,580
Int. Cl.³ B60K 17/34, 23/08
U.S. Cl. 180—247 **8 Claims**



1. A control system for automatically operating the clutch in a single clutch split axle drive mechanism responsive to an operational mode of a transfer case, with which the split axle drive mechanism is used in a part-time four-wheel drive vehicle powered by an internal combustion engine, comprising:

a vacuum motor mechanically connected to the clutch so that the clutch is biased toward disengagement when the vacuum motor is vented and biased toward engagement when the vacuum motor is evacuated,

conduit means connecting the vacuum motor to a vacuum source provided by the internal combustion engine,

said conduit means including a two-way valve which has a first operative position where the vacuum motor is connected to a vent and a second operative position where the vacuum motor is connected to the vacuum source for evacuating the vacuum motor,

means operatively connected to the transfer case positioning the two-way valve in the second operative position when the transfer case is in a four-wheel drive mode whereby the clutch is automatically engaged when four-wheel drive is selected, and

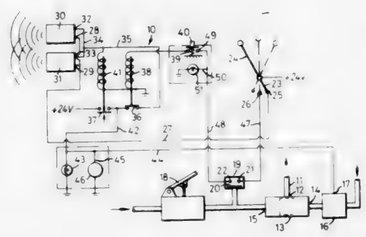
said two-way valve being mechanically positioned in the fist operative position when the transfer case is in the two-wheel drive mode whereby the control system does not require any power for operation in the two-wheel drive mode.

4,407,388

COLLISION PREVENTION SYSTEM

James Steel, Newcastle Upon Tyne, England, assignor to Ogden Electronics, Ltd., Yorkshire, England

Filed Mar. 11, 1981, Ser. No. 242,523
Claims priority, application United Kingdom, Mar. 19, 1980, 8009244; Sep. 25, 1980, 8030904
Int. Cl.³ B60T 7/12
U.S. Cl. 180—271 **2 Claims**



2. Apparatus for automatically controlling the braking system of a vehicle which vehicle includes a manually actuated foot brake pedal and a gear shift lever, said apparatus comprising:

hazard detection means for detecting a hazard in the path of the vehicle while the gear shift lever is placed in a reverse gear position and for producing a control output in response to such detection;

automatic brake actuation means connected to respond to said control output for automatically actuating said braking system and maintaining said braking system in the actuated mode to thus retard motion of the vehicle; and

manual reset control means for deactuating said automatic brake actuation means including

a manually actuatable cancel means,

a gear shift lever actuated means, and

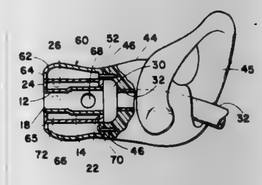
control means operatively associated therewith and with said brake pedal for effectively deactivating and resetting said automatic brake actuation means only when (a) the gear shift lever has been manually moved out of a reverse gear position, (b) the brake pedal has been actuated, and (c) the cancel means has been actuated.

4,407,389

VENTED ACOUSTIC EAR MOLD FOR HEARING AIDS

Rubein V. Johnson, 2432 Court St., Muskogee, Okla. 74401

Filed Jan. 19, 1981, Ser. No. 226,030
Int. Cl.³ A61B 7/02
U.S. Cl. 181—135 **9 Claims**



1. A hearing aid ear mold insertable into the auditory canal of the user for the passage of sound wave energy from a hearing aid to the tympanic membrane of the ear, comprising:

(a) an inner central thin-walled metal tube forming a longitudinal conduit connected at its outer end by tubular means to a hearing aid;

(b) a first outer thin-walled metal tube coaxial with said inner central tube, and forming a first annular space closed by annular end walls sealing the annular space between said inner and said first outer metal tubes;

(c) at least one opening in the wall of said inner tube joining said first annular space and the space inside said tube; and

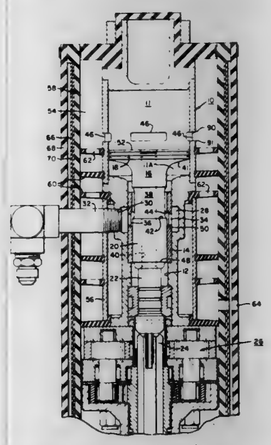
(d) a second outer thin-walled metal tube coaxial with said inner central tube and said first outer metal tube, forming a second annular space, closed off by outer and inner annular walls in the plane of said annular end walls closing said first annular space.

4,407,390

PNEUMATIC MOTOR

Louis H. Le Blanc, Jr., Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Division of Ser. No. 77,246, Sep. 19, 1979, Pat. No. 4,308,925.
This application Aug. 7, 1981, Ser. No. 291,025
Int. Cl.³ F01N 1/08
U.S. Cl. 181—230 **3 Claims**



1. In a pneumatic motor having cylinder means, a piston reciprocable within said cylinder means, ports in the wall of said cylinder through which exhaust gas passes, and a muffler surrounding said cylinder for receiving said exhaust gas, the improvement in said muffler comprising:

an annular wall of resilient material surrounding said cylinder means;

annular spacers separating said wall from said cylinder means;

openings in said spacers through which exhaust gas can pass,

said opening in at least some spacers being displaced about the cylinder axis with respect to the opening in a next adjacent spacer, whereby exhaust air will after passing in a generally longitudinal direction with respect to said cylinder axis flow generally circumferentially to the next said opening, and

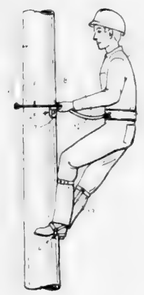
an opening in said annular wall through which exhaust gas passes to the atmosphere after passing through the openings in said spacers.

4,407,391

POLE CLIMBER'S SAFETY DEVICE

Peter R. Greenway, 5105 Mount Nemo Rd., R.R. #2, Milton, Ontario, Canada L9T 2X6; Andrew C. Sulowski, 6 Sweet Pea Path, Weston, Ontario, Canada M6P 3S3, and Henry C. George, 57 Ambleside Ave., Toronto, Ontario, Canada M8Z 2H8

Filed Apr. 14, 1982, Ser. No. 368,301
Int. Cl.³ A62B 35/00
U.S. Cl. 182—9 **11 Claims**



1. A pole climber's safety device comprising a closed yoke for encompassing a pole, the yoke consisting of a pair of arcuate half yokes providing upper and lower surfaces, the half yokes being hingedly interconnected with respect to a vertical axis at one pair of adjacent ends; releasable fastening means interconnecting the other pair of adjacent ends of said half yokes; attachment means for attaching safety belt connectors to the yoke; a pair of handle portions extending outwardly from the half yokes on either side of said attachment means; a plurality of blades pivotally mounted on the lower surfaces of said half yokes for pivotal movement about respective horizontal pivotal axes, the blades projecting inwardly from the half yokes for biting or gripping engagement with the pole; means biasing the blades about their pivotal axes to a pole engaging position; and manually operable means for retracting the blades in one direction from the pole engaging position about their pivotal axes for permitting movement of the device down the pole.

4,407,392

SAFETY SCAFFOLD FOR METAL MELTING FURNACES

William B. Lazzari, LaGrange, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 298,221
Int. Cl.³ E04G 3/14
U.S. Cl. 182—128 **4 Claims**

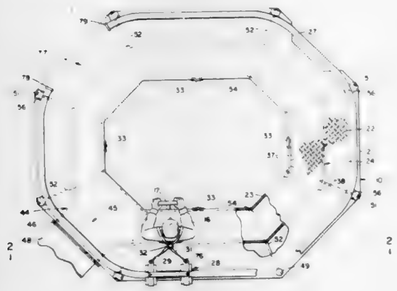
1. A scaffold for supporting a workman with respect to a top opening in a metal melting furnace, which comprises:

platform means of a size adapted to fit over and rest on the walls surrounding a furnace opening, said platform means

having a central opening conforming to the opening in the furnace, and further including ducts extending around said platform opening having first vent openings facing the platform opening, and a second opening facing away from the platform opening;

means secured about said second opening for exhausting fumes from said duct means;

a plurality of spaced posts extending upwardly from the outer periphery of said platform means;



a track secured to the posts and running from a first to a last of said posts to leave an entry between said first and last posts;

a trolley mounted on and movable along the track; and

lanyard means secured to the trolley and adapted to be attached to a workman on the platform means, said lanyard means being of such length as to restrict movement of the workman to positions adjacent to the platform opening.

4,407,393

PROPORTIONAL BRAKE FOR POWERED WHEELCHAIRS

Myron Youdin, 200 E. 33rd St., New York, N.Y. 10016; Mario W. Clagnaz, Jr., 18 Helen Ct., Floral Park, N.Y. 11001, and Henry Louie, 2669 E. 23rd St., Brooklyn, N.Y. 11235

Filed May 22, 1981, Ser. No. 266,623

Int. Cl.³ B60T *7/02*

U.S. Cl. 188—2 F **11 Claims**



1. A proportional braking system for a powered wheelchair comprising:

one or more wheelchair brakes;

means controllable by the operator of the chair for selecting and maintaining an amount of braking force to be applied by said brakes;

control means responsive to said selecting means for generating a braking signal;

brake activation means responsive to said signal for proportionately activating said brakes and maintaining the activation of said brakes with the amount of braking force selected by the operator.

4,407,394

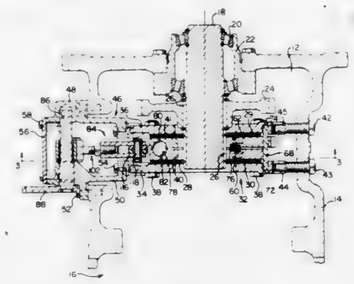
DYNAMIC BRAKE MOUNT ASSEMBLY

Aldo Allori, Brookfield; John A. Wilger, Chicago, and Julian D. Voss, Naperville, all of Ill., assignors to International Harvester Co., Chicago, Ill.

Filed Jun. 10, 1981, Ser. No. 272,147

Int. Cl.³ F16D *55/08*

U.S. Cl. 188—71.4 **8 Claims**



1. A dynamic brake mount assembly comprising:

a fluid filled chamber defined by a chamber casing;

a rotatable shaft disposed within said chamber;

coaxially spaced brake discs removably attached to and rotatable with said shaft;

a disassembleable brake housing extended about said shaft and frictionally engageable with said brake discs for retarding the shaft rotation;

at least a pair of cooperating pressure plates located within said brake housing and between said discs;

said plates being axially displaceable upon rotational movement thereof in opposite directions;

an actuator mechanism means for rotating said plates in opposite directions; and

cam means disposed intermediate the plates forcing the plates apart and into frictional interengagement with said discs;

said brake housing being stationary located within said chamber space by an actuator mechanism housing and detachable support means;

said actuator mechanism housing partially encompasing said actuator mechanism means being mounted on said casing and rigidly attached to one side of said brake housing;

said detachable support means interconnecting said casing with another side of said brake housing for immobilizing support thereof within said chamber space.

4,407,395

MECHANICAL SHOCK AND SWAY ARRESTOR

Leonard S. Suozzo, 366 Maple Hill Dr., Hackensack, N.J. 07601

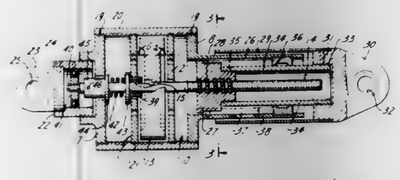
Filed Sep. 25, 1981, Ser. No. 305,514

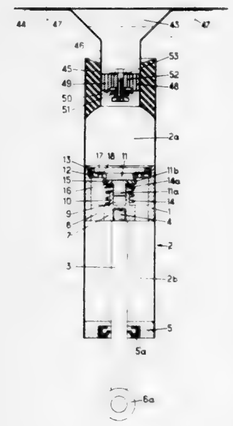
Int. Cl.³ B60T *7/12*

U.S. Cl. 188—134 **8 Claims**

1. A mechanical shock and sway arrestor adapted to be interposed between piping and a stationary support for said piping wherein said mechanical shock and sway arrestor comprises a housing having a tubular wall having first and second end walls which are externally threaded for engaging internal threads of said tubular wall and wherein said first end wall has a first central opening for threadably receiving a tubular extension which in turn has a central opening for receiving an ear which is secured to said tubular extension by screw means which ear connects one end of said arrestor to said fixed support; said second end wall having a second tubular extension

formed integrally therewith and extending longitudinally thereof; an outer sleeve disposed about said second tubular extension and extending coaxial therewith and secured to a second ear which second ear connects one end of said arrestor to said piping; said second ear having internal threads for engaging threads on an inner sleeve which extends longitudinally of said second tubular extension and said outer sleeve and coaxial therewith; a ball nut fixedly secured against rotation and disposed within said second tubular extension and connected to one end of said inner sleeve; first and second parallel and spaced apart clutch plates disposed in said housing having external threads formed on their periphery for engaging internal threads formed in said tubular wall and having central openings formed there through; a flywheel disposed in said housing and between said clutch plates and having a central opening formed there through coaxial with said central openings formed in said clutch plates; a screw member disposed in said housing and extending longitudinally and coaxial with said inner and outer sleeves and said second tubular extension and extending through said central openings formed through said clutch plates and said flywheel and through a threaded opening formed through said ball nut; a first collar disposed about said screw member in said housing and disposed between said first end wall and said first clutch plate and coating with a sleeve disposed in said central opening formed in said first clutch plate; a second collar disposed about said screw member in spaced apart parallel relationship with said first collar and disposed in said housing and disposed between said first collar and said first end wall said second collar coacting with an adjustable sleeve which is also disposed about said screw member; a spring disposed in said housing about said screw member and positioned between said first and said second collars; and, a ball bearing disposed in said central opening of said threaded tubular extension for rotatably supporting said screw member whereby in response to longitudinally axial movement of said piping causing said inner and outer sleeves and said screw member to also move axially, in either direction, one of said clutch plates will engage said flywheel stopping further axial movement and forming a rigid strut of the mechanical shock and sway arrestor and effectively shortening its length which will be returned to its normal length by said spring when the axial force is removed.





4,407,396

HYDRAULIC SHOCK ABSORBER HAVING PISTON-MOUNTED VALVE BIASED BY GASEOUS PRESSURE

Jacques M. M. Sirven, 34 Rue de l'Orangerie, 78000 Versailles, France

Continuation of Ser. No. 3,688, Jan. 15, 1979, abandoned. This application Jul. 7, 1981, Ser. No. 281,140

Claims priority, application France, Jan. 25, 1978, 78 02054

Int. Cl.³ F16F *9/50*

U.S. Cl. 188—282 **28 Claims**

1. A damping device for damping the relative movement of two bodies comprising:

a cylinder for hydraulic fluid,

a main piston movable axially in the cylinder and dividing the cylinder into a first chamber and a second chamber,

a rigid element secured to said piston,

a rod connected to the piston and extending through the second chamber,

a fluid storage space which is in communication with the first chamber and is not in direct communication with the second chamber,

a first restrictive passage means opening from said first chamber to said storage space permitting fluid to flow from said first chamber to said storage space, said restrictive passage means limiting the flow of fluid therethrough to cause the pressure in the first chamber to increase in response to piston movement toward the first chamber,

a regulating valve on said main piston, said regulating valve being movable during a rapid compression movement of said piston from a closed position to an open position at which said first chamber is in communication with said second chamber, said regulating valve having surfaces exposed to pressures of the fluid in the first and second chambers,

a return spring for biasing the regulating valve toward its closed position, said return spring bearing against said rigid element secured to said piston,

a substantially fluid tight reference chamber on said main piston containing a substantially constant pressure gas for biasing the regulating valve toward its closed position, said regulating valve having a first surface portion which closes said reference chamber, a second surface portion of said valve being exposed to the pressure of said first chamber, and said first surface portion having an area no greater than said second surface portion,

said regulating valve and said reference chamber acting as pressure control means which, within a range of compression rates which lie below a given compression rate (V_1), is operable to provide damping forces which increase progressively when the compression rate increases, and

said pressure control means, within a range of compression rates which lie above said given compression rate (V_1) and below a limit compression rate (V_0) being operable to provide damping forces which decrease progressively when the compression rate increases.

4,407,397
SHOCK ABSORBER WITH PRESSURE-RELIEF MECHANISM

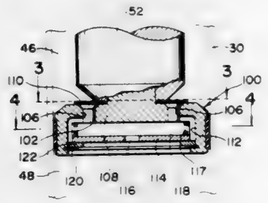
Naoto Fukushima, Fujisawa; Kunihiko Hidaka, Kamakura, and Kazuroh Iwata, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Sep. 28, 1981, Ser. No. 306,181

Claims priority, application Japan, Oct. 16, 1980, 55-147793[U]; Oct. 29, 1980, 55-151737

Int. Cl.³ F16F *9/34*

U.S. Cl. 188—282 **7 Claims**



1. A hydraulic shock absorber comprising:
- a hollow cylinder defining therein a fluid chamber filled with a working fluid;
- a piston movably disposed within said fluid chamber to divide the fluid chamber into first and second chambers, said piston being formed with a circular recess on one surface thereof;
- a resilient member disposed within said circular recess and defining a vortex chamber together with said piston, said resilient member having means for defining first and second fluid passages for communication between said first chamber and said vortex chamber, said second passage being normally closed and responsive to a pressure difference between said first chamber and said vortex chamber greater than a set pressure provided by said resilient member to open; and
- means for establishing communication between said second chamber and said vortex chamber so that the fluid flowing into said vortex chamber from said second chamber generates a vortex in said vortex chamber.

4,407,398
DRIVE UNIT

Ernst Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,674

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016620

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.055 **4 Claims**



1. An improved drive unit for a vehicle including a reciprocating-piston internal combustion engine having a crankshaft, comprising a multiple-gear automatic transmission and a clutch interposed between said engine and said automatic transmission, said transmission operating as a function of the operating condition of the vehicle, said clutch comprising a mechanical coupling part, and a fluid coupling part which serves as the flywheel mass for said engine, wherein said mechanical coupling part is interposed between said crankshaft and said flywheel mass, said fluid coupling part further comprising means for connecting said fluid coupling part with an input shaft of said transmission, and pump means for connecting said fluid coupling part to an auxiliary starting motor, said auxiliary starting motor selectively operating as a generator to charge a battery of said vehicle and as a motor to maintain a predetermined rotational speed of said fluid coupling part during engine-braking and stopping operating conditions of said vehicle.

4,407,399
TWO-SPEED TRANSMISSION WITH HYDRAULIC ACTUATION OF THE SHIFTING OPERATIONS UNDER LOAD

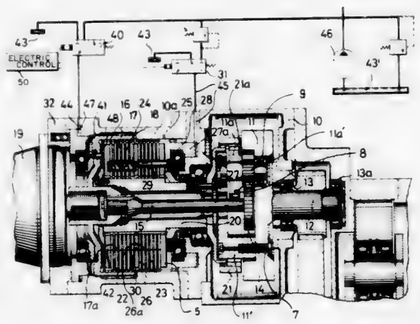
Friedrich Wolff, Wetter, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 230,079

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003831

Int. Cl.³ B60K *41/28*; G05G *1/00*

U.S. Cl. 192—4 A **12 Claims**



1. In a two-speed transmission with hydraulic actuation of the shifting operations under load for a hydrostatically operated work machine, particularly caterpillar-track excavators, having a planetary gearing provided with double planet gears, a sun gear as an input member, and a brakable internal gear as a reaction member, and having packs of discs forming a clutch constituting a clutch means and a brake constituting a brake means, respectively, which discs are arranged coaxially around the axis of the sun gear of the planetary gearing, the improvement wherein
- said packs of discs formed as said clutch means and said brake means, respectively, for being operatively connected to said planetary gearing,
- said planetary gearing includes a planet carrier means for carrying the planet gears via a bearing of the latter and for being continuously connected with a power take-off, and
- said planet carrier means has a width encompassing the bearing of the planet gears and a diameter greater than the internal gear so as to be formed as a flywheel.

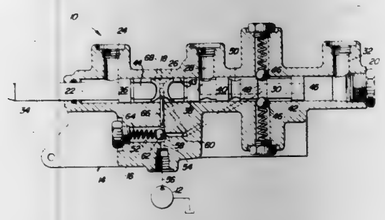
4,407,400
WINCH CONTROL VALVE

Gary R. Fichtinger, Hazel Green, Wis., assignor to Deere & Company, Moline, Ill.

Filed Jan. 29, 1981, Ser. No. 229,398

Int. Cl.³ F16D *67/04*; F15B *13/07*

U.S. Cl. 192—12 C **4 Claims**



1. A winch transmission control valve comprising: a valve body defining a valve bore; sump port means, pressure port means and clutch service and brake service ports intersecting the bore at axially spaced locations therealong; a valve spool located in the bore and including fluid directing means for controlling the flow of fluid to and from the clutch and brake service ports; said fluid direction means including a first land means operable when the spool is in an inching position for simultaneously connecting the clutch service port to the sump and pressure port means to thereby effect a partial engagement of a pressure-engageable clutch to which the clutch service port is adapted for connection; and a second land means operable when the spool is in a controlled release position for simultaneously connecting the brake service port to the sump and pressure port means to thereby effect a partial disengagement of a brake to which the brake service port is adapted for connection.

4,407,401
HYDROSTATIC COUPLING

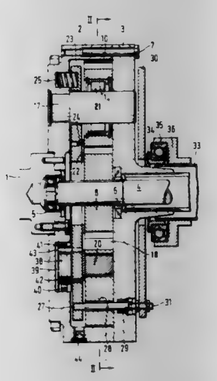
Peter Rosendahl, Düren-Lendersdorf, and Karl T. Renius, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Feb. 3, 1981, Ser. No. 231,020

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004581

Int. Cl.³ F16D *31/04*

U.S. Cl. 192—61 **9 Claims**



1. A hydrostatic coupling, which comprises:
- a first coupling shaft;
- a housing fastened on said first coupling shaft and including a plurality of recesses;
- a second coupling shaft associated with said housing;
- a first gear, serving as a sun gear and secured on said second coupling shaft; and
- a plurality of further gears, which are contained in at least some of said recesses and are arranged in a planetary manner about said first gear in such a way as to include circulation passages, said first gear forming a geared pump with each of said further planetary gears and driving same; a sealing plate which is externally axially adjustable against spring force, and in which said housing has a smooth inner wall, said first sun gear and said further planetary gears on the one hand engaging said smooth inner wall of said housing, and on the other hand engaging said sealing plate, which, in conformity with the axial adjustment, at least partially closes said circulation passages.

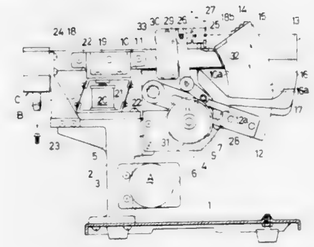
4,407,402
FASTENER FEEDING APPARATUS

Masaru Nishimura; Osamu Shikata, and Yoshikuni Ohtsuka, all of Ayabe, Japan, assignors to Nitto Seiko Co., Ltd., Kyoto, Japan

Filed Jan. 22, 1981, Ser. No. 227,388

Int. Cl.³ B65G *47/24*

U.S. Cl. 198—389 **11 Claims**



1. A fastener feeding apparatus for scooping up fasteners stored in bulk form in a hopper, orienting them in a predetermined position, and sequentially feeding them, comprising:
- a movable scooping plate adapted to scoop up fasteners in a predetermined position with the fastener head facing upward and the fastener leg extending downward in a groove provided in the top surface of said scooping plate, said top surface being inclined when said scooping plate is at an upper position so that said fasteners supported in said predetermined position may slide down by gravity to the rear of said inclined top surface, said top surface of said scooping plate is in the form of a V-shaped groove at its outer end for facilitating the scooping up of said fasteners and is beveled at its inner end for facilitating the return back to said hopper of fasteners not supported in said predetermined position, said scooping plate comprising;
- a scoop plate body; and
- a scoop plate arm coupled to said scoop body, said scoop plate arm being supported pivotally on a vertically extending support plate extending at least partially into said hopper with a side end surface of said support plate defining a circular segment conforming to an inner peripheral face of said scoop plate body;
- motive means for moving said scooping plate from said upper position to a lower position and vice versa;
- a chute rail having a substantially horizontal fastener supporting face adapted to receive said fasteners supported on said scooping plate as they slide down from said scooping plate top surface and to support said fasteners by the bottom face of the head part with their heads facing upwardly and their legs loosely inserted in a chute rail

groove, a bottom face of said chute rail having a top surface of said support plate extending upwardly towards said bottom face, said chute rail further being spaced from said support plate by a slight clearance space for permitting vibration of said chute rail, the rear end faces of said chute rail being in the form of a circular segment conforming to said inner peripheral surface of said scoop plate body and is spaced therefrom by a slight clearance for permitting vibration of said chute rail relative to said scoop plate body; and

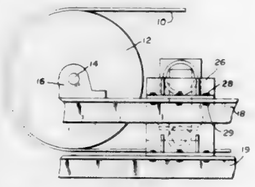
a chute rail support for supporting said chute rail in a substantially horizontal position, said chute rail support comprising a rectilinear vibrating unit for imparting a slight vibration to said chute rail and for thereby causing the fasteners supported by said chute rail to be fed in a rearward direction.

4,407,403

VIBRATORY BELT CLEANING APPARATUS FOR AN ENDLESS CONVEYOR

Theodore S. Wadensten, P.O. Box 8, Wyoming, R.I. 02898

Filed Jun. 10, 1981, Ser. No. 272,303
Int. Cl.³ B65G *45/00*
U.S. Cl. 198—494 **16 Claims**



1. A vibratory belt cleaning apparatus for an endless conveyor belt as carried by head and tail pulleys supported by a frame, said vibratory cleaning apparatus disposed immediately adjacent the tail pulley and disposed and positioned to contact the inner surface of the returning conveyor belt to locally vibrate the conveyor belt to remove unwanted particles from the exterior surface of the belt after discharge has been made from the tail pulley, the vibratory belt cleaning apparatus including:

(a) a support frame for the conveyor belt and pulleys, said frame including support shelf portions;

(b) a pair of brackets securable to said frame for rigid attachment thereto, each of said brackets disposed to provide a channel open at least to its top, said channel when the brackets are secured to the frame disposed substantially vertically;

(c) a channel shaped non-metallic liner within and secured to the channel in each bracket, said liner at least in part open toward the belt;

(d) a vibrated apparatus frame having guide portions disposed so as to be slidable in the channel shaped non-metallic liner in the secured brackets, said vibrated apparatus frame including a support plate disposed between the guide portions and on which is mountable a motor vibrator;

(e) a variable speed and force vibrator motor removably securable to the support plate of the vibrated apparatus frame, the vibrational range providing from twelve hundred to nine thousand cycles per minute, and

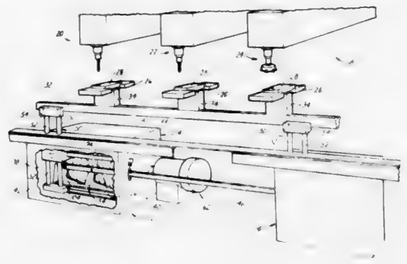
(f) a freely-turning roller carried on a shaft secured to the guide portions of the vibrated apparatus frame, said vibrated roller gravitationally engaging the inside of the returning extend of the conveyor belt while said vibrations are isolated from the conveyor support frame by the non-metallic liner within the channel of the bracket.

4,407,404

WORK TRANSFER DEVICE

William E. Rise, Utica, and Gregory J. Masserang, Farmington, both of Mich., assignors to Android Corporation, Auburn Hts., Mich.

Filed Jul. 6, 1981, Ser. No. 280,385
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774 **23 Claims**



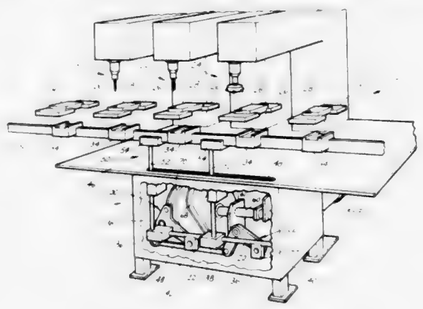
1. In a work transfer device for progressively transferring articles to successive stations having a base on which a carriage is longitudinally shiftable, work engaging means movable longitudinally with the carriage while being shiftably mounted on the carriage for transverse shiftable movement with respect to the carriage, drive means for shifting the carriage longitudinally of the base and for shifting the work engaging means transversely of the carriage so as to cause the work engaging means to execute a generally rectilinear path of movement for progressively transferring articles between successive stations, the improvement for imparting transverse motion to the work engaging means wherein there is provided a track parallel to the longitudinal travel of the carriage and wherein a track engaging means is coupled with the work engaging means so that the two move longitudinally in unison, said track engaging means riding within the track, and means operably mounting the track on the base for bodily transversely displacing the track while maintaining the track parallel with the longitudinal travel of the carriage thereby to impart transverse motion to the work engaging means.

4,407,405

WORK TRANSFER DEVICE

William E. Rise, Utica, Mich., assignor to Android Corporation, Auburn Hts., Mich.

Filed Jul. 6, 1981, Ser. No. 280,386
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774 **14 Claims**



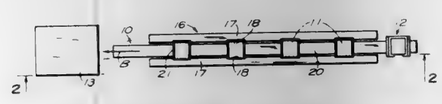
1. In a work transfer defice for progressively transferring articles to successive stations having a base on which a carriage means is longitudinally shiftable, work engaging means movable longitudinally with the carriage means while being shiftably mounted on the carriage means for transverse shiftable movement with respect to the carriage means, drive means for shifting the carriage means longitudinally of the base and for shifting the work engaging means transversely of the carriage so as to cause the work engaging means to execute a generally rectilinear path of movement for progressively transferring articles between successive stations, the improvement for imparting transverse motion to the work engaging means wherein there is provided a cylindrical guide rod parallel to the direction of carriage travel, a pair of longitudinally spaced slides which are longitudinally shiftable on the guide rod, means securing each slide to the work engaging means, a pair of bellcranks spaced longitudinally apart, means mounting the bellcranks on the base about respective longitudinally spaced pivot axes, a pair of pivot blocks secured to the guide rod at longitudinally spaced locations, each bellcrank having a crank arm connected at the distal end to a corresponding one of the pivot blocks whereby a pivot connection is provided between each crank arm and the corresponding pivot block, each bellcrank comprising a second crank arm, a drag link connecting both second crank arms together so that rocking motion of one crank arm about its pivot axis is imparted to the other crank arm and means operably coupling the two crank arms to the drive means for causing the crank arms to operate in unison to transversely displace the guide rod and thereby impart transverse motion to the work engaging means.

4,407,406

WALKING BEAM MECHANISM

Dallas G. Norris, Indianapolis, Tenn., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 26, 1981, Ser. No. 314,943
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—774 **4 Claims**



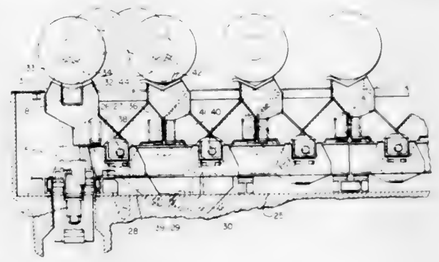
1. Walking beam apparatus comprising, a frame, a longitudinally reciprocable carriage mounted by said frame, carriage positioning means for longitudinally positioning said carriage and including for that purpose carriage drive means adapted to undergo alternate longitudinal forward and reverse strokes and coupled to said carriage by a lost motion coupling, said positioning means being operable such that, during a first interval of each of such strokes, such carriage and drive means are uncoupled while said carriage remains stationary and, during a second interval of each of such strokes, such carriage and drive means are coupled to move longitudinally together, a walking beam, movable beam support means fixedly coupled to said beam and slidably coupled with said carriage so as to render said beam longitudinally movable therewith and laterally movable with respect thereto, guide means on said carriage for constraining lateral movement of such support means and beam to be normal to the longitudinal movement of said carriage, and link means coupled between said drive means and support means and pivotally coupled to each thereof, said link means being responsive to changes in the relative positioning of such carriage and drive means during the first interval of, respectively, each such forward stroke and subsequent reverse stroke to displace said support means to, respectively, a laterally outward position and a laterally inward position, the combined movements of such carriage and support means being adapted to cause said beam to undergo a rectangular movement in the course of each such forward stroke and subsequent reverse stroke.

4,407,407

METHOD FOR ROTATING AND CONVEYING COILS

Werner W. Eibe, McCandless Township, Allegheny County, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Division of Ser. No. 972,903, Dec. 26, 1978, Pat. No. 4,271,959.
This application Mar. 18, 1981, Ser. No. 245,115
Int. Cl.³ B65G *25/04*
U.S. Cl. 198—777 **3 Claims**



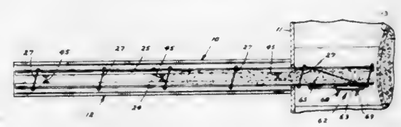
1. The method of conveying successive hot coils in the eye horizontal position along a path of travel of the coil axis normal thereto and defined by successive arcuate segments, each segment intersecting its adjoining segments, comprising transferring each said coil between swinging transfer members at a location within each path segment, and also transferring said coil between swinging transfer members at each intersection of said path segments, the coil at each transfer being simultaneously supported by the overlapping free ends of said transfer members whereby it is rotated but not rolled during transfer.

4,407,408

FEED CONVEYOR

David A. Olson, 1708 Roberts Dr., Albert Lea, Minn. 56007

Filed Dec. 5, 1980, Ser. No. 213,420
Int. Cl.³ B65G *25/00*
U.S. Cl. 198—621 **20 Claims**



1. A conveyor to convey particulate material in a forward longitudinal direction, comprising:

a first elongate sidewall and a second elongate sidewall, both generally longitudinally orientated and disposed in generally parallel spaced apart relationship to one another;

power means connected to at least one of the sidewalls operable to move the sidewalls in reciprocal fashion;

link means connecting the first and second sidewalls whereby upon operation of the power means the sidewalls move sequentially between a first spaced apart position with said sidewalls having particulate material disposed between them; inwardly to a second position wherein the sidewalls are moved toward one another to an extent that particulate matter is clamped between them; forwardly to a third position wherein the sidewalls and particulate material are moved forward; outwardly to a fourth position wherein the sidewalls are moved away from each other to unclamp the particulate material; and then rearwardly wherein the sidewalls are returned to the first position, said link means including means limiting movement of the sidewalls toward each other during rearward movement; and

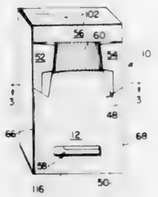
means supporting the sidewalls and permitting movement thereof.

4,407,409

CARTON WITH SUSPENSION SUPPORT AND BLANK FOR FORMING SAME

Daniel P. Dutcher, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 150,729, May 19, 1980, abandoned.
This application Mar. 23, 1982, Ser. No. 361,530
Int. Cl.³ B65D *25/00*
U.S. Cl. 206—45.31 **1 Claim**



1. A carton for suspending a capped breakable container therein, the cap having a laterally extending skirt extending outwardly of the container portion below and immediately adjacent thereto, said carton comprising:

a front panel;

first and second side panels hingedly coupled at opposite side edges of said front panel along fold lines;

top and bottom cover means coupled to top and bottom edges, respectively, of said panels; and

collapsible support means for providing a support surface intermediate said top and bottom cover means substantially perpendicular to and between said front and back panels for supporting said container on the bottom edge of its cap with the bottom of the container spaced above said bottom cover means;

said support means comprising first and second parallel bridge panels having upper edges forming said support surface, each of said bridge panels being a leg of a U-shaped member having a base panel fixed to said front panel;

said legs being hingedly coupled to opposite side edges of said base panel along fold lines and secured to said back panel by means of glue flaps hingedly coupled to side edges of said legs remote from said base panel;

first and second front flaps formed in said front panel above said support means for forming an opening in said front panel;

said front flaps being hingedly coupled at opposite side edges of said front panel and defined by slits formed in said front panel to permit said front flaps to be folded into the interior of the carton and behind the container cap at an angle of inclination with respect to said back panel.

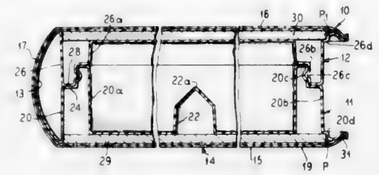
4,407,410

BOOK TYPE CASSETTE HOLDER AND METHOD OF MAKING SAME

Herbert Graetz, Chicago, Ill., and Ronald C. Unterreiner, Cape Girardeau, Mo., assignors to Blair Industries, Inc., Scott City, Mo.

Filed May 7, 1982, Ser. No. 376,147
Int. Cl.³ B65D *85/67*
U.S. Cl. 206—387 **15 Claims**

1. A book style holder comprising a first one-piece flexible sheet having integral front and rear flap portions and an integral spine portion between the flap portions connecting the flap portions in laterally spaced side-by-side relation, a second one-piece stiff molded sheet having a raised tray portion on the inner face of each flap portion of said first sheet and an integral spine liner portion between the tray portions connecting the tray portions in laterally spaced side-by-side relation and covering the spine portion of said first sheet, a bond connecting said first and second sheets together around the peripheries thereof, the tray portions on the front and rear flap portions being complementary to stack together in the closed position



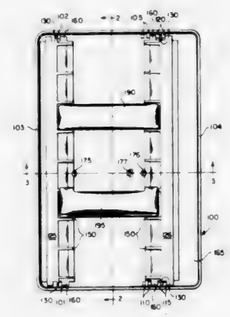
of the holder, and said flexible spine and spine liner having a greater width than the stacked height of the tray portions to bow outwardly to form a convex arcuate front end for the holder and flexing across their entire widths to a flat position when the holder is opened.

4,407,411

STORAGE BOX

Alan Lowry, Canton, Mass., assignor to Hartzell Manufacturing, Inc., St. Paul, Minn.

Filed Jun. 24, 1982, Ser. No. 391,549
Int. Cl.³ B65D *85/67, 85/30, 5/48, 5/50*
U.S. Cl. 206—387 **10 Claims**



1. A storage box for a plurality of flat, generally rectangular objects comprising:

a box-like housing,

at least two rack members slidably insertable into said housing, each of said rack members comprising a central planar portion and two sets of ribs, one of said rib sets being mounted perpendicularly on each side of said planar portion with equal spacing therebetween, said spacing of said ribs mounted on one side of said planar portion being different from said spacing of said ribs mounted on the other side of said planar portion, and

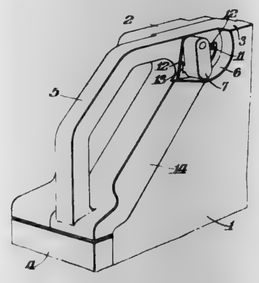
means for mounting said rack members in spaced, parallel relationship within said housing whereby one set of ribs on one of said rack members and one set of ribs on one of said other rack members form slots for storing said objects.

4,407,412

PLASTICS SPOOL CONTAINER FOR MAGNETIC TAPES

Hartmut Thiele, Munich; Dieter Schmelter, Poecking, and Rainer Posch, Munich, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 274,821
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 8016911
Int. Cl.³ B65D *85/02, 45/06;* E05C *3/12*
U.S. Cl. 206—404 **2 Claims**



1. A container for magnetic tapes having at least two parts hinged together comprising

a bottom case part having a housing portion of the bottom case part

a covering case part foldably connected to said bottom case part by hinging means and disposed to provide a closed container in the folded-together position,

said container in closed position having a narrow front side and another adjacent narrow side and said container being formed to provide a handle at a corner between the front and said adjacent narrow side,

a segment-shaped cavity formed in said container which is adjacent to both said handle and said adjacent narrow side, having a lateral wall of said cavity,

a groove formed in said lateral wall and indentations formed within said groove and in said lateral wall,

a hole opening into a recess formed in the housing portion of the bottom part,

so constructed and arranged that,

when said parts are folded into closed position, said lateral wall is adjacent to the hole opening in the recess formed in the housing portion of the bottom case part,

a locking toggle having a peg member which is mounted in said lateral wall and extends into said hole opening into said recess formed in the housing portion of the bottom case part,

a single arm of said toggle pivotally mounted on an end of the peg and pivotable between a first and a second toggle position,

a projection formed on said arm to be positioned in said grooves and engage said indentations, said projection engageable in said indentations in the respective first and second toggle positions,

a barb on the end of the peg opposite the single arm insertable through the hole opening into said recess, said barb and recess being adapted to each other so that the barb engages the housing in one of said positions,

whereby the barb and the housing on the bottom case by engagement of the barb with the bottom case part and the arm with the covering case part pushes the bottom case part and the covering case part, respectively closely together with the locking toggle arrested by engagement of the projection and an indentation.

4,407,413

DISPLAY PACK

Erik C. Jansson, Enköping, Sweden, assignor to Aktiebolaget Bahco Verktyg, Enköping, Sweden

Continuation of Ser. No. 254,587, Apr. 14, 1981, abandoned.
This application Aug. 6, 1982, Ser. No. 405,721
Claims priority, application Sweden, Apr. 18, 1980, 8002935
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—493 **2 Claims**



1. A hanging display pack comprising a backing plate or lamina preferably with attachment details such as buckles, eyelets, pockets etc. for removable retention of an article on the lamina, the article having a preferably circular hole in a portion thereof situated substantially parallel to the lamina, which has a hole adapted in respect of size and position for coaction with the hole of the article, there being a locking body adapted for insertion through the hole of the lamina and the hole of the article, and substantially filling out said hole for mutually locking the lamina and article together by means of a flange like projection preventing said body from going completely through the hole of the lamina, said projection thus being situated on the side of the lamina facing away from the article, said body also having snap teeth at its insertion end, said teeth being resiliently adapted for snapping out after they have been inserted through the hole of the article, when they will be situated on the side of the article facing away from the lamina, said body being made from elastic material, preferably plastics, characterized in that said body is formed as a cupola with a substantially cylindrical portion, at its base provided with said projection and at its opposing end having a hemispherical top, forming its insertion end, said teeth being located along two mutually opposing areas along the circumference of said cylindrical portion and the remainder of the circumference being without teeth, and formed with at least one through-slit, which is disposed on or parallel to a line, preferably a line of symmetry, between said two mutually opposing areas having the snap teeth such that in order to release said locking body pressure must be applied against the sides of said cylindrical portion in a direction substantially parallel to said line.

4,407,414

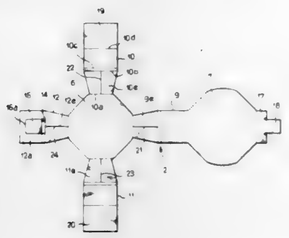
WRAPPER FOR KITCHEN UTENSILS

Pierre Rey, and Emile Bonnet, both of Rumilly, France, assignors to SEB S.A., Selongey, France

Filed Sep. 9, 1982, Ser. No. 416,958
Claims priority, application France, Sep. 30, 1981, 81 18393
Int. Cl.³ B65D *6/04*
U.S. Cl. 206—553 **14 Claims**

1. A wrapper for kitchen utensils which have a bottom wall and a side wall, said wrapper being made from a sheet of semi-rigid foldable material such a paperboard having two planar surfaces which are cut-out of the sheet to a size approximate the area of the bottom wall, said two surfaces being applied respectively against the internal face and the external face of the bottom of the utensil, wherein the two surfaces aforesaid are joined to each other by means of at least three

tongues spaced at intervals around the side wall of the utensil, said tongues being adapted to cover the top rim of said side



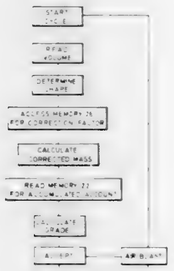
wall and being applied against the internal and external faces of said wall.

4,407,415

METHOD OF GRADE DETERMINATION INCLUDING COMPENSATION

Rolf C. Böhme, Kyalami, and Max M. Lazerson, Northcliff, both of South Africa, assignors to General Mining Union Corporation Limited, South Africa

Filed Nov. 28, 1980, Ser. No. 211,444
Claims priority, application South Africa, Dec. 4, 1979, 79/6566; Jul. 15, 1980, 80/4249
Int. Cl.³ B07C *5/00, 5/346*
U.S. Cl. 209—556 **5 Claims**



1. A method of determining the grade of a radioactive particle which includes the steps of obtaining a measure of the radioactivity of the particle, obtaining a measure of the volume of the particle, deriving a measure of the particle's mass from the volume measurement, deriving a grade measurement of the particle from the ratio of the radioactivity measure to the mass measure, and correcting the grade measurement by applying a corrective factor which is dependent on the mass of the particle.

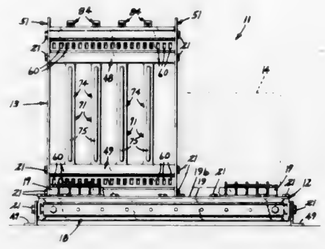
4,407,416

MOUNTING FRAME SYSTEM FOR CIRCUIT BOARDS

Dale L. Anderson, Mound, Minn., assignor to Protronix, Inc., Minneapolis, Minn.

Filed Jul. 16, 1980, Ser. No. 169,294
Int. Cl.³ A47F *5/00, 7/00*
U.S. Cl. 211—41 **20 Claims**

1. A universal rail member usable in selected lengths in a modular frame assembly, comprising:
(a) an elongated web;
(b) a pair of first ridge members projecting laterally outward from one side of the web, the first ridge members extending over the length of the web in spaced, parallel relation;
(c) a pair of second ridge members projecting laterally outward from the opposite side of the web, the second ridge members extending over the length of the web in parallel relation and spaced apart so that the first ridges of one rail member are capable of engaging and interlockably fitting between the second ridge members of another rail member;



(d) and at least one notch formed in each of the second ridge members, the notches being transversely aligned, and sized and configured to receive the end of another rail member in perpendicular, interlocking relation.

4,407,417

PRODUCT COUNTER DISPLAY

Daniel J. Boyle, Hartland, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 219,248
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—69.1 **2 Claims**



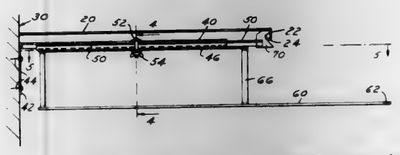
1. A product holder for displaying axially elongated products, such as pencils and the like, said holder comprising:
(a) a face panel comprising a center panel, a top extension panel foldably connected to a top edge of said center panel, and a bottom extension panel foldably connected to a bottom edge of said center panel, said top and bottom extension panels being provided with at least one pair of aligned apertures for receiving and displaying an elongated product;
(b) a base support comprising an upper base panel foldably connected to a bottom edge of said bottom extension panel along a first fold line, a lower base panel foldably connected to said upper base panel and adhesively secured to a lower surface of said upper base panel;
(c) a back panel foldably connected to said lower base panel along a second fold line which is offset from said first fold line;
(d) a glue panel foldably connected to a top edge of said top extension panel, said glue panel being adhesively secured to a top portion of said back panel;
(e) a stand panel foldably connected to a top edge of said back panel;
(f) a stand support panel foldably connected to a bottom edge of said stand panel;
(g) said first and second fold lines being operable, by reason of being offset from each other, to convert said holder from a flattened shipping condition to an expanded operable condition when said upper and lower base panels are pivoted from a first position substantially coplanar with said back panel to a second position substantially perpendicular to said back panel, said face panel being outwardly offset from said back panel when said holder is in said expanded operable condition; and
(h) means for securing said stand support panel in a supporting position substantially coplanar with said base support when said holder is in said expanded operable condition.

4,407,418

ADJUSTABLE TIE RACK

John W. Brammer, 27622 Parkview Blvd., Apt. #323, Warren, Mich. 48092

Filed May 28, 1981, Ser. No. 267,786
Int. Cl.³ A47F *7/12*
U.S. Cl. 211—87 **8 Claims**



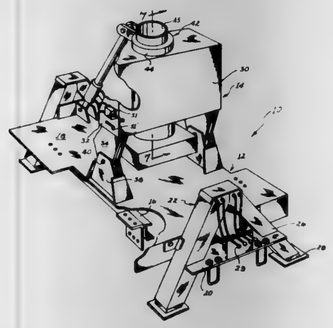
1. A support rack for use under a horizontal closet shelf having a clothes hanger support near the front edge which comprises:
(a) a first elongate plate having a tab to fasten to a closet wall,
(b) a second elongate plate adjustably slidable in relation to said first plate,
(c) means on said second plate to engage and be supported by a clothes hanger support,
(d) means to lock said plates in a longitudinally adjusted position, and
(e) a frame suspended from one of said plates having legs parallel to and below said elongate plates to support ties and the like.

4,407,419

PORTABLE BOOM SUPPORT FOR VEHICLES

Shannon K. Clements, 6216 Locust Dr., Evansville, Ind. 47712

Filed Dec. 30, 1981, Ser. No. 335,752
Int. Cl.³ B66C *23/78*
U.S. Cl. 212—189 **1 Claim**



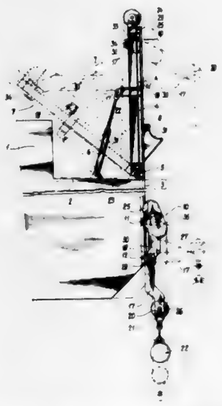
1. A boom support assembly for a vehicle with frame members, said assembly comprising: a frame with upper and lower horizontally disposed plate means, spaced rigid beams mounted between said upper and lower plate means;
adjustable outriggers mounted at each end of said plate means for adjustably positioning said frame relative to a supporting surface to maintain said frame in a selected position;
a turntable support including spaced plates and side panels forming a generally rectangular unit, means pivotally mounting said turntable suport on said upper plate means for movement about a horizontal axis, a vertically tubular member open at it upper and lower ends and fixedly mounted in said unit, a shaft, vertically spaced bearings mounted in said tubular member for rotatably supporting said shaft therein, means operatively connected to the lower end of said shaft for rotating said shaft about a generally vertical axis, bracket means mounted on the upper end of said shaft for pivotally supporting a boom thereon:
means for pivoting said turntable support about said horizontal axis, control means mounted on said unit for actuating said means for pivoting said turntable; and
means mounted on said upper and lower plate means and spaced beams for attaching said frame to said frame members of said vehicle.

4,407,420

SHIP COMPRISING ONE OR MORE DERRICKS SUCH AS A DREDGE WITH SUCTION PIPE DERRICKS

Arie de Jager, Sliedrecht, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Aug. 3, 1981, Ser. No. 289,382
Claims priority, application Netherlands, Aug. 4, 1980, 8004436
Int. Cl.³ B66C *23/18*
U.S. Cl. 212—199 **8 Claims**



1. In a ship having a derrick on deck along a side of the ship to handle the suction tube of a dredge, means mounting the derrick for vertical swinging movement about a horizontal axis from an inboard position toward a position in which the suction tube can be lowered outboard and vice versa, means for swinging the derrick about said horizontal axis, a hoisting winch having a hoisting cable, a hoist block for carrying the suction tube, said hoist block being disposed outboard in the latter said position of said derrick, pulleys about which said cable extends to said hoist block, guiding tracks on said derrick, guiding tracks on the hull of the ship, and a sliding piece slidable along the guiding tracks on said derrick and on said ship between an upper position on the guiding tracks of said derrick and a lower position on the guiding tracks of said ship; the improvement comprising a crane jib on said sliding piece having an outer end carrying said hoisting block, said guiding tracks on the hull of the ship being disposed within the profile

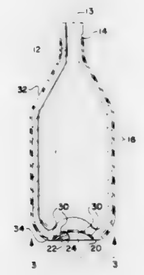
of the side wall of the ship, and said cable having a portion disposed between the guiding tracks of the derrick and between the guiding tracks of the ship inwardly of the profile of said side wall of the ship when said sliding piece is in said lower position.

4,407,421

GLASS CONTAINER HAVING MEANS FOR REDUCING BREAKAGE AND SHATTERING

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Filed Dec. 16, 1981, Ser. No. 331,420
Int. Cl.³ B65D *23/08*
U.S. Cl. 215—12 R **8 Claims**



1. In a glass container of the type which is designed to be coated with a plastic material to reduce breakage and shattering comprising a neck portion which terminates in a discharge opening, a mid-portion, and a base, said base presenting a bearing surface upon which said bottle stands, the improvement wherein:

said base comprises a plurality of concentric annular ribs as longitudinal extensions defining first and second annular channels, said channels being concentric about the center of said base with said first channel being outside said second channel and said second channel surrounding a reservoir,

said channels being filled with a charge of cast plastic, and said channels and reservoir being designed such that they aid in preventing said container from shattering when filled with a charge of cast plastic.

4,407,422

COMPOSITE CLOSURE

Sheldon L. Wilde; Thomas J. McCandless, both of Crawfordsville, and Robert M. Saunders, Ladaga, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

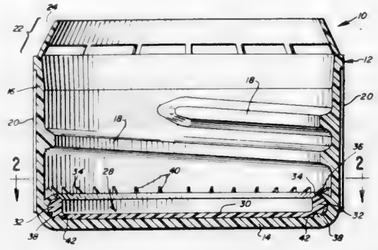
Continuation-in-part of Ser. No. 270,241, Jun. 4, 1981, Pat. No. 4,378,893, which is a continuation-in-part of Ser. No. 77,566, Sep. 21, 1979, abandoned. This application Oct. 13, 1981, Ser. No. 310,769
Int. Cl.³ B65D *53/04*
U.S. Cl. 215—246 **31 Claims**

1. A composite closure for a container, comprising

a plastic cap having a top wall portion and an annular skirt portion having a thread formation,

a disc-shaped plastic sealing liner disposed within said cap generally adjacent said top wall portion including an annular sealing portion having a generally inwardly facing sealing surface, and

means for retaining said liner within said cap comprising a plurality of projections on the inner surface of said top



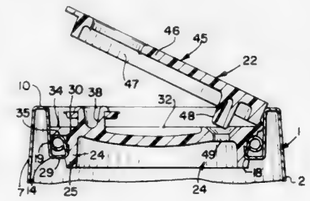
wall portion arranged in circumferentially spaced relation in a ring engaging said annular sealing portion.

4,407,423

DETACHABLE RESEALABLE CLOSURE

John Walter, Evergreen Park, Ill., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Mar. 15, 1982, Ser. No. 358,164
Int. Cl.³ B65D *51/16, 39/00*
U.S. Cl. 220—260 **10 Claims**



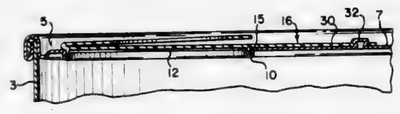
1. A pressure-resistant assembly comprising a combination of a thin metal neck structure having a plurality of radially spaced wall portions and one of which provides a closure-receiving bore and another wall portion of which provides a support for said one portion, said one portion having radial expansion inhibiting means spanning the space between said portions, and a plastic closure comprising a radially expandable hollow plug having a seal tight fit within said one wall portion and positioned in radial alignment with said inhibiting means.

4,407,424

PLASTIC PLUG TYPE CLOSURE FOR BEVERAGE CONTAINERS

William M. Heyn, New Canaan, Conn., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Jul. 1, 1982, Ser. No. 394,231
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **10 Claims**



1. A closure for a pour opening in a wall of a container, a channel on the wall inscribed within said opening,

a plastic closure having a body portion overlying the opening and a rupturable web extending from one side of said body portion into said channel,

a retainer bead having a juncture with said web, said bead being positioned in said channel,

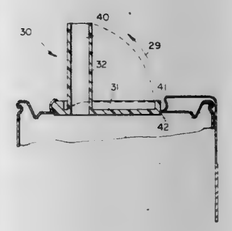
said channel having a wall crimped about said bead and having a cutting edge imbedded into said bead at said juncture for severing said web attendant to said body portion of the closure being lifted for opening said container.

4,407,425

CONTAINER CLOSURE LID INCLUDING DRINKING SPOUT MEANS

Marvin Combs, 2327 Mayhew Dr., Indianapolis, Ind. 46227

Filed Feb. 22, 1982, Ser. No. 350,754
Int. Cl.³ B65D *17/32, 47/10, 47/32*
U.S. Cl. 220—269 **6 Claims**



1. A closure lid for carbonated beverage containers which comprises:

a boss portion unitary with said lid and coterminous with a pour opening disposed in said lid;

a closure strip disposed inwardly of the outer periphery of said boss portion and disposed as part of said boss portion and manually separable from said boss portion;

a flexible spout member having a unitary base portion having an outer upwardly projecting periphery which defines a spout receiving recess, a portion of said outer periphery of said base portion being secured within said boss portion; and

said flexible spout member further having unitary therewith a cylindrical resilient drinking spout portion folded over beneath said closure strip and received within said spout receiving recess in a closed condition and said resilient spout springing upwardly from said closed condition to an open condition when said closure strip is separated from said boss portion, said closure strip and said drinking spout being spaced apart in said open condition allowing oral contact with just said drinking spout, a vent being disposed in said pour opening spaced from said spout receiving recess.

6. A closure lid for beverage containers which comprises:

a boss portion unitary with said lid;

a closure strip disposed as part of said boss portion and manually separable from said boss portion;

a flexible spout member having a base portion secured within said boss portion and a resilient drinking spout portion folded over beneath said closure strip in a closed condition and being upwardly and pivotally movable to an open condition when said closure strip is separated from said boss portion; and

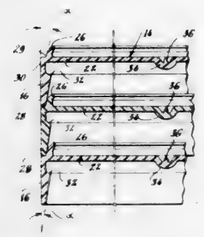
a vent opening defined by said base portion and said closure lid, said vent opening being exposed when said closure lid is in said open condition, and said vent opening being exterior of said spout member.

4,407,426

ROUND ICE CREAM CARTON LID

Edwin C. McLaren, Apple Valley, and David J. Adamek, Minneapolis, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 137,453, Apr. 4, 1980, Pat. No. 4,305,524. This application Apr. 13, 1981, Ser. No. 253,304
Int. Cl.³ B65D *41/18, 43/03;* G09F *3/20*
U.S. Cl. 220—306 **7 Claims**



1. A closure for an ice cream carton or the like of the type having a circular rim defining a dispensing opening therein, comprising:

a unitary, circularly shaped lid including a circular disc having on its top surface a concentric continuous uninterrupted bead which has a lower portion and an upwardly and inwardly extending continuous uninterrupted annular upper overhanging extremity portion having an inwardly angled outer surface and an inwardly angled inner surface,

said lower portion having an outer angled surface and a substantially straight inner surface,

said lid further including an annular skirt portion depending downwardly from the periphery of said circular disc,

a smooth annular portion of said top surface extending between said bead and the periphery of said disc, said annular portion being on the same plane as said lid portion,

said skirt portion including an upper and lower portion, having a smooth contiguous outer surface and the inner surface of said upper skirt portion being recessed radially inwardly with respect to the inner surface of the lower portion of said skirt to define a locking shoulder therebetween, and

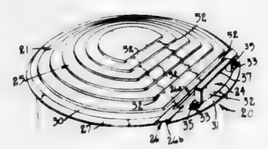
the inner surface of said lower skirt portion being flared outwardly at an acute angle with respect to the vertical.

4,407,427

INTEGRAL HINGE COVERS FOR WASTE CONTAINER

Edward J. Reuter, 5215 Howard's Point Rd., Excelsior, Minn. 55331

Filed Apr. 30, 1982, Ser. No. 373,689
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—339 **11 Claims**



1. A homogeneous container cover of stiff but flexible material comprising a first portion, a second portion and an interconnecting portion integral with said first and second portions for enabling hinging relative motion therebetween, said interconnecting portion being configured as one or more parallel ridges and grooves formed in said cover forming a generally

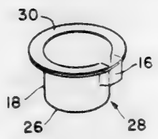
saw tooth configuration, said ridges and grooves extending across said cover, but stopping short of the peripheral edge of said cover, and a pair of hinge areas free of said ridges and grooves extending from the termination thereof to the outer periphery of the cover.

4,407,428

CAP FOR A PAPER CORE

Harris E. Stone, 293 Lenox St., Norwood, Mass. 02062

Filed Mar. 6, 1981, Ser. No. 241,394
Int. Cl.³ F24M *3/00*
U.S. Cl. 220—356 **2 Claims**



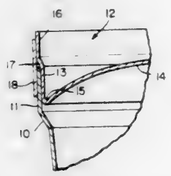
1. A strengthened cap for a paper core comprising:
(a) a cylindrical tube, having an upper portion and a lower portion, said lower portion terminating in a slight bead to facilitate the insertion thereof into said paper core;
(b) a socket protruding radially from said upper portion of said tube; and
(c) a circular uniform-sized rim of constant inside and outside diameter formed outwardly and at the top of said tube, said uniform-sized rim giving added structural strength to said protruding socket.

4,407,429

CAP FOR AND IN COMBINATION WITH A CONTAINER

Ihab M. Hekal, Stamford, Conn., assignor to The Continental Group, Inc., Stamford, Conn.

Filed Apr. 21, 1982, Ser. No. 370,648
Int. Cl.³ B65D *41/00*
U.S. Cl. 220—359 **10 Claims**



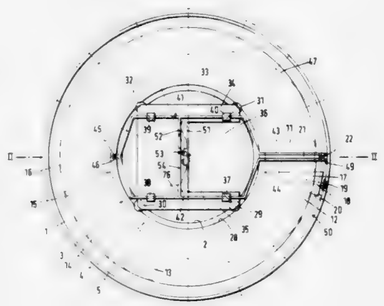
1. A cap for a preselected container having a mouth defined by a cylindrical terminal container portion of a preselected wall thickness, said cap comprising a cylindrical mounting wall, an axially outwardly domed panel within said mounting wall and secured to said mounting wall by a radius, a cylindrical securing wall forming an axial extension of said mounting wall, said securing wall being of a greater diameter than said mounting wall by twice said preselected wall thickness and being joined to said mounting wall by a radially offset intermediate wall.

4,407,430

APPARATUS FOR DELIVERING MERCHANDISE FROM A VENDING MACHINE

Rolf Nehrkorn, Weender Strasse 63, 3400 Göttingen, Fed. Rep. of Germany

Filed Apr. 16, 1981, Ser. No. 254,853
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015183
Int. Cl.³ B65G *59/06*
U.S. Cl. 221—122 **10 Claims**



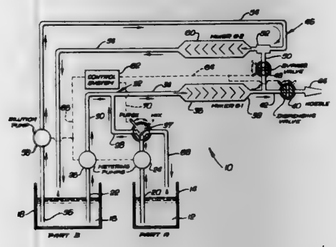
1. Apparatus for delivering merchandise from vending machines, comprising
juxtaposed storage columns for merchandise, each of said columns including wall portions for guiding merchandise packages, said wall portions defining at the bottom of said column at least one ejector-receiving slot and one exit slot longitudinally aligned with said ejector-receiving slot,
an ejector guide,
an ejector, which is reciprocable in said ejector guide and adapted to enter the ejector-receiving slot,
an element which interengages with the ejector and is movable past all storage columns,
drive means for driving said element,
first coupling means operable to selectively couple said ejector guide to said element, and
second coupling means operable to selectively couple said ejector guide to parts of the apparatus which are rigid with respective ones of said storage columns,
said ejector guide being movable into alignment with each of said storage columns in unison with said element when said first coupling means have been operated,
said second coupling means being arranged to be operated in response to the alignment of said ejector guide with a selected one of said storage columns and to impart by said operation to said ejector guide a longitudinal movement toward said selected storage column,
said first coupling means being arranged to be released in response to said alignment of said ejector guide with said selected storage column,
said ejector being arranged to be reciprocated in said ejector guide and under said selected storage column in said ejector-receiving slot in response to a continued movement of said element when said ejector guide has been aligned with said storage column and said second coupling means have been operated,
an exit opening being provided at one end of the ejector guide.

4,407,431

SYSTEM FOR DISPENSING CURABLE COMPOSITIONS

Charles G. Hutter, III, 4110 County Line, Carson City, Nev. 89701

Filed Mar. 4, 1981, Ser. No. 240,470
Int. Cl.³ B01F *15/02*; B67D *5/60*
U.S. Cl. 222—1 **42 Claims**



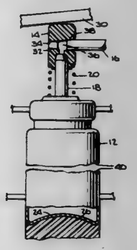
1. A method of dispensing a curable composition formed by a mixture of first and second materials, comprising the steps of:
controllably supplying the first and second materials from respective reservoirs to a first mixing device for mixture thereof to form the composition;
dispensing the composition from the first mixing device in a first condition of operation through a dispensing nozzle;
supplying the composition in a second condition of operation to a second mixing device;
supplying a diluent stream of the first material during the second condition of operation to the second mixing device in sufficient quantity for mixture therein with the composition to form a diluted mixture having a concentration level of the second material sufficiently low to prevent curing of the diluted mixture for a substantial period of time; and
returning the diluted mixture to the reservoir of the first material.

4,407,432

PRESSURE RELIEF SYSTEM FOR PRESSURIZED GAS CONTAINERS

Daniel Shichman, Trumbull, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 22, 1980, Ser. No. 218,549
Int. Cl.³ B65D *83/00*
U.S. Cl. 222—54 **6 Claims**



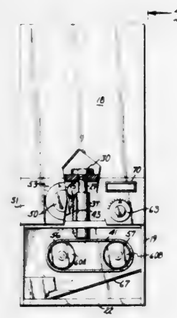
1. A low-cost over-pressure safety venting system for a pressurized gas container in a disposable gas-powered medical device wherein depressing the gas discharge element located on top of the container during normal operation allows gas to leave the container through a first passageway in the discharge element and pass to the other portions of the device to power the device, said container located in a housing; said safety venting system comprising:
(a) a second passageway in the gas discharge element through which gas passes when the gas discharge element is depressed and the passageway is not obstructed, said first and second passageways being fluidly connected;
(b) a safety plug of material having a predetermined melting point obstructing the second passageway when the plug is in an unmelted state;
(c) a bottom on the gas container that expands outward when the gas temperature is approximately equal to the melting point of the safety plug;
(d) a top member in the housing located close to the gas discharge element; and
(e) a bottom member in the housing against which the bottom of the container pushes when the container bottom expands outward, thereby causing the rest of the container to move toward the top member;
the top and bottom members being close enough to each other so that movement of the rest of the container toward the top member brings the gas discharge element into contact with the top member and forces the gas discharge member to be depressed, thereby venting the container and the other portions of the device containing pressurized gas through the second passageway.

4,407,433

CONVEYOR WITH TELESCOPIC FEED TUBE

James D. Schroeder, Anoka, Minn., assignor to Accu-Feed Corp., Anoka, Minn.

Filed Jul. 1, 1980, Ser. No. 164,893
Int. Cl.³ B67D *5/14*
U.S. Cl. 222—63 **18 Claims**



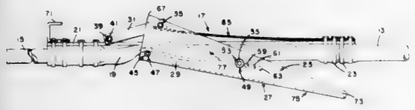
1. An apparatus for dispensing particulate material comprising: a housing having side walls defining a hopper with a hopper outlet opening; a conveyor belt assembly having a powered conveyor belt with a forward run located beneath the hopper outlet for receipt of particulate material from the hopper and delivery to a discharge location; electric motor means to regulate the speed of the forward run of the conveyor belt; metering means for carrying particulate material from the hopper outlet to the conveyor belt forward run, said metering means having a first end in communication with said hopper outlet and a second end poised over the conveyor belt forward run for deposit of particulate material onto the conveyor belt forward run; and control means to operate the electric motor means, said control means having display means to monitor electric impulses transferred to the electric motor means to drive the motor means which drives the conveyor belt, counter means for counting said electric impulses, comparator means connected to the counter means whereby, when a predetermined number of electrical impulses set in the counter means is monitored by the display means, the electric motor means is stopped.

4,407,434

APPARATUS HAVING AN IMPROVED FLOW CONTROL PINCH VALVE FOR DISPENSING FLOWABLE MATERIALS

Dennis D. Kempf, San Jose, Calif., assignor to FMC Corporation, Philadelphia, Pa.

Filed May 1, 1981, Ser. No. 259,720
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—214 **14 Claims**



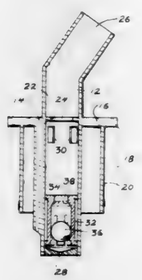
1. A pinch valve for use in dispensing measured amounts of flowable material including a support plate, an operating lever, a resilient tube between said support plate and said lever for conveying flowable material, first and second pinch means on said lever in longitudinally spaced relationship thereof, and means connecting said support plate and said lever for movement of said first and second pinch means relative to said support plate between a position in which said resilient tube is normally collapsed by said first pinch means and a position in which said resilient tube is permitted to relax from such normally collapsed condition only after said resilient tube is collapsed from a normally relaxed position by said second pinch means during movement of an end portion of said lever adjacent thereto toward said support plate, said connecting means including a pivot member on said lever between said first and second pinch means, and a resilient means extending between said support plate and said pivot member.

4,407,435

DISPENSER FOR POURING MEASURED QUANTITIES OF A LIQUID FROM A CONTAINER

James V. Harmon, 56 Pine St., Mahtomedi, Minn. 55115

Filed Jan. 21, 1982, Ser. No. 341,315
Int. Cl.³ G01F *13/00*
U.S. Cl. 222—481 **7 Claims**



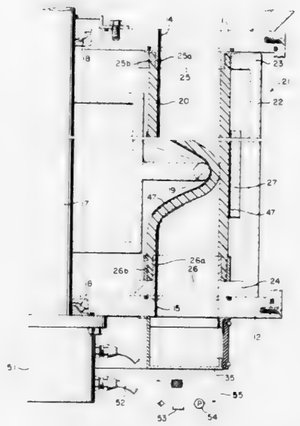
1. A dispenser for pouring measured quantities of a liquid from a container comprising a liquid discharge passage and an air vent passage extending when the dispenser is in use from the exterior of the container to the interior thereof, a sealing collar around the passages for mounting the dispenser in the container, at its upper end and a liquid control orifice toward the lower end thereof and a liquid inlet opening located between the nozzle and the orifice, said inlet opening communicating when the dispenser is in use with the interior of the container, a valve element sealably and slideably engaged within the discharge passage, a duct in the valve element communicating therethrough between opposite sides of the discharge passage and a sealing body within the duct movable therein between a first position for sealing the duct when the dispenser is inverted so that the nozzle points downwardly, the valve element thereby moving at a predetermined speed toward the inlet opening under the influence of the liquid flowing into the passage through the control orifice while liquid within the container flows through the liquid inlet opening and out through the dispensing nozzle and said valve element then sealing the inlet opening and shutting off the liquid flow after a measured quantity of liquid has been dispensed, whereupon when the container and dispenser are tipped back to an upright position, the sealing body will fall under the influence of gravity to a second open position in the sealing element when the dispenser is upright allowing the sealing element to fall quickly toward the lower end of the passage ready for the start of another pouring operation.

4,407,436

METERING AND/OR FEEDING DEVICE FOR MATERIALS

John T. Broadfoot, 805 Eighth SW., Everett, Wash. 98204, and John T. Broadfoot, Jr., Rte. 3, Box 3191, Sunnyside, Wash. 98944

Filed Feb. 25, 1982, Ser. No. 352,126
Int. Cl.³ F04B *19/12*
U.S. Cl. 222—636 **11 Claims**



8. A metering and feeding device for particulate material, comprising:

a helical rod adapted to be rotated about its axis;

a plurality of vertical, open-ended, elastic-walled tubes having upper infeed ends and lower discharge ends arranged about the helical rod so that the helical rod periodically and sequentially engages and constricts each of the tubes, beginning at their upper infeed ends and progressively moving toward their lower discharge ends;

means supporting each of the elastic-walled tubes in a fixed location;

means for feeding a particulate material into each of the elastic-walled tubes; and

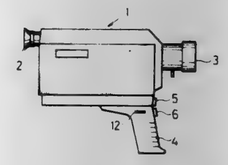
means to cover and uncover the upper ends of each of the tubes at selected intervals to prevent entry of the particulate material to be conveyed into the tube so that when the helical member engages the upper end of the tube to constrict the tube, that portion of the tube is substantially free of particulate material.

4,407,437

SHOULDERING AID FOR A PORTABLE TELEVISION CAMERA

Takayuki Takubo, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 30, 1981, Ser. No. 259,457
Int. Cl.³ A45F *5/00*
U.S. Cl. 224—270 **23 Claims**



1. A shouldering aid for a portable television camera having a mechanically operable start switch and a detachable hand grip, comprising:

(a) a base member arranged to be attachable to the body of said portable television camera, said base member having a front end portion and a rear end portion, said front end portion having means for attaching said hand grip having a manipulation knob;

(b) a linking mechanism arranged to slide with respect to said base member for interlocking said manipulation knob of said hand grip and said start switch of said television camera, said linking mechanism having a generally flat and elongate plate slidably attached to said base member, and means for biasing said plate in one direction;

(c) a shoulder pad member attached, at a front end portion thereof, to said rear end portion of said base member; and

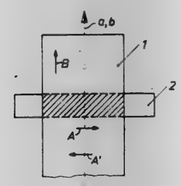
(d) means for fastening said shoulder pad member to said base member.

4,407,438

TRANSPORT SYSTEM FOR FLAT METALLIC MATERIALS IN STRIP MILLS

Karl-Ernst Wiechmann, Bremen, Fed. Rep. of Germany, assignor to Klöckner-Werke Aktiengesellschaft, Duisburg, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,649
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026891; Jun. 4, 1981, 3122196
Int. Cl.³ B65H *25/26;* B21C *47/34;* B65G *54/02*
U.S. Cl. 226—15 **16 Claims**



1. A system for transporting a thin hot-rolled metallic strip through a strip mill towards a feed guide, said system including

a roll table which includes a multiplicity of aligned rollers over which the thin hot-rolled metallic strip passes, the upper peripheries of said rollers forming a table plane and said roll table having a center line therethrough,

at least one linear drive element positioned between at least one pair of rollers of said roll table, each linear drive element being located below the plane of said roll table, and

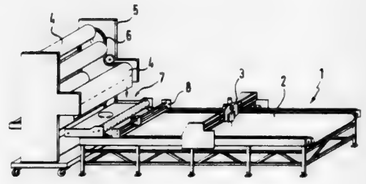
a power supply means for said linear drive elements, said power supply means supplying current to said linear drive element(s) when a thin hot-rolled metallic strip passes over the roll table which is not centered over the center line of the roll table to cause the leading end of the thin metallic strip to move laterally towards the center line of the roll table.

4,407,439

APPARATUS FOR DEPOSITING A WEB OF MATERIAL ON A TABLE

Albert Buss, Munsingen, Fed. Rep. of Germany, assignor to G. O. Stumpf GmbH & Co., Fed. Rep. of Germany

Filed Mar. 29, 1982, Ser. No. 363,294
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1981, 3113619
Int. Cl.³ B65H *25/26;* B23Q *15/00;* B26D *5/00*
U.S. Cl. 226—20 **8 Claims**



1. An apparatus for depositing a web of flexible material on a table with one edge aligned with a datum position, said apparatus comprising:

(a) a conveyor means for advancing said flexible material to a feed rate control means;

(b) said feed rate control means providing an adjustable and controllable feed rate for said flexible material, said feed control means having a feed roller, an auxiliary roller cooperating with said feed roller, and means for controlling the speed of said feed roller;

(c) support means for said conveyor means and said feed rate control means, said support means positioned to rotate said conveyor about an axis which is substantially perpendicular to a horizontal plane of said table;

(d) a two directional rotary stepping motor coupled to said support means to vary the angular orientation of said support means and said conveyor means;

(e) a sensor means adapted to provide control signals in response to the deviation of the actual position of an edge of said web of flexible material from said datum position;

(f) control means for receiving said control signals to vary the direction of rotation and the angle of rotation imparted by said stepping motor to said support means,

whereby said flexible web is deposited on to said table in a tension free manner with said edge precisely aligned with respect to said datum position.

4,407,440

SEMICONDUCTOR DIE BONDING MACHINE

John J. Manning, San Jose, Calif., assignor to Mesa Technology, Mountain View, Calif.

Filed Feb. 23, 1981, Ser. No. 236,994
Int. Cl.³ B23K *1/12*
U.S. Cl. 228—6 A **9 Claims**

1. An improved semiconductor die bonding machine for electrically connecting the contact pads of a semiconductor die to the leads of a die holding member utilizing a suitable micro leadframe comprising:

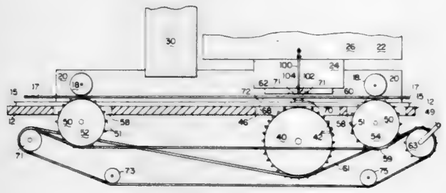
a bonding surface heated to a temperature of approximately 450° C.;

means for positioning a die holding member proximate said

bonding surface, said die holding member having a central area formed therein to which a semiconductor die is affixed such that the contact pads thereof face away from said central area and are generally aligned relative to the leads of said die holding member;

means for positioning a micro leadframe, which is one of a series of micro leadframes that are serially formed in an aluminum foil, proximate said bonding surface, such that said micro leadframe is positioned between said bonding surface and said die holding member;

means for the alignment of said micro leadframe relative to said die holding member and semiconductor die such that each lead of said micro leadframe is juxtaposed immediately above the semiconductor die contact pad and die holding member lead to which it is to be bonded;



means for causing the simultaneous movement of said aluminum foil and said die holding member such that said aluminum foil and said die holding member are caused to move in alignment beneath said bonding surface;

means for the alignment of said micro leadframe beneath said bonding surface; and

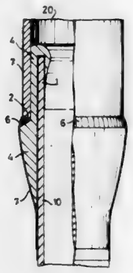
means for causing a pressing contact against said bonding surface of each lead of said micro leadframe with a semiconductor die contact pad and a die holding member lead, such that each said micro leadframe lead is bonded at one end to a contact pad and at the other end to a die holding member lead.

4,407,441

METHOD OF WELDING AN ALUMINIUM OBJECT TO A STAINLESS STEEL OBJECT

Kornelis J. Aarts, Noordwijk, Netherlands, assignor to Agence Spatiale Europeenne, Paris, France

Filed Apr. 8, 1981, Ser. No. 252,168
Claims priority, application France, Apr. 18, 1980, 80 08752
Int. Cl.³ B23K *31/02*; B64G *1/00*
U.S. Cl. 228—176 **4 Claims**



1. A method of welding an aluminum object to a stainless steel object, comprising the steps of:

flame spraying the surface of the stainless steel object to be welded with a powder mixture including a major proportion of a metal having a high melting point and a minor proportion of aluminum to form a thin film undercoat;

flame spraying the surface of said undercoat with a layer of very pure aluminum, and

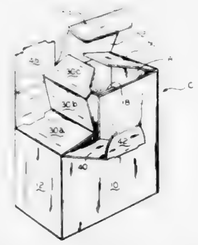
welding the aluminum object to the aluminum layer on the stainless object using very pure aluminum as a filler.

4,407,442

BI-LEVEL DUAL CELL CARTON

William H. Watson, and John E. Straw, both of St. Louis, Mo., assignors to Container Corporation of America, Chicago, Ill.

Filed Nov. 25, 1981, Ser. No. 324,771
Int. Cl.³ B65D *5/48*
U.S. Cl. 229—28 R **4 Claims**



1. A bi-level, dual cell carton formed of a unitary blank of foldable sheet material such as paperboard, comprising:

(a) front and rear side wall panels and first and second end wall panels foldably joined to each other to form a tubular structure open at the ends;

(b) said end wall panels being of different heights;

(c) an internal partition panel extending between said side wall panels in parallel relation with said end wall panels to divide the interior of said tubular structure into two adjacent cells of different heights;

(d) upper and lower closure flaps joined to upper and lower edges, respectively, of said side wall and end wall panels and being folded into overlapped relation to close the upper and lower ends of said tubular structure;

(e) said upper closure flaps including an extension foldably joined to shorter of said end wall panels and including:

(i) a first section joined to an upper edge of said shorter end wall panel and folded normal thereto to overlie the shorter of said cells;

(ii) a second section joined to an inner edge of said first section and folded normal thereto against a portion of said partition panel;

(iii) a third section joined to an upper edge of said second section and folded normal thereto to overlie the taller of said cells;

(f) said upper closure flaps further including a first outer closure flap foldably joined to said front side wall panel and disposed to overlie said first section of the extension and a second outer closure flap foldably joined to said rear side wall panel and disposed to overlie said third section of the extension; and

(g) a lock flap foldably joined to an upper edge of said rear side wall panel and being folded downwardly 180° into engagement with said first outer closure flap.

4,407,443

TAMPER-INDICATING SHEET

James McCorkle, Holden, Mass., assignor to Ludlow Corporation, Needham Heights, Mass.

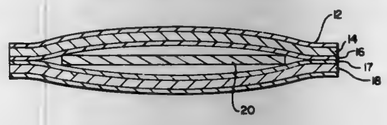
Filed Jan. 29, 1979, Ser. No. 7,400
Int. Cl.³ B65D *30/00*; B42D *15/00*; B41M *3/14*; C08J *9/16*
U.S. Cl. 383—5 **23 Claims**

1. In a thermally-sensitive blush coating comprised of a mass of light-scattering, polymeric particles which are adapted to coalesce to a more compact coating on application of heat thereto, the improvement wherein said mass of particles is in intimate contact with a minor amount of a binder composition which, on exposure to any of a wide spectrum of aromatic or aliphatic solvents, will form means to substantially impair the light-scattering character of said mass of polymeric particles and transform said mass of particles into a more compact, normally translucent, coating.

7. A lottery ticket comprising, as an integral portion thereof, a means for detecting thermal and solvent tampering with said ticket, a blush coating comprised of a mass of light-scattering, polymeric particles which are adapted to coalesce to a more compact coating on application of heat thereto, the improvement wherein said mass of particles is in intimate contact with a minor amount of a binder composition which, on exposure to any of a wide spectrum of aromatic or aliphatic solvents, will form means to substantially impair the light-scattering character of said mass of polymeric particles and transform said mass of particles into a more compact, normally translucent, coating.

17. In a pouch formed of a sheet material comprising (a) polymer-based cohesive seal and (b) a polymer-based coating formed of small thermoplastic polymeric particles deposited in intimate contact with another within said pouch-forming sheet material, and wherein the appearance of said based coating is irreversibly and substantially changed by subjecting said polymeric particles to temperatures of at least 140° F.

the improvement wherein said polymer-based coating comprises a binder composition with a solvent-leachable plasticizer component forming means to accelerate said change in appearance.

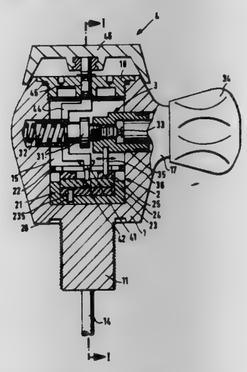


4,407,444

THERMOSTATICALLY CONTROLLED MIXER BATTERY

Werner Knebel, Iserlohn; Norbert Ronzon, Balve, and Eugen Weidner, Iserlohn, all of Fed. Rep. of Germany, assignors to Firma Knebel & Röttger, Iserlohn, Fed. Rep. of Germany

Filed Nov. 19,0181, Ser. No. 318,310
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 3041979
Int. Cl.³ G05D *23/13*
U.S. Cl. 236—12.1 **7 Claims**



1. A thermostatically-controlled mixer battery, comprising:

a housing defining a mixing chamber and having a hot water inlet bore and a cold water inlet bore formed therein leading to said mixing chamber;

a thermostatic expansion element mounted in said mixing chamber to permit water to flow therearound, said thermostatic expansion element being adjustable within a preselected operating range so as to permit delivery of a mixture of hot and cold water at a desired temperature;

a control member coupled to, and thermostatically controlled by, said thermostatic expansion element, said control member being displaceable by said expansion element to effect opening and closing of at least one of said hot and cold water inlet bores to said mixing chamber;

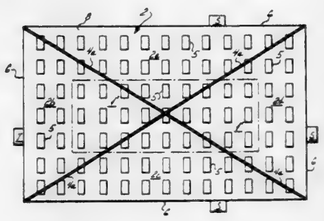
a manually operable valve for regulating the quantity of the incoming hot water and cold water, said valve including a plate control means comprising at least one rotatable quantity control plate mounted in said housing and having bores formed therein, said quantity control plate being rotatable from the exterior of said housing and being so disposed as to travel over, in use, said hot and cold inlet bores such that said inlet bores are selectively alignable with said bores in said control plate, and a temperature control plate mounted in said housing and actuated by said control member and, in turn, said thermostatic expansion element, said temperature control plate being sealingly displaceable relative to said quantity control plate and having bores formed therethrough selectively alignable with said bores in said quantity control plate to allow hot water and cold water to pass therethrough into said mixing chamber.

4,407,445

CEILING CONSTRUCTION FOR A HEATING, VENTILATION AND AIR CONDITIONING SYSTEM

Constantine Vivian, 72-11 45th Ave., Woodside, N.Y. 11377

Division of Ser. No. 19,048, Mar. 9, 1979, Pat. No. 4,258,615, which is a continuation-in-part of Ser. No. 938,576, Aug. 31, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 217,376
Int. Cl.³ F24F *7/00*; F24H *3/00*
U.S. Cl. 236—49 **3 Claims**



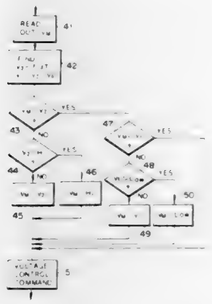
3. In a building having a heating, ventilation and air conditioning system, exterior walls and at least one story having a true ceiling, a suspended ceiling, and lighting fixtures occupying openings in the suspended ceiling, the true and suspended ceilings being vertically spaced thereby to form a plenum, the improvement comprising thermally insulating material forming an interior area of the suspended ceiling and relatively thermally transmissive material forming a perimeter area of the suspended ceiling, the exterior walls forming the periphery of said perimeter area, said perimeter area surrounding said interior area, temperature sensing means located outside said building and, operatively connected to and responsive to said temperature sensing means, a scheduled control located in a perimeter area of the story directly beneath the perimeter area of the suspended ceiling and means operatively connected to and responsive to said scheduled control for ventilating the plenum.

4,407,446

CONTROL FOR AUTOMOBILE AIR CONDITIONING SYSTEM

Tetsuya Iijima, Yamato, and Seiichi Takahashi, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 3, 1981, Ser. No. 317,862
Claims priority, application Japan, Nov. 4, 1980, 55-153720
Int. Cl.³ F24F 7/00; B60H 3/00
U.S. Cl. 236—49 **11 Claims**



1. An air quantity control system for an automobile air conditioner, comprising:

an air conditioner comprising a blower fan driven by a motor and air temperature regulating means,

a reference temperature supplier for supplying a predetermined reference temperature,

a temperature sensor for sensing the temperature of the passenger compartment of the automobile, and

blower fan speed control means connected with said reference temperature supplier and said temperature sensor for determining the speed of the blower fan and producing a control signal indicative of the determined fan speed, said control means being arranged to calculate the absolute value of the temperature difference between the reference temperature and the sensed temperature, and to determine, in accordance with the calculated absolute value, the value of a first function which increases as said absolute value increases and the value of a second function which increases as said absolute value increases and is always greater than the value of said first function, said control means determining the fan speed as being equal to the determined value of said second function if the current fan speed is greater than the determined value of said second function and as being equal to the determined value of said first function if the current fan speed is less than the determined value of said first function, while maintaining the current fan speed unchanged if the current fan speed is neither greater than the determined value of said second function nor less than the determined value of said first function, and

blower fan speed regulating means, connected with said control means, for regulating the blower fan speed in accordance with said control signal.

4,407,447

ENERGY CONTROL SYSTEM

Marshall Sayegh, Vacaville, Calif., assignor to STA-TECH International, Inc., Winters, Calif.

Filed Dec. 7, 1981, Ser. No. 328,014
Int. Cl.³ F24F 3/00, 7/00
U.S. Cl. 236—49 **11 Claims**

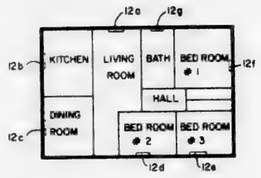
1. A fluid control system for regulating the delivery of a fluid to a region to control the temperature of said region, wherein said region having a plurality of confined spaces, said fluid generated by a generating means in response to a thermostat, and delivered to said confined spaces in a plurality of delivery channel means, said control system comprising:

a plurality of occupancy sensing means, with each occupancy sensing means for detecting the presence of a human being in a confined space, and to produce an occupancy signal in response thereto;

a plurality of valve control means with one valve control means in each of said delivery channel means, each of said valve control means for regulating the amount of fluid passing through said delivery channel means in response to a control signal;

a plurality of temperature sensing means, with each temperature sensing means for measuring the temperature of each confined space and for producing a temperature signal in response thereto; and

logic means for receiving said plurality of occupancy signals and temperature signals and for producing control signals to activate the valve control means to direct the delivery



of said fluid to the confined spaces in accordance with the following priority until the capacity of said generating means is reached:

(a) all occupied confined spaces as detected by the occupancy sensing means, wherein the temperature signal of each occupied confined space is compared to said thermostat and in the event the temperature of said occupied confined space is insufficient, said logic means is adapted to control the valve control means to deliver said fluid to said occupied confined spaces until the temperature of said space is sufficient; and

(b) unoccupied confined spaces in accordance with the following priority, wherein the temperature signal of each unoccupied confined space is compared to said thermostat, and said logic means is adapted to control the valve control means to deliver the fluid to the confined space which is insufficient and which has the highest differential between the temperature of said confined space and said thermostat.

4,407,448

TEMPERATURE SENSING VALVE

Minoru Yamanaka, Toyota; Mitsuyuki Suzuki, Gamagoori; Hideo Haneda, Toyota; Masatoshi Kato, Kariya, and Masataka Ohtsuki, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 28, 1981, Ser. No. 297,276
Claims priority, application Japan, Aug. 29, 1980, 55/120102
Int. Cl.³ G05D 23/26
U.S. Cl. 236—88 **4 Claims**

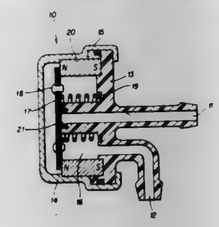
1. A temperature sensing valve comprising:

a casing having an internal fluid passage member formed therein and forming a valve seat;

a fixed permanent magnet mounted in said casing;

a movable valve body which comprises a magnetically soft, amorphous metal member supported in a thermally sensitive region of said casing for movement between a first and second position engaging said seat and being disengaged from said seat, respectively, and being magnetically coupled to said permanent magnet so that flow through said fluid passage member can be interrupted in response to magnetic excitement of said valve body; and

spring means for urging said valve body to permit fluid flow through said fluid passage member wherein when the temperature of said thermally sensitive region is below the Curie point of said valve body, said valve body is excited by said permanent magnet so as to maintain said fluid passage member closed against the biasing force of said spring means whereas when the temperature of said thermally sensitive region reaches the Curie point of said



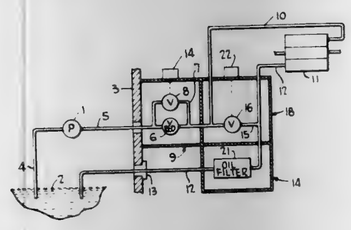
valve body, said valve body comprises a paramagnetic body and is no longer excited by said permanent magnet so as to be displaced by said biasing force of said spring means to said second position for flow of said fluid through said fluid passage member and wherein said spring means is located radially within said permanent magnet and said valve seat is located radially within said spring means.

4,407,449

SYSTEM FOR HEATING THE SERVICE CABIN OF A MACHINE OPERATED BY AN INTERNAL CUMBUSTION ENGINE

Gottfried Moser, Bergisch Gladbach; Walter Nau, Cologne, and Ernst D. Neumann, Aachen, all of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 315,857
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043457
Int. Cl.³ B60H 1/02
U.S. Cl. 237—12.3 R **5 Claims**



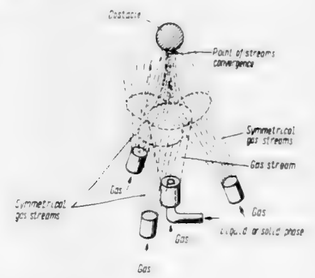
1. A system for heating the service cabin of a machine operated by an internal combustion engine, wherein heated oil is fed by a high-pressure supply pump from the engine oil sump through an oil conduit and returned to the oil sump, a pressure-reducing element in said conduit for elevating the temperature of the oil flowing therethrough, a first line by-passing said element and having a flow control valve therein, a heat exchanger series-connected into said conduit downstream of said element and located in the service cabin for heating the area thereof, a return line extending from said heat exchanger, the improvement wherein said pump is located inside the wall casing of said engine, a housing containing said element and said control valve, said housing being sealingly mounted on said wall casing and in communication with the inside thereof, a high-pressure section of said conduit extending from the pressure side of said pump to said element being disposed inside said wall casing, and a low-pressure section of said conduit extending from said element to said heat exchanger being disposed outwardly of said wall casing, whereby any loss of oil through said high-pressure section will be confined within said engine to thereby avoid any injury or damage outside the engine by escaping oil issuing at high pressure from said high-pressure section, and to thereby avoid exposure of the engine to danger due to an uncontrolled loss of oil.

4,407,450

METHOD OF AERODYNAMIC PRODUCTION OF LIQUID AND SOLID DISPERSE AEROSOLS

Alexandr S. Chegolya, poselok Khiminstituta, 10 kv. 7; Vladimir A. Malykh, ulitsa Gorkogo, 86/3, kv. 54; Vladimir V. Chizhov, poselok Khiminstituta, 17, kv. 7; Viktor I. Yankov, poselok Khiminstituta, 11, kv. 11, and Nikolai I. Pirog, poselok Khiminstituta, 8, kv. 10, all of Kalinin, U.S.S.R.

Filed Oct. 30, 1980, Ser. No. 202,150
Int. Cl.³ A62C 1/12
U.S. Cl. 239—8 **4 Claims**



1. A method of aerodynamically producing an aerosol of solid or liquid particles, comprising developing a main gas stream with entrained atomized liquid or solid particles, compressing the main gas stream radially and constricting it during axial travel thereof by application thereto of at least three converging gaseous streams symmetrically disposed circumferentially of said main gas stream and converging to a given point of convergence, impacting the compressed main gas stream with the entrained particles therein on a solid obstacle having curvature at the point of convergence of the gaseous streams, and the point of convergence being disposed on a curved surface of said obstacle on which the main gaseous stream and said particles are impacted, and the three gaseous streams constricting the main gas stream upstream of said obstacle to maintain it in a constricted state during axial travel thereof until it strikes said obstacle, whereby an aerosol dispersion of the particles is developed at said obstacle.

4,407,451

WATER PRESSURE CONTROLLED INDEXING MEANS FOR IRRIGATION SPRINKLER SYSTEM

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

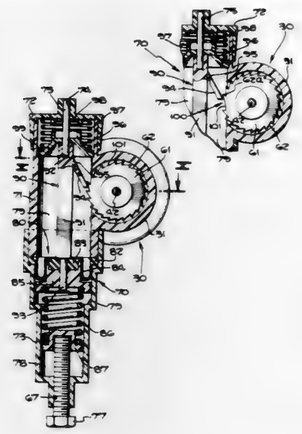
Filed Feb. 23, 1981, Ser. No. 236,850
Int. Cl.³ A01G 25/02
U.S. Cl. 239—66 **18 Claims**

10. In a water pilot valve having a water pressure controlled indexing means for operating said valve between opened and closed conditions, the improvement comprising the provision of:

means for operating said indexing means to a predetermined initial indexing position in response to a predetermined sequence of variations of water pressure supplied to said valve from a source thereof; and

dwell means operable independently of variations of water pressure in said system for automatically defeating the

continued advancement of said indexing means after it has undergone its operating sequence to provide a dwell mode for the indexing means in said initial indexing position



while continued pressure variations of the same magnitude may occur in the water pressure supplied to said valve.

4,407,452

APPARATUS FOR MIXING GASES IN MOLECULAR LASERS

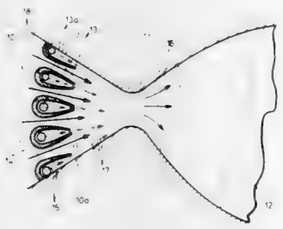
Gunthard Born, and Konrad Altmann, both of Munich, Fed. Rep. of Germany, assignors to Messerschmitt Boelkow Blohm Gesellschaft mit Beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,260

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008425

Int. Cl.³ B05B *15/00, 17/00*

U.S. Cl. 239—132.5 **9 Claims**



1. An apparatus for mixing gases in a molecular laser, comprising nozzle means having a nozzle neck (11) through which a hot laser gas may flow, said nozzle means further comprising a first volume (10) upstream of said nozzle neck (11) and a second volume (12) downstream of said nozzle neck (11), and slot means (13) positioned in said first volume (10) of said nozzle means upstream of said nozzle neck (11) for introducing a cold gas through said slot means (13) into said hot laser gas, and wherein said slot means (13) are sufficiently spaced upstream of said nozzle neck (11), so that mixing of the cold gas with the hot gas takes place substantially in said nozzle neck (11).

4,407,453

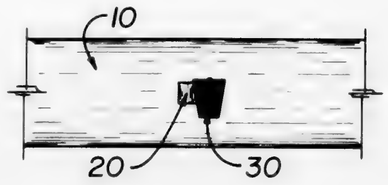
DIFFUSION APPARATUS FOR GATED IRRIGATION PIPES

Gary C. McClellan, Rte. #2, P.O. Box 3255, Vale, Oreg. 97918

Filed Oct. 26, 1981, Ser. No. 314,996

Int. Cl.³ A01G *25/00*

U.S. Cl. 239—145 **13 Claims**



1. Water diffusion apparatus for irrigation pipe comprising:
water metering means connected to said pipe for controlling water flow therefrom;
a water diffuser including a framework, substantially inverted U-shaped in cross section, and having a top member and a pair of oppositely disposed downwardly depending side members and one or more water diffusing elements supported by said framework to define a vertically oriented water porous cover;
water diffuser attachment means for attaching said water diffuser to said metering means.

4,407,454

SPRAY SYSTEM

Billy G. Massey, House Springs, Mo., assignor to Whitmire Research Laboratories, Inc., St. Louis, Mo.

Filed Jun. 26, 1981, Ser. No. 277,996

Int. Cl.³ B05B *9/08*

U.S. Cl. 239—154 **16 Claims**



1. A spraying system for use in conveniently delivering a fluid such as an insecticide or the like and facilitating the spray applicator's usage by segregating the bulkier fluid reservoir from its more manipulative spray applicator comprising a reservoir for holding a quantity of pressurized insecticide or the like and having a discharge port therein, a clamp means secured upon the upper end of the said reservoir, a valve means incorporating an outlet connecting upon said reservoir and capable of closing off the transfer of insecticide from the same or opening for delivering insecticide from the said reservoir, a length of hose, spray means, said hose connecting said reservoir and operative valve means and with the said spray means, said spray means including a portable sprayer body, a spray actuator, said sprayer body including a cylinder chamber providing a supplemental pocket for collection of pressurized insecticide for charging of its spray means and for assuring a uniform delivery of insecticide to said spray actuator, said spray actuator provided upon said body and when actuated providing for a delivery of insecticide to its intended location provided the said valve means has been opened.

4,407,455

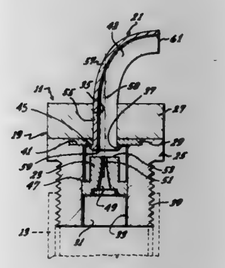
SNAP-IN ROTATABLE SPRINKLER

Ronald J. Sargent, Los Angeles, Calif., assignor to RIS Irrigation Systems, El Cajon, Calif.

Filed Apr. 16, 1982, Ser. No. 369,033

Int. Cl.³ B05B *3/04*

U.S. Cl. 239—222.17 **6 Claims**



1. A rotatable sprinkler comprising:
a body having a passage extending therethrough and a shoulder in said passage, said body being connectable to a source of water under pressure;
a sprinkler head of plastic material, one portion of said sprinkler head being rotatably received in said passage to mount the sprinkler head for rotation relative to said body and another portion of the sprinkler head projecting from the body;
said one portion of said sprinkler head having a retainer thereon engageable with said shoulder and forming a snap-fit therewith to retain said one portion of the sprinkler head against withdrawal from the passage in at least one direction without preventing rotation of the sprinkler head relative to said body;
said sprinkler head having passage means extending therethrough communicating with the passage in said body;
means defining a restricted orifice in said passage in said housing for directing water at relatively high velocity into and through said passage means of said sprinkler head;
said passage means being configured so that the sprinkler head is rotated relative to said body by the flow of water in the passage means of the sprinkler head; and
said passage means of said sprinkler head discharges the water flowing through the passage means in a generally circular pattern and said sprinkler provides an obstruction-free path to said circular pattern whereby the circular pattern is not interrupted by the sprinkler.

4,407,456

MIXING NOZZLE

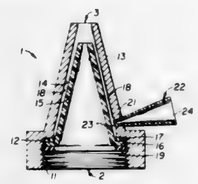
Hugh O. Daniel, deceased, late of Oakland, Calif., by Lucille W. Daniel, administratrix, 532 Lewis St., San Leandro, Calif. 94577

Filed Mar. 27, 1981, Ser. No. 248,314

Int. Cl.³ B05B *7/04*

U.S. Cl. 239—423 **1 Claim**

1. Apparatus for producing a small cross-section liquid stream from a liquid source and adapted for mixing a second material with said liquid stream comprising:
a nozzle member having means at one end of connection to said liquid source and means at a second end for forming said small cross-section liquid stream;
said nozzle member having a truncated cone shape portion narrowing in cross-section toward said second end and having an internal shoulder near said one end;
an inner channel member positioned within said nozzle member, said channel having an annular outwardly extending flange;
said flange of said channel member and said shoulder of said nozzle member cooperating to position said channel within said nozzle member so as to provide an annular space between the interior of said nozzle member truncated cone shape portion and the exterior of said channel;
said flange of said channel member including means to positively position said channel within said nozzle member to establish said annular space between said channel and said cone shaped portion;



said flange of said channel member being eccentric to said channel to accomplish said positive positioning of said channel within said cone shaped portion; and
a cut out portion through said cone shaped portion to establish a passageway to said annular space between said channel and said cone shaped portion;
said nozzle member, channel and passageway being so constructed and arranged that materials introduced through said passageway are mixed said liquid stream passing through said nozzle.

4,407,457

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

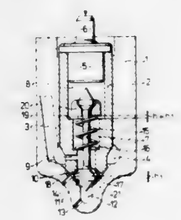
Kurt Seifert, Esslingen-Zollberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 30, 1981, Ser. No. 326,091

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048304

Int. Cl.³ F02M *61/00*

U.S. Cl. 239—533.12 **7 Claims**



1. A fuel injection nozzle for internal combustion engines having a nozzle body, a valve needle in said nozzle body subjected to a closing force and arranged to open counter to fuel flow direction, said valve needle encompassing an auxiliary needle in an elongated chamber in said valve needle, said auxiliary needle extending from said chamber into a blind bore at a fuel injection end of said nozzle body, said nozzle body having fuel injection areas, each of said areas having at least one injection opening controllable in accordance with valve needle stroke, said valve needle arranged to control a passage from a pressure chamber of said injection nozzle to the injection areas, characterized in that said auxiliary needle is urged in an opening direction of said valve needle by a spring and is displaced in fuel flow direction at a first, lower fuel pressure

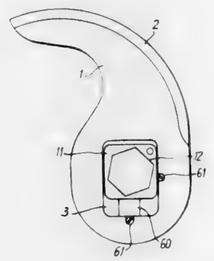
whereby said injection areas are hydraulically separated from one another with fuel flow being interrupted to one of said areas, and further that said auxiliary needle is carried along as a drag member by said valve needle at a second, higher pressure and thereby reestablishes communication between said injection areas.

4,407,458

DEVICE FOR MOUNTING AND BALANCING THE ROTARY KNIVES OF A CUTTER MACHINE

Eric R. Hotimsky, 24, allee des chalets, 93320 Les Pavillons Sous Bois, France

Filed Nov. 16, 1981, Ser. No. 321,635
Claims priority, application France, Nov. 17, 1980, 80 24374
Int. Cl.³ B02C *18/16*
U.S. Cl. 241—282.1 **6 Claims**



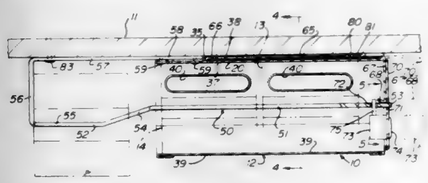
1. A mounting and balancing device for rotary knives of a cutter machine, wherein the machine has a shaft of a predetermined cross-sectional shape, each of the knives including a massive central portion formed with an opening of substantially rectangular shape, a support washer including a boss of square shape for introduction into each of said knife openings, said support-washer being formed with an opening the shape of which is identical to that of the shaft of the machine, said boss including an eccentric hole, a stabilizer holding washer having a sleeve and a finger for cooperating with said eccentric hole, and a single balancing washer of circular shape having in its center a non-circular opening for mounting said balancing washer on said sleeve to thereby offset any unbalance of the knives mounted on the shaft of the machine.

4,407,459

TOILET PAPER STORAGE DISPENSER

Thaddaues H. Wormly, 1218-20 Liberty St., Camden, N.J. 08104

Continuation-in-part of Ser. No. 204,217, Nov. 5, 1980, Pat. No. 4,322,042. This application Oct. 2, 1981, Ser. No. 307,656
Int. Cl.³ B65H *19/00*
U.S. Cl. 242—55.53 **12 Claims**



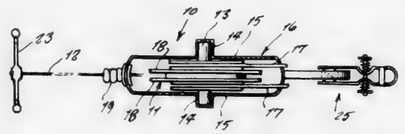
1. A toilet paper storage dispenser comprising an open ended enclosure having elongate front, back and side walls; the ends of said enclosure being open and defining inlet and outlet ends for respectively receiving and delivering toilet paper rolls; said back wall being adapted for attachment to an upright supporting surface; an elongate toilet paper roll guide disposed longitudinally of and centrally within said enclosure having an outlet end region extending through and beyond the outlet end of said enclosure for extension through toilet paper rolls passing through storage positions in said enclosure to a dispensing position beyond said enclosure outlet end; a lateral extension on the outlet end region of said guide extending toward and secured to said back wall; an inlet end wall extending across the inlet end of said enclosure; slide means slidable relative to said back wall and mounting said inlet end wall for shifting movement away from and toward said enclosure between open and closed positions respectively affording and denying access to the inlet enclosure end; and releasable interfitting means on said inlet end wall and inlet end region of said roll guide movable into and out of interfitting engagement upon closing and opening of said inlet end wall, to effect restraint against movement of said roll guide.

4,407,460

AUTOMATIC TOW ROPE REWINDER

Vreij Khudaverdian, c/o ADNOC P.O. Box 7181, Abu Dhabi U.A.E., Saudi Arabia

Filed Mar. 23, 1981, Ser. No. 246,307
Int. Cl.³ B65H *75/40, 75/48*
U.S. Cl. 242—86.5 A **1 Claim**



1. An automatic tow rope rewinder, comprising, in combination, a reel inside a case, a tow rope wound around said reel, one end of said tow rope being secured to said reel while an opposite end thereof extends outwardly of said case and is attached to handle bar for being held in a hand of a skier, whereby the skier can separate from the tow rope by releasing the handle bar, two rewind springs between said case and said reel; a drain hole at the bottom of said case, and a resilient fitting mounted in a hole of said case through which said tow rope is pulled, said fitting having a plurality of circular scraper edges therewithin for scraping snow or water from said tow rope; and said case having an extended tab having a hole therethrough, a safety clamp securable to a towing vehicle having a pair of rounded jaws extending into opposite sides of said tab having a hole, and spring means urging said jaws together, whereby said tab will automatically separate from said jaws if excessive force is applied to said tow rope to thereby separate the entire rewinder from the towing vehicle.

4,407,461

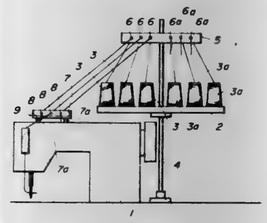
SPOOL HOLDING DEVICE

Susumu Tomisawa, 4-41-42 Maekawa-cho, Kawaguchi-shi, Saitama-Ken, Japan

Filed Feb. 24, 1982, Ser. No. 351,891
Claims priority, application Japan, Mar. 23, 1981, 56-41061[U]
Int. Cl.³ B65H *49/18*
U.S. Cl. 242—134 **5 Claims**

1. A spool holding device for a sewing machine comprising a spool holder base positioned above a rear portion of said sewing machine and supporting a plurality of spaced upper thread spools on one half portion and a plurality of spaced lower thread spools on the other half portion of said spool holder base, respectively, a first thread guide plate positioned above and extending in parallel to said spool holder base, said first thread guide plate being provided in one half portion of the plate with a plurality of spaced upper thread guide holes and in the other half portion of the plate with a plurality of spaced lower thread guide holes, a second thread guide plate supported on the top of the arm of said sewing machine and extending in parallel to said arm, said second thread guide plate being provided with a plurality of upper thread guide holes,

and a thread retaining means associated with said second thread guide plate for retaining the thread payed out of one selected upper thread spool in cooperation with the second thread guide plate, whereby the leading end of the threads payed out of the respective upper thread spools are passed



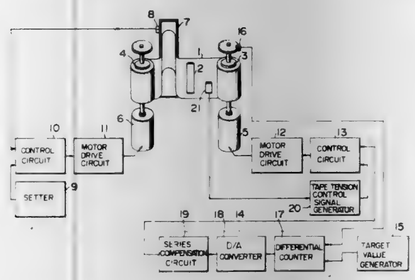
through the respectively associated upper thread guide holes in the first and second thread guide plates and positioned above said arm of the sewing machine and the leading ends of the threads payed out of said lower thread spools are passed through the respectively associated lower thread guide holes in said first thread guide plate to dangle from the guide plate.

4,407,462

WEB DRIVE APPARATUS

Fujio Tajima, Shimoinayoshi; Atsushi Ichikawa, Tsuchiura, and Isao Shimizu, Shimoinayoshi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,143
Claims priority, application Japan, Aug. 15, 1980, 55/111699
Int. Cl.³ G11B *15/06, 23/12;* **B65H** *23/20*
U.S. Cl. 242—184 **10 Claims**



1. In a web drive apparatus wherein a web is wound around a web supply reel and a web take-up reel each driven and rotated by a separate motor, and information is written into or read out of the web by means of an information exchange station disposed between the reels, the improvement which comprises:

web tension control signal generator means for generating a web tension control signal on the basis of variations in the tension of the web between said supply and take-up reels when said web is subjected to intermittent movement;

position control means for producing a position control signal to be used for positioning said take-up reel;

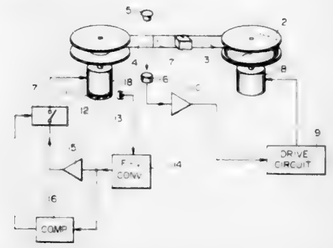
control means for correcting said position control signal in accordance with said web tension control signal so as to cancel transient vibrations of the web, and including means for applying the corrected position control signal to said web take-up reel motor.

4,407,463

TAPE RECORDING REPRODUCING APPARATUS HAVING IMPROVED FAST FORWARD DRIVE SYSTEM

Kazutaka Ashida, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Aug. 21, 1981, Ser. No. 295,001
Claims priority, application Japan, Aug. 22, 1980, 55-115376
Int. Cl.³ G11B *15/32, 15/46*
U.S. Cl. 242—201 **16 Claims**



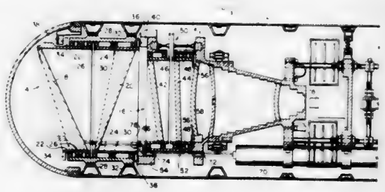
13. Apparatus for controlling the speed of motor means driving a tape between first and second reels, so the motor means speed is maintained relatively constant when the tape is driven at high speed relative to normal speed of the tape, the motor means including first and second motors for respectively driving the first and second reels, the first motor when driving the tape toward the first reel at high speed causing a torque to be produced in the second motor, the control apparatus comprising means for detecting the speed of the second motor, and means responsive to the detecting means for supplying a signal having a component proportional to the second motor speed to the second motor only in response to the second motor speed exceeding a predetermined value associated with the high tape speed, the signal having a component proportional to the second motor speed as supplied to the second motor producing a torque in the second motor opposite to the torque produced in the second motor by the first motor driving the tape at high speed.

4,407,464

STEERING MECHANISM FOR A THERMAL IMAGING SYSTEM AND RANGEFINDER THEREFOR

James Linick, 4611 San Miguel, Tampa, Fla. 33609

Filed Jul. 27, 1981, Ser. No. 286,767
Int. Cl.³ F41G *7/26*
U.S. Cl. 244—3.13 **9 Claims**



1. An imaging system, comprising in combination:

an imaging subsystem operable to scan object space within a predetermined field of view; and

a steering subsystem serially positioned in front of the input of said imaging subsystem, said steering subsystem being operable to scan object space within a variable field of regard within a field of search and including

a first prism,

a second prism positioned rearwardly of said first prism, first means for rotating said first prism, and

second means for rotating said second prism,
whereby said field of view of said imaging subsystem is effectively increased to equal said variable field of regard within said field of search of said steering subsystem.

4,407,465

METHOD FOR GUIDING MISSILES

Klaus Meyerhoff, Hamburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,780

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1979, 2947492

Int. Cl.³ F41G *7/22*

U.S. Cl. 244—3.16 **7 Claims**



1. In a method for guiding a missile by illuminating the target by means of a laser and tracking the target with a sensor system carried by the missile, the improvement wherein said step of illuminating is carried out to illuminate the target by means of the laser for a short period of time and to terminate the illumination of the target after the short period of time and before the missile reaches the target, and said step of tracking is carried out with the aid of an electronic optical sensor by causing the sensor to sense the laser light reflected from the target and then locking the sensor onto the target region from which such reflection took place.

4,407,466

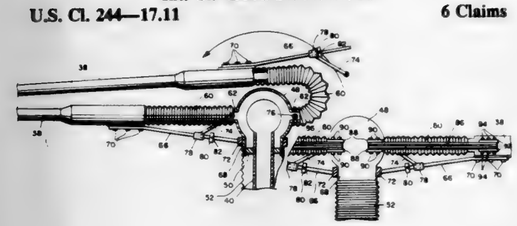
JET NOZZLE ROTARY WING AIRCRAFT

Darrow Thompson, Playa del Rey, Calif., and Daniel L. Thompson, Riyadh, Saudi Arabia, assignors to Overseas International Distributors Company B.V., Geneva, Switzerland

Filed Jul. 14, 1980, Ser. No. 167,813

Int. Cl.³ B64C *27/39, 27/18*

U.S. Cl. 244—17.11 **6 Claims**



1. In a rotary wing aircraft which includes a fuselage, air compressor means on said fuselage, a jet nozzle driven rotor assembly situated over said fuselage and having a rotor axis about which said assembly rotates, said rotor assembly including a generally hollow rotor hub and a plurality of generally hollow jet nozzle driven rotor blades extending radially outwardly of said rotor hub, said rotor hub defining air conduit means to said rotor blades, and means for folding at least one of said rotor blades in a radial plane relative to said rotor hub, said folding means including a section of said rotor blade comprising flexible air conduit means, releasable stabilizing means between said rotor hub and an outboard portion of said rotor blade beyond said flexible air conduit section, and releasable brace means between said rotor hub and said releasable stabilizing means, said releasable brace means being releasably connected to said releasable stabilizing means for sliding movement intermediate the ends of said releasable stabilizing means for preventing the rotor blades from coning beyond a predetermined limit whereby said releasable stabilizing means and said releasable brace means may be released from one another and said rotor blade may be folded in said radial plane with said flexible air conduit section acting as a hinge means.

6. In a rotary wing aircraft which includes a fuselage, a rotor assembly situated over said fuselage and having a rotor axis about which said assembly rotates, said rotor assembly including a rotor hub and a plurality of rotor blades extending radially outwardly of said rotor hub and a pivotal connection between said rotor and said hub for pivotal movement of said rotor in a radial plane releasable stabilizing means between said rotor hub and an portion of said rotor blade outboard of said pivotal connection, releasable brace means between said rotor hub and said releasable stabilizing means, said releasable brace means being connected to said releasable stabilizing means for sliding movement intermediate the end of said releasable stabilizing means, and stop limit means on said releasable stabilizing means for limiting the sliding movement of said brace means in at least one direction along said releasable stabilizing means for preventing the rotor blades from coning beyond a predetermined limit.

4,407,467

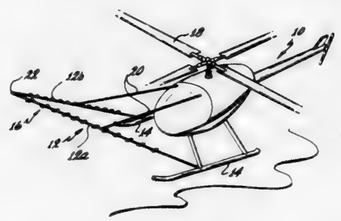
TACTICAL WIRE-CUTTER SYSTEM FOR HELICOPTERS

Charles F. Emigh, Malibu, and Morris Goldin, Orange, both of Calif., assignors to Hughes Helicopters, Inc., Culver City, Calif.

Filed Aug. 24, 1981, Ser. No. 295,695

Int. Cl.³ B64D *7/00*; B64C *27/04*; F41H *13/00*

U.S. Cl. 244—17.11 **10 Claims**



1. An apparatus for cutting suspended cable for use in combination with a helicopter characterized by having a rotor disc area comprising:

a probe coupled to and extending forward of said helicopter and inclined with respect to the forward motion of said helicopter; and

a plurality of explosive cutting means sequentially disposed along said probe for cutting said cable when in contact with any one of said plurality of explosive cutting means, each one of said plurality of cutting means having all portions projecting therefrom removed by detonation from the patch of travel of said cable along said probe after being detonated to permit continued travel of said cable to an adjacent one of said plurality of cutting means should said cable remain unsevered,

whereby successive encounters between said cable and one of said cutting means is insured until said cable is severed.

4,407,468

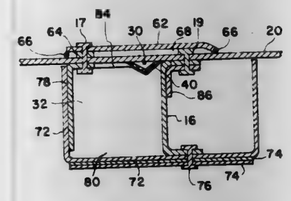
EXPLOSIVELY ACTIVATED EGRESS AREA

Laurence J. Bement, Newport News, and James W. Bailey, Tabb, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 30, 1981, Ser. No. 259,209

Int. Cl.³ F42B *1/00*; B64C *1/32*

U.S. Cl. 244—137 P **17 Claims**



1. A mechanism using pyrotechnics to cut an egress area within an existing structure which separates an interior and exterior region comprising:

a structure means for separating exterior and interior regions;

said structure means having a periphery to an egress area and includes a skin attached to frame structural support members;

explosive charge means held against said structure means for cutting said structure means along said periphery;

said explosive charge means being flexible linear-shaped charges;

said flexible linear-shaped charges passing through and around said structural supporting members for cutting said skin and structural supporting members along said periphery;

reaction surface means attached to the exterior surface of said structure means for receiving explosive forces from said explosive charge means, and limiting deformation of said structure means; and

said explosive charge mena and said reaction surface means are arranged and constructed to cut smooth edges along said periphery, and jettison that portion of said structure means within said periphery when said explosive charge means are initiated.

4,407,469

ATTITUDE CONTROL SYSTEM FOR SPACECRAFT UTILIZING THE THRUSTER PLUME

Stephen M. Fox, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

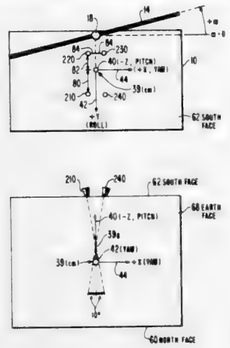
Continuation of Ser. No. 68,502, Aug. 22, 1979, abandoned. This application Mar. 31, 1981, Ser. No. 249,607

Int. Cl.³ B64G *1/26*

U.S. Cl. 244—169 **5 Claims**

1. An attitude control system for a spacecraft of the type having jet type thrusters for orbit adjustment and attitude control maneuvers, a structure having a surface disposed in the thruster exhaust plume of at least one of said thrusters so that said one thruster exhaust plume impinges on said structure to develop a plume torque in a given direction with respect to one of the spacecraft's three primary control axes, hereinafter termed said one axis, to rotate said spacecraft in said given direction about said one axis and so that said one thruster generates a reaction force to develop a control torque about said one axis and a control system for operating said thruster to control the attitude about said one axis or to change the orbit position of said spacecraft, comprising:

said one thruster being spaced from the said structure and canted relative to a second of said spacecraft primary axes orthogonal to said one axis, hereinafter termed said second axis, to direct its reaction line of thrust to cross said second axis at said one axis or on the thruster side of said one axis to develop said control torque in only said given direction about said one axis, when said line of thrust does not pass



through said one axis, such that the resultant torque about said one axis is caused by said control torque aiding said plume torque.

4,407,470

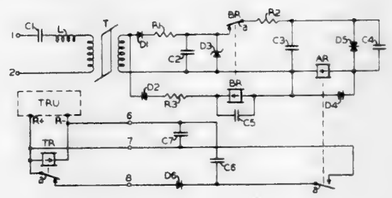
CODE RESET APPARATUS FOR RAILROAD TRACK CIRCUITS

Heinz Gilcher, Export, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Aug. 21, 1981, Ser. No. 295,197

Int. Cl.³ B61C *21/06*

U.S. Cl. 246—34 R **5 Claims**



1. Code reset apparatus for an alternating current track circuit for a railroad track section normally supplied with steady energy but at times selectively supplied with coded energy from an alternating current source coupled to the section rails at the exit end, said track circuit including a track relay means with high output impedance coupled to said rails and to said source and normally responsive only to steady energy to register an unoccupied section, comprising,

(a) a code following relay coupled to said source and responsive to coded energy for periodically closing a contact at the received code rate,

(b) a timing means coupled to said source for storing coded energy to measure a predetermined time period,

(c) a switching means coupled to said timing means by said code following relay only during coded energy off-periods and responsive to the energy stored in said timing means only when a preselected level is exceeded for closing a contact, and

(d) a storage means coupled to said track relay means for

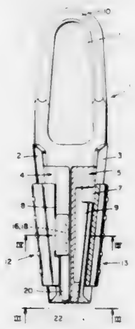
storing its coded energy output when the section is unoccupied during said timing period,

(e) said storage means controlled by said switching means for supplying the stored energy, when said switching means contact is closed, to actuate a response by said track relay means to said coded energy for resetting said source to supply steady energy to said track circuit.

4,407,471
CLAMPING DEVICE FOR SELF-SUPPORTING ELECTRIC CABLES

Hans-Peter Wilmsmann, and Fritz E. Koch, both of Schalksmuhle, Fed. Rep. of Germany, assignors to Dr. Franz & Rutenbeck, Schalksmuhle, Fed. Rep. of Germany

Filed Dec. 17, 1980, Ser. No. 217,490
Int. Cl.³ F16L 3/00
U.S. Cl. 248—63 **6 Claims**



1. A support for electric cables comprising

(a) a support member having an aperture allowing the support member to be suspended;

(b) a pair of lateral flanges on said support member which include acute angles with said support member and converge in such a way that their spacing is largest adjacent said aperture and smallest remote from said aperture;

(c) a pair of cable-clamping members each having an outer surface which is wedge-shaped and slidable engages the inner surface of one of said pair of flanges and an inner curved surface adapted to exert a clamping pressure upon an electric cable;

(d) a pair of outer clamping members each engaging the outer surface of one of said pair of flanges and each slidable along one of said pair of flanges;

(e) first cooperating tie means on each of said pair of cable-clamping members and on each of said pair of outer clamping members for causing each of said pair of cable-clamping members to move jointly with one of said pair of outer clamping members along one of said pair of lateral flanges;

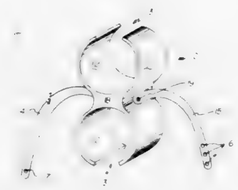
(f) second cooperating tie means on the rear of said pair of outer clamping members allowing to alter the spacing between said pair of outer clamping members; and

(g) a pair of projections formed by said lateral flanges of said support member of which each engages a cooperating elongated lateral recess in one of said pair of cable-clamping members, thus forming a pair of cooperating abutments with the walls of said recess that directly limit the maximal and the minimal separation of said pair of cable-clamping members.

4,407,472
HOSE HANDLER-KEEPER

Donald R. Beck, P.O. Box 178, Fort Jones, Calif. 96032

Filed Nov. 13, 1979, Ser. No. 93,588
Int. Cl.³ F16M 13/00
U.S. Cl. 248—89 **3 Claims**

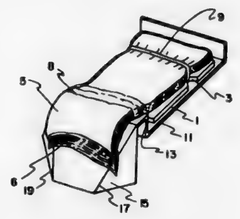


1. A hose handler-keeper comprising a symetrically formed coextensive upper and lower retaining clamp having diametrically opposed permanently open areas for reception therein of hose segments, and clamps joinded together by an integral intermediate web portion defining said symmetry and strap means adapted to affix further hose segments thereto and to hang said keeper on a retention device, said strap means comprises a pair of flexible strap elements disposed on opposed faces of said web, said strap elements having free ends provided with interlocking means on extremities remote from said web.

4,407,473
BAG DISPENSER

Milton A. Howe, Jr., Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 54,219, Jul. 2, 1979, Pat. No. 4,280,811.
This application Apr. 13, 1981, Ser. No. 254,016
Int. Cl.³ B65B 67/12
U.S. Cl. 248—95 **4 Claims**



1. Bag dispensing means comprising:

backing board means having a stack of bags retained thereon;

backing board receiving means comprising a backing board support surface terminating in an upright ledge with said ledge being adapted to abuttingly retain said backing board means;

truncated portion means attached along at least one edge thereof to said upright ledge and comprising truncated surfaces and edges; and

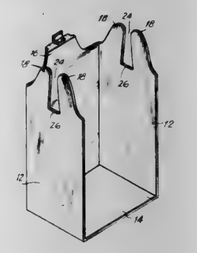
wherein said backing board means is supported by said backing board receiving means and is abuttingly retained by said upright ledge and the mouths of said stack of bags at least partially overlie the truncated surfaces and edges of said truncated portion means; and

whereby said truncated portion means is adapted to lead a hand toward the mouths of said stack of bags.

4,407,474
PLASTIC SACK HOLDER

Rita Swenson, Ringwood, N.J., assignor to International Paper Company, New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 296,946
Int. Cl.³ A63B 55/04
U.S. Cl. 248—97 **8 Claims**



1. A device to hold open for loading a limp plastic sack having a pair of integral handles and a body portion terminating in a base portion, said device comprising:

(a) a base member;

(b) a pair of side wall members, each attached at its lower end to said base member;

(c) a rear wall member attached to each of said side wall members;

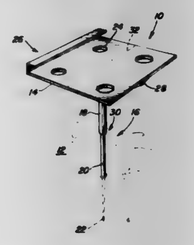
(d) means to engage the handles of said plastic sack, said means comprising a pair of spaced apart ears projecting above the upper edges of each of said side wall members, wherein the space between each of said ears extends downwardly uninterruptedly into each of said side wall members and wherein said space between each of said ears, including said downward extension thereof, is of sufficient width to permit the insertion of several human fingers therein;

wherein the height of said side wall members is slightly less than the height of the plastic sack to be loaded therein and wherein the internal perimeter of said base member is at least equal to the perimeter of the base of said plastic sack when said sack is in an open position and ready for loading.

4,407,475
RECREATIONAL TABLE

John R. Gossage, 7924 Green Moss Glen, Severn, Md. 21144

Filed Feb. 5, 1981, Ser. No. 231,939
Int. Cl.³ A47B 37/04, 3/00
U.S. Cl. 248—156 **4 Claims**

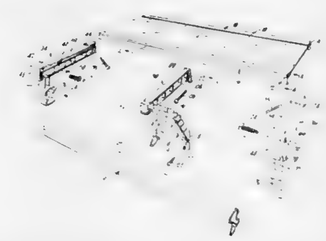


1. A recreational table including a horizontal table top including upper and lower surfaces, remote opposite marginal edge portions and a mount centrally located between said remote edge portions and projecting downwardly from said lower surface, an elongated, telescopically longitudinally extendable and retractable pedestal assembly having one end portion pivotally supported from said mount for angular displacement about an axis transverse to said pedestal assembly and a path extending between said remote edge portions, said pedestal assembly and said top including coacting means operatively associated with each other limiting angular displacement of said top relative to said pedestal assembly to approximately 90° between a first position with said top disposed generally normal to said pedestal assembly and a second position with said top generally paralleling and closely adjacent said pedestal assembly, one of said remote edge portions including handle means and the other of said remote edge portions including a ledge extending therealong and projecting outwardly from said upper surface, said ledge terminating outwardly in an inturned free edge portion projecting inwardly over said upper surface in spaced relation relative thereto, said coacting means including a resilient arcuate slotted sector arm rigidly secured at one end to the lower surface of said top and a laterally outwardly projecting pin carried by said pedestal assembly slidably received in said slot and bearing against the edge of said arm defining one side longitudinal marginal portion of said slot, said edge of said arm having longitudinally spaced notches formed therein in which said pin may be selectively removably seated.

4,407,476
COMBINED SHELF AND CLOTHES BAR ASSEMBLY

Jerry L. Bohannan, Glendora, Calif., assignor to Acme General Corporation, San Dimas, Calif.

Filed Feb. 8, 1982, Ser. No. 346,527
Int. Cl.³ A47G 29/02
U.S. Cl. 248—235 **18 Claims**



1. A shelf assembly for supporting a flat shelf panel having front and rear edges, comprising:

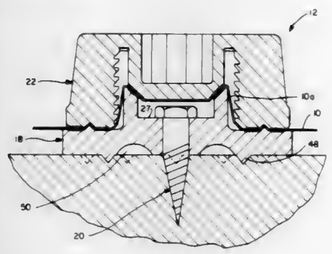
a pair of elongated edge cleats each having an elongated channel for encompassing one of such edges of the shelf panel and a stiffening flange for extending normal to the shelf panel for stiffening of the shelf, in which the edge cleats have lower flanges extending generally normal to the stiffening flanges;

a pair of outer shelf support brackets each having a socket for receiving an end of a shelf panel and an end of each of the edge cleats encompassing a shelf panel, the socket including means for limiting raising of the shelf panel and means for preventing removal of the edge cleat from the front edge of a shelf panel; and a center support bracket having an upper surface for supporting the underside of the shelf panel and slotted front and rear portions for slidably receiving the lower flanges of the edge cleats so the center support bracket is slidable lengthwise with respect to the shelf along the lower flanges of the edges cleats;

an elongated hanger bar; and

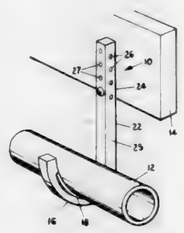
a hanger bar socket integral with each shelf support bracket for encompassing an end portion of the hanger bar.

4,407,477
TIEDOWN FASTENING DEVICE
Jonathan C. Backlund, Palo Alto, and Eugene F. Duval, Woodside, both of Calif., assignors to Fafco, Inc., Menlo Park, Calif.
Filed Aug. 8, 1980, Ser. No. 176,345
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—499 **13 Claims**



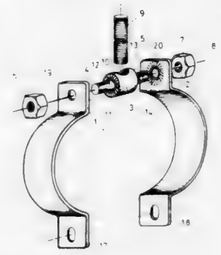
1. A device especially suitable for fastening down one section of a strap, comprising a base member, means for fixedly attaching said base member to a given support structure, and a cap disengageably connected with said base member in a predetermined way, said base member and cap including confronting surface segments cooperating with one another for engaging and retaining said strap section in a fixed position along a path having a plurality of bends when said base member and cap are connected in said predetermined way, at least some of said confronting surface segments including confronting stepped shoulders for gripping said strap segment.

4,407,478
PIPE HANGER
Bonnie E. Hodges, 761 Palmer Dr., Greenville, Mich. 48838
Filed Mar. 6, 1981, Ser. No. 241,373
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—542 **13 Claims**



1. A pipe hanger for suspending at least one pipe from a support, said pipe hanger comprising:
an elongate stem for mounting to a support and at least one flexible curved portion connected to said stem;
the at least one flexible curved portion having a radius of curvature defining an arc from the juncture between the stem and the curved portion to an end of the curved portion in excess of 180°;
the end of said curved portion being spaced from the stem a distance less than the diameter of the curved portion and the curved portion being of a shape so that a pipe, having a radius of about the radius of the curved portion, can be securely seated and snap-fit in the curved portion by forcing said pipe downwardly toward the curved portion from a position between the end of the curved portion and the stem;
the elongate stem having a prismatic cross-section with the sides of the stem adapted to be positioned adjacent the support;
the stem having at least two holes located at a selected position on the stem and extending through the prismatic cross-section, with the axis of at least one hole being at an angle relative to the axis of at least one other hole so that the pipe hanger can be nailed at different orientations with respect to the support;
wherein the stem is adapted to mount the at least one pipe to the support at a selected height and angle relative to the support and the curved portion receives the pipe in a snap-fit connection.

4,407,479
PIPE HANGER
Hubert Combe, Lankwitzer Str. 39, 1000 Berlin 42, Fed. Rep. of Germany
Filed Nov. 9, 1981, Ser. No. 319,544
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1980, 3044008
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—59 **6 Claims**

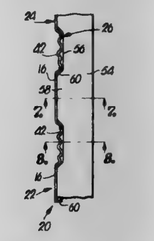


1. A pipe hanger comprising,
a pair of oppositely curve legs, joined at one end and having flat contact areas facing each other at the opposite end, the contact areas having inwardly facing, annular, first serrated surfaces defining holes within each annular surface,
a cylindrical member having a central region of larger diameter and at least one end region of narrower diameter, the central region terminating on opposite sides in annular second serrated surfaces for engaging the first serrated surfaces of the contact areas, the end region of narrower diameter passing through a hole in an annular surface and having means for clamping the cylindrical member relative to the contact areas.

4,407,480
TEXTURED BRICK FORM
James E. Trimmer, and Ross W. Worley, both of Kansas City, Mo., assignors to Precise Forms, Inc., Kansas City, Mo.
Filed Jan. 3, 1977, Ser. No. 756,429
Int. Cl.³ E04G *11/08*
U.S. Cl. 249—189 **3 Claims**

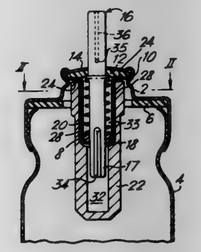
1. A construction form including:
a normally upright panel embossed to present a masonry pattern in one face of the panel and an impression of said pattern in the opposite face,
said pattern defining a plurality of offset courses, each having a series of stretchers, presenting a number of vertical joints between the stretchers with the joints in each course vertically misaligned relative to vertical joints in adjacent courses,
said one face having a vertical, marginal border traversing said courses, said border terminating at one lateral edge of said panel,
a number of said series of stretchers extending across said border to said edge,

said border having a plurality of vertically spaced depressions defined by the joints in certain of said courses; and
an elongate, vertical flange rigidly secured to said panel along said border for reinforcing said panel against buckling,
said flange including a longitudinal surface contiguous with



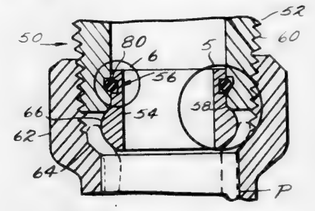
said border and in contact with the stretchers presented therealong, said surface having a plurality of vertically spaced projections disposed to be received within the depressions, whereby said surface contacts substantially the full length of said border to prevent deformation of the latter,
said flange being laterally offset from said one edge.

4,407,481
VALVE ASSEMBLY FOR A PRESSURIZED AEROSOL-DISPENSING CONTAINER
Philip Bolton, Blackburn, and Norman Burdekin, Accrington, both of England, assignors to Neotechnic Engineering Limited, Lancashire, England
Filed May 18, 1981, Ser. No. 264,329
Claims priority, application United Kingdom, May 16, 1980, 8016285
Int. Cl.³ B65D *83/00*
U.S. Cl. 251—353 **8 Claims**



1. A valve assembly comprising a casing member adapted to form a portion of an aerosol container; a first hollow body secured to the inside of the casing member; an elongate valve member sealingly extending through respective apertures in the casing member and the first hollow body for longitudinal inward movement during a dispensing operation, having an outlet passage and an inlet passage at its outer and inner ends respectively, and operative to connect a chamber formed by the spce inside the first hollow body around the valve member with the outside and inside respectively of the container; and a second hollow body encircling the first hollow body and in gripping contact with the external surface of the first hollow body at a plurality of circumferentially spaced regions thereby defining a plurality of liquid retaining capillary channels between the two bodies and between said regions.

4,407,482
COUPLING JOINT FOR TELESCOPING TUBULAR MEMBERS
Joseph L. Daghe, Decatur, and Robert E. Sands, Shelbyville, both of Ill., assignors to Mueller Co., Decatur, Ill.
Filed Nov. 25, 1980, Ser. No. 210,534
Int. Cl.³ F15K *51/00*; F16L *25/00*
U.S. Cl. 251—148 **26 Claims**



24. A coupling joint for telescoping tubular members of a fluid distribution system comprising:
a first tubular member;
a second tubular member having a portion inserted within said first tubular member;
stop means on one of said first tubular member and said second tubular member to limit insertion of said portion of said second tubular member into said first tubular member;
a first annular groove on one of said tubular members and a second annular groove on the other of said tubular members, said first and second annular grooves being arranged to oppose one another when said first and second tubular members are in telescoping relationship;
a resilient O-ring positioned in said first and second annular grooves when the same are opposed to one another for retaining said tubular members in telescoping relationship, said first and second annular grooves, when opposed to each other and when said stop means has limited insertion of said portion of said second tubular member within the end of said first tubular portion, having a cumulative radial dimension anywhere along and normal to a longitudinal axis of the grooves less than the unstressed diameter of a radial section of said resilient O-ring to cause continuous compressive forces to be exerted on said resilient ring by both said first and second annular grooves; and
a camming surface in one of said grooves engaging said resilient O-ring and causing the continuously compressed resilient O-ring to seek to expand and to exert resultant forces on said first and second tubular members urging the same in an axial direction relative one another against said stop means.

4,407,483
BUTTERFLY VALVE
Jean Gachot, 26 bis, avenue de Paris, 95230 Soisy Sous Montmorency, France
Filed Oct. 6, 1981, Ser. No. 309,113
Claims priority, application France, Nov. 19, 1980, 80 24582
Int. Cl.³ F16K *51/00*
U.S. Cl. 251—287 **7 Claims**

1. In a butterfly valve comprising a valve body, a passageway within said body, a butterfly valve closure disk rotatably mounted within said passageway about an axis located at right angles to the axis of the passageway, an annular seal carried by the body and projecting within the interior of said passageway, the valve disk being movable about said axis between an opening position and a closure position in which an annular bearing surface formed at the periphery of the valve disk bears on the seal, the annular bearing surface of the valve disk being a portion of the surface of a sphere the center of which is located substantially at the intersection of the axis of rotation of the valve disk and the axis of the passageway; the improvement in

which the valve disk carries a stop which is so positioned as to be in abutment against an internal surface of the valve other



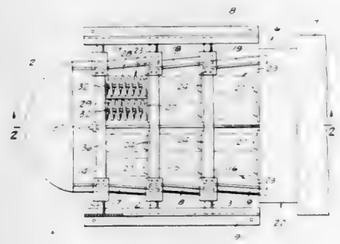
than said annular seal when the valve disk is in the closure position.

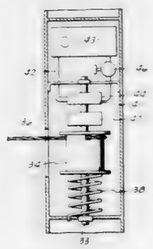
4,407,484

IMPACT ENERGY ABSORBER

Jan N. Meinzer, Sacramento, Calif., assignor to Meinco Mfg. Co., Sacramento, Calif.

Filed Nov. 16, 1981, Ser. No. 321,339
Int. Cl.³ A01K *3/00*; E01F *15/00*
U.S. Cl. 256—13.1 **9 Claims**





1. An impact attenuating device comprising a stationary housing having an upright wall, a guide rail extending between a location adjacent said upright wall and another location distant from said upright wall, an impact wall, means movably mounting said impact wall on said rail to travel toward and away from said upright wall, a spring flexable between a relaxed condition and an energy storage condition, means mounting said spring in said relaxed condition between said upright wall and said impact wall, means operated by said impact wall upon travel of said impact wall toward said upright wall flexing said spring from said relaxed condition into said energy storage condition, and means controlling flexing of said spring from said energy storage condition into said relaxed condition.

4,407,485

ELECTRIC FENCE STANDARD

Colin A. Standing, Cambridge, New Zealand, assignor to Gallagher Electronics Limited, Hamilton, New Zealand

Filed Dec. 23, 1981, Ser. No. 333,987
Claims priority, application New Zealand, Dec. 23, 1980, 195922
Int. Cl.³ A01K *3/00*; H05C *1/00*
U.S. Cl. 256—10 **7 Claims**



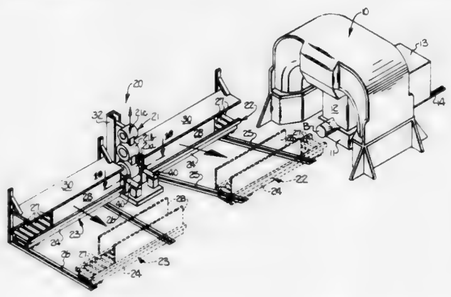
1. An electric fence standard for supporting a fence wire above a ground surface such that the standard is rotatable about the wire to permit translation of the wire, the electric fence standard comprising, an insulated hub through which the wire passes, a plurality of electrically conductive legs extending radially outwardly from the hub, and a contactor mounted in the hub which make contact with all legs of the fence standard except those in contact with the ground surface at a given time.

4,407,486

METHOD AND APPARATUS OF HOT WORKING METAL WITH INDUCTION REHEATING

Gary L. Mills, Monroe, and B. Dean Bowen, Matthews, both of N.C., assignors to Teledyne Industries, Inc., Monroe, N.C.

Division of Ser. No. 197,493, Oct. 16, 1980, Pat. No. 4,362,578.
This application Aug. 26, 1982, Ser. No. 411,912
Int. Cl.³ C21D *8/00*
U.S. Cl. 266—87 **6 Claims**



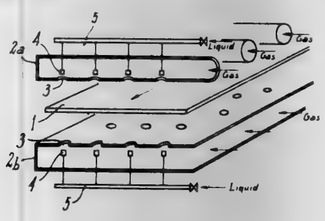
1. In an apparatus for hot working a workpiece formed of a metal having an optimum hot working temperature range, said apparatus comprising means for initially heating the workpiece to a temperature within said working temperature range and means for receiving the heated workpiece and for hot working the workpiece by deformation until the workpiece becomes chilled, thereby necessitating reheating prior to further hot working, the combination with said apparatus of an improved means for reheating the chilled workpiece to produce a finer and more uniform grain structure in the workpiece, said means for reheating comprising an electric induction heating coil having a central opening for receiving the workpiece therethrough, respective elongate support tables positioned on opposite sides of said coil and extending in axial alignment with the central opening in said coil for supporting the workpiece and guiding the same through the coil, said support tables including means for longitudinally moving the workpiece back and forth in a reciprocating manner through said coil, means associated with one of said elongate support tables for moving the support table away from said coil and into close proximity with said means for hot working the workpiece so as to thereby convey the workpiece between said induction coil for reheating and said hot working means for hot working, and power supply means for supplying electric current to said coil at a frequency preselected to concentrate the induced heat in the chilled outer portions of the workpiece to rapidly return the workpiece to a substantially uniform hot working temperature throughout so that continued hot working can be reinitiated before appreciable grain growth can occur.

4,407,487

DEVICE FOR COOLING METAL ARTICLES

Robert Wang, Wissous, France, assignor to Heurtey Metallurgie, Paris, France

Division of Ser. No. 112,187, Jan. 15, 1980, Pat. No. 4,329,188.
This application Jan. 22, 1982, Ser. No. 341,702
Int. Cl.³ C21D *1/667*
U.S. Cl. 266—114 **7 Claims**



1. An apparatus for cooling continuously moving metal articles, said apparatus comprising:

means for projecting conical jets of gas at low pressure toward opposite sides of a continuously moving metal article to be cooled, said projecting means comprising cooling units adapted to be located at opposite sides of the article to be cooled, each said cooling unit having therein a plurality of openings adapted to face the article to be cooled and through which are projected said conical jets of gas; and

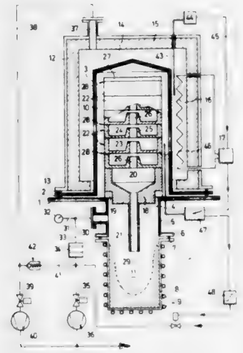
means for injecting a conical jet of liquid into each respective said conical jet of gas at a position chosen such that liquid particles of each said jet of liquid are broken into finer particles by friction and are distributed into the entire volume of said respective jet of gas, thereby forming therein a mist which is projected onto the article to be cooled, said injecting means comprising a plurality of liquid injectors, each said injector being positioned within a respective said cooling unit at a position spaced inwardly from and aligned exactly with a respective said opening.

4,407,488

DISTILLATION AND SUBLIMATION APPARATUS COMPRISING A CONDENSER

Erwin Wanetzky, Gross-Krotzenburg; Franz Hugo, Aschaffenburg, and Fernand Kuhlmann, Luxemburger Staatsbürger, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,844
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1981, 3144285
Int. Cl.³ F27D *7/06*
U.S. Cl. 266—148 **5 Claims**



1. A distillation and sublimation apparatus comprising: a receiving vessel; a plurality of containers for the starting product, which each have a bottom, an outer wall of constant height and an inner wall of smaller height forming a downwardly directed vapour duct, the containers being mounted one upon the other by their outer walls in such manner that the vapour ducts of all of the containers form a downwardly extending series arrangement and that an unoccupied annular space is present within the receiving vessel; a cover resting on the outer wall of the top container; and a condenser into which the vapour duct of the bottom container discharges, characterized in that capillary gaps (**28**), open towards the annular space (**10**) in the receiving vessel (**3**) are present between the container (**22**) and between the top container and the cover (**27**), and in that the condenser (**8**) communicates with the annular space (**10**) by way of at least one return-flow opening (**19**) for gases, the arrangement being such that the annular space (**10**), the capillary gaps (**28**) the vapour ducts (**26**), the condenser (**8**) and the return-flow opening or openings (**19**) are parts of a closed gas-circulation path.

4,407,489

APPARATUS FOR DISCHARGING HOT FLOWABLE SOLIDS FROM AN UPRIGHT CONTAINER, PARTICULARLY FOR DISCHARGING SPONGE IRON FROM A SHAFT FURNACE

Ernst Oberndorfer, Ried, Austria, assignor to Voest Alpine Aktiengesellschaft, Linz, Australia

Filed Nov. 30, 1982, Ser. No. 445,769
Claims priority, application Austria, Dec. 7, 1981, 5230/81
Int. Cl.³ F27B *1/20*
U.S. Cl. 266—191 **5 Claims**

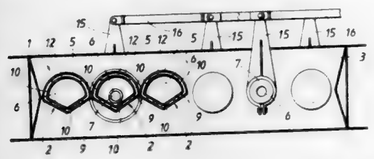
1. In apparatus for discharging hot flowable solids from an upright container having a bottom structure which is adapted to support a column of flowable solids, comprising

a discharge implement which constitutes said bottom structure and is formed with flow passages for conducting a cooling liquid and is operable to effect a discharge of flowable solids from said column, and

drive means for operating said discharge implement,

the improvement residing in that

said discharge implement consists of a grate having parallel hollow grate bars, which are non-circular in cross-section,
each of said grate bars is mounted for rotation about its longitudinal axis,
said drive means are operable to impart to each of said grate bars rotational oscillations about its longitudinal axis,



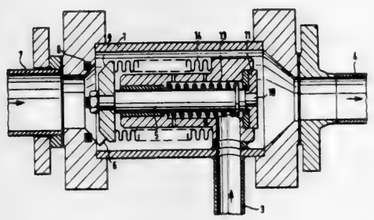
each of said grate bars comprises an inner tube defining an inner flow passage and a shell which surrounds and is radially spaced from said inner tube to define an annular flow passage with said inner tube,
each of said grate bars is provided with an inlet fitting for supplying cooling liquid to said inner and annular flow passages and with an outlet fitting for withdrawing cooling liquid from said inner and annular flow passages.

4,407,490

METHOD AND A MEANS FOR INTRODUCING CLOSE-GRAINED CARBONACEOUS FUELS INTO AN IRON MELTING BATH

Karl Brotzmann, and Hans-Georg Fassbinder, both of Sulzbach-Rosenberg, Fed. Rep. of Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg, Fed. Rep. of Germany

Division of Ser. No. 177,162, Aug. 11, 1980. This application Jul. 21, 1981, Ser. No. 285,672
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1979, 293433; Dec. 11, 1979, 2949801
Int. Cl.³ C21B *7/16*
U.S. Cl. 266—266 **6 Claims**



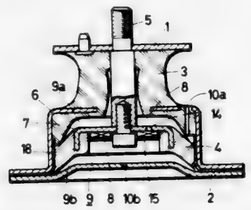
1. A means for introducing close-grained carbonaceous fuels, which are suspended in a carrier gas, and oxygen into an iron melt, comprising a housing, a movable valve member in said housing, a fuel supply pipe for admitting fuel to said housing, an oxygen supply pipe for admitting oxygen to said housing and a tuyere pipe operatively connecting said housing to a tuyere; a fuel aperture and an oxygen aperture in said housing, said movable valve member selectively opening the fuel aperture cross-section or the oxygen aperture cross-section and movement of said movable valve being regulated by the pressure of the oxygen in the supply pipe.

4,407,491

RUBBER BEARING DEVICE HAVING AIR DAMPING CAPACITY

Motoo Kunihiro, Ibaraki; Tomiaki Atsumi; Kazumasa Kuse, both of Toyota, and Masahiro Ishigaki, Ibaraki, all of Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka and Toyoto Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Oct. 5, 1981, Ser. No. 308,769
Claims priority, application Japan, Oct. 9, 1980, 55-141193
Int. Cl.³ F16F *15/08*
U.S. Cl. 267—140.1 **9 Claims**



1. A rubber bearing device having air damping capacity which comprises
upper and lower fitments, one of which is adapted to have a vibration-causing device mounted thereon;
a rubber cylindrical body which is interposed between said upper and lower fitments with the upper surface and the lower peripheral surface thereof being bonded firmly and hermetically to said upper and lower fitments, respectively, said cylindrical body defining an air chamber capable of having its volume changed, said chamber being closed by the lower surface of said cylindrical body and said lower fitment;
a rubber piston-shaped body having an upright shaft portion extending through and fitted hermetically in said cylindrical body and bonded firmly and integrally to said upper fitment, said piston-shaped body being disposed within said air chamber thus dividing it into two upper and lower air sub-chambers, orifices communicating with said upper and lower air sub-chambers for releasing air from or for admitting air to said sub-chambers; and
a depression diaphragm member provided in association with said upper and lower sub-chambers, one opening of said depression diaphragm member communicating with one of said sub-chambers and the other opening of which member communicates with the other sub-chamber, said depression diaphragm member being capable of decreasing the magnitude of effective volume change by a definite magnitude.

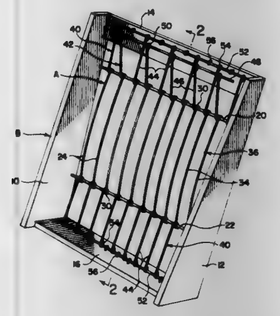
4,407,492

INTEGRATED SPRING MAT ASSEMBLY FOR SEATING

Stephen E. Muzzell, Ferndale, Mich., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed Oct. 16, 1981, Ser. No. 311,914
Int. Cl.³ F16F *3/02*
U.S. Cl. 267—103 **41 Claims**

1. An integrated spring mat assembly for a generally rectangular rigid seat frame having end rails and side rails, said spring mat assembly comprising a relatively widely spaced pair of longitudinal bolster wires, a plurality of relatively closely spaced transverse spring steel stringer wires having intermediate wire portions extending between and connected to said bolster wires to form therewith a generally flat central support portion of said assembly, said stringer wires having extended portions projecting outwardly beyond each of said bolster wires to form edge wing portions on said assembly including a fixed wing portion on each end of said assembly and a free wing portion on at least one end of said assembly, said free wing portion forming together with the adjacent one of said fixed wing portions a split-wing edge on said assembly, said free wing portion being comprised of the said outwardly projecting portions of selective ones of said stringer wires extending side-by-side from the respective one of said bolster wires to the same one side of and in spaced relation to the adjacent one



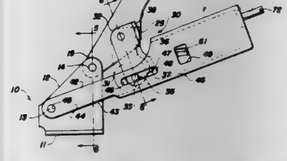
of said fixed wing portions, a longitudinal border wire interconnecting the free outer ends of the said selective stringer wires forming the said free wing portion of said assembly, and the free outer ends of said stringer wires forming the said fixed wing portions of said assembly being provided with fastening means for attaching the assembly to opposed rails of the said seat frame in a position therebetween.

4,407,493

SELF-ADJUSTING TOGGLE CLAMPS FOR FACTORY FIXTURES AND THE LIKE

Raymond A. Okolischan, St. Louis, Mo., assignor to Carr Lane Mfg. Co., St. Louis, Mo.

Filed Aug. 5, 1981, Ser. No. 290,387
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—93 **2 Claims**



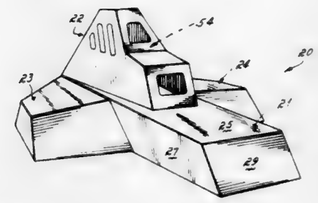
1. A toggle clamp adapted to project a force-applying member over, and retract it from, position for clamping workpieces of varying thickness, comprising
(a) a base member having portions supporting two pivots, the first of said pivots being adjacent to the side of the base member at which clamping is to be effected and the second of said pivots being at the opposite side of said base member and at a higher elevation than the first,
(b) a clamp force-applying member having at one end clamp foot means, its opposite end being hingedly pivoted on the second of said base member pivots, and having, intermediate its ends, a toggling pivot,
(c) a link member connected at one end to said toggling pivot and at its opposite end to a slide pivot, and
(d) an actuator member whose length greatly exceeds that of the link member,
said actuator member including longitudinal spaced-apart clevis arms mounted at one end to the first of said base member pivots and extending therefrom for a length sufficient, on angular movement, to clear the base member support portion of the second of its said pivots,
said actuator member having a longitudinal bearing surface providing a slide path relative to which said slide pivot is engaged, said slide path commencing at a point along the actuator member at which the slide pivot is positioned for toggle-clamping an object of a chosen minimum thickness, and extending, from such point, farther from said first base member pivot sufficiently for toggle-clamping an object of greater thickness,
whereby, when the clamp force-applying member is driven against such object of greater thickness for clamping, the slide pivot is driven away from the first base pivot sufficiently to permit the link member to align itself with the actuator member and to toggle, in combination with
(e) locking means mounted on said slide pivot, born by the actuator member and longitudinally slidable relative thereto when released,
(f) the link member having means, adjacent to its connection to said slide pivot, to hold said locking means released except when the link member is in an angular position near alignment with the actuator member,
whereby, on withdrawing the force-applying member by angular rotation of the actuator member over and across the base point of the force-applying member, the force-applying member is fully retracted from above such workpiece with the link member substantially perpendicular to the slide path.

4,407,494

TOY AIRCRAFT

David M. Hummel, 722 Miami Ave., Terrace Park, Ohio 45174

Filed Aug. 20, 1981, Ser. No. 294,762
Int. Cl.³ A63G *31/00*
U.S. Cl. 272—1 D **5 Claims**



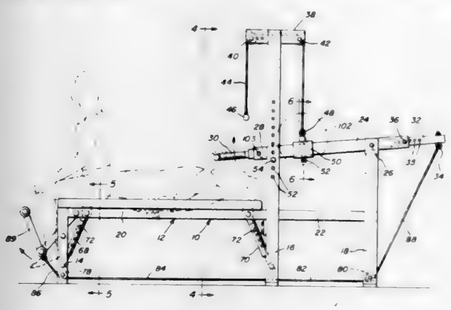
1. A toy aircraft for a child comprising,
a hollow fuselage,
wings projecting laterally from each side of the fuselage,
and a canopy mounted on top of the fuselage,
said fuselage having a large opening in its lower surface to permit the head and shoulders of a child to be thrust into the fuselage,
said fuselage having an opening in the upper surface thereof communicating with said canopy and through which the child may thrust its head into the space enclosed by the canopy,
said fuselage having upper and lower walls connected by side walls, and
a V-shaped internal wall disposed adjacent said side walls, the upper portion of said V-shaped internal wall providing a surface for engagement by the forearm of a child to support the aircraft.

4,407,495

MULTI-PURPOSE EXERCISE APPARATUS

Ronald A. Wilson, 1000 Strawberry La., Ashland, Oreg. 97520

Filed Sep. 12, 1980, Ser. No. 186,595
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **11 Claims**



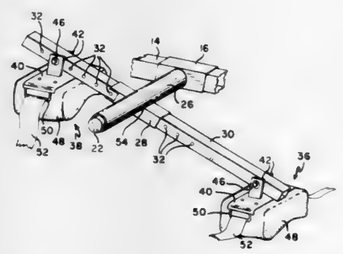
1. An exercise apparatus including a bench having first and second end portions, an elongated support portion spaced horizontally outwardly of and above said one end portion, an elongated generally horizontal lever pivotally supported intermediate its opposite ends from said support portion for oscillation about a horizontal axis transverse to said lever and said bench and with one end portion of said lever projecting toward and overlying said one end portion of said bench, an elongated levertype leg exercise frame pivotally attached at one end to the other end portion of said bench for oscillation relative thereto about an axis transverse to said frame and said bench, the other end of said frame including foot and/or leg engageable abutment means and said one end of said lever including handgrip means, weight means carried by said lever intermediate said handgrip means and the first-mentioned axis, and elongated tension member means extending between and anchored to said other end of said frame and the other end portion of said lever, the opposite end portions of said bench including low tension member guide means with which said tension member means is engaged and upwardly from which the opposite end portions of said tension member means extend toward said frame other end and said lever other end portion.

4,407,496

LIMB EXERCISE DEVICE

David E. Johnson, Apt. 101, 2900 Autumn Dr., Dubuque, Iowa 52001

Filed Dec. 14, 1981, Ser. No. 330,141
Int. Cl.³ A63B *21/06*
U.S. Cl. 272—117 **9 Claims**



1. An exercise device for use in connection with a body joint and limb exercising apparatus which has a movable member to which the apparatus applies a force against movement of the member, said exercise device comprising an elongated member having a distal end and a proximal end, first limb engaging means connected to said elongated member at a point near the distal end of said elongated member and engageable with a limb of a user, second limb engaging means connected to said elongated member at one of a plurality of selected points near the proximal end of said elongated member, said second engaging means being attached to the same limb of a user at a point on the limb spaced from the point of engagement of the first limb engaging means, third means associated with said first and second limb engaging means providing for a releasable attachment of the first and second limb engaging means to the same limb of a user, and connection means along said elongated member providing for varying points of attachment of the movable member to said elongated member at a selected point between the points of attachment of said first and second limb engaging means means with the limb of the user.

4,407,497

WEIGHTED EXERCISE SUIT

Geysa Gracie, P.O. Box A, Alderson, W. Va. 24910

Filed Dec. 29, 1981, Ser. No. 335,359
Int. Cl.³ A63B *21/12*
U.S. Cl. 272—119 **14 Claims**



1. A weighted exercise suit for a human user, comprising:

(a) a body suit means for covering at least the upper portion of the body trunk of the human user;

(b) two weight strip means for adding weight to the upper portion of the body trunk of the human user, said weight strip means being designed to be placed over and removably fastened to selected places on said body suit means, said selected places on said body suit being located over the right and left shoulders of the human user and extending from front to back;

(c) cushion means for cushioning the weight of said weight strips, said cushion means being attached to the lower face of said weight strip; and,

(d) fastening means for removably fastening said weight strip means to said selected places on said body suit means located over the right and left shoulders of the human user and extending from front to back, said fastening means comprising:

(1) a first component attached to the lower face of said cushion means; and,

(2) a second component attached to the upper face of said selected places on said body suit means located over the right and left shoulders of the user and extending from front to back, whereby said weight strip means may be removably fastened to said selected places on said body suit means located over the right and left shoulders of the human user and extending from front to back.

4,407,498

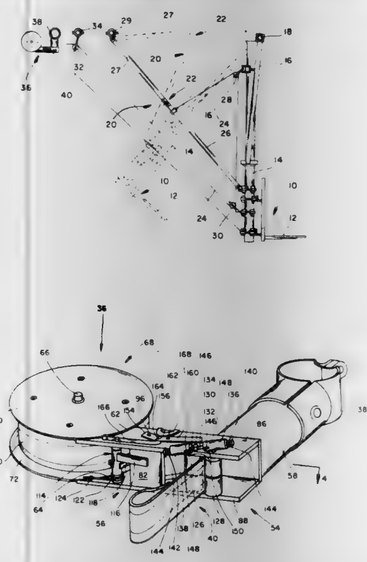
LOCK FOR A FLEXIBLE ELEMENT

Wayne G. Clore; Charles T. Norton, and William P. Thompson, all of Anderson, Ind., assignors to Recreation Equipment Corp., Anderson, Ind.

Filed Jul. 20, 1977, Ser. No. 817,332
Int. Cl.³ A63B *63/08*; B60T *7/12*; F16D *59/02*
U.S. Cl. 273—1.5 R **1 Claim**

1. In combination, a movably mounted backstop and a lock for preventing too-rapid movement of the backstop, the backstop including a flexible safety element, the lock comprising a

frame for providing first and second surfaces, a wedge-shaped jaw supported in the frame for movement between the first and second surfaces and into gripping relation with one of said surfaces, the flexible element passing between said one surface and the movable jaw, means including a spring for yieldably urging the movable jaw between the first and second surfaces and into gripping relation with said one surface to prevent movement of the flexible element between said one surface and movable jaw, means for holding the movable jaw against the urging means out of gripping relation with said one surface, and means for actuating the holding means to release the movable jaw for movement into gripping relation with said one surface, the actuating means including means disposed for rotation in response to flexible element movement, means mounted on the rotating means and responsive to rotation thereof to cause the holding means to release the movable jaw



when the flexible element moves at a rate in excess of a predetermined rate, a spool for storing the flexible element, the spool being rotatably supported on the frame and spring means for exerting rewinding force on the spool, the spring means being wound by rotation of said spool as the flexible element is withdrawn therefrom, a bell crank for retracting the movable jaw from between the first and second surfaces against the yieldable urging means to reset the holding means, the bell crank being pivotally mounted in the frame and supporting the spring, the spring being wound about the bell crank pivot yieldably to urge the bell crank pivotally in one direction, the bell crank including an arm for coupling the spring force to the movable jaw and a resetting arm, force on the resetting arm urging the bell crank about its pivot in a second and opposite direction to withdraw the movable jaw from between the first and second surfaces.

4,407,499

BOWLING AID

Jimmy D. Newton, Midland, Tex., assignor to Thomas L. Taylor, Odessa, Tex.

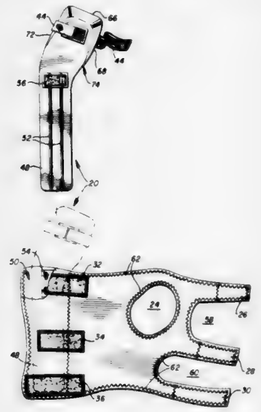
Filed Jun. 2, 1981, Ser. No. 269,669
Int. Cl.³ A63B *71/02*
U.S. Cl. 273—54 B **4 Claims**

4. A bowling aid for encapsulating the wrist and hand of a bowler while restraining the second and third fingers of the hand, so that movement of the bowler's wrist, fingers, and forearm is restrained; comprising:

a relatively flexible panel member, a stiffener and finger guide member;

said panel member includes a forward edge portion for contacting the heel and the back of a person's hand, a rear edge portion for contacting the forearm and wrist, and opposed sides adapted to be brought about the hand and fastened together, and a thumb hole; fastener means by which the opposed sides are releasably fastened to one another;

one marginal end of said stiffener and finger guide member includes an elongated tongue member secured to the panel member for imparting stiffness thereinto; the opposed



marginal end of the stiffener and guide member includes means for restraining the second and third fingers of the hand, and includes adjacent cavities within which the knuckles of the second and third fingers are releasably received;

said stiffener and guide member is secured to said panel member by an outwardly opening pocket formed at a location which extends the finger guide member forwardly into a position for receiving the fingers of one's hand; said cavities of said finger guide member extends forwardly in advance of said tongue and panel;

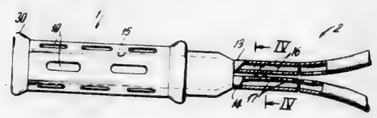
so that when the panel member is fastened about the hand, and the second and third fingers are positioned within the cavities, the relative position of the forearm, wrist, hand, and fingers are maintained at an optimum angle.

4,407,500

RACKET HANDLE

Ulrich Hofmann, Parkstrasse 4, D-8870 Günzburg, Fed. Rep. of Germany

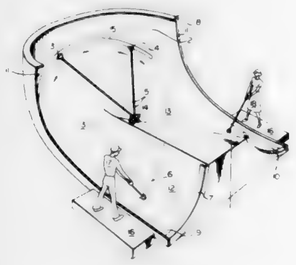
Continuation of Ser. No. 139,453, Apr. 11, 1980, abandoned. This application Jun. 24, 1982, Ser. No. 391,719
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944882
Int. Cl.³ B63B *49/08*
U.S. Cl. 273—75 **9 Claims**



1. A racket of the type used in playing tennis and like sports, comprising an elongated shaft portion, a hollow grip portion having a forward portion and a butt portion with said forward

portion being attached to one end of said shaft portion, said one end terminating within and adjacent to said forward portion of said grip, a frame portion connected to the other end of said shaft portion, said shaft portion including two spaced apart hollow tube sections, the space between the portions of said tube sections which face each other in the transverse direction of said tube sections including means for forming a Venturi region for creating a zone of reduced air pressure between said tube sections when the racket is swung, said portions being provided with slots extending generally in the longitudinal direction of said tube sections for allowing said zone of reduced air pressure to communicate with the interior of said tube sections, the interior of said grip portion forming a passageway for communicating air with the interior of said tube sections, said grip portion having a plurality of openings between said passageways and the outer periphery of said grip portion for allowing air to be drawn from the hand of a player using the racket, wherein said openings in said grip portion, said passageway in said grip portion, the interior of said tube sections and said Venturi region are adapted to conduct air therethrough from the hand of the player when the racket is swung, so that perpspiration accumulating on the hand of the player holding said grip portion is removed by the air drawn in said openings through said passageway of said grip portion.

4,407,501
CURVED BALL COURT
Farrell C. Bates, 639 N. Vickers St., Thunder Bay, Ontario, Canada P7C 4B6
Filed Mar. 8, 1982, Ser. No. 355,651
Claims priority, application Canada, Mar. 11, 1981, 372792
Int. Cl.³ A63F *7/02*
U.S. Cl. 273—118 R **5 Claims**

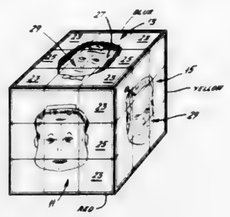


1. A curved ball court having a raised part extending from the front of the court towards the central region of the court, a concave playing surface at each side of the raised part, a vertical curved rear wall, the rear wall and the concave playing surfaces being connected by a parabolic curve.

4,407,502
MATRIX PUZZLE GAME
John A. Paulos, 609 Martin La., Dresher, Pa. 19025
Filed Oct. 2, 1981, Ser. No. 307,968
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **10 Claims**

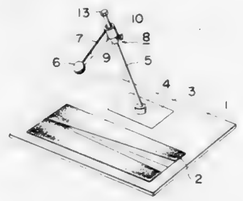
1. A puzzle game comprising:

a three-dimensional matrix cube with exclusively rotatable rows and columns of cube segments, each face of said cube being defined by a plurality of said cube segments, each cube segment on each face having a pictorial design component thereon which complements pictorial design components on adjacent cube segments on each face to form integrated composite invertible pictorial designs on each face in a plurality of rotated locations of rows and columns of said cube



segments, including rotated locations thereof wherein selected cube segments are inverted.

4,407,503
GOLF PRACTICE DEVICE
Hideyuki Nishizawa, 1-5-1, Nakasato-cho, Kita-ku, Tokyo, Japan
Filed Jul. 22, 1981, Ser. No. 285,738
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—197 R **1 Claim**



1. A golf practice device comprising in combination

(a) a base plate,

(b) an inclined support shaft extending upwardly from the base plate,

(c) a rigid golf ball support arm having an inner end that is mounted on said support shaft so that said ball support arm can slide up and down said inclined support shaft,

(d) a golf ball attached to the outer end of the golf ball support arm,

(e) means for supporting the inner end of said ball support arm on said support shaft at a distance such that said support arm is freely rotatable around said support shaft and so that the ball can be positioned between 20 and 40 cm above said base plate,

(f) said support arm being connected to said support shaft at such an angle that gravitational forces alone will always automatically return said golf ball to exactly the same location above said base plate so that a golfer practicing his golf swing can hit the golf ball any desired number of times without either changing his position or removing his hands from the golf club.

4,407,504
AMUSEMENT DEVICE
Richard Popov, Bldg., Apt. 5, 60 North Street, Marcellus, N.Y. 13108
Filed Jul. 22, 1981, Ser. No. 286,031
Int. Cl.³ A63F *9/06*; A63H *3/16*
U.S. Cl. 273—153 R **6 Claims**

1. An amusement device comprising:

housing means having a transparent lid means associated therewith for permitting a viewing into an interior portion of said housing means;

a plurality of latching means operably associated with said housing means and serving to retain said lid means in a normally latched closed position;

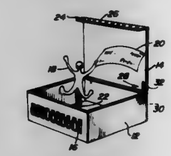
tumbler means selectively positionable to effect an unlatching of said latching means, thereby to effect a release of said lid means whereby said lid means may be moved into an open position so as to permit access to said interior portion of said housing means, said tumbler means being positionable on an exterior surface of said housing means, said tumbler means including a plurality of rotatable tumblers having positioning indicia on external surfaces thereof, whereby a proper positioning of said indicia will effect said unlatching of said lid means;

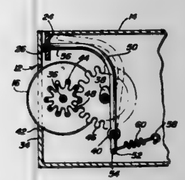
first gear means fixedly secured to said tumbler means, said first gear means including a plurality of first gears one each of which is respectively associated with one of said plurality of said tumblers, whereby a rotation of a respective one of said plurality of said tumblers will effect a concurrent rotation of a respective associated first gear;

first support shaft means rotatably mounted in said housing means, said first support shaft means having said tumbler means and said first gear means mounted thereon;

second support shaft means rotatably mounted in said housing means;

second gear means fixedly mounted on said second support shaft means, said second gear means including a plurality of second gears each of which is in a respective meshing





driving relationship with one of said first gears, whereby a rotation of a respective one of said first gears will effect a concurrent rotation of a respective one of said second gears;

third support shaft means rotatably mounted in said housing means, said plurality of latching means being rotatably and spring-biasedly mounted on said third support shaft means;

cam means fixedly secured to said second support shaft means, said cam means being rotatable with said second gear means and being in slidable engagement with said latching means, thereby to control a positioning of said latching means with respect to said lid means; and

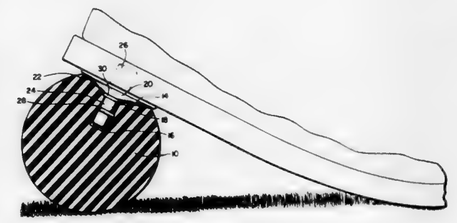
locking means for selectively fixedly securing said first gear means and said tumbler means in a fixed relationship, said locking means including a use of a selectively removable pin in each of said first gears, said removable pin being positionable in aligned apertures respectively contained in each of said first gears and said tumblers, whereby relative rotation between each of said first gears and said tumblers is prevented when said removable pin is in position and relative rotation between each of said first gears and said tumblers is permitted when said removable pin has been selectively removed from said aligned apertures, thereby to permit a selective changing of indicia positioning necessary to effect an unlatching of said lid means by permitting a selective relative rotation between each of said first gear means and said tumblers when desired.

4,407,505
PORTABLE, COLLAPSIBLE PRACTICE GOLF FLAGSTAFF WITH STOWABLE GROUND SPIKE
Edward Kendziorski, 1008 Hukill St., Brilliant, Ohio 43913
Filed Mar. 2, 1982, Ser. No. 353,919
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—177 R **55 Claims**



1. A portable, collapsible flagstaff suitable for use to support a practice golf shag flag or putting flag, comprising a segmented tubular, vertically elongated flagstaff having at least an upper, middle and bottom segment, which segments are detachably connected to one another to form the length of the flagstaff; a weighted cylindrical base at the foot of and concentrically mounted on said bottom segment, permanently attached thereto; and a spike for removably anchoring said flagstaff in the ground; said weighted base being adapted either to store in its interior said spike when the flagstaff structure is disassembled for carriage or storage, or to provide mounting means by which said spike can be attached to the bottom of said weighted base for anchoring said flagstaff to the ground when assembled for use.

4,407,506
GOLF TRAINING DEVICE
John P. O'Brien, 175 E. Delaware, Chicago, Ill. 60611
Filed Feb. 22, 1982, Ser. No. 350,999
Int. Cl.³ A63B *69/36*; A43B *5/00*
U.S. Cl. 273—187 B **7 Claims**



1. A golf training device adapted to be removably affixed to a golf shoe, said training device comprising:

a support member, said support member being substantially

spherical with a diameter from 1.6 to 1.75 inches, and having a radially disposed well therein adapted to receive the shank of a golf shoe spike, and

a golf shoe spike comprising a conventially threaded upper portion, a flange of conventional size and shape, and a lower shank portion, said shank portion being generally cylindrical in shape with at least one annular rib disposed thereon, said rib being spaced from said flange,

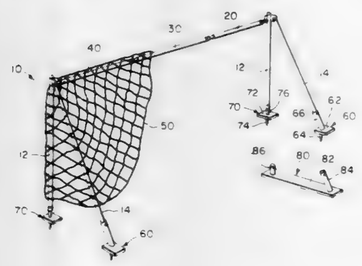
said support member designed to cooperate with said spike and receive said shank portion in said well, said annular rib adapted to frictionally engage the supporting member to removably affix said supporting device to a golf shoe.

4,407,507

PORTABLE SOCCER GOAL

Vincent C. Caruso, 120 Old Country Rd., Melville, N.Y. 11747, and Andrew Caruso, 104 Wyandanch Blvd., Commack, N.Y. 11725

Filed Jul. 6, 1981, Ser. No. 280,327
Int. Cl.³ A63B *63/00*
U.S. Cl. 273—400 **1 Claim**



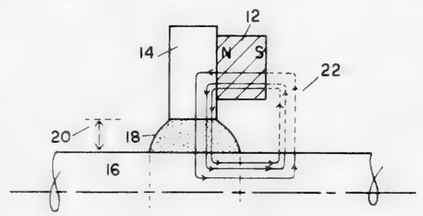
1. A portable soccer goal comprising a first end support means; a second end support means; a cross support means having a first end connectable to said first end support means and a second end connectable to said second end support means; a net supportable by said first and second end support means and said cross support means, wherein each of said first and second end support means comprises a stationary post for positioning upright upon a support base, and an elongated brace member having an upper end pivoted to the upper end of said stationary post, wherein said cross support means comprises a plurality of sleeve extensions, a first one of said sleeve extensions being connected at its first end to said upper end of one of said stationary posts, a second one of said plurality of sleeve extensions having a first end connected to the other of said stationary posts at the upper end thereof, each of said first and second sleeve extensions having a second end for connection to another of said plurality of sleeve extensions, wherein said another of said plurality of sleeve extensions has a first end and a projecting tenon extending axially outwardly therefrom, said projecting tenon having a retractable rounded protuberance and a second end, said second end having a positioning slot for reception therein of a retractable rounded protuberance, said slot extending about the circumference of said sleeve an arcuate distance greater than the width of a retractable rounded protuberance which it receives to allow for the rotation of the stationary posts relative to said another sleeve extension, wherein said second end of said first sleeve extension also has an elongated arcuate slot to receive therein said rounded protuberance of said another sleeve extension, wherein said net comprises a first end attached to one of said stationary posts along the length of said post, and a second end connected to the other of said stationary posts along the length of said post, and a middle portion between said first and second ends thereof extending around said elongated brace members along the length of each brace member, said middle portion of said net contacting said brace members on the side thereof facing away from said stationary posts, whereby a front opening is provided defined between the stationary posts, wherein each said stationary post has at its upper end a knob, said knob extending above the plane of said cross support means, and each said stationary post further having a fin adjacent said upper end, whereby said net may be passed thereover to hold it in place.

4,407,508

SINGLE-POLE-PIECE FERROFLUID SEAL APPARATUS AND EXCLUSION SEAL SYSTEM

Kuldip Raj, Merrimack, and Raoul Casciari, Bedford, both of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.

Filed Dec. 16, 1982, Ser. No. 450,339
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—1 **13 Claims**



11. A method of providing a ferrofluid exclusion seal about a rotatable shaft element, which method comprises:

(a) surrounding the rotatable shaft with an annular, single pole piece of magnetically permeable material having a one and other end, the one end of the pole piece secured in a magnetic-flux relationship to one end of an annular permanent magnet having a one and other end, the other end of the single pole piece extending into a close, non-contacting relationship with the surface of the shaft to define a small radial gap;

(b) sealing the shaft by employing a ferrofluid in the radial gap, the ferrofluid characterized by a magnetization value in oersteds, and a magnetic-flux density in the radial gap sufficient to provide a magnetic-force density on the ferrofluid which is greater than the centrifugal-force density of the rotatable shaft element on the ferrofluid, to retain the ferrofluid in a seal position; and

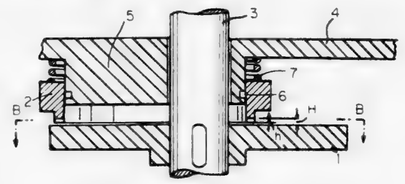
(c) providing a magnetic flux path through the permanent magnet, the single pole piece, the ferrofluid in the radial gap, the shaft, and an air gap between the shaft and the other end of the permanent magnet.

4,407,509

ZERO-LEAKAGE NON-CONTACTING MECHANICAL FACE SEAL FOR ROTARY MACHINES

Izhak Etsion, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Jan. 18, 1982, Ser. No. 340,246
Claims priority, application Israel, Mar. 11, 1981, 62344
Int. Cl.³ F16J *15/34, 15/40*
U.S. Cl. 277—3 **9 Claims**



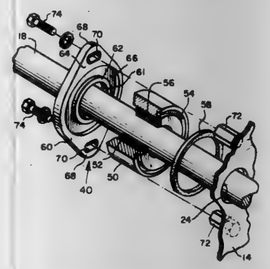
1. A non-contacting end-face seal for a rotary machine, said seal comprising a rotor mounted on the shaft of said machine and rotating therewith and a stator connected to the housing of said machine, said rotor and said stator having opposing, smooth and preferably planar surfaces separated by a gap of at least two sizes of width, the seal being characterized by one of the two opposing surfaces being smooth and uniform and the other opposing surface being in the shape of a closed curve having an inside enclosing said shaft and an outside contained within the contours of the opposite surface, said closed curve forming a partition between a zone of higher pressure and a zone of lower pressure and being so formed that a tangent to every point of said curve forms an acute, positive or negative angle with the relative velocity vector passing through that point or coincides therewith and that at all points of said curve where the relative velocity vector is directed from the zone of higher pressure to the zone of lower pressure the width of the gap between said opposing surfaces is smaller than it is at those points where the relative velocity vector is directed from the zone of lower pressure to the zone of higher pressure.

4,407,510

ADJUSTABLE PACKING GLAND ASSEMBLY FOR MOVABLE BLADE DAMPER

Jack M. Cornelius, and Egon V. Braunagel, both of Birmingham, Ala., assignors to Flo-Tech Dampers, Inc., Birmingham, Ala.

Filed Nov. 13, 1981, Ser. No. 320,950
Int. Cl.³ F16J *15/00*
U.S. Cl. 277—12 **12 Claims**



1. In combination with a damper comprising a peripheral frame member, at least one opening defined in the frame member, a damper blade shaft passing through the opening, and a damper blade mounted to the shaft to one side of the frame member, the improvement comprising:

a packing gland assembly comprising:

a packing gland sleeve disposed around the shaft, said packing gland sleeve defining an annular recess positioned adjacent the shaft;

a packing material positioned in the recess between the shaft and the packing gland sleeve; and

means for retaining the packing material in place in the annular recess to create an effective seal between the shaft and the sleeve;

a pressure seal disposed between the packing gland assembly and the frame member around the opening to prevent leakage of gases between the damper frame member and the packing gland assembly;

at least one attachment member fixedly mounted to the frame member adjacent the opening;

at least one hold-down member, included in the packing gland assembly and aligned with the at least one attachment member; and

at least one fastener clamping the hold-down member against the attachment member to releasably and adjustably hold the packing gland assembly in place against the frame;

said attachment member, hold-down member and fastener cooperating to provide a range of lateral adjustability of the position of the packing gland assembly with respect to the frame before the fastener is secured in place, to enhance the concentricity of the packing gland sleeve around the shaft;

said attachment member, hold-down member, and fastener cooperating to rigidly and fixedly secure the packing gland assembly in place on the frame member when the fastener is secured in place;

said pressure seal operating to create an effective seal between the frame member and the packing gland throughout the range of lateral adjustability.

4,407,511

SEAL AND SCRAPER ASSEMBLY

Robert L. Benton, Bay City; Dainis O. Martinsons, and Flave F. Stimpson, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 24, 1981, Ser. No. 287,245
Int. Cl.³ E21B *33/08*; F16J *15/00, 15/16*; F16K *41/00*
U.S. Cl. 277—24 **3 Claims**



1. A seal and scraper for a nut and screw actuator comprising; an annular lip member abutting and compressed radially inward by a cylindrical surface on said nut at assembly; a thread sealing portion having a thread form cooperating with the screw thread on the actuator and including a plurality of circumferentially spaced scraper means each defined by a scraper surface extending through the thread form at an angle oblique to a radius of the thread form and terminating at a position radially inward of a normal thread form when the screw actuator is not engaging the screw thread so that the thread sealing portion adjacent the scraper surface must be deflected radially outward during insertion of the screw actuator, web means connecting the lip member with the thread sealing portion along the oblique angle for transfering the force of compression on said lip member to the scraper surface of said thread sealing portion and a lubricant return surface extending in a circumferential direction oblique to the axial direction of the thread form; and means for preventing rotation of said seal and scraper relative to the nut.

4,407,512

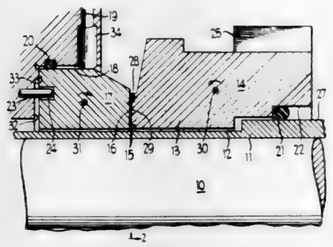
HIGH PRESSURE ROTARY MECHANICAL SEAL

Joseph J. Trytek, Chicago, Ill., assignor to John Crane-Houdaille, Inc., Chicago, Ill.

Continuation of Ser. No. 646,335, Jan. 2, 1976, abandoned. This application Apr. 25, 1977, Ser. No. 790,328
Int. Cl.³ F16J *15/16, 15/40*
U.S. Cl. 277—96.1 **6 Claims**

1. A rotary end face seal comprising relatively rotatable

primary and seat rings having abutting radially disposed sealing surfaces, a support for the seat ring, means sealing a radially outer periphery of the seat ring with respect to the support, means limiting contact between the seat ring and the support in an axial direction to a radially outer region of the seat ring, the centroid of an axial section taken through a quadrant of the seat ring being located radially inward of the



means limiting contact between the seat ring and support, the proportion which the radial width of the abutting radially disposed sealing surfaces bars to the inner radius of the contacting surfaces is in the range of 0.085 to 0.3, and at least one of said abutting surfaces is relieved radially inwardly from the pressure side of the seal at peripherally spaced intervals to form hydro-pads.

4,407,513

MECHANICAL SEAL

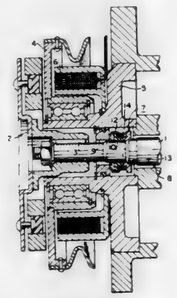
Akira Takenaka, and Tatsuhiko Fukuoka, both of Toyota, Japan, assignors to Taiho Kogyo Co., Ltd., Toyota, Japan

Continuation of Ser. No. 123,625, Feb. 22, 1980, abandoned, which is a division of Ser. No. 895,072, Apr. 10, 1978, abandoned. This application Apr. 8, 1982, Ser. No. 366,810

Claims priority, application Japan, Apr. 12, 1977, 52-41838; Mar. 3, 1978, 53-24137; 4138, Mar. 3, 1978, JPX

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—96.1 **9 Claims**



1. A combination comprising:

a mechanical seal including stationary means and a follower ring,

the stationary means including a seating ring which receives therethrough a rotatable shaft and has an annular sliding contact surface,

the follower ring being mounted to rotate with said rotatable shaft and has another annular sliding contact surface in slidable contact with the sliding contact surface of said seating ring when the shaft is rotated causing relative motion in one direction between said sliding contact surfaces,

each said annular sliding contact surface having a radially inner portion and a radially outer portion,

means for sealing a pressurized fluid, which consists of a liquid or a mixture of a gas and a liquid, in a zone radially outside of said follower ring, and

means for connecting the radially inside surface of said follower ring to inside air,

at least one of said annular sliding contact surfaces having means cooperative with the other said annular contact surface for avoiding the leakage of said fluid from said outside zone to said inside air, said leakage avoiding means comprising:

(a) a plurality of grooves in at least one of the annular sliding contact surfaces, said grooves having a closed outer end portion terminating radially short of the outer periphery of said annular sliding contact surface, said grooves having a depth in the range from as low as 0.05 mm up to about 1.0 mm and being less than about 1.0 mm wide, at least some of said grooves having open radially inner ends, said grooves being oriented outwardly from the shaft in a rearward direction with respect to the direction of said relative motion, said grooves extending along a line approximately tangent to the radially inner edge of the corresponding annular sliding contact surface; and

(b) means for avoiding leakage with the follower ring stopped and formed by an annular, axially raised portion disposed along the periphery of at least one of the sliding contact surfaces, said axially raised portion being defined by a slight swelling of the radially outer circumferential portion of said at least one sliding contact surface in the axial direction beyond the radially inner circumferential portion thereof while maintaining a small clearance between inner circumferential portion of the sliding contact surfaces to hold therebetween a fluid, said raised portion increasing the surface pressure at the radially outer circumferential portion of said slide contact surfaces beyond that at the radially inner circumferential portion, the axial extent of said raised portion being several microns or less, the closed outer ends of said grooves leaving a circumferentially continuous annular surface along said raised portion.

4,407,514

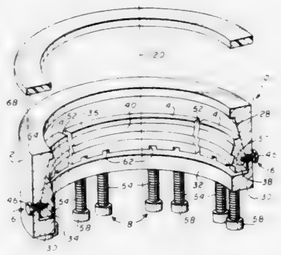
WELLHEAD CASING PACKING SUPPORT

Frederick A. Hausler, Shreveport, La., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,555

Int. Cl.³ F16J *15/06*; E21B *33/12*

U.S. Cl. 277—117 **5 Claims**



1. A device for supporting a set of packing rings mounted in sleeved relationship between a casing and a wellhead bore comprising:

a support ring of generally cylindrical configuration having a central axial bore with an inside diameter greater than the diameter of the casing so that the ring may be sleeved about the casing, the support ring having an upper bore portion defined by an internal frusto-conical surface which is convergent inwardly toward an upper end of the support ring, the support ring having an intermediate bore portion with an inside diameter greater than the inside diameter of the upper bore portion and a lower bore portion having a depending inwardly extending annular lip defining an upwardly facing shoulder on the top side of the lip;

a plurality of clamping segments of arcuate configuration arranged in a generally circular pattern, each clamping segment having gripping means on its inner arcuate surface and having an external arcuate surface defining a frusto-conical configuration convergent toward the upper end of the clamping segment, the external frusto-conical surfaces having a common conical axis and being defined by a cone angle substantially equal to the cone angle which defines the internal frusto-conical surface of the support ring;

a plurality of releasable retaining means for securing the clamping segments to the inside of the support ring in an unactivated position so that when the support ring is sleeved about the casing the gripping means does not contact the casing, the clamping segments being received retained inside the support ring such that small gaps exist between the adjacent segments; and

activating means received through the bottom of the inwardly extending annular lip of the support ring for pressing the clamping segments upward upon release of the retaining means so that the coacting frusto-conical surfaces of the segments and support ring act to wedge the clamping segments radially inward allowing the gripping means to contact the casing, the gripping means engaging the casing so that the clamping segments and support ring are secured to the casing.

4,407,515

COMBINED OIL RING

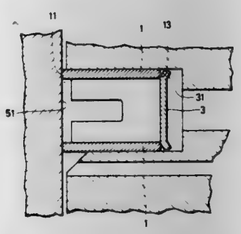
Yoshio Naito, Urawa, Japan, assignor to Nippon Piston Ring Co., Ltd.,, Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,312

Claims priority, application Japan, Jun. 12, 1981, 56-90506

Int. Cl.³ F16J *9/04*; F16L *9/06*

U.S. Cl. 277—139 **10 Claims**



1. An oil ring, comprising; a steel spacer expander and a pair of steel side rails, said steel spacer expander comprising a parent material of Austenite matrix structure and having a nitride layer in the surface the thereof; said steel side rails comprising a parent material of Martensite matrix structure, and having a nitride layer formed in the surface thereof.

4,407,516

PRESSURE ENERGIZED SEALING CONNECTION WITH ANNULAR SEAL RING

Tri C. Le, and Bruce P. Noble, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

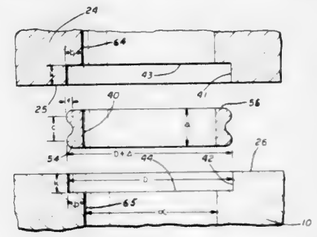
Filed Dec. 13, 1982, Ser. No. 449,353

Int. Cl.³ F16J *15/06*

U.S. Cl. 277—206 R **9 Claims**

1. A pressure energizable sealing connection for sealing between connected first and second coaxially aligned members which are provided with central bores and are subjectable to high fluid pressures therein, said first and second aligned members being each provided with an internal annular recess at the end thereof which is connected adjacent to the other of said members, each said recess of a given one of said first and second aligned members being defined by an internal cylindrical surface extending from the adjoined end of said one member and terminating at an annular radial shoulder formed by an enlargement of the bore of said one member;

a sealing ring for sealing between said connected coaxially aligned members when positioned in said recesses in coaxial alignment therewith, said sealing ring having an external diameter which exceeds the diameters of said recesses of the coaxially aligned members and upper and lower annular end surfaces which reside in planes transverse to the axis of the sealing ring, said sealing ring having a pair of circumferential projections for sealing with the cylindrical sealing surfaces of the coaxially adjoined members, said circumferential



projections being separated by a continuous circumferential groove and each of said projections having an arcuate external surface in radial cross section, said ring having an axial dimension which is slightly less than the sum of the axial dimensions of said internal recesses and an external diameter at its circumferential projections which slightly exceeds the diameter of said internal recesses to provide an interference fit of the sealing ring in said recesses and an initial seal with the axial connected members at very low internal fluid pressures, said ring being pressure energizable by fluid pressure internally of said connected first and second coaxially aligned members and subject to being radially compressed thereby for effecting a bore seal with said first and second coaxially aligned members which increases in sealing effectiveness with increasing internal fluid pressure.

4,407,517

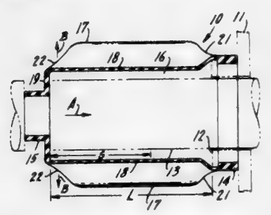
PROTECTIVE BOOT FOR SOLENOID

James U. Neyer, Lake Bluff, Ill., assignor to Synchro-Start Products, Inc., Skokie, Ill.

Filed Dec. 6, 1982, Ser. No. 446,960

Int. Cl.³ F04B *21/00*; F16J *15/50*

U.S. Cl. 277—212 FB **7 Claims**

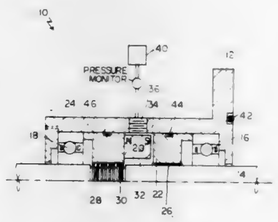


1. A protective boot for a solenoid or like device of the kind comprising a housing having an opening through which a shaft projects, the shaft being reciprocally axially movable through a stroke of given length between an extended position and a retracted position relative to the housing, the boot being of resilient elastomer material and comprising:

a fixed end adapted to be sealed to the housing around the opening through which the shaft extends;

a movable end adapted to be sealed to the shaft;
and a fluid chamber extending between the fixed end and the movable end of the boot in encompassing relation to a portion of the shaft, the fluid chamber having an unstressed axial length exceeding the aforesaid stroke length, the fluid chamber including a plurality of concave wall portions each extending axially of the shaft, which concave wall portions are forced outwardly of the shaft by the resiliency of the boot during movement of the shaft toward its retracted position, so that the volume of the fluid chamber remains generally constant during reciprocal movements of the shaft.

4,407,518
NONBURSTING MULTIPLE-STAGE FERROFLUID SEAL AND SYSTEM
Ronald Moskowitz; Kuldip Raj, both of Merrimack, and James L. Kern, Nashua, all of N.H., assignors to Ferrofluidics Corporation, Nashua, N.H.
Filed Jan. 5, 1983, Ser. No. 455,065
Int. Cl.³ F16J 15/40, 15/54
U.S. Cl. 277—1 **15 Claims**



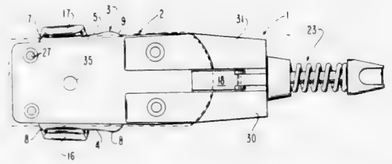
1. A nonbursting, ferrofluid seal apparatus to provide a ferrofluid seal about a shaft element between a first high-pressure and a second low-pressure environment, which seal apparatus comprises in combination:
(a) a permanent magnet having a one end and another end;
(b) first and second pole pieces, each having a one and another end, the other end of each of the pole pieces in a magnetic-flux relationship with the one end of the permanent magnet, and the other ends of the first and second pole pieces extending into a close, noncontacting relationship with the surface of the shaft element to be sealed, to define a radial gap between the respective other ends of the pole pieces and the surface of the shaft element;
(c) the first pole piece on the high-pressure side of the first high-pressure environment at the other end thereof, or the portion of the surface of the shaft employed therewith adjacent to the other end, having a plurality of ridges thereon, to form with a ferrofluid a plurality of separate, multiple, seal stages beneath the other end of the first pole piece, to provide a defined pressure capacity to the seal apparatus, which pressure capacity is greater than the high pressure of the first high-pressure environment;
(d) the other end of the second pole piece and the surface of the shaft element defining a first-stage radial gap, to form with a ferrofluid, on the low-pressure side of the second environment, a single-stage ferrofluidic seal;
(e) the permanent magnet, the first and second pole pieces and the multiple-stage ferrofluid and the single-stage ferrofluid seals defining a first interstage volume between the single-stage ferrofluid seal and the first stage of the multiple-stage seal;
(f) ferrofluid magnetically retained under the other end of the first and second pole pieces, to provide a multiple-stage pressure-capacity seal under the other end of the first pole piece and a single-stage ferrofluid seal under the other end of the second pole piece;
(g) passageway means extending into the first-stage volume; and
(h) means to remove air from the interstage volume through the passageway means, to maintain the interstage volume at a defined low pressure between the first high- and second low-pressure environments, thereby providing a nonbursting, first-stage ferrofluidic seal in a stable, nonbursting condition.

4,407,519
BOAT TRAILER TONGUE EXTENDER
Gregory L. Heyser, 2881 Forebay Rd., Pollock Pines, Calif. 95726
Filed Oct. 5, 1981, Ser. No. 308,268
Int. Cl.³ B60D 1/14
U.S. Cl. 280—482 **4 Claims**



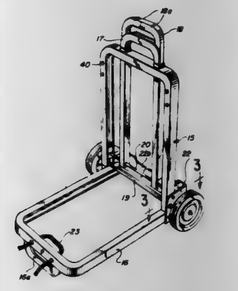
1. A method for attaching a trailer tongue extender to a trailer tongue consisting of:
a. hooking a latch tab at one end of the extender into a receptacle attached on the trailer tongue;
b. inserting a trailer ball, located on the extender between 0.2 meters and 0.7 meters from the latch tab, into the trailer coupler at the end of the trailer tongue; and
c. tightening the trailer coupler.

4,407,520
SKI BOOT LOCATING APPARATUS
Richard G. Spademan, 130 Country Club Dr. #30, Incline Village, Nev. 89450
Filed Apr. 20, 1981, Ser. No. 255,623
Int. Cl.³ A63C 9/08
U.S. Cl. 280—624 **1 Claim**



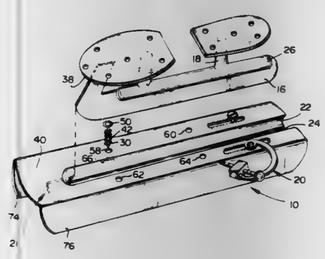
1. A ski binding having means for securing a ski boot to a ski rearward of the toe and forward of the rear of the heel of the ski boot and means for locating the heel of the ski boot in a predetermined position relative to said securing means preparatory to securing said ski boot in said binding, said binding comprising:
(a) ski mounted heel receiving means having a curved surface corresponding to the shape of the rear surface of the heel of said ski boot,
(b) a boot mounted plate with inwardly curved side edges, the narrowest width of said plate being located toward the aft portion thereof, and
(c) a pair of ski mounted side clamping members for engaging said curved side edges,
whereby when said clamping members engage said plate, said plate is drawn forwardly until said clamping members are in engagement with said narrowest width of said plate and said heel portion of said boot is at a sufficient distance from said heel receiving means to clear the forward edges thereof upon lateral release of said boot.

4,407,521
FOLDABLE HAND CART
Wolf Zeitlin, 2814 Gregory St., Chicago, Ill. 60625
Filed Nov. 24, 1980, Ser. No. 209,666
Int. Cl.³ B62B 1/12
U.S. Cl. 280—655 **6 Claims**



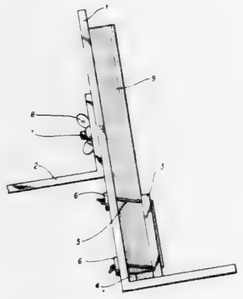
1. A folding, collapsible hand cart comprising: a load-carrying platform frame having an arch shape with side bars which are attached to a pair of rearward side plates along portions thereof which are forwardly bent from a back wall reinforcing said side plates; a first shaft and wheel assembly passing through said side plates and the ends of said bars to add stability to said platform; said side plates further having a second shaft secured to them above said first shaft and spaced from said back wall and an opening in one of said side plates to receive first locking means positioned on cart handle means, said handle means comprising a main frame carrying extensible, arch-shaped slidable frames, the main frame being of arch shape having side bars which are mounted on said second shaft for pivotal movement of said main frame from a closed position in contact with said platform frame to an open position perpendicular to said platform frame and in locked relationship therewith by the engagement of said first locking means positioned on one of said main frame side bars with said opening in one of said side plates, said extensible frames being located between the side bars of said main frame and slidable through the top of the main frame, said extensible frames being an inner one with lateral channeled uprights opening outwardly, and an outer one with inwardly opening channeled uprights seating in those of the inner frame.

4,407,522
ENERGY SAVING ICE SKATE ATTACHMENT DEVICE
Hyman Suroff, 6813 21st Ave., Brooklyn, N.Y. 11204
Filed Mar. 11, 1983, Ser. No. 474,435
Int. Cl.³ A63C 3/04
U.S. Cl. 280—809 **9 Claims**



1. An energy saving ice skate device for attachment to ice skates, or the like, also suitable for training skaters comprising:
(a) an elongated frame having,
(i) a centrally disposed longitudinal receptacle provided with an elongated centrally disposed slot adapted to receive the blade of an ice skate therethrough,
(ii) two longitudinal outboard ice skate blades, one positioned on each side of said receptacle by a horizontal portion of said frame, the edges of said outboard blades being coplanar with the edge of said ice skate blade,
(iii) clamp means for releasably affixing said frame to one shoe support post of said ice skate for prohibiting longitudinal movement between said ice skate blade and said outboard blades; and
(b) resilient means disposed between said horizontal frame portion and the bottom surface of the shoe portion of said ice skate.

4,407,523
BOOK HOLDER
A. Peter Campione, 32 Jones St., New York, N.Y. 10014
Filed Jan. 11, 1982, Ser. No. 338,421
Int. Cl.³ B42D 17/00; A47B 97/04
U.S. Cl. 281—46 **2 Claims**



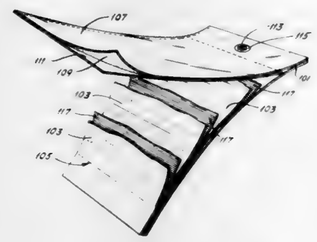
1. A book holder for supporting a book in an open position upon a horizontal surface, which holder comprising in combination
a book supporting structure, consisting of an L-shaped backrest having a perpendicular support lip extending out from its base in a forward direction, said backrest is held in a rearwardly inclined vertical position by means of a back supporting plate; a book is leaned against said backrest's front surface but the book's weight is being supported by a base support lip with a spacer making contact with the book's lower edges, said spacer, being located at the intersection of the base of backrest's front surface and the rear of book support lip's top surface, is a means of holding the book's lower edges above the lip's top surface, thereby creating and maintaining a convenient storage space in which to place the flat plate temporarily, because it would otherwise be an impediment to a safe page turn when so desired by the reader; a rectangular flat plate of transparent material is flexibly supported in a horizontal normal working position in this book holder, with its back surface making contact with and pressing against the entire width of the open pages' lower margins, said flat plate providing a rearwardly exerting force against said open pages, said force being generated by means of elastics whose degree of tension is proportional to the thickness of the open book, said elastics, located at each extreme end of the flat plate, are threaded through holes in the flat plate and bypass the vertical edges of the open book, attach to the backrest, through which they also pass through holes, and are terminated and held captive by some means to the backside of the backrest; by varying the working length of each elastic used at the extreme ends of the flat plate, an additional means is provided by which the flat plate can vary its rearwardly exerting force applied against the pages of the open book.

4,407,524

DURABLE DATA-TAG WITH RECORD DUPLICATION

Ray W. Trautlein, Dublin, Pa., assignor to Lem Products, Inc., Doylestown, Pa.

Filed Sep. 11, 1980, Ser. No. 186,161
Int. Cl.³ B41L 1/14; G09D 3/00
U.S. Cl. 282—9 R **12 Claims**



1. A tag with record duplication comprising:

means for receiving data on one surface thereof, said data receiving means forming the backer sheet of said tag;

means for receiving an identical copy of data received by said data receiving means, said identical copy receiving means including sheets detachably secured to said data receiving means at a first end thereof;

means for providing a duplicate data imprint on said identical copy receiving means sheets and said data receiving means backer sheet, said duplicate data imprint means including imprint sheets interleafed with said identical copy receiving means sheets and being detachably secured to said data receiving means backer sheet at said first end thereof; wherein the detachment of said identical copy receiving means sheets and said duplicate imprint means sheets completely separates all of them away from said data receiving means backer sheet; and

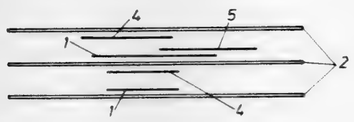
means for sealing said data imprint on said data receiving means backer sheet, said sealing means being attached to said data receiving means at the end opposite said first end.

4,407,525

IDENTIFICATION CARD WITH HALLMARK FOR AUTHENTICATION BY INCIDENT AND TRANSMITTED LIGHT

Joachim Hoppe, Munich, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 81,704, Oct. 4, 1979. This application May 13, 1981, Ser. No. 263,373
Int. Cl.³ B42D 15/02; G09F 3/02
U.S. Cl. 283—110 **13 Claims**



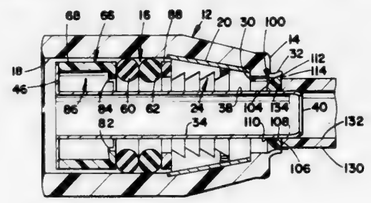
1. In an identification card adapted to be authenticated by transmitted and reflected light comprising at least one substrate layer of substantially homogeneous color or having a substantially uniform color layer thereon; said card also having partially overlapping layers of colors comprising complementary design portions providing desired visual effects whereby light transmitted through the overlapping areas of the color layers is less than the light transmitted through the nonoverlapping areas so that the overlapping areas appear darker to the eye than the nonoverlapping areas when light is transmitted therethrough, and whereby light reflected from the overlapping areas visually possesses greater color intensity than the surrounding, the improvement comprising forming the layers of colors on at least two discrete substrate layer surfaces of said card whereby said complementary design portions are disposed in spaced planes.

4,407,526

TAB-TYPE COUPLING AND METHOD

Christopher W. Cicenas, Madison, Ohio, assignor to Perfection Corporation, Madison, Ohio

Filed Jan. 5, 1981, Ser. No. 222,346
Int. Cl.³ F16L 47/00
U.S. Cl. 285—27 **21 Claims**



1. In a stab-type coupling for couplingly receiving an end portion of a pipe wherein said coupling includes a body having a first end and an internal recess extending inwardly from said first end adapted to receive the pipe end portion, an elongated hollow insert disposed within said recess and about which the pipe end portion is adapted to be received, and at least a pipe gripping member disposed within said recess surrounding a portion of said insert in a radially spaced relationship with said gripping member including pipe gripping means disposed on the inner surface thereof adapted to retainingly engage a pipe end portion inserted axially therepast into said coupling body recess, the improvement comprising:

a chamfer ring receivable through a central passage therein onto the exterior of said elongated insert adjacent said coupling body first end, said chamfer ring being retainingly received on said insert against accidental displacement therefrom during handling of said coupling while being axially movable therealong under the influence of an axial force applied thereto, said chamfer ring including a forward end area facing said first end and a rear end area adapted to be engaged by the end face of a pipe, said forward end area having an outer diameter at least generally as large as the outside diameter of a pipe which is to be inserted into said coupling, whereby as the end portion of a pipe is urged axially along said elongated insert and into said coupling body recess from said body first end said chamfer ring will be urged along said insert ahead of the pipe end portion in order that the chamfer ring forward end area will act as a pipe end portion lead through the gripping member means to facilitate ease of pipe end portion insertion into said coupling.

4,407,527

SELF-ALIGNING CONNECTOR ASSEMBLY

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Aug. 24, 1981, Ser. No. 295,679
Int. Cl.³ F16L 15/00
U.S. Cl. 285—27 **4 Claims**

1. Apparatus for connecting tubular members of any size diameters, while preventing cross-threading, comprising:

a. a first tubular member having tapered, external threads toward a first end thereof;

b. a generally cylindrical external surface, as part of said first tubular member, axially displaced relative to said external threads and on the opposite side thereof from said first end;

c. a second tubular member having generally circular guide means toward a first end thereof;

d. said second tubular member further having tapered, internal threads generally complementary to said external threads, and axially displaced relative to said guide means;

e. wherein:

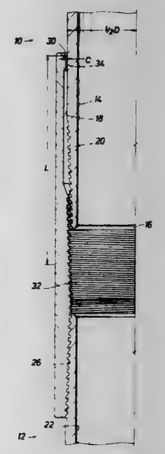
i. L is the axial displacement between said guide means and said internal threads;

ii. X is the inverse of the axial distance between adjacent threads of said external threads;

iii. D is the outside diameter of the external surface;

iv. C is one-half the difference between the inside diameter of said guide means and D; and

v. L is at least as large as the quantity 2XDC;



f. so that said first and second tubular members, regardless of their respective diameter sizes, may be threadedly connected by means of said external threads and said internal threads with said second tubular member generally receiving said first tubular member, said guide means cooperating with said external surface of said first tubular member, and L being sufficiently large, to limit the range of relative rotational orientation between said first and second tubular members with said first tubular member extending within said second tubular member a sufficient distance for said external and internal threads to make contact and prior to rotational thread make-up of said external and internal threads, said limited relative rotational orientation range being sufficiently small as to prevent cross-threading of said external and internal threads during rotational thread make-up.

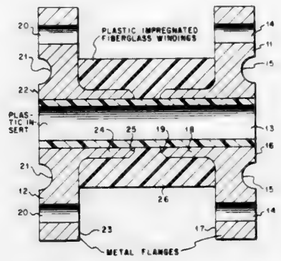
4,407,528

HIGH PRESSURE INSULATING FLANGE

Donald R. Anthony, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 14, 1981, Ser. No. 330,112
Int. Cl.³ F16L 11/12, 9/14, 33/00; H02G 15/24
U.S. Cl. 285—50 **2 Claims**

1. A high pressure insulating coupling for use in a pipeline comprised of two metal half flanges, each of said half flanges having an outer face surface, an inner face surface, and an inner tubular extension, said half flanges being supported on a nonconductive cylindrical nonmetallic member in a manner such that the inner faces of said half flanges face each other and the inner tubular extensions point toward each other without touching each other, and plastic impregnated fiberglass windings around said inner tubular extensions between said inner face surfaces of said half flanges, said fiberglass windings and said cylindrical nonmetallic member forming a layer between



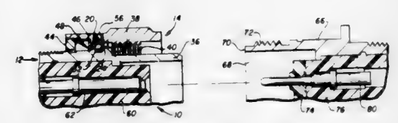
said inner tubular extensions of sufficient thickness to withstand the working pressure of said pipeline.

4,407,529

SELF-LOCKING COUPLING NUT FOR ELECTRICAL CONNECTORS

Howard E. Holman, Fort Worth, Tex., assignor to T. J. Electronics, Inc., Arlington, Tex.

Filed Nov. 24, 1980, Ser. No. 209,429
Int. Cl.³ H01R 13/54
U.S. Cl. 285—82 **21 Claims**



1. A self-locking coupling nut comprising:

a first cylindrical shell including a radially inwardly located, axially extending ball receiving surface, a ball camming surface extending angularly outwardly from the ball receiving surface, and a plurality of ball receiving grooves intersecting the ball camming surface and positioned at spaced intervals around the periphery of the first shell, the innermost surface of each ball receiving groove positioned radially outwardly from the ball receiving surface, each adjacent pair of ball receiving grooves being separated by a land;

a second cylindrical shell for mating engagement with the first shell and having external threads thereon;

cooperating surfaces on the first and second shells for locating the shells with respect to each other upon mating engagement therebetween;

a nut surrounding the first shell and having threads for threadedly engaging the threads of the second shell to secure the first and second shells in mating engagement, a plurality of radially extending ball receiving apertures each initialy aligned with the ball receiving surface of the first shell, and a circumferentially extending spring receiving slot intersecting each of the ball receiving apertures;

a plurality of balls each positioned in one of the ball receiving apertures of the nut for movement therewith from initial engagement with the ball receiving surface of the first shell up the ball camming surface thereof and into engagement with the ball receiving grooves in response to threaded engagement of the nut with the second shell thereby locking the nut until a force sufficient to urge the balls up and over the lands separating the ball receiving grooves is applied; and

a spring positioned in the spring receiving slot of the nut for retaining the balls in the ball receiving apertures and for urging the balls inwardly toward the first shell, the spring being cammed outwardly as the balls move up the ball

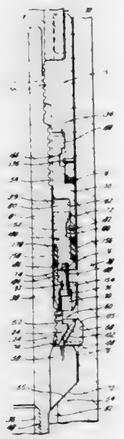
camming surface into the ball receiving grooves thereby indicating the locked condition of the self-locking coupling nut.

4,407,530

PACKOFF APPARATUS

John H. Fowler, Houston, Tex., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Dec. 22, 1980, Ser. No. 219,253
Int. Cl.³ E21B *33/04*
U.S. Cl. 285—140 **17 Claims**



1. A sealing assembly for sealing the annulus between a hanger and a head, comprising:
an intermediate tubular member;
a lower tubular member disposed below and reciprocably mounted on said intermediate tubular member;
an upper tubular member disposed above and reciprocably mounted on said intermediate tubular member;
first sealing means disposed on said lower tubular member and engageble with said intermediate tubular member for sealing enggement with the hanger;
second sealing means independent of said first sealing means disposed on said intermediate tubular member and engageable with said upper tubular member for sealing engagement with the head; and
compression means for compressing said lower, intermediate and upper tubular members together, said first and second sealing means sealingly engaging the hanger and head in series whereby said second sealing means may be further compressed between said upper and intermediate tubular members after the compression of said first sealing means between said lower and intermediate members has been completed.

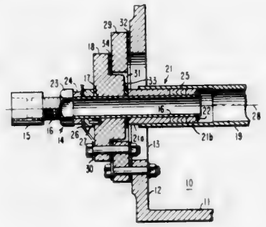
4,407,531

EXTERNALLY ADJUSTABLE SEAL AND BEARING STRUCTURE

Russell G. Raush, Conestoga, and Raymond A. Alleman, Lancaster, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,063
Int. Cl.³ F16L *5/02*
U.S. Cl. 285—158 **9 Claims**

1. A seal and bearing structure for admitting fluid to the inside of a container from a fluid source external of said container comprising:
a stop plate having a bore extending from the outside of said container to the inside of said container;
an external tube passing through said bore for admitting fluid to the inside of said container;
an internal tube coaxial with and oscillatory with respect to said external tube and positioned so that said tubes overlap;
bearing means having at least two bearing portions arranged radially between and coaxial with said external and internal tubes whereby said tubes are longitudinally oscillatory with respect to one another, one of said bearing portions contacting said stop plate;
seal means arranged radially between and coaxial with said external and internal tubes, and positioned longitudinally between said bearing portions;



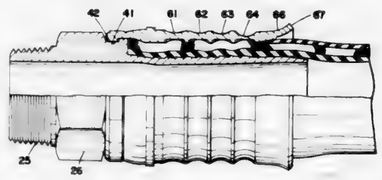
retainer means for retaining the overlapping relationship of said tubes;
external means for longitudinally moving said external tube with respect to said internal tube whereby said stop plate and said retainer means compress said bearing means against said seal means to radially expand said seal means against said external and internal tubes to prevent fluid leakage along said tubes; and a thrust bracket coupling said stop plate and said external tube for preventing longitudinal movement of said external tube in response to pressure in said internal tube.

4,407,532

HOSE END FITTING

Hiralal V. Patel, Mentor, and Samuel A. Rudolph, Cleveland Heights, both of Ohio, assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 26, 1981, Ser. No. 228,317
Int. Cl.³ F16L *33/20*
U.S. Cl. 285—256 **4 Claims**



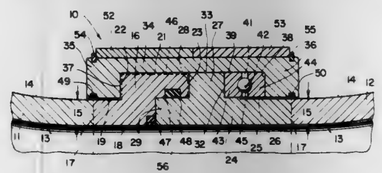
1. A hose end assembly comprising a metal hose coupling and a flexible reinforced hose having an inner bore, an outer surface, and an end surface, said hose coupling including an insert portion within said hose bore and a radial abutment adjacent said hose end surface, said hose coupling including a sleeve member secured to said insert member on the side of said abutment away from said hose end surface, said sleeve and insert portion cooperating to form an annular axially extending hose receiving zone, said sleeve extending inwardly over the hose outer surface and being deformed radially inward to make gripping contact with said hose outer surface in said hose receiving zone, said insert portion radially internally supporting the hose area gripped by said sleeve in said hose receiving zone, said insert portion having a plurality of uniformly axially spaced, radially outwardly extending annular ridges in engagement with said hose inner bore, each of said annular insert ridges having substantially the same cross-sectional shape and size in a longitudinal plane, said sleeve on its inner surface adjacent said hose outer surface having at least three uniformly axially spaced, radially inwardly extending annular ridges in gripping engagement with said hose outer surface in said hose receiving zone, each of said annular sleeve ridges having substantially the same cross-sectional shape and size in a longitudinal plane, the number of insert ridges in said hose receiving zone being greater than the number of sleeve ridges, said sleeve having a plurality of annular grooves on its outer surface with each axial groove being in axial alignment with a space between adjacent inwardly extending annular sleeve ridges, said grooves being progressively deeper axially away from the hose end surface to provide progressively decreasing radial thickness of said sleeve at portions extending progressively away from said hose end surface, the hose receiving zone bounded radially outwardly by said sleeve ridges and radially inwardly by said insert ridges having substantially the same hose receiving volume per unit length along substantially its full length.

4,407,533

HIGH PRESSURE SWIVEL JOINT

James F. Giebeler, San Bernardino, Calif., assignor to Arrowhead Continental, San Bernardino, Calif.

Filed Oct. 1, 1981, Ser. No. 307,441
Int. Cl.³ F16L *27/00, 17/00, 23/00, 21/00*
U.S. Cl. 285—281 **6 Claims**



1. In a device for connecting two pipes for carrying abrasive material under high pressure, the two pipes having substantially the same outside diameter and wall thickness, the combination of: a flange member welded to one end of one of the pipes and having an inside diameter substantially equal to that of the pipe, a ring member welded to an end of the other pipe and having an internal diameter substantially the same as that of said flange member, said ring member having an integral annular outward-extending rib, a tension sleeve encircling said flange member, ring member and rib, said tension sleeve having at one end a first inwardly directed lip engaging a shoulder on said flange member, said tension sleeve having at the other end a second inwardly directed lip encircling a portion of said ring member, said second lip and said rib defining an annular pocket between said tension sleeve and said ring member, an anti-friction bearing assembly in said annular pocket and containing roller elements acting only in compression, said tension sleeve comprising two semi-circular halves, and at least one continuous circumferential band encircling the tension sleeve to hold the two halves thereof against radial separation.

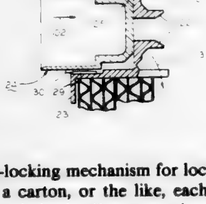
4,407,534

ARRANGEMENT FOR CONNECTING EDGE AREAS OF THIN-WALLED BODIES

Günter Petz, Flachslander Str. 8, Nüraberg D 8500, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,346
Claims priority, application European Pat. Off., Jan. 2, 1980, 80100 001.9
Int. Cl.³ F16L *37/14*
U.S. Cl. 285—305 **1 Claim**

1. An improved arrangement for joining adjacent edge areas of thin-walled bodies, wherein the corresponding edge areas are each provided with a plurality of bent sections and a plurality of recesses, with the bent sections and recesses of one edge area being offset with respect to the bent sections and recesses of the corresponding edge area, thereby permitting the bent sections of one edge area to be disposed through the recesses of the corresponding edge area so that the bent sections of both edge areas collectively define a cylindrical channel for receiving an elongate member to secure the bodies together, which arrangement comprises:
(a) a corner section carried by each edge area and disposed transversely to the plane of its corresponding body to define a free end;
(b) the plurality of bent sections are carried by the free end of each corner section, with each bent section having a



substantially semi-cylindrical depression and separated from an adjacent bent section by a recess;
(c) the depressions of the bent sections of one corner section alternate with and are adjacent to the depressions of the bent sections of the corresponding corner section;
(d) when the edge areas are joined to form the cylindrical channel, the joined bodies define an interior joint side and an exterior joint side, wherein;
i. the cylindrical channel and corner sections are disposed on and visible only from the interior joint side; and
ii. the exterior joint side presents a linear joint line defined by abutting portions of the edge areas; and
(e) elongated means disposed in the cylindrical channel for securing the edge areas together.

4,407,535

CONTAINER-LOCKING MECHANISM

Katsutoshi Ohnuki, and Yasuo Suzuki, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,207
Claims priority, application Japan, Feb. 16, 1981, 56-20333[U]; Jul. 23, 1981, 56-109525[U]
Int. Cl.³ E05C *3/06, 3/16, 7/00*
U.S. Cl. 292—27 **13 Claims**

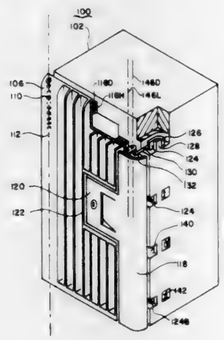
1. A container-locking mechanism for locking two overlapping sections of a carton, or the like, each section having a hole, with the two holes in alignment when said two sections are in a closed position, the mechanism comprising: an outer tubular member adapted to be fitted into the aligned holes in the overlapping sections, one end of said tubular member having a radially outwardly extending flange; an inner tubular member having at one end a plurality of circumferentially

spaced tapered portions, said outer tubular member having at the other end a plurality of radially arranged arms, said tapering portions engaging said arms and forcing said arm radially outwardly beyond the outer peripheral surface of said outer tubular member when the inner tubular member is fittingly inserted into the outer tubular member while said outer member is fitted in the aligned holes in the overlapping sections, to clamp said sections against each other in cooperation with said flange on the outer tubular member; and locking means for locking the inner tubular member in a position fully inserted into the outer tubular member.

4,407,536
SINGLE THROW MULTI-GRIP LATCHING MECHANISM

Marvin L. Kausch, San Jose, Calif., assignor to Cromemco Inc., Mt. View, Calif.

Filed Feb. 17, 1981, Ser. No. 235,167
Int. Cl.³ E05C 5/00
U.S. Cl. 292—29 **14 Claims**

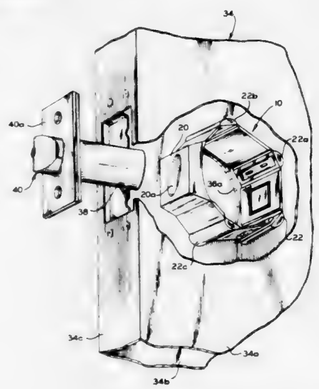


1. An environmental chamber having an operator access port which may be quickly unlatched opened closed and latched by the operator, and having a peripheral gasket which is reseated after each operator access, comprising;
- a housing forming the chamber, with an elongated access port therein;
- an elongated closure means for covering the access port, having a pair of opposed elongated sides;
- hinge means for hingedly securing the closure means to the housing along an open-close axis proximate one of the elongated sides of the closure means;
- peripheral gasket means seated between the housing and the closure means when the closure means is latched for sealing the access port;
- over-center linking means pivotally secured to the elongated closure means along a linking axis proximate the unhinged elongated side thereof;
- over-center latching structure extending along the unhinged elongated side of the closure means, and pivotally secured to the over-center linking means along a latching axis displaced from the linking axis;
- a plurality of spaced latching fingers positioned along the latching structure and extending therefrom toward the housing;
- threaded means on each latching finger for adjusting the operative length thereof;
- latching flange means formed at the end of each latching finger;
- a plurality of correspondingly spaced shoulder means on the housing for releaseably engaging the latching flange means;
- a plurality of cavities in the housing, one positioned next to each shoulder means for receiving the latching fingers;
- finger stop means extending from the latching structure next to each latching finger for guiding the latching fingers into the cavity to a position proximate the shoulder means; and
- a handle portion extending from the latching structure by which the operator pivots the latching structure and swings the latching axis along an arc about the linking axis towards the over-center position relative to the linking axis, causing the flange means to engage the shoulder means to pull the unhinged side of the closure means closer to the housing causing the peripheral gasket means to seat around the access port, and for further pivoting beyond the over-center position to bias the latching structure in the latched position.

4,407,537
DOOR AND LOCK SUPPORT

Earl J. Ames, P.O. Box 7496, Toledo, Ohio 43615

Filed Oct. 20, 1981, Ser. No. 313,164
Int. Cl.³ E05B 9/08; E04C 2/52
U.S. Cl. 292—337 **5 Claims**



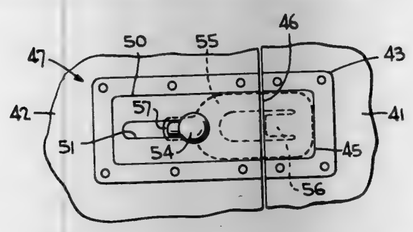
1. An annular reinforcing device for insertion interiorally into a hollow door for surrounding an internally disposed retracting mechanism and receiving a retractable bolt associated with the retracting mechanism, comprising:
- (a) an elongate, substantially flat flexible member;
- (b) said elongate, substantially flat flexible member including a number of spaced reinforcing rib portions extending transversely of said elongate, substantially flat flexible member;
- (c) a panel section disposed between adjacent rib portions, one of said panel sections having an aperture for receiving the retractable bolt;
- (d) hinge means interconnecting the adjacent edges of said rib portions and said panel sections; and
- (e) detachable interconnecting means affixed to the opposed ends of said elongate, substantially flat flexible member for forming said flexible member into an annular configuration whereby said annular reinforcing device may be folded into a compressed shape and inserted into the interior of the hollow door.

4,407,538
BISTABLE LATCH

Peter Bauer, 13921 Esworthy Rd., Germantown, Md. 20767

Filed Jan. 23, 1981, Ser. No. 227,731
Int. Cl.³ E05C 19/06
U.S. Cl. 292—87 **11 Claims**

1. A latch mechanism for permitting selective engagement and disengagement of relatively movable first and second members, said latch mechanism comprising:
- a positionally bistable member secured to said first member and comprising an endless band of spring-like material and having an outer rim and an inner rim which circumscribes a cut-out portion, said band having first and second stable positions wherein said inner rim is disposed on opposite sides respectively of said outer rim, said bistable member further including a latching tongue formed integrally with said endless band and projecting longitudinally from said band to terminate in a distal end, said tongue having first and second orientations which it assumes in said first and second stable positions, respectively, of said band;

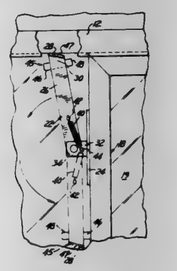


- surface means secured to said second member and positioned, when said first and second members are engaged, to abut said distal end of said tongue and prevent disengagement of said first and second members when said band is in said second stable position; and
- means for selectively applying bending forces to said bistable member to permit said bistable member to be selectively snapped between said first and second stable positions.

4,407,539
LATCH FOR SLIDING GLASS DOOR

Ralph T. Asp, 4160 W. Walton, Drayton Plains, Mich. 48020

Filed Aug. 28, 1981, Ser. No. 297,094
Int. Cl.³ E05C 17/12
U.S. Cl. 292—338 **5 Claims**

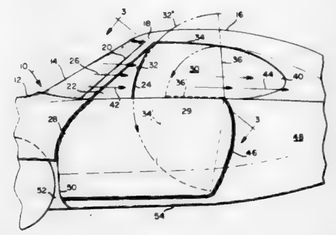


1. A locking device for a sliding door mounted in a track comprising:
- a pivotal lever mounted on the upper forward edge of the sliding door, said lever pivotal between an active upper locking position and a lower inactive position, said lever further having an upper toothed end portion engageable with the opposed track in its upper locking position;
- a biasing spring operably connected to said lever for maintaining it in one of said positions; and
- a resilient molded member mounted at the upper end of said lever, said member including a forward and a rearward bumper, said molded member including a further protective rim alongside and slightly above said toothed portion.

4,407,540
WINDOW CONSTRUCTION FOR PASSENGER VEHICLES

Walter H. Korff, 449 N. Lamer St., Burbank, Calif. 91506

Filed Aug. 7, 1981, Ser. No. 291,087
Int. Cl.³ B60J 1/00
U.S. Cl. 296—146 **17 Claims**



1. A window construction for passenger vehicles having improved aerodynamic characteristics in combination with a closed passenger body having a front windshield, a roof, and a pair of side passenger doors, comprising:
- a. said front windshield having a pair of side edges with a curved section adjacent each of said side edges;
- b. a pair of side window assemblies, each of said side window assemblies being disposed in an associated one of said side passenger doors;
- c. said side window assemblies each having a front segment and a rear segment, said front segment having a forward edge, and at least one of said segments being movable;
- d. said side window assemblies each having a generally convex surface;
- e. a pair of "A" posts, each of said "A" posts being disposed between one of said side edges and said forward edge of an associated one of said side window assemblies and each of said "A" posts having a pair of associated edges;
- f. said front windshield assembly, said "A" posts, and said side window assemblies each having an external surface;
- g. each side edge abutting one edge of said pair of associated edges of each of said "A" posts whereby said front windshield external surface is aligned with each external surface of said pair of "A" posts; and,
- h. said forward edge of each side window assembly abutting said other one edge of said pair of associated edges whereby each "A" post external surface is aligned with said associated side window assembly external surface for providing an integral unitary aerodynamic surface.

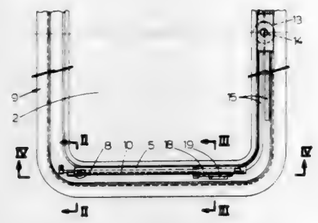
4,407,541
SLIDING ROOF

Robert T. Boots, Haarlem, Netherlands, assignor to Vermeulen-Hollandia Octrooien B.V., Haarlem, Netherlands

Filed Jun. 12, 1981, Ser. No. 273,107
Claims priority, application Netherlands, Jun. 24, 1980, 8003639
Int. Cl.³ B60J 7/04
U.S. Cl. 296—216 **20 Claims**

14. A sliding roof for a vehicle, having a fixed roof with an opening therein, comprising a panel which in its forward and lowermost position closes said opening in said fixed roof; at least one front support, guided in said vehicle for backward and forward movement in the longitudinal direction of the vehicle, said front support carrying a horizontal cross shaft which supports the panel near the front end of said panel, said front support occupying its foremost position in the closed position of the panel; an actuating member engaging said front support and adapted to move the same backward and forward; at least one lever, which is supported at its lower end in the vehicle for pivotal movement about a horizontal transverse axis, said lever occupying its foremost position in the closed

position of the panel; a cross pin connected to the upper end of said lever; a slot formed underneath said panel and associated therewith, said cross pin slidably engaging said slot and occupying its rear position in said slot in the closed position of said panel; resilient means loading the cross pin in the rearward direction of said slot; and a stop means defining the position of



said lever wherein a displacement of said slot with respect to said cross pin is initiated, said pivotal lever movement before said latter lever position is reached raising the rear edge of said panel with respect to its lowermost position, while said displacement of said slot with respect to said cross-pin causes said panel with its raised edge to be partly displaced outside the roof opening into positions above the fixed roof.

4,407,542

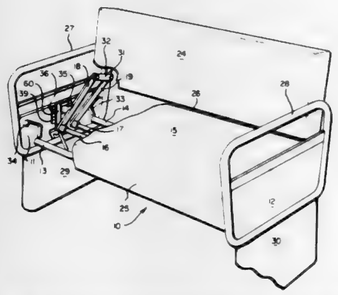
WALK-OVER SEAT WITH LATCH

Norman J. Kehl, Elk Grove Village, and Richard D. Unser, Wood Dale, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed May 8, 1981, Ser. No. 261,772

Int. Cl.³ B60N *1/02*

U.S. Cl. 297—103 **16 Claims**



1. A walk-over seat having front and rear ends and comprising:

a base having a pair of side members;

a horizontal rod extending between said side members;

a seat back;

a link having an upper end connected to said seat back and a lower end;

means mounting said lower end on said rod for pivotal movement of said link about the axis of said rod and along a path extending between a first position, in which the link extends angularly upwardly from the rod towards said front end of the seat, and a second position in which the link extends angularly upwardly towards said rear end of the seat;

a first latch member;

means mounting said first latch member on a side member, for pivotal movement of said first latch member about a vertical axis between a locking position, in which said latch member extends outwardly from said side member in said path of movement of said link, and a retracted position in which said first latch member does not extend into said path;

means normally urging said first latch member toward its locking position;

means on said first latch member engageable by said link when the link moves from its first to its second position, for pivoting said first latch member from its locking to its retracted positon;

and means for preventing movement of the first latch member from its locking position upon being engaged by said link member when the link member is urged from its second to its first position.

4,407,543

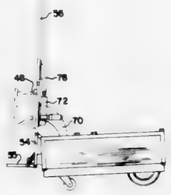
MECHANIZED WHEELCHAIR

David Mashuda, R.D. #1, Evans City, Pa. 16033

Filed Oct. 30, 1981, Ser. No. 316,680

Int. Cl.³ A61G *5/04*

U.S. Cl. 297—330 **4 Claims**



1. In a mechanized wheelchair of the type comprising a rectangular body frame supported on front and rear pair of wheels, a rectangular seat frame pivotally mounted at its forward end on the forward end of the body frame and being swingable upwardly from a horizontal position in which it rests on the body frame to an upright position, a rectangular back frame pivotally mounted on one end of the rear end of the seat frame being swingable from a horizontal position in which its rear end rests on the body frame to an upright position, a pair of leg rest frames pivotally connected at their upper ends to the forward end of the seat frame and being swingable from a downwardly extending position upwardly into a position co-planar with the seat frame, the improvement comprising a base frame mounted on the wheels at corners of the body frame so as to position the body frame on the base frame for vertical telescoping movement thereon, a lever arm affixed to the bottom of the seat frame extending downwardly therefrom, first power operated means attached to the body frame to the rear end of the seat frame and to the free end of said lever arm for swinging the seat supporting a person from horizontal to upright position by pulling the lever arm, and second power operated means mounted on the base frame and attached to the body frame for raising and lowering the frame supporting a person with respect to the base frame.

4,407,544

APPARATUS FOR ELIMINATION PLAY IN GEAR WHEEL TRANSMISSIONS

Horst Bähring, Mühltal, Fed. Rep. of Germany, assignor to Privates Institut für Physikalisch Technische Auftragsforschung GmbH, Reinheim, Fed. Rep. of Germany

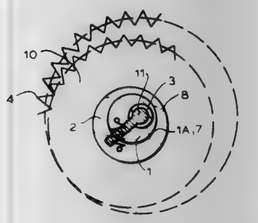
PCT No. PCT/EP80/00029, § 371 Date Jan. 28, 1981, § 102(e) Date Jan. 7, 1981, PCT Pub. No. WO80/02677, PCT Pub. Date Dec. 11, 1980

PCT Filed May 24, 1980, Ser. No. 229,578

Claims priority, application Fed. Rep. of Germany, May 28, 1979, 2921588

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—362 **27 Claims**



1. Apparatus for eliminating play between two interengaged gear wheels (4, 10) of a gear wheel transmission which is self-locking in relation to a moment of rotation acting on the output side and includes two disc-like transmission elements (1, 2) each associated with the respective gear wheel, characterized by the combination of the following features:

(a) the central axis (2M or 1M) of each of the disc-like transmission elements (2 or 1) is concentric with respect to the axis of rotation (10D or 4D) of the respective gear wheel (10 or 4);

(b) the spacing of the axes of rotation (4D, 10D) of the two gear wheels (4, 10) is a function of the rotation of the disc-like transmission elements (1, 2) relative to each other;

(c) a spring (12) is connected to both disc-like transmission elements (1, 2) in such a way that the two disc-like transmission elements (1, 2) are pivoted relative to each other by the spring force in a direction, such that the displacement of the central axes (1M, 2M) of the disc-like transmission elements relative to each other in radial direction increases and thus play between the gear wheels (4, 10), which are connected to the respective disc-like transmission elements (1, 2), is removed; and

(d) a handle (16) is connected to one of said gear wheels (10) by way of an adjusting shaft (5) and the disc-like transmission elements (1, 2) in such a way that, upon rotary movement in either of the two directions of rotation, said one gear wheel is rotated relative to the other gear wheel (4) and at the same time the respective disc-like transmission element (1, 2) is moved in the direction of slightly increasing the play between the two gear wheels (4, 10).

4,407,545

MINE SYSTEM

Brian R. Stoppani, Doncaster, England, assignor to Mining Supplies Limited, England

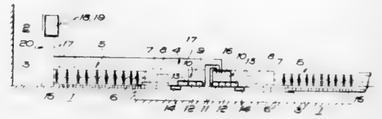
Filed Oct. 15, 1980, Ser. No. 197,332

Claims priority, application United Kingdom, Oct. 19, 1979, 7936340

Int. Cl.³ E21C *29/00*

U.S. Cl. 299—30 **4 Claims**

1. A mine system comprising at least one mining machine of the shearer or trepanner type adapted to haul itself, in a reciprocal manner, along a mineral face, a mine roadway located at one end of said mineral face, conveyor means extending along said mineral face to guide said mining machine and to transport the mineral to the roadway, rack means attached to said conveyor and extending longitudinally therealong, a self-contained haulage unit carried by said machine and including at least one variable speed electric motor, a haulage sprocket coupled to said motor for engaging said rack means, a control box for said haulage unit located in said roadway and means for electrically connecting the same to said machine, a terminal



box housed in said machine to receive said connecting means, and electrical coupling means between said terminal box and said motor, whereby said self-contained haulage unit and in particular the supply of electrical power to said electric motor of said haulage unit is controlled through said roadway located control box.

4,407,546

MINING PLANER WITH PIVOTAL TOOL HOLDER

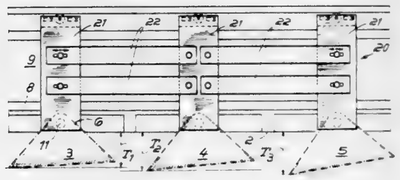
Ernst Braün, and Gert Braün, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,017

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011100

Int. Cl.³ E21C *27/35*

U.S. Cl. 299—34 **28 Claims**



1. A planer assembly for winning minerals from a mineral face comprising:

a planer guide member;

at least two planers engaged with said guide member and slidable therealong in a travel direction;

hinge means interconnecting said at least two planers for transferring moments applied to each of said planers; and

a planer tool holder for holding at least one planer tool mounted on each of said planers and positioned to make a cut in the mineral face of a selected depth, the depth increasing from planer to planer in a direction opposite the travel direction;

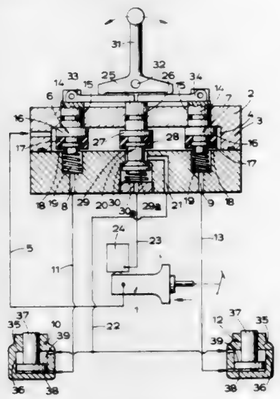
said hinge means comprising a connecting lug rigidly connected to each of said planers and extending outwardly therefrom, a hinge bolt extending substantially perpendicular to the travel direction and through connecting lugs of adjacent planers for interconnecting said adjacent planers for permitting relative movement at an angle in a vertical plane of adjacent planers.

4,407,547

HYDRAULIC BRAKING SYSTEMS FOR VEHICLES

Roy E. Edwards, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 16, 1981, Ser. No. 254,602
Claims priority, application United Kingdom, Apr. 17, 1980, 8012658
Int. Cl.³ B60T 11/12
U.S. Cl. 303—6 A 10 Claims



1. An hydraulic braking system for a vehicle comprising brakes on opposite sides of the vehicle, actuator means for operating said brakes, a single pedal-operated hydraulic master cylinder for supplying hydraulic fluid to said actuator means to apply said brakes, a selector valve assembly for controlling independently or simultaneously the supply of hydraulic fluid to said actuator means for said brakes on one or both sides of the vehicle, whereby said brakes can be applied independently for steering or simultaneously for retarding the progress of the vehicle, and brake torque regulating means operable in conjunction with said selector valve assembly, said selector valve assembly comprising a housing having an inlet port and a pair of outlet ports, a distribution chamber in said housing, a pair of normally open diverter valves, and valve control means, said inlet port being connected to said master cylinder, each outlet port being connected to a respective one of said actuator means, each diverter valve controlling communication between said distribution chamber and a respective one of said outlet ports, and said valve control means being operable to simultaneously close either one of said diverter valves and operate said torque regulating means, whereby, for a given pedal force, an output torque from each said brake is greater when the said brake is applied independently of said brake on the opposite side of said vehicle than when both said brakes are applied simultaneously.

4,407,548

AIR SERVICE BRAKE EXHAUST CONTROL SYSTEM

John M. Graham, 921 Sequoia Ave., Millbrae, Calif. 94030

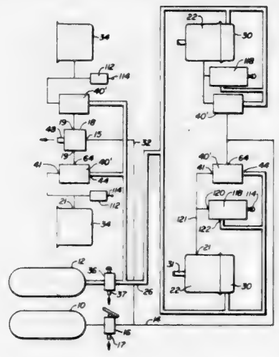
Continuation-in-part of Ser. No. 152,590, May 23, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 320,892
Int. Cl.³ B60T 13/22
U.S. Cl. 303—6 M 18 Claims

1. An air service brake exhaust control system adapted for controlling the exhaust of air from an air service brake assembly, the assembly including a housing, a service chamber defined by said housing, a housing inlet formed in said housing and fluidly communicating with the service chamber, and an actuator responsive to the pressure within said service chamber, the system comprising:

exhaust valve means, having an exhaust port, for fluidly connecting said housing inlet to a service brake pressure source or to said exhaust port for discharge to atmosphere; and

a pilot check valve having a first port fluidly coupled to said exhaust port, a second/exhaust port fluidly coupled to said first port, check valve means for blocking fluid flow from said fluid port to said second/exhaust port, a control port, and means, responsive to the presence of a control pressure at said control port of at least a first value, for overriding said check valve means to allow relatively free flow of fluid from said first port to said second/exhaust port;

whereby when said control pressure is at least said first valve and said housing inlet is fluidly connected to the service



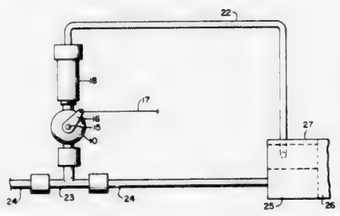
brake pressure source, fluid from said service brake pressure source is fluidly connected to said service chamber to actuate said actuator; when said control pressure is at least said first value and said housing inlet is fluidly connected to said exhaust port, said housing inlet is fluidly connected to said second/exhaust port to allow the fluid in said service chamber to be exhausted through said second/exhaust port; and when said control pressure is less than said first value, fluid flow from said housing inlet through said exhaust port and to said first port of said pilot check valve is blocked by said check valve means so the pressure within said service chamber is not dissipated by exhausting fluid within said service chamber through the second/exhaust port.

4,407,549

ANTI-SKID DEVICE FOR VEHICLES

George C. Klein, 102 W. Truman Dr., Holiday, Fla. 33590

Filed Jun. 10, 1981, Ser. No. 272,346
Int. Cl.³ B60T 7/02
U.S. Cl. 303—6 C 4 Claims



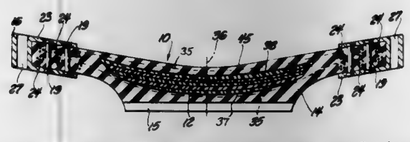
1. In a vehicle having a hydraulic brake system with front and rear wheel brakes actuated by separate reservoirs in a dual master brake cylinder and separate hydraulic circuit means to said front and rear wheel brakes, means to selectively deactivate said front wheel brakes after said front and rear wheel brakes have been activated, comprising a hydraulic by-pass circuit in said hydraulic circuit connecting said front wheel brake reservoir in said master brake cylinder to said front wheel brakes, said by-pass circuit having a by-pass valve as part thereof and being movable between an open position in which a quantity of fluid passes through said by-pass valve back to said master brake reservoir to substantially deactivate said front wheel brakes without deactivating said rear wheel brakes, and a closed position in which said by-pass valve is closed to passage of fluid and said by-pass circuit is inoperative.

4,407,550

RESILIENT BAND STRUCTURE HAVING IMPROVED LAMINATED CORE AND DRIVE SHOES

Algis L. Lapsys, Oakland, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1981, Ser. No. 245,481
Int. Cl.³ B62D 55/24
U.S. Cl. 305—35 EB 5 Claims



1. An annular resilient band structure designed for installation on a ground vehicle to provide tractive propulsion force and vehicle suspension function: said band structure comprising an annular resilient core having a transverse curvature that is convex on its outer surface and concave on its inner surface; first and second substantially inextensible bead structures outboard from the lateral edges of the core; first load transfer cord means extending from the first bead structure to the second bead structure along the outer surface of the resilient core; second load transfer cord means extending from the first bead structure to the second bead structure along the inner surface of the resilient core; and an elastomeric sheath surrounding the core, bead structures and cord means; said resilient core comprising an elongated strip of resilient material (26) wound in spiral fashion to define a continuous spiral leaf having a multiplicity of resilient leaf layers; said strip of resilient material having a relatively wide inner end and a relatively narrow outer end, the lateral side edges of the strip becoming progressively narrower from the strip inner end to the strip outer end so that individual leaf layers have progressively narrower transverse widths measured from the inner layer to the outer layer.

4,407,551

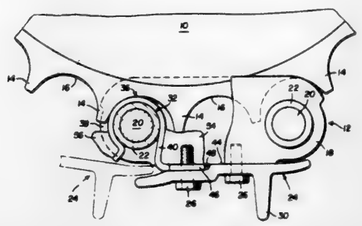
REPLACEABLE WEAR COVER FOR TRACK BUSHING

John M. Baylor, Bettendorf, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jun. 1, 1981, Ser. No. 269,128
Int. Cl.³ B62D 55/08
U.S. Cl. 305—57 5 Claims

1. In an endless track assembly of the type used on a machine provided with a drive sprocket having teeth separated by circumferentially disposed spaces between the teeth, said track assembly including a pair of laterally spaced apart track links interconnected by at least one pin fitted within an external bushing, a track plate removably attached by fasteners to said track links, the improvement comprising:

a replaceable wear cover including a generally planar mounting portion which is mounted between said track links and a curved shield portion fitted partially around the outer surface of said bushing, said shield portion directly engaging the circumferentially disposed spaces between the sprocket teeth to protectively shield the bushing against impact with the sprocket thereby increasing its work life; and



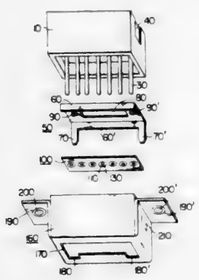
elastomeric block-shaped members secured to opposed sides of said shield portion for engaging the ends of said sprocket teeth prior to the engagement between said wear cover and sprocket.

4,407,552

CONNECTOR UNIT

Masayuki Watanabe; Hiroshi Yamaya, both of Aichi, and Hitoshi Kurohata, Komaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 140,887, Apr. 16, 1980. This application Jun. 21, 1982, Ser. No. 390,333
Claims priority, application Japan, May 18, 1978, 53-67665; Jan. 16, 1979, 54-3693
Int. Cl.³ H01R 13/66
U.S. Cl. 339—143 R 8 Claims



1. A connection unit comprising:

an insulating housing having a separation wall;

a plurality of connection pins penetrating said separation wall;

a conductor plate formed with at least one projection and at least one hole of sufficient size to permit said connection pins to pass through said hole without making electrical contact with said conductor plate, said conductor plate being disposed within the insulating housing along the underside of said separation wall;

a dielectric plate formed with a plurality of holes which receive individual connection pins therethrough without making electrical contact with said connection pins, said dielectric plate being disposed within the insulating housing in contact with the underside of said conductor plate;

a plurality of conducting portions formed on the surface of said dielectric plate opposite the surface in contact with the conductor plate and surrounding said holes of the dielectric plate and in electrical contact with said connection pins, thereby effectively forming low-pass filters between said connection pins and conductor plate;

encapsulating resin filling the space within said insulating housing surrounding said conductor plate and said dielectric plate;

a conductive case having a bottom wall formed with at least one hole penetrated by said connection pins and said projection, said connection pins being disposed without making electrical contact with said conductive case and said conductive case accommodating said insulating housing therein; and

means for electrically connecting said projection of the conductor plate to the outside of the bottom wall of said conductive case so as to provide an electromagnetic or magnetic shield by both of said conductor plate and conductive case,

whereby said connector unit is electromagnetically or magnetically shielded by both of said conductor plate and conductive case and shielded from the external environment by the encapsulating resin.

4,407,553

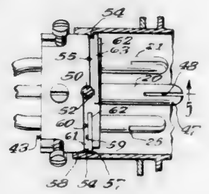
ELECTRICAL CONNECTOR HAVING THREADED CONNECTION BETWEEN RECEPTACLE PARTS

Harold A. Dvorachek, Iola, Kans., and Boleslaw M. Klimek, Des Plaines, Ill., assignors to Echlin Inc., Branford, Conn.

Continuation of Ser. No. 149,123, May 12, 1980, abandoned. This application Jun. 23, 1982, Ser. No. 391,230

Int. Cl.³ H01R *13/34*

U.S. Cl. 339—14 P **8 Claims**



1. In an electrical connector including a hollow housing member having open forward and rearward portions, a body member of insulating material having a forward end portion adapted to be inserted into said rearward open end portion of said housing member to be positioned in an operative relationship with respect thereto, and contact means carried by said body member for engagement with contact means carried by another body member inserted into said forward open end, said rearward end portion of said housing member and said forward end portion of said body member when in said operative relationship having facing internal and external generally cylindrical surfaces, the cylindrical surface of one of said members being formed with a single helical projection having a length of nearly and no more than 360 degrees and the cylindrical surface of the other of said members being formed with a single helical groove having a length of nearly and no more than 360 degrees and being arranged to threadingly receive said projection to hold said members together in said operative relationship when said body member is inserted into said open rearward end of said housing member and rotated approximately 360 degrees to place substantially the full length of said projection within the full length of said groove, said groove being defined by rearwardly and forwardly facing side surfaces in facing relation to each other, and said other of said members being formed by separate forward and rearward parts with said rearwardly facing side surface being formed on said forward part and said forwardly facing side surface being formed on said rearward part.

4,407,554

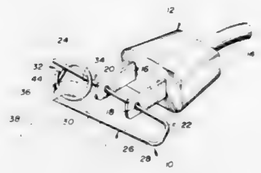
ELECTRICAL PLUG SAFETY DEVICE

Jerry E. Drall, 5167 Patrick Dr., West Bloomfield, Mich. 48033

Filed Mar. 16, 1981, Ser. No. 244,512

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—37 **4 Claims**



1. An electrical plug safety device for use with an electrical plug having prongs including openings, the safety device comprising: a clasp including an elongated pin having an electrically nonconductive outer surface; said pin including an attached end and a distal end that can be inserted through the prong openings of the electrical plug; said clasp also including an elongated connector having one end that supports the attached end of the pin for movement of the pin between open and closed positions; said connector also having another end including a retainer formed to receive the distal end of the pin in the closed position thereof so as to prevent use of the electrical plug with the pin extending through the prong openings thereof; said pin being movable to the open position free from the retainer to allow withdrawal thereof from the prong openings such that the plug can be used; and said retainer having an opening capable of receiving a shackle of a lock to prevent movement of the pin to the open position and thereby selectively ensuring nonuse of the plug under control of the lock.

4,407,555

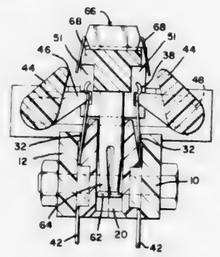
CAM ACTUATED DIP TEST SOCKET

Joseph L. Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 19, 1981, Ser. No. 245,303

Int. Cl.³ H01R *13/193*

U.S. Cl. 339—75 M **8 Claims**



5. A test socket for testing electrical components having a series of electrical terminals extending outwardly from respective sides thereof, comprising:

housing means having rows of spring terminal means secured along respective sides;

transport means mounted onto said housing means between said rows of spring terminal means and being movable relative to said housing means, said transport means having support surface means onto which an electrical component can be placed with the series of electrical terminals thereof being disposed in alignment with respective spring terminal means of said rows of spring terminal means;

dielectric terminal-engaging means;

mounting means provided by said terminal-engaging means and said housing means mounting said terminal-engaging means onto said housing means along said rows of spring terminal means and for movement of the terminal-engaging means relative to said housing means; and

means pivotally connecting said terminal-engaging means to said transport means so that when said transport means is moved relative to said housing means with an electrical component on said support surface means, said pivotally connecting means moves said terminal-engaging means relative to both said housing means and transport means thereby causing the electrical terminals of the electrical component to be moved into electrical engagement with said spring terminal means.

4,407,556

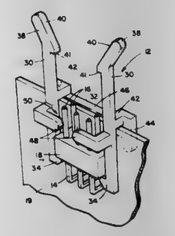
RETAINING CLIP FOR AN ELECTRICAL CONNECTOR

Albert M. Hoschett, Arlington Heights, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Sep. 21, 1981, Ser. No. 304,297

Int. Cl.³ H01R *13/627*

U.S. Cl. 339—91 R **2 Claims**



1. A retaining clip (12) for releasably holding an electrical connector socket (22) in engagement with a plug (14) securely soldered to a circuit board (19) having first and second surfaces; the plug (14) comprises at least two spaced parallel pins (16) maintained in relative position by a molded strip (18), the pins (16) are bent at right angles with one end of each pin soldered to the circuit board (19) and the free corresponding ends of the pins (16) being in a plane parallel to the first surface of the circuit board (19), said retaining clip (12) comprises:

a pair of generally parallel, elongated legs (30) having first and second ends, each of said legs (30) being spaced apart approximately the width of said plug (14),

a brace (32) secured to each of said legs (30) spaced apart from both ends thereof and serving to hold said legs (30) in substantially parallel alignment,

said first ends of said legs (30) each having a locking prong (34), said locking prongs (34) being oppositely positioned to grasp the molded strip (18) of said plug (14),

said second ends of said legs (30) having notches (41), oppositely disposed and serving to engage the socket (22) to prevent disengagement of the socket (22) from the plug (14),

said second end of each of said legs (30) is flared (38) forming a camming surface (40) which serves to facilitate movement of said legs (30) apart to allow engagement between said socket (22) and said plug (14), and

said brace (32) includes a pair of arms (44) secured to said legs (30) and extending in a common direction substantially along a line parallel to the axis of each of the legs (30) and along a second surface of the circuit board (19) and serving to restrict relative movement between said retaining clip (12) and said circuit board (19).

4,407,557

ELECTRICAL COUPLING DEVICE

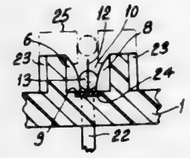
Derek Hayes, Home Farm Cottage, St. Michael, Bungay, Suffolk NR 1NF, England

Filed Jul. 14, 1981, Ser. No. 283,235

Claims priority, application United Kingdom, Jul. 16, 1980, 8023304

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—97 R **13 Claims**



1. An electrical coupling device for effecting electrical connection between an electrically-conducting member of the coupling device and the electrically-conducting material of an insulated electrical conductor, said coupling device comprising

a base member of electrically insulating material,

a cradle provided on the base member,

said cradle including a pair of spaced-apart, metallic side members having respective first ends joined to each other by metallic connection means, said side members and said connection means together defining an internal space of the cradle which is open between respective second ends of said side members to enable said conductor, in use of the coupling device, to be pressed into said space between said side members, and

a metallic, conductor-piercing means, forming at least part of said electrically-conducting member, which conductor-piercing means projects into said space between said side members in the direction from said first ends of said side members toward said second ends thereof,

whereby when said conductor is introduced into said space, said conductor-piercing means penetrates the electrically-insulating material of the conductor to make contact with the electrically-conducting material of the conductor and the conductor is subjected to pressure between said side members of the cradle.

4,407,558

ELECTRICAL CONNECTOR ASSEMBLIES FOR CAPACITIVE FLUID-GAUGING PROBES

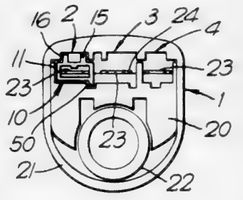
Peter R. Thrift, Basingstoke, England, assignor to Smiths Industries Public Limited Company, London, England

Filed May 4, 1981, Ser. No. 260,461

Claims priority, application United Kingdom, May 13, 1980, 8015814

Int. Cl.³ H01R *13/516, 13/635*

U.S. Cl. 339—121 **9 Claims**



1. An electrical plug and socket connector assembly for a capacitive fluid-engaging probe comprising: a sleeve which is shaped to extend about the probe, said sleeve having a portion

which is remote from said probe, said remote portion of said sleeve having an inner surface which is provided with a configuration of axially extending surface formations; an inner member separate from said sleeve and probe and shaped to be received within said sleeve between said portion of the sleeve and the probe, said inner member having an outer surface which is spaced from said probe and provided with a configuration of axially extending surface formations, the said outer surface of said inner member being disposed in spaced facing relation to the said inner surface of said sleeve to define therebetween a plurality of axially extending socket members which are demarcated from one another by axially extending surface formations on at least one of said inner surface of said sleeve and said outer surface of said inner member, each of said socket members having two opposing sides which are defined respectively by a part of said inner surface of said sleeve and by a part of said outer surface of said inner member, the surface configurations of said opposing sides of each said socket member being defined by said axially extending surface formations on said parts, the said surface configurations of the opposing sides of at least some of said socket members differing from one another; a plurality of first contact elements; means mounting one each of said first contact elements in respective different ones of said socket members; a plurality of separate plug members each of which is adapted to be individually inserted into one of said socket members independently of the insertion of any other of said plug members into any other of said socket members, each said plug member having an outer housing containing a single second contact element that is positioned to engage the one of said first contact elements in the socket member into which said plug member is inserted, the housing of each of said plug members having a pair of opposing sides adapted to be disposed in facing slideable relation to the said opposing sides of the socket member into which said plug member is inserted, the said opposing sides of each said plug member housing having configurations of axially extending surface formations respectively shaped for cooperation with the surface configurations in the said opposing sides of the said socket member into which said plug member is slideably inserted, the said surface configurations of the opposing sides of the housing of at least one of said plug members differing from the said surface configurations of the opposing sides of at least one of said socket members such that said at least one of said plug members is prevented from being inserted into said at least one of said socket members.

4,407,559

CONNECTOR DEVICE WITH FLUSH MOUNTING RECEPTACLE, COVER PLATE AND TERMINAL BOARD

Daniel Meyer, Rochester, Minn., assignor to Communications Systems, Inc., Hector, Minn.

Filed Apr. 9, 1981, Ser. No. 252,287
Int. Cl.³ H01R *13/514*
U.S. Cl. 339—126 R **10 Claims**



1. A connector device for receiving an electrical communication plug and which mounts flush on a surface having a cavity therein and with a rear side facing the cavity, the device comprising:

a cover plate having at least one opening therethrough and a periphery circumscribing a rear side for adjacently abutting the surface;

means for attaching the cover plate to the surface;

at least one housing having a receptacle defined therein attached to the cover plate, said housing having a plug receiving end and a rearward end, the plug receiving end being aligned with the opening of the cover plate for cooperation therewith and the rearward end extending into the cavity, the receptacle having first conductive means for conductively contacting the communication plug inserted into the plug receiving end and a second conductive means conductively connected to the first conductive means; and

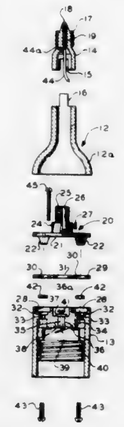
a terminal board positioned on the rear side of the cover plate having a base with a plurality of conductive terminals on the base conductively connected to the second conductive means, and having a plurality of supports projecting from the base toward the cover plate supporting the base from the rearside of the cover plate, and wherein said base is fastened with respect to the cover plate with threaded fasteners substantially less in number than the number of terminals and wherein at least one of the conductive terminals is a threaded fastener that threadably fastens the base to the rearward end of the receptacle.

4,407,560

ELECTRICAL ADAPTER

Michael Williams, R.D. #3 Box 222, Quakertown, Pa. 18951

Filed Jun. 25, 1981, Ser. No. 277,127
Int. Cl.³ H01R *13/504*
U.S. Cl. 339—154 L **9 Claims**



1. An adapter comprising:

(a) a top section comprised of a hollow ceramic base member having upwardly extending protrusions and a hollow ceramic top member having notched portions corresponding to said protrusions, said upwardly extending protrusions engaging said notched portions to form joints, said joints being secured by an adhesive

(b) a male threaded screw shell and a central contact mounted on said top member; and

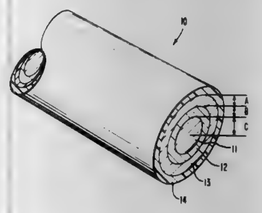
(c) a bottom ceramic section connected with said base member having mounted thereon an internally threaded female screw shell and a central contact, said central contact mounted on said top member and said central contact mounted on said bottom ceramic section being electrically connected and said male threaded screw shell and said female threaded screw shell being electrically connected.

4,407,561

METALLIC CLAD FIBER OPTICAL WAVEGUIDE

Joseph A. Wysocki, Oxnard, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 14, 1980, Ser. No. 196,955
Int. Cl.³ G02B *1/10, 5/14, 5/172*
U.S. Cl. 350—96.3 **17 Claims**



1. A flexible fiber optical waveguide for the transmission of optical electromagnetic radiation, said waveguide comprising a glass fiber including a glass core member having a first minimum refractive index for said radiation and a glass cladding concentrically surrounding said core, said glass cladding including at least one layer having a second refractive index for said radiation which is lower than the minimum of said first refractive index by at least 0.1% to produce total internal refraction of said optical radiation at the core/clad interface and to thereby guide said optical radiation along said waveguide, characterized in that said glass fiber is provided with a coating of a metal or alloy of sufficient thickness to substantially preserve the nascent strength of said glass fiber waveguide without substantially interfering with the optical transparency of said waveguide or the flexibility thereof, and said metal or alloy

(a) is substantially chemically inert with respect to the material comprising said glass fiber at the melting point of said metal or alloy during coating of said metal or alloy onto said glass fiber;

(b) has a recrystallization temperature greater than room temperature or the anticipated working temperature, whichever is greater; and

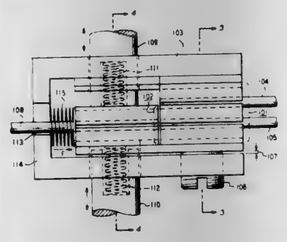
(c) forms an hermetic seal around the outer surface of said glass cladding.

4,407,562

OPTICAL FIBER SWITCH

William C. Young, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 210,013, Nov. 24, 1980, abandoned. This application Oct. 1, 1982, Ser. No. 432,254
Int. Cl.³ C02B *7/26*
U.S. Cl. 350—96.20 **13 Claims**



1. A switch for coupling an optical signal between optical fibers characterized by

first (**101**) and second (**102**) housings having a number of fiber receiving channels (**301**) therethrough, each housing also having two parallel exterior surfaces with a number of grooves (**204**) having a uniform cross-section disposed therein, the perpendicular distance between said surfaces of said first housing being greater than the perpendicular distance between said surfaces of said second housing;

first (**104, 105**) and second (**108**) sets of optical fibers respectively disposed in said fiber receiving channels in said first and second housings;

a support assembly (**103, 106, 205**) having a slot with grooved and parallel sidewalls which are the mating opposite of the grooved exterior housing surfaces, said first housing being fixedly positioned in said slot by the mutual engagement of the grooved exterior surfaces of said first housing and said grooved slot sidewalls, said second housing being disposed in said slot adjacent said first housing with said first and second sets of optical fibers parallel to one another; and

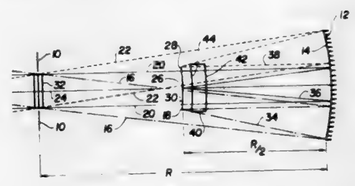
means (**109, 110**) for displacing said second housing in a direction substantially perpendicular to said exterior surfaces to either of two positions which axially aligns a predetermined number of optical fibers in said first and second sets, each position being precisely determined by the mutual engagement of one grooved exterior housing surface and one grooved slot sidewall.

4,407,563

HIGH SPEED MULTI FOCAL PLANE OPTICAL SYSTEM

Peter O. Minott, Bowie, Md., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 22, 1981, Ser. No. 333,535
Int. Cl.³ G02B *27/10, 17/08*
U.S. Cl. 350—173 **17 Claims**



1. A pupil concentric optical imaging system comprising:

an aperture stop (**10**);

an image forming objective including a first optical element (**12**) concentric with said aperture stop (**10**) and adapted to converge a light beam (**16**) impinging thereon from said aperture stop, and

a second optical element (**40**) situated in the path of said converging beam (**34**) from said first optical element (**12**), said second optical element (**40**) including an entrance face (**42**) and at least two exit faces (**44, 54**) from which images emerge to at least two focal surfaces (**30, 56**), said entrance and exit faces (**42, 44, 54**) being curved and optically concentric to said aperture stop (**10**).

4,407,564

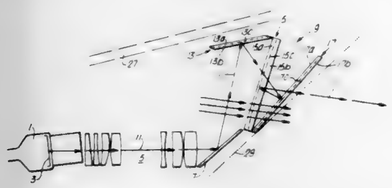
HEAD-UP DISPLAYS

Stafford M. Ellis, East Preston, England, assignor to Elliott Brothers (London) Limited, Essex, England

Filed Jan. 21, 1981, Ser. No. 237,401
Claims priority, application United Kingdom, Jan. 22, 1980, 8002127
Int. Cl.³ G02B *27/14, 5/32;* G03H *1/30*
U.S. Cl. 350—174 **6 Claims**

1. A display unit for a head up display comprising a combiner through which an observer can view a scene and a projector unit having a display surface from which light representing a display is projected onto the combiner for reflection to the observer thereby to provide the observer with an image of the display superimposed on his view through the combiner,

characterised in that the combiner has first, second and third tuned reflective optical films which converge towards one another so as to define a pair of tapering spaces; the reflection/-transmission characteristics of the films and the angles of convergence of the films and their angular relationship with the display surface being such that light within a narrow wave-



band from the display surface is, in turn, reflected at the first film towards the second film, transmitted through the second film towards the third film, reflected at the third film back towards the second film, reflected at the second film towards the third film, and transmitted through the third film to the observer's viewing position.

4,407,565

LIGHT VALVE SUSPENSION CONTAINING FLUOROCARBON LIQUID

Robert L. Saxe, New York, N.Y., assignor to Research Frontiers Incorporated, Plainview, N.Y.

Filed Jan. 16, 1981, Ser. No. 252,757
Int. Cl.³ G02F *1/01*
U.S. Cl. 350—374 **26 Claims**

1. In a light valve, comprising a cell containing a suspension of particles in a liquid suspending medium, the improvement wherein said light valve suspension comprises particles of a perhalide of an alkaloid acid salt or of a light-polarizing metal halide or perhalide suspended in said liquid suspending medium and a protective polymer effective to inhibit agglomeration of said particles dissolved in said liquid suspending medium, said liquid suspending medium comprising an electrically resistive, chemically inert, low molecular weight, liquid fluorocarbon polymer having a specific gravity at room temperature of at least about 1.5 and having at least about 50% of its atoms constituted by halogen atoms, at least 60% of said halogen atoms being fluorine and the balance chlorine and/or bromine, and an electrically resistive organic liquid miscible with the fluorocarbon liquid, said fluid suspending medium being operable to suspend said particles in substantial gravitational equilibrium.

4,407,566

OPTICAL FILTER

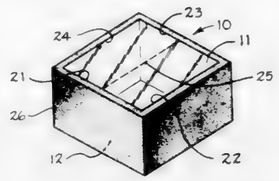
William J. Rosenberg, and Alan M. Title, both of Palo Alto, Calif., assignors to Lockheed Missiles & Space Co., Inc., Sunnyvale, Calif.

Filed Sep. 29, 1981, Ser. No. 306,691
Int. Cl.³ G02B *5/28, 5/30*
U.S. Cl. 350—404 **19 Claims**

1. A filter element for an optical filter, said filter element comprising:

(a) a birefringent crystal having a unique optic axis; said crystal having a rectangular parallelopiped configuration with an entrance face through which optical energy is received, an exit face through which optical energy in a particular passband is passed, and four side walls; said optic axis being parallel to said entrance and exit faces, each of said side walls being surfaced so as to cause optical energy incident upon any one of said side walls from within said crystal at an angle greater than a critical angle as measured from normal to said one of said side walls to undergo total internal reflection back into said crystal; and

(b) a coating on each of said side walls, said coating having an index of refraction such as to cause said critical angle for total internal reflection of optical energy in said pass-



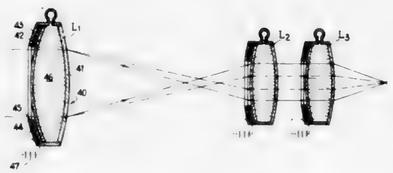
band to be substantially equal to a half-angle defining a maximum field of view for said filter element.

4,407,567

OBJECTIVE HAVING A VARIABLE FOCAL LENGTH

Guy A. Michelet, Paris, and Georges G. Bret, Verrieres, both of France, assignors to Quantel S.A., Orsay, France

Filed Apr. 24, 1979, Ser. No. 32,932
Claims priority, application France, May 5, 1978, 78 13395
Int. Cl.³ G02B *15/00*
U.S. Cl. 350—423 **16 Claims**



1. An optical device having a variable focal length comprising at least two separate and independent optical elements which are of variable focal length spaced apart at a distance sufficient to produce an optical instrument having variable magnification and comprise piezoelectric multilayer structures, at least one electric supply connected to the multilayer structures, and electronic means for controlling the voltage supplied to the respective multilayer structures of the elements of variable focal length as a function of the magnification desired for said optical device.

4,407,568

LARGE APERTURE OBJECTIVE WITH BEHIND THE LENS DIAPHRAGM

Hideo Yokota, Tokyo, and Sadahiko Tsuji, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1980, Ser. No. 155,757
Claims priority, application Japan, Jun. 7, 1979, 54-71740
Int. Cl.³ G02B *9/60*
U.S. Cl. 350—467 **5 Claims**



1. A large aperture objective with a behind the lens diaphragm comprising five components of which the first and the

second counting from the front are positive meniscus lenses of convex surface toward the front, the third is a negative meniscus lens of concave surface toward the rear, the fourth is a negative meniscus lens of concave surface toward the front, and the fifth is a bi-convex lens with its rear surface of strong curvature toward the rear, said diaphragm being positioned on the image side of said fifth lens and said objective satisfying the following conditions:

(1) $0.18\ f < D_1 < 0.28\ f$, where $D_1 = d_1 + d_2 + d_3 + d_4 + d_5$
(2) $0.08\ f < D_2 < 0.18\ f$, where $D_2 = d_7 + d_8 + d_9$
(3) $0.12\ f < d_6 < 0.15\ f$
(4) $0.35 < (R_1/R_2) < 0.5$
(5) $0.6 < (R_7/R_8) < 0.8$
(6) $|R_{10}/R_9| < 0.3$

wherein R_i is the radius of curvature of the i-th lens surface counting from the front; di is the axial thickness or air spacing between the i-th and (i+1)th lens surfaces; and f is the focal length of the entire lens system.

4,407,569

DEVICE FOR SELECTIVELY AVAILABLE PHASE-CONTRAST AND RELIEF OBSERVATION IN MICROSCOPES

Horst Piller, Aalen, and Klaus Weber, Konigsbronn, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jul. 7, 1981, Ser. No. 281,072
Int. Cl.³ G02B *21/14*
U.S. Cl. 350—509 **13 Claims**

1. In a microscope, illumination-optical means establishing an illumination-ray path, an objective and observation-optical means establishing an observation-ray path, a first pupil plane in the illumination-ray path conjugate to a second pupil plane in the observation-ray path, a phase-contrast layer positioned in said second pupil plane, said phase-contrast layer having the configuration of at least one circular annulus concentric with the axis of the observation-ray path at said second pupil plane, the outer diameter of said annulus being of effectively pupil-entrance size at said second plane, and selectively operable means including at least two diaphragms of different configuration at said first pupil plane, one of said two diaphragms having the shape of a circular annulus, and the other of said two diaphragms being a light transmitting circular-ring segment.

4,407,570

SPECIMEN HOLDING DEVICE FOR MICROSCOPE STAGES

Toshimi Hayasaka, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Mar. 16, 1981, Ser. No. 244,073
Claims priority, application Japan, Mar. 17, 1980, 55/35486
Int. Cl.³ G02B *21/26*
U.S. Cl. 350—529 **5 Claims**

1. A specimen holding device for a microscope stage, comprising:

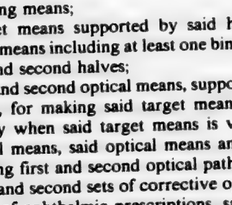
a specimen supporting body secured to the microscope stage;

a specimen push claw rotatably mounted on said specimen supporting body, movable between an open and closed position, and biased toward said closed position;

a three sided cavity having a base defined by said body, a first side, and a second side defined by said push claw;

the end of said first side being provided with an outwardly inclined surface, completely nonrotatable with respect to said first side;

the end of said push claw being provided with an outwardly inclined surface in the closed position, completely nonrotatable with respect to said push claw, said inclined sur-



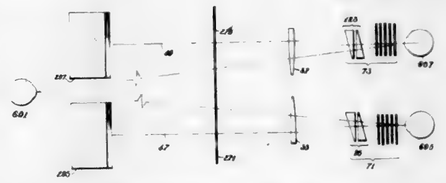
face defining an entrance to the cavity which narrows in width from the entrance toward the base, whereby a specimen moving towards said base can contact said inclined surfaces and cause said claw to rotate to an open position; wherein the edges of said first side and said push claw adjacent said cavity are downwardly inclined along their entire lengths to provide gripping means for gripping a specimen.

4,407,571

COMPACT REFRACTION INSTRUMENT

Peter Augusto, Hilton; Edwin A. Hazard, and Richard C. Mohrman, both of Rochester, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,142
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—13 **42 Claims**



1. A refraction instrument having alignment, retinoscopy, distance and near vision testing modes, said instrument comprising:

(a) housing means;

(b) target means supported by said housing means, said target means including at least one binocular target having first and second halves;

(c) first and second optical means, supported by said housing means, for making said target means appear at or near infinity when said target means is viewed through said optical means, said optical means and said target means defining first and second optical paths;

(d) first and second sets of corrective optics for emulating a series of ophthalmic prescriptions, said corrective optics supported relative to said housing means in optical alignment with said optical means;

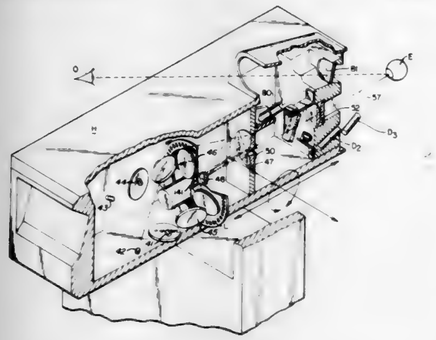
(e) means, supported by said housing means and interposed along said optical paths between said optical means and said target means for separating said optical paths so as to provide separate and independent views of said halves of said binocular target;

(f) means, supported by said housing means, for suppressing accommodation; and

(g) mode change apparatus, supported by said housing means between said optical means and said target means,

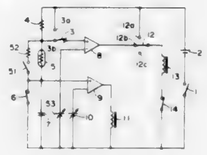
said apparatus including first and second alternate means for folding said optical paths, said first folding means folding said optical paths when said instrument is used in said distance and near vision testing modes, said second folding means folding said optical paths when said instrument is used in retinoscopic examination mode, said second folding means including means which permit retinoscopic examination through said optical means and said corrective optics while simultaneously maintaining separate and independent views of said halves of said binocular target through said optical means and said corrective optics.

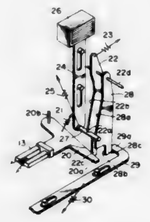
4,407,572
KERATOMETER
William E. Humphrey, San Leandro, Calif., assignor to Humphrey Instruments, Inc., San Leandro, Calif.
Filed Jun. 12, 1980, Ser. No. 158,849
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—212 **23 Claims**



1. A keratometer for measuring by reflection curvature of an optical surface including at least one light emitting area, a corresponding photodetection area with a separate optical path between said light emitting area and said photodetection area; said path between said two areas having a portion thereof running substantially adjacent to the optical axis of said keratometer, one of said areas including first and second photo distinct portions; means for positioning the optical surface with curvature substantially coaxial to the optical axis of said keratometer to define a virtual image of said light emitting area, said light path at said portions substantially adjacent to the optical axis incident to said optical surface with curvature; a moving boundary locus for occulting light between said light emitting and detection areas, said locus including a transparent portion, an opaque portion, and at least one boundary therebetween for occulting light by movement of said boundary between said light source and detector whereby timing of said occultations of said first portion relative to said second portion of one of said areas by said moving boundary locus enables detection of the movement of the weighted center of illumination of said areas to determine towards and away positioning of said optical surface along the optical axis for measurement of said optical surface in at least sphere and cylinder curvatures.

4,407,573
POP UP FLASH DEVICE CONTROL FOR A CAMERA
Hiroshi Wakabayashi, Yokohama; Kazuyuki Kazami, Tokyo; Yoshiaki Ohtsubo, Kawasaki, and Shigeo Akasaka, Kodaira, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed May 21, 1981, Ser. No. 266,103
Claims priority, application Japan, Jun. 5, 1980, 55-77298[U]; Jun. 8, 1980, 55-95196[U]
Int. Cl.³ G03B *7/16*
U.S. Cl. 354—33 **10 Claims**

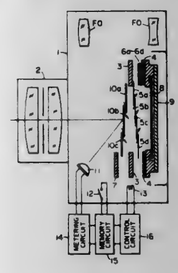




1. A camera having a flash device provided with a light emitting portion which is movable between a first position in the camera and a second position protruded from the camera, and first biasing means for biasing said light emitting portion from the first position to the second position, the camera further comprising:
a latch member movable between a first position in which the latch member is capable of latching the light emitting portion in order to inhibit the light emitting portion from being moved from the first to the second position thereof by said biasing means when the light emitting portion is in the first position thereof, and a second position in which the light emitting means is released from the latch member;
second biasing means for biasing the latch member from the second to the first positions thereof;
an operating member movable between a first position in which the operating member can fix the latch member to the second position thereof while engaged with the latch member and a second position in which the operating member releases the latch member therefrom;
third biasing means for biasing said operating member from the second to the first position thereof;
holding means having a first state in which said operating member is held in the second position thereof and a second state in which said operating member is released; and
means for re-setting said operating member and said holding means to said second position and said first state, respectively, in response to movement of said light emitting portion from said first to second position.

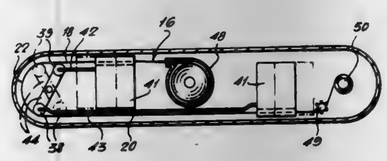
2. A camera as set forth in claim 1, further comprising a detecting circuit for detecting the luminance value of light from the object to be photographed and producing a detecting signal when the luminance value is less than a predetermined value which is required to effect a proper exposure with respect to film charged in the camera, and wherein said flash device is capable of emitting flash light by the light emitting portion in association with the camera when the flash light emitting portion is in the second position; and said holding means when it is in the first state, changes to the second state in response to said detecting signal.

4,407,574
CAMERA WITH FOCAL PLANE SHUTTER
Naoki Tomino, Kawasaki, and Masaaki Tsukamoto, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Continuation of Ser. No. 340,842, Jan. 20, 1982, abandoned, which is a continuation of Ser. No. 154,869, May 30, 1980, abandoned. This application Sep. 15, 1982, Ser. No. 418,292
Claims priority, application Japan, Jun. 9, 1979, 54-71846
Int. Cl.³ G03B *7/089, 9/36, 19/12*
U.S. Cl. 354—50 **23 Claims**



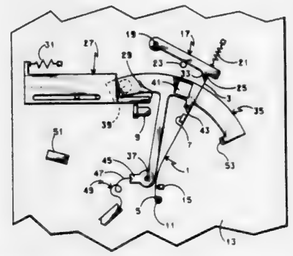
15. In a camera having a focal plane shutter of the type which comprises a group of opening blades and a group of closing blades for opening and closing the exposure aperture of said camera wherein each blade is responsible for covering each corresponding area of the aperture and all the blades in each group together can cover the whole area of the aperture, and a light receiving element for metering the light transmitted through the photographing lens of said camera, the improvement comprising:
(a) a light shielding member provided in the photographing light path adjacent to said focal plane shutter for shielding at least a boundary area between neighboring blades in said opening group relative to said transmitted light and disposed to reflect the photographing light toward said light receiving element, said light shielding member including a plural number of light shielding plates adapted to overlap each other; and
(b) means for displacing said light shielding plates relative to each other to retract them to a position out of said photographing light path before exposure.

4,407,575
STEREOSCOPIC PHOTOGRAPHY
Hon Liu, 200 Aberdeen Main Rd., 5th Floor, Rear Portion, Hong Kong, Hong Kong
Filed Nov. 23, 1981, Ser. No. 323,790
Claims priority, application United Kingdom, Nov. 24, 1980, 8037617
Int. Cl.³ G03B *35/08*
U.S. Cl. 354—115 **16 Claims**



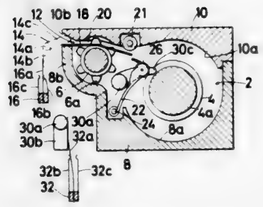
10. A camera for exposing a stereoscopic pair of images, said camera comprising: means for holding a length of film in the form of a loop comprising two substantially flat arms and a bent portion spacing and joining said arms where the film is bent through 180°; two optical systems, one for recording a left-hand image and one for recording a right-hand image, said left-hand optical system being arranged to record the left-hand image on one arm of the film adjacent one edge thereof and the right-hand optical system being arranged to record the right-hand image on the other arm adjacent the other edge thereof, means to vary the spacing between the axes of the two optical systems and to move the position of said bent portion of film to maintain the spacing substantially constant between the left-hand and right-hand images on the film as measured along the loop, and means for advancing the film between exposures along one arm, around the bent portion and along the other arm.

4,407,576
SYNCHRONIZING MECHANISM FOR FLASH FIRING AND SHUTTER OPERATION
Brian J. Joseph, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 8, 1982, Ser. No. 337,928
Int. Cl.³ G03B *15/03*
U.S. Cl. 354—135 **4 Claims**



1. In a photographic camera of the type wherein (a) a piezoelectric generator is struck to produce an electrical pulse for flash firing, (c) a striker is movable to strike said generator, and a shutter member is operable to initiate a film exposure in synchronization with flash firing, the improvement comprising:
means, adapted to releasably engage said striker with said shutter member, for moving said shutter member with said striker and for allowing said shutter member to be catapulted from said striker upon the striker striking said piezoelectric generator, whereby said shutter member is operated to initiate a film exposure.

4,407,577
AUTOLOADING APPARATUS FOR PHOTOGRAPHIC FILM
Ikushi Nakamura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Toyonaka, Japan
Filed Jan. 5, 1982, Ser. No. 337,225
Claims priority, application Japan, Jan. 8, 1981, 56-1761
Int. Cl.³ G03B *1/12*
U.S. Cl. 354—173 **6 Claims**



1. An autoloading apparatus comprising:
a spool chamber having a film inlet,
a take-up spool accommodated in the spool chamber for winding a film thereon,

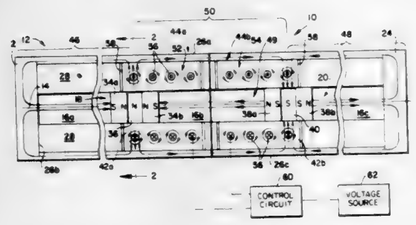
a film transport member for transporting the film to the take-up spool after the film is inserted into the film inlet of the spool chamber,
a motor for driving the take-up spool and the transport member,
a motor drive circuit for energizing the motor,
first detecting means for detecting the insertion of the film into the film inlet, associated with the motor drive circuit for causing the motor drive circuit to energize the motor upon the insertion of the film into the film inlet, and
second detecting means for detecting that the film has been wound on the take-up spool, associated with the motor drive circuit for causing the motor drive circuit to de-energize the motor upon the winding of the film on the take-up spool.

4,407,578

EFFICIENT ELECTROMAGNETIC ACTUATOR USABLE AS PHOTOGRAPHIC SHUTTER

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,503
Int. Cl.³ G03B *9/08*; H02K *33/18*
U.S. Cl. 354—235 **5 Claims**



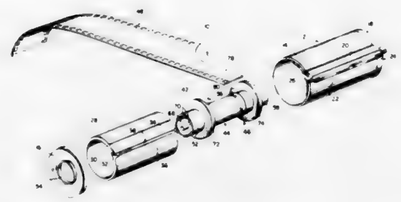
1. An electromagnetic actuator comprising:
a core assembly including a plurality of pairs of permanent magnets aligned along a given axis, each of said pairs of magnets having like magnetic poles facing each other and opposite magnetic poles facing away, and said pairs of magnets being spaced apart along said given axis with means providing a continuous low magnetic reluctance path therebetween and with opposite poles of adjacent pairs facing each other to thereby produce regions of high density magnetic lines of flux of opposite polarity extending generally transversely of said given axis from adjacent pairs;
means for defining a continuous low reluctance path extending alongside said core assembly from the magnetic pole forming one end of said core assembly to the magnetic pole forming the other end thereof and spaced over said regions of high density magnetic lines of flux so as to define magnetic gaps to said core in the area of said regions;
electrical conductor arrangements supported within the magnetic gaps associated with each of the regions of high density magnetic flux for translational movement generally parallel to said given axis with respect to said core assembly; and
means for coupling each of said electrical conductor arrangements to a voltage source for producing a force effecting relative movement generally parallel to said given axis between said electrical conductor arrangements and said core assembly.

4,407,579

PHOTOGRAPHIC FILM ASSEMBLAGE

Joseph F. Huff, Hyde Park, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 3, 1982, Ser. No. 374,504
Int. Cl.³ G03B *17/26*
U.S. Cl. 354—275 **8 Claims**



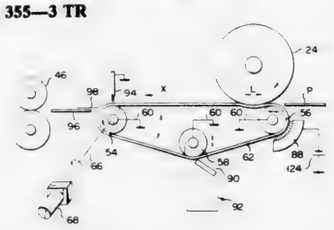
1. A photographic film assemblage comprising:
a cassette having means defining a lighttight passageway through which a strip of photographic film is adapted to be advanced to the exterior of said cassette;
a roll of photographic film having a leading and trailing end; and
a spool rotatably supported within said cassette with said roll of film coiled around said spool and with said trailing end being attached to said spool, said spool having a longitudinal axis and being comprised of first and second members connected to each other for movement relative to each other along said longitudinal axis, each of said first and second members includes a radially extending flange having friction producing means on a face thereof which is adapted to lie in a plane closely adjacent to a side of said roll of film, each of said first and second members further includes means extending to the exterior of said cassette where they may be manually grasped and moved toward each other thereby moving said friction producing means on said flanges into firm engagement with the opposite sides of said roll of film whereby relative rotation between said spool and said cassette about said longitudinal axis in a predetermined direction is then effective to move said leading end of said roll of film into and through said lighttight passageway.

4,407,580

TRANSFER DEVICE

Shinichi Hashimoto, Fujisawa; Toshimasa Takano, Sagamihara, and Hideo Mukai, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 27, 1981, Ser. No. 257,613
Claims priority, application Japan, Apr. 30, 1980, 55-57540; Apr. 30, 1980, 55-57541; Apr. 30, 1980, 55-57542
Int. Cl.³ G03G *15/14, 15/16*
U.S. Cl. 355—3 TR **17 Claims**



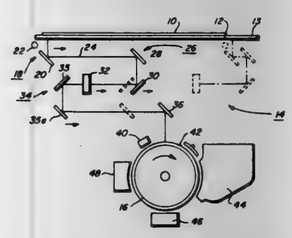
1. In a transfer device for an electrostatic copying apparatus including an image forming body on which a toner image made of a toner charged with a predetermined polarity is formed, comprising:
a transfer belt adapted to be run in a manner to face the image forming body and holding a copying medium relative to the image forming body;
a plurality of rollers rotatably mounted and supporting the transfer belt such that the belt can be run; and
a charger for causing that surface of the transfer belt which is located on the image forming body side to be charged with a polarity opposite to said predetermined polarity,
the improvement in which said transfer belt includes:
a first layer formed on the side at which it faces said image forming body and formed of a material having a resistivity of above 10^{10} Ωcm; and
a second layer formed on the side opposite to that on which said image forming body is provided, and formed of a material having a resistivity lower than said resistivity of said first layer;
said charger including a contact member formed of a pliable material, having a predetermined resistivity and contacting the surface of said first layer to form a surface potential on the surface of said first layer, an electrode connected to the contact member and having a resistivity lower than that of said contact member, and means for supplying a voltage on the electrode to charge said first layer and at least one of said rollers is made of an electroconductive material, contacting the surface of said second layer and grounded.

4,407,581

COMPACT OPTICAL SCANNING SYSTEM

David K. Shogren, Ontario, and Robert G. Zambelli, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 17, 1982, Ser. No. 378,691
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **8 Claims**



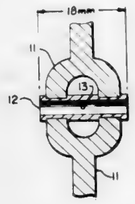
1. A multi-rate scanning system for scanning a document lying in an object plane and projecting an image along an optical path onto a photoreceptor plane, said system including the following optical elements:
an illumination/mirror scanning assembly including a first reflective means associated with the illumination means and adapted for movement in the scan direction at a velocity V1 and a second reflective means adapted for movement in the scan direction at a velocity V2;
a projection lens lying in a plane parallel to said illumination/mirror assembly and adapted to move in the scan direction at a velocity V3;
a third reflective means adapted to move in the scan direction at a velocity V4; and
a drive arrangement for driving said optical elements at a velocity relatively whereby V1>V2>V3>V4.

4,407,582

METHOD AND APPARATUS FOR REDUCTION OF MATRIC INTERFERENCE IN ELECTROTHERMAL ATOMIZER FOR ATOMIC ABSORPTION SPECTROSCOPY

Ray A. Woodriff, Bozeman, Mont., assignor to The Research and Development Institute, Inc. at Montana State University, Bozeman, Mont.

Filed Jan. 12, 1981, Ser. No. 224,627
Int. Cl.³ G01N *21/74*
U.S. Cl. 356—312 **5 Claims**



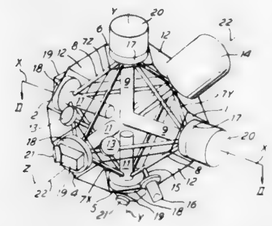
1. In a method for sample analysis by atomic absorption spectroscopy wherein a chemical sample is atomized by pulsed electrothermal energy from a carbon rod atomizer containing graphite electrode support holders and a graphite furnace tube, the improvement according to which the ends of the sample-containing furnace tube are heated first by passing electrical current only through said ends followed by heating the center of the furnace tube by conduction thereby providing sufficient thermal energy for complete decomposition of the sample molecules to the atomic state.

4,407,583

RING LASER GYROSCOPES

Graham J. Simms, Reading, England, assignor to British Aerospace Public Limited Company, London, England

Filed Apr. 17, 1981, Ser. No. 255,018
Claims priority, application United Kingdom, May 9, 1980, 8015477
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **8 Claims**

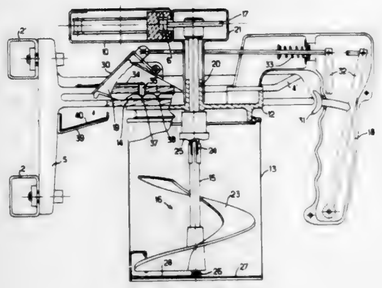


1. A ring laser gyroscope having a plurality of sensitive axes and hence a plurality of cavities, the cavities lying in mutually orthogonal planes at right angles to the respective sensitive axes and each cavity having three or more corners arranged so that at least one corner coincides with a corner of another cavity, whereby the cavities are interconnected, the gyroscope further comprising a plurality of mirrors disposed respectively at the coinciding corners and the remaining corners of the cavities, whereby the number of mirrors is less than the total number of cavity corners, the mirrors at the coinciding cavity corners and the coinciding cavities being oriented such that the normal to each of these mirrors lies in the plane of each cavity it serves and bisects the associated corners of those cavities.

4,407,584
VESSEL LID ESPECIALLY FOR A MIXER USED FOR THE HOMOGENIZATION OF A MIXTURE OF PRODUCTS

Daniel Boudin, Orleans; Claude Brachet; Pierre Desmier, both of St. Jean de la Ruelle; Pierre Foltier; Jean Godat, both of Olivet; Alain Krzywdziak, St. Denis en Val, and Daniel Parmenon, Orleans la Source, all of France, assignors to Fonderie et Ateliers des Sablons, France

Filed Jan. 29, 1981, Ser. No. 230,109
Claims priority, application France, Feb. 11, 1980, 80 02940
Int. Cl.³ B01F *7/16, 15/00*
U.S. Cl. 366—279 **14 Claims**



1. A lid which is to be attached to a vessel, said lid comprising:

a. a pouring spout;

b. a handle to allow the lid and attached vessel to be carried;

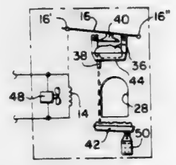
c. a support housing having two slides; and

d. means facilitating a fitting to said support housing designed to support the lid and an attached vessel, said means including two lateral support elements on opposite sides of the lid which fit said two slides on the support housing, said slides having a configuration complementary to that of the support elements, and means for adjusting said slides to enable the fitting therein of lids of various sizes.

4,407,585
SCENT-AWAKE CLOCK

Louise D. Hartford, 391 Durant Ave., Staten Island, N.Y. 10308, and James P. Kavoussi, 1401 80th St., Brooklyn, N.Y. 11228

Filed Dec. 11, 1981, Ser. No. 330,030
Int. Cl.³ G04B *47/00*
U.S. Cl. 368—12 **7 Claims**

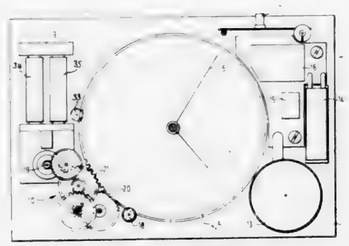


1. A scent-awake clock for awakening a sleeper through the sense of smell comprising a housing; aromatic means in said housing for giving off a scent when dispensed; means for storing and dispensing said aromatic means in said housing; actuating means operably connected to said means for storing and dispensing, said actuating means selectively causing said aromatic means to be dispensed form said means for storing and dispensing; and timing means for activating said actuating means at a predetermined time, said aromatic means comprising a liquid stored in said means for storing and dispensing said means for storing and dispensing comprising a container, said actuating means comprising a solenoid electrically connected to said means for activating, and a lever arm pivoted at one end thereof to said housing, the other end of said lever arm being connected to the plunger of said solenoid for movement thereby, said lever arm operating said means for storing and dispensing said aromatic means to thereby dispense said aromatic means, wherein said lever arm comprises a plunger means located between said one end and said other end thereof, said plunger means extending downwardly from said lever arm towards said container; said container comprising a sealed liquid-filled squeezable bag which is alternately squeezed and expanded by said plunger means to cause said aromatic means to exit therefrom, said squeezable bag having outlet means at the bottom thereof through which said aromatic means is forced out; means for mounting said squeezable bag in said housing; and tray means mounted in said housing directly below said outlet means so that when said aromatic means is forced out of said squeezable bag, said aromatic means drops onto said tray means where said aromatic means evaporated to give off a scent to awaken a sleeper; said housing further having an opening formed therein adjacent said tray means through which said evaporated aromatic means exits.

4,407,586
THIN WRIST-WATCH

Jean-Pierre Musy, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Aug. 27, 1980, Ser. No. 181,928
Claims priority, application France, Sep. 4, 1979, 79 22607
Int. Cl.³ G04B *19/20*
U.S. Cl. 368—77 **7 Claims**

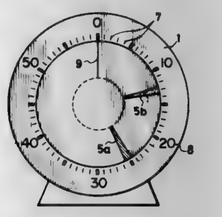


1. A wrist-watch of reduced thickness comprising a case, a crystal, at least two time indicating discs, a drive system arranged to drive said discs, said drive system itself being driven by an electric motor under control of an electronic circuit and wherein each of said indicator discs is formed from a single thin sheet of transparent material with teeth formed from this material on their periphery, said transparent material having a thickness between 0.05 mm and 0.15 mm, and each disc being driven from a common driving wheel which drives directly a first faster moving disc and indirectly a second slower moving disc via a gear train independent from the faster moving disc said discs being guided laterally at their periphery and proximate the driving point by at least one guide means including at least two coaxial independent idlers arranged to turn freely on a stud support on opposite sides of a disc said indicator discs being supported by a central axle stud for rotation thereabout.

4,407,587
ELECTRONIC TIMER

Masanori Fujita, Tokyo, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 156,420, Jun. 4, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,430
Claims priority, application Japan, Jun. 11, 1979, 54-73299
Int. Cl.³ G04F *8/00*; G04C *17/02*
U.S. Cl. 368—108 **8 Claims**



1. An electronic timer, comprising:

a display comprised of a plurality of elongate segment electrodes arranged side by side in a generally circular array with the respective segment electrodes disposed extended radially of said array, a plurality of sector-shaped common electrodes arranged in two concentric rings and positioned opposite and concentric with said generally circular array of segment electrodes, said sector-shaped common electrodes dimensioned to oppose equal numbers of segment electrodes for defining groups of equal numbers of inner and outer display elements each comprised of a common electrode and a segment electrode, insulating means for insulating said segment electrodes from said common electrodes, and an electro-optical display medium disposed between said segment and common electrodes for responding to electrical signals applied to pairs of said electrodes defining display elements to change visual appearance so as to display information;

electrically conductive circuit paths connecting corresponding ones of said segment electrodes within each group of segment electrodes facing a different common electrode;

storage means for storing signals representing any desired preset time;

counting means for counting the lapse of time and for generating output signals representing the counted lapse of time;

display driving means responsive to selection signals for applying voltage pulses to said display elements for turning on and off respective ones of said display elements selected according to the selection signals;

first selection means responsive to the content of said storage means for applying to said display driving means selection signals effective to operate respective ones of said display elements for displaying the preset time represented by the contents of said storage means; and

second selection means responsive to the count developed by said counting means for applying to said display driving means selection signals effective to operate respective ones of said display elements for displaying a lapse of time relative to the preset time.

4,407,588
ELECTRONIC OSCILLATION COUNTING TIMER

Isao Arichi, Kurashiki; Tetuya Wanlisi, and Takuji Koh, both of Okayama, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 19, 1981, Ser. No. 294,421
Claims priority, application Japan, Aug. 20, 1980, 55-118445[U]
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—118 **2 Claims**

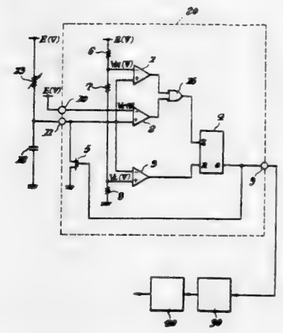
1. An electronic timer having an oscillator formed on a single IC chip, a time constant circuit connected to said oscillator and consisting of a resistor and capacitor connected in series, a counter which counts outputs of said oscillator up to a predetermined count value and thereupon generates an output, and an output circuit for generating an output signal in response to said output from the counter, said oscillator comprising

a first input terminal for connection with said time constant circuit,

a second input terminal adapted to be connected to a variable resistance for supplying a reference voltage,

a dividing resistance circuit for developing a first upper limit voltage and a lower limit voltage,

a first upper limit comparator connected to said resistance



circuit and to said first terminal for comparing a potential at said first terminal with said first upper limit voltage,

a second upper limit comparator connected to said second terminal for comparing said potential at first terminal with said reference voltage,

an OR-circuit for receiving outputs from said first and second upper limit comparators,

a lower limit comparator connected to said resistance circuit and to said first terminal for comparing the potential at said first terminal with said lower limit voltage,

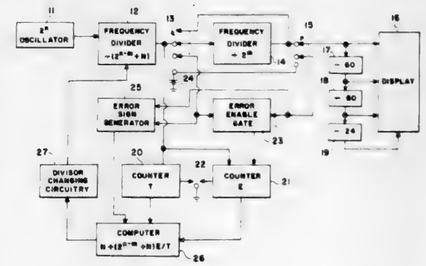
a flip-flop which is set by an output from said OR-circuit and reset by an output from said lower limit comparator, and

a transistor for discharging said capacitor in response to an output generated from said flip-flop.

4,407,589
ERROR CORRECTION METHOD AND APPARATUS FOR ELECTRONIC TIMEPIECES

John R. Davidson, 266 Nottingham Rd., and Joseph S. Heyman, 130 Indian Springs Rd., both of Williamsburg, Va. 23185

Filed Feb. 13, 1981, Ser. No. 234,225
Int. Cl.³ G04B *17/12*
U.S. Cl. 368—201 **14 Claims**



7. In an electronic digital timepiece that includes an oscilla-

tor that has a 2^n frequency output, an n stage frequency divider for reducing the oscillator output frequency to a time keeping frequency, and means for counting and displaying the count of the time keeping frequency, apparatus for correcting errors in said timepiece due to changes in the output frequency of said oscillator comprising:

a first counting means connected to the output of the (n−m)th stage of said frequency divider where m is a whole number less than n and greater than zero;

a second counting means connected to the output of the (n−m)th stage of said frequency divider;

means for activating said first counting means for a selected period of time T whereby the first counting means counts the output of the (n−m)th stage of said frequency divider during the period T;

means for activating said second counting means for a period of time |E| where |E| is equal to the error accumulated by said time piece during said period T;

means for dividing the count on said second counting means by the count on said first counting means, multiplying by $(2^{n-m}+N)$ and adding N to produce a new adjustment value where N is the preceding adjustment value; and

means for adjusting the 2^{n-m} divisor of the first (n−m)th stages of said frequency divider by the amount of said new adjustment value.

4,407,590

BATTERY UNIT FOR AN ELECTRIC TIMEPIECE

Hideshi Ohno, Sayama; Kazunari Kume, Tokorozawa; Takatoshi Osaka, Higashikurume; Katsuo Nishimura, Tokorozawa; Munetaka Tamaru, Tokyo, and Sadao Ode, Hoya, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 967,019, Dec. 6, 1978, abandoned. This application Aug. 13, 1980, Ser. No. 177,583

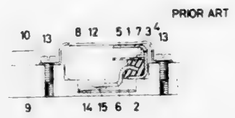
Claims priority, application Japan, Dec. 10, 1977, 52-148586; Dec. 15, 1977, 52-151055; Dec. 20, 1977, 52-153175

Int. Cl.³ G04B *1/00*; G04C *3/00*

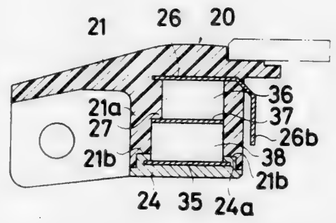
U.S. Cl. 368—204 **2 Claims**

1. An electric timepiece comprising a watch case and a battery unit forming an integral part of said electric timepiece, said watch case having a back and front portion made of a plastic material, said battery unit comprising at least one battery chamber formed in an edge portion of said watch case having a battery component, a removable cover made of a plastic material for covering said battery chamber at the back of said watch case, said battery component comprising a first electrode embedded in said edge portion of said watch case at a top portion of said battery chamber integral with said front portion of said watch case, a second electrode embedded in said cover, an anode blend and cathode blend provided in said battery chamber between said electrodes and a separator held on a shoulder formed in said edge portion of said watch case in said battery chamber so as to separate said anode and cathode









blends, said cover being separable from said anode and cathode blends.

4,407,591

BALLISTIC WIRE MATRIX PRINT HEAD

Contardo Adamoli, Castellamonte; Francesco Bernardis, Chiaverano; Franco Cretaz, Pont St. Martin, and Mario Gaiardo, Ivrea, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Filed Aug. 12, 1981, Ser. No. 292,173

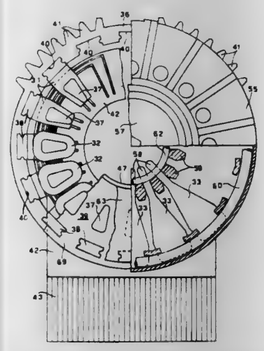
Claims priority, application Italy, Aug. 21, 1980, 68304 A/80

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **4 Claims**

1. A ballistic wire matrix print head comprising a guide assembly, a plurality of printing wires axially slideable in said guide assembly, a plurality of electromagnetic structures, each including a U-shaped core of ferromagnetic material provided with an outer pole piece and an inner pole piece, and an energizeable coil wound on said inner pole piece, means for supporting said electromagnetic structures and for dissipating the heat produced by the energization of said coils, said supporting and heat dissipating means comprising a cylindrical tube of a non-magnetic material having a plurality of internal axial seats radially disposed, into each of which is fitted one of said outer pole pieces, means for mounting said tube coaxially with respect to said guide assembly, said mounting means comprising a resin block which embeds said cores and said coils internally to said tube, and which is provided with a central through hole for housinga rear part of said guide assembly, a plurality of armatures disposed radially with respect to said guide assembly

and associated with said electromagnetic structures to form electromagnetic actuators for transferring electromechanical energy to said printing wires, and an armature retainer coupled



to said guide assembly for maintaining each armature in engagement with its associated pole pieces and with its corresponding printing wire.

4,407,592

POWER-OPERATED TYPEWRITER

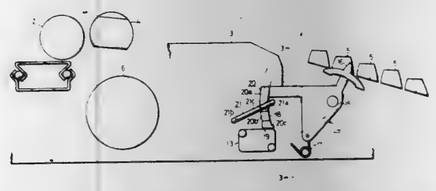
Hisao Kurachi, Okazaki; Takeo Ito, Kuwana, and Hiroshi Onoda, Kariya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Feb. 26, 1981, Ser. No. 238,228

Claims priority, application Japan, Feb. 28, 1980, 55-25568[U]

Int. Cl.³ B41J *23/08, 29/38, 29/56*

U.S. Cl. 400—54 **1 Claim**



1. In a power-operated typewriter comprising a powered motor, a electric power switch therefor, a drive shaft connected to said motor and rotated thereby, a driven mechanism including a printing mechanism, a movable carriage and a carriage return mechanism therefor, a plurality of print keys and a carriage return key each manually depressed for selectively operating an associated mechnism in said driven mechanism, and a first and a second clutch member provided on said shaft respectively, said first clutch member actuated in response to depressing of each said print key for translating a rotation of said shaft into powered action in said printing mechanism, said second clutch member actuated in response to depressing of said carriage return key for translating the same into powered action in said carriage return mechanism, the improvement which comprises;

a first control member and a second control member each pivotally mounted and caused to actuate said first clutch member and second clutch member respectively by depressing of said associated key,

an operating member having a manually operated portion, a switch controlling portion and a cam portion, and selectively and biasingly placed in first or second position for turning on or off said switch and holding thereof, and

a locking member movably mounted in connection with said first and second control members and urged to engage with said cam portion of said operating member, said locking member being in the form of a U-shaped rod so that its one end is elongated relative to said first control member, its other end is elongated relative to said second control member and its intermediated portion connecting them is urged to engage with the cam portion of said operating member and said first and second control members are simultaneously disabled by said one end and other end respectively when said operating member is shifted from said first position to said second position in order to turn off said switch, thereby neither said first nor second clutch members are actuated in spite of depressing of any of said keys during said motor stopping.

4,407,593

ARRANGEMENT FOR MONITORING THE OPERATION OF THE INK RIBBON OF AN INK-RIBBON MAGAZINE

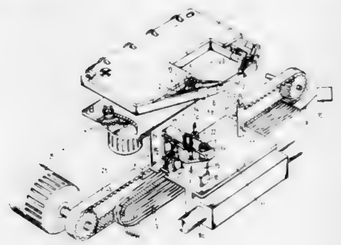
Johannes Haftmann, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Fed. Rep. of Germany

Filed Mar. 10, 1982, Ser. No. 356,705

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1981, 8108981[U]

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **6 Claims**



1. A devise for monitoring the physical condition of an ink ribbon (2) in an ink ribbon cassette (1) having an ink ribbon path and which is operatively but removably mounted on a printer unit (11), said device comprising:

first and second electrical contact means (12, 6) mounted on the cassette adjacent the ink ribbon path so as to contact opposite faces of the ribbon and be normally separated from one another by the ribbon, one (12) of said first and second contact means being resiliently biased toward the other (6) to provide a tensioning influence on the ribbon, each of said first and second contact means having an edge (5a, 6a) extending beyond the corresponding edge of said ribbon;

mounting means (15) on said printer unit adjacent said cassette when operatively mounted;

third and fourth contact means (7, 8) disposed on said mounting means in spaced relation for contacting the extending edges of the first and second contact means respectively when the cassette is operatively mounted;

means (19, 20) resiliently biasing said third and fourth contact means toward the extending edges of the first and second contact means; and

indicator means (10) carried by the printer unit and electrically connected to the first and second contact means through the third and fourth contact means and the bias means to generate a signal whenever the physical condition of the ribbon allows the first and second contact means to touch one another.

4,407,594

ERROR CORRECTING TYPEWRITER RIBBON SYSTEM

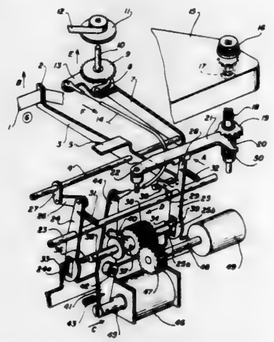
Manfred Link, Nuremberg, Fed. Rep. of Germany, assignor to Triumph-Adler A.G. fur Buround Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,929

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023474

Int. Cl.³ B41J *35/10, 35/23*

U.S. Cl. 400—212 **1 Claim**



1. An error correcting typewriter comprising
carbon ribbon elevating mechanism,
carbon ribbon feed mechanism,
error correction ribbon elevating mechanism,
error correction ribbon feed mechanism,
first pivotally mounted lever means for simultaneously driving said carbon ribbon elevating and feed mechanisms,
second pivotally mounted lever means for driving said error correction ribbon elevating mechanism,
a motor cyclically responsive to a typing command,
an axially shiftable cam shaft coupled to said motor and normally coupled to drive said first pivotally mounted lever,
an electromagnet energizable in response to an error signal,
third pivotally mounted lever means coupled to said cam shaft operable in response to energization of said electromagnet for shifting said cam shaft to decouple said cam shaft from said first pivotally mounted lever and to couple it with said second pivotally mounted lever for driving said error correction elevating mechanism in response to a typing command, and
a drive connection between said third lever means to said error correction ribbon feed mechanism for driving said error correction feed mechanism.

4,407,595

COLOR PRINTING APPARATUS

Abraham H. Gershnow, Merrimack, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Aug. 31, 1981, Ser. No. 298,087

Int. Cl.³ B41J *35/14, 35/16*

U.S. Cl. 400—212 **7 Claims**

1. Apparatus for color printing for installation in a printer having a platen, a carriage, printing means mounted on the carriage, means for moving the carriage along parallel to the platen and means for actuating the printing means so that the printing means can print on a printing medium engaged on the platen, said apparatus including

A. means for supporting a cartridge containing an ink ribbon having at least four longitudinal bands of different colors disposed across the width of the ribbon between the printing means and the platen parallel to the platen so that, when actuated by the actuating means, the printing means prints indicia in a color corresponding to the one of the at least four ribbon segment color bands located opposite the printing means;

B. means for hinging the support means to the carriage at a location thereon distal to the platen so as to permit the support means to pivot on an axis lying parallel to the platen;

C. a rigid beam;

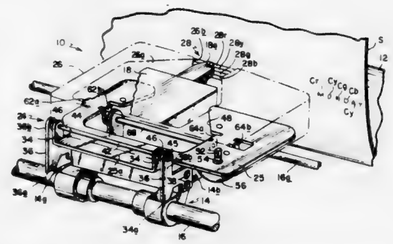
D. means for pivotally connecting said beam to the support means, said pivotal connection being located between the hinging means and the platen and displaced along the beam from the beam vertical centerline;

E. a first pivot connected adjacent to one end of the beam;

F. a second pivot connected adjacent to the other end of the beam;

G. means for maintaining the beam and support means in a reference position;

H. first means responsive to digital logic for lifting the first pivot from a lower position to at least one elevated position so that the beam is swung up about the second pivot thereby raising the support means a first selected distance above said reference position;



I. second means responsive to digital logic for lifting the second pivot from a lower position to at least one elevated position so that the beam is swung up about the first pivot thereby raising the support means a second distance above the reference position;

J. said beam and support means being lifted to a third selected position above the reference position when both said pivots are lifted to their at least one said elevated positions by said first and second lifting means, whereby the working edge of a ribbon cartridge positioned on the support means is moved vertically relative to the printing means so as to select one of the at least four different ribbon color bands for printing; and

K. stop means engaged by the lifting means for defining the elevated positions of said lifting means.

4,407,596

CASE SHIFT AND LOCK INPUT MECHANISM INCLUDING A SHIFT CONTROL SWITCH

Barry C. Reiner, Homer, N.Y., and Robert M. DuRoss, Huntsville, Ala., assignors to SCM Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,536

Int. Cl.³ B41J *25/24*

U.S. Cl. 400—253 **6 Claims**

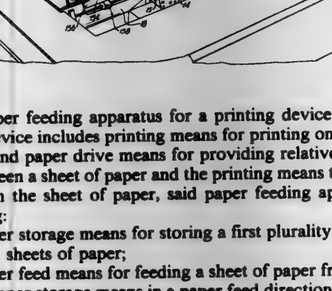
1. A case shift and lock input mechanism assembled in a keyboard of a printer capable of printing lower case and upper case characters, the keyboard having a support frame, the improved mechanism comprising:

a pair of spaced apart shift keylevers mounted on the support frame for movement between a normal rest position and a depressed position independently of each other;

a lock keylever mounted on the support frame for movement between a supported position and a locked position independently of said pair of shift keylevers;

a single shift control switch in the mechanism fixed on the support frame and operable between a normal de-energized position for conditioning the printer to print lower case characters and an actuated energized position for producing an electrical signal utilized for conditioning the printer to print upper case characters;

an abutment on said lock keylever for engageably actuating said shift control switch in response to said lock keylever being moved from said supported position to said locked position; and



a single member associated with said pair of shift keylevers and operable for mechanically actuating said shift control switch in response to either one of said pair of shift keylevers being moved from said rest position to said depressed position.

4,407,597

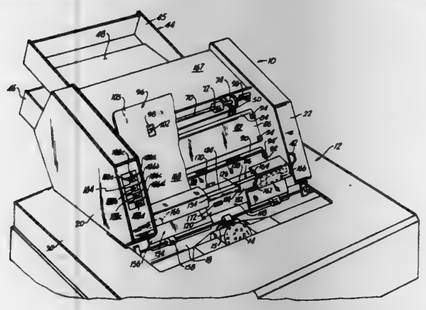
PAPER FEEDING APPARATUS FOR PRINTING APPARATUS

Ludwig J. Kapp, Montville, N.J., assignor to Ziyad Incorporated, Denville, N.J.

Continuation-in-part of Ser. No. 114,115, Jan. 21, 1980, Pat. No. 4,326,815. This application Jun. 9, 1981, Ser. No. 271,937

Int. Cl.³ B41J *11/58*

U.S. Cl. 400—625 **47 Claims**



1. A paper feeding apparatus for a printing device, which printing device includes printing means for printing on a sheet of paper, and paper drive means for providing relative movement between a sheet of paper and the printing means to effect printing on the sheet of paper, said paper feeding apparatus comprising:

first paper storage means for storing a first plurality of individual sheets of paper;

first paper feed means for feeding a sheet of paper from said first paper storage means in a paper feed direction along a paper feed path to said paper drive means;

second paper storage means for storing a second plurality of individual sheets of paper;

a deflector-support member for guiding sheets of paper fed from said first paper storage means and for supporting said second paper storage means, said deflector-support member having a first surface positioned along said paper feed path on the side opposite from said first paper storage means and extending parallel to said paper feed path to define a portion of said paper feed path, said first surface serving to deflect a sheet of paper fed by said first paper feed means from said first paper storage means to move said sheet of paper along said paper feed path toward said paper drive means, and said deflector-support member further including a second surface for supporting said second paper storage means;

means defining a paper passageway between said second surface of said deflector-support member and said paper feed path at a location along said paper feed path intermediate the location of said first paper storage means and said paper drive means; and

second paper feed means for feeding a sheet of paper from said second paper storage means through said paper passageway into said paper feed path toward said paper drive means.

4,407,598

TIMING HUB

Robert V. Hendershot, Evanston, Ill., assignor to Troika Corp., Evanston, Ill.

Filed Nov. 12, 1981, Ser. No. 320,449

Int. Cl.³ F16D *1/00*

U.S. Cl. 403—4 **7 Claims**



1. A rotatably adjustable shaft coupling having a pair of coupling members for timing adjustment of input and output shafts joined thereto, comprising: a pair of hub members, each having means for connection with a shaft; connective means at the periphery of each hub member, an annular disk member cast about and thereby integrated with each said hub member and said connective means thereof and having a plurality of arcuately spaced openings therethrough; the number of openings in one disk member differing by at least two from the number of openings in the other disk member whereby to provide a differential in rotational positions of adjustment therebetween when two diametrically opposed openings in one disk member are coaxially aligned with corresponding openings in the other disk member; and connective means receptive in said aligned openings for positively coupling said disk members in face to face relationship whereby to rotatably adjust and join the input and output shafts connected to said hub members.

4,407,599

DEVICE FOR FIXING A DERAILLEUR ON A FRAME LUG

Roger Huret, deceased, late of Nanterre, France, and by Alain P. B. Huret, legal representative, Bougival, France, assignors to Huret et ses Fils, Nanterre, France

Filed Mar. 8, 1982, Ser. No. 356,039

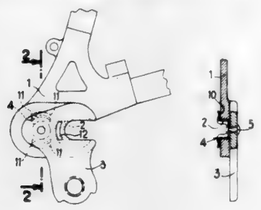
Claims priority, application France, Mar. 23, 1981, 81 05718

Int. Cl.³ B25G *3/00;* **F16D** *1/00;* **F16G** *11/00*

U.S. Cl. 403—11 **9 Claims**

1. A device for fixing a derailleur support on a frame lug of a bicycle, said device comprising an elastically yieldable fas-

tener which is permanently fixed on the support and provides cooperation with the frame lug ensures that the support is



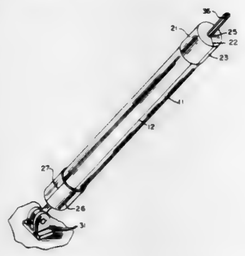
maintained in position relative to the frame lug, and means carried by the support centering the support relative to the frame lug.

4,407,600

TURNBUCKLE BOOT COVER

David M. Thompson, 803 Mentoloking Rd., Brick Town, N.J. 08723

Filed Sep. 24, 1981, Ser. No. 305,152
Int. Cl.³ F16B *11/00*
U.S. Cl. 403—23 4 Claims



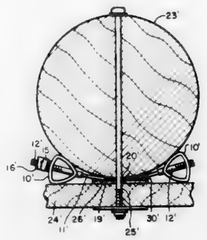
1. A turnbuckle boot cover comprising an elongated cylindrical central sleeve portion having a continuous axial slot, said central portion extending beyond a given turnbuckle in both directions; an upper cap having a top portion, a first cylindrical sleeve portion, and a second cylindrical sleeve portion, said upper cap top portion having a centrally-located hole the size of a given stay; said first upper cap sleeve portion having an inner diameter the size of the outer diameter of said central sleeve portion; said second upper cap sleeve portion having an outer diameter the size of the inner diameter of said central sleeve portion; said upper cap having an axial slot extending from said centrally-located hole through said top and sleeve portions; a lower cap having a bottom portion and a cylindrical sleeve portion; said lower cap bottom portion having a centrally-located hole to accomodate the lower connection of said turnbuckle to a given surface; said lower cap sleeve portion having an inside diameter the size of said outer diameter of said central sleeve portion; said lower cap having an axial slot extending from said centrally-located hole, through said bottom and sleeve portions; said elongated central sleeve, and said upper and lower caps, being of a resilient material whereby said slots can be spread apart to fit around the appropriate parts of said turnbuckle, stay, and lower connection; and said upper and lower cap portions can be fitted over the upper and lower ends of said central sleeve portion to seal said turnbuckle boot cover and reduce abrasion of adjacent sails or cordage.

4,407,601

CROSS-ARM BRACE

Gareld S. Reeder, Elk Grove Village, Ill., assignor to Commonwealth Edison Co., Chicago, Ill.

Filed Nov. 3, 1980, Ser. No. 203,702
Int. Cl.³ E04H *12/24*
U.S. Cl. 403—25 37 Claims



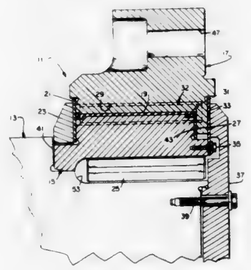
1. An improved utility pole cross-arm brace comprising:
first and second support members, each support member having outwardly-curved outer surfaces along its length, both support members positioned substantially parallel to each other;
at least one connecting member separably connecting the first and second support member, the at least one connecting member sized and shaped to lie across a face of a utility pole of the type comprising at least one cross-arm and a fastener which extends through the cross-arm and into the pole to securely mount the cross-arm to the pole, said utility pole and cross-arm being adapted to support utility cables; and
adjusting means, associated with the at least one connecting member, for varying the transverse spacing between the first and second support members, to wedge the first and second support members between the utility pole and the at least one cross-arm mounted to the pole such that the support members brace the at least one cross-arm against rotation in a plane transverse to the utility pole.

4,407,602

INSULATED COUPLING

Vincent G. Terry, Jr., Beverly, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Jan. 29, 1982, Ser. No. 344,210
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—336 6 Claims



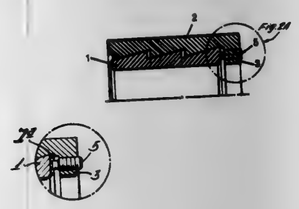
1. A coupling for joining two rotatable shafts, the coupling including two oppositely facing coupling members each mounted on a respective shaft; and, at least one coupling member comprising:
a radially inner hub mounted to its respective shaft;
a radially outer hub mounted concentrically around said radially inner hub and adapted to be connected to its opposite coupling member;
electrical insulation at a circumferential interface between the inner and outer hubs whereby the hubs are electrically insulated from one another;
a first annular row of keys disposed at the interface between the shaft and the inner hub; and,
a second annular row of keys disposed at the interface between the inner and outer hubs, said second row of keys being electrically insulated.

4,407,603

FRICTION JOINT

Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Gothenburg, Sweden

Filed Oct. 27, 1980, Ser. No. 201,521
Claims priority, application Sweden, Nov. 19, 1979, 7909531
Int. Cl.³ B25G *3/20;* F16B *2/00, 7/04*
U.S. Cl. 403—370 8 Claims



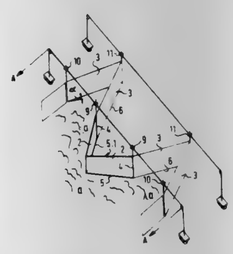
1. A device for producing a friction joint comprising inner and outer members having concentric confronting opposed surfaces which in longitudinal section form a saw tooth contour with a number of portions inclined relative to the central axis of the surfaces and interengaging means actuating said members axially relative to one another effecting radial displacement through said inclined surfaces without rotation of said members and said means also preventing relative rotation of said members to improve torque transmitting characteristics of the device.

4,407,604

METHOD AND DEVICE FOR LAYING ROADMAKING MATERIAL IN A ROADWAY

Massimo Spiritini, Passau, Fed. Rep. of Germany, and Christoph Stiehler, Dr.-Hellge-Strasse 19, 8390 Passau, Fed. Rep. of Germany, assignors to Christoph Stiehler, Hamburg, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,795
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1980, 3028741; European Pat. Off., May 12, 1981, 81 103 648.2
Int. Cl.³ E01C *7/35*
U.S. Cl. 404—75 14 Claims



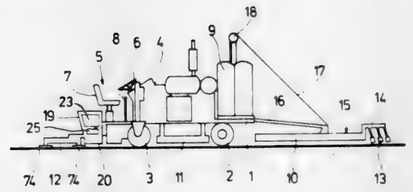
1. A method of resurfacing a roadway already surfaced with existing asphalt or like surfacing material and in which spaced tracks have been formed, the method comprising re-plasticizing the existing material of marginal regions of the tracks and of an intermediate strip therebetween, laying new surfacing material on the roadway so as to fill the tracks and cover the intermediate strip, grading the new material to a profile having a substantially flat section over the intermediate strip and domed sections over the tracks extending above the level of said flat section, then compressing the new material to provide a substantially flat surface across the entire extent of both the tracks and the intermediate strip.

4,407,605

METHOD AND APPARATUS FOR REPAIRING LONGITUDINAL SEAMS OR CRACKS IN ROAD SURFACES

Reinhard Wirtgen, D 5461, Windhagen/Linz, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 273,071
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1980, 3022513
Int. Cl.³ E01C *7/06, 19/05, 3/06*
U.S. Cl. 404—77 16 Claims



1. A method for patching longitudinal seams or longitudinal cracks which define substantially longitudinal gaps in road surfaces formed of bituminous material or similar road surface material, comprising the steps of: removing dirt and moisture from within the gap to clean the same by applying heat along the length of the gap; softening the road surface within the cleaned longitudinal gap and in the region of the gap by applying a second heating along the length thereof; loosening the softened road surface from the underlying road substrate; mixing the loosened and softened road surface with a new road surface material to form a road surface material compound; depositing the road surface material compound onto the road in the region from which the softened road surface was loosened; and compacting the deposited road surface material compound.

4,407,606

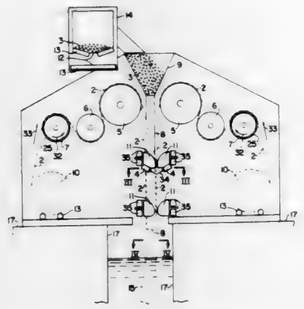
METHOD AND APPARATUS FOR PRODUCING AND LAYING A BALLASTED MAT FOR GROUND STABILIZATION

Ole J. F. Larsen, P.O. Box 3002, 6700 Esbjerg, Denmark

PCT No. PCT/DK80/00068, § 371 Date Jul. 8, 1981, § 102(e) Date Jul. 8, 1981, PCT Pub. No. WO81/01432, PCT Pub. Date May 28, 1981
PCT Filed Nov. 12, 1980, Ser. No. 285,078
Claims priority, application United Kingdom, Nov. 13, 1979, 7939278
Int. Cl.³ E02B *3/12*
U.S. Cl. 405—17 4 Claims

1. A method of producing and laying on the ground a ballasted mat defined by two layers of sheet material joined together along parallel lines and enclosing particulate ballast material comprising the steps of providing two sources of sheet material, continuously drawing the sheet material from the two sheet material sources under the influence of the ballasted mat, continuously leading the sheet material to meet in generally overlapped relationship, seaming the sheet material to enclose at least two parallel compartments, continuously filling the

two parallel compartments with particulate ballast material, continuously advancing the sources of sheet material over the ground adapted to be covered by the ballasted mat, continuously lowering the ballasted mat to the ground during the



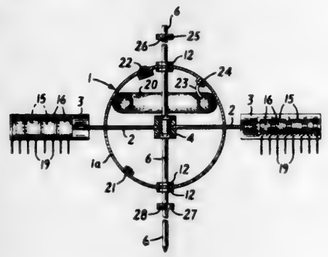
formation thereof and during the advancing of the sources of sheet material in timed relationship to the drawing of the sheet material from the two sheet material sources, and seaming crosswise the end of each ballasted mat and the adjacent end of the next ballasted mat.

4,407,607

FLUID DYNAMIC EROSION CONTROL UNIT

Joseph McCambridge, 12 Watson La., Setauket, N.Y. 11733

Filed Feb. 5, 1982, Ser. No. 346,264
Int. Cl.³ E02B *3/04*
U.S. Cl. 405—26 **19 Claims**



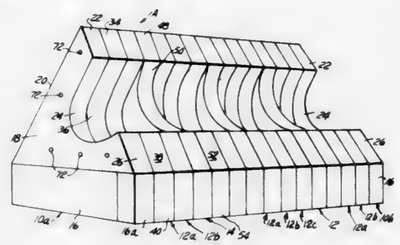
1. A fluid dynamic erosion control unit comprising a hollow submersible body having a shell, means for regulating the buoyancy of said body, means for rotatably positioning said body in submerged condition for rotation about an approximately vertical axis, a plurality of arms extending laterally of said body, a paddle-like blade on each of said arms, each of said blades having an effective area defined by the area of a vertical projection of the blade, means for reducing the effective area of said blades when moving against a flow of water past said unit, whereby flow of water past said unit produces rotation of said unit by exerting a greater force on blades of larger effective area when moving in the direction of water flow than on blades of reduced effective area when moving in a direction against the flow of water.

4,407,608

METHOD AND APPARATUS FOR CONTROLLING FLUID CURRENTS

Thom W. Hubbard, 3319 Pembrook Dr., Sarasota, Fla. 33579

Filed Jul. 27, 1981, Ser. No. 287,526
Int. Cl.³ E02B *3/06*
U.S. Cl. 405—31 **13 Claims**



1. A method of controlling current flow of fluids having alluvium entrained therein, which comprises introducing into the path of an oncoming flowing fluid a shaped object having an interrupted front wall, said interrupted front wall being provided with a pair of spaced-apart, forwardly and downwardly directed sloping surfaces and a connecting concave surface, both of said sloping surfaces being substantially flat and extending across a common plane, said sloping and said concave surfaces being so disposed with respect to one another as to reverse the flow path of said fluid upon itself to deposit adjacent one of said sloping surfaces alluvium entrained therein, said object also having a relatively massive rear wall presenting an upwardly and forwardly directed planar surface, the top longitudinal edge of said rear wall forming a vortex along the top longitudinal edge of said front wall, and said rear wall receiving an oppositely flowing fluid and also being effective to cause deposition of alluvium entrained therein.

4,407,609

APPARATUS AND METHOD FOR PROVIDING NEGATIVE BUOYANCY FOR TUNNEL FORMS

Henry P. Cerutti, Seminole; Robert A. Cannon, and George G. Lindbloom, both of Allison Park, all of Pa., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Nov. 20, 1980, Ser. No. 208,625
Int. Cl.³ E21D *9/06*
U.S. Cl. 405—146 **14 Claims**



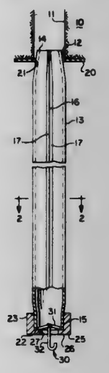
1. A form for a poured concrete tunnel lining comprising a series of adjacent arcuate forms arranged in side-by-side relation in a tunnel bore, a track attached to the interior of said forms, a wheeled vehicle movable on said track in load transmitting relation thereto carrying counterweight means in a load-bearing container for opposing the buoyant force of the liquid concrete at a desired region on said forms.

4,407,610

STABILIZER FOR AN EARTH STRUCTURE

Gerald W. Elders, 38 Yakashba Estates, Prescott, Ariz. 86301

Continuation-in-part of Ser. No. 134,939, Mar. 28, 1980, Pat. No. 4,350,462. This application Jan. 20, 1982, Ser. No. 341,067
Int. Cl.³ E21D *21/00, 20/00*
U.S. Cl. 405—259 **7 Claims**



1. A stabilizer for an earth structure having a bore with an opening, comprising:

(a) a support plate having a hole with cross-sectional dimensions smaller than the cross-sectional dimensions of the bore, the plate being positioned relative to the earth structure with the hole substantially aligned with the opening of the bore,

(b) an elongate support tube including:

1. means extending generally lengthwise responsive to peripheral compression of the tube to cause a contraction of cross-sectional dimension, and causing an expansion of cross-sectional dimension upon diminishment of peripheral compression, the plate hole compressing the tube upon insertion of the tube into the bore through the plate hole, and the tube expanding after passage through the plate hole to frictionally engage the surface of the bore in spaced relation to the bore opening for anchoring the tube within the bore, and

2. a driven end, and

(c) a sleeve having internal cross-section dimensions approximately or less than that of the plate hole, the driven end of the tube being located in and fixed to the sleeve, the sleeve providing an impact surface for accepting insertion forces for driving the tube through the plate hole and into the bore.

4,407,611

ANCHORED EARTH STRUCTURE

Richard Murray, Three Mile Cross, and Maurice J. Irwin, Camberley, both of England, assignors to The Secretary of State for Transport in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

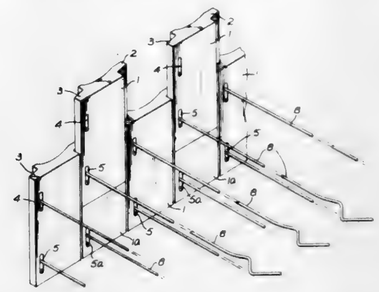
Filed Sep. 1, 1981, Ser. No. 298,374
Claims priority, application United Kingdom, Sep. 4, 1980, 8028620
Int. Cl.³ E02D *29/02, 5/74*
U.S. Cl. 405—284 **10 Claims**

1. An anchored earth structure comprising:

an earth fill;

a plurality of facing units bounding the earth fill, said facing units having overlapping flanges with vertically extending slots therein, the slots of an overlapping flange of one facing unit being arranged so as to be in substantial alignment with the slots of an overlapping flange of an adjoining facing unit;

a plurality of anchors embedded in said earth fill and attached to respective facing units of said plurality of facing units, each of said anchors having an anchoring portion at one end thereof and an attachment portion at an opposite end thereof, said anchoring portion having a substantially



serpentine form, said anchoring portion being further characterized by a spring-like resiliency, the attachment portion of said anchors extending through said slots; and

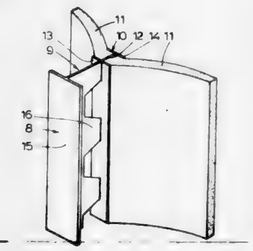
means for attaching said attachment portions of said anchors to respective facing units of said plurality of facing units.

4,407,612

SOIL AND/OR WATER-RETAINING WALL; METHOD FOR FORMING THIS SOIL AND/OR WATER-RETAINING WALL; AND FORMING MOULD SUITABLE FOR USE WITH THIS METHOD

Abraham F. van Weele, Waddinxveen, Netherlands, assignor to Foundacon BV, Netherlands

PCT No. PCT/NL80/00003, § 371 Date Sep. 30, 1980, § 102(e) Date Sep. 24, 1980, PCT Pub. No. WO80/01582, PCT Pub. Date Aug. 7, 1980
PCT Filed Jan. 30, 1980, Ser. No. 212,091
Claims priority, application Netherlands, Jan. 30, 1979, 7900704
Int. Cl.³ E02D *5/00*
U.S. Cl. 405—285 **7 Claims**



1. A soil and water retaining wall for protecting an excavation from the soil around it, and comprising:

a plurality of spaced prefabricated uprights which are introduced into the soil;

said uprights consisting of steel sections composed of:

a compression portion disposed towards the soil and having a first web, and two first flanges forming a space therebetween; and

a tensile portion disposed towards the excavation and having a second web welded to one of said first flanges, and a second flange; and

a plurality of intervening curved shells extending between said prefabricated uprights, said shells being formed of concrete or other hardenable material and being connected to said uprights without joints by ends which

completely fill the space between the first web and the first flanges of said compression portion.

4,407,613

SINGLE LINE PRESSURE-PRESSURE PNEUMATIC TUBE SYSTEM

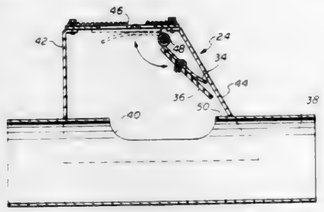
William W. Jones, Houston, Tex., assignor to C. K. Kelley & Sons, Inc., Houston, Tex.

Continuation of Ser. No. 124,897, Feb. 26, 1980, Pat. No. 4,325,660. This application Jan. 22, 1982, Ser. No. 341,735

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.³ B65G *51/08*

U.S. Cl. 406—84 **14 Claims**



1. A single line pressure-pressure pneumatic tube system comprising: a first end terminal having a pressure unit therein; a second end terminal having a pressure unit therein; a line of tubing connecting the first terminal to the second terminal; two inline valves in the tubing line, one adjacent each terminal; each of said valves comprising a port for exhausting air from the tubing directly to the atmosphere and a freely pivotable closure means extending into the tubing and being pivoted away from the port by air flow in the tubing in one direction and being pivoted into engagement with the port to close the port by air flow in the tubing in the opposite direction; a carrier for travel in the tubing from one terminal to the other terminal upon pressurization of a terminal; said two valves being arranged in opposition so that the valve adjacent the pressurized terminal commences closure when the carrier is upstream thereof and fully closes after passage of the carrier, while the valve adjacent the other terminal commences opening when the carrier is upstream thereof for exhausting air from the tubing in front of the carrier directly to the atmosphere and fully opens after the passage of the carrier to exhaust air in the tubing behind the carrier directly to the atmosphere thereby reducing the pressure propelling the carrier and slowing the travel of the carrier to the other terminal.

4,407,614

APPARATUS FOR PERFORATING A WORKPIECE

Richard Muhr, and Karl Schink, both of Attendorn, Fed. Rep. of Germany, assignors to Muhr und Bender, Attendorn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 971,418, Dec. 20, 1978, abandoned. This application Jan. 9, 1981, Ser. No. 223,837

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2759083

Int. Cl.³ B23B *39/08, 49/00*

U.S. Cl. 408—13 **5 Claims**

1. An apparatus for perforating an elongate workpiece, comprising:

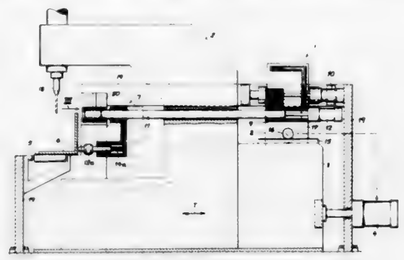
conveyor means for longitudinally transporting said workpiece along a predetermined path;

a main slide carrying tool means for perforating a workpiece confronted thereby;

an ancillary slide adjacent said main slide carrying sensing means for detecting a reference surface of said workpiece, said sensing means including a pair of closely juxtaposed elements relatively offset in a direction transverse to said path, each of said elements having an output emitting a detection signal in a predetermined approach position relative to said reference surface;

mutually independent first and second drive means for respectively displacing said main and ancillary slides in said transverse direction;

switch means connected to the outputs of said elements for operating said second drive means to advance said ancillary slide toward said path in the absence of a detection



signal from both of said elements and to retract said ancillary slide in the presence of detection signals from both said elements; and

correlating means for determining a relative displacement of said slides and controlling said first drive means to restore said main slide to a predetermined position relative to said ancillary slide while holding the latter stationary by immobilizing said second drive means.

4,407,615

TOOL-CLAMPING DEVICE

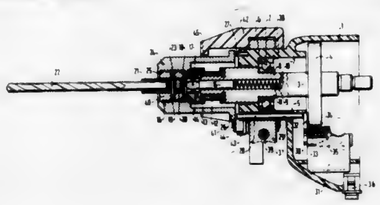
Gerhard Kuhlmann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 20, 1980, Ser. No. 199,107

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943500

Int. Cl.³ B23B *31/08, 45/00*

U.S. Cl. 408—239 A **8 Claims**



1. A tool clamping device for a tool machine, particularly for use in hand tool machines having a housing, and a tool drive with a rotary drive spindle, comprising tool-receiving means adapted to clamp a tool to be used, said tool-receiving means being arranged so as to be moved relative to said drive spindle in an axial direction and to be selectively coupled with said drive spindle to permit relatively quick change of a tool to be used without utilization of a chuck; and locking means adapted to be selectively positioned between a locking position to limit the axial movement of said tool-receiving means and a released position to release said tool-receiving means to thereby permit relatively quick change of a tool to be used, said locking means including a locking plate and an axle mounted on said housing, said locking plate being arranged to pivot about said axle between said locking and released positions, said spindle being provided with a longitudinal recess, and said tool-receiving means including an outer sleeve having a radially outwardly extended flange and an inner sleeve threadably positioned within said outer sleeve and having a first end portion extending into said recess, a second end portion adapted to receive a tool to be used and a shaped intermediate portion.

4,407,616

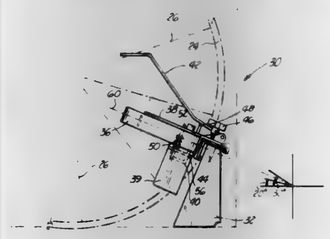
WHEELCHAIR LOCK FOR REDUCING WHEEL SPOKE INTERFERENCE

William W. Hinze, Hutchinson, Kans., assignor to Collins Industries, Inc., Hutchinson, Kans.

Filed Aug. 24, 1981, Ser. No. 295,379

Int. Cl.³ B60P *7/08*; B60T *3/00*

U.S. Cl. 410—3 **10 Claims**



1. An improved wheelchair lock for securing a wheelchair, the wheelchair having a pair of ground wheels with spokes, the lock comprising:

a support;

a pair of guide arms attached to the support, the guide arms disposed in a spaced relationship to each other and extending outwardly from the support for receiving a portion of one of the ground wheels therebetween;

latch means attached to one of the guide arms, the latch means receiving a portion of one of the ground wheels when the ground wheel is received between the guide arms for securing the ground wheel therein, the latch means angled upwardly toward the center of the ground wheel; and

means for releasing the latch means so the ground wheel can be disengaged from between the guide arms.

4,407,617

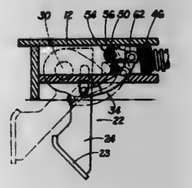
COMBINATION MANUAL AND AUTOMATIC UNLOCKING MECHANISM FOR TRAILER HITCH HEAD

James C. Hammonds, St. Charles, and Ronald D. VanDyke, St. Peters, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,154

Int. Cl.³ B60P *3/06*; B62D *53/08*

U.S. Cl. 410—59 **12 Claims**



1. A tractor operated trailer hitch jaw opening mechanism comprising: a lock block link having a first end connected to a bumper block and a second end adapted to engage a lock block which holds the hitch jaws in closed position; pivot means connecting the bumper block to the hitch head; whereby when said bumper block is engaged by the tractor said bumper block rotates about said pivot means; and whereby this rotation moves said lock block link and said lock block rearwardly, which allows said jaws to rotate to open position to allow exit of the trailer kingpin; and lost motion means to allow said lock block link to move relative to the bumper block when said lock block is moved rearwardly manually.

4,407,618

FASTENER

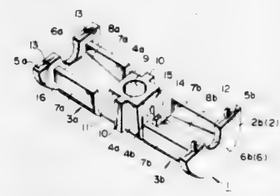
Shigeru Kimura, Kamakura, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,316

Claims priority, application Japan, Mar. 12, 1980, 55-31011[U]

Int. Cl.³ F16B *13/06, 13/14*

U.S. Cl. 411—40 **4 Claims**



1. An integral molded plastic fastener comprising a plurality of legs each having an entering end and having an outwardly directed flange means at the opposite end, a polygonal screw receiving member disposed between said legs and having a central axial bore for receipt of a screw, and a plurality of integral hinges initially joining said leg entering ends to said screw receiving member enabling said legs to be moved from an initial splayed molded position to installation position with said legs in substantial parallelism embracing said screw receiving member, said legs having tapering surfaces confronting said screw receiving member which are in installation position spaced apart a predetermined maximum distance at said entering end and which taper toward one another approaching said flange means, said screw receiving member having tapering surfaces confronting said leg confronting surfaces and spaced a maximum dimension adjacent said hinges and tapering towards one another away from said hinges said legs being adapted to be inserted through a hole in a panel to abut said flange means against a surface of said panel, a screw inserted past said flange means and threaded into said screw receiving member pulling said screw receiving member towards said flange means and causing the confronting tapering surfaces to cam said legs apart to fracture said hinge and to spread said legs apart on the opposite side of said panel from the surface engaged by said flange means.

4,407,619

BLIND FASTENER WITH DEFORMABLE CLAMPING MEANS

George Siebol, Renton, Wash., assignor to Olympic Fastening Systems, Downey, Calif.

Continuation-in-part of Ser. No. 77,344, Sep. 20, 1979, abandoned. This application May 19, 1980, Ser. No. 151,411

Int. Cl.³ F16B *00/00*

U.S. Cl. 411—43 **17 Claims**

1. In a blind fastener for joining side-by-side workpieces having aligned holes of a first predetermined diameter for receiving the fastener, and having:

a tubular sleeve having an outside diameter sized to fit through said holes and having a first head at one end for abutting against one side of the workpieces, and an opposite end portion for projecting beyond the other side of the workpieces to be expanded against the workpieces into a second head on said other side;

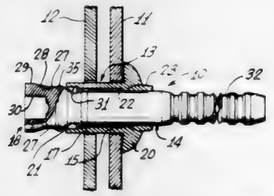
a setting pin extending through said sleeve for use in expanding said opposite end portion to clamp the workpieces together and form said second head, said setting pin having:

a central section smaller than the inside of said sleeve;

a pulling section on one end of said central section extending beyond said first head;

and an expanding head on the other end of said central section beyond said other end of said sleeve, to be drawn into said sleeve, said expanding head having a cylindrical expansion section joined to said central section and larger than said central section and the inside diameter of said sleeve, formed with a tapered leading end adjacent said opposite end portion, said expansion section having an outside diameter that is less than the size of said holes by an amount equal to twice the wall thickness of said sleeve, to expand the sleeve into, and hold it in, tight engagement with the workpieces;

and a tapered portion beyond said expansion section progressively increasing the size of said expanding head



from said expansion section toward said other end, to form said second head on said sleeve;

the improvement comprising:

a deformable annular clamping ridge encircling the leading end portion of said expansion section, and having a tapered leading face forming an included angle of approximately thirty degrees with the longitudinal axis of the setting pin, and having a crest with an outside diameter that is slightly larger than the diameter of said expansion section to define a relief area portion of said expansion section between said ridge and said tapered portion and having a diameter slightly less than the outside diameter of said crest, thereby to resist entry of said expansion section into said sleeve and composed of material that is sufficiently strong to expand the sleeve beyond the workpieces without substantial deformation of the ridge, said crest being formed from a material that is sufficiently soft for deforming when the workpieces are clamped together and being drawn off into the space between the relief area portion and said tubular sleeve to permit the expansion section to enter and fill tightly the portion of the sleeve that is inside the workpieces.

4,407,620

DRILL SCREW

Katsumi Shinjo, Osaka, Japan, assignor to Yugen Kaisha Shinjoseisakusho, Osaka, Japan

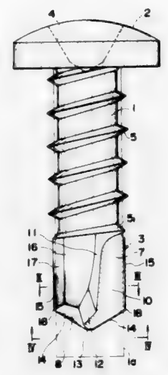
Filed Nov. 28, 1980, Ser. No. 210,979

Claims priority, application Japan, Dec. 29, 1979, 54-172577

Int. Cl.³ F16B *25/00*

U.S. Cl. 411—387 **6 Claims**

1. A drill screw comprising an elongated threaded stem having a driving head at one end and a drill bit at the opposite end thereof, said drill bit including at least two flutes equally spaced from each other around a central axis of the stem, each flute having a cutting edge at a forward edge thereof to be inclined rearwardly from an inward end of the cutting edge to an outward end thereof, a cutting blade at a side edge of the flute extending parallel to the central axis of the stem and a cutting surface located inside both said cutting edge and said cutting blade and having a concave bottom, said cutting edge and said cutting blade being located in an imaginary reference plane parallel to a plane extending radially outwardly from the



central axis of the stem and having acute rake angles extending toward the concave bottom of the cutting surface.

4,407,621

SELF-ADJUSTING TURNING ROLL ASSEMBLY

Erik Hansen, Gentofte, Denmark, assignor to ESAB Aktiebolag, Sweden

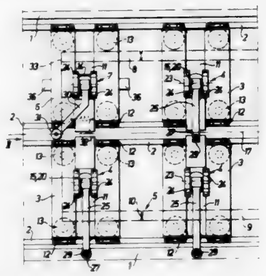
PCT No. PCT/SE80/00183, § 371 Date Mar. 11, 1981, § 102(e) Date Mar. 11, 1981, PCT Pub. No. WO81/00227, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 1, 1980, Ser. No. 247,536

Claims priority, application Denmark, Jul. 12, 1979, 2946/79

Int. Cl.³ B23Q *1/16*; B23K *37/02*

U.S. Cl. 414—433 **9 Claims**



1. Apparatus for supporting a workpiece including first and second axially disposed cylindrical bearing surfaces rotatable about a common longitudinal axis, said apparatus comprising a first pair and a second pair of rotatable support roller means for supporting said workpiece for rotation therewith, said first pair of said rotatable support roller means being disposed on either side of said longitudinal axis of said first bearing surface, and said second pair of said rotatable support roller means being disposed on either side of said longitudinal axis of said second bearing surface, one of said rotatable support roller means being pivotably mounted on a stationary member, carrage members for supporting each remaining one of said rotatable support roller means, said carriage members being mounted with respect to first and second paths parallel to said longitudinal axis and being independently and freely movable along one of said first and second paths in response to axial movements of said workpiece during rotation thereof in a predetermined direction, first adjustment means associated with each of said carriage members and responsive to axial movement of said carriage members for causing said remaining ones of said rotatable support roller means supported by said carriage members to rotate about an axis substantially perpendicular to said longitudinal axis and thereby counteract said axial movement of said workpiece, and second adjustment means responsive to axial movement of said workpiece for causing said one rotatable support roller means to rotate about an axis substantially perpendicular to said longitudinal axis and thereby to counteract said axial movementof said workpiece.

4,407,622

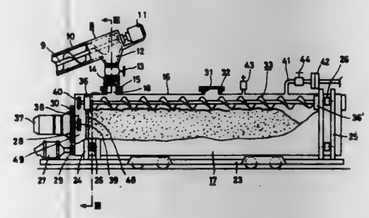
SOIL TRANSPORTING VEHICLE FOR TRANSPORTING SOILS EXCAVATED BY SHIELD MACHINE

Toshihiko Ito, Kashiwara, Japan, assignor to Okumura Corporation, Osaka, Japan

Filed May 18, 1981, Ser. No. 264,614

Int. Cl.³ E21D *9/12*; E02F *7/10*; E21D *9/06*; B60P *1/04*

U.S. Cl. 414—468 **1 Claim**



1. A soil transporting vehicle for transporting the soil excavated by a shield machine having a pressure compartment defined therein between a cutter head and a diaphragm located behind the cutter head, into which pressure compartment the pressurized slurry or air is introduced, the vehicle comprising:

a cylindrical soil container having soil introduction and discharge opening means and being pressure resistant,

said soil introduction and discharge opening means consisting of a first opening and a second opening in said soil container, said first and second openings being aligned along a longitudinal axis of said soil container,

soil conveying means arranged in the soil container adjacent to said opening means for moving the soils in the soil container axially thereof,

a chassis for supporting the soil container rotatably about the longitudinal axis thereof,

drive means for rotating the soil container about said axis between a soil introduction position wherein said first and second openings are directed upwardly and a soil discharge position wherein said first and second openings are directed downwardly,

said soil container being provided with an inlet for introducing gas under pressure into the soil container, and a pressure regulating valve for regulating the pressure in said container to be substantially equal to that of said pressure compartment,

a compressor connected with said gas inlet for introducing said pressurized gas into said soil container through the gas inlet,

opening and closing valve means arranged between said compressor and said gas inlet for admitting said pressurized gas into said soil container to raise the pressure inside the soil container to be substantially equal to that of said pressure compartment before the soil is introduced into the soil container.

4,407,623

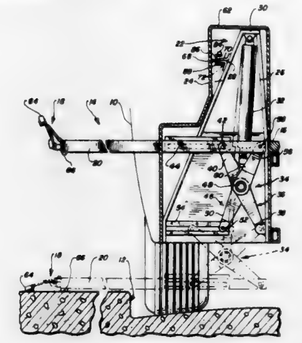
LIFT ASSEMBLY INCLUDING A REACTION SWITCH

William W. Parks, Glenview, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Oct. 24, 1980, Ser. No. 200,594

Int. Cl.³ B60T *1/44*

U.S. Cl. 414—540 **11 Claims**



9. A device for sensing the engagement of a lift platform of a vehicle with an obstacle, wherein said lift platform includes a frame, and means for operating said lift platform, said device comprising a gap defined in said frame, first and second bridging members secured to said frame on opposite sides of said gap, means for resiliently biasing said first and second bridging members together across said gap, and switch means responsive to relative movement of said bridging members caused by said obstacle for deactuating said operating means.

4,407,624

WHEELCHAIR LOADING DEVICE FOR PASSENGER CARRYING VEHICLES

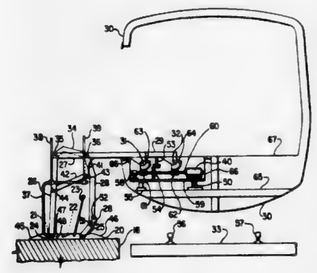
John C. Kingston, Suite 1210, 261 Cooper St., Ottawa, Ontario, Canada K2P 0G3

Filed Aug. 6, 1981, Ser. No. 290,597

Claims priority, application Canada, Feb. 23, 1981, 371502

Int. Cl.³ B60P *1/48*

U.S. Cl. 414—546 **10 Claims**



1. A device for raising and lowering wheelchair using passengers to and from a passenger carrying vehicle, said device comprising:

a loading platform for transport of a wheelchair thereon;

a pair of spaced apart and opposed linkage means positioned on either side of said loading platform and which pivotally interconnect said loading platform to a framework of said vehicle for movement of said platform between ground level exterior of said vehicle and floor level interior of said vehicle, each of said linkage means including five pivotally interconnected links wherein a first common link disposed above said loading platform is pivotally con-

nected to said loading platform by a first set of spaced apart links and wherein the points of pivotal interconnection of said first set of links with said common link and said loading platform define the corners of a first parallelogram, and wherein said first common link is pivotally connected to said framework by a second set of spaced apart links and wherein the points of pivotal interconnection of said second set of links with said common link and said framework define the corners of a second parallelogram;

thrust link means interconnecting a link of said first set of links to a link of said second set of links for maintaining said loading platform out of contact with said vehicle when said loading platform is away from rest position interior of said vehicle; and

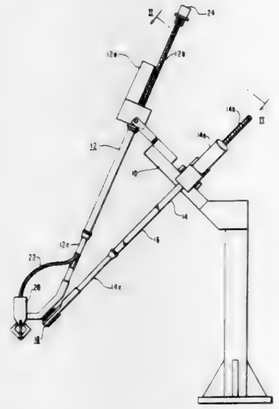
means co-operating with said linkage means for raising and lowering said loading platform.

4,407,625

MULTI-ARM ROBOT

Lanson Y. Shum, Westmoreland County, Salem Township, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1981, Ser. No. 264,154
Int. Cl.³ B25J *11/00*
U.S. Cl. 414—728 **9 Claims**



1. A robotic manipulator for automatically positioning a workhead comprising:

a support structure;

three arms having their remote end portions hingedly connected together at a single location which is at least relatively close to the point of intersection of the axes of the three arms, said location being adjacent the workhead connected to said three arms, and having their proximate end portions carried in gimbaled relation from said support structure at spaced apart locations thereat together defining the points of a triangle;

means for driving each arm axially and independently to move said workhead to different positions, said driving means being carried by said support structure and being fixed in location at said support structures, said workhead being in rigid relation to one of said three arms and spaced from said single location;

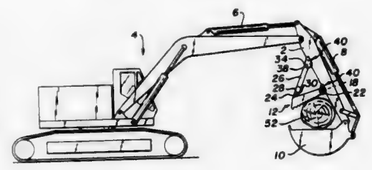
each arm being substantially straight from its remote end portion to its proximate end portion and rigid for its length in the sense that no part of the arm is hingedly connected to another part so that the forces derived from the payload weight and movement subject said arms primarily only to compression and/or tension.

4,407,626

GRIPPING DEVICE

Peter J. Bruckner, Box 187, Nakusp, British Columbia, Canada

Filed Jan. 30, 1981, Ser. No. 229,868
Int. Cl.³ E02F *3/28*
U.S. Cl. 414—740 **1 Claim**



1. A device to be mounted to a boom of a back hoe, the boom having a bucket and first and second spaced rods, the first rod closer to the bucket than the second rod the device comprising:

a first connection to pivotally engage the first rod;

a back plate attached to the first connection;

rows of teeth extending longitudinally of the back plate to extend towards the bucket of the back hoe;

a detachable second connection on the back plate, remote from the first connection;

a support arm detachably attached to the second connection at one of its ends and extending towards the boom;

the distance between the first and second connections being the same as the distance between the first and second rods;

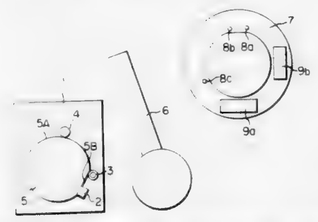
a detachable third connection to engage the second rod attached to the support arm at the other of its ends, whereby the device may be attached to the boom of a back hoe to provide a rigidly mounted gripping surface against which an object can be forced by movement of the bucket and thus held, and whereby the second and third connections may be detached to remove the support arm, and the back plate pivoted to a rest position, generally adjacent and parallel to the boom, and secured in that position by attaching the second connection on the back plate to the second rod.

4,407,627

AUTOMATIC WAFER ORIENTING APPARATUS

Hiroshi Sato; Kei Takatsu, and Junji Isohata, all of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 970,146, Dec. 18, 1978, abandoned.
This application Apr. 21, 1981, Ser. No. 256,173
Claims priority, application Japan, Dec. 20, 1977, 52-154171
Int. Cl.³ B65G *47/24*
U.S. Cl. 414—757 **1 Claim**



1. An automatic wafer orienting apparatus for orienting a wafer with respect to a wafer chuck prior to alignment with a mask, comprising:

a first automatic wafer orienting sub-apparatus comprising:

a support plate for supporting a wafer having an orientation cut in a part of the peripheral edge thereof; and

wafer position defining members comprising a drive member contacting the peripheral edge of the wafer for rotating said wafer on said support plate and defining members for contacting the peripheral edge of the wafer;

a transport device for transporting the wafer oriented in said first automatic wafer orienting sub-apparatus to a second automatic wafer orienting sub-apparatus; and

a second automatic wafer orienting sub-apparatus comprising:

a wafer chuck;

positioning members provided on said wafer chuck; and

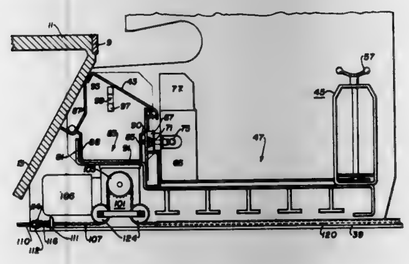
means for pressing the thus transported wafer against said positioning members.

4,407,628

APPARATUS FOR HANDLING CUTTINGS FROM A SHEAR

Eugene W. Pearson, Orinda, Calif., and Wilbur G. Short, Browns, Ill., assignors to Canron Corporation, Oakland, Calif.

Division of Ser. No. 703,617, Jul. 8, 1976, Pat. No. 4,150,594.
This application Oct. 30, 1978, Ser. No. 955,987
Int. Cl.³ B21D *43/22*
U.S. Cl. 414—35 **12 Claims**



1. A moveable car for use with a shear machine that produces both porduct and scrap, said car comprising:

a scrap collecting section;

a product collecting section;

a wall separating said car into forward and rearward sections;

said scrap collecting section located forward of said wall;

said product collecting section located rearward of said wall;

said wall having an upper portion inclined over said forwardly located scrap collecting section, and

means to move said car forward, towards said machine to a scrap collecting position, and rearward, away from said machine, to a product collecting position.

4,407,629

LIFTING APPARATUS FOR DOWN-HOLE TUBULARS

Clyde A. Willis, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Jul. 28, 1980, Ser. No. 172,543
Int. Cl.³ E21B *19/14*
U.S. Cl. 414—745 **20 Claims**

1. In a drill rig including a tower for supporting a string of down-hole tubulars and a boom pivotably mounted to the rig adjacent the tower to move between a parallel to the tower, said boom including a clamp for clamping and holding a down-hole tubular, the improvement comprising:

a support member mounted to the tower;

a bolt slidably mounted to the support member and movable between a first position, in which the bolt is retracted toward the support member, and a second position, in which the bolt is extended away from the support member on the side of the tower facing the boom;

means for locking the bolt in the second position;

a blocking member mounted to the boom and aligned with the bolt such that the bolt substantially abuts the blocking member when the boom is in the vertical position substantially parallel to the tower;

said support member, bolt, and blocking member positioned



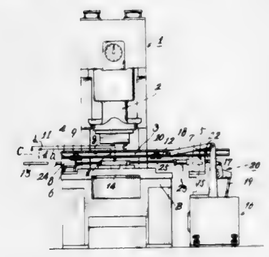
to provide a safety frame between the boom and the tower at a level adapted to restrain the movement of vertically positioned down-hole tubulars between the tower, the boom, and the frame.

4,407,630

WORK FEED METHOD IN A PRESS

Setsuo Toda, No. 1-1392 Sobudai Danchi, Sagamihara-shi, Kanagawa, Japan

Division of Ser. No. 116,290, Jan. 28, 1980, Pat. No. 4,361,413.
This application Nov. 13, 1981, Ser. No. 321,268
Int. Cl.³ B30B *13/00*
U.S. Cl. 414—786 **1 Claim**



1. A work feed method for a work feed apparatus for a press including a workpiece feed bar, a drive unit including a rocking means operatively connected to said feedbar and adapted to move said feed bar in the horizontal direction, an operation drum cam operatively connected to said rocking means to move it through a predetermined oscillating motion, a cam plate and a lift unit assembly having a mechanism connected to a lift rod adapted to be actuated by said cam plate to impart upward and downward movement to said feed bar, said feed bar being disposed in a press gap rearwardly of a die, and at least one workpiece vacuum clamper arm provided on said feed bar extending toward the front of said press and having supported thereon a workpiece vacuum clamping means, said rocking means and lift rod being adjustable, comprising when the press is at top dead center, two work suction vacuum clamper means provided on a feed bar are first moved in a linear line from their respective initial stop positions in which

one of said vacuum clamper means and the other vacuum clamper means are disposed in an intermediate position between a supply stage and a die and an intermediate position between said die and a discharge stage, respectively, in one direction until said one vacuum clamper means is positioned above said supply stage and said other vacuum clamper means is positioned above said die, respectively, second, said one and other vacuum clamper means are lowered to said supply stage and said die, respectively, to cause said one vacuum clamper means to clamp a supply workpiece thereto and said other vacuum clamper means to clamp a processed workpiece thereto, third, said one and other vacuum clamper means are raised, fourth, said one and other vacuum clamper means are linearly moved in the other opposite direction until said one and other vacuum clamper means are positioned above said die and above said discharge stage, respectively, fifth, said one and other vacuum clamper means are lowered to said die and discharge stage, respectively and unclamped to cause said one vacuum clamper means to supply said supply workpiece to the die and said other vacuum clamper means to discharge said process workpiece to said discharge stage, respectively, sixth, said one and other vacuum clamper means are raised and last, said one and other vacuum clamper means are linearly moved in said one direction to said initial stop positions, respectively whereupon said press is actuated for a cycle of pressing operation.

4,407,631

MOTOR-PUMP AGGREGATE

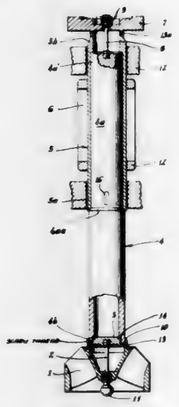
Wolfangang Schneider, Weisenheim; Josef Peters, Lambsheim, and Karl Gaffal, Hessheim, all of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,370

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021318

Int. Cl.³ F01D *5/34*

U.S. Cl. 415—122 R **10 Claims**



1. In a motor-pump aggregate, particularly in an aggregate including a glandless centrifugal pump for use in nuclear reactor plants, the combination of coaxial pump and motor shafts having adjacent first end portions and second end portions remote from one another, one of said first end portions extending into the other of said first end portions; means for coupling said first end portions to one another so that said motor shaft can transmit torque to said pump shaft, including a conical seat in said other first end portion, a complementary conical external surface provided on said one first end portion and abutting against said seat, means for non-rotatably connecting said first end portions to one another, and means for sealingly urging said surface against said seat; impeller means adjacent to the second end portion of said pump shaft; and means for coaxially securing said impeller means to said pump shaft, including mating ring gears respectively provided on the second end portion of said pump shaft and on said impeller means.

4,407,632

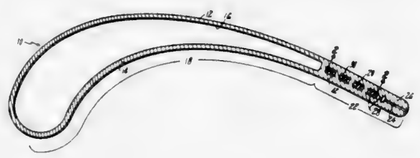
AIRFOIL PEDESTALED TRAILING EDGE REGION COOLING CONFIGURATION

George P. Liang, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,480

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—97 R **8 Claims**



1. An airfoil having a suction side wall and a pressure side wall defining a forward portion of said airfoil and a trailing edge region of said airfoil, said trailing edge region including a trailing edge, said suction side wall and said pressure side wall being spaced apart defining a cooling air cavity within said forward portion and a slot of width W in said trailing edge region, said slot being in communication with said cavity for receiving cooling air from said cavity, said airfoil including means defining outlet passageways through said trailing edge in communication with said slot for discharging cooling air from said slot through said trailing edge;

a plurality of spaced apart pedestals extending across said slot from said pressure side wall to said suction side wall, said pedestals being arranged in an array wherein they are located at each vortex formed by two criss-crossing sets of parallel lines, the distance between adjacent parallel lines in both sets being equivalent to define a grid of congruent diamonds, said sets of parallel lines being angled relative to each other such that a line connecting a first pair of opposing vertices of each diamond is substantially parallel to the spanwise direction of the airfoil;

a plurality of suction side fences joining each pair of adjacent pedestals along each of the lines of one of said two sets of criss-crossing parallel lines, wherein each suction side fence is a wall of length G and of height A extending inwardly from said suction side wall, said height A being less than the slot width W; and

a plurality of pressure side fences joining each pair of adjacent pedestals along each of the lines of said other of said two sets of criss-crossing parallel lines, wherein each pressure side fence is a wall of height B extending inwardly from said pressure side wall, said height B being less than the slot width W.

4,407,633

HELICOPTER ROTOR

Rene L. Mouille, Aix-en-Provence, France, assignor to Societe Nationale Industrielle Aero., France

Division of Ser. No. 43,878, May 30, 1979, Pat. No. 4,304,525.

This application Sep. 8, 1981, Ser. No. 300,091

Claims priority, application France, Jun. 2, 1978, 78 16521; May 8, 1979, 79 11585

Int. Cl.³ B64C *27/38*

U.S. Cl. 416—140 **12 Claims**

1. A rotary aircraft rotor comprising:

a rotor strut,

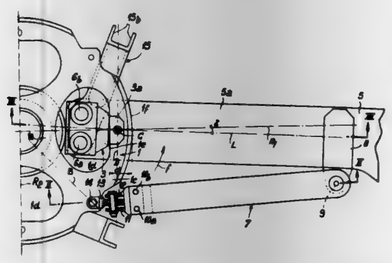
a hub arranged for rotation about a rotor axis and supporting a plurality of rotor blades each having a root and each having a longitudinal axis extending radially when the corresponding blade is in its neutral position which refers to it at rest or when the rotor rotates slowly,

said hub, including a central part in the form of a tubular stem prolonging said rotor strut,

and a top plate and a bottom plate each having radial arms of same dimensions regularly distributed around said rotor axis and arranged in a pair of superposed arms in vertical alignment for each blade,

and said hub being coupled to said root of each blade by means

(a) of a laminated spherical abutment having a center through which extends the blade flap axis and including a first rigid element presenting concave spherical surface and a second rigid element in the form of a convex spherical cap turned towards said hub central part and said concave spherical surface of said first rigid element, said laminated spherical abutment being received in a recessed yoke, the outer end of which is secured to said blade root and the inner end of which is radially disposed between said arms of said corresponding pair of arms of said top and bottom plates and secured to said first rigid element of said laminated spherical abutment, and



(b) of a brace, linked to said central part of said hub and to said yoke of said corresponding blade, wherein said brace is a resilient return brace comprising an elongated stock of metal plates alternating with elastomeric shock absorbing plates made of viscoelastic material having great persistence of deformation, the outer extremity of said resilient return brace being coupled to said yoke by a first ball joint the center of which is near the flap axis of said corresponding blade, and the inner extremity of resilient return brace being coupled to a place of said hub central part by a second ball joint the center of which is on the longitudinal axis of an immediately neighbour blade when said longitudinal axis is extending radially, and wherein said second rigid element of said laminated spherical abutment is integral with a holder fitted between and directly secured to said arms of said corresponding pair of arms of said top and bottom plates by means of at least two bolts extending through pairs of superposed holes in the outer end portion of said arms and apertures in said holder, said apertures having axes defining a plane in which said flap axis of said corresponding blade is preferably received.

4,407,634

AXIAL-FLOW STEAM TURBINE WHEEL

John Tones, Heddon on the Wall, England, assignor to Northern Engineering Industries plc, Newcastle upon Tyne, England

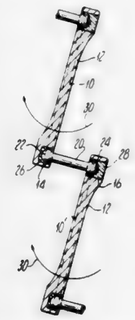
Filed Aug. 13, 1982, Ser. No. 407,875

Claims priority, application United Kingdom, Sep. 8, 1981, 8127167

Int. Cl.³ F01D *5/22*

U.S. Cl. 416—196 R **5 Claims**

1. A steam turbine wheel comprising blades each of twisted form and each including a tip section and elongate members which are interposed between said tip sections of said blades and which are effective to inhibit flutter of said tip sections, said wheel further comprising for each said elongate member two ball-and-socket arrangements one at each end of each said elongate member, each said elongate member extending between the tip sections of two of said blades said two blades being mutually adjacent blades, each said elongate member



being pre-stressed in compression so as to exert thrusts on said two blades to pre-stress said two blades torsionally each in a sense corresponding to untwisting of said twisted form of said blade, each said thrust being exerted on the respective one of said two blades through a respective one of said ball-and-socket arrangements.

4,407,635

AIRCRAFT PROPELLER ASSEMBLY WITH COMPOSITE BLADES

Richard V. Grimes; W. Benjamin Harlamert, both of Piqua, Ohio, and David F. Thompson, Chester, Pa., assignors to TRW Inc., Cleveland, Ohio

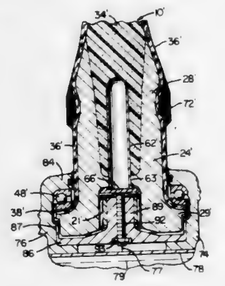
Continuation of Ser. No. 1,961, Jan. 8, 1979, Pat. No. 4,302,155.

This application Nov. 16, 1981, Ser. No. 321,771

The portion of the term of this patent subsequent to Nov. 24, 1998, has been disclaimed.

Int. Cl.³ B64C *11/26*

U.S. Cl. 416—230 **9 Claims**



1. An aircraft propeller assembly comprising a rotatable propeller hub supporting a plurality of radially extending composite propeller blades, each of said composite blades including an elongated core of substantially rigid plastics material, a skin of plastic resin impregnated material surrounding said core, a rigid base member supporting said core and having an outwardly projecting inner flange portion integrally connected to an undercut neck portion of reduced outside diameter, means defining a bore within said base member, means connected to said propeller hub and supporting a bearing within said bore to provide for rotating said blade relative to

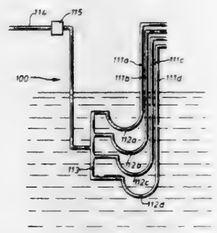
said hub, said skin material on said blade continuing radially inwardly along said neck portion of said base member in overlying relation and having a skin flange portion projecting laterally outwardly adjacent said flange portion of said base member, securing means extending around said skin material surrounding said reduced neck portion and spaced radially outwardly from said skin flange portion for forming a first rigid connection of said skin material to said base member, means connected to said propeller hub and including an inwardly projecting retention lip portion substantially surrounding said base member, and said lip portion being disposed radially between said skin flange portion and said securing means and radially overlying both of said flange portions to form a second rigid connection of said skin material to said base member.

4,407,636

SELF-CLEANING SUBMERSIBLE PUMP

Nigel D. King, Southampton, England, assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 99,664, Dec. 3, 1979, abandoned, which is a continuation of Ser. No. 868,055, Jan. 9, 1978, abandoned.
This application Nov. 30, 1981, Ser. No. 325,972
Claims priority, application United Kingdom, Jan. 10, 1977, 719/77
Int. Cl.³ F04F *1/10, 7/00*
U.S. Cl. 417—118 **1 Claim**



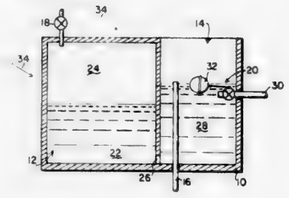
1. A self-cleaning pump for simultaneously and intermittently pumping a plurality of relatively small liquid samples from different levels of a body of liquid, such as sewage containing solid particles, comprising, in combination, supply means for providing a propellant gas, an unobstructed plurality of downcomer conduit portions connected through a single conduit to said supply means, each downcomer conduit portion operably associated with a respective unobstructed riser conduit portion, and each riser conduit portion in communication at one end with one end of each downcomer conduit portion substantially at the lowest region thereof for the passage of a propellant gas from the other end of the respective downcomer conduit portion to the other end of the respective riser conduit portion, each of said downcomer conduit portions and said riser conduit portions arranged to be fixedly submerged at least partially in said liquid, respective ones of said riser conduit and downcomer portions being disposed at different levels within said liquid in which said plurality are submerged, an unobstructed inlet orifice located in the lowest region of each one of the respective conduit portions for the entry of liquid thereinto from said body of liquid when each orifice is submerged in the liquid, each said orifice being sized to permit the inlet of liquid into each said riser conduit portion and each said downcomer conduit portion to a level equal to the level of liquid in said body of liquid and to block entry of solid particles of greater size than said orifice between successive pulses of a propellant gas, said supply means being intermittently activated to pass a propellant gas through said single conduit into each other end of the respective downcomer conduit portions to clear solid particles in said liquid away from said orifices and simultaneously propel liquid from each said downcomer conduit portion to said other end of each respective raiser conduit portion, whereby some liquid and propellant gas are propelled out of said conduit portions through each said orifice during operation of said pump for at least temporarily freeing each said orifice of any orifice-obstructing solid particles.

4,407,637

SOLAR POWERED LIQUID METERING DEVICE

John C. Newby, 41289 Malcolmson St., Fremont, Calif. 94538

Filed Jan. 22, 1981, Ser. No. 227,183
Int. Cl.³ F04F *1/02*
U.S. Cl. 417—138 **7 Claims**



1. A solar powered liquid metering device comprising:
a unitary container including:
a solar chamber sealed from atmospheric pressure, said solar chamber containing a quantity of a liquid to be pumped in a lower portion thereof and an expansible gas filling the remaining volume thereof, said solar chamber having at least one wall adapted to be exposed to direct solar radiation, and
an overflow chamber open to atmospheric pressure and also containing a quantity of said liquid, said solar chamber and said overflow chamber being separated by a wall having an opening at a lower end thereof to allow fluid communication between said liquid within said solar chamber and said liquid within said overflow chamber; and
an overflow outlet opening within said overflow chamber for draining excess liquid from said overflow chamber that is above a predetermined level,
filler means coupling a supply of said liquid to said overflow chamber and operative to permit liquid to flow from said supply into said overflow chamber when said liquid level within said overflow chamber is below said predetermined level, and
valve means permitting a preselection of the amount of liquid metered out during an operating cycle by allowing the amount of gas within said solar chamber to be varied prior to the commencement of said operating cycle by opening said valve means and introducing or removing gas from said solar chamber, said valve means being normally closed during said operating cycle.

4,407,638

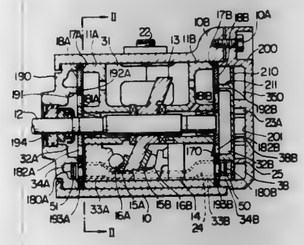
SWASH PLATE TYPE COMPRESSOR WITH SILENCER STRUCTURE

Kazushi Sasaya, Katsuta; Takashi Degawa; Atsushi Suginuma, both of Mito, and Noriharu Sato, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 28, 1981, Ser. No. 229,063
Claims priority, application Japan, Jan. 28, 1980, 55-7846
Int. Cl.³ F04B *3/02*
U.S. Cl. 417—269 **14 Claims**

1. A swash plate type compressor provided with a silencer structure, comprising:
a rotary shaft;
a swash plate secured to said rotary shaft;
at least one cylinder block journalling said rotary shaft for rotation;
a plurality of pistons engaged by said swash plate and caused to move in reciprocatory movement in a direction parallel

to said rotary shaft by the rotary swinging movement of said swash plate;
a plurality of cylinder bores formed in said cylinder block, each of said cylinder bores having fitted therein one of said pistons for sliding movement;
an end plate attached to an end of said cylinder block opposite said swash plate;
first partition wall means defining at one side of said plate a first flat space separated from atmosphere;
second partition wall means defining at one side of said first flat space a second flat space separated from atmosphere;



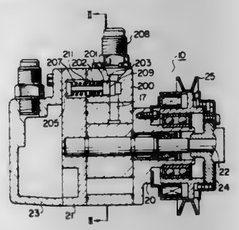
a high pressure chamber in said first flat space receiving a compressed refrigerant discharged from said cylinder bores and introduced thereinto through said plate;
passage means for directing the compressed refrigerant discharged from said high pressure chamber in a generally radial direction toward the center of said second flat space; and
refrigerant draw-off passage means opening at one end in the center of said second flat space and communicating at the other end externally of said compressor.

4,407,639

COMPRESSOR

Teruo Maruyama, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 22, 1982, Ser. No. 341,607
Claims priority, application Japan, Jan. 29, 1981, 56-12425
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—292 **4 Claims**



1. A compressor having a rotor, a cylinder rotatably accommodating said rotor, vanes slidably carried by said rotor, side plates secured to both sides of said cylinder so as to close both open ends of cylinder chambers defined by said rotor, vanes and said cylinder, a suction port and a discharge port for a refrigerant, and a temperature-sensitive valve disposed in a passage leading to said suction port and adapted to control the state of opening of said suction port, characterized in that said compressor satisifies the following condition of:

$$0.025 < \theta_s \cdot a_1 / Vo < 0.080$$

where, a_1 is given by the following formula of:

$$\bar{a}_1 = \int_o^{\theta_s} \theta^2 a_1(\theta) d\theta / \int_o^{\theta_s} \theta^2 d\theta$$

wherein, $a_1(\theta)$ represents the effective area (cm^2) of suction passage between an evaporator and said vane chamber in the state where said temperature-sensitive valve has been controlled, θ_s represents the angle (rad) of rotation of said rotor from the position at which the suction stroke is started and the position at which the suction stroke is completed, and Vo represents the volume of said vane chamber at said position at which the suction stroke is completed;
said compressor further satisfying the following relationship where, a_2 is given by the following formula of:

$$\bar{a}_2 = \int_o^{\theta_s} \theta^2 a_2(\theta) d\theta / \int_o^{\theta_s} \theta^2 d\theta$$

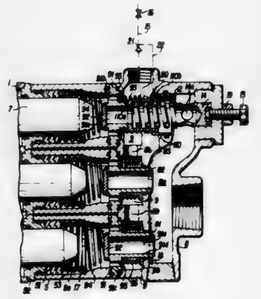
where, $a_2(\theta)$ represents said effective area of suction passage in the state where said temperature-sensitive valve is in the opening position.

4,407,640

RECIPROCATING PUMP HAVING UNIQUE PRESSURE CONTROL VALVE CONSTRUCTION

Yoriaki Namekata, Osaka, Japan, assignor to Arimitsu Industry Co., Ltd., Osaka, Japan

PCT No. PCT/JP80/00009, § 371 Date May 18, 1981, § 102(e) Date May 7, 1981, PCT Pub. No. WO81/00889, PCT Pub. Date Apr. 2, 1981
PCT Filed Jan. 25, 1980, Ser. No. 261,205
Claims priority, application Japan, Sep. 18, 1979, 54-120480
Int. Cl.³ F24B *49/08*
U.S. Cl. 417—296 **2 Claims**



1. A reciprocating pump, comprising:
a cylinder;
a freely reciprocable plunger supported within said cylinder; and
a suction passage, a discharge passage and a valve device located at a front end of said cylinder, said valve device comprising:
a valve seat having a suction bore in its central portion and a discharge bore in its outer peripheral portion;
a pressure control valve, supported by the valve seat, having at least one pressure receiving surface disposed within said discharge passage, said pressure control valve being biased to the valve seat through a control spring;
at least one suction valve connected to said suction passage and at least one discharge valve connected to said discharge passage, said discharge valve being located at the outlet side of said discharge bore, said suction valve and said pressure control valve being located at the inlet side

of the suction bore, said pressure control valve being constructed with a through bore through which the suction bore communicates with the suction passage; and

a pressure adjusting member supporting said control spring located movably at a cylinder head at the front end of said cylinder,

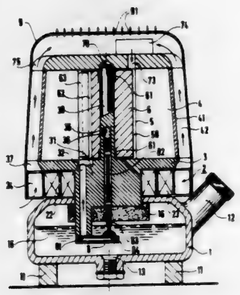
said plunger reciprocating to actuate the suction valve and the discharge valve at the valve device.

4,407,641

ELECTRICALLY-DRIVEN ROTARY VANE PUMP

Jacques Long, Annecy, France, assignor to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Jul. 21, 1981, Ser. No. 285,688
Claims priority, application France, Jul. 23, 1980, 80 16225
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—356 **2 Claims**



1. An electrically-driven rotary vane vacuum pump comprising:

a hollow pump housing defining an oil sump,

a fixed hub mounted to said housing and overlying said sump,

a pump shaft fixed to said hub and extending vertically upwardly therefrom,

an annular electric motor stator mounted on said hub surrounding said shaft,

a pump stator comprising a tubular non-magnetic inner lining within said electric motor stator,

a rotor common to said pump and said electric motor,

bearings borne by said fixed shaft for mounting said rotor for rotation about the shaft axis and ecentrically within said tubular lining,

said rotor constituting a squirrel-cage rotor and carrying radially movable vanes for contact with the lining to provide a pumping action when the rotor rotates,

said rotor including at least two radially directed peripheral slots between bars of said squirrel-cage rotor,

said rotor being generally cylindrical and being mounted inside the tubular pump stator in a fashion such that it is substantially tangential thereto along a tangential line of contact and forming a vacuum pump chamber therebetween,

means defining a suction opening and an escape opening to said chamber defined by said rotor and said eccentrically positioned tubular lining and being located at plus or minus 80° from said tangential line of contact between said rotor and said tubular lining,

an oil supply opening within said hub leading to said eccentric pumping chamber,

an oil circulation valve positioned within the sump at a level normally immersed within the oil borne by said sump and communicating with said oil supply opening,

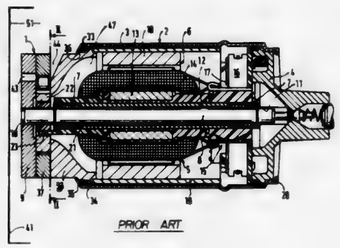
and wherein said electrically-driven rotary vane vacuum pump further comprising electromagnetic means provided within one end of said fixed shaft and operatively engaging said oil circulation valve and being responsive to magnetic fields produced by operation of the electric motor for opening said oil circulation valve when the motor is in operation and for closing said oil circulation valve when the motor is not in operation, in order to avoid the entry of oil into the eccentric vacuum pump chamber when the electric current is off.

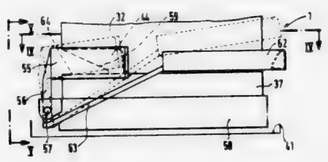
4,407,642

FUEL SUPPLY UNIT

Ulrich Kemmner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 26, 1981, Ser. No. 228,043
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003828
Int. Cl.³ F04B *17/00*; B67D *3/00*
U.S. Cl. 417—366 **2 Claims**





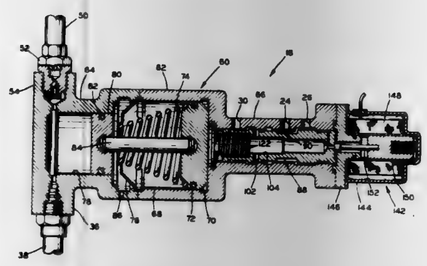
1. A fuel supply unit, comprising a pumping element and an electromotor arranged to drive the same, said pumping element and electromotor being housed together in a common housing having a cylindrical body portion at one end thereof, said housing being secured in an upright position in the interior of a fuel container in such a manner that the pumping element cylindrical body portion is located near the bottom of said fuel container, said pumping element having a first intake area oriented toward the bottom of the fuel container and a second intake area remote from the bottom of said fuel container, and a closure member externally movably disposed on said fuel supply unit for movement transversely of the cylindrical body portion to close said second intake area from the outer side of said pumping element, said closure member being actuatable by means of a floater body, the position of said floater body being determined by the level of the fuel within said fuel container, said closure member and said floater body being interconnected via a lever means externally pivotably supported on a holder sleeve placed over said cylindrical body portion, said closure member having a semi-circular cross section arranged to partially surround said cylindrical body portion on said housing in proximity to said intake areas, said floater body being embodied as a hollow, semi-annular body which partially surrounds said fuel supply unit on a side remote from said second intake area.

4,407,643

POWER FLUID SYSTEM EMBODYING TWO-FLUID PUMP

Arthur K. Brown, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 95,735, Nov. 19, 1979, abandoned. This application Oct. 1, 1981, Ser. No. 307,359
Int. Cl.³ F04B *17/04*
U.S. Cl. 417—401 **1 Claim**



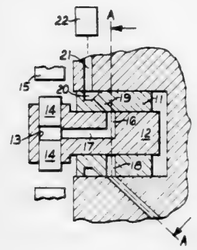
1. A pump comprising, in combination, a housing extending substantially linearly and defining a small diameter portion at one end thereof, a large diameter portion and valve portion, the small diameter portion including an inlet and an outlet for communicating a first fluid through said housing small diameter portion, a small diameter piston movably disposed within said housing small diameter portion and exposed to said first fluid, a large diameter piston movably disposed within said housing large diameter portion, a connecting rod secured to said large diameter piston and secured to said small diameter piston to move therewith, a valve member movably disposed within said housing valve portion, said housing valve portion including passage means to communicate a second fluid under pressure through said housing in communication with said valve member, and a solenoid assembly coupled to the other end of said housing, said housing defining a linearly extending stepped bore to movably receive said pistons and valve member, said solenoid assembly cooperating with said valve member in an energized state to move said valve member within said housing in order to communicate said second fluid under pressure with said large diameter piston via said stepped bore, said large diameter piston being movable from a rest position in response to the fluid pressure of the second fluid to move said small diameter piston from its rest position, said small diameter piston moving within said housing to develop fluid pressure for the first fluid, said pistons being biased to their rest positions by resilient means within said housing, said valve member defining a central passage communicating with said passage means when said valve member is moved by said solenoid assembly, said central passage cooperating with said linearly extending stepped bore to communicate second fluid pressure to said large diameter housing portion, said solenoid assembly including a rod engageable with said valve member to move the latter in the energized state and also cooperating with said valve member to close an end of said central passage, said solenoid assembly further including a base plate carried by the valve portion of said housing, said base plate substantially closing one end of said stepped bore and engaging said valve member to define the rest position for the latter, said base plate also forming an opening for receiving the rod, said valve member defining a bypass passage communicating said central passage with said passage means to always maintain flow of second fluid pressure through said housing, and resilient means cooperating with said valve member and said rod to bias the same to their rest positions.

4,407,644

FUEL INJECTION PUMPING APPARATUS

Colin P. Brotherston, Rainham, and Anthony J. Adey, Gravesend, both of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Dec. 17, 1980, Ser. No. 217,465
Claims priority, application United Kingdom, Jan. 19, 1980, 8001836
Int. Cl.³ F04B *19/02*
U.S. Cl. 417—462 **3 Claims**



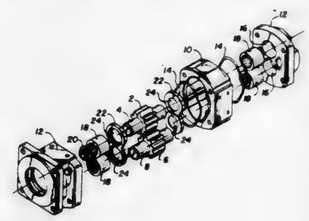
1. A fuel injection pumping apparatus for supplying fuel to an internal combustion engine and comprising a body part, a rotary distributor member mounted in the body part, a bore formed in the distributor member and a plunger therein, a cam for imparting inward movement to the plunger as the distributor member rotates, and means for conveying fuel to and from said bore, said means comprising a single passage communicating with said bore and including an axially extending portion and an inclined portion extending at an angle to the axis of rotation of the distributor member and breaking out onto the periphery of the distributor member, a plurality of outlet ports in the body part and with which said passage can register in turn as the distributor member rotates during successive pumping movements of the pumping plunger, a plurality of inlet ports alternatively arranged with said outlet ports, said inlet ports being in communication with a source of fuel, and a pair of interconnected drillings in the distributor member, said drillings extending to the periphery of the distributor member and being positioned to register with an inlet port and an outlet port after said outlet port has been supplied with fuel.

4,407,645

GEAR PUMP HAVING AN ISOLATOR TO PROTECT ITS BEARINGS

Harry Haigh, Cranbrook, and Rudy C. Sonmor, Vancouver, both of Canada, assignors to R.C.S. Enterprises Limited, Vancouver, Canada

Filed Jul. 10, 1981, Ser. No. 282,207
Int. Cl.³ F04C *15/00*
U.S. Cl. 418—131 **3 Claims**



1. A gear pump useful with a hydraulic fluid having a water base, the gear pump comprising:

a housing;

a drive gear on a driveable hub and an idler gear engaging with the drive gear and carried by an idler hub, the drive hub and the idler hub each being mounted in bearings at both ends of the housing;

an isolator between each bearing and the hydraulic fluid, said isolator comprising a recess to receive an end of each bearing;

a sealing member positioned within each recess to seal against the outer surface of the shaft at the sealing members inner edge and to seal against the outer edge of the recess at the sealing member's outer edge.

4,407,646

APPARATUS FOR MAKING VIDEO DISCS

Claude Bricot, and Gerard Robin, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Division of Ser. No. 127,116, Mar. 4, 1980, Pat. No. 4,354,988. This application Mar. 3, 1982, Ser. No. 354,457
Claims priority, application France, Mar. 6, 1979, 79 05733
Int. Cl.³ B28B *17/00*
U.S. Cl. 425—174.4 **9 Claims**

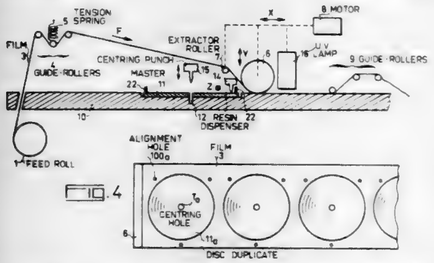


FIG. 4

1. An apparatus for producing video discs from at least one master having an engraved zone carrying information in the form of surface micro-reliefs, comprising:

a horizontal base within which said master is embedded;

means operatively associated with said base for feeding a flexible film forming a transparent substrate in a layer across said base and said master;

a pressure roller operatively associated with said base and which further comprises means for transversely moving said pressure roller in a horizontal plane;

means operatively associated with said base for depositing a resin fillet on said master in a direction transverse to the direction of movement of said pressure roller, wherein said pressure roller is movable in a direction transverse to said resin fillet so as to gradually bring together said film and said master while moving away from the zone where said resin fillet is deposited and so as to form said disc; and

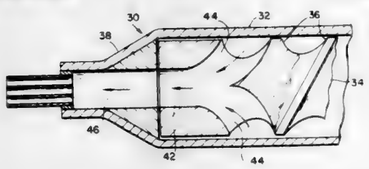
roller means positioned adjacent said base for loosening said substrate from said master during return movement of said pressure roller.

4,407,647

SOAP PLODDER FOR ELIMINATION OF WET CRACKING

Rudolph E. Denzler, Stirling, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,716
Int. Cl.³ B29F *3/06*
U.S. Cl. 425—208 **11 Claims**



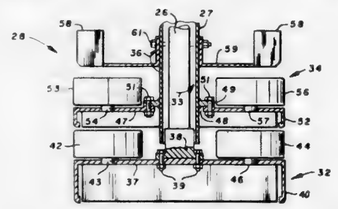
1. A soap plodder to reduce surface cracking in soap consisting essentially of a barrel, a delivery head connected to said barrel, a worm operating in the barrel for mixing and advancing soap toward said delivery head, said delivery head having a cylindrical exit orifice, said worm having a bore therein communicating with said orifice having at least one hole therein extending from the periphery thereof towards and communicating with said central bore for feeding soap through said bore into said orifice wherein said bore and said orifice are of the same diameter.

4,407,648

COUNTER ROTATING PACKERHEAD ASSEMBLY

Navarro T. Fosse, Nashua, Iowa, assignor to Hydrotile Machinery Company, Nashua, Iowa

Division of Ser. No. 188,301, Sep. 18, 1980, Pat. No. 4,340,553, which is a continuation-in-part of Ser. No. 974,303, Dec. 29, 1978. This application Apr. 9, 1982, Ser. No. 366,870
Int. Cl.³ B28B *21/26, 1/28*
U.S. Cl. 425—457 **26 Claims**



1. A counter rotating packerhead assembly for use with a machine to make a concrete product comprising: a rotatable lower packerhead unit having a plurality of first rollers with outer portions thereof operable to pack concrete into the annular space between the lower packerhead unit and the mold, means rotatably supporting the first rollers for rotation about separate axes extended generally parallel parallel to the axis of rotation of the lower packerhead unit, said means including plate means and means rotatably mounting the first rollers on the plate means and locating the first rollers above the plate means, a rotatable upper packerhead unit located above said lower packerhead unit, said first rollers being disposed immediately below said upper packerhead unit with no intermediate structure therebetween, said upper packerhead unit having a plurality of second rollers, each of said second rollers having outer portions operable to pack concrete in an annular space surrounding the upper packerhead unit, said outer portions of the second rollers being located radially inwardly of the outer portions of the first rollers, means rotatably supporting the second rollers for rotation about separate generally upright axes extended parallel to the axis of rotation of the upper packerhead unit, means fixedly mounting a finned impeller to said upper packerhead unit for rotation therewith, said upper packerhead unit having annular trowel means located between said first and second rollers, said trowel means having outer means located radially inward of said outer portions of the first and second rollers for troweling the concrete between the first and second rollers and metering concrete directly to the first rollers of the lower packerhead unit.

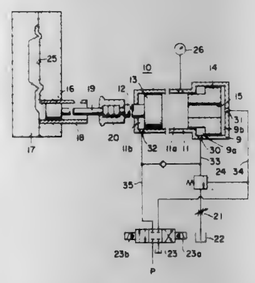
4,407,649

INJECTION MOLDING MACHINE

Hiroji Saito, Sagamihara, Japan, assignor to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1982, Ser. No. 343,969
Claims priority, application Japan, Jan. 2, 1981, 56-15264
Int. Cl.³ B29F *1/06*
U.S. Cl. 425—145 **5 Claims**

1. An injection molding machine comprising an injection piston-cylinder mechanism including therein an injection piston and a booster piston located at a rear portion of said injection piston and provided with a central longitudinal through hole, first valve means connected to a pressurized fluid source and said injection piston-cylinder mechanism so that the pressurized fluids supplied into said injection piston-cylinder mechanism passes through said through hole of said booster piston and acts on said injection piston thereby to fill a mold cavity of
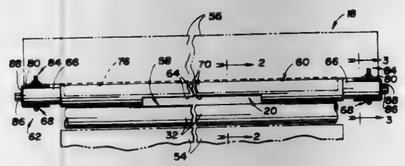


a mold with molten bath, and a second valve means connected to said injection piston-cylinder mechanism which operates to discharge pressurized fluid in a cylinder chamber between said booster piston and said injection cylinder into a tank at a time when a fact that the molten bath injected into said molted cavity produces a predetermined condition is detected thereby to move said booster piston in a controlled manner.

4,407,650

ADJUSTABLE SEAL FOR GLASS SHEET FURNACE

Robert J. Greenler, 29071 Belmont Lake Rd., Perrysburg, Ohio 43551

Filed Apr. 5, 1982, Ser. No. 365,696
Int. Cl.³ F27D *1/18*; F27B *25/00*; C03B *18/00*
U.S. Cl. 432—242 **15 Claims**



1. In a furnace including a heating chamber, a horizontal conveyor for conveying glass sheets through the furnace for heating thereof within the heating chamber while being conveyed along a general horizontal plane, and a horizontally elongated access opening to the heating chamber along the plane of conveyance through the furnace, an adjustable seal for the access opening comprising: an elongated ceramic seal member of fused silica having a rotational axis extending along the length thereof; a support that rotatably mounts the ceramic seal member about its rotational axis above the access opening of the furnace; and the ceramic seal member having an elongated portion that moves toward and away from the plane of conveyance upon rotation of the seal member to thereby control the size of the opening.

4,407,651

HYBRID REHEATING SYSTEM AND METHOD FOR POLYMER PREFORMS

Martin H. Beck, Brookline; Suppayan M. Krishnakumar, Nashua, both of N.H., and Wayne N. Collette, Canton, Conn., assignors to The Continental Group, Inc., Stamford, Conn.

Filed Feb. 5, 1982, Ser. No. 345,997
Int. Cl.³ F27D *3/00*; F27B *9/14, 9/06*
U.S. Cl. 432—11 **18 Claims**



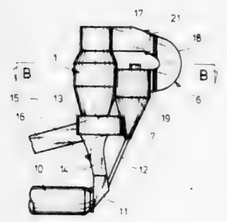
1. A hybrid heating system for reheating polymer tubular preforms, said heating system comprising at least one first type heating means for heating preforms in a manner wherein an interior surface of a wall of each preform is heated to a higher temperature than an exterior surface of that wall, and at least one second type of heating means for heating preforms in a manner wherein an exterior surface of a wall of each preform is heated to a higher temperature than an interior surface of that wall, whereby a desired temperature profile through a preform may be obtained, all of said heating means being disposed completely externally of a preform to be heated.

4,407,652

APPARATUS FOR CALCINING RAW MATERIALS IN THE FORM OF POWDER OR PARTICLES

Toshikazu Ichiyanagi; Kanzaburo Sudoh, both of Kumagaya; Keisuke Ogawa, Yotsukaido, and Nobuhiro Yamazaki, Tokyo, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Chichibu Cement Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 30, 1981, Ser. No. 326,049
Claims priority, application Japan, Dec. 15, 1980, 55/175794
Int. Cl.³ F27B *15/00*
U.S. Cl. 432—58 **5 Claims**



1. A calcining furnace for producing a vortex of upwardly spiraling gases with entrained particulate matter, comprising:

(a). lower, central and upper sections which are connected and open to each other and have a common vertical axis,

(b). means at the lower part of the furnace for forming an upwardly and radially outwardly moving spiral of of gases and particulate matter, comprising

i. the lower section being of inverted frusto-conical shape,

ii. a chamber connected to the lower end of the lower section and shaped to impart a swirling motion to gases introduced into it,

iii. means for introducing into the swirling chamber gases and entrained particulate matter,

(c). means for forming an upwardly moving vortex from gases and entrained particulate matter moving upwardly from the lower section, comprising:

i. the central section being of cylindrical shape and having the same internal diameter as the upper end of the lower section,

(d). means at the upper end of the furnace for increasing the

velocity of the swirling gases rising from the central section and forcing them radially inwardly, comprising:

i. the upper section being frusto-conical in shape, and

(e). a chamber above and open to the upper section which is so formed that gases and entrained particulate matter which enter from the upper section are giving a swirling motion, and

(f). an outlet duct leading from the swirling chamber at the top of the upper section.

4,407,653

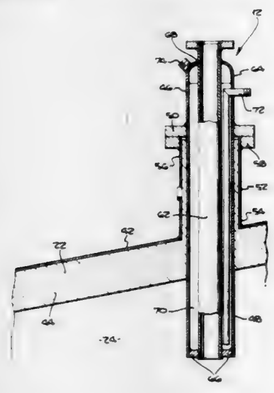
APPARATUS FOR HEATING SOLID HEAT-CARRYING BODIES

John F. Nutter, Encino, Calif., assignor to Tosco Corporation, Los Angeles, Calif.

Filed Nov. 19, 1981, Ser. No. 322,894

Int. Cl.³ F27B *15/00*; F26B *17/12*

U.S. Cl. 432—215 **8 Claims**



1. An apparatus for heating solids comprising:

a heater shell having a roof, sides and a bottom defining a solids heating chamber; a removable feed conduit passing through said heater shell, said conduit having an inlet portion outside said heating chamber, an outlet portion inside said heating chamber and a mid portion therebetween, wherein solids are passed through said feed conduit into said heating chamber for heating;

a mounting tube having a bottom end integrally attached to said heater shell and a top end, said mounting tube having an inside diameter large enough for said feed conduit to pass therethrough;

a first flange extending radially outward from the mounting tube top end;

a second flange extending radially outward from said feed conduit mid portion, said second flange being adapted to releasably seat upon said first flange to position said feed conduit within said mounting tube and heating chamber;

means for heating said solids within said heating chamber; and

means for removing the heated solids from the heating chamber.

4,407,654

HANDLING AND SUPPORT SYSTEM FOR KILN FIRED WARE

David M. Irwin, East Liverpool, Ohio, assignor to The Potters Supply Company, East Liverpool, Ohio

Filed Jan. 21, 1982, Ser. No. 342,032

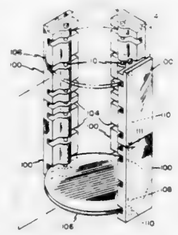
Int. Cl.³ F27D *5/00*

U.S. Cl. 432—258 **18 Claims**

1. Apparatus for handling and supporting ware which is subjected to firing during production, said apparatus comprising:

ware supporting means adapted to receive and support said ware;

vertical support means for receiving and supporting said ware supporting means so that ware placed on said ware supporting means are separated and spaced apart from one another, said ware supporting means and said vertical



support means each including apertures formed therein which apertures align with one another when said ware supporting means is received within said vertical support means; and

locking means received within said aligned apertures for locking said ware supporting means to said vertical support means to form a framework for handling and supporting articles for firing.

4,407,655

DEVICE FOR SIMULATION OF PROJECTED IMAGE

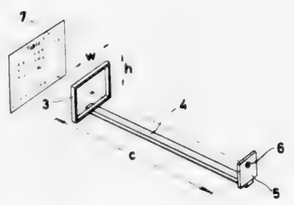
Yoshio Koda, Nagoya, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,472

Claims priority, application Japan, Mar. 18, 1981, 56-38879; Jul. 10, 1981, 56-108555

Int. Cl.³ G09B *19/00*

U.S. Cl. 434—219 **11 Claims**



1. A device for simulation of projected image, comprising a support member, a frame disposed at one end of said support member substantially perpendicularly to said support member, and an eye member provided with an eye hole and disposed at the other end of said support member substantially perpendicularly to said support member and parallelly to said frame, the inner vertical dimension of said frame being what is obtained by multiplying the vertical dimension of the area of a projected image by the distance between said frame and said eye member and dividing the resultant product by the distance between the surface of the projected image on the screen and the position suitable for observation of the projected image and the inner horizontal dimension of said frame being what is obtained by multiplying the horizontal dimension of the area of the projected image by the distance between said frame and said eye member and dividing the resultant product by the distance between the surface of the projected image on the screen and the position suitable for observation of the projected image.

4,407,656

GETTERING DEVICE AND METHOD

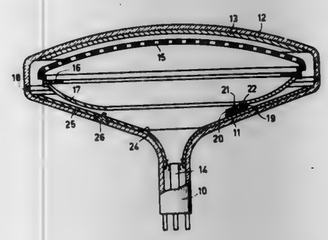
Franz Hofer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 261,993

Claims priority, application Netherlands, May 16, 1980, 8002836

Int. Cl.³ H01J *9/20*

U.S. Cl. 445—10 **12 Claims**



1. A method of manufacturing a colour television display tube having an envelope comprising a conical portion and a window portion which are sealed together in a vacuum-tight manner by means of a sealing glass, a gettering device being provided in a place situated inside the envelope of the tube before said portions are sealed together, said gettering device comprising a source of evaporable gettering metal and at least one gas source including a material which releases gas upon heating, the gas being released from the gas source after evacuating the display tube and while the gettering metal is evaporated, characterized in that said gas-releasing material comprises a nitrided pulverulent ternary alloy of iron, germanium and at least one of the metals chromium and manganese.

7. A gettering device comprising a source of evaporable gettering metal and at least one gas source including gas-releasing material in powder form, characterized in that said gas-releasing material comprises a nitrided pulverulent ternary alloy of iron, germanium and at least one of the metals chromium and manganese.

4,407,657

GETTERING DEVICE AND METHOD

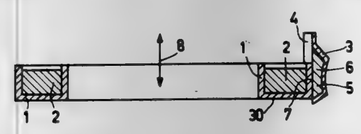
Jan J. B. Fransen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1981, Ser. No. 262,003

Claims priority, application Netherlands, May 16, 1980, 8002837

Int. Cl.³ H01J *9/20*

U.S. Cl. 445—17 **12 Claims**



1. A method of manufacturing a picture display tube comprising installing in the tube a gettering device holding a gas releasing material and an evaporable gettering metal, sealing and evacuating the tube, and applying an electromagnetic field to the device to induce therein an electrical heating current to effect release of the gas and evaporation of the gettering metal, characterized in that said gettering device includes a first metallic holder containing the evaporable gettering metal and a second metallic holder containing the gas-releasing material, said second holder being attached to a predetermined position on the first holder's outer surface where the electrical current of greatest magnitude is induced, for shunting sufficient electrical current from the first holder to effect heating of the material held in the second holder to its gas-releasing temperature before the gettering metal held in the first holder is heated to its evaporation temperature.

8. A gettering device for inductively heating and dispersing a gas and a gettering metal in an evacuated envelope, when an electrical heating current is induced in the device by means of an applied electromagnetic field, said device comprising a first metallic holder for an evaporable gettering metal and a second metallic holder for a gas-releasing material,

characterized in that said second holder is attached to a predetermined position on the first holder's outer surface where the electrical current of greatest magnitude is induced, for shunting sufficient electrical current from the first holder to effect heating of the material held in the second holder to its gas-releasing temperature before the gettering metal held in the first holder is heated to its evaporation temperature.

4,407,658

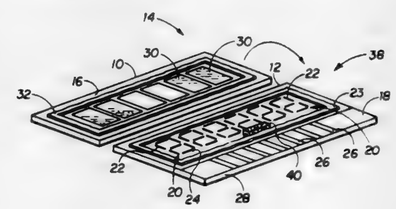
GAS DISCHARGE DISPLAY DEVICE SEALING METHOD FOR REDUCING GAS CONTAMINATION

Anthony J. Bernot, Gilbert, and Kenneth Brown, Tempe, both of Ariz., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 2, 1981, Ser. No. 239,292

Int. Cl.³ H01J *9/18*

U.S. Cl. 445—25 **6 Claims**



1. A method for constructing a gas discharge display device having a face plate and a base plate forming an interior envelope with a viewing window and containing electrode means, said method comprising the steps of:

forming a perimeter seal around said viewing window of said display on at least one of said plates;

placing spacer means on one of said plates;

assembling said plates in face-to-face relation to form said envelope;

maintaining with said spacer means the majority of said perimeter seal out of contact with the other of said plates to provide a gap between said perimeter seal and said other of said plates;

placing said assembled plates in a vacuum furnace;

heating said furnace to a first temperature range to soften said perimeter seal;

outgassing contaminants from said electrode means and from said perimeter seal;

simultaneously with said first temperature heating step creating a vacuum in said furnace to remove said contaminants through said gap and out of the atmosphere between said plates;

introducing an ionizable gas between said plates;

heating said furnace to a second temperature range higher than said first temperature range to melt said spacer means; and

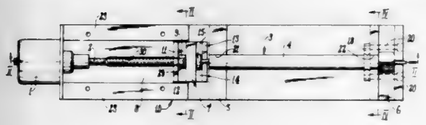
moving said plates in contact with each other around said perimeter seal to establish a hermetically sealed display.

4,407,659

DRIVE SYSTEM

Leslie E. S. Adam, Doncaster, Australia, assignor to Varian Associates, Inc., Palo Alto, Calif.

PCT No. PCT/AU81/00069, § 371 Date Jan. 28, 1982, § 102(e) Date Jan. 28, 1982, PCT Pub. No. WO81/03545, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 5, 1981, Ser. No. 346,073
Claims priority, application Australia, Jun. 6, 1980, PE3939
Int. Cl.³ A61M *5/20*
U.S. Cl. 604—155 **6 Claims**



1. A syringe drive system including,
a support structure,
means on said support structure for receiving and holding a syringe against axial movement,
a drive motor having a body and a drive shaft which moves axially relative to said body in response to energization of said motor,
said drive motor body being secured to said support structure against movement relative thereto and so that said drive shaft is substantially coaxially with a said syringe secured to said support structure,
coupling means connected directly to an end of said drive shaft for movement therewith relative to said support structure,
said coupling means being directly connectable to the plunger of a said syringe to cause axial movement thereof in response to said axial movement of the drive shaft, and
means holding said shaft against rotation relative to said support structure.

4,407,660

PLASMAPHERESIS ASSEMBLY AND ASSOCIATED FLUID MANIFOLD

Charles Nevens, Barrington, and Ronald A. Williams, Mundelein, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Sep. 8, 1981, Ser. No. 300,338
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—6 **18 Claims**



1. A blood collection assembly comprising
primary conduit means including, at one end thereof, a phlebotomy needle,
first and second blood collection containers,
first and second auxiliary conduit means respectively attached in fluid communication with said collection containers, and
a fluid manifold interconnecting said primary conduit means and said first and second auxiliary conduit means, said manifold including
a main passage having a portion attached in flow communication with said primary conduit means and a portion normally open to communication with the atmosphere and accommodating attachment to a recipient set for conducting fluids into said main passage,
a pair of branch passages joining said main passage in a spaced-apart relationship and being attached in flow communication with a respective one of said first and second auxiliary conduit means, and
a plug removably insertable through said normally open portion of said main passage and into the interval between the junctions of said spaced apart branch passages with said main passage, said plug including a cap portion which, when said plug is inserted, sealingly occupies and closes said normally open portion, said plug further including a stem portion which, when said plug is inserted, sealingly occupies and closes said main passage in said interval for blocking flow communication between said branch passages through said main passage.

4,407,661

MOTOR FUEL ADDITIVES DERIVED FROM SHALE OIL

Serge R. Dolhyj, Parma, and Christos Paparizos, Willowick, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Dec. 7, 1981, Ser. No. 327,831
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—78 **5 Claims**

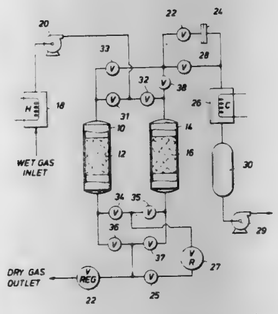
1. A motor fuel comprising a blend of:
A. A mixture of hydrocarbons boiling within the gasoline range, and
B. An etherified mixture of phenols, the phenols obtained from retorted shale oil.

4,407,662

METHOD OF REMOVING WATER FROM ETHANOL

William F. Ginder, Houston, Tex., assignor to Ad-Pro Industries, Inc., Houston, Tex.

Continuation of Ser. No. 198,370, Oct. 20, 1980, abandoned.
This application Jun. 1, 1982, Ser. No. 383,612
Int. Cl.³ B01D *3/00, 53/04*
U.S. Cl. 55—33 **5 Claims**



1. A method of removing sufficient water from H_2O ethanol at least 160 proof to produce ethanol having a proof of 195 or more comprising the steps of heating the ethanol water mixture until it is a vapor with sufficient superheat to maintain the vapor phase and prevent substantial capillary adsorption as the mixture passes through a dessicant bed of molecular sieves, passing the superheated ethanol water mixture through the bed to remove sufficient water to increase the proof of the ethanol to at least 195, passing a portion of the dehydrated ethanol through a second dessicant bed of molecular sieves at less than atmospheric pressure to desorb the water and ethanol on the dessicant from a previous dehydration cycle, and reversing the flow through the two beds after the temperature of the bed increases no more than about 14° C. (25° F.).

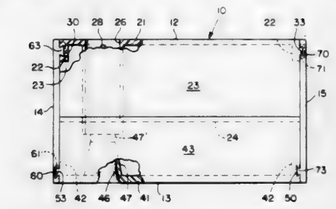
5. A method of dehydrating ethanol to 195 proof or higher comprising the steps of heating the ethanol to 99°–110° C. (210°–230° F.) at a pressure of 2–10 PSIG, passing the gaseous ethanol through a first dessicant bed of 3A molecular sieves with sufficient superheat to prevent substantial capillary adsorption as the mixture passes through said bed, for 2–10 minutes where a portion of the water and the ethanol is adsorbed by the dessicant bed, passing a portion of the dehydrated gaseous ethanol through a second dessicant bed of 3A molecular sieves at 5–10 PSIA to desorb the water and ethanol adsorbed by the bed previously when gaseous ethanol was passed through the bed at 99°–110° C. (210°–230° F.) and 2–10 PSIG pressure, diverting the flow of the gaseous ethanol to the second bed and the flow of the desorbing ethanol to the first bed at the end of the 2–10 minute cycle, and repeating the diverting step at the end of each 2–10 minute cycle such that the temperature of the first bed increases no more than about 14° C. (25° F.).

4,407,663

MODULAR SPIN FILTERS AND HOUSING THEREFOR

Clyde W. Hawley, Fairport, N.Y., assignor to Dollinger Corporation, Rochester, N.Y.

Filed Jun. 30, 1982, Ser. No. 393,749
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—347 **10 Claims**



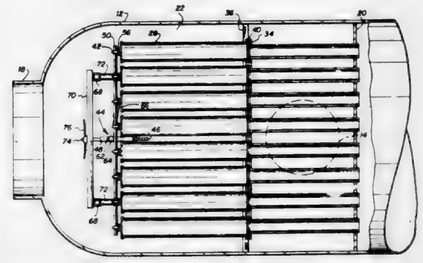
8. A modular spin filter comprising
a pair of front and rear sections positioned in operative engagement with each other,
a pair of end panels releasably secured to opposite ends of said front and rear sections to secure said sections releasably in their operative positions, and
means for conveying a gas, which is to be filtered, from gas inlet openings in one of said sections to gas discharge openings in the other of said sections, including means for centrifugally removing particles from the gas as it passes between said sections,
each of said end panels being releasably connected to said sections by tongue and groove connecting means permitting each panel to be manually shifted relative to said sections in one direction to connect the panel to said sections and in the opposite direction to disconnect the panel from said sections.

4,407,664

MULTIPLE FILTER VESSEL

Donald A. Sillers, Jr., Dallas, Tex., assignor to Peerless Manufacturing Company, Dallas, Tex.

Division of Ser. No. 103,857, Dec. 14, 1979, Pat. No. 4,298,474.
This application Jul. 13, 1981, Ser. No. 282,855
Int. Cl.³ B01D *46/10*
U.S. Cl. 55—357 **2 Claims**



1. In a horizontally disposed filter vessel having an inlet and outlet port the combination of:
an elongated filter element having a first end with an opening fitted against a flow directing member so the gas passing through the element may enter the member and a second closed end; and
a mast structure within the vessel and having an opening for supporting said second closed end such that said elongated filter element is substantially horizontally disposed within said filter vessel;
said second end of the elongated filter element comprising a cap sealingly secured to and closing the second end of the

filter element, said cap having a pointed stud extending therefrom which can be grasped by a human hand to manipulate the filter element to which the cap is attached into a horizontal position so as to align said first open end with said flow directing member supporting the second end of the filter element on the mast means.

4,407,665

LIQUID DEGASIFICATION DEVICE

Henry C. Lasater, Box 616, Cuba, N. Mex. 87013

Filed Mar. 24, 1980, Ser. No. 132,888

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—55 **6 Claims**



1. An apparatus for the degasification of water, said apparatus comprising:

a degasification column for removal of dissolved gases which are in solution with water and having a top and a bottom, said column having a length exceeding the height of the water which would be supported within the column by atmospheric pressure when the top of the column is in substantially evacuated condition;

a water reservoir;

means for venting gases from the top of said column;

means for selectively sealing said venting means;

means for selectively draining degassed water from said column

means for selectively connecting said column to said reservoir for controlling water flow therebetween; and

a container under a vacuum and connected with said means for selectively draining degassed water to receive and retain degassed water.

4,407,666

METHODS FOR PROLONGING THE USEFUL LIFE OF A GRAPHITE ELEMENT IN AN OPTICAL FIBER-DRAWING FURNACE

Alfred D. Briere, Dudley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 31, 1981, Ser. No. 298,059

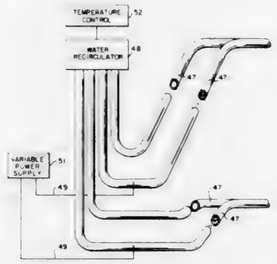
Int. Cl.³ C03B *37/07, 37/01*

U.S. Cl. 65—2 **12 Claims**

1. A method for using an optical fiber-drawing furnace, including a graphite element of generally cylindrical shape with a reduced central cross-sectional configuration having a flange at opposite ends thereof and having an axial hole therethrough including a central internal element chamber for receiving a glass preform, means for water cooling said flanges, and means for applying electric power across said flanges to resistively heat said reduced central cross-sectional configuration and, hence, said central internal element chamber so that an optical fiber can be drawn from said preform, said method prolonging the useful life of said graphite element and comprising

a. regulating the water used for cooling said flanges to a temperature substantially in excess of the dew point of the ambient atmosphere in which said furnace is located so that atmospheric moisture does not condense thereupon and to a temperature not in excess of 98.6° Fahrenheit so that said flanges can be cooled to a temperature not in excess of average normal human body temperature; and

b. avoiding thermal shock to said graphic element by raising the temperature of said chamber of a cold graphite element through the application of electric current by said



power means at a gradually increasing rate not in excess of one thousand amperes per three minutes until said chamber has achieved an operating temperature of 1900° C. to 2300° C., operating said furnace and producing drawn optical fiber with said chamber maintained at said operating temperature, and gradually lowering the temperature of said chamber of said graphite element by diminishing the application of current therethrough at a decreasing rate not in excess of one thousand amperes per three minutes until said chamber has achieved a bakeout temperature which is high enough to prevent moisture from entering said axial hole of said graphite element.

4,407,667

METHOD AND APPARATUS FOR FABRICATING OPTICAL FIBERS

Georges Le Noane, Kerrougant Bras, 22730 Tregastel, and Daniel Boscher, Kerariou, 22560 Tregastel, both of France

Filed Jul. 20, 1981, Ser. No. 284,961

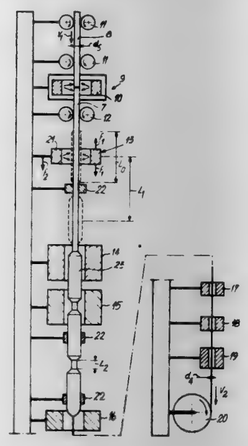
Claims priority, application France, Jul. 31, 1980, 80 17005

Int. Cl.³ C03B *20/00, 37/025*

U.S. Cl. 65—3.11 **10 Claims**

1. A process for continuous manufacture of optical fibers, comprising the steps of advancing successive cylindrical bars of homogeneous silica-base material in end to end relation along a predetermined path; welding each of said bars to a preceding one of said bars as the rear end of said preceding bar is advanced past a welding location to form a train of bars along said path; progressively applying on each of said bars a silica cladding containing a proportion of index varying dopant which varies as the diameter of the cladding increases as it passes through a cladding zone so as to form successive welded and clad preforms; and drawing out each one of the welded and clad preforms in turn to the fiber diameter as said train

advances, whereby lengths of optical fibers are obtained each corresponding to one of said preforms which have a core of



constant index surrounded by an annular portion of variable index.

4,407,668

APPARATUS AND PROCESS FOR PRODUCING A CLADDED OPTICAL FIBER HAVING A LONGITUDINAL SIDE COUPLING ZONE

Hubert Aulich, and Franz Auracher, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

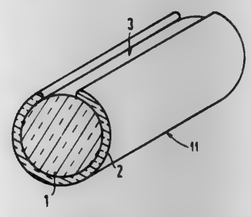
Division of Ser. No. 944,366, Sep. 21, 1978, Pat. No. 4,355,863.

This application May 21, 1982, Ser. No. 380,817

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1977, 2744129

Int. Cl.³ C03B *5/26, 19/00, 37/025*

U.S. Cl. 65—3.11 **4 Claims**



1. A process for the production of glass fiber having a core of glass surrounded by a cladding layer of glass with an index of refraction lower than the index of refraction of the glass of the core, said fiber having a longitudinally extending opening in the cladding layer to expose a portion of the core, said process comprising providing a workpiece having a rod member with a sleeve-like layer of the cladding, said sleeve-like layer having an opening to expose a portion of the rod member, heating said workpiece to a drawing temperature and then drawing said workpiece into said fiber having a cladding layer with a longitudinal extending opening exposing a portion of the core.

4. In an apparatus for producing glass fiber having a core of a glass material and a cladding layer of a glass having an index of refraction less than the index of refraction of the glass material of said core, said apparatus comprising a double crucible with the inner crucible having means defining an opening defining a core, said opening of the inner crucible being axially aligned with means defining an opening in the outer crucible for the cladding material to form a drawing nozzle, the improvement comprising the opening in the inner crucible being arranged concentrically to the opening of the outer crucible and having at least one bulge extending at least to an edge of the opening of the outer crucible so that a cladded fiber drawn therethrough has a gap in the cladding layer through which the core is exposed.

4,407,669

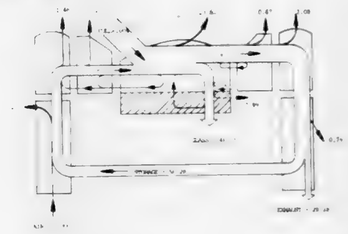
WASTE HEAT RECOVERY FROM REGENERATIVE FURNACES

Frederick J. Nelson, Swanton, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 15, 1982, Ser. No. 368,597

Int. Cl.³ C03B *5/16*

U.S. Cl. 65—134 **13 Claims**



1. A method of operating a regenerative furnace of the type having a pair of checkerworks used alternately on the exhaust side and inlet side of said furnace, to capture a greater portion of its waste heat, comprising the steps of introducing a substantial volume of air into the checkerworks at one side of a regenerative furnace, the volume of which is greater than that required for complete combustion, passing this entire volume of air as a unitary stream through at least a first portion of the one side of the hot checkerworks of the regenerative furnace to preheat the air and substantially increase the sensible heat of the air, diverting a portion of the preheated air from the said one side of the checkerworks in advance of the combustion zone to an auxiliary heat-utilizing apparatus mounted exteriorly of said furnace, conducting the remainder portion of the preheated air to the combustion zone of the said furnace to achieve combustion of a combustible fuel, conducting all of the combustion exhaust through the exhaust side checkerworks to thereby heat the checkerworks, and adjusting the flow paths at predetermined intervals to reverse the regenerative flow system and recover heat from the other side on reversal.

4,407,670

BIOCIDAL COMPOUNDS AND COMPOSITIONS

Trevor A. Crabb; Graham C. Jackson, both of Portsmouth, and Philip A. Jupp, Petersfield, all of England, assignors to National Research Development Corporation, London, England

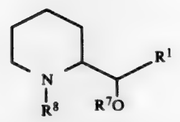
Filed Feb. 23, 1981, Ser. No. 237,108

Claims priority, application United Kingdom, Feb. 28, 1980, 8006772

Int. Cl.³ A01N *43/00, 43/40, 43/76*

U.S. Cl. 71—67 **5 Claims**

1. A composition for inhibiting algal, barnacle and fungal growth in aquatic environments consisting essentially of a biocidally effective amount of an active component which is a synthetic heterocyclic compound of the structure:



wherein

R^1 is an alkyl radical containing 8, 10 or 12 carbon atoms and R^7 and R^8, when taken separately, are hydrogen atoms or, when taken together, are $—CH_2—$, in conjunction with an acceptable diluent or carrier.

4,407,671

USE OF 3-AMINOCYCLOHEXADIENECARBOXYLIC ACIDS FOR CONTROLLING THE GROWTH OF UNWANTED PLANTS

Dennis H. Flint, and Herbert Estreicher, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 6, 1982, Ser. No. 447,379
Int. Cl.³ A01N *37/08*
U.S. Cl. 71—113 **1 Claim**

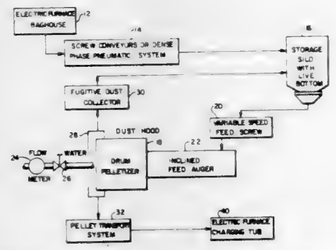
1. A method for controlling growth of unwanted plants at a locus which comprises applying to that locus an effective amount of a 3-aminocyclohexadienecarboxylic acid in which the carbon atom of the ring to which the carboxyl moiety is bonded is olefinically unsaturated, and the carbon atom of the ring to which the amino moiety is bonded is saturated, an alkali metal, alkaline earth metal, ammonium or amine salt, or a C_1–C_6 alkyl ester, of such an acid.

4,407,672

METHOD FOR THE RECOVERY OF IRON UNITS FROM FLUE DUST GENERATED IN A STEEL MAKING PROCESS

Roger A. Deuschle, Villanova, and Charles P. Mueller, King of Prussia, both of Pa., assignors to International Mill Service, Inc., Philadelphia, Pa.

Filed Jun. 24, 1981, Ser. No. 276,977
Int. Cl.³ C21C *5/52*; C21B *3/04*; C22B *1/248*
U.S. Cl. 75—10 R **9 Claims**



1. A method of making a melt utilizing flue dust in a steel making process, consisting essentially of the steps of:

collecting the dust generated in the steel making process;

agglomerating the collected dust into green ball pellets in a pelletizing apparatus;

loading the pellets into an electric arc furnace charging bucket by placing the pellets at or near the bottom of the charging bucket and covering the pellets with steel scrap separate from the pellets; and

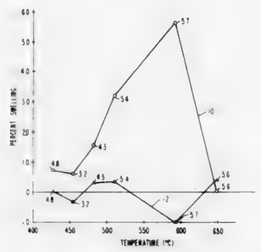
charging an electric arc furnace with the pellets and the steel scrap in the charging bucket only after the furnace has been previously charged with steel scrap without said pellets to form a melt, whereby when the pellets are charged into the melt, the pellets are immediately submersed into the melt by the steel scrap to minimize fume-off of pellet material.

4,407,673

SOLID SOLUTION STRENGTHENED DUCT AND CLADDING ALLOY D9-B1

Michael K. Korenko, Rockville, Md., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Continuation of Ser. No. 110,525, Jan. 9, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,340
Int. Cl.³ C22C *38/40*
U.S. Cl. 75—128 A **12 Claims**



1. An austenitic iron base alloy characterized by improved microstructural stability and swelling resistance superior to AISI type 316 stainless steel in a neutron irradiation atmosphere, said alloy consisting essentially of from about 14% to about 16% nickel, from about 12% to about 14% chromium, from about 1.2% to about 1.7% molybdenum, from about 0.5% to about 1.1% silicon, from about 1.5% to about 2.5% manganese, up to 0.1% zirconium, from about 0.2% to about 0.5% titanium, from about 0.02% to about 0.1% carbon, up to 0.01% boron and the balance iron with incidental impurities.

4,407,674

NOVEL ELECTROCONDUCTIVE COMPOSITIONS AND POWDER FOR USE THEREIN

John E. Ehrreich, Wayland, Mass., assignor to Ercon, Inc., Waltham, Mass.

Division of Ser. No. 126,681, Mar. 3, 1981, Pat. No. 4,319,920. This application Oct. 2, 1981, Ser. No. 308,242
Int. Cl.³ B22F *1/00*
U.S. Cl. 75—251 **10 Claims**

1. A silver powder product formed of nonplanar, essentially flake-shaped particles, wherein said particles which are characterized by an average thickness of less than about 0.2 micron thick and further characterized by a bulk density of from 0.15 to 0.85 gram per cc.

4,407,675

COMPOSITION FOR PRESERVING DENTAL PULP

Milton Hodosh, 72 Overhill Rd., Providence, R.I. 02906

Division of Ser. No. 126,433, Mar. 3, 1980, Pat. No. 4,343,608. This application Jun. 24, 1982, Ser. No. 391,728
Int. Cl.³ A61K *6/08*
U.S. Cl. 106—35 **6 Claims**

1. A pulp capping composition comprising a vehicle capable of hardening to a cement-like consistency selected from the group consisting of a mixture of zinc oxide and eugenol and a mixture of zinc oxide and polyacrylic acid and, as the essential ingredient, an effective amount of potassium nitrate sufficient to prevent pulp degeneration and abscess formation.

4,407,676

FIBER-REINFORCED CEMENT AND PROCESS

Jose M. Restrepo, Calle 85 No. 14-70, of. 301, Bagota, Colombia

Continuation-in-part of Ser. No. 325,035, Nov. 25, 1981. This application Jul. 2, 1982, Ser. No. 394,785
Int. Cl.³ C04B *21/00*
U.S. Cl. 106—88 **20 Claims**

1. A cement mortar comprising separate reinforcing filaments obtained from polyolefin film, said separate filaments consisting in sections shredded from non-twisted fibrillated ribbons having a length of up to 50 mm long, with said fibrillated ribbons having been split apart from said polyolefin film, wherein said separate reinforcing filaments have filamentary structure comprising hooked microfibrils outwardly projecting from points along the length of said separate filaments, and wherein separate reinforcing plastic filaments are microfibrillated and evenly distributed throughout the body of said cement mortar in a randomly oriented fashion along all of its special directions by high-speed stirring, and wherein gas bubbles or chunks of a cellular plastic are evenly and randomly distributed throughout said body of cement mortar.

4,407,677

CONCRETE MASONRY UNITS INCORPORATING CEMENT KILN DUST

Milton H. Wills, Jr., Catonsville, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 5, 1982, Ser. No. 365,425
Int. Cl.³ C04B *7/35*
U.S. Cl. 106—97 **7 Claims**

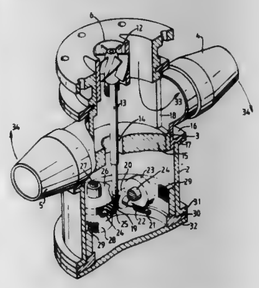
1. A composition for the manufacture of concrete block, comprising aggregate, cement, and cement kiln dust, wherein the aggregate is present in a proportion of between about 8 to about 12 parts to 1 part of a mixture of cement and cement kiln dust.

4,407,678

SLUDGE REMOVAL MACHINE

John A. Furness, Addiscombe, and John Haggerty, Warlingham, both of England, assignors to Butterworth Systems Inc., Florham Park, N.J.

Filed Sep. 11, 1981, Ser. No. 301,414
Claims priority, application United Kingdom, Sep. 12, 1980, 8029639
Int. Cl.³ B08B *3/02, 9/08*
U.S. Cl. 134—167 R **11 Claims**



1. A machine suitable for removing sludge from the bottom of a storage tank which comprises a central body, a casing rotatable about said body and provided with two substantially diametric nozzles arranged so that liquid emerging therefrom sweeps substantially only in one plane, a turbine for rotating the casing about the central body and means ensuring that when the casing is continuously rotated, alternately one nozzle is closed for substantially 180° rotation whilst the other nozzle is open.

4,407,679

METHOD OF PRODUCING HIGH TENSILE ALUMINUM-MAGNESIUM ALLOY SHEET AND THE PRODUCTS SO OBTAINED

Carmen C. Manzonelli, Corapolis, Pa., and David A. Chatfield, Michigan City, Ind., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1980, Ser. No. 208,485
Int. Cl.³ C22F *1/04*
U.S. Cl. 148—2 **16 Claims**

1. The method of making a high tensile aluminum-magnesium alloy sheet product comprising

forming an aluminum-magnesium alloy melt consisting essentially of 0.15–0.45% silicon, 0.10–0.90% iron, 1.5–2.3% magnesium and the remainder aluminum,

continuously forming from the melt a sheet of aluminum-magnesium alloy having a uniform thickness between 0.125 and 0.5 inch,

providing the aluminum-magnesium alloy sheet quenched to a temperature below 500° F., the quenching taking place in not more than about three minutes, and

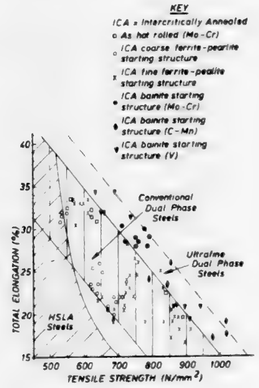
cold reducing the quenched sheet straight down to an 80%–95% reduction in thickness without the application of extraneous heat to the sheet, to thereby obtain an aluminum-magnesium alloy sheet product having a yield and tensile strength in excess of 50,000 psi.

4,407,680

DUAL-PHASE STEELS

Terence Gladman, Swinton, and Nicholas K. Ballinger, Doncaster, both of England, assignors to British Steel Corporation, London, England

Continuation of Ser. No. 225,667, Jan. 16, 1981, abandoned. This application Mar. 25, 1982, Ser. No. 361,852
Claims priority, application United Kingdom, Jan. 18, 1980, 8001702
Int. Cl.³ C21D *8/02*
U.S. Cl. 148—12 F **5 Claims**



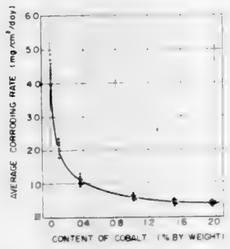
1. A process for producing a hot-rolled dual-phase low carbon steel in which steel strip is hot-rolled in a mill, cooled to exhibit a substantially uniform bainitic structure throughout its cross-section as it issues from the mill and in which the strip is subsequently transported through an annealing furnace and continuously annealed in the two-phase ferrite austenite field and cooled to transform some, or all, of the austenite to martensite.

4,407,681

HIGH TENSILE STEEL AND PROCESS FOR PRODUCING THE SAME

Katutoshi Ina; Kazuo Yamamoto; Hirokichi Higashiyama; Norio Ishikawa, and Hiroshi Miyoshi, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 158,135, Jun. 10, 1980, abandoned.
This application Jun. 9, 1982, Ser. No. 387,264
Claims priority, application Japan, Jun. 29, 1979, 54-81472; Aug. 8, 1979, 54-101020
Int. Cl.³ C21D *8/00*
U.S. Cl. 148—12 F **11 Claims**



1. A high tensile steel having excellent resistance to sulfide corrosion cracking and corrosion which steel has substantially a martensite structure and a yield strength of 60 to 81 kg/mm^2 and which steel has been prepared by hot- or cold-rolling a steel consisting essentially of, as indispensable components, 0.05% to 0.50% by weight of carbon, 0.1% to 0.28% by weight of silicon, 0.1% to 2.0% by weight of manganese, 0.05% to 1.50% by weight of cobalt, and the balance consisting of iron and inevitable impurities; said high tensile steel being produced by rapidly heating said rolled steel to a temperature of from 850° C. to 950° C. at a heating rate of 2° C./ sec or more to austenitize it; then quenching said austenitized steel by using water or oil; and tempering said quenched steel at a temperature not higher than Ac_1 point of said steel.

5. A process for producing a high tensile steel having substantially a martensite structure and a yield strength of 60 to 81 kg/mm^2 and exhibiting excellent resistance to sulfide corrosion cracking and corrosion, which comprises the steps of:

hot- or cold-rolling a steel consisting essentially of, as indispensable components, 0.05% to 0.50% by weight of carbon, 0.1% to 0.28% by weight of silicon, 0.1% to 2.0% by weight of manganese, 0.05% to 1.50% by weight of cobalt, and the balance consisting of iron and inevitable impurities;

rapidly heating said rolled steel to a temperature of from 850° C. to 950° C. at a heating rate of 2° C./ sec or more to austenitize it;

quenching said austenitized steel by using water or oil; and

tempering said quenched steel at a temperature not higher than the Ac_1 point of said steel.

4,407,682

METHOD OF PLASTIC WORKING OF METAL MATERIALS

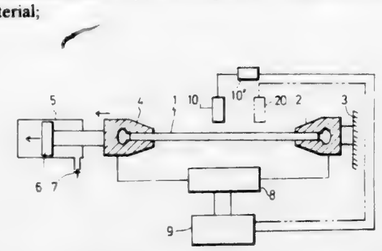
Shigeki Sawa, Nagoya; Hiroyasu Nagasaka, Chiryu; Makoto Saito, Nagoya; Masashi Mizuno, Aichi, and Katuhiro Kozima, Chita, all of Japan, assignors to Daido Tokushuko Kabushiki Kaisha, Japan

Filed Mar. 29, 1981, Ser. No. 363,345
Claims priority, application Japan, Apr. 6, 1981, 56-51498; May 14, 1981, 56-72681; Jul. 24, 1981, 56-116688
Int. Cl.³ C21D *8/00*
U.S. Cl. 148—128 **9 Claims**

1. A method of plastic working of metal materials including the steps of:

(a) effecting changes in the temperature of a material to be plastically worked;

(b) determining variations in the metallographical condition of the material caused by the changes in the temperature of the material;



(c) detecting a sudden change in the metallographical condition of the material caused immediately before the material becomes superplastic; and

(d) starting a plastic working of the material after having detected the sudden change in the material.

4,407,683

STEEL FOR COLD PLASTIC WORKING

Toshio Hijikata, Fujisawa, and Kazuhiro Kawasaki, Hiratsuka, both of Japan, assignors to Neturen Company, Ltd., Tokyo, Japan

Division of Ser. No. 224,625, Jan. 12, 1981, Pat. No. 4,336,081, which is a division of Ser. No. 34,951, Apr. 30, 1979, abandoned.
This application Apr. 15, 1982, Ser. No. 368,847
Int. Cl.³ C21D *9/52*
U.S. Cl. 148—144 **10 Claims**

1. A process of preparing a cold plastic workable steel wire, which comprises heating a hardenable carbon steel wire, which contains at least 0.27% C, 0.15–2.2% Si and 0.61–1.65% Mn, by high-frequency induction to a temperature within the austenitic range for the hardenable carbon steel wire, quenching the thus heated steel wire, heating the quenched steel wire by high-frequency induction to between 300° and 600° C., stopping said heating, holding the steel wire for up to 60 seconds, and cooling the thus heated steel wire at a cooling rate of greater than 50° C./second to yield said cold plastic workable steel wire, having a tensile strength of greater than 150 Kgf/mm^2.

4,407,684

APPARATUS AND METHOD OF APPLYING AN ELONGATED STRIP TO A TIRE COMPONENT BUILDING DRUM

Ronald L. Budzowski, Munroe Falls, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 27, 1981, Ser. No. 258,201
Int. Cl.³ B29H *17/10*
U.S. Cl. 156—133 **9 Claims**

1. A method of feeding an elongated strip onto a tire component building drum, characterized by the improvement comprising the steps of:

(a) placing a roll of said strip on a roll support means on the side of said building drum intended for a person to stand while operating said drum and wrapping components of a tire onto said drum;

(1) after the step of placing said roll of strip on said roll support means, securing an end of said strip between rollers of a roller means located near the elevation of said roll support means,

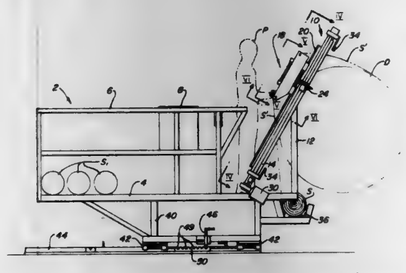
(2) moving said roller means up a track that is slanted toward said building drum to unwind said strip from said roll and carry said end of said strip upwardly and toward the location on said building drum where said strip is to be passed onto said drum, and

(3) stopping said roller means on said track and fixing said roller means at a location convenient for passing said strip over said roller means and onto said building drum;

(b) passing said strip over said roller means; and

(c) passing said strip from said roller means onto said building drum.

2. Apparatus for feeding an elongated strip onto a tire component building drum, that has a floor located adjacent to one lateral side of said drum for holding a person who operates said strip-feeding apparatus and said building drum, said strip-feeding apparatus including an elongated frame having track extending lengthwise of said frame, and a carriage mounted on



said track and movable along the length of said track means, said carriage being equipped with roller means for holding and conveying said elongated belt strip, characterized by the improvement comprising:

(a) said frame being mounted on said floor and located on same side of said building drum as said floor, said frame and said track extending upwardly from said floor and laterally toward said building drum;

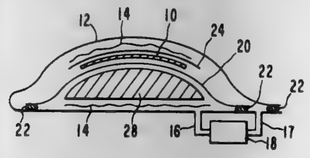
(b) means mounted on said frame for driving said carriage up and down said track and for fixing the position of said carriage on said track at a location with respect to said building drum which is convenient for use in conveying and applying said elongated strip to said drum.

4,407,685

METALLIZED FILM TRANSFER PROCESS

Lawrence B. Hankland, Menlo Park, Calif., assignor to Ford Aerospace & Communication Corporation, Detroit, Mich.

Continuation of Ser. No. 59,807, Jul. 23, 1979, abandoned. This application May 4, 1981, Ser. No. 260,229
Int. Cl.³ B31F *1/00*; B44C *1/00*; B29C *17/00*; B32B *3/26*
U.S. Cl. 156—212 **1 Claim**



1. Method for applying a metal coating onto a composite object having a compoundly curved shape and having a high modulus fiber component and an adhesive component, wherein the adhesive component is from the class consisting essentially of thermoplastic adhesives and B-staged thermosetting adhesives; said method comprising the steps of:

depositing by vapor deposition a thin layer of said metal less than 0.0002 inches thick onto a fluorocarbon-based polymer release film to form a metallized film;

joining together several of said metallized films side-by-side to provide a single large metallized film having a sufficient size to cover said object;

placing said large metallized film against the composite object, with the metal side facing the composite object, in such a way that no additional adhesive agent is placed between said metal and said object;

in a vacuum formed by a single vacuum source, adhering said metal to said object while simultaneously applying pressure to said object and to said large metallized film so that said object is molded into said compoundly curved shape and coated with said large metallized film in same step; and

peeling said release film away from said metallized composite object leaving just said metal coating on said composite object.

4,407,686

INFLATABLE DEVICE FOR INSTALLING STRAIN GAGE BRIDGES

Clarence E. Cook, Lancaster; Glynn E. Smith, Quartz Hill, and Richard C. Monaghan, Pearblossom, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 17, 1981, Ser. No. 322,314
Int. Cl.³ E04B *2/00*; E04F *13/00*; B44C *1/00*; G01L *1/22*
U.S. Cl. 156—215 **9 Claims**

1. In a method for installing in a tubular shaft, multiple electronic devices, such as strain gages, having bonding surfaces and leads extended therefrom, the steps comprising:

A. forming a flexible, template-like component from a thin sheet of Teflon, said template being provided with multiple openings for receiving said electronic devices and characterized by an etched bonding surface;

B. inserting electronic devices into the openings provided for said component with the bonding surfaces of the electronic devices being exposed at the etched surface of the template-like component, and the leads of the electronic devices being extended along the surface of the component opposite the etched surface thereof;

C. wrapping the component around an expansible cylinder with the etched surface of the template facing away from the cylinder thus to form an insertion assembly;

D. coating with adhesive the etched surface of the template and mounting surfaces of the electronic devices;

E. inserting the assembly to a desired depth within the tubular shaft; and

F. expanding the cylinder for forcing the surfaces of the template-like component and the surfaces of the electronic devices to which the adhesive has been applied into bonding contact with the adjacent surface of the shaft for thus bonding the component and electronic devices to the shaft.

9. A device particularly suited for use in installing strain gages internally of a tubular load bearing shaft, comprising:

A. an expansible cylinder formed of silicon rubber, said cylinder being characterized by an outside diameter less than the internal diameter of said shaft;

B. means for pneumatically sealing each of the opposite ends of said expansible cylinder including a pair of metallic plates adhesively secured to the cylinder and interconnected by a plurality of rigid tie-bolts, at least one of said plates being provided with a pneumatic valve for accommodating a pneumatic pressurization and depressurization of said cylinder;

C. a flexible template-like component for mounting strain gages on the external surface of said cylinder, said component formed of bondable Teflon and including a bonding surface engagable with the internal surface of said shaft and a plurality of openings defined in the template, strain gages secured in said openings in a manner such that a mounting surface for each strain gage protrudes through one of said openings formed in the component; and

D. means comprising an adhesive for uniting the bonding surface of the component and the mounting surface of

each strain gage to the internal surface of said shaft in response to a pressurization of the cylinder.

4,407,687

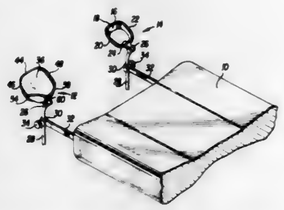
METHOD OF MANUFACTURING COVER FOR STIRRUP OF PHYSICIAN'S EXAMINATION TABLE

Winalee G. Mitchell, 110 Secor Woods La., Perrysburg, Ohio 43551

Division of Ser. No. 159,974, Jun. 16, 1980, Pat. No. 4,360,193. This application Jul. 21, 1982, Ser. No. 400,535

Int. Cl.³ B31F *23/10*

U.S. Cl. 156—227 **2 Claims**



1. A method of making a cover for a stirrup of a medical examination table, comprising the steps of:

advancing a first band of elastomeric sheet material and a substantially wider second band of elastomeric sheet material into a face-to-face relationship;

uniting said bands in a first bonding operation to form therebetween a pocket having an open mouth with an edge defined by an edge of said first band, said pocket being of a width and depth sufficient to accommodate at least the upper portion of a stirrup;

cutting the material of said second band to form a flap extending beyond said edge of said open mouth, said flap and said pocket having a longitudinal axis which extends from the bottom of said pocket past said open mouth and along said flap;

separating said flap and said pocket from said bands; folding at least a portion of said flap along said axis so that said edge of said open mouth is at the exterior surface of the folded article; and

forming a heel cushioning and protecting portion in said flap in a second bonding operation by uniting said folded portion in a curved seam extending upwardly from said axis.

4,407,688

METHOD OF MAKING HELICOPTER BLADE SPARS

Fiorenzo Mussi, Milan, and Emilio Pariani, Cardano al Campo, both of Italy, assignors to Costruzioni Aeronautiche Giovanni Agusta S.p.A., Italy

Filed Jan. 6, 1982, Ser. No. 337,443

Claims priority, application Italy, Feb. 5, 1981, 67152 A/81

Int. Cl.³ B29C *23/00*

U.S. Cl. 156—242 **5 Claims**



1. A method of making spars for helicopter blades, each said spar comprising two pairs of ribs (**64**) lying parallel to and alongside one another, in which each said rib (**64**) is constituted by a tape (**2**) folded into a substantially U-shape and comprising two substantially rectilinear twisted arms lying alongside one another and joined together by a curved section (**63**), the method being characterised by the fact that it utilises a double forming mould (**1**) which can permit the simultaneous forming of two of the said ribs (**64**) opposite one another and joined together at the free ends of the said arms, and includes steps consisting in the deposition of the said tape (**2**) onto the said forming mould (**1**) with a continuous circulating movement in such a way as to define an annular body constituted by the said two ribs (**64**) opposite one another and rigidly joined together, and in subsequently cutting the said annular body on the said mould (**1**) in such a way as to separate the said two ribs (**64**) from one another, separating the said mould (**1**) into two half moulds (**6,7**) at the line of cut separating the said two ribs (**64**), and in turning the said half moulds (**6,7**) with respect to one another to bring them alongside one another to define a further forming mould (**68**) for one of the said pair of ribs (**64**).

4,407,689

PROCESS FOR PRODUCTION OF LAMINATED MEMBER

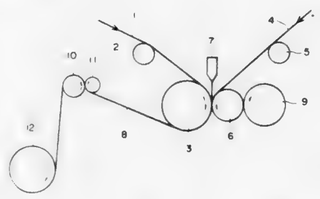
Akira Ohtsuki; Hirokichi Ishino; Hiromu Sakai; Susumu Tsuchiko; Kazuo Tawara, and Takahiko Yamasoba, all of Tokyo, Japan, assignors to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 218,134, Dec. 19, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 427,038

Claims priority, application Japan, Dec. 21, 1979, 54/165700; Mar. 10, 1980, 55/29159

Int. Cl.³ B29D *7/14*

U.S. Cl. 156—243 **10 Claims**



1. A process for producing a laminated member including a metal foil or a metal foil backed with a thermoplastic resin (**1**) and a thermoplastic resin film (**4**) said process comprising steps of:

heating the foil (**1**) and the film (**4**) with at least one adhesive disposed therebetween, said adhesive being selected from a carboxyl group-containing polyolefin and a polyolefin based resin prepared by heat-compounding a carboxyl group-containing polyolefin and a metal compound, at a temperature which is higher than the melting temperature of the adhesive and pressing to form a laminated member (**8**); and

cooling the laminated member (**8**) at the heat distortion temperature of the adhesive or at a temperature higher than the heat distortion temperature while applying a pressure of at least 1 kg/cm^2 using a cooling roll (**10**) and a resilient nip roll (**11**) such that said laminated member (**8**) is brought into contact first with the resilient nip roll (**11**).

4,407,690

PROCESS FOR COATING WEBS WITH POLYETHYLENE

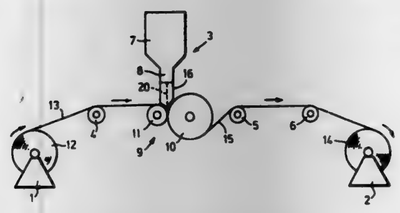
George White, Glenburnie, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Mar. 10, 1982, Ser. No. 356,718

Claims priority, application United Kingdom, Mar. 18, 1981, 8108486

Int. Cl.³ B29C *19/00;* **B05D** *3/12*

U.S. Cl. 156—244.27 **10 Claims**



1. A process for coating a substrate web with a polyethylene in which process the polyethylene, having a melt index of between about 30 dg/min and about 100 dg/min, is extruded through a slot in a slotted die in the form of a sheet having two edges onto the substrate web being transported past the slotted die, to form a coated web; and subsequently the coated web is passed through a nip roll assembly comprising a chill roll and a nip roll which form a throat therebetween, said slot at the extremities thereof having edge guides which are maintained at a temperature higher than the melting temperature of the polyethylene and are adapted to guide the two adhered edges of the extruded sheet into the throat of the nip roll assembly.

4,407,691

METHOD AND APPARATUS FOR PERFORMING HOT AIR WELDING OF THERMOPLASTIC RESIN PARTS

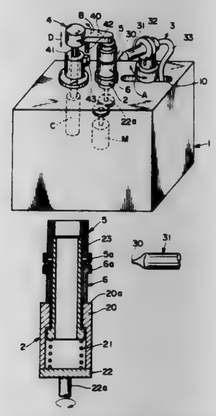
Masami Ishii, Toyota; Nobuharu Kato, Nagoya, and Mikio Hota, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Division of Ser. No. 136,050, Mar. 31, 1980, Pat. No. 4,315,791. This application Sep. 3, 1981, Ser. No. 299,136

Claims priority, application Japan, Apr. 19, 1979, 54/48386

Int. Cl.³ B29C *25/00;* **C09J** *5/00*

U.S. Cl. 156—304.2 **3 Claims**



1. A process for welding a pair of thermoplastic resin parts along their peripheral surfaces comprising the steps of holding one of said parts on an end face of a rotatable cylinder and the other of said parts on an end face of an axially movable guide member having a portion projecting from the end face of the cylinder with the peripheral surfaces of the parts opposed to and spaced from each other, rotating said cylinder and guide member in the same direction and at the same speed, so that said parts are rotated at the same speed, positioning a nozzle means in an operative position and blowing hot air through said nozzle means toward the peripheral surfaces of said rotating parts while said peripheral surfaces are spaced from each other causing said peripheral surfaces to melt, forcing said parts toward each other to bring the melted peripheral surfaces into integral contact with each other causing the parts to be welded together, and displacing the nozzle means to an inoperative position and removing the welded parts from the cylinders.

4,407,692

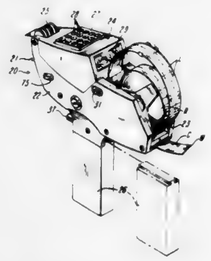
HAND-HELD ELECTRICALLY SELECTABLE LABELER

Daniel J. Torbeck, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed May 29, 1981, Ser. No. 268,590

Int. Cl.³ B41J *3/00;* **B41F** *1/08*

U.S. Cl. 156—350 **88 Claims**



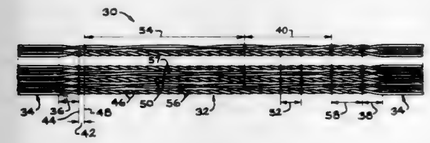
1. A hand held labelling machine comprising; a housing having a manually engageable handle, the housing having means for holding a label supply roll of a composite web having labels releaseably adhered to a backing strip the housing further having means for receiving a source of electrical energy, means for printing on a label at a printing position, means for peeling the printed label from the back strip, label applying means disposed adjacent the peeling means, means for advancing the web to peel a printed label from the backing strip at the peeling means and advance the printed label into label applying relationship with the label applying means and to advance another label into the printing position, means including a keyboard mounted on the housing for entering selected data to be printed, the printing means including a thermographic printing head having a plurality of individually selectable printing elements arranged in a single line array having a density of at least 200 elements per inch disposed substantially transverse to the direction of advancement of the web and powered by the source of electrical energy for printing on a thermographic label at the printing position, means coupled to the keyboard for receiving and electrically processing data representative of the selected data entered by the keyboard, means electrically coupling the data receiving and processing means and the thermographic printing head, and means for causing the data receiving and processing means to operate the thermographic printing head to print the selected data on the label.

4,407,693

APPARATUS FOR MAKING LOW CROSSTALK RIBBON CABLE

Patrick J. Paquin, Hamden, Conn., assignor to Allied Corporation, Toledo, Ohio

Filed Mar. 23, 1981, Ser. No. 246,798
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ H01B *13/00*
U.S. Cl. 156—436 **19 Claims**



1. Apparatus for making multiple conductor ribbon cable having a plurality of longitudinally extending insulated conductor pairs and having twisted conductor portions serially alternating with straight conductor portions, comprising:

first means for supplying a plurality of first conductor pairs and continuously twisting said first conductor pairs in a first direction;

second means for supplying a plurality of second conductor pairs and continuously twisting said second conductor pairs in a second direction;

first twister means for precisely intermittently starting and stopping to intermittently twist said first conductor pairs in said first direction to form a plurality of first twisted conductor portions having a twist length of a first predetermined distance and a plurality of first straight conductor portions having a predetermined length;

second twister means for precisely intermittently starting and stopping to intermittently twist said second conductor pairs in said second direction to form a plurality of second twisted conductor portions having a twist length of a second predetermined distance and a plurality of second straight conductor portions having said predetermined length;

means for maintaining said first conductor pairs and said second conductor pairs as said straight conductor portions for a predetermined distance after said stopping of said first twister means and of said second twister means;

means for applying a first sheet of plastic film to one first side of said insulated conductor pairs to adhere to both said first and said second twisted conductor portions and said first and second straight conductor portions upon subsequent bonding of said conductor portions and said first plastic film;

means for bonding said first plastic film to said first and second twisted conductor portions and to said first and second straight conductor portions;

said means for bonding including third means for precisely laterally aligning said first and second twisted conductor portions during the bonding thereof to said first plastic film and fourth means for precisely laterally aligning said first and second straight conductor portions during the bonding thereof to said first plastic film;

said third means including a first roller having a series of channels therein for precise lateral spacing of each said twisted conductor portion during bonding of said first and second twisted conductor portions;

said fourth means including a second roller having a series of channels therein for precise lateral spacing of each said straight conductor portion during bonding of said first and second straight conductor portions; and

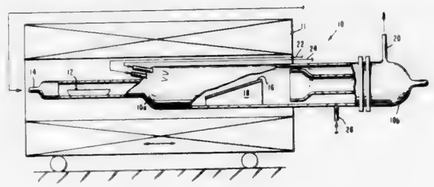
means for sequentially positioning said first roller and said second roller for bonding of said serially alternating twisted conductor portions and said straight conductor portions.

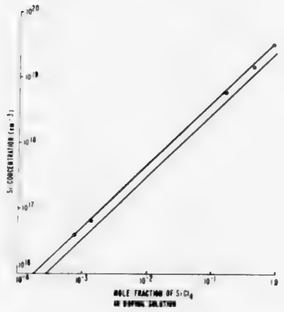
4,407,694

MULTI-RANGE DOPING OF EPITAXIAL III-V LAYERS FROM A SINGLE SOURCE

Victor K. Eu, Redondo Beach; Milton Feng, Rancho Palos Verdes; Timothy T. Zielinski, Hawthorne, and James M. Whelan, Glendale, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 22, 1981, Ser. No. 276,104
Int. Cl.³ H01L *21/205, 21/223*
U.S. Cl. 156—606 **13 Claims**





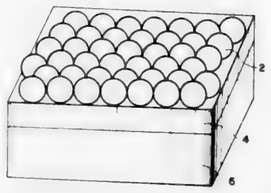
1. A process for providing a range of doping levels from a single doping source using vapor phase epitaxial growth of a III-V semiconductor layer under substantially equilibrium conditions using halide or hydride epitaxy growth process in which the doping source comprises a liquid solution of (a) a compound selected from the group consisting of arsenic halides and phosphorus halides and (b) a compound selected from the group consisting of silicon halides and germanium halides.

4,407,695

NATURAL LITHOGRAPHIC FABRICATION OF MICROSTRUCTURES OVER LARGE AREAS

Harry W. Deckman, Clinton, and John H. Dunsmuir, Madison, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 336,036, Dec. 3, 1981. This application Mar. 29, 1982, Ser. No. 363,019
Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06;* H01L *21/306*
U.S. Cl. 156—643 **27 Claims**



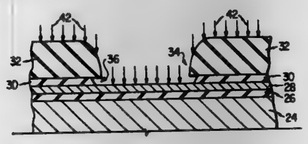
1. A method producing a lithographic mask on the surface of a substrate comprising coating said substrate with a monolayer of colloidal particles substantially over the entire surface such that said particles are fixed to said substrate in a predetermined way as to particle size distribution and mean distance between particles, said monolayer of colloidal particles serving as an etch mask for forming an etched pattern in said substrate.

4,407,696

FABRICATION OF ISOLATION OXIDATION FOR MOS CIRCUIT

Yu-Pin Han, Dallas, and Bing C. Ma, Carrollton, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Dec. 27, 1982, Ser. No. 453,214
Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06;* H01L *21/306*
U.S. Cl. 156—653 **5 Claims**



1. A method for fabricating isolation oxidation on a silicon semiconductor substrate, comprising the steps of:

producing a first oxide layer on the surface of said substrate,

producing a polysilicon layer on the surface of said first oxide layer,

producing a nitride layer on the surface of said polysilicon layer,

etching said nitride layer to open an area therein,

producing said isolation oxidation as a layer located in the region of the open area of said nitride layer, said isolation oxidation layer comprising said first oxide layer, oxide derived from said polysilicon layer and oxide derived from said semiconductor substrate, and

etching said nitride layer, said polysilicon layer and said first oxide layer from at least the edges of said isolation oxidation layer.

4,407,697

PROCESS FOR MAKING ELECTRICAL INSULATING PAPER AND THE PRODUCT THEREOF

Fred S. Sadler, St. Jessup, Pa.; Paul F. Hettwer; Vu H. Viet, both of Franksville, Wis., and Clarance R. Acker, Zanesville, Ohio, assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Apr. 5, 1982, Ser. No. 365,523
Int. Cl.³ D21H *1/48;* H05K *5/00*
U.S. Cl. 162—137 **11 Claims**

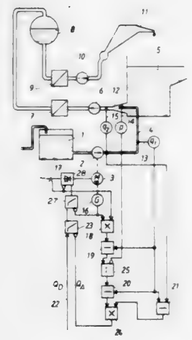
1. A method for improving the thermal stability and dielectric integrity of cellulosic material especially adaptable for use as electrical insulation comprising: (a) forming a continuous web of cellulosic material, (b) impregnating said web with a nitrogen-donor compound in an amount sufficient to provide said web with a nitrogen content of not less than 0.2% by weight, (c) drying said web to a moisture content not greater than 10% by weight, (d) thereafter impregnating said web with an aqueous solution of a vegetable protein having a pH of not less than about 8.5, and (e) drying said web.

4,407,698

APPARATUS FOR REGULATING FIBER CONCENTRATION

Nils E. Andersson; Sten Eriksson, and Bengt Sinner, all of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Mar. 30, 1981, Ser. No. 248,867
Claims priority, application Sweden, Apr. 3, 1980, 8002587
Int. Cl.³ D21C *1/06, 1/08*
U.S. Cl. 162—258 **2 Claims**



1. Apparatus for regulating the fiber concentration of a fiber suspension, when above about 2 per cent by weight fibers, during transport of said fiber suspension through a conduit to an outlet thereof, the fiber suspension being mixed with a liquid diluent, said apparatus comprising

a variable speed-controlled electric motor,

a regulating system for controlling the operation of said electric motor,

a first pump driven by said electric motor for impelling said fiber suspension through the conduit toward said outlet,

means for generating a signal representative of the power W supplied to said first pump by said electric motor,

a second pump for mixing the fiber suspension issuing from said outlet with the liquid diluent,

a flow meter providing an output signal q_1 proportional to the flow of said fiber suspension in said conduit,

means for providing an output signal q_2 proportional to the flow of said fiber suspension and liquid diluent through said second pump,

a first dividing means to which said signal representative of the power W and said output signal q_1 are fed, said first dividing means generating a first output signal which represents a measure of the fiber concentration Q,

a summation means to which said first output signal is fed, said summation and dividing means adjusting the first signal based on the static pressure head loss which occurs in said conduit, thereby providing a second output signal which is proportional to the power consumed by said first pump in overcoming the dynamic resistance to flow of said fiber suspension in said conduit,

a dividing means for obtaining a signal proportional to q_1/q_2, and

a dividing and multiplying means to which said second output signal is fed, to which said output signal q_1 is fed and to which said signal proportional to q_1/q_2 is fed, said dividing and multiplying means generating a signal Q_A which is proportional to the actual fiber concentration in the fiber stock upstream and downstream of said second pump and which is fed to said regulating system.

4,407,699

PROCESS AND APPARATUS FOR THE DRY COOLING OF COKE

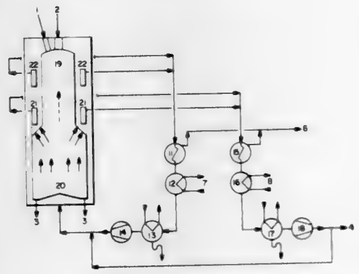
Claus Flockenhaus; Dietrich Wagener; Erich Hackler; Stefan Smieskol; Manfred Galow, all of Essen; Joachim Meckel, Heiligenhaus, and Dieter Breidenbach, Waltrop, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Essen, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,742

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 304489

Int. Cl.³ C10B *27/00, 39/02*

U.S. Cl. 201—39 **18 Claims**



1. A process for the dry cooling of coke produced during a coking operation which also produces raw coke oven gas, said process comprising:

providing a vessel having therein first and second zones in full communication with each other;

introducing hot coke into said first zone, and passing said coke through said first and second zones without adding heat to said coke;

introducing raw coke oven gas from the coking operation into said first zone and therein reducing the temperature of said coke by means of said raw coke oven gas, while cleaning said raw coke oven gas to form cleaned coke oven gas;

removing said cleaned coke oven gas from said first zone;

removing heat from the thus removed cleaned coke oven gas;

utilizing the thus cooled cleaned coke oven gas as a heat carrier gas introduced into said second zone and therein further reducing the temperature of said coke by means of said heat carrier gas; and

removing the thus further cooled coke from said second zone.

4,407,700

INJECTOR FOR CALCINER

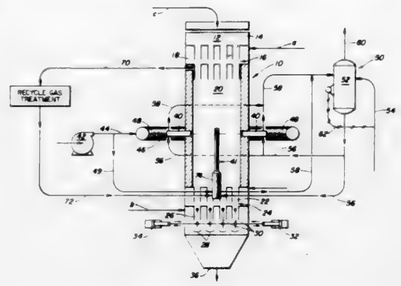
Richard L. Davis, Billings, Mont.; Harlan G. Graf, Ponca City, Okla.; Don L. Edwards, Ponca City, Okla., and William B. Macbeth, Jr., Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 14, 1982, Ser. No. 388,338

Int. Cl.³ C10B *1/04, 49/06*

U.S. Cl. 202—85 **8 Claims**

1. In an internally fired, vertical shaft kiln for the calcining of petroleum coke comprising a vertical shaft kiln having a top and bottom and an outer wall and an inner refractory wall, means for providing green particulate petroleum coke to a calcining chamber within the shaft kiln defined by upper and lower chamber walls and said inner refractory wall, means for removing calcined coke from said calcining chamber at the bottom of said shaft kiln and means for introducing recycle gas to the interior of the shaft kiln near the bottom thereof and means for introducing combustion gas to the interior of said shaft kiln comprising a plurality of radially disposed combustion gas injectors located at an intermediate level within said shaft kiln and defining a combustion zone therewithin, the improvement which comprises at least one vertical tubular combustion gas injector for injecting a combustion gas into said combustion zone, said vertical injector having a longitudi-



nal central orifice and extending vertically within said calcining chamber and terminating in said combustion zone, said vertical injector having an annular coolant circulation space disposed therearound, coolant within said circulation space and means for providing said coolant to said annular space.

4,407,701

APPARATUS FOR TREATING GASES PRODUCED FROM COAL

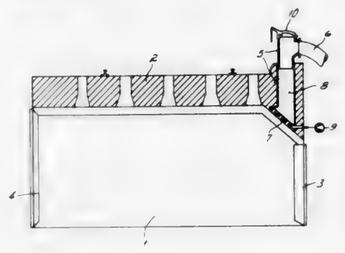
Dietrich Wagener; Horst Fach; Peter Sauder, all of Essen, and Otto Abel, Clausthal-Zellerfeld, all of Fed. Rep. of Germany, assignors to Didier Engineering GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 205,931, Nov. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 169,672, Jul. 17, 1980, abandoned, which is a division of Ser. No. 69,866, Aug. 27, 1979, abandoned. This application Aug. 2, 1982, Ser. No. 404,534

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837416

Int. Cl.³ C10B *27/00*

U.S. Cl. 202—99 **2 Claims**



1. Coal conversion apparatus for the production of coke and the treatment of gases produced by the conversion of coal to coke in said apparatus to reduce the level of undesirable constituents in said gases comprising a coke oven for receiving coal for conversion to coke and gases, said coke oven having a roof, a vertically ascending standpipe mounted in said roof containing a coke bed at a temperature of at least about 1100° K., grate means at the bottom of said standpipe for supporting said coke bed from below in said standpipe while permitting said gases to pass upwardly through said standpipe without substantial condensation of said gases such that said gases pass through said coke bed in said standpipe to be treated thereby, and duct means communicating with said standpipe at its lower end for introducing a controlled amount of air into said coke bed in said standpipe.

4,407,702

APPARATUS TO EXTRACT GASES EVOLVING DURING CHARGING OF A COKE OVEN

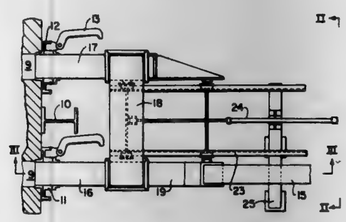
Hans-Jurgen Kwasnik, Herne, and Hans-Gunter Piduch, Bochum, both of Fed. Rep. of Germany, assignors to Dr. C. Otto & Comp. G.m.b.H., Bochum, Fed. Rep. of Germany

Filed Dec. 20, 1982, Ser. No. 451,456

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150657

Int. Cl.³ C10B *31/04, 41/00, 45/00*

U.S. Cl. 202—263 **8 Claims**



1. In a battery of horizontal coke oven chambers, the combination of removable oven doors at the ends of the coke oven chambers along one side of the oven battery, said oven doors each having an opening for a leveler for leveling a coal charge in the oven chamber thereof, gas-conducting means hermetically interconnecting said opening in an oven door of two adjacent oven chambers, truck means including a drive for moving said gas-conducting means in a direction longitudinally of an oven chamber between an operative position forming a hermetic seal with oven chambers and an inoperative position, and a leveler adapted to extend in said gas-conducting means for operation in an oven chamber.

4,407,703

AMINE SEPARATION PROCESS

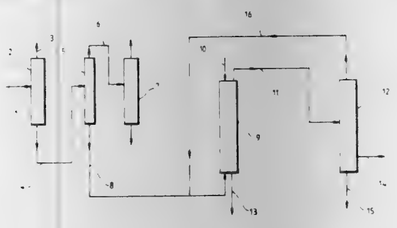
William Featherstone, Nunthorpe, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 227,344, Jan. 22, 1981, abandoned. This application Feb. 18, 1982, Ser. No. 349,816

Claims priority, application United Kingdom, Feb. 8, 1980, 804303

Int. Cl.³ B01D *3/14, 11/04*

U.S. Cl. 203—43 **3 Claims**



1. A process of separating a mixture comprising ammonia, mono-, di-, and tri-ethylamines, ethanol and water which comprises distilling the mixture in one or more stages to separate from said mixture substantially all the ammonia and monoethylamine and at least some of the ethanol and di-ethylamine, and subjecting the remainder of the thus distilled mixture comprising diethylamine, triethylamine, water and ethanol to a multi-stage liquid-liquid extraction using water as the sole extractant, said multi-stage extraction being carried out at a temperature in the range 75° to 95° C. and at a pressure greater than atmospheric pressure, recovering from said multi-stage extraction an aqueous extract rich in triethylamine and containing small amounts of diethylamine, water and ethanol and distilling said extract to recover pure triethylamine as the distillate, the process being characterized by reduced energy consumption and by increased recovery of triethylamine using less water extractant than when a single stage extraction is employed.

4,407,704

OXYGEN CONCENTRATION DETECTOR AND A METHOD OF DETECTING OXYGEN CONCENTRATION

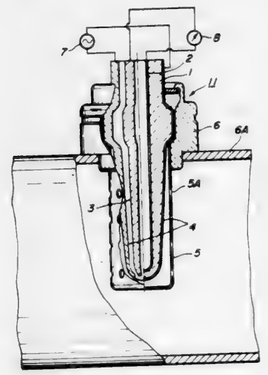
Syunzo Mase, Tobishima, and Shigeo Soejima, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Nov. 25, 1980, Ser. No. 210,239

Claims priority, application Japan, Dec. 4, 1979, 54-156314; Mar. 28, 1980, 55-39004

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—1 T **13 Claims**



1. A method of detecting oxygen concentration in a gaseous environment using an oxygen concentration cell comprising the steps of:

preparing an oxygen ion conductive solid electrolyte body;

providing at least two separate electrodes contacting the oxygen ion conductive solid electrolyte body so as to form an oxygen concentration cell, at least one of said electrodes being exposed to a gaseous environment for detecting its oxygen concentration, and at least another one of said electrodes being exposed to a reference gaseous environment;

heating the solid electrolyte body by applying an AC voltage through at least two electrodes of said electrodes, and thereby decreasing the impedance of said cell, wherein said AC voltage is applied at a frequency which is sufficiently high that the impedance between said electrodes to which AC voltage is applied is largely independent of the interface capacitances between said electrodes to which AC voltage is applied and the surface of said solid electrolyte body; and

measuring the electromotive force of said cell when said solid electrolyte body is in its heated condition, said electromotive force representing, and thereby detecting the oxygen concentration in said gas.

6. An oxygen concentration detector for detecting the oxygen concentration in gases, comprising:

an oxygen ion conductive solid electrolyte body;

at least two separate electrodes contacting the solid electrolyte body so as to form an oxygen concentration cell;

AC power supplying means connected to at least two of said electrodes for heating said solid electrolyte body by applying an AC voltage, and thereby decreasing the impedance of said cell, wherein said AC power supplying means is arranged to supply an AC voltage at a frequency sufficiently high that the impedance between said elec-

trodes to which AC voltage is applied is largely independent of the interface capacitances between said electrodes to which AC voltage is applied and the surface of said solid electrolyte body; and

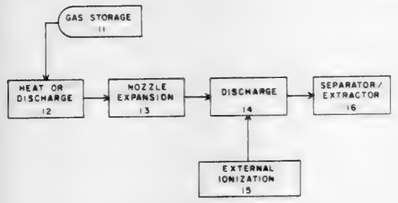
DC voltage detecting means connected to said electrodes constituting said oxygen concentration cell for measuring electromotive force of said cell when said solid electrolyte body is in its heated condition, said electromotive force representing and thereby detecting the oxygen concentration in gases.

4,407,705

PRODUCTION OF NEGATIVE IONS OF HYDROGEN

Alan Garscadden, Yellow Springs; William F. Bailey, and Gary L. Duke, both of Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 14, 1981, Ser. No. 263,629
Int. Cl.³ B01J *19/08, 19/12, 19/26*
U.S. Cl. 204—157.1 H **14 Claims**



1. A process for producing negatively charged ions of hydrogen which comrises:

a. cooling hydrogen gas to below 300° K.;

b. vibrationally exciting the molecules of the said hydrogen gas to a first vibrational energy state higher than the ground vibrational state;

c. anharmonically pumping said gas to a second vibrationally excited state higher than said first state; and

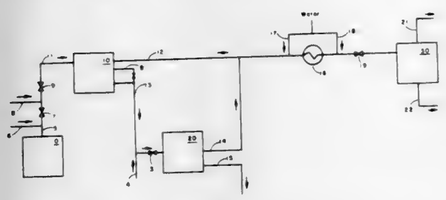
d. impacting the cooled and vibrationally excited hydrogen gas molecules with energetic electrons to produce, by dissociative attachment, neutral hydrogen atoms and negatively charged hydrogen ions.

4,407,706

PROCESS FOR DEDUSTING SOLIDS-CONTAINING HYDROCARBON OILS

Philip Merchant, Jr., Houston, Tex., and Dean L. Smith, Jr., Mountainside, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

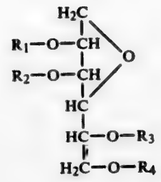
Filed Aug. 24, 1981, Ser. No. 295,797
Int. Cl.³ B01D *17/06*
U.S. Cl. 204—190 **41 Claims**



20. A process for dedusting shale oil which contains a low to moderate amount of finely divided solids which comprises

dispersing from about 10 parts to about 5000 parts, per million parts by volume of oil of an admixture of surfactant and demulsifier within said oil, the surfactant being

(I) an ester characterized as follows:



where R_1, R_2, R_3, and R_4 are selected from

(a) ethoxy or propoxy groups, or mixed ethoxy and propoxy groups, and

(b) the dehydroxylated residue of a fatty acid molecule, or moiety represented by the formula

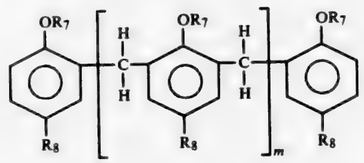


where R is a straight-chain hydrocarbon moiety which can be substituted or unsubstituted, saturated or unsaturated, and where unsaturated can contain conjugated or unconjugated double bonds, and

at least one and up to three of R_1, R_2, R_3, and R_4 is ethoxy, propoxy, or mixed ethoxy and propoxy groups,

the demulsifier being

(II) an ethoxylated or propoxylated, or admixed ethoxylated/propoxylated, phenol formaldehyde resin substituted at a position para to the ethoxy or propoxy group, or mixed ethoxy/propoxy groups, by a hydrocarbyl group, said modified phenol formaldehyde resin being characterized as follows:



wherein

R_7 represents one or more ethoxy or propoxy groups, or mixed ethoxy and propoxy groups,

R_8 is a hydrocarbyl radical selected from the group consisting of alkyl, aralkyl, cycloalkyl, aryl, alkaryl, alkenyl, and alkynyl, and

m is an integer of one or greater, the molecular weight of said resin ranging from about 2000 to about 20,000;

the ratio of demulsifier:surfactant ranging from about 1:1 to about 15:1, based on the sum total volume of the demulsifier and surfactant,

admixing washwater in concentration ranging from about 5 percent to about 50 percent, based on the volume of oil, with said surfactant/demulsifier-containing shale oil, and emulsifying same to form a shale oil and water emulsion,

heating said shale oil and water emulsion to a temperature ranging from about 100° F. to about 350° F. by passage through a heat exchanger,

passing said heat shale oil/water emulsion to an electrostatic coalescer, maintaining a temperature within the electrostatic coalescer ranging from about 100° F. to about 350° F. and a residence time ranging from about 10 minutes to about 80 minutes, to separate said shale oil/water emulsion into a clean shale oil overflow and solids-containing water phase underflow, and

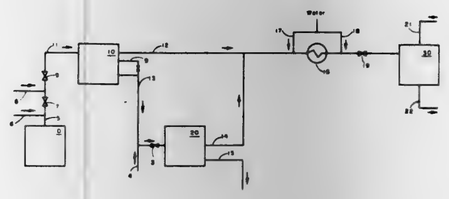
recovering a clean shale oil suitable as a feed for use in refining operations.

4,407,707

PROCESS FOR DEDUSTING SOLIDS-CONTAINING HYDROCARBON OILS

Philip Merchant, Jr., Houston, Tex., and Dean L. Smith, Jr., Mountainside, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

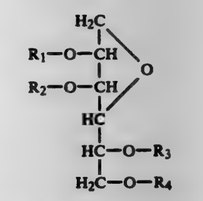
Filed Aug. 24, 1981, Ser. No. 295,799
Int. Cl.³ B01D *17/06*
U.S. Cl. 204—190 **40 Claims**



1. A process for dedusting oils characterized as unconventional whole heavy crudes, heavy petroleum crude fractions and residua, syncrudes, syncrude fractions, and syncrude residua, which contain finely divided solids, which comprises

dispersing from about 10 parts to about 5000 parts, per million parts of oil by volume, of an admixture of surfactant and demulsifier within said oil, the surfactant being

(I) an ester characterized as follows:



where R_1, R_2, R_3, and R_4 are selected from

(a) ethoxy or propoxy groups, or mixed ethoxy and propoxy groups, and

(b) the dehydroxylated residue of a fatty acid molecule, or moiety represented by the formula



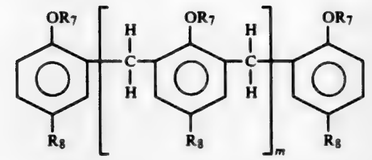
where

R is a straight-chain hydrocarbon moiety which can be substituted or unsubstituted, saturated or unsaturated, and where unsaturated can contain conjugated or unconjugated double bonds, and

at least one and up to three of R_1, R_2, R_3, and R_4 is ethoxy, propoxy, or mixed ethoxy and propoxy groups,

the demulsifier being

(II) an ethoxylated or propoxylated, or admixed ethoxylated/propoxylated, phenol formaldehyde resin substituted at a position para to the ethoxy or propoxy group, or mixed ethoxy/propoxy groups, by a hydrocarbyl group, said modified phenol formaldehyde resin being characterized as follows:



wherein

R_7 represents one or more ethoxy or propoxy groups, or mixed ethoxy and propoxy groups,

R_8 is a hydrocarbyl radical selected from the group consisting of alkyl, aralkyl, cycloalkyl, aryl, alkaryl, alkenyl, and alkynyl, and

m is an integer of one or greater, the molecular weight of said resin ranging from about 2000 to about 20,000;

the ratio of demulsifier:surfactant ranging from about 1:1 to about 15:1, based on the sum total volume of the demulsifier and surfactant,

admixing in a first stage washwater in concentration ranging from about 5 percent to about 50 percent, based on the volume of oil, with said surfactant/demulsifier-containing oil, and emulsifying same to form an oil and water emulsion,

separating said oil and water emulsion into an oil phase and solids-containing water phase,

recovering from said first stage an oil phase of reduced solids,

admixing with said surfactant/demulsifier-containing oil in a second stage additional washwater in concentration ranging from about 5 percent to about 50 percent, based on the volume of oil,

passing said admixture of surfactant/demulsifier-containing oil and water through a heat exchanger and heating said admixture to a temperature ranging from about 100° F. to about 350° F.,

emulsifying said heated admixture of surfactant/demulsifier-containing oil and water,

passing said emulsion into an electrostatic coalescer, maintaining said emulsion at a temperature ranging from about 100° F. to about 350° F. for a period ranging from about 10 minutes to about 80 minutes, while

separating said oil and water emulsion into an oil phase overflow, and solids containing water phase underflow, and

recovering from said second stage an oil phase of reduced solids suitable as a feed for use in refining operations.

4,407,708

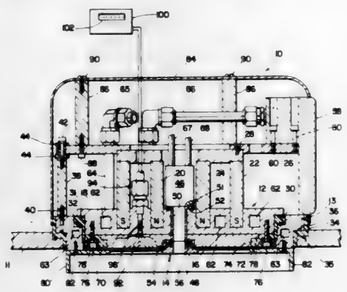
METHOD FOR OPERATING A MAGNETRON SPUTTERING APPARATUS

Richard F. Landau, Morgan Hill, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 6, 1981, Ser. No. 290,457
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **2 Claims**

1. A method for operating a magnetron sputtering apparatus of the type which includes a sputtering target having a flat surface in contact with a flat surface of a cathode of said appa-

ratus, including monitoring the temperature of said cathode at a point adjacent said flat surface of said cathode, and ceasing



operation of said apparatus and replacing said sputtering target when said temperature reaches a predetermined value.

4,407,709

METHOD AND APPARATUS FOR FORMING OXIDE COATING BY REACTIVE SPUTTERING TECHNIQUE

Katsuhisa Enjouji; Hiroshi Ikeizumi, both of Nishinomiya; Kenji Murata, Takarazuka, and Syozaburo Nishikawa, Itami, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Mar. 31, 1982, Ser. No. 363,777
Claims priority, application Japan, Mar. 31, 1981, 56/48258
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 SP **15 Claims**

1. In a method for forming a coating of an oxide on a support by the reactive sputtering technique, the improvement which comprises measuring the optical intensities of three spectral components having a given wavelength of the spectrum of a plasma formed between the support and a target composed of an oxidizable substance convertible to said oxide, said three spectral components being derived from an inert gas, oxygen gas and said oxidizable substance, comparing the measured intensities of the three spectral components with the standard intensities of three spectral components of the same wavelength respectively, and continuously or intermittently varying the physical amount of a sputtering gas and the amount of an electric current from a sputtering power supply so that the measured intensities of the former spectral component approach the standard intensities of the latter spectral components.

4,407,710

HYBRID METHOD OF MAKING AN AMORPHOUS SILICON P-I-N SEMICONDUCTOR DEVICE

Theodore D. Moustakas, Berkeley Heights, N.J.; Don L. Morel, Woodland Hills, Calif., and Benjamin Abeles, Princeton, N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1981, Ser. No. 311,546
Int. Cl.³ C23C *15/00*; H01L *31/18*
U.S. Cl. 204—192 S **19 Claims**

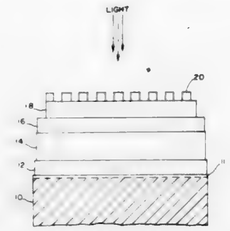
1. A method for producing a hydrogenated amorphous silicon PIN photovoltaic device exhibiting increased blue photoresponse, said method comprising the steps of:

providing a substrate having at least a region of a first electroconductive material which forms an ohmic contact to n-doped amorphous silicon;

depositing a layer of n-doped hydrogenated amorphous silicon onto said ohmic contact;

depositing a layer of undoped, intrinsic hydrogenated amorphous silicon onto said n-doped layer by means of glow discharge decomposition of silane;

reactively sputter depositing a layer of p-doped hydrogenated amorphous silicon onto said intrinsic layer, said p-doped layer forming a semiconductor junction with said intrinsic layer and having an optical gap greater than 1.8 ev;
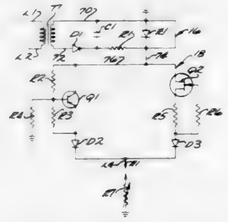


depositing a layer of a second electroconductive material onto said p-layer, said material forming an ohmic contact thereto.

4,407,711

CORROSION PROTECTION SYSTEM FOR HOT WATER TANKS

Robert Baboian, Johnston, R.I., and Gardner Haynes, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 90,776, Nov. 2, 1979. This application Jun. 5, 1981, Ser. No. 270,945
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **2 Claims**



1. An impressed current protection system for a hot water tank in which the tank is constructed at least in part of corrosively active material and in which an anode of electrochemically active noble metal is disposed in the tank, a power supply for the system comprising transformer means to supply a relatively low, constant voltage source, the output of the transformer means connected to the anode through two parallel circuit branches, means to provide a first level of anode current at values of water resistivity above a first selected amount and a second level of anode current at values of water resistivity below a second selected amount and to provide intermediate the first and second selected amounts a level of anode current which is inversely proportional with the value of resistivity of the water comprising

a constant voltage branch having an NPN transistor whose collector is connected to the constant voltage source of the transformer means and whose emitter is connected to the anode, and

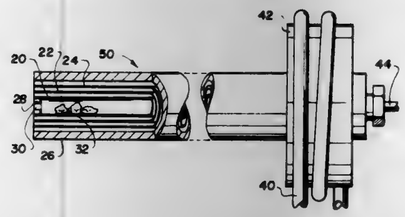
a constant current branch which is adapted to conduct the second level of current at levels of water resistivity below the second selected amount.

4,407,712

HOLLOW CATHODE DISCHARGE SOURCE OF METAL VAPOR

William F. Henshaw, Street; John R. White, Darlington, and Andrus Niiler, Bel Air, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 1, 1982, Ser. No. 383,882
Int. Cl.³ C23C *13/12, 15/00*
U.S. Cl. 204—298 **8 Claims**



1. A device for ion plating a substrate with high temperature metal vapor comprising:

an evacuable chamber enclosing;

a hollow cathode tube having an end opening and adapted to receive a high temperature plating metal at a selected distance from said opening;

gas supply means connected to said cathode tube for supplying a gas therethrough at a selected flow rate;

an anode spaced from said cathode tube open end; and

power supply means connected to said cathode tube and anode to bias said cathode tube negatively with respect to said anode sufficiently to produce an arc therebetween and evaporate the high temperature metal in said cathode tube;

means for mounting a hollow substrate surrounding said cathode and anode; and power supply means for negatively biassing said substrate;

wherein said selected distance is chosen to correspond substantially to a location of maximum temperature which is a characteristic of the inside diameter of said cathode tube and the gas flow rate supplied by said gas supply means.

4,407,713

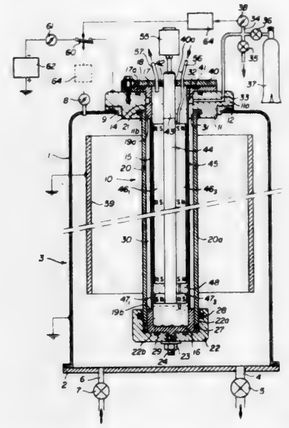
CYLINDRICAL MAGNETRON SPUTTERING CATHODE AND APPARATUS

Bogdan Zega, Geneva, Switzerland, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 6, 1981, Ser. No. 290,426
Claims priority, application European Pat. Off., Aug. 8, 1980, 80200753.4
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **11 Claims**

1. An improved cylindrical magnetron cathodic sputtering apparatus for coating a substrate with a material from a tubular target within an evacuated sealed enclosure, in which magnetic fields enhance the sputtering of the tubular target, said target having a sputtering face of the material to be sputtered and a back face opposed to the sputtering face, wherein the improvement comprises:

a magnet assembly that is radially magnetized, disposed behind the back face of the tubular target, having a plurality of equiangularly spaced, axially extending magnets and designed to generate a magnetic flux of straight arch portions connected to arcuate end portions which combine to project at least one intense, closed-loop plasma over the sputtering face of the tubular target.



4,407,714

PROCESS FOR CRACKING HIGH-BOILING HYDROCARBONS USING HIGH PORE VOLUME, LOW DENSITY CATALYST

George D. Myers, deceased, late of Ashland, Ky. by Virginia K. Myers, administrator; William P. Hettinger, Jr., Russell, and Stephen M. Kovach, Ashland, both of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed May 13, 1981, Ser. No. 263,391
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—120 **67 Claims**

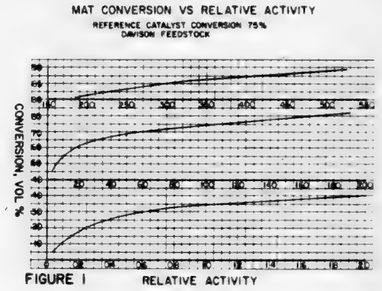


FIGURE 1

1. A process for converting carbo-metallic oils to lighter products comprising:

(a) providing a converter feed containing 650° F.+ material, at least a portion of said 650° F.+ material containing components which will not boil below about 1025° F., said 650° F.+ material further being characterized by a carbon residue on pyrolysis of at least about one and by containing at least about 4 ppm of Nickel equivalents of heavy metals;

(b) providing a cracking catalyst having an average pore volume of at least about 0.2 cc per gram;

(c) bringing said cracking catalyst into contact with said feed to form a stream comprising a suspension of said catalyst in said feed, at least a portion of said feed remaining unvaporized and depositing as a liquid on said catalyst parti-

cles, and causing the resulting stream to flow through a progressive flow reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor residence time in the range of about 0.5 to about 10 seconds, at a temperature of about 900° F. to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight, the ratio by weight of catalyst to oil being sufficiently high so that the total pore volume of the catalyst is greater than the volume of feed which will not boil below about 1025° F.;

(d) separating said catalyst from the resulting cracking products;

(e) stripping adsorbed hydrocarbons from said separated catalyst;

(f) regenerating said catalyst with oxygen-containing combustion-supporting gas under conditions of time, temperature and atmosphere sufficient to reduce the carbon on the catalyst to about 0.25% by weight or less, while forming a gaseous combustion product comprising CO and/or CO_2; and

(g) recycling the regenerated catalyst to the reactor for contact with fresh converter feed.

4,407,715

METHOD OF AND APPARATUS FOR THE FLOTATION PROCESSING OF MINERALS

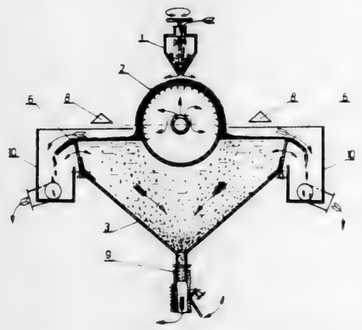
Alexey D. Sheludko; Rumen V. Ivanov; Dobrin V. Nikolov, and Ivan M. Nishkov, all of Sofia, Bulgaria, assignors to Institute Po Physikochimia pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 816,817, Jul. 18, 1977, abandoned, Ser. No. 961,100, Nov. 16, 1978, abandoned, and Ser. No. 87,977, Oct. 25, 1979, abandoned. This application Oct. 28, 1981, Ser. No. 316,077

Claims priority, application Bulgaria, Jul. 16, 1976, 33774

Int. Cl.³ B03D *1/02, 1/14*

U.S. Cl. 209—164 **16 Claims**



1. A method of flotation-processing minerals in particulate form, comprising pretreating of the starting mineral material by means of flotation agents to form a pulp suspension, fixedly positioning a drum with its longitudinal axis horizontal, with its lower portion immersed in a bath of said pulp suspension, and with its upper portion exposed above the upper surface of said bath, the drum having a perforated peripheral surface the apertures in which are controllable as to size, spreading the pretreated starting material in the form of a thin pulp suspension film over the exposed upper surface of the drum, blowing a compressed air stream upwardly through the pulp suspension film on the exposed upper surface of the drum from the inner to the outer surface of the drum whereby to form a forth thereon, discharging the froth and the mineral granules adhering thereto from the froth on the exposed upper surface of the bath, and discharging the material in the pulp suspension including unadhered mineral particles submerged in the bath from a lower portion of the bath.

4,407,716

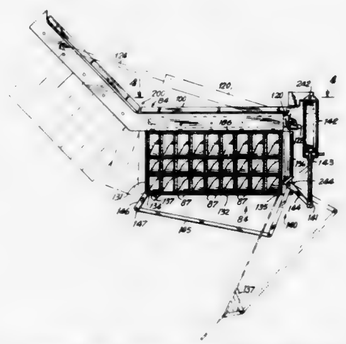
LIQUID FLOW SYSTEM INCLUDING MULTI-AXIAL LIQUID FLOW SCREENING MEANS FOR EXCLUDING OVERSIZED SLENDER OBJECTS CARRIED BY A LIQUID

John P. Latimer, and Glenn E. Miller, both of Newport News, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Jun. 8, 1981, Ser. No. 271,551

Int. Cl.³ B01D *35/02, 35/28;* E02F *3/94*

U.S. Cl. 210—155 **11 Claims**



1. In a liquid flow system conprising a liquid flow conduit, liquid pumping means for drawing a flow of liquid through the flow conduit, the conduit being in fluid flow connection with the inlet to the pump, and screening means located in fluid flow connection within the conduit for preventing the passage of long slender objects with any liquid flowing through the conduit and to the pump inlet, the screening means comprising:

(a) a conduit for liquid flow; and

(b) a plurality of pairs of separated, opposed complementarily aligned, undulating surfaces mounted within the conduit and defining restricted, curved separate channels for the flow of liquid, the undulating surfaces being arranged such that the axes of curvature of the undulating surfaces extend in at least two transverse directions, such that a long slender object of predetermined dimensions aligned in any direction cannot pass through any of the separate channels.

4,407,717

WASTEWATER TREATMENT PROCESS

Gerald H. Teletzke, and Allen H. Erickson, both of Wausau, Wis., assignors to Sterling Drug Inc., New York, N.Y.

Continuation of Ser. No. 214,450, Dec. 8, 1980, abandoned. This application Nov. 24, 1982, Ser. No. 444,350

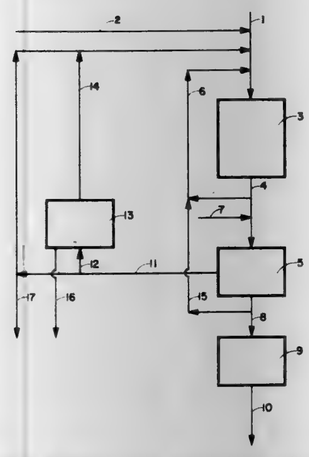
Int. Cl.³ C02F *3/04*

U.S. Cl. 210—616 **29 Claims**

1. A process for treating wastewaters, comprising the steps of:

(a) forming a mixture of influent wastewater and a powdered adsorbent capable of adsorbing impurities from said wastewaters;

(b) passing said mixture downward through a fixed media filter through which air passes by natural or forced ventilation and having microorganisms attached to the media, wherein wastewater, adsorbent, microorganisms and air are contacted; and



(c) separating adsorbent from said mixture after passage through the fixed media filter to produce a treated and clarified wastewater.

4,407,718

LONG VERTICAL SHAFT BIOREACTOR WITH PRESSURIZED HEAD TANKS

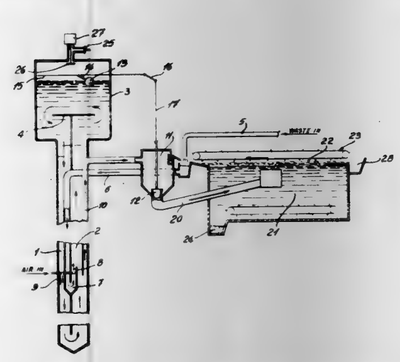
David C. I. Pollock, Richmond Hill, Canada, assignor to C-I-L Inc., North York, Canada

Continuation of Ser. No. 159,350, Jun. 13, 1980, abandoned. This application Nov. 5, 1981, Ser. No. 318,390

Claims priority, application Canada, Oct. 26, 1979, 338535

Int. Cl.³ C02F *3/12*

U.S. Cl. 210—626 **5 Claims**



1. An improved activated sludge waste treatment process wherein an aerobic biological reaction takes place during the continuous circulation of a waste liquor in an apparatus including a surface basin, a long vertical downcomer chamber, a long vertical riser chamber operatively communicating with the downcomer through the basin and at the lower end of the downcomer to form a loop, and including means to introduce influent waste liquor at depth into said riser and to discharge effluent waste liquor at depth from said riser at a location lower in the said riser than the point of influent introduction and including means to circulate waste liquor through the said riser and downcomer in the presence of oxygen-containing gas, the improvement comprising surrounding said surface basin in a gas tight enclosure, maintaining a substantially constant level of waste liquor in said basin while maintaining the surface of waste liquor in said basin under supra-atmospheric pressure to control the degree of gas disengagement from the waste liquor in the said basin.

4,407,719

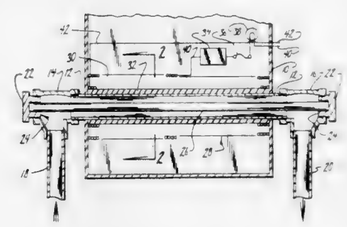
MAGNETIC WATER TREATMENT APPARATUS AND METHOD OF TREATING WATER

Donald J. Van Gorp, Rte. #2, Pella, Iowa 50219

Filed Oct. 30, 1981, Ser. No. 316,725

Int. Cl.³ C02F *1/48*

U.S. Cl. 210—695 **5 Claims**



1. A water treatment apparatus comprising,

elongated pipe means having an inlet and an outlet opening at the opposite ends thereof for the passage of water therethrough,

means for establishing an alternating electro-magnetic force field within said pipe means, said means for establishing the electro-magnetic force field comprising an electrical coil, a thermostat connected to said coil, with said thermostat being connected to a source of alternating current,

rod means comprised of ferromagnetic material supported within said pipe means whereby water passing through said pipe means surrounds said rod means,

insulating means for magnetically insulating said means for establishing an alternating electro-magnetic force field from said pipe means, and

insulating means for magnetically insulating said rod from said pipe,

said inlet and outlet being completely separated so that water passing through said pipe means will not re-enter said pipe means.

4,407,720

METHOD AND APPARATUS FOR FILTRATION OF CONTAMINATED LIQUIDS

Jack R. Bratten, 5970 St. James Dr., West Bloomfield, Mich. 48033

Filed Apr. 8, 1982, Ser. No. 366,817

Int. Cl.³ B01D *37/02, 33/06*

U.S. Cl. 210—777 **4 Claims**

1. In a filtration system for separating solid particles from a liquid of the type characterized by a rotatable drum having a perforate cylindrical surface fully submerged in the contaminated liquid and provided with suction means connected to the interior of the drum to establish flow of contaminated liquid through the perforate surface and into the drum interior, the improved method of filtration which comprises:

sub-dividing the interior of the drum into a plurality of radially shallow parallel adjacent peripheral chambers, each chamber defined on its radially outward boundary by a circumferentially narrow portion of the perforate drum periphery extending a substantial portion of the length of the drum, each of said chambers being otherwise sealed except for an outlet into a main filtered liquid chamber within the interior of the drum;

establishing an inward flow of liquid through the perforate surface of the drum and into said peripheral chambers and

then into said main filtered liquid chamber and then to an outlet from the drum;

establishing a flow of pressurized filter liquid to backwashing liquid port means at a stationary location within the interior of the drum where, at any angular position of the drum, only a small fraction of the total number of peripheral chambers communicate with said port means to receive said pressurized backwashing liquid therefrom for causing accumulated filter cake to be removed from the perforate surface of the communicating chambers by the reverse flow of backwashing liquid therethrough;

and rotating said drum to selectively bring successive peripheral chambers into communication with said backwashing liquid port means;

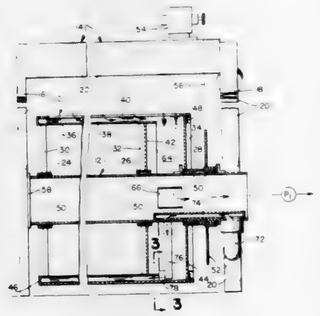


FIG. 3

whereby filtration proceeds through all of the chambers which are in communication with said main filtered liquid chamber simultaneously with backwashing through those chambers which are in communication with said backwashing liquid port means.

2. The method of claim 1 which further includes the step of applying a filter air pre-coat at a location on the drum adjacent to the backwashing liquid port means, whereby the pre-coat may be applied to a portion of the drum which has been cleaned by the backwashing step and prior to the build-up of any significant amount of filter cake thereon.

4,407,721

PROCESS FOR MANUFACTURING POWDER FOR MAGNETIC RECORDING MEDIUM

Yoshiyasu Koike, Chigasaki; Osamu Kubo; Tadashi Ido, both of Yokohama, and Masanobu Uwaha, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1981, Ser. No. 304,683

Claims priority, application Japan, Sep. 22, 1980, 55-132130

Int. Cl.³ C04B *35/26*; C01G *49/00*

U.S. Cl. 252—62.59 **11 Claims**

1. A process for manufacturing a hexagonal ferrite magnetic powder for a magnetic recording medium comprising the steps of:

uniformly mixing and melting hexagonal ferrite-forming components and a glass-forming component as a base material for precipitated fine grains of the hexagonal ferrite;

rapidly cooling the resultant molten material to provide glass flakes;

thermally treating the glass flakes to precipitate the fine grains of the hexagonal ferrite therein;

incompletely dissolving the glass flakes containing the precipitated fine grains to a degree that glass remains present around the fine grains, said dissolution being achieved with boiling water or an acid which is capable of dissolving glass;

mechanically pulverizing the precipitated fine grains and the incompletely dissolved glass flakes in the presence of a dispersing agent capable of preventing flocculation of fine grains of ferrite and

separating and recovering the precipitated fine grains from the incompletely dissolved glass flakes, said grains being within the range of 0.01 to 0.3 microns and when incorporated into a recording film of a magnetic recording tape effecting a magnetic recording medium having a surface coarseness of not more than 0.1 microns.

4,407,722

FABRIC WASHING PROCESS AND DETERGENT COMPOSITION FOR USE THEREIN

James F. Davies, Wirral, and John B. Tune, Higher Bebington, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,308

Claims priority, application United Kingdom, Jun. 18, 1981, 8118802

Int. Cl.³ C11D *17/00, 7/06*

U.S. Cl. 252—91 **1 Claim**

1. A detergent composition suitable for washing fabrics in water containing calcium hardness, the composition comprising:

(i) about 2.5% to about 30% of at least one synthetic detergent active material;

(ii) at least about 10% of an alkalimetal carbonate as a primary detergency builder material; and

(iii) a secondary detergent builder material;

characterised by means for delaying the reaction between said secondary builder and the calcium hardness of the water until the critical state is reached, and secondary builder material being nitrilotriacetic acid coated with a fatty acid.

4,407,723

ABSORPTION OF CARBON DIOXIDE

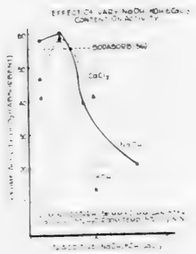
Clive D. R. MacGregor, Tantallon, and William G. Forsyth, Halifax, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Mar. 8, 1982, Ser. No. 356,035

Claims priority, application Canada, May 27, 1981, 378468

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—192 **10 Claims**



1. In a method for making a carbon dioxide absorbent material, said absorbent material comprising about 75 to about 85%/w of a compound selected from the group consisting of group IA and IIA metal hydroxides, about 15 to about 20%/w of water and about 3 to about 5%/w of an additive,

the improvement comprising (1) providing said additive in solution in water wherein said additive solution comprises about 15 to about 20%/w of water, about 2 to about 3% of NaOH, about 1 to about 2%/w of KOH and about 0.1 to about 1%/w of $CaCl_2$, and (2) spraying said addition solution onto said compound to provide a substantially even coating of said addition solution on said compound.

4,407,724

PROCESS FOR PRODUCING EMULSION

Hermann Perrey, Krefeld; Martin Matner, Odenthal; Ernst Schwinum, Leichlingen, and Hans Rudolph, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 669,638, Mar. 13, 1976, abandoned. This application Apr. 10, 1981, Ser. No. 252,981

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1975, 2513690

Int. Cl.³ B01F *17/26*

U.S. Cl. 252—312 **3 Claims**

1. A process for producing an emulsion which consists essentially of emulsifying an oily phase and an aqueous phase with an emulsifier consisting of a compound of the formula

$$R-SO_2-NH-CH_2-\underset{\displaystyle R_1}{\underset{|}{CH}}-OH$$

wherein

R is straight chain alkyl having 8 to 30 carbon atoms or said alkyl substituted by chlorine and

R_1 is hydrogen or methyl.

4,407,725

REGENERATION OF ACTIVATED CARBON

Hanceford L. Allen, Bartow; William W. Berry, Lakeland, and Robert W. Leibfried, Tampa, all of Fla., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Continuation of Ser. No. 180,050, Aug. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 22,082, Mar. 19, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,624

Int. Cl.³ B01J *20/34, 20/20*; C01B *25/16*

U.S. Cl. 502—25 **4 Claims**

1. A process for performing repeated regeneration cycles of up to more than 50 times on spent activated carbon over the useful life of said carbon after each use of said carbon to remove humate-type impurities from cooled wet process phosphoric acid that has been treated with clay wherein each of said regeneration cycles consists essentially of the following steps:

(a) contacting said spent activated carbon with a first water wash stream in an amount of 0.5 to 1.5 gal/lb of carbon for a contact time of 15–100 minutes to remove said acidic solution from said carbon;

(b) contacting the water-washed carbon from step (a) with an aqueous caustic wash stream having a free NaOH concentration of at least about 1.5% by weight for a contact time of 60–180 minutes to remove the absorbed humate-type impurities from said carbon; and

(c) contacting the caustic-washed carbon from step (b) with a hot water wash stream at a temperature in the range of about 170° F. to 180° F. to boiling for a length of time sufficient to remove substantially all of the remaining caustic and desorbed humate-type impurities.

2. The process of claim 1 wherein said caustic wash stream has an initial NaOH concentration of from about 5% to about 10% by weight.

3. The process of claim 1 wherein said contacting steps are effected in a carbon absorption column.

4,407,726

PREPARATION OF CARBOXYLIC ACIDS

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Division of Ser. No. 267,963, May 28, 1981, Pat. No. 4,372,889, which is a continuation-in-part of Ser. No. 219,786, Dec. 24, 1980. This application May 12, 1982, Ser. No. 377,537

Int. Cl.³ B01J *27/08*

U.S. Cl. 502—161 **7 Claims**

1. A liquid-phase carbonylation catalyst comprising a molybdenum-nickel or tungsten-nickel co-catalyst component, an organic promoter component and a halide component represented by the following formula X:T:Z:Q, wherein X is molybdenum or tungsten, T is nickel, X and T being in zero valent form or in the form of a halide, an oxide, a carboxylate of 1 to 20 carbon atoms, a carbonyl or a hydride; Z is a halide source which is hydrogen halide, halogen, an alkyl halide wherein the alkyl group contains 1 to 20 carbon atoms or an alkali metal halide, and Q is an organo-phosphorus compound or an organo-nitrogen compound wherein the phosphorus and the nitrogen are trivalent, the molar ratio of X to T being 0.1–10:1, the molar ratio of X+T to Q being 0.05–20:1 and the molar ratio of Z to X+T being 1–1,000:1, the halide being chloride, bromide or iodide, said organo-phosphorus compound being a phosphine of the formula

$$\begin{array}{l} R^1 \\ | \\ P-R^3 \\ | \\ R^2 \end{array}$$

wherein R^1, R^2 and R^3 may be the same or different, and are alkyl, cycloalkyl, aryl or amide groups or halogen atoms, containing 1 to 20 carbon atoms in the case of alkyl and cycloalkyl groups and 6 to 18 carbon atoms in the case of aryl groups, and said organo-nitrogen compound being a tertiary amine, an amide, a hydroxy amine, a keto amine, a di-, tri-, or other polyamine or a nitrogen-containing compound which comprises two or more other functional groups.

4,407,727

METHOD OF SUPPORTING A CATALYST ON POLYOLEFINS

James J. Harris, and Donald E. Hostetler, both of West Chester, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 8, 1982, Ser. No. 433,566

Int. Cl.³ C08F *4/02*

U.S. Cl. 502—115 **4 Claims**

1. In a method for the preparation of a catalyst for the polymerization of olefins which consists of reducing a transition metal compound selected from the group consisting of the halides, oxyhalides, alcoholates of aliphatic alcohols having 1 to 6 carbon atoms in the alkyl groups, acetates, benzoates, acetylacetonates, and the dicyclopentadienyl salts, with an organomagnesium compound in the presence of a polyolefin support and then deactivating the excess organomagnesium compound with a deactivation agent therefore selected from the group consisting of hydrogen chloride, hydrogen bromide, water, acetic acid, alcohols, carbonic acid, phosphorous pentachloride, silicon tetrachloride, acetylene, and mixtures thereof; sand transition metal being selected from the metals of Groups IV-B, V-B, and VIII of the Periodic System, and said organomagnesium compound being selected from the group consisting of compounds of formula RMgX where R is alkyl having 1 to 20 carbon atoms, or aryl having 6 to 10 carbon atoms and X is R, halide or —OR and complexes of RMgX with organometallic compounds of aluminum or zinc, the improvement consisting of pretreating said polyolefin support by (a) mixing the dry polyolefin powder with 0.1 to 2.0 millimoles of an organomagnesium compound per gram of polyolefin powder and the minimum amount of an inert diluent required to wet the powder mixture, (b) removing diluent until the powder-organomagnesium compound mixture is dry, and (c) treating the powder-organomagnesium compound mixture at a temperature between −50° C. and the softening point of the polymer powder with at least 2 millimoles of a deactivation agent for the magnesium compound per millimole of magnesium compound.

4,407,728

METHOD FOR PRODUCING CRYSTALLINE ALUMINOSILICATES AND THEIR USE AS CATALYSTS AND CATALYST SUPPORTS

William J. Ball, Capel; Keith W. Palmer, Weybridge, and David G. Stewart, Epsom, all of England, assignors to The British Petroleum Company Limited, London, England

Continuation-in-part of Ser. No. 969456, Dec. 14, 1978, abandoned. This application Feb. 2, 1981, Ser. No. 230,814

Claims priority, application United Kingdom, Dec. 23, 1977, 53645/77; Jul. 27, 1978, 31636/78

Int. Cl.³ C01B *33/28*

U.S. Cl. 502—60 23 Claims

1. A method for preparing a crystalline aluminosilicate having a high silica to alumina molar ratio and an X-ray diffraction pattern substantially the same as that of ZSM-5 zeolite which method comprises mixing a source of silica, a source of alumina, a source of alkali metal, water and at least one alkanolamine according to Formula (I):



(I)

wherein any two of R^1, R^2 and R^3 are independently alkylol groups and the remaining one of R^1, R^2 and R^3 is a hydrogen atom or all of R^1, R^2 and R^3 are independently alkylol groups, the alkylol groups being $—CH_2—R—OH$, wherein R is $—CH_2—$, $—CH_2CH_2—$, or $—CH(CH_3)—$, the ratio of said source of silica to said source of alumina being at least 20:1 based on the equivalent moles of silica and alumina in said respective sources, maintaining said mixture at a temperature above about 120° C. and recovering the crystalline aluminosilicate formed.

23. A method for preparing a crystalline aluminosilicate as defined in either claim 1 or claim 6 wherein said recovered crystalline aluminosilicate is treated with a suitable compound containing a non-metallic element selected from the group consisting of boron and phosphorus to incorporate said non-metallic element into the aluminosilicate.

4,407,729

CATALYSTS

Ignatius Schumacher, Ballwin, and Kang-Bo Wang, Creve Coeur, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 21, 1981, Ser. No. 313,519

Int. Cl.³ B01J *21/04, 27/02, 27/24*

U.S. Cl. 502—200 25 Claims

1. A catalyst composition comprising the adduct of:

(a) an alumina-metal oxide combination represented by the formula

$$(Al_2O_3)_a(M_{2/n}O)_c$$

wherein M is a metal cation selected from the group consisting of the lanthanides, Groups 1b, 2b, 5b, 6b, 7b, and 8 of the Periodic Table of the Elements, and mixtures thereof, and a and c represent weight percent of the Al_2O_3 and $M_{2/n}O$ components, respectively, in the alumina-metal oxide combination, with a being 50 to 100 and c being 0 to 50, and n is an integer from 1 to 7 of the valence of the metal cation, and

(b) a catalytically effective amount of sulfur trioxide.

2. The catalyst composition of claim 1 wherein the amount of sulfur trioxide is in the range from about 5 weight percent to about 40 weight percent, based on the weight of the alumina-metal oxide combination.

3. The catalyst composition of claim 1 wherein the alumina-metal oxide combination is selected from the group consisting of crystalline and noncrystalline phases, and mixtures thereof.

4,407,730

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research & Development Co., Pittsburgh, Pa.

Filed Jun. 22, 1981, Ser. No. 275,652

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—208 5 Claims

1. A catalyst support consisting essentially of a magnesia-alumina-aluminum phosphate matrix characterized after calcination at 500° C. for 10 hours as amorphous, and having an average pore radius of from about 10 A to about 300 A, a surface area ranging from 100 m^2/g to about 350 m^2/g, a pore volume of from about 0.3 cc/g to about 1.5 cc/g, wherein the magnesia-alumina-aluminum phosphate matrix contains magnesia in an amount ranging from at least about 0.5 mole percent but less than about 10 mole percent, or in the range above about 25 mole percent to about 75 mole percent, alumina in an amount ranging from about two to about 90 mole percent, and aluminum phosphate in an amount ranging from about three to about 95 mole percent, and wherein said matrix retains at least about 90 percent of its surface area when the matrix is additionally calcined at a temperature up to about 750° C. for about 10 hours.

4,407,731

PREPARATION OF METAL OXIDE-SUPPORTED BORON FLUORIDE CATALYSTS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 8, 1982, Ser. No. 440,112

Int. Cl.³ B01J *21/02*

U.S. Cl. 502—203 14 Claims

1. A method for the preparation of a metal oxide-supported boron fluoride catalyst which comprises treating said metal oxide with an aqueous solution of an acid at treating conditions, washing the treated metal oxide with an aqeous solution of an alkaline compound, calcining the resultant treated metal oxide at calcination conditions, impregnating said treated metal oxide with boron trifluoride at impregnation conditions, and recovering the resultant metal oxide-supported boron fluoride catalyst.

4,407,732

CATALYTIC SUPPORTS WITH CONTROLLED PORE PROPERTIES

William L. Kehl, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 22, 1981, Ser. No. 275,653

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

Int. Cl.³ B01J *27/14*

U.S. Cl. 502—208 5 Claims

1. A catalyst support consisting essentially of a magnesia-alumina-aluminum phosphate matrix characterized after calcination at 500° C. for 10 hours as amorphous, and having an average pore radius of from about 10 A to about 300 A, a surface area ranging from 100 m^2/g to about 350 m^2/g, a pore volume of from about 0.3 cc/g to about 1.5 cc/g, wherein the magnesia-alumina-aluminum phosphate matrix contains magnesia in an amount ranging from about 10 to about 25 mole percent, alumina in an amount ranging from about two to about 85 mole percent, and aluminum phosphate in an amount ranging from at least about three mole percent but less than about 10 mole percent, or in the range above about 65 mole percent to about 85 mole percent, and wherein said matrix retains at least about 90 percent of its surface area when the matrix is additionally calcined at a temperature up to about 750° C. for about 10 hours.

4,407,733

SUPPORTED CATALYSTS AND PROCESS FOR THEIR PREPARATION

Udo Birkenstock, Ratingen, and Herbert Schmidt, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 66,976, Aug. 16, 1979. This application Jul. 20, 1981, Ser. No. 284,752

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2848978

Int. Cl.³ B01J *23/58, 23/78, 23/89*

U.S. Cl. 502—174 27 Claims

1. A supported catalyst comprising an inert support material having a BET surface area of less than 20 square meters per gram and a catalytically active material disposed in an annular zone located inside and just below the surface of said inert support prepared by a process consisting essentially of:

A. contacting said inert support, prior to any impregnation with the catalytically active metal in accordance with its absorbency to saturation, with a solution of a base so as to dispose within said inert support 0.01 to 50 grams equivalents of base per gram equivalent of catalytically active metal to be impregnated within said inert support;

B. drying the so-base-treated inert support at a temperature of 50° to 200° C. so that said inert support has a constant weight and has a residual moisture content of less than 10 percent of the maximum obsorbency of the support; and

C. impregnating the so-dried inert material in accordance with its absorbency to saturation with a solution of a catalytically active metal; and

D. washing, drying and reducing or calcining the so-impregnated inert material.

4,407,734

SPRAY DRIED VANADIA CATALYST AND METHOD OF PREPARING IT

Dean A. Denton, Baltimore, and Raymond D. Feldwick, Timonium, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,685

Int. Cl.³ B01J *21/04, 21/08, 21/12, 23/22*

U.S. Cl. 502—9 20 Claims

1. A catalyst comprising microspherical particles having a weight median particle diameter of from about 5 to about 100 microns and containing in a uniform mixture at least about 25 weight percent of vanadia and at least about 15 weight percent of an aluminosilicate clay inert support having a surface area of less than about 25 square meters per gram.

4,407,735

METHOD OF IMPREGNATING SPHERES OF ACTIVATED ALUMINA FOR USE IN CATALYST SUPPORT WITH CERIUM

Keiichi Sawamura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 26, 1982, Ser. No. 382,282

Claims priority, application Japan, Jun. 19, 1981, 56-93734

Int. Cl.³ B01J *23/10, 37/00*

U.S. Cl. 502—10 8 Claims

1. In a method of impregnating spheres of activated alumina for use in catalyst supports with cerium in an oxidized state, the method having the steps of wetting spheres of activated alumina with an aqueous solution of a cerium salt, drying the wet spheres and calcining the dried spheres in an oxidizing atmosphere,

the improvement comprising performing the step of drying the wet spheres so as to complete the removal of water from the spheres by evaporation in a time period not longer than 10 minutes.

4,407,736

CATALYST AND PROCESS OF PREPARING

Regis J. Pellet; Michael J. Gradassi, both of Wheaton, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company, (Indiana), Chicago, Ill.

Division of Ser. No. 92,569, Nov. 8, 1979, Pat. No. 4,298,461. This application Apr. 28, 1981, Ser. No. 258,372

Int. Cl.³ B01J *21/12, 23/64*

U.S. Cl. 502—230 9 Claims

1. A hydrocarbon conversion catalyst comprising at least one platinum-group metal deposited on a composite comprising (1) alumina and (2) rhenium deposited on silica.

2. The catalyst of claim 1 wherein said alumina is substantially free from rhenium deposited thereon.

3. The catalyst of claim 1 comprising said silica in an amount within the range of about 5–35 wt. % based upon the total weight of the catalyst.

4. The catalyst of claim 1 wherein said platinum-group metal comprises platinum.

5. The catalyst of claim 1 wherein said catalyst comprises about 0.01–3 wt. % rhenium, about 0.01–3 wt. % platinum, each being calculated as the element, about 5–35 wt. % silica, and about 65–95 wt. % alumina.

4,407,737

CATALYSTS FOR HETEROGENEOUS SYNTHESIS

Attilio Passariello, Tivoli, Italy, assignor to Ammonia Casale S.A., Lugano, Switzerland

Filed Jan. 19, 1982, Ser. No. 340,888

Claims priority, application Italy, Jan. 21, 1981, 19226 A/81

The portion of the term of this patent subsequent to Feb. 14, 1995, has been disclaimed.

Int. Cl.³ B01J *23/76, 21/12*

U.S. Cl. 502—243 2 Claims

1. In the process for the preparation of catalysts for heterogeneous synthesis, particularly of ammonia, in which a mix of magnetite and promoters, especially oxides of calcium, magnesium, aluminium, potassium and silicon is prepared, the so obtained mix is molten at at least 1,600° C., the molten mass is air cooled, the lump is freed from the slag and crushed, and the so obtained mass is milled in a bar-mill, the relevant powders are pelletised in a tray pelletiser and the so prepared spheres are dried at 100°–150° C. and finally sintered at 1200°–1350° C. in argon atmosphere, the improvement consisting in that the milling of the mass obtained from crushing the lump is carried to reach a content of at least 80% in fine powders having a granulometry from 325 to 400 mesh and in that said fine powders are collected, are pelletised, dryed and sintered.

2. A process according to claim 1, in which said fine powders are treated with an aqueous solution of cerium.

4,407,738

PROCESS FOR PREPARING A PLATINUM/RHODIUM CATALYST

Victoria Eskinazi, Boothwyn; John F. Kirner, Media, both of Pa., and Charles R. Wilson, Swedesboro, N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 21, 1981, Ser. No. 333,131

Int. Cl.³ B01J *21/04, 23/42, 23/44, 23/46*

U.S. Cl. 502—334 14 Claims

1. In a method of preparing a platinum/rhodium catalyst having a substantially alumina catalyst support on which there is positioned a first region of platinum having its maximum concentration near the surface of said support and a second region positioned adjacent to said first region and penetrating into said support having a preponderance of the total rhodium metal and a minor amount of the total platinum metal, the improvement which comprises impregnating said support in a single step using a controlled acidic solution of a platinum-containing compound, a rhodium-containing compound, and a strong acid and an ammonium salt or equivalents thereof in amounts to yield at least about 0.01 N solution.

4,407,739

PREPARATION OF ELECTRICALLY CONDUCTIVE POLYMERS

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal, and Johannes Schlag, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,020

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1981, 3104408

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—512 **6 Claims**

1. A process for the preparation of a stabilized electrically conductive polymer having a conductivity greater than 10^{-2} S/cm, comprising treating an organic unsaturated polymer of the series of the polyphenylenes, heteropolyphenylenes or polyacetylenes, in the absence of moisture and of oxygen, first with from 0.1 to 10.5% by weight, based on the polymer, of an organic nitroso compound selected from the group consisting of ethyl N-nitroso-N-methylcarbamate, N-nitroso-N-methylurethane, 1-nitrosonaphth-2-ol, 2-nitrosonaphth-1-ol, the ammonium salt of 4-nitroso-N-phenylhydroxylamine (Cupferron), 2-nitroso-toluene, 5-nitroso-2,4,6-triaminopyridine, 3-nitrosostyrene, ω-nitrosostyrene, nitrosobenzene, nitroso-tert.-butane, N-nitroso-dimethylamine, 4-nitroso-N-dimethylaniline, N-(N-nitrosomethylamino)-methyl-benzamide, 2-nitroso-2-naphthol-3,6-disulfonic acid, N-nitrosopyrrolidone and 4-nitrosophenol, at from −100° C. to +100° C. for from 0.1 to about 5 hours, and then with from 0.5 to 55% by weight, based on the polymer, of a strong Lewis acid dopant having a pk_a of from −10 to +4 or a base having a Pauling electronegativity of up to 1.5.

4,407,740

DI- AND TETRA-HYDROBENZOFURANONES AS SCENTS AND AROMA SUBSTANCES

Manfred Köpsel, and Roland Emberger, both of Holzminden, Fed. Rep. of Germany, assignors to Haarmann & Reimer GmbH, Holzminden, Fed. Rep. of Germany

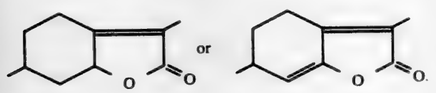
Filed Apr. 23, 1981, Ser. No. 256,748

Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017068

Int. Cl.³ A61K *7/46*; A23L *2/26*

U.S. Cl. 252—522 R **7 Claims**

1. A scenting and/or flavoring composition comprising conventional scenting and/or flavoring agents or carriers and, as a scent and/or flavor modifier thereof, a modifying amount of a di- or tetra-hydrobenzofuranone of the formula



4,407,741

HYDROTROPIC CLEANER

Richard D. Maggi, Oyster Bay, N.Y., assignor to Life Industries Corporation, Old Bethpage, N.Y.

Continuation-in-part of Ser. No. 937,327, Aug. 28, 1978, abandoned. This application Jan. 27, 1982, Ser. No. 343,027

The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.

Int. Cl.³ C11D *1/70, 1/825, 3/28, 3/43*

U.S. Cl. 252—542 **11 Claims**

1. A cleaning composition comprising (a) about 0.22 to 0.33 parts by weight of methyl-2 pryyolidone, (b) about 1.5 to 2 parts by weight of an alkylaryl polyether alcohol obtainable as the reaction product of octylphenol and ethylene oxide and containing an average of five ethylene oxide units per molecule and (c) one part by weight of an alkylaryl polyether alcohol obtainable as the reaction product of octylphenol and ethylene oxide and containing an average of seven to eight ethylene oxide units per molecule.

2. The composition of claim 1 further including water.

4,407,742

PROCESS FOR CONDITIONING RADIOACTIVE AND TOXIC WASTES

Milan Hrovat, Rodenbach; Hans Huschka, and Lothar Rachor, both of Hanau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 25, 1980, Ser. No. 143,941

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1979, 2917437

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—628 **13 Claims**

1. A process for conditioning radioactive and toxic wastes for the transportation and final storage through binding the waste in a carbon matrix comprising employing as the starting material for the carbon matrix natural graphite and pressing with sulfur as a binder at a temperature above 100° C. and in the melting range of sulfur to form a molded article.

4,407,743

NOVEL N,N'-BIS(TRIFLUOROMETHYLSULFONYL)OXAMIDES AND CHEMILUMINESCENT COMPOSITIONS CONTAINING THE SAME

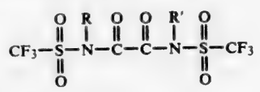
Shin-Shyong Tseng, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 19, 1982, Ser. No. 359,728

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—700 **10 Claims**

1. A compound having the formula



(I)

wherein R and R' independently represent substituted alkyl of 1 to 6 carbon atoms wherein the substituents are selected from trihalomethyl, C_1–C_6 alkoxycarbonyl, or C_6–C_{10} arylalkoxycarbonyl wherein the alkoxy moiety is of 1 to 6 carbon atoms.

4,407,744

PROCESS FOR OBTAINING NERVE GROWTH FACTOR

David M. Young, 60 Farm Rd., Sherborn, Mass. 01770

Division of Ser. No. 854,194, Nov. 23, 1977, Pat. No. 4,185,095. This application Feb. 5, 1979, Ser. No. 9,017

Int. Cl.³ C07G *7/00*; A61K *37/00*

U.S. Cl. 260—112 R **1 Claim**

1. The process for obtaining a composition useful as plasminogen activator comprising a nerve growth factor having a molecular weight of about 116,000, said composition being derived from either mouse submandibular gland or from mouse saliva which composition is free from the components of mouse saliva or mouse gland which degrade the nerve growth factor which comprises forming an aqueous extract of mouse submandibular gland or mouse saliva, said aqueous extract having a pH between about 6 and 9 and an ionic strength between about 0.01 and 0.2, said extract being formed prior to substantial degradation of nerve growth factor having a molecular weight of about 116,000 contained in said extract, passing said extract through a column of a positively charged ion exchange resin to form a component rich in said nerve growth factor and substantially free of components of said mouse saliva or mouse submandibular gland that degrades said nerve growth factor, eluting said column with an aqueous salt solution to recover said component rich in nerve growth factor, passing said component rich in nerve growth factor through a chromatographic column of neutral resin to further separate nerve growth factor from said component rich in nerve growth factor and eluting said neutral resin column with an aqueous salt solution to recover a second component having an increased concentration of said nerve growth factor, passing said second component having an increased concentration of said nerve growth factor through at least one additional neutral resin column and eluting each of said additional columns with an aqueous salt solution in order to recover pure stable nerve growth factor having a molecular weight of about 116,000.

4,407,745

HEPTACOSAPEPTIDE

Mikio Uchiyama, Urawa; Takashi Sato, Tokyo; Hiroshi Yoshino, Abiko; Yutaka Tsuchiya, Tokyo; Masayuki Konishi, Ichinomiya; Masahiko Tsujii, Kagamihara; Yoshihiko Hisatake, Kounan, and Atsushi Koiwa, Gifu, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1981, Ser. No. 300,857

Claims priority, application Japan, Sep. 11, 1980, 55-125262

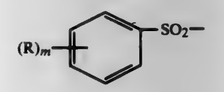
Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **11 Claims**

1. A heptacosapeptide having the following structural formula:

Boc-His(Boc)-Ser(Bu^t)-Asp(OBu^t)-Gly-Thr(Bu^t)-Phe-Thr(Bu^t)-Ser(Bu^t)-Glu-(OBu^t)-Leu-Ser(Bu^t)-Arg(X)-Leu-Arg(X)-Asp(OBu^t)-Ser(Bu^t)-Ala-Arg(X)-Leu-Gln-Arg(X)-Leu-Leu-Gln-Gly-Leu-Val-NH_2,

in which X is a group having the formula:



wherein R is alkyl or alkoxy and m is an integer of 1 to 3, provided that the R's are the same or different when m is 2 or 3.

4,407,746

CYCLOHEXYL AND PHENYL SUBSTITUTED ENKEPHALINS

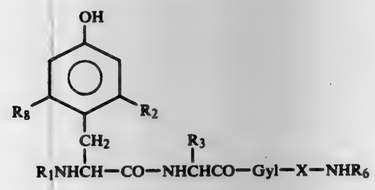
Robert H. Mazur, Chicago; David A. Tyner, Glenview, and Eleanor A. Hallinan, Evanston, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Dec. 14, 1981, Ser. No. 330,614

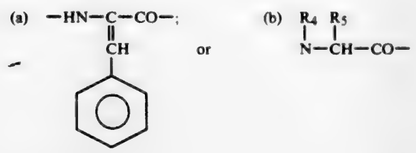
Int. Cl.³ C07C *103/52*; A61K *37/00*

U.S. Cl. 260—112.5 E **9 Claims**

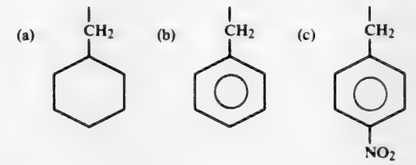
1. A compound according to the formula



wherein R_1 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein R_2 and R_8 are:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive; R_2 and R_8 each being the same of different;
wherein R_3 is:
(a) alkylthioalkyl having 2 to 6 carbon atoms, inclusive;
(b) alkylsulfinylalkyl have 2 to 6 carbon atoms, inclusive;
wherein X is:



wherein R_4 is:
(a) hydrogen; or
(b) alkyl of 1 to 6 carbon atoms, inclusive;
wherein R_5 is:



wherein R_6 is:
(a) cyclohexyl; substituted 2, 3 or 4 by R_7; or
(b) phenyl; substituted ortho, meta or para by R_7;
wherein R_7 is:
(a) hydrogen;
(b) alkyl ester of carboxylic acid of 1 to 6 carbon atoms, inclusive.
(c) hydroxyalkyl of 1 to 6 carbon atoms, inclusive; and the pharmaceutically acceptable salts.

4,407,747

CONTINUOUS METHOD FOR DISSOLVING MILK PROTEINS CONTAINING CASEIN AND AN APPARATUS FOR PERFORMING THE METHOD AS WELL AS WATER SOLUBLE MILK PROTEIN PRODUCTS OF A NOVEL TYPE

Frank Lippe, Veghel; Henricus A. W. E. M. Ottenhof, and Rudolf De Boer, both of Wageningen, all of Netherlands, assignors to Stichting Nederlands Instituut Voor Zuivelonderzoek (NIZO), Netherlands

Filed Oct. 28, 1980, Ser. No. 201,419

Claims priority, application Netherlands, Aug. 13, 1980, 8004587

Int. Cl.³ A23J *1/20*

U.S. Cl. 260—120 **17 Claims**

1. A continuous method for dissolving milk proteins containing water insoluble casein comprising (a) simultaneously admixing said milk proteins with at least one solubilizer and with water, (b) passing the milk proteins, the solubilizer, and the water in a continuous stream through a closed reaction chamber by means of a positive displacement pump, and (c) converting the mixture within said reaction chamber under the influence of shearing forces at a temperature of at least 60° C. and at a final pH value of at least 6.5 into a solution having a dry solids content within the range of from 27 to 60% by weight.

4,407,748

AZO DYESTUFFS POSSESSING ANTIMICROBIAL PROPERTIES

Irina N. Gorbacheva; Zinaida J. Kozinda; Elena G. Suvorova; Viktor A. Chertov; Semen I. Dvoskin; Evdokia V. Platonova; Tatyana A. Podgaevskaya, and Andrei B. Skvirenko, all of Moscow, U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Institut, Moscow, U.S.S.R.

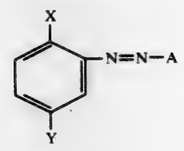
Filed Mar. 13, 1980, Ser. No. 129,903

Claims priority, application U.S.S.R., Mar. 13, 1979, 2729601

Int. Cl.[3] **C09B** *62/09, 62/503;* **D06P** *1/382, 1/384*

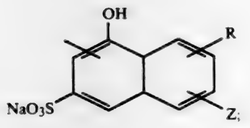
U.S. Cl. 260—153 **2 Claims**

1. An azo dyestuff composition of matter possessing antimicrobial properties, having the formula:



wherein

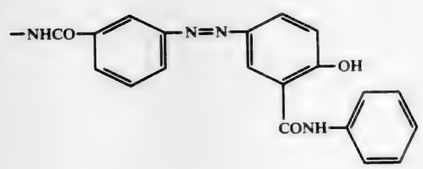
A is



X is $-OCH_3$;

Y is $-SO_2CH_2CH_2OSO_3Na$;

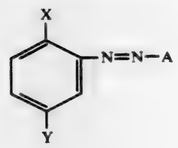
Z is



and

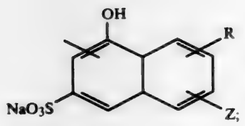
R is —H.

2. A azo dyestuff composition of matter possessing antimicrobial properties, having the formula:



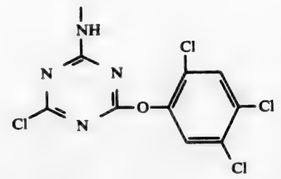
wherein

A is



X is $-SO_3Na$;

Y is



Z is $-SO_3Na$; and

R is —H or $-NH_2$.

4,407,749

AZO DYES FROM 2-SULFONATED, SULFATED OR THIOSULFATED ORGANOTHIOTHIADIAZOLE AND ANILINE, TETRAHYDROQUINOLINE, OR BENZOMORPHOLINE COUPLERS

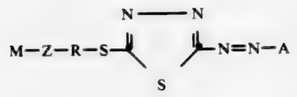
Max A. Weaver; Clarence A. Coates, Jr., and John G. Fisher, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 174,055, Jul. 31, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,885

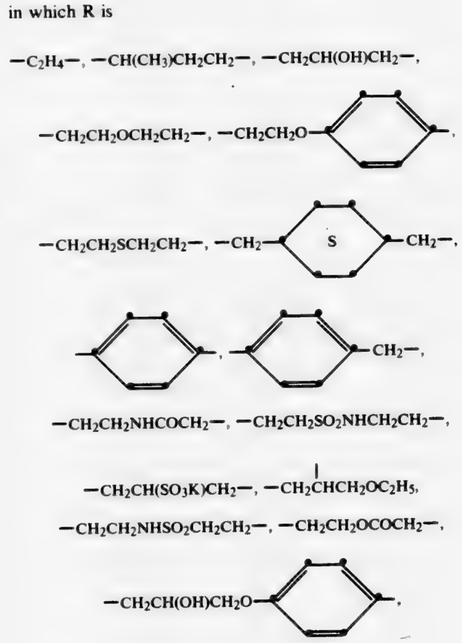
Int. Cl.[3] **C09B** *29/049, 29/08, 29/36, 29/44*

U.S. Cl. 260—155 **11 Claims**

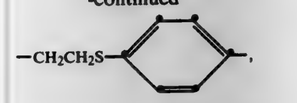
1. A compound having the formula

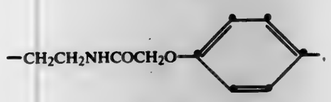


in which R is



-continued

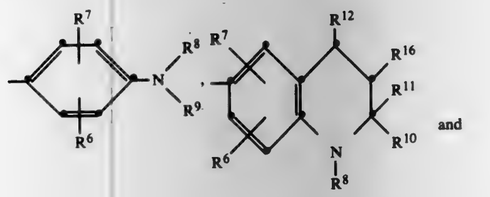




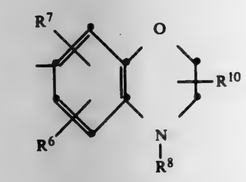
$-CH_2CH_2-N(SO_2CH_3)-CH_2CH_2-$,

$-CH_2CH(OSO_3Na)CH_2-$, or $-CH_2CH(SSO_3Na)CH_2-$;

Z is SO_3, SO_4, or SSO_3; M is hydrogen, an alkali metal or ammonium; and A is selected from coupler moieties of the formulae



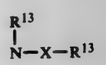
and



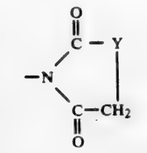
wherein

R^6 and R^7 are each selected from hydrogen, fluorine, chlorine, bromine, lower alkyl, cycloalkyl, lower alkoxy, phenoxy, lower alkylthio, arylthio, and $-NH-X-R^{13}$ in which X is —CO—, —COO—, or $-SO_2-$ and R^{13} is selected from aryl, cycloalkyl, lower alkyl and lower alkyl substituted with halogen, hydroxy, phenoxy, aryl, cyano, cycloalkyl, lower alkylsulfonyl, lower alkylthio, lower alkanoyloxy, and lower alkoxy, and when X is —CO—, R^{13} is also selected from hydrogen, amino, lower alkylamino, lower alkylcarbamoyl, lower dialkylamino, arylamino, and furyl;

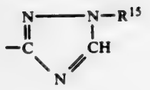
R^8 and R^9 are selected from hydrogen; cycloalkyl; cycloalkyl substituted with one or two groups selected from lower alkyl, —OH, lower alkoxy, halogen and hydroxy substituted lower alkyl; phenyl or phenyl substituted with lower alkyl, lowr alkoxy, halogen, lower alkanoylamino, cyano or lower alkoxycarbonyl; straight or branched lower alkenyl; straight or branched alkyl or 1–8 carbons and such alkyl substituted with the following: hydroxy; halogen; cyano; succinimido; glutarimido; phthalimidino; 2-pyrrolidono; cyclohexyl; phenyl or phenyl substituted with 1–3 of lower alkyl, halogen, cyano, sulfamoyl, OH, OR^{13}, OXR^{13}, SR^{13}, $NHXR^{13}$, SO_2NHR^{13}, $O(CH_2)_nXR^{13}$, $O(CH_2)_nOR^{13}$, or



where n is 1–6; lower alkanoylamino; sulfamoyl, lower alkylsulfamoyl; vinylsulfonyl; acrylamido; phthalimidinyl; benzoylsulfonicimidyl; lower alkylsulfonamido; phenylsulfonamido; lower alkoxycarbonylamino; lower alkylcarbamoyloxy; lower alkoxycarbonyl; lower alkoxycarbonyloxy;



wherein Y is —NH—, —NH—lower alkyl—, —O—, —S—, or $-CH_2O-$; $-S-R^{14}$ wherein R^{14} is lower alkyl, phenyl, phenyl substituted with halogen, lower alkyl, lower alkoxy, lower alkanoylamino, cyano, or lower alkoxycarbonyl, pyridyl, pyrimidinyl, benzoxazolyl, benzimidazolyl, benzothiazolyl, or



$-SO_2R^{13}$; $-COOR^{13}$; $-OXR^{13}$; $-NH-X-R^{13}$; $-X-R^{13}$; $-OCO-R^{13}$; $-CONR^{15}R^{15}$; $-SO_2NR^{15}R^{15}$; wherein R^{13} and X are as defined above and each R^{15} is selected from H and R^{13}; lower alkoxy, lower alkoxy substituted with hydroxy, cyano, lower alkanoyloxy, or lower alkoxy; phenoxy; phenoxy substituted with one or more of lower alkyl, lower alkoxy or halogen; or R^8 and R^9 combined form pentamethylene, ethyleneoxyethylene or ethylenesulfonylethylene;

R^{10}, R^{11}, and R^{12} are each selected from hydrogen and lower alkyl; and R^{16} is selected from —OH, —Cl, $-CONH_2$, —CONH—lower alkyl, lower alkoxy, phenoxy, $-SR^{14}$, and $-OXR^{13}$ wherein R^{13} and R^{14} are as defined above.

4,407,750

UNSYMMETRICAL AZETIDINONE ALDEHYDE DISULFIDES AND PROCESS

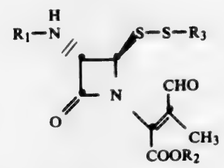
Stjepan Kukolja, Carmel, and Janice L. Pfeil, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 137,861, Apr. 7, 1980, Pat. No. 4,302,391. This application Aug. 7, 1981, Ser. No. 290,919

Int. Cl.[3] **C07D** *205/08, 405/06, 403/06, 409/06*

U.S. Cl. 260—239 A **14 Claims**

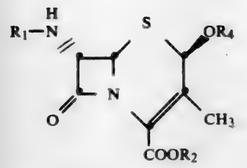
1. A process for preparing an azetidinone disulfide compound of the following formula:



I

which comprises

reacting at a temperature between about 0° C. and about 30° C. a 2α-alkoxy cephalosporin ester compound of the formula



II

with between about 0.8 to about 1.2 equivalents of phenylsulfenyl chloride or a monosubstituted phenylsulfenyl chloride, wherein the substituent is selected from the group consisting of chloro, methoxy, methyl and acetoxy, per equivalent of the 2α-alkoxy cephalosporin ester in an aromatic hydrocarbon or chlorinated hydrocarbon solvent,

wherein the above formulae R_1 is an acyl group of the formula



wherein R′ is

(a) C_1–C_7 alkyl, cyanomethyl, C_1–C_6 haloalkyl, 4-protected amino-4-protected carboxybutyl; or

(b) C_1–C_6 alkoxy, phenoxy, benzyloxy or 4-methoxybenzyloxy; or

(c) the group —R″ wherein R″ is phenyl or substituted phenyl wherein the substituents are 1 or 2 halogens, protected hydroxy, cyano, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, protected carboxy, protected carboxymethyl, protected hydroxymethyl or protected aminomethyl; or

(d) an arylalkyl group of the formula

wherein m is 0 or 1; or

(e) a substituted arylalkyl group of the formula



wherein R‴ is R″ as defined above, 2-thienyl, 3-thienyl, 2-furyl or 3-furyl; W is protected hydroxy, protected carboxy, protected amino, or

(f) a heteroarylmethyl group of the formula



wherein R⁗ is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 5-tetrazolyl, 1-tetrazolyl; R_2 is a carboxy protecting group, R_3 is phenyl or a mono substituted phenyl group where the substituents are chloro, methoxy, methyl or acetoxy and R_4 is methyl, ethyl or isopropyl.

4,407,751

PROCESSES FOR PREPARING β-LACTAMS

Wagn O. Godtfredsen, Vaerlose, and Welf von Daehne, Rungsted Kyst, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab), Ballerup, Denmark

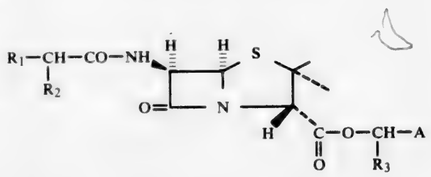
Continuation of Ser. No. 213,083, Dec. 4, 1980, Pat. No. 4,342,772, which is a continuation-in-part of Ser. No. 118,063, Jan. 24, 1980. This application Aug. 7, 1981, Ser. No. 291,081

Claims priority, application United Kingdom, Feb. 13, 1979, 7905020; Jun. 19, 1979, 7921341; Aug. 9, 1979, 7927761; Nov. 14, 1979, 7939473; Jan. 25, 1980, 8002682

Int. Cl.³ C07D *499/04*

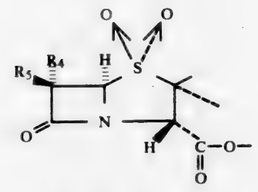
U.S. Cl. 260—239.1 7 Claims

1. A method for producing a compound of formula I

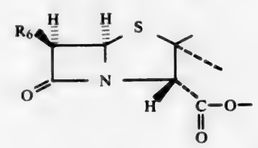


I

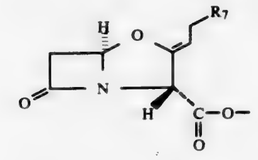
in which R_1 stands for a phenyl, 4-hydroxyphenyl, 1,4-cyclohexadienyl or a 3-thienyl group; R_2 represents a primary amino or a carboxy group; R_3 is a hydrogen atom, or a lower alkyl, aryl or aralkyl radical, and A stands for a radical of a β-lactamase inhibitor containing a β-lactam ring as well as a carboxy group, A being connected via the carboxy group, and salts of the compounds of formula I with pharmaceutically acceptable, non-toxic acids or bases, said A substituent being a radical selected from the group consisting of



II

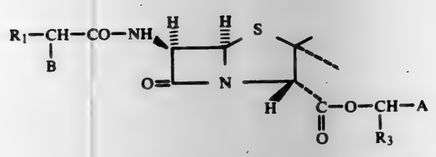


III



IV

in which R_4 stands for a hydrogen or a halogen atom; R_5 is a hydrogen atom or an amino or acylamino group, but at least one of R_4 and R_5 is hydrogen; R_6 represents a halogen atom; and R_7 stands for a hydroxyl group, or one of the radicals of known clavulanic acid derivatives with β-lactamase inhibitory activity, wherein a compound of formula V:



V

in which R_1, R_3, and A are as defined above, B stands for an azido group, a protected amino group, or a protected carboxy group, is subjected to a catalytic hydrogenolysis or hydrolysis depending on what A and B stand for.

4,407,752

AZETO-IMIDAZO-DIAZEPINES

Walter Hunkeler, Magden, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

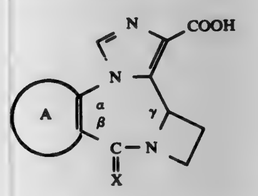
Division of Ser. No. 349,405, Feb. 16, 1982, Pat. No. 4,352,816. This application Jul. 30, 1982, Ser. No. 403,952

Claims priority, application Switzerland, Feb. 27, 1981, 1339/81

Int. Cl.³ C07D *487/12, 512/22*

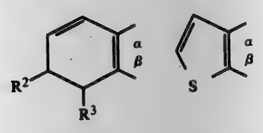
U.S. Cl. 260—239.3 P 2 Claims

1. A compound of the formula



VIII

wherein A together with the two carbon atoms denoted as α and β is the group



(a) or (b);

wherein R^2 is hydrogen, trifluoromethyl or halogen; R^3 is hydrogen, trifluoromethyl, halogen or lower alkyl and X is an oxygen or sulphur atom.

4,407,753

8α-OESTRA-1,3,5(10)-TRIENE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS

Marinus B. Groen, Schayk, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

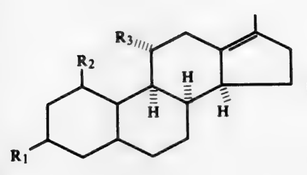
Filed Jul. 2, 1981, Ser. No. 280,266

Claims priority, application Netherlands, Jul. 11, 1980, 8003999

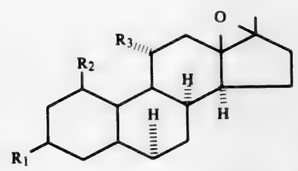
Int. Cl.³ C07J *71/00*

U.S. Cl. 260—239.55 R 1 Claim

1. A compound selected from the group consisting of



and



wherein

R_1=H, hydroxy, (C_1–C_8)-hydrocarbyloxy, trimethylsilyloxy, tetrahydropyranyloxy or (C_1–C_7)-carboxyacyloxy;

R_2=H or equal to R_1; with the proviso that at least one of the substituents R_1 and R_2 is not equal to H; and

R_3=methyl or ethyl.

4,407,754

CHOLECALCIFEROL DERIVATIVES

Richard Barner, Witterswil, and Josef Hubscher, Seon, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 333,354, Dec. 22, 1981, abandoned, which is a continuation of Ser. No. 183,140, Sep. 2, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,438

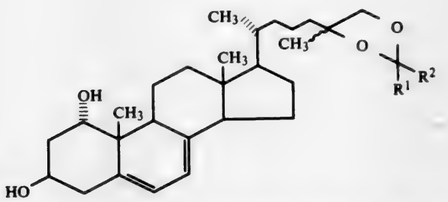
Claims priority, application Switzerland, Sep. 14, 1979, 8346/79

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—239.55 D 16 Claims

5. A cholestadiene of the formula

IV



wherein R^1 and R^2 are lower-alkyl or R^1 and R^2 together are lower-alkylene.

4,407,755

6-AMINO PENAM DERIVATIVES

Robert L. Cundall, Liverpool, and Derek Walker, Jamesville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

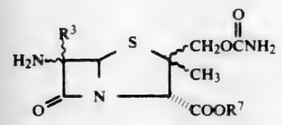
Division of Ser. No. 92,248, Nov. 7, 1979, Pat. No. 4,310,459, which is a division of Ser. No. 893,092, Apr. 3, 1978, Pat. No. 4,322,347. This application Aug. 3, 1981, Ser. No. 289,621

The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.

Int. Cl.³ C07D *499/02*

U.S. Cl. 260—245.2 R 4 Claims

1. A compound of the formula



in which R^3 is hydrogen, (lower)alkoxy or (lower)alkylthio and $COOR^7$ is carboxy or a conventionally protected carboxyl group.

4,407,756

PROCESS FOR PRODUCING AMINOANTHRAQUINONE

Akira Fukasawa, Toyonaka; Masakatsu Yoshimura, Sakai; Tatsuo Kaneoya, Minoo, and Kenji Takahashi, Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed May 16, 1979, Ser. No. 39,606
Claims priority, application Japan, May 26, 1978, 53-63543
Int. Cl.³ C07C *97/24*
U.S. Cl. 260—378 **14 Claims**

1. A process for producing an aminoanthraquinone by reduction of a nitroanthraquinone, whichcomprises carrying out the reduction in an aqueous medium while feeding a nitroanthraquinone and an alkali sulfide into a reaction zone kept at a temperature of from 80° to 140° C., the alkali sulfide being used in an amount of 1.6 or more times the mole number of the nitro group, and while withdrawing the reaction product from the reaction zone.

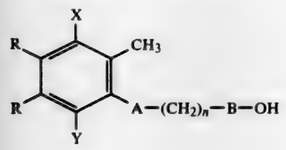
4,407,757

ARALKYL CARBOXYLIC ACID COMPOUNDS

Hiroshi Morimoto, Hyogo; Isuke Imada, Osaka; Masazumi Watanabe, Osaka, and Mitsuru Kawada, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 961,021, Nov. 15, 1978, Pat. No. 4,271,083, which is a division of Ser. No. 573,158, Apr. 30, 1975, Pat. No. 4,139,545. This application Dec. 31, 1980, Ser. No. 221,613
Claims priority, application Japan, May 2, 1974, 49-50003
Int. Cl.³ C11C *1/00, 3/02*
U.S. Cl. 260—413 **20 Claims**

1. A compound of the formula



wherein R represents alkyl of 1–4 carbon atoms or alkoxy of 1–4 carbon atoms, A represents $—CH_2—$, —CO— or



B represents $—CH_2—$ or —CO—, n represents an integer of 1 to 8, X represents hydrogen or hydroxyl and Y represents hydroxyl, or the corresponding ester with methanol at the function shown by —B—OH when B is —CO—, or the corresponding ester with acetic acid at the function shown by —B—OH when B is $—CH_2—$.

4,407,758

DIALKYLZINC COMPOSITIONS HAVING IMPROVED THERMAL STABILITY

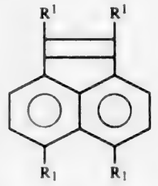
Alfred K. Jung, Queens, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Oct. 30, 1981, Ser. No. 316,597
The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.
Int. Cl.³ C07F *3/06*
U.S. Cl. 260—429.9 **8 Claims**

1. A dialkylzinc composition having improved stability against thermal decomposition comprising a dialkylzinc compound represented by the formula

R-Zn-R

wherein R represents an alkyl radical having from 1 to about 8 carbon atoms, in admixture with an acenaphthylene compound represented by the formula



wherein each R^1 independently represents an alkyl radical, an olefin radical conjugated with the aromatic moiety, an aryl radical or a substituted aryl radical, each having from 1 to about 12 carbon atoms, or hydrogen; said acenaphthylene compound being present in an amount sufficient to reduce the thermal decomposition rate of said dialkylzinc compound.

4,407,759

PHOTOINITIATORS

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 150,974, May 19, 1980, abandoned, which is a continuation of Ser. No. 13,166, Feb. 21, 1979, abandoned, which is a continuation of Ser. No. 833,146, Sep. 14, 1979, Pat. No. 4,161,478, which is a continuation-in-part of Ser. No. 789,419, Apr. 21, 1977, Pat. No. 4,136,102, which is a division of Ser. No. 574,006, May 2, 1975, which is a continuation-in-part of Ser. No. 466,374, May 2, 1974, abandoned, Ser. No. 466,375, May 2, 1974, abandoned, and Ser. No. 466,378, May 2, 1974, abandoned. This application Dec. 10, 1981, Ser. No. 329,485
Int. Cl.³ C07F *9/66, 9/90, 9/02*
U.S. Cl. 260—440 **8 Claims**

1. A Group VIa onium salt having an MF_6 anion, where M is selected from phosphorous, arsenic and antimony, and a sulfur containing cation whose valence of three is satisfied by hydroxy substituted $C_{(6-20)}$ monovalent aromatic organic radical and two radicals selected from $C_{(1-8)}$ alkyl, cycloalkyl, $—C_2H_4OCH_3$, $—CH_2COOC_2H_5$, $—CH_2COCH_3$, and a mixture thereof.

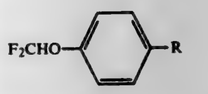
4,407,760

METHOD FOR THE PREPARATION OF DIFLUOROMETHOXYAROMATIC COMPOUNDS

Jack K. Siddens, Princeton Junction, N.J., assignor to American Cyanamid Company, Stamford, Conn.

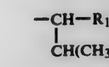
Filed Sep. 20, 1982, Ser. No. 420,169
Int. Cl.³ C07C *121/75, 43/225, 69/712, 79/35*
U.S. Cl. 260—465 F **9 Claims**

1. A method for the preparation of a compound of structural formula-(I)



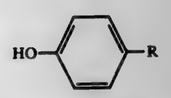
(I)

wherein R is C_1–C_3 alkyl, halogen, nitro or the moiety



wherein R_1 is CN, $COOR_2$, OH or OR_3; R_2 is C_1–C_3 alkyl; R_3 is tosyl, mesyl or C_2–C_4 alkanoyl; comprising:

reacting one molar equivalent of a compound of structural formula-(II)



(II)

and R is as hereinabove defined, at a temperature of from 20° to 40° C. in the presence of 1740 to 2614 mol percent of water, 1:1 acetone:2-propanol used at a rate of 4 ml to 6 ml per gram of the compound of formula-(II), and 10 mol percent of benzyltriethylammonium chloride with two to three molar equivalents of chlorodifluoromethane added under a pressure of from 0.4 to 2.5 kg cm^{-2} over a period of from 30 minutes to 1.0 hour while simultaneously

adding to the pressurized reaction mixture an aqueous solution of four molar equivalents of an alkali metal hydroxide of sodium or potassium hydroxide over a 1 to 4 hour period, wherein the concentration of said aqueous solution is such that on completion of the addition the total amount of water added to the reaction mixture is from 2614 to 3482 mol percent; after the completion of the addition the reaction mixture is further maintained at the above pressure and temperature ranges for a period of from 0.1 to 6 hours or until said reaction is essentially complete.

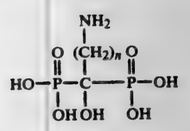
4,407,761

PROCESS FOR THE PRODUCTION OF ω-AMINO-1-HYDROXYALKYLIDENE-1,1-BISPHOSPHONIC ACID

Helmut Blum, and Karl-Heinz Worms, both of Dusseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

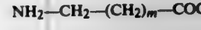
Filed Apr. 16, 1981, Ser. No. 254,918
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 3016289
Int. Cl.³ C07F *9/38*
U.S. Cl. 260—502.5 C **4 Claims**

1. A process for the preparation of a ω-amino-1-hydroxyalkylidine-1,1-bisphosphonic acid of the formula:



wherein n is an integer from 3 to 5, consisting essentially of the steps of:

(1) reacting an aminocarboxylic acid of the formula:



wherein m is an integer from 2 to 4, with a phosphonating reactant selected from the group consisting of:

(a) a mixture of phosphorous acid and PCl_3,

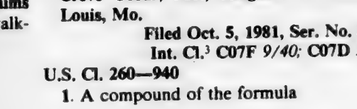
(b) a mixture of phosphorous acid and PCl_5, and

(c) a mixture of phosphorous acid and $POCl_3$

(2) hydrolyzing the reaction mixture with concentrated hydrochloric acid which does not oxidize aminophosphonic acids, by heating, and

(3) recovering said ω-amino-1-hydroxyalkylidene-1,1-bisphosphonic acid.

4. 6-Amino-1-hydroxyhexylidene diphosphonic acid of the summary formula (1):



4,407,762

PROCESS FOR THE ISOLATION OF 1-NAPHTHYLAMINE-4,8-DISULPHONIC ACID

Heinz U. Blank; Horst Behre, both of Odenthal; Hans W. Linden, Leverkusen, and Werner Mentzel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 23, 1982, Ser. No. 410,746
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1981, 3135391
Int. Cl.³ C07C *143/60*
U.S. Cl. 260—508 **9 Claims**

1. In the process for the isolation of 1-naphthylamine-4,8-disulphonic acid from sulphonation mixtures containing it by introducing these sulphonation mixtures into water, the improvement comprising introducing the sulphonation mixture containing 1-naphthylamine-4,8-disulphonic acid, in the presence of at least one equivalent of alkali metal ions, into water, if appropriate preheated, so that a temperature of at least 100° C. is reached at the start of crystallisation of the 1-naphthylamine-4,8-disulphonic acid and the separation of 1-naphthylamine-4,8-disulphonic acid from the mother liquor is carried out at a temperature not higher than 70° C.

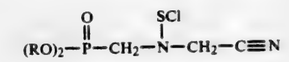
4,407,763

THIOSULFENAMIDE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINONITRILES

James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 5, 1981, Ser. No. 309,321
Int. Cl.³ C07F *9/40*; C07D *317/56*
U.S. Cl. 260—940 **2 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of lower alkyl, lower alkoxy, lower alkylthio, alkoxycarbonyl, methylenedioxy, trifluoromethyl, cyano, nitro and halogen.

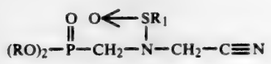
4,407,764

N-ARYLSULFINYL N-PHOSPHONOMETHYLGLYCINONITRILES

James A. Sikorski, West Lafayette, Ind., and Mary A. Hoobler, Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 31, 1981, Ser. No. 298,056
Int. Cl.³ C07F 9/40; A01N 57/20
U.S. Cl. 260—940 **6 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of phenyl, naphthyl or biphenylyl; or phenyl, naphthyl or biphenylyl substituted with from 1 to 3 substituents independently selected from the group consisting of hydrogen, lower alkyl, lower alkoxy and methylenedioxy, and R_1 is phenyl or phenyl substituted with from 1 to 3 substituents selected from the group consisting of lower alkyl and lower alkoxy.

4,407,765

SYNTHESIS OF ORGANIC PHOSPHATE-PHOSPHONATES

Thomas A. Hardy, Fairfield, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 165,428, Jul. 2, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,394
Int. Cl.³ C07F 9/09
U.S. Cl. 260—970 **13 Claims**

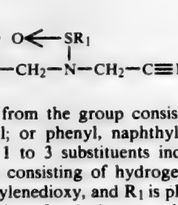
1. A process for the preparation of organic phosphate-phosphonates comprising the steps of:
(a) reacting an organic acylating agent with an organic phosphite triester to form an intermediate followed by
(b) reacting the intermediate with an organic phosphite diester in the presence of from about 3 to about 20 percent by weight based on the weight of phosphite diester of a tertiary amine.

4,407,766

MOLDS AND PROCEDURE FOR PRODUCING TRUNCATED CONTACT LENSES

Henry Haardt, Henryville, Pa.; John Magdon, Phillipsburg, N.J., and Eric Noble, Smithtown, N.Y., assignors to National Patent Development Corporation, New York, N.Y.

Filed May 26, 1981, Ser. No. 266,782
Int. Cl.³ B29D 11/00
U.S. Cl. 264—2.2 **25 Claims**



1. A mold for producing a truncated contact lens comprising:
a male portion including a substantially cylindrical support portion and a first optical molding surface having a principal longitudinal axis, said molding surface having a predetermined curvature to form a first optical surface of said desired contact lens;
a female portion including a second optical molding surface having a principal longitudinal axis having a predetermined curvature to form a second optical surface of said desired contact lens, said female portion comprising a hollow cylindrical portion having an open upper end and a closed lower end;
one of said optical molding surfaces having a periphery composed of a circular portion having two ends and a straight line connecting the two ends defining a chord whereby the chord defines the truncation on the molded contact lens; and
a continuous, flexible rim portion provided about said periphery integral with said optical molding surface and having in its circular portion an axis common with the principal longitudinal axis of the mold portion to which it is attached.

10. A process of producing truncated contact lens in a single direct casting procedure comprising the steps of:
(a) charging a mixture comprising vulcanizable or polymerizable constitutents to a first mold portion of a thermoplastic mold for producing a contact lens, said thermoplastic mold comprising:
(i) a first mold portion including a first molding surface having a principal longitudinal axis, said first molding surface having a predetermined curvature to form a first surface of the desired contact lens;
(ii) a second mold portion including a second molding surface having a principal longitudinal axis, said second molding surface having a predetermined curvature to form a second surface of the desired contact lens;
one of said molding surfaces having a periphery composed of a circular portion having two ends and a straight line connecting the two ends defining a chord whereby the chord defines the truncation on the molded contact lens; and
(iii) a continuous, flexible rim portion provided about said periphery, integral with said molding surface and having in its circular portion an axis common with the principal longitudinal axis of the mold portion to which it is attached;
(b) closing the mold by placing the first mold portion and the second mold portion in alignment with each other such that the principal longitudinal axes of the mold portions coincide with each other and in a manner whereby the flexible rim portion is seated circumferentially on the opposite molding surface while retaining said mixture between said molding surfaces and said flexible rim portion to form a totally enclosed space; and
(c) subjecting the resulting closed mold system to activating conditions for a period of time sufficient to effect the desired degree of vulcanization or polymerization of said mixture while causing the flexible rim portion to flex in a generally uniform manner with respect to the axis of said molding surface such that said mold portions approach each other during vulcanization or polymerization; and
(d) recovering the resulting product having the shape of a truncated contact lens.

4,407,767

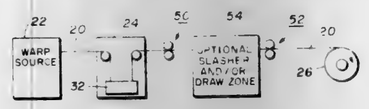
DRAWING AND BEAMING A WEFTLESS WARP OF YARNS

Douglas K. Seaborn, Cantonment, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 89,810, Oct. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 62,269, Jul. 30, 1979, abandoned, which is a continuation of Ser. No. 960,159, Nov. 13, 1978, abandoned. This application May 20, 1982, Ser. No. 380,371
Int. Cl.³ B29C 17/02; D02H 5/02, 13/08
U.S. Cl. 264—40.1 **2 Claims**

1. A beaming process, comprising sequentially:
a. feeding a weftless warp sheet of spun yarns from a source through a tension detector;
b. drawing said warp sheet; and
c. winding said warp sheet onto a beam;
d. said tension detector comprising:

(1) a yarn accumulator for continuously storing a quantity of each yarn constituting said warp sheet; and
(2) means, responsive to occurrence of tension in any



given one of said yarns equal to a predetermined level, for releasing the stored quantity of said given one yarn whereby the tension in said given one yarn does not exceed said predetermined level.

4,407,768

FOAMABLE POLYMERIC COMPOSITION COMPRISING PROPYLENE POLYMER AND HYDRATED ALUMINA

Rodrigo A. Garcia, Pasadena; Roel Moreno, Houston, both of Tex., and Robert J. Martinovich, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 8, 1982, Ser. No. 337,925
Int. Cl.³ B29H 7/20
U.S. Cl. 264—54 **15 Claims**

1. A foamable thermoplastic composition comprising a propylene polymer selected from the group of resinous homopolymers of propylene and copolymers of propylene copolymerized with a minor amount of one or more comonomers selected from the group consisting of aliphatic mono-1-olefins containing from 2 to about 10 carbon atoms, said composition having dispersed therein a filler precursor and sole blowing agent being particulate hydrated alumina of the formula $Al_2O_3.xH_2O$, wherein x has any value from 1 to 3.

4,407,769

METHOD OF MANUFACTURING CEMENT PRODUCTS HAVING SUPERIOR MECHANICAL STRENGTH

Shozo Harada, Tokoname; Kazuo Ito, Tokai; Takayuki Shirai, Tokoname, and Tetsuya Koide, Nagoya, all of Japan, assignors to Ina Seito Co., Ltd., Tokoname, Japan

PCT No. PCT/JP80/00058, § 371 Date Mar. 9, 1981, § 102(e) Date Mar. 9, 1981
PCT Filed Apr. 2, 1980, Ser. No. 253,747
Int. Cl.³ C04B 7/02
U.S. Cl. 264—60 **6 Claims**

1. A method of manufacturing a product of cement, which comprises the steps in sequence of:
adding water into a mixture of cement and an aggregate, and kneading the mixture;
molding the resulting kneaded mixture into a desired shape;
preliminarily hardening the resulting molded body by hydration;
burning the entire body thus preliminarily hardened at a temperature of about 650° to about 950° C. to initially decrease the mechanical strength thereof;
hardening the burned body by subjecting said body to further hydration by application of water thereto so as to enhance the mechanical strength thereof.

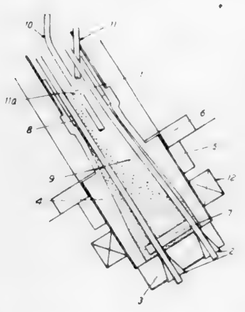
4,407,770

CABLE ANCHORAGE

Luis Ripoll, Barcelona, Spain, assignor to Stronghold International AG, Vaduz, Liechtenstein

Filed Mar. 19, 1982, Ser. No. 359,832
Claims priority, application United Kingdom, Mar. 25, 1981, 8109308
Int. Cl.³ B29C 25/00; B29D 3/02; B28B 21/60
U.S. Cl. 264—69 **10 Claims**

1. In a method of filling a cable anchorage comprising an anchored cable element or elements and a sleeve through which the cable element or elements extend the improvement comprising the steps of at least partially filling said sleeve with a curable low-viscosity liquid, thereafter adding aggregate particles to said curable liquid within said sleeve thereby to



displace said liquid so that the liquid and the aggregate particles occupy the sleeve to the desired extent, and then effecting cure of said curable liquid to form a solid mass containing said aggregate particles and enveloping the cable element or elements.

4,407,771

BLOW LINE ADDITION OF ISOCYANATE BINDER IN FIBERBOARD MANUFACTURE

William E. Betzner, St. Petersburg; Richard K. Holtman, Largo, both of Fla., and Allen R. Hill, Laurel, Miss., assignors to The Celotex Corporation, Tampa, Fla.

Filed Apr. 26, 1982, Ser. No. 371,894
Int. Cl.³ D04H 3/16
U.S. Cl. 264—115 **15 Claims**

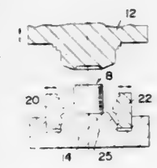
1. In a process of producing a synthetic board from cellulosic material and a binder wherein
(a) said cellulosic material is subjected to the action of steam under pressure and refined to hot and wet fibers,
(b) said hot and wet fibers are partially dewatered,
(c) said partially dewatered fibers are formed into a mat, and
(d) said mat is subjected to heat and pressure to form said synthetic board, the improvement comprising applying an organic polyisocyanate binder to said hot and wet fibers from said refining step (a).

4,407,772

METHOD OF PRODUCING A CONTOURED DISK WHEEL

Ralph A. Maglio, Wadsworth, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 128,003, Mar. 7, 1980, abandoned. This application May 28, 1982, Ser. No. 382,854
Int. Cl.³ B29C 17/00, 3/00
U.S. Cl. 264—294 **3 Claims**



1. Method for making a contoured disk wheel comprising:
(a) spirally winding a sheet containing thermosetting resin

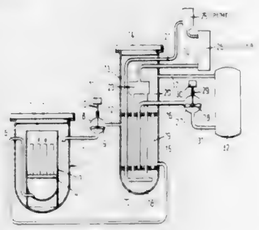
and randomly oriented fibers into a substantially cylindrical body, and partially curing said resin;
(b) disposing said body in end-abutting position on an elevated, substantially flat end portion of a first male mold member;
(c) moving cooperating mold members together about said first male mold member and about a lower portion of said body, said male mold member and said cooperating mold members defining at least part of a mold cavity therebetween;
(d) heating said sheet and axially moving a second male mold member toward said first male mold member, causing the partially cured resin to flow radially outwardly and axially into the said mold cavity around the periphery of said first mold member; and
(e) curing said resin to form said disk wheel.

4,407,773

NUCLEAR REACTOR INSTALLATION

Nico Woudstra, Gouda, Netherlands, assignor to B.V. Neratoom, The Hague, Netherlands

Division of Ser. No. 905,516, May 12, 1978, Pat. No. 4,312,703. This application Oct. 8, 1981, Ser. No. 309,792
Claims priority, application Netherlands, May 13, 1977, 7705332
Int. Cl.³ G21C *15/00*
U.S. Cl. 376—299 **1 Claim**



1. A nuclear reactor installation comprising a housing containing a reactor core and provided with means for dissipating the heat generated in the reactor core during power operation, which means comprise at least one primary fluid circuit incorporating a pump and extending through the reactor core, and at least one secondary fluid circuit for heat utilization arranged outside the reactor housing to utilize the heat from said core, said secondary circuit incorporating a pump and coupled for heat transfer to said primary circuit by means of an intermediate heat exchanger; wherein said installation is provided with further means for dissipating the decay heat produced in the core of the nuclear reactor after the reactor operation has been switched off and the power shut down, said further means comprising a third circuit arranged outside the reactor housing, and said third fluid circuit being coupled to the primary circuit by said intermediate heat exchanger, said intermediate heat exchanger being structurally integrated to comprise a single vessel housing containing conducting and heat transfer members respectively forming part of the secondary circuit and the third fluid circuit and arranged at substantially the same location in the flow path of the fluid in the primary circuit so that the said primary fluid flows substantially simultaneously over the conducting members of both the secondary utilization circuit and the third decay heat fluid circuit, and wherein said intermediate integrated heat exchanger situated outside of the reactor core comprises a vessel which accommodates the external portion of the primary circuit including the primary fluid containing the heat to be dissipated from the core during the power and decay phases of reactor operation and also accommodates heat exchange portions of separate sets of circuits, one set forming a utilization circuit for absorbing the heat evolved during the power generation phase and the other set forming a decay heat circuit for absorbing the heat generated during the decay phase; each of said circuits comprising a heat-transporting fluid, a pump means, fluid distribution chambers, heat exchange tubes connected at the proximate ends of said chambers, fluid collectors connected to the distal ends of said tubes and to heat utilization or cooler means outside of the heat exchanger vessel; said tubes from each circuit set being combined into a single tube bundle in heat exchange contact with said primary fluid to remove the heat therefrom, said single tube bundle being helically wound around a set of conduit-pipes extending vertically along the axis of the vessel and terminating in said fluid distribution chambers.

4,407,774

METHOD FOR PREVENTING DANGEROUS HYDROGEN ACCUMULATION IN NUCLEAR REACTOR CONTAINMENTS

Klaus Schretzmann, Karlsruhe; Stefan Dorner, Pforzheim, and Gustav Schumacher, Karlsruhe, all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe G.m.b.H., Karlsruhe, Fed. Rep. of Germany

Filed Jul. 15, 1977, Ser. No. 816,181
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1976, 26331135
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—300 **8 Claims**

1. In a method for the controlled removal of large amounts of suddenly released hydrogen from the containment chambers of a nuclear reactor including a water cooling system wherein, upon occurrence of an accidental break, large amounts of such hydrogen may be released which causes an increase of gas pressure in the containment and the formation of a highly explosive hydrogen-air mixture, an oxygen providing powdered material is stored within a wall structure in the containment and is, only as a result of such accident, blown out into the containment into contact with the hydrogen in a controlled manner dependent on the amount of hydrogen accidentally released such that the hydrogen is consumed with the aid of said material in a non-explosive reaction and the amount of the hydrogen in the containment is maintained below the ignition limit of a hydrogen-oxygen gas mixture.

4,407,775

PRESSURELESS CONSOLIDATION OF METALLIC POWDERS

James L. Holman, Jr.; John F. McIlwain, and L. A. Neumeier, all of Rolla, Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 27, 1981, Ser. No. 258,076
Int. Cl.³ B22F *3/10*
U.S. Cl. 419—36 **5 Claims**

1. A process for pressureless consolidation of alloy powders, said alloys containing a ferrous alloy, consisting essentially of:
blending the alloy powder with about 0.25 to 1 percent of lithium tetraborate powder; and
placing the resulting admixture in an open mold, and heating in a nonoxidizing atmosphere at an elevated temperature that is below the solidus temperature of the powder for a time sufficient to effect substantial consolidation of the powder particles.

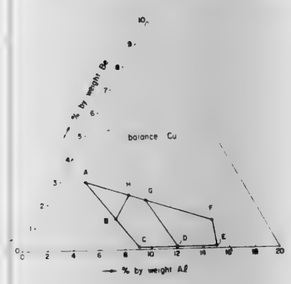
4,407,776

SHAPE MEMORY ALLOYS

Kikuo Suzuki, Suita, Japan, assignor to Sumitomo Special Metals, Ltd., Osaka, Japan

Filed Mar. 22, 1982, Ser. No. 360,566
Claims priority, application Japan, Mar. 25, 1981, 56-44580
Int. Cl.³ C22C *9/01*
U.S. Cl. 420—477 **6 Claims**

1. A shape memory alloy of the beta-brass type structure consisting essentially of, by weight ratio, 2 to 15% aluminium, 0.01 to 3% beryllium and the balance being substantially copper, with impurities being inevitably present in the process of preparation, said alloy having a composition range encircled by a closed line ACEFA in FIG. 1 where, by weight ratio,
A: 2% aluminium, 3% beryllium, the balance copper;



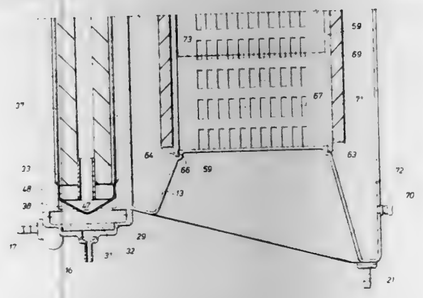
C: 9.0% aluminium, 0.01% beryllium, the balance copper;
E: 15% aluminium, 0.01% beryllium, the balance copper; and
F: 13.5% aluminium, 1.25% beryllium, the balance copper.

4,407,777

BLOOD OXYGENATOR

William R. Wilkinson, 16422 Quail Park, Missouri City, Tex. 77489, and Richard F. Wilkinson, Sr., 2114 S. Grand Ave., Santa Anna, Calif. 92705

Filed Jul. 22, 1981, Ser. No. 285,797
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—46 **6 Claims**



1. A blood oxygenator comprising:
(a) a vessel molded from transparent plastics with an open-top lower container and having sealed thereto in a fluid (-) tight manner an enclosing cover;
(b) said lower container having an integral upright cylindrical wall extending substantially the height thereof;
(c) inlet means at the lower end of said cylindrical wall for directing upwardly a mixture of inflowing streams of blood and oxygen gas;
(d) said inlet means including a porous member for dispersing finely divided oxygen gas bubbles into the blood stream;
(e) said cylindrical wall carrying a plurality of inwardly directed vertical ribs;
(f) a closed bottomed metal tube slideably mounted concentrically within said cylindrical wall, and said tube having outwardly directed flutes internested with said ribs for providing a plurality of upright thin film blood and oxygen flow channels between said cylindrical wall and said tube;
(g) outlet means for removing the mixture of blood and oxygen gas from adjacent the upper end of said tube;
(h) an insulative tubular member having an axial passageway mounted concentrically within said tube in laterally spaced relationship providing an annulus therebetween;
(i) inlet means in said cover for inflowing a liquid coolant downwardly through said annulus of said tubular member;
(j) outlet means in said cover for outflowing the coolant upwardly from said axial passageway of said tubular member;
(k) a spacer supporting the lower end of said tubular member relative to the closed bottom of said tube for providing a fluid path between the inflowing and outflowing coolant;
(l) a vent bypass port in said cover between the coolant inlet and outlet means whereby said annulus about said tubular member is completely filled;
(m) an oblong mounting ring carried in the bottom of said lower container;
(n) an oblong vertical perforated wall with an open top and a bottom end seated upon said mounting ring in fluid tight relationship;
(o) said vertical perforated wall carrying a plurality of vertically elongated openings and a plurality of exterior vertical ribs between said elongated openings;
(p) an open-pore foam member surrounding said vertical perforated wall and said foam member enclosed on its side surfaces by a woven cover formed of synthetic polymeric threads;
(q) fing means sealing fluid tightly the top and bottom ends of said foam member to said vertical perforated wall;
(r) a conical inlet member with an open central portion positioned above said vertical perforated wall to receive an inflow of the blood and oxygen mixture from said outlet means associated with said metal tube; and said conical inlet member;
(s) said conical inlet member directing the blood and oxygen mixture along the interior surface of said vertical perforated wall in a downward splash free flow;
(t) an upright semicylindrical flow diverter positioned on said conical inlet member for deflecting blood and gas mixture inflow from direct straight line passage into said conical inlet member;
(u) a blood reservoir surrounding said vertical perforated wall in said vessel for receiving degassed and defoamed blood traversing said foam member through said vertical elongated openings;
(v) said blood reservoir having a fluid connection with outlet means for the outflow from said vessel of degassed and foam free blood;
(w) said vertical perforated wall at its open top and said blood reservoir having a fluid connection with outlet means for the outflow from said vessel of free oxygen gas; and
(x) said cover carrying projecting members for securely mounting the several elements (C-K) and (M-W) within said lower container.

4,407,778

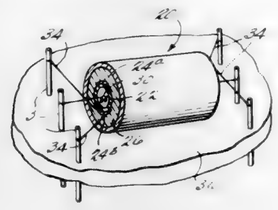
FREON GAS DETECTING ELEMENT

Masayuki Shiratori, Kawasaki, and Masaki Katsura, Yososuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 18, 1981, Ser. No. 293,963
Claims priority, application Japan, Sep. 25, 1980, 55-132353; Sep. 25, 1980, 55-132354; Sep. 25, 1980, 55-132355
Int. Cl.³ G01N *27/12*
U.S. Cl. 422—90 **6 Claims**

1. A freon gas detecting element comprising:
a pair of electrodes;
a gas detecting body made of metal oxide semiconductor and covering said pair of electrodes; and
a catalyst layer coated on said gas detecting body, said catalyst layer being made of V and W supported by one catalyst carrier selected from the group consisting of Al_2O_3, SiO_2,

and SiO_2-Al_2O_3, the amount of V in said catalyst layer being limited from about 0.1 wt % to about 50 wt %, and the



atomic ratio (W/V) between said V and W being limited from about 0.05 to about 0.5.

4,407,779

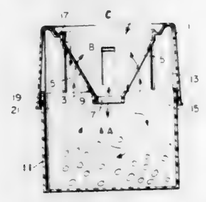
DISPERSION CONTROL DEVICE

Joseph Thompson, Upper Saddle River, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Continuation of Ser. No. 168,143, Jul. 14, 1980, abandoned. This application Jan. 13, 1982, Ser. No. 339,055

Int. Cl.³ B01D *11/02*

U.S. Cl. 422—266 **20 Claims**



12. A dispensing cap adapted to be connected to an open top of a container containing a solid to be dissolved and dispensed, said cap comprising;

an outer wall portion having a lower end adapted to be connected to an open top of a container containing a solid to be dispensed and an upper end adapted to be spaced above said lower end when said lower end is connected to the container open top;

a conical portion having an upper end and a lower end, said upper end of said conical portion being connected to said upper end of said outer wall portion with said conical portion extending downwardly and inwardly from said upper end of said outer wall portion, and said lower end of said conical portion being at a level no lower than said lower end of said outer wall portion;

said conical portion having a hole in said lower end thereof for providing permanent communication into the interior of the container when said cap is connected to the container;

said conical portion having in the wall thereof a plurality of openings providing permanent communication into the interior of the container when said cap is connected to the container; and

said hole and said openings forming means, when said cap is connected to the container and when said cap and the thus connected container are immersed in a liquid, for enabling access of the liquid through said cap into the interior of the container to dissolve a portion of the solid, and for enabling the thus formed solution of liquid and solid to be dispensed from the container through said cap and into the liquid.

4,407,780

REDUCTIVE STRIPPING OF URANIUM VALUES FROM WET-PROCESS PHOSPHORIC ACID

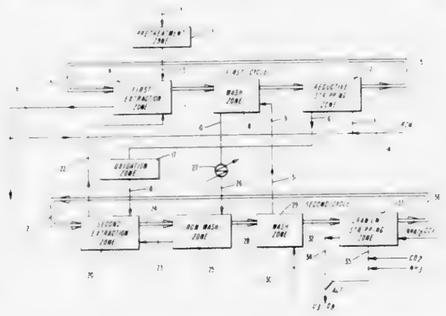
Dominique Foraison, and Alain Leveque, both of Paris, France, assignors to Rhone-Poulenc Industries, Paris, France

Filed May 22, 1980, Ser. No. 152,417

Claims priority, application France, May 22, 1979, 79 12957

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—10 **20 Claims**



1. In a process for the recovery of uranium values from a wet-process phosphoric acid solution which comprises extracting said solution with a first organic extractant, reductively stripping the resulting first organic phase of its uranium values with a strip solution including and in which ferrous ion is utilized to reduce uranyl ions in said first organic phase to uranous ions therein, disengaging the strip solution from said first organic extractant and oxidizing same to convert the uranous ions therein to uranyl ions, next extracting said oxidized strip solution and the uranium values contained therein with a second organic extractant, washing the organic phase resulting from the second extraction with an aqueous solution of phosphoric acid to strip concomitantly any iron values therefrom, and thence stripping said uranium values from the resulting second organic phase, the improvement comprising (i) washing with an iron-free aqueous wash solution, and upstream of the reductive stripping thereof, the organic phase resulting from the first extraction, and (ii) utilizing effluent, iron-free aqueous wash solution, containing phosphoric acid, from the step (i) to wash the organic phase resulting from the second extraction and concomitantly to strip any iron values therefrom, upstream of the stripping of the uranium values therefrom.

4,407,781

METHOD OF SEPARATING MOLYBDENUM FROM URANIUM

Thomas J. Crossley, Littleton, and Thomas P. Zinge, Lakewood, both of Colo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 5, 1981, Ser. No. 240,655

Int. Cl.³ C01G *43/00, 39/00*

U.S. Cl. 423—15 **7 Claims**

1. In an aqueous solution containing about 200 to about 500 ppm of uranium and about 19,000 to about 40,000 ppm molybdenum, a method of separating said molybdenum from said uranium, comprising

(A) lowering the pH of said solution to less than about 4;

(B) removing carbon dioxide from said solution;

(C) raising the pH of said solution to at least about 9 and adding, as necessary, ammonium ions to precipitate ammonium diuranate; and

(D) separating said precipitated ammonium diuranate from said solution.

4,407,782

CRYSTALLINE ZEOLITE HP

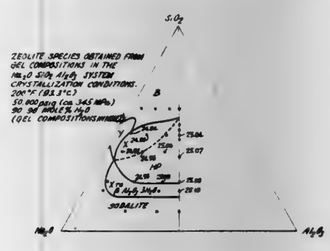
John H. Estes, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 713,457, Aug. 11, 1976, abandoned, and a continuation-in-part of Ser. No. 92,162, Nov. 7, 1979, Pat. No. 4,289,740. This application Sep. 3, 1981, Ser. No. 299,267

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—328 **4 Claims**



1. A synthetic crystalline sodium aluminosilicate zeolite having a lattice constant of above 24.94 A up to 25.10 A and an atom ratio of silicon to aluminum in the unit cell of below 1.00.

4,407,783

PRODUCING SILANE FROM SILICON TETRAFLUORIDE

Harry E. Ulmer, Morristown; Donald Pickens, Mendham; Forrest J. Rahl, Hackettstown, and Philip A. Lefrancois, Cranford, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 16, 1982, Ser. No. 408,408

Int. Cl.³ C01B *33/04*

U.S. Cl. 423—347 **10 Claims**

1. A process for producing silane which comprises reacting sodium hydride with silicon tetrafluoride in a solvent comprising a cyclic ether or dimethoxyethane having a boiling point between about 60° C. and about 110° C. in the presence of sodium aluminum hydride at a level wherein the fraction

$$\frac{\text{weight } NaAlH_4}{\text{weight } NaH + \text{weight } NaAlH_4}$$

is between about 0.04 and about 0.25.

4,407,784

PROCESS FOR THE SELECTIVE EXTRACTION TREATMENT OF GASEOUS HYDROCARBON MIXTURE CONTAINING CARBON DIOXIDE

Claude Blanc, Pau; Henry Galy, Bordes, and Jean Elgue, Vielesegure, all of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Continuation of Ser. No. 230,518, Feb. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,797, Jul. 11, 1980, abandoned, which is a continuation of Ser. No. 87,889, Oct. 24, 1979, abandoned. This application Oct. 19, 1981, Ser. No. 312,646

Claims priority, application France, Oct. 27, 1978, 78 30639

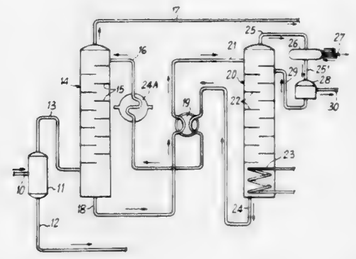
Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 **5 Claims**

1. A process for the treatment of a gaseous hydrocarbon mixture at a pressure from 20 to 90 bars, which mixture contains 5 to 3,000 ppm by volume of hydrogen sulfide and 0,3 to 3% carbon dioxide, in order to reduce the hydrogen sulfide content to less than 4 ppm and to limit the carbon dioxide content to 2%, wherein:

submitting the hydrocarbon mixture to a series of from 3 to 18 counter-current washings by contact with an aqueous solution of methyldiethanolamine having a concentration of 20 to 50% by weight to obtain a liquid effluent enriched in hydrogen sulfide,

submitting the enriched effluent to a regeneration treatment in a regeneration zone at a temperature and pressure to



cause the liquid effluent to boil to form a regenerated amine solution having a hydrogen sulfide content of less than 1 g/L, and returning the thus generated amine solution to the upstream end of the absorption zone, and

maintaining the flow rates of the gaseous mixture and amine solution fed to the absorption zone at such values that the ratio of the flow rate of gaseous mixture to the flow rate of the amine solution is from 16×10^3 to 25×10^3, where said flow rates are expressed in the same units.

4,407,785

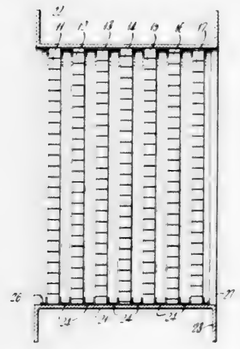
METHOD OF CONDUCTING CATALYTICALLY PROMOTED GAS-PHASE REACTIONS

William C. Pfefferle, Middleton, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Continuation of Ser. No. 624,241, Oct. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 309,994, Nov. 28, 1972, abandoned. This application May 17, 1979, Ser. No. 39,925

Int. Cl.³ B01J *8/04, 12/00*

U.S. Cl. 423—659 **16 Claims**



1. A method for carrying out a catalytically promoted gas phase reaction comprising passing gaseous reactants through and in contact with a plurality of unobstructed parallel flow-through paths of a plurality of separate segments of honeycomb catalyst in series, discharging gaseous reaction products and unconverted reactants from each segment of said honeycomb catalyst into an unobstructed mixing zone comprising an open space between adjacent segments which is free from catalyst and packing material and having an unobstructed

cross-sectional area which, normal to the general direction of gas flow through said catalyst segments, is substantially equal to the cross-sectional area of the segment of honeycomb catalyst immediately preceding the mixing zone in the direction of gas flow, commingling the reaction products and unconverted reactants within said mixing zone, and supplying the resulting mixture of gaseous reaction products and unconverted reactants from said mixing zone to the next succeeding segment of said catalyst in the direction of gas flow, each segment of said honeycomb type catalyst being spaced from each adjacent segment by a distance at least equal to the flowthrough path channel length of the immediately upstream catalyst segment whereby the effect on the treated gases of variations in catalytic activity among the flow paths of the segments of said honeycomb-type catalyst is minimized by the commingling in said mixing zone, and discharging the resulting gaseous products of reaction from the last of said segments of honeycomb-type catalyst in the direction of gas flow.

4,407,786
GLASS COMPOSITION

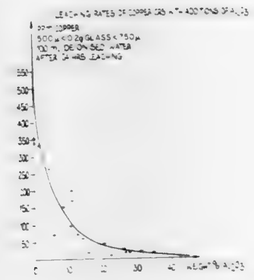
Cyril F. Drake, Harlow, and Mary Tripp, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Division of Ser. No. 97,019, Nov. 23, 1979. This application Apr. 9, 1981, Ser. No. 252,662

Claims priority, application United Kingdom, Dec. 21, 1978, 49600/78

Int. Cl.³ C03C *3/16*; A61K *33/34*

U.S. Cl. 424—14 **3 Claims**



1. A subcutaneous implant for supplying copper to the bloodstream or body fluid of an animal, the implant comprising a glass body completely soluble in the body fluid of the animal for releasing copper into solution at a predetermined uniform rate when implanted beneath the skin of the animal and leaving no residue when completely dissolved, wherein the glass body consists of cupric oxide as the source of copper, at least one alkali metal oxide as a first glass-modifying oxide, 45 to 75 mole percent phosphorous pentoxide as a glass-forming oxide present in the glass body in a predetermined concentration chosen to provide a solution with the body fluids of the animal having a pH physiologically compatible with the animal, and sufficient alumina as a second glass-modifying oxide to reduce the solubility of the glass body to the predetermined uniform rate suitable for supplementing the copper ingested by the animal from other sources to provide the total amount of copper necessary for nutrition without toxic side effects, and wherein the cupric oxide concentration is not less than 5 mole percent, said cupric oxide and alkali metal oxide concentration together is 5 to 55 mole percent, wherein the alkali metal oxide is an oxide of sodium or potassium or a combination thereof, and the alumina concentration is not more than 4 mole percent.

3. A method of supplying copper to the bloodstream of an animal with a subcutaneous implant that releases copper as it dissolves in the body fluids of the animal and leaves no residue when completely dissolved, the method comprising:

providing the glass body recited in claim 1 or 2, wherein the composition of the glass body provides a solution with the body fluids of the animal having a pH physiologically compatible with the animal and releases copper at a uniform rate that supplements the copper ingested by the animal from other sources to provide the total amount of copper necessary for proper nutrition without toxic side effects; and

implanting said glass body beneath the skin of the animal.

4,407,787
COLLAGENOUS DRESSING

Axel Stemberger, Neubiberg, Fed. Rep. of Germany, assignor to Dr. Ruhland Nachf. GmbH, Neustadt, Fed. Rep. of Germany

Filed Sep. 21, 1981, Ser. No. 303,851

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1980, 3037513

Int. Cl.³ A61F *13/00*; C08L *89/00*; A61K *35/14, 37/00*

U.S. Cl. 424—28 **12 Claims**

1. A tissue-adherent collagenous dressing, comprising collagen present in combination with a resorbable biopolymer from the group consisting of fibrinogen, gelatin modified to contain reactive SH groups, collagen modified to contain reactive SH groups, and regenerated oxycellulose modified to contain reactive SH groups.

4,407,788
DENTIFRICE

Diana Kiozpeoplou, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 299,684, Sep. 8, 1981, and Ser. No. 277,774, Jun. 26, 1981, abandoned. This application Apr. 22, 1982, Ser. No. 370,660

Int. Cl.³ A61K *7/16*

U.S. Cl. 424—49 **6 Claims**

1. A dentifrice which reduces dental stain comprising about 20–80% by weight of a liquid humectant vehicle, about 5–50% by weight of a siliceous polishing material and about 0.05–5% by weight of a resinous poly(ethylene oxide), said dentifrice containing flocculated particles formed by said siliceous polishing material in the presence of said poly(ethylene oxide).

4,407,789
GROUND RICE HULLS IN BODY POWDERS

Edward Eigen, East Brunswick; Dina I. Brachman, Highland Park, and Stuart D. Friedman, Bound Brook, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,874

Int. Cl.³ A61K *7/46, 7/021, 7/32, 7/035*

U.S. Cl. 424—69 **11 Claims**

1. A highly absorbent body powder composition consisting essentially of finely ground rice hulls which pass through a 200 mesh sieve as the base powder, in amounts up to 98% by weight of the composition and from 1 up to 15% by weight of the total composition of a suitable binding agent.

4,407,790
METHOD OF CONTROLLING BLOAT USING NONIONIC SURFACTANTS

Thomas R. Oakes, Stillwater, Minn., and James L. Sadler, Cambridge, New Zealand, assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Sep. 25, 1981, Ser. No. 305,395

Int. Cl.³ A61K *31/74, 31/08*

U.S. Cl. 424—78 **10 Claims**

1. A method for the prevention or treatment of bloat in ruminants comprising the step of administering to a bloat-susceptible ruminant a bloat-controlling amount of a composition comprising nonionic surfactant of the structure

$$R-O-(CH_2-\underset{\displaystyle CH_3}{\underset{|}{C}}H-O)_x-(CH_2CH_2O)_yH$$

wherein R is an aliphatic, hydrophobic moiety, having about 6 to about 20 carbon atoms, x has a value of about 3 to about 40, y has a value of about 5 to 25.

4,407,791
OPHTHALMIC SOLUTIONS

Raymond L. Stark, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Sep. 28, 1981, Ser. No. 306,317

Int. Cl.³ A61K *31/74, 31/79, 31/14*

U.S. Cl. 424—80 **17 Claims**

1. A method of imparting antimicrobial activity to an aqueous ophthalmic contact lens solution comprising:

adding to said solution from about 0.00001% to about 3.0% by weight/volume of α-4-[1-tris(2-hydroxyethyl) ammonium chloride-2-butenyl] poly[1-dimethyl ammonium chloride-2-butenyl]-w-tris (2-hydroxyethyl) ammonium chloride as an antimicrobial agent.

4,407,792
SUSTAINED RELEASE OPHTHALMIC DRUG DOSAGE

Ronald D. Schoenwald, and Robert E. Roehrs, both of Fort Worth, Tex., assignors to Alcon Laboratories, Inc., Fort Worth, Tex.

Division of Ser. No. 37,314, May 9, 1979, Pat. No. 4,271,143, which is a continuation of Ser. No. 872,074, Jan. 25, 1978, abandoned. This application Mar. 12, 1981, Ser. No. 243,266

Int. Cl.³ A61K *31/74, 31/78, 31/71, 31/35*

U.S. Cl. 424—81 **29 Claims**

1. An ophthalmic dosage of an aqueous gel for application to the conjunctival sac of the eye, said gel comprising an ophthalmic drug and a gel-forming high molecular weight ethylene maleic anhydride polymer, said polymer having a molecular weight in excess of 1,000,000, said ophthalmic drug being present at a level of from about 0.03 to about 15 percent by weight, said polymer being present at a level of from about 2 to about 8 percent by weight, said gel having a viscosity of from about 40,000 to about 300,000 cps and a yield value of from about 5,000 to about 20,000 dyne/cm^2.

4,407,793
COMPOSITION FOR TEMPORARY SUBSTITUTION OF BONE TISSUE DEFECTS

Alla Y. Akimova, ulitsa Kosmonavta Volkova, 7, kv. 15; Anatoly B. Davydov, ulitsa Krasny Kazanets, 19, kv. 283; Galina M. Derkach, proezd Shokalskogo, 2-a, kv. 81; Valeria I. Timokhina, Yaroslavskoe shosse, 4, korpus 4, kv. 373, all of Moscow; Sergei S. Tkachenko, Svetlanovsky prospekt, 35, kv. 16; Vladimir V. Rutsky, ulitsa Kosinova, 7, kv. 10, both of Leningrad; Mstislav V. Volkov, ulitsa Stroitelei, 6, korpus 1, kv. 63, Moscow; Irina S. Shepeleva, Bulvar generala Karbysheva, 4, kv. 15, Moscow; Alexandr V. Shiryaev, Zatsepsky val, 5, kv. 80, Moscow; Semen I. Lipkin, Leningradskoe shosse, 128, kv. 150, Moscow, and Vladimir M. Musyanovich, ulitsa 700-letia Lvova, 53, kv. 84, Lvov, all of U.S.S.R.

Filed May 26, 1982, Ser. No. 382,321

Int. Cl.³ A61K *31/78*

U.S. Cl. 424—81 **7 Claims**

1. A composition for a temporary substitution of bone tissue defects comprising α-cyanacrylic acid esters and a powder-like filler selected from the group consisting of a calcium salt of an organic acid and a calcium salt of an inorganic acid with a particle size of from 0.01 to 0.5 mm at the following proportions of the components, percent by weight:

α-cyanacrylic acid esters	60 to 40
powder-like filler selected from the group consisting of calcium salt of an organic acid and calcium salt of inorganic acid with a particle size of from 0.01 to 0.5 mm	40 to 60.

4,407,794
PEPTIDES AND THERAPEUTIC APPLICATIONS THEREOF

Bernard Roques, Saint Maurice, and Jeanne-Marie Lecomte, Paris, both of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Aug. 3, 1981, Ser. No. 289,383

Claims priority, application France, Aug. 8, 1980, 80 17523

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **5 Claims**

1. Peptide derivatives having the formula

Tyr—A—Gly—B—C—D (I)

in which:

A is a D.Ser, D.Thr, D.Cys, homo Serine, βPhe Ser, βOH Leu, 4OH Ile, α,β,γ OHNor Val or OH Val residue in which the side-chain OH or SH groups may be free or protected by (i) a straight-or branched-chain alkyl radical having 1–6 carbon atoms, (ii) an unsubstituted phenyl radical or a phenyl radical substituted with one or more fluorine atoms, (iii) an unsubstituted benzyl radical or a benzyl radical substituted with one or more fluorine atoms, (iv) an aliphatic acyl radical having 1–6 carbon atoms or an acyl radical of the formula COX in which X is a phenyl, benzyl or benzhydryl radical, optionally substituted with one or more fluorine atoms,

B is a L.Phe, pF.L.Phe or pentafluoro L.Phe residue,

C is a Leu, N.Leu or Ile residue having D or L configuration,

D represents a group of the formula:

$$-NH-\underset{\displaystyle (CH_2)_n}{\underset{|}{CH}}-Y \quad \text{or} \quad -NH-\underset{\displaystyle CHOR}{\underset{|}{CH}}-Y$$
$$\qquad\qquad\quad |\qquad\qquad\qquad\qquad\quad |$$
$$\qquad\qquad CH_2OR \qquad\qquad\quad CH_3$$

in which n=B 0, 1 or 2,

R is a hydrogen atom or a radical as defined for the protection of the OH group of residue A,

Y is a hydrogen atom, a hydroxy, carboxy, carbamoyl oxy group, a group OR_1, $COOR_1$ or $CONHR_1$ in which R_1 represents a radical such as defined for the protection of the OH group of residue A, a phosphatidylethanolamine chain, or a chain

$$NH-(CH_2)_n-\underset{\displaystyle R_2}{\overset{\displaystyle R_3}{\overset{|}{\underset{|}{N}}}}$$

in which n is an integer from 0 to 3, R_2 is a hydrogen atom or a straight alkyl radical containing 1–4 carbon atoms, and R_3 is a hydrogen or oxygen atom or a straight alkyl residue having 1–4 carbon atoms

and their pharmaceutically acceptable salts.

4,407,795

INCLUSION COMPOUND OF P-HEXADECYLAMINO BENZOIC ACID IN CYCLODEXTRIN AND METHOD OF USE

Gabriela Nicolau, Cliffside Park, N.J., and Alfred P. Tonelli, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 16, 1981, Ser. No. 283,852
Int. Cl.³ A61K *31/73;* **C08B** *37/16*
U.S. Cl. 424—180 **3 Claims**

1. The method of inhibiting atherosclerotic occlusion of the arteries in a mammal which comprises orally administering to said mammal an effective amount of an inclusion compound comprising about 8% p-hexadecylamino benzoic acid sodium salt in β-cyclodextrin in a molar ratio of about 1:4 of said salt to β-cyclodextrin which provides enhanced bioavailability of said salt over said salt orally administered alone.

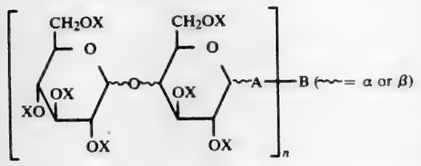
4,407,796

MODULATORS OF THE COMPLEMENT SYSTEM

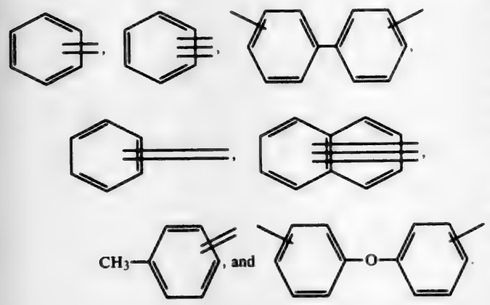
Thomas G. Miner, Sugarloaf, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,937
Int. Cl.³ A61K *31/70;* **C07H** *15/20, 5/10*
U.S. Cl. 424—180 **28 Claims**

1. A compound selected from those of the formula:



wherein X is $—SO_3M$ and M is a nontoxic pharmaceutically acceptable cation salt, wherein the salt forming moiety is selected from the group consisting of alkali metal, alkaline earth metal, ammonia and substituted ammonia selected from the group consisting of trialkylamine (C_1–C_6), piperidine, pyrazine, alkanolamine (C_2–C_6) and cycloalkylamine (C_3–C_6); A is selected from the group consisting of S, SO and SO_2; n is an integer 2 or 3; and B is an arylene selected from the group consisting of



10. A method of modulating the complement system in a warm-blooded animal which comprises administering to said warm-blooded animal an effective complement modulating amount of a pharmaceutically acceptable compound of claim **1**.

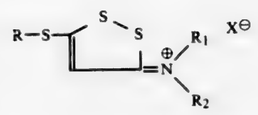
4,407,797

1,2-DITHIOL-3-YLIDENEAMMONIUM DERIVATIVES, COMPOSITIONS AND USE

Claude Cotrel, Paris; Daniel Farge, Thiais, and Gerard Taurand, Sucy-en-Brie, all of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Aug. 10, 1982, Ser. No. 406,980
Claims priority, application France, Aug. 11, 1981, 8115528; Jun. 17, 1982, 8210616
Int. Cl.³ A61K *31/535, 31/385;* **C07D** *339/04, 413/04*
U.S. Cl. 424—246 **16 Claims**

1. A 1,2-dithiol-3-ylideneammonium derivative of the general formula:



wherein $X^{\ominus}$ represents an pharmaceutically acceptable anion, R represents a straight- or branched-chain alkyl radical containing 1 to 7 carbon atoms [unsubstituted or substituted by a hydroxy, carboxy, alkoxycarbonyl, cyano, dialkylamino or alkylcarbonyl radical, or a benzoyl radical the phenyl ring of which is unsubstituted or substituted by one or more halogen atoms or radicals selected from alkyl (optionally substituted by one or more halogen atoms), alkoxy, hydroxy, amino, alkylamino, dialkylamino, cyano and nitro, or by a thenoyl radical the thienyl ring of which is unsubstituted or substituted by one or more halogen atoms or radicals selected from alkyl, cyano and nitro, or a pyridylcarbonyl, carbamoyl, dialkylcarbamoyl (the alkyl radicals of which can together form, with the nitrogen atom to which they are attached, a 5- or 6-membered heterocyclic ring optionally containing another heteroatom selected from oxygen, sulphur, and nitrogen substituted by an alkyl or alkylcarbonyl radical) or pyridyl radical], a dialkylcarbamoyl radical (the alkyl radicals of which can together form, with the nitrogen atom to which they are attached, a 5- or 6-membered heterocyclic ring optionally containing another heteroatom selected from oxygen, sulphur, and nitrogen substituted by an alkyl or alkycarbonyl radical), an alkenyl radical containing 2 to 4 carbon atoms, an alkynyl radical containing 2 to 4 carbon atoms, or an alkoxycarbonyl radical, or alternatively represents a 2-oxotetrahydrofuran-3-yl or 2-oxotetrahydropyran-3-yl ring, and either R_1 and R_2, which have the same or different significances, each represent a phenyl radical, a cycloalkyl radical containing 3 to 7 carbon atoms, or an alkyl or phenylalkyl radical, or alternatively together form, with the nitrogen atom to which they are attached, a 5-, 6- or 7-membered heterocylic ring which can optionally contain another hetero-atom selected from oxygen, sulphur, and nitrogen substituted by an alkyl radical, or R_1 represents a phenyl radical unsubstituted or substituted by one or more halogen atoms or radicals selected from alkyl (optionally substituted by one or more halogen atoms), alkoxy, hydroxy, amino, alkylamino, dialkylamino, cyano and nitro, or alternatively represents a cycloalkyl radical containing 3 to 7 carbon atoms, or an alkyl or phenylalkyl radical, and R_2 represents a hydrogen atom, and also the corresponding bases when R_2 represents a hydrogen atom, the aforementioned alkyl and alkoxy radicals and moieties containing 1 to 4 carbon atoms in a straight- or branched-chain unless otherwise indicated.

16. A method for the treatment of a patient suffering from ulceration of the digestive system which comprises administering to the patient an amount of a pharmaceutically acceptable 1,2-dithiol-3-ylideneammonium derivative conforming to the general formula depicted in claim **1** or, when R_2 represents hydrogen, a base derived thereforom, effective to ameliorate the condition of the patient.

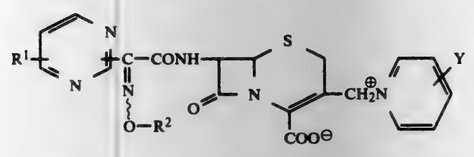
4,407,798

CEPHEM COMPOUNDS

Takashi Kamiya, Suita; Tsutomu Teraji, Osaka; Yoshiharu Nakai, Otsu; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Aug. 26, 1981, Ser. No. 296,301
Claims priority, application United Kingdom, Aug. 29, 1980, 8028042
Int. Cl.³ C07D *501/58;* **A61K** *31/545*
U.S. Cl. 424—246 **13 Claims**

1. A compound of the formula:



in which

R^1 is amino or a protected amino group,

R^2 is cyclo(lower)alkyl, cyclo(lower)alkenyl, lower alkyl, lower alkynyl, carboxy(lower)alkyl, protected carboxy(lower)alkyl or lower alkylthio(lower)alkyl, and

Y is hydrogen, amino or a protected amino group, and pharmaceutically acceptable salts thereof.

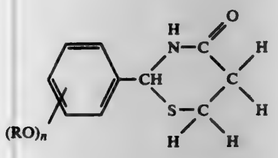
4,407,799

2-SUBSTITUTED-PHENYL-1,3-PERHYDROTHIAZINE-4-ONE

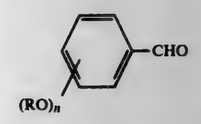
Takao Kawasaki, Sayama; Daisaku Immaru, Tama; Yoshiaki Osaka, Nagareyama; Tadashi Tsuchiya, Matsudo, and Saichi Ono, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,187
Claims priority, application Japan, Oct. 9, 1980, 55-141240
Int. Cl.³ C07D *279/06;* **A61K** *31/54*
U.S. Cl. 424—246 **4 Claims**

1. A process for preparing a compound of 2-substituted phenyl-1-1, 3-perhydrothiazine-4-one represented by the formula

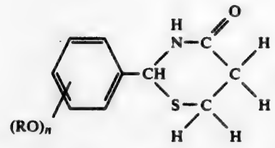


wherein R represents a lower alkyl group of 1 to 3 carbon atoms and n denotes in integer of 1 to 3, which comprises reacting an aldehyde represented by the formula



wherein R and n are as defined above, with 3-mercaptopropionic acid amide in an inert solvent.

3. A pharmaceutical anti-ulcer composition in a dosage unit form, which comprises a dosage effective for treatment of peptic ulcer of a 2-substituted phenyl-1,3-perhydrothiazine-4-one represented by the formula



wherein R represents a lower alkyl group of 1 to 3 carbon atoms and n denotes an integer of 1 to 3, and a pharmaceutically acceptable carrier.

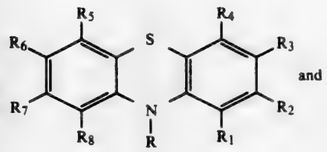
4,407,800

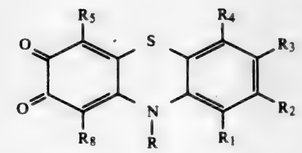
PROTOZOACIDAL ACTIVITY OF PHENOTHIAZINES

Richard D. Pearson, Charlottesville, and Erik L. Hewlett, Keswick, both of Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Filed Nov. 2, 1981, Ser. No. 317,547
Int. Cl.³ A61K *31/54*
U.S. Cl. 424—247 **11 Claims**

1. A method of treating trypanosomiasis and leishmaniasis comprising the step of administering to a mammal having trypanosomiasis or leishmaniasis an amount effective to reduce the number of living protozoa in said mammal of a phenothiazine compound having a formula selected from the group consisting of:





wherein R = hydrogen, C_1–C_5 alkyl, or C_1–C_5 alkyl group substituted with an amino group or with a 5- or 6-membered heterocyclic ring containing 1 or 2 nitrogen atoms selected from the group consisting of piperazinyl, piperdyl and pyrrolidinyl and R_{1-8} independently represent hydrogen, halogen, hydroxyl, thiol, methylthiol, methylsulfinyl, C_1–C_5 alkyl, C_1–C_6 alkynoyl, phenyl, or trifluoromethyl.

4,407,801

ANTI-ISCHEMIC PHARMACEUTIC COMPOSITIONS

Jean-Claude Arnaud, La Garenne Colombes, and Michelle Devissaguet, Neuilly-sur-Seine, both of France, assignors to Science Union Et Cie, Suresnes, France

Filed Sep. 28, 1981, Ser. No. 306,224
Claims priority, application France, Sep. 30, 1980, 80 20919
Int. Cl.³ A61K *31/495, 31/70*
U.S. Cl. 424—250 **6 Claims**

3. A method for treating ischaemia in a patient which comprises administering to said patient a daily oral amount of a composition which comprises 20 to 80 mg of a compound selected from 1-(2,3,4-trimethoxybenzyl)-piperazine and a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable disintegrating agent.

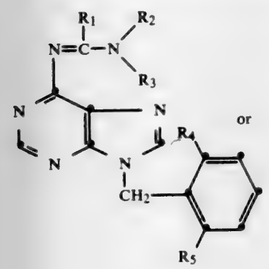
4,407,802

6-AMIDINO-9-SUBSTITUTED BENZYL PURINES

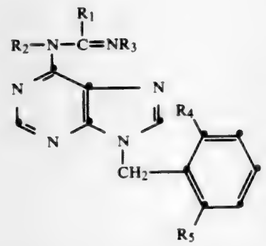
Donald W. Graham, Mountainside; Gary H. Rasmusson, Watchung, and Richard L. Tolman, Warren, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 28, 1981, Ser. No. 306,112
Int. Cl.³ C07D *473/34;* A61K *31/52*
U.S. Cl. 424—253 **6 Claims**

1. A compound having the formula



or



wherein R_1, R_2 and R_3 are independently hydrogen or loweralkyl and R_4 and R_5 are independently halogen.

5. A method for the treatment of coccidiosis in poultry which comprises administering to poultry infected with coccidiosis an effective amount of a compound of claim **1**.

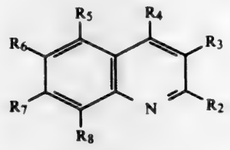
4,407,803

ANTIINFLAMMATORY 1-(QUINOLINYL)-2-PYRAZOLINE DERIVATIVES

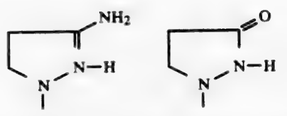
Fortuna Haviv, Dearfield, and Robert W. Denet, Waukegan, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,767
Int. Cl.³ A61K *31/47;* C07D *401/04*
U.S. Cl. 424—258 **38 Claims**

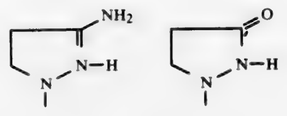
1. A compound of the formula



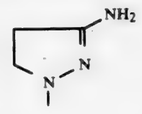
wherein R_2–R_8 independently of one another denote hydrogen, loweralkyl, phenyl, alkoxy, halo, hydroxy, nitro, trifluoromethyl,



with the proviso that at least one but no more than one of the substituents R_2–R_8 is

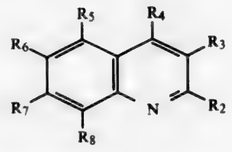


and with the further proviso that at least four of the substituents R_2–R_8 are hydrogen and, R_2 cannot be

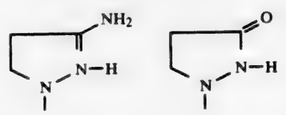


when R_3–R_8 are hydrogen, and pharmaceutically acceptable salts thereof.

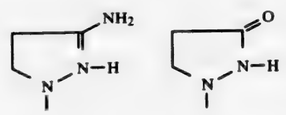
23. A method of treating or relieving the symptoms associated with inflammation comprising administering to a patient in need of such treatment a therapeutically effective amount of an antiinflammatory agent of the formula



wherein R_2–R_8 independently of one another denote hydrogen, loweralkyl, phenyl, alkoxy, halo, hydroxy, nitro, trifluoromethyl,



with the proviso that at least one but no more than one of the substituents R_2–R_8 is



and with the further proviso that at least four of the substituents R_2–R_8 are hydrogen, and pharmaceutically acceptable salts thereof.

4,407,804

ANALGESIC MIXTURE OF NALBUPHINE AND INDOMETHACIN

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,805
Int. Cl.³ A61K *31/40, 31/485*
U.S. Cl. 424—260 **16 Claims**

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) indomethacin, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.01 to about 1:20.

4,407,805

ANALGESIC MIXTURE OF NALBUPHINE AND ZOMEPIRAC

William K. Schmidt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1982, Ser. No. 393,808
Int. Cl.³ A61U *31/40, 31/485*
U.S. Cl. 424—260 **16 Claims**

1. A pharmaceutical composition comprising a combination of (a) nalbuphine, or a pharmaceutically acceptable salt thereof, and (b) zomepirac, or a pharmaceutically suitable salt thereof, in which the weight ratio of (a):(b) is from about 1:0.02 to about 1:26.

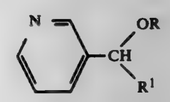
4,407,806

FUNGICIDAL, HERBICIDAL AND PLANT GROWTH REGULATING PYRIDYL-CONTAINING ETHERS

Richard E. Cherpeck, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 23, 1981, Ser. No. 323,832
Int. Cl.³ A61K *31/44;* C07D *213/16*
U.S. Cl. 424—263 **16 Claims**

1. A compound having the formula:



wherein

R is benzyl; benzyl substituted on the phenyl ring with 1 to 5 of the same of different substituents selected from fluoro, chloro, bromo, iodo, nitro, lower alkoxy, lower alkyl or lower alkyl substituted with 1 to 5 of the same or different halogen; or $—CH_2R^2$ wherein R^2 is lower alkenyl or lower alkenyl substituted with lower alkoxy or with 1 to 5 of the same or different halogens and;

R^1 is phenyl or phenyl substituted with 1 to 5 of the same or different substituents selected from fluoro, chloro, bromo, iodo, nitro, lower alkoxy, lower alkyl or lower alkyl substituted with 1 to 5 of the same or different halogens.

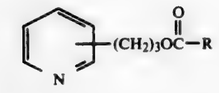
4,407,807

PYRIDYLPROPYL CYCLOALKANECARBOXYLATES: INSECT REPELLENTS

Rayman Y. Wong, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

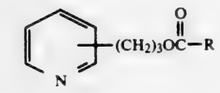
Continuation-in-part of Ser. No. 223,515, Jan. 8, 1981, abandoned. This application Dec. 21, 1981, Ser. No. 332,568
Int. Cl.³ C07D *213/55;* A01N *43/40*
U.S. Cl. 424—263 **13 Claims**

1. A compound having the formula



in which R is cyclobutyl.

4. A method of repelling but not killing insects selected from mosquitoes, houseflies or stable flies from a locus to be protected therefrom, comprising applying to said locus an effective insect repelling but non-lethal amount to said insects of a compound having the formula



in which R is C_3–C_5 cycloalkyl.

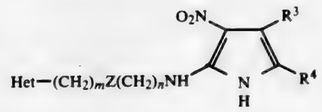
4,407,808

2-HETEROCYCLIC ALKYLAMINO-3-NITROPYRROLES

Michael L. Roantree, Welwyn Garden City, and Rodney C. Young, Bengeo, both of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

Division of Ser. No. 159,524, Jun. 16, 1980, Pat. No. 4,331,668, which is a division of Ser. No. 43,786, May 30, 1979, Pat. No. 4,238,494. This application Jan. 28, 1982, Ser. No. 343,632
Claims priority, application United Kingdom, May 30, 1978, 24117/78; Aug. 4, 1978, 32313/78
Int. Cl.³ A61K *31/40;* C07D *403/12, 413/12;* A61K *31/41*
U.S. Cl. 424—263 **5 Claims**

1. A compound represented by Structure 1:



Structure 1

in which

Het is selected from the group consisting of oxazole, isoxazole and 1,2,4-triazole rings optionally substituted by lower alkyl, trifluoromethyl, hydroxymethyl, halogen, hydroxy, lower alkoxy or amino;

Z is sulphur, methylene or oxygen;

m is 0, 1 or 2 and n is 2 or 3 provided that m+n is 3 or 4;

R^3 is hydrogen, lower alkyl, aryl, aryl lower alkyl or heteroaryl lower alkyl, aryl being phenyl optionally substituted by lower alkyl, lower alkoxy or halogen and heteroaryl being 2-furyl, 2-thienyl, 2-pyridyl, 3-pyridyl or 4-pyridyl optionally substituted by lower alkyl or lower alkoxy; and

R^4 is hydrogen or lower alkyl, or a pharmaceutically acceptable acid addition salt thereof.

4. A method of blocking histamine H_2-receptors which comprises administering an effective amount of a compound of claim **1** to an animal in need of such treatment.

4,407,809

N-PHENOXY(OR THIO)HYDROCARBON 3,4,5-TRIHYDROXYPIPERIDINE DERIVATIVES, THEIR USE IN MEDICINE AND IN ANIMAL NUTRITION

Bodo Junge, Wuppertal; Jürgen Stoltefuss, Haan; Lutz Müller, Wuppertal; Hans-Peter Krause, Wuppertal, and Rüdiger Sitt, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

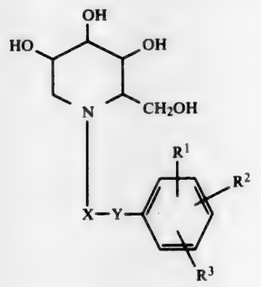
Filed Feb. 5, 1981, Ser. No. 231,695

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007078

Int. Cl.³ A61K *31/445;* **C07D** *211/40*

U.S. Cl. 424—267 **31 Claims**

1. A 3,4,5-trihydroxypiperidine derivative of the formula



(I)

in which

X denotes a straight-chain or branched saturated or monoethylenically unsaturated hydrocarbon radical having 1 to 10 carbon atoms,

Y denotes oxygen or sulphur and R^1, R^2 and R^3 are identical or different and independently of one another denote a hydrogen or halogen atom, an alkyl, monocylic or bicyclic carbocyclic aryl or aroxy, alkylthio, nitro, hydroxyl, cyano, amino, alkylamino, dialkylamino, amioalkyl, hydroxy-alkyl, carboxylic or sulphonic acid acylamino, sulfonylamino, carboxylic or sulphonic acid acyloxy, carboxyl, carbalkoxy, alkylcarbonyl or formyl radical or a carboxamide or sulphonamide radical which is unsubstituted or substituted by C_1–C_7-alkyl or phenyl, each of said alkyl, alkoxy, alkylthio, alkylamino, aminoalkyl, hydroxyalkyl, carbalkoxy and alkylcarbonyl group having up to 12 carbon atoms; and each of said dialkylamino groups having up to 12 carbon atoms in each alkyl group.

4,407,810

THIAZOL-2-YL-OXAMIC ACID DERIVATIVES, AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Heinz Eilingsfeld, Frankenthal; Peter Neumann, Wiesloch; Guenther Seybold, Neuhofen; Dieter Lenke, Ludwigshafen, and Ludwig Friedrich, Bruehl, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

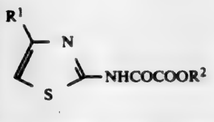
Filed Jul. 13, 1981, Ser. No. 282,661

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027527

Int. Cl.³ C07D *277/20;* **A61K** *43/78*

U.S. Cl. 424—270 **8 Claims**

1. A compound of formula I



where R^1 is phenyl which is unsubstituted or in monosubstituted or disubstituted by hydroxyl, or is monosubstituted, disubstituted or trisubstituted by methoxy or ethoxy, or is monosubstituted by methylenedioxy or ethylenedioxy and R^2 is a radical of the formula $-(CH_2CH_2O)_m-CH_2CH_2OR^3$, $-(CHR^4-CHR^5O)_n-CHR^4-CHR^5OR^3$ or $-CH_2CH_2-SR^6$ where m and n are each an integer from 0 to 3, R^3 is hydrogen or an alkyl of 1 to 4 carbon atoms, R^4 and R^5 are each hydrogen or methyl and R^6 is an alkyl of 1 to 4 carbon atoms.

4,407,811

HYPOGLYCEMIC 5-SUBSTITUTED OXAZOLIDINE-2,4-DIONES

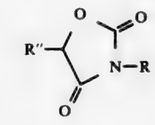
Rodney C. Schnur, Noank, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 222,202, Jan. 2, 1981, which is a continuation-in-part of Ser. No. 173,206, Jul. 28, 1980, abandoned. This application Mar. 1, 1982, Ser. No. 353,467

Int. Cl.³ A61K *31/42;* **C07D** *263/32*

U.S. Cl. 424—272 **8 Claims**

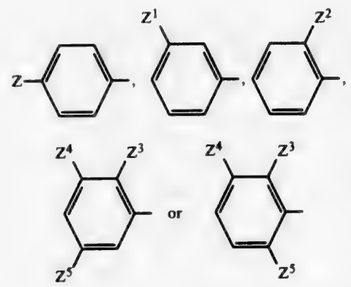
1. A method of lowering the blood glucose in a hyperglycemic mammal which comprises administering a blood glucose lowering amount of a racemic or optically active compound of the formula



wherein

R is hydrogen, $(C_1$–$C_4)$-alkanoyl, benzoyl, $(C_2$–$C_4)$-carbalkoxy, $(C_1$–$C_3)$-alkylcarbamoyl, $(C_5$–$C_7)$-cycloalkylcarbamoyl or di$(C_1$–$C_3)$-alkylcarbamoyl; and

R″ is



wherein Z is hydrogen or fluoro;

Z^1 is acetamido, amino, benzyloxy, chloro, phenoxy, nitro or trifluoromethyl;

Z^2 is acetamido, amino, benzyloxy, phenoxy, nitro or trifluoromethyl;

Z^3 is methyl, $(C_1$–$C_2)$alkoxy, methylthio, chloro or fluoro; and

Z^4 and Z^5 are each independently hydrogen, methyl, bromo, chloro, fluoro, cyano, nitro, or trifluoromethyl;

or a pharmaceutically acceptable salt thereof when R is hydrogen.

4,407,812

ETHERAL IMIDAZOLES AND USE IN TREATMENT OF THROMBOSES

Claude Bonne, Bry sur Marne; Claude Coquelet, Noisy-le-Roi, and Daniel Sincholle, St. Clement, all of France, assignors to Laboratoires Chauvin-Blache, Montpellier, France

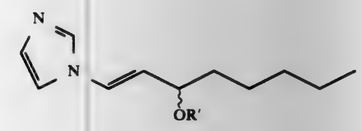
Filed Jan. 21, 1981, Ser. No. 226,774

Claims priority, application France, Jan. 31, 1980, 80 02057

Int. Cl.³ C07D *233/54;* **A61K** *31/415*

U.S. Cl. 424—273 R **11 Claims**

1. A compound of the formula (III):



in which R′ represents a C_{1-8} alkyl radical, an aryl radical, an aryl(C_{1-5}alkyl) or (C_{1-5}alkyl)aryl radical, the term "aryl" designating an aromatic hydrocarbon radical having 6–10 carbon atoms or a pharmaceutically acceptable acid addition salt thereof.

4,407,813

INSECTICIDAL PYRAZOLINE DERIVATIVES AND COMPOSITION

Kiyomi Ozawa; Yasuyuki Nakajima; Makoto Tsugeno; Shigeru Ishii, and Masataka Hatanaka, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

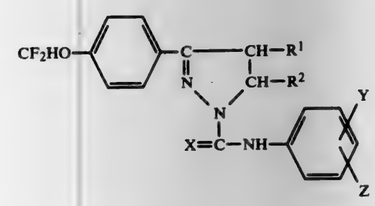
Filed Aug. 13, 1981, Ser. No. 292,710

Claims priority, application Japan, Feb. 17, 1981, 56-21767; Jun. 19, 1981, 56-94850

Int. Cl.³ A01N *43/56;* **C07D** *231/06*

U.S. Cl. 424—273 P **17 Claims**

1. A pyrazoline derivative having the formula



[I]

wherein R^1 represents hydrogen atom, a lower alkyl group, phenyl group or a halogen-substituted phenyl group; R^2 represents hydrogen atom or phenyl group which can have halogen substituents; X represents oxygen or sulfur atom; Y and Z respectively represent hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, nitro-group, trifluoromethyl group, a lower alkylthio group, a lower alkanoyl group, nitrile group or a lower alkyl sufonyl group.

17. An insecticidal composition which comprises an effective amount of a pyrazoline derivative defined in claim **1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15** or **16** as an active ingredient and a carrier therefor.

4,407,814

IMIDAZOLIDINE DERIVATIVES

Karl Bernauer, Oberwil; Helmut Link, Basel, and Harro Stohler, Binningen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 118,004, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 954,073, Oct. 24, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,364

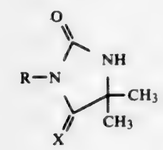
Claims priority, application Luxembourg, Oct. 28, 1977, 78407; Switzerland, May 19, 1978, 5465; Sep. 6, 1978, 9367

The portion of the term of this patent subsequent to Nov. 18, 1997, has been disclaimed.

Int. Cl.³ C07D *233/72;* **A61K** *31/415*

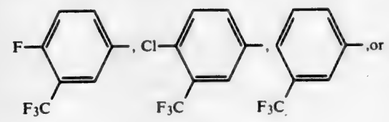
U.S. Cl. 424—273 R **14 Claims**

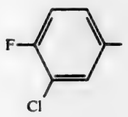
1. A compound of the formula



I

wherein X is oxygen or imino and R is





4,407,815

β-LACTAM ANTIBACTERIAL COMPOUNDS, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Michael J. Pearson, and Clive L. Branch, both of Horsham, England, assignors to Beecham Group Limited, England

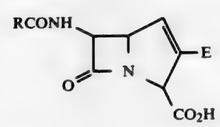
Filed Feb. 10, 1981, Ser. No. 233,180

Claims priority, application United Kingdom, Feb. 14, 1980, 8005037

Int. Cl.³ C07D *487/04;* **A61K** *31/40*

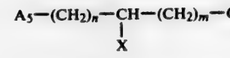
U.S. Cl. 424—274 **103 Claims**

1. A compound of the formula (II):

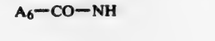


(II)

a pharmaceutically acceptable salt thereof or an ester thereof cleavable by hydrogenolysis or hydrolyzable in-vivo wherein RCONH is a group of the subformula (a), (b), (c) or (d):

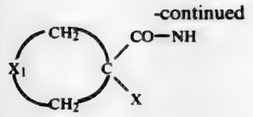


(a)



(b)

-continued

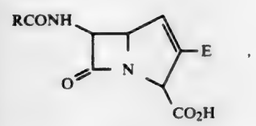


(c)

$A_6-X_2-(CH_2)_n-CO-NH$ (d)

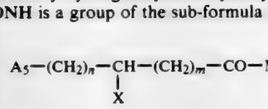
wherein n is 0, 1 or 2; m is 0, 1 or 2; A_5 is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxyphenyl, thienyl or pyridyl; X is hydrogen, bromo, chloro, a carboxylic acid moiety, a carboxylate ester cleavable by hydrogenolysis or hydrolyzable in-vivo, hydroxy, acyloxy, amino, ureido, guanidino or acylureido; A_6 is phenyl, 2,5-dimethoxyphenyl, 2-alkoxy-1-naphthyl, 3-arylisoxazolyl, isothiazolyl or 3-aryl-5-methylisoxazolyl wherein aryl is phenyl; X_1 is CH_2OCH_2, CH_2SCH_2 or $(CH_2)_n$ wherein n is as above defined; and X_2 is an oxygen or sulphur atom, and E is a carboxy group, a pharmaceutically acceptable salt thereof, an alkyl ester thereof wherein the alkyl moiety is of 1 to 10 carbon atoms and is unsubstituted or substituted by alkoxy of 1 to 7 carbon atoms, alkanoyloxy of 1 to 7 carbon atoms, alkenyl of up to 5 carbon atoms or alkynyl of up to 5 carbon atoms, or by 1 or 2 phenyl moieties each of which is unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of up to 4 carbon atoms or alkoxy of up to 4 carbon atoms, or E is cyano.

34. A pharmaceutical composition useful for treating bacterial infections in animals including humans which comprises an antibacterially effective amount of a compound of the formula (II):

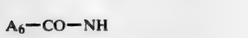


(II)

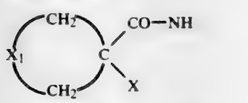
a pharmaceutically acceptable salt thereof or an ester thereof cleavable by hydrogenolysis or hydrolyzable in-vivo wherein RCONH is a group of the sub-formula (a), (b), (c) or (d):



(a)



(b)



(c)

$A_6-X_2-(CH_2)_n-CO-NH$ (d)

wherein n is 0, 1 or 2; m is 0, 1 or 2; A_5 is alkyl or 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, cyclohexenyl, cyclohexadienyl, phenyl, hydroxyphenyl, thienyl or pyridyl; X is hydrogen, bromo, chloro, a carboxylic acid moiety, a carboxylate ester cleavable by hydrogenolysis or hydrolyzable in-vivo, hydroxy, acyloxy, amino, ureido, guanidino or acylureido; A_6 is phenyl, 2,5-dimethoxyphenyl, 2-alkoxy-1-naphthyl, 3-arylisoxazolyl, isothiazolyl or 3-aryl-5-methylisoxazolyl wherein aryl is phenyl; X_1 is CH_2OCH_2, CH_2SCH_2 or $(CH_2)_n$ wherein n is as above defined; and X_2 is an oxygen or sulphur atom, and E is a carboxy group, a pharmaceutically acceptable salt thereof, an alkyl ester thereof wherein the alkyl moiety is of 1 to 10 carbon atoms and is unsubstituted or substituted by alkoxy of 1 to 7 carbon atoms, alkanoyloxy of 1 to 7 carbon atoms, alkenyl of up to 5 carbon atoms or alkynyl of up to 5 carbon atoms, or by 1 or 2 phenyl moieties each of which is unsubstituted or substituted by fluoro, chloro, bromo, nitro, alkyl of up to 4 carbon atoms or alkoxy of up to 4 carbon atoms, or E is cyano, in combination with a pharmaceutically acceptable carrier.

4,407,816

3-SUBSTITUTED-2-PROPENIMIDAMIDES AND METHOD OF MANUFACTURING THE SAME

Tsuyoshi Tomiyama, Sakaki, and Akira Tomiyama, Togura, both of Japan, assignors to Kotobuki Seiyaku Company Limited, Nagano, Japan

Filed Aug. 4, 1981, Ser. No. 289,903

Claims priority, application Japan, Aug. 8, 1980, 55-109060; Nov. 1, 1980, 55-154348

Int. Cl.[3] **A61K** *31/38, 31/34, 31/275, 31/165*

U.S. Cl. 424—275 **13 Claims**

1. A compound of the formula:



wherein:

A is a furyl, thienyl, phenyl, chlorophenyl or lower-alkoxyphenyl group;

R^1 represents =NCN or $=NCONH_2$ and

R^2 represents $-NHR^3$ or $-NHNHCOR^4$, wherein R^3 is a hydrogen atom, or a lower-alkyl, phen-lower-alkyl or cyclohexyl group, said cyclohexyl group being optionally substituted by lower-alkyl and R^4 is a lower alkyl group, and

pharmaceutically acceptable acid addition salts thereof.

4,407,817

FUNGICIDAL 3-(N-ACYL-N-ARYLAMINO)- AND 3-(N-THIONOACYL-N-ARYLAMINO)-GAMMA-BUTYROLACTONES AND GAMMA-THIOBUTYROLACTONES

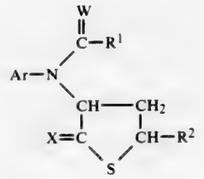
David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 228,048, Jan. 26, 1981, abandoned, Continuation of Ser. No. 44,740, Jan. 1, 1979. This application Apr. 19, 1982, Ser. No. 369,713

Int. Cl.[3] **A01N** *43/08, 43/10;* **C07D** *307/32, 333/36*

U.S. Cl. 424—275 **13 Claims**

1. A compound of the formula



(I)

wherein Ar is phenyl, naphthyl, or phenyl or naphthyl substituted with 1 to 4 of the same or different substituents selected from fluoro, chloro, bromo, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

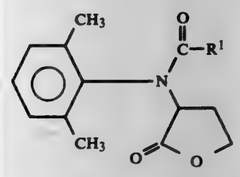
R^1 is alkenyl of 2 to 6 carbon atoms, optionally substituted by halogen or alkoxy of 1 to 4 carbon atoms, or alkenyl oxide of 2 to 6 carbon atoms;

R^2 is hydrogen, chloro, bromo, alkyl of 1 to 6 carbon atoms, phenyl or phenyl substituted with 1 to 2 of the same or different substituents selected from fluoro, chloro, bromo and alkyl of 1 to 6 carbon atoms:

W is O or S; and

X is O or S.

10. A compound selected from the group having the formula



wherein R^1 is the group having the formula $-CH=CH_2CH_3$ or $-CH_2CH=CH_3$.

4,407,818

ANTI VIRAL, ANTI BACTERIAL AND/OR ANTI FUNGAL COMPOSITION CONTAINING METAL OXYALKYLATE

Joseph E. Lionelle, and Jeffrey A. Staffa, both of Salida, Colo., assignors to Bio-Systems Research, Inc., Salida, Colo.

Continuation of Ser. No. 217,120, Dec. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 214,103, Dec. 8, 1980. This application Sep. 21, 1981, Ser. No. 304,303

Int. Cl.[3] **A61K** *31/045;* **A01N** *55/02*

U.S. Cl. 424—289 **22 Claims**

1. A therapeutic composition for treating Herpes virus comprising an effective amount of a metal oxyalkylate having the formula $M_4O(R-CO_2)_6$ wherein M represents zinc or manganese and R represents hydrogen or methyl, and a pharmaceutically acceptable carrier therefor.

4,407,819

PHENYLETHANOLAMINE DERIVATIVES AND ACID ADDITION SALTS THEREOF FOR THE DEPRESSION OF FAT DEPOSITION IN WARM BLOODED ANIMALS

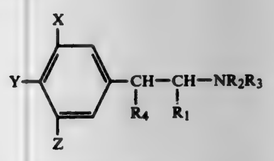
Jane A. Kiernan, Kendall Park, and Pamela K. Baker, Hopewell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser No. 181,255, Aug. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 143,070, Apr. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 66,909, Aug. 16, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,055

Int. Cl.[3] **A61K** *31/275, 31/135, 31/42, 31/40*

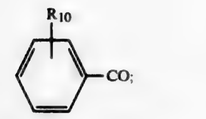
U.S. Cl. 424—304 **57 Claims**

1. A method for increasing lean meat, improving the lean meat to fat ratio, reduction of body fat and improving the efficiency of feed utilization; and/or increasing the growth rate in warm-blooded animals comprising; orally or parenterally administering to said animals an effective amount to achieve the animal body functions, above, of a compound having the general formula:

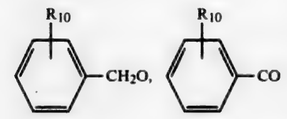


(I)

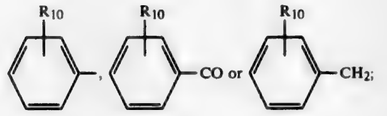
wherein X is hydrogen, halogen, or —CN; Y is hydrogen, NR_8R_9 or $NHCOR_5$; Z is halogen, OH, CF_3, CN, $COOR_1$, $CONH_2$, C_1-$_{C4}$ alkyl, C_1–C_4 alkoxy, nitro or C_1–C_4 dialkylaminomethyl; R_1 is hydrogen or C_1–C_4 alkyl; R_2 is hydrogen, methyl, ethyl, C_2–C_5 alkanoyl or



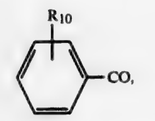
R_3 is C_1–C_5 alkyl, C_3–C_4 alkenyl, C_3–C_5 cycloalkyl, 2-hydroxyethyl, α,α-dimethylphenethyl, benzyl, 3-phenylpropyl or 3-(4-carbomethoxyphenyl)propyl; R_4 is hydrogen, OR_6 or SR_{11}; R_5 is hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy,



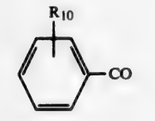
or $N(R_1)_2$; R_6 is hydrogen, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_2–C_5 alkanoyl,



R_8 is hydrogen, C_1–C_4 alkyl or C_3–C_4 alkenyl; R_9 is hydrogen, C_1–C_6 alkyl, C_4–C_6 cycloalkyl, C_3–C_4 alkenyl or benzyl; R_{10} is hydrogen, chloro, dichloro, methyl, dimethyl, methoxy, dimethoxy or nitro; R_{11} is C_1–C_6 alkyl, phenyl or benzyl; and when R_8 and R_9 are taken together with the nitrogen to which they are attached, they may represent pyrrolidino; with the provisos that when R_3 is α,α-dimethylphenethyl, C_3–C_6 cycloalkyl, benzyl, 3-phenylpropyl or 3-(4-carbomethoxyphenyl)-propyl, R_2 is hydrogen, C_2–C_5 alkanoyl or benzoyl; and when R_3 is hydroxyethyl, R_2 and R_6 are hydrogen; when R_6 is C_2–C_5 alkanoyl or



R_2 and R_3 are substituents other than hydrogen, except when R_3 is an alkyl or substituted alkyl group which contains a tertiary carbon attached to nitrogen when Y is hydrogen, and X and Z are halogen, R_2 is hydrogen, C_2–C_5 alkanoyl or



and R_3 is isopropyl, 2-butyl or tert-butyl; when Z is OH, X and Y are hydrogen; when X is —CN, Z is —CN; when R_5 is $N(R_1)_2$, R_6 is hydrogen; and when R_8 is C_1–C_4 alkyl or C_3–C_4 alkenyl, R_9 is C_1–C_4 alkyl or C_3–C_4 alkenyl; or racemic mixtures of the above-identified compounds and the optically active isomers, and non-toxic, pharmacologically acceptable acid addition salts thereof.

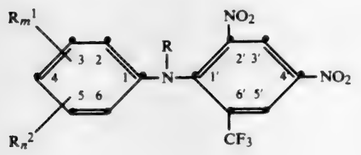
4,407,820

DIPHENYLAMINE COMPOUNDS

Barry A. Dreikorn, Lawrence, and Kenneth E. Kramer, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

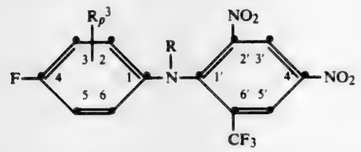
Continuation-in-part of Ser. No. 245,424, Mar. 19, 1981, abandoned. This application Sep. 8, 1981, Ser. No. 300,160
Int. Cl.³ A01N *33/18, 37/34;* C07C *87/62, 121/78*
U.S. Cl. 424—304 51 Claims

1. Method of inhibiting a phytophagous insect or arachnid which comprises applying to a locus of the insect or arachnid an effective insect- or arachnid-inactivating amount of an active agent which is a compound of the formula



wherein
R=methyl, ethyl, or n-propyl; each R^1 is independently bromo, chloro, or fluoro;
R^2 is iodo, cyano, nitro, or trifluoromethyl;
m is an integer of from 0 to 5;
n is an integer of from 0 to 1;
and the sum of m and n is an integer
(1) when n is 0, from 1 to 5; and
(2) when n is 1, from 1 to 3
subject to the further limitations that (1) not more than two R^1 groups represent bromo; (2) where R^2=iodo, the iodo is located at the 4-position; (3) where R^2=cyano, the cyano is located at the 3-, 4-, or 5-position; and (4) where $R^2=NO_2$, the NO_2 is located at the 2-, 3-, 5-, or 6-position.

28. Compound of the formula



wherein R is methyl, ethyl, or n-propyl; and R_p^3 is one of the following:
(1) p=0;
(2) p=1 and R^3=2-F, 3-F, 2-Cl, or 2-Br;
(3) p=2 , and R^3=2-F-6-Br or 2-F-6Cl; or
(4) p=2, 3, or 4 and each R^3=F.

4,407,821

LIPIDIC COMPOSITIONS FOR USE IN DIETETICS, REANIMATION AND THERAPEUTICS

Francois Mendy, Boulogne, France, assignor to Roussel UCLAF, Romainville, France

Filed Sep. 15, 1981, Ser. No. 302,624
Claims priority, application France, Sep. 24, 1980, 80 20477
Int. Cl.³ A61K *31/23, 31/20*
U.S. Cl. 424—312 25 Claims

1. A lipidic composition for use in reanimation, dietetics and in situations wherein the energy balance is endangered by a disorder of lipid digestion comprising:
(A) an oil naturally containing γ-linolenic acid, said oil enriched in γ-linolenic acid, or γ-linolenic acid, an ester of said acid, or mixtures thereof; and
(B) pure medium chain triglycerides of fatty acids containing 6 to 12 carbon atoms and comprising at least 50% by weight of the composition, wherein the ratio of the medium chain triglyceride component to the γ-linolenic component is between 10 and 100.

23. A method of compensating for a condition wherein the energy balance is endangered by a disorder of lipid digestion which comprises administering to a patient having such a condition an effective amount of the composition of claims 1, 2 or 3 to mitigate said condition.

4,407,822

BENZAMIDO-ALKYL-HYDROXAMIC ACID DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons Alfort, France

Filed Mar. 19, 1982, Ser. No. 360,056
Claims priority, application France, Mar. 25, 1981, 81 06017
Int. Cl.³ A61K *31/185;* C07C *83/10*
U.S. Cl. 424—315 2 Claims

1. 3-(3-aminobenzamido)-propionhydroxamic acid and its acid addition salts.

2. A therapeutical composition comprising, in association with a physiologically acceptable excipient, a pharmaceutically effective amount of a compound according to claim 1.

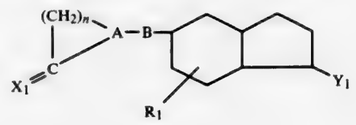
4,407,823

NOVEL PHENYLACETIC ACID DERIVATIVES

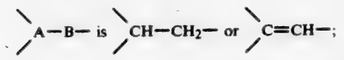
Gerald Kirsch; Joachim-Friedrich Kapp, and Clemens Rufer, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 925,339, Jul. 17, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,272
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1978, 2804051; Jun. 14, 1978, 2826437
Int. Cl.³ A61K *31/19;* C07C *65/20*
U.S. Cl. 424—317 9 Claims

1. A phenylacetic acid compound of the formula



wherein
n is an integer of 2 to 5;



R_1 is hydrogen, halogen, trifluoromethyl, nitro or amino;
X_1 represents two hydrogen atoms or an oxo group; and
Y_1 is carboxyl or a physiologically compatible salt thereof with a base, or ester thereof from a physiologically acceptable alcohol.

9. A method of treating inflammation in a patient in need of such treatment which comprises administering an antiinflammatorily effective amount of a compound of claim 1.

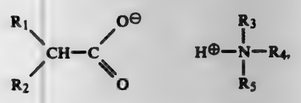
4,407,824

PHARMACEUTICAL PREPARATIONS FOR TOPICAL APPLICATION WHICH CONTAIN SALTS OF ALKANECARBOXYLIC ACIDS, NOVEL CARBOXYLIC ACID SALTS AND THE PRODUCTION THEREOF

Theodor Eckert, Münster, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

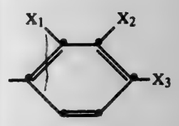
Filed Feb. 20, 1981, Ser. No. 236,097
Int. Cl.³ A61K *31/14*
U.S. Cl. 424—329 3 Claims

1. A method for the treatment of inflammatory and/or painful symptoms in warmblooded organisms which comprises topically administering to such organisms an anti-inflammatory and/or analgesic effective amount of an active compound of the formula I



(I)

wherein R_1 is a group of the formula



(IIa)

and wherein X_2 and X_3 are hydrogen; X_1 is 2,6-dichloroanilino; R_2 is hydrogen;
R_3, R_4 and R_5 are hydroxy-lower alkyl containing up to and including 4 carbon atoms, or one of R_3, R_4 and R_5 is hydrogen and the others are lower alkyl containing up to and including 4 carbon atoms, hydroxy-lower alkyl containing up to and including 4 carbon atoms, or are members of a 2-morpholinium ring, together with pharmaceutically usable conventional carriers and excipients for topical application.

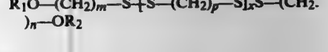
4,407,825

NOVEL BIS- AND POLY-DISULFIDES HAVING IMMUNOSTIMULANT ACTIVITY

Peter Hiestand, Allschwil, and Michael Strasser, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Filed Jan. 29, 1982, Ser. No. 344,175
Claims priority, application United Kingdom, Feb. 5, 1981, 8103513
Int. Cl.³ A61K *31/105;* C07C *149/12*
U.S. Cl. 424—336 8 Claims

1. A compound of formula I



(I)

wherein
R_1 and R_2 are, independently, hydrogen, C_{1-5} alkyl or a non-toxic acid residue which is removable by hydrolysis under physiological conditions,
m and n are, independently, 2 or 3,
p is an integer of from 2 to 6 and
x is 1, 2 or 3,
whereby, when x is 2 or 3, each p may be the same or different.

7. A method of stimulating the immune response of a mammal in need of such treatment, which method comprises administering to said subject an amount of a compound of formula I as defined in claim 1 sufficient to effect immunostimulation.

4,407,826

METHOD OF PRODUCING KOJI PRODUCTS

Fumio Noda, Kamagaya; Kazuya Hayashi, Kashiwa; Keitaro Mogi, Noda; Takashi Iwasaa, Noda; Toshio Sakasai, Noda, and Nobuyoshi Iguchi, Noda, all of Japan, assignors to Kikkoman Shoyu Co. Ltd., Chiba, Japan

Continuation of Ser. No. 73,804, Sep. 10, 1979, abandoned. This application Sep. 17, 1981, Ser. No. 303,124
Claims priority, application Japan, Sep. 12, 1978, 53-111330
Int. Cl.³ A23L *1/20, 1/10, 1/238*
U.S. Cl. 426—7 3 Claims

1. In a method for producing a fermentation koji product which comprises inoculating a koji mold in a substrate and cultivating it, the improvement which comprises adding
(A) at least one compound selected from the group consisting of alkali metal salts of an acid selected from the group consisting of acetic acid and propionic acid, and
(B) at least one compound selected from the group consisting of hypochlorous acid, alkali metal salts of hyposulfurous acid, alkli metal hydrogen sulfite, alkali metal pyrosulfite and hydrogen peroxide,
at any time ranging from a step of preparing the substrate to the step of cultivation, the total amount of said compounds (A) and (B) being about 0.01 to about 2% by weight based on the weight of the substrate, and the weight ratio of compound (A) to compound (B) being from 1:4 to 4:1.

4,407,827

METHOD FOR THE PRODUCTION OF BREAD

Kenji Tanaka, Kawagoe, and Shigeru Endo, Tokyo, both of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,222
Claims priority, application Japan, Feb. 5, 1981, 56-16546
Int. Cl.³ A21D *8/02*
U.S. Cl. 426—19 4 Claims

1. In a process for producing a bread dough suitable for making bread wherein the flour is mixed with water, yeast and other additives to form a bread dough and then fermented before baking, the improvement comprising preparing the dough by adding to wheat flour a part of the required amount of water for formation of said dough and kneading the resulting mixture with pressure thereby to form an intermediate dough having the moisture content of 25–50% by weight based on the weight of the wheat flour, fermenting the intermediate dough and then kneading, said fermented intermediate dough with the remaining amount of water necessary to obtain the desired dough.

4,407,828

FERMENTATION METHOD USING A SELECTED LACTOBACILLUS

Moshe Raccach, Tempe, Ariz., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed May 29, 1981, Ser. No. 268,354
The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.
Int. Cl.³ A23L *1/31;* C12P *7/56;* C12N *1/20;* C12R *1/245*
U.S. Cl. 426—56 11 Claims

1. In a food fermentation method including the steps of providing lactic acid producing bacteria in the food with an assimilable carbohydrate and then fermenting the food with the bacteria so that lactic acid is produced from the carbohydrate over a period of time in the food the improvement which comprises:
(a) providing in admixture in a food a culture of a lactobacillus with an assimilable carbohydrate and with a stimulatory, food grade metal salt in an amount sufficient to accelerate the fermentation by the lactobacillus, wherein the culture is characterized by having low temperature fermentation characteristics in food at least as rapid as

Lactobacillus casei subspecies *alactosus* NRRL-B-12,344; and

(b) fermenting the food admixture at temperatures between about 15.6° C. and 48.9° C. so that lactic acid is produced in the food product.

4,407,829

METHOD OF MANUFACTURING COLLAGEN PRODUCTS

Einar Sjölander, Prilyckegatan 87, 425 32 Hisings-Kärra, Sweden

PCT No. PCT/SE81/00146, § 371 Date Jan. 7, 1982, § 102(e) Date Jan. 7, 1982, PCT Pub. No. WO81/03261, PCT Pub. Date Nov. 26, 1981

PCT Filed May 14, 1981, Ser. No. 339,433

Claims priority, application Sweden, May 23, 1980, 8003876

Int. Cl.³ A22C *13/00*; A23J *1/10*; C07G *7/00*

U.S. Cl. 426—59 **5 Claims**

1. A method for producing collagen fibrils from starting materials selected from animal digestive organs and slaughter biproducts comprising intestines, stomach, rumen, reticulum, third stomach, lungs and udders, comprising the steps of:

(a) cleaning the starting materials;

(b) reducing the starting materials into strips or pieces;

(c) freezing the reduced starting materials;

(d) mincing the frozen starting materials;

(e) treating the minced materials in a first slurry of water and said minced materials to which is added a proteolytic enzyme in amounts to remove proteins other than collagen and to release collagen fibrils;

(f) separating the collagen fibrils;

(g) homogenizing the collagen fibrils in a first homogenization step at a pressure of from about 50 to about 300 kgpond/cm^2;

(i) homogenizing the collagen fibrils adjusted with said acid in a second homogenization step;

(h) forming a second slurry of water and from about 1.5 to about 15% by solids content of collagen fibrils and an acid in an amount to adjust the pH to about 2.5–4.5;

(j) maturing the collagen fibrils in the second slurry for about 24 hours thereby facilitating the forming of individual fibrils; and

(k) centrifuging the collagen fibril slurry to remove air bubbles, and thereby obtain said product.

4,407,830

METHOD OF MAKING A FAT COATED MEAT PRODUCT

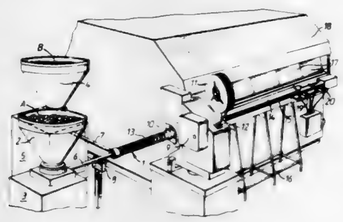
Bernard T. Matthews, Norwich; Alan J. Benstead, Aylesham; David J. Joll, Reepham; Sidney Thorp, Swanton Morley, and David N. Wilson, Hellesdon, all of England, assignors to Bernard Matthews Limited, Norfolk, England

Filed Jun. 23, 1980, Ser. No. 162,241

Claims priority, application United Kingdom, Jun. 28, 1979, 7922452

Int. Cl.³ A22C *11/00*

U.S. Cl. 426—272 **3 Claims**



1. A method of making a meat product with a relatively thin uniform outer layer of fat completely surrounding and directly contacting the meat and within which the meat is cooked, which comprises pumping relatively solid intact natural meat pieces through a central passage of an extrusion mandrel and pumping relatively fluid fatty material through a separate annular passage in said extrusion mandrel, increasing the cross-sectional area of the meat to relax the meat and reducing the thickness of the fatty material in a laterally enlarged extrusion head located at the outlet end of the extrusion mandrel, coextruding, through respective orifices in the outlet end of said extrusion head, the meat, as a core, and the fatty material, as a uniform outer annular layer completely surrounding and directly contacting the meat, directly into a flexible fitting feasing to form elongated encased billets of the meat product.

4,407,831

WHEY PROTEIN FORTIFIED FISH AND PROCESS FOR PREPARATION

William E. Swartz, Upper St. Clair, Pa., assignor to Nutrisearch Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 108,432, Dec. 31, 1979, abandoned. This application Jan. 13, 1981, Ser. No. 224,718

Int. Cl.³ A23L *1/325*

U.S. Cl. 426—281 **9 Claims**

1. Protein fortified intact fish flesh, comprising intact fish flesh as the sole fish source, having incorporated into the muscle tissue of said intact fish flesh a whey protein fortifier composition having more than about 30% by weight whey protein on a dry solids basis wherein said protein fortifier composition consists essentially of about 100% of a whey protein concentrate as the sole protein source, wherein said whey protein concentrate is prepared by neutralizing whey prior to protein concentration thereof, and wherein said whey protein fortifier composition being hydratable for incorporation into said fish flesh.

4,407,832

PROCESSING OF MUSHROOMS WITH REDUCED WEIGHT LOSS

Andrew M. Ferguson, Alexandria, Va., and Howard M. Malick, West Chester, Pa., assignors to Mushroom Associates, Kennett Square, Pa.

Continuation-in-part of Ser. No. 266,222, May 11, 1981, abandoned, and a continuation-in-part of Ser. No. 46,078, Jun. 6, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,681

Int. Cl.³ A23L *1/212*

U.S. Cl. 426—281 **14 Claims**

1. A method for processing mushrooms for reducing shrinkage during subsequent cooking comprising the steps of:

introducing the mushrooms into a sealable container whose contents include a water suspension of an effective amount of an edible microscopic sized heat stable non water soluble solid particulate hydrophilic material, with an average particle size of less than 2 microns

subjecting the contents of the container to at least one application of a pressure whose value is sufficiently above atmospheric pressure to cause compression of the air entrained between the mycellular strands of the mushrooms tissue

wherein, the pressure is at least 10 psi above atmospheric pressure, and the microscopic particulate material is at least 0.5% by weight of the suspension

submerging the mushrooms in said water suspension while rapidly restoring the pressure in the container to atmospheric pressure, at a rate rapid enough to cause a portion of the compressed air entrained between the mycellular strands to be expelled from the mushrooms

said expelled air being replaced within the mushrooms by a quantity of the water suspension, and

removing the mushrooms from the container.

8. A method for processing mushrooms with reduced shrinkage during subsequent cooking comprising the steps of:

introducing the mushrooms into a sealable container whose contents include a water suspension of at least 0.5% by weight of an edible microscopic sized, heat stable, non water soluble, solid, particulate, hydrophilic material, with an average particle size of less than 2 microns,

subjecting the contents of the container to a vacuum of at least 20 inches of mercury, to remove a portion of the air entrained in the intermycellular spaces of the mushrooms

submerging the mushrooms in the water suspension while restoring the pressure in the container to atmospheric pressure causing a portion of the water suspension to replace the air removed from the intermycellular spaces, and

removing the mushrooms from the container.

4,407,833

WHEY PROTEIN FORTIFIED RED MEAT AND PROCESS FOR PREPARATION

William E. Swartz, Upper St. Clair, Pa., assignor to Nutrisearch Company, Cincinnati, Ohio

Continuation of Ser. No. 224,717, Jan. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 108,441, Dec. 31, 1979, abandoned. This application Sep. 10, 1982, Ser. No. 416,695

Int. Cl.³ A23L *1/31*

U.S. Cl. 426—281 **9 Claims**

1. Protein fortified red meat, comprising intact natural skeletal meat as the sole meat source, having incorporated in the muscle tissue of said red meat a whey protein fortifier composition having more than about 30% by weight whey protein on a dry solids basis wherein said whey protein fortifier composition consists essentially of from about 75% to about 100% of a whey protein concentrate as the sole protein source, wherein said whey protein concentrate is prepared by neutralizing whey prior to protein concentration thereof and wherein said whey protein fortifier composition is hydratable for incorporation into said meat.

4,407,834

RECOVERY OF XANTHINE STIMULANTS FROM AQUEOUS MEDIA

Jacky Chiovini, Daillens; Geoffrey Margolis, Bussigny, and Maurice Blanc, Morges, all of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 266,091, May 21, 1981, Pat. No. 4,390,698. This application Jul. 24, 1981, Ser. No. 286,632

Int. Cl.³ A23G *1/00*

U.S. Cl. 426—422 **7 Claims**

1. A process for the recovery of xanthine stimulants from an aqueous solution containing xanthine stimulants extracted from cocoa material, characterised in that the solution is contacted with a substantially neutral adsorbent and the adsorbent with the xanthine stimulants adsorbed thereon is separated from the aqueous solution having a reduced content of xanthine stimulants.

4,407,835

LEAVENING SYSTEM IN FRUCTOSE CONTAINING BAKED GOODS

Frank H. Y. Chung, Norwalk, Conn., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 6, 1981, Ser. No. 290,448

Int. Cl.³ A21D *10/04*

U.S. Cl. 426—552 **15 Claims**

1. A process for preparing chemically leavened baked goods which comprises utilizing, as the leavening acid in a bicarbonate leavening system in a cake formulation containing monosaccharide, a blend of a slow-acting phosphate leavening acid having a 2 minute donut dough rate of reaction of between about 15% and about 35% evolved CO_2 and a 10 minute donut dough rate of reaction of between about 20% and about 60% evolved CO_2 in combination with an organic acid selected from the group consisting of fumaric acid, citric acid, maleic acid, tartaric acid, succinic acid, adipic acid and mixtures thereof and baking said cake.

4,407,836

COLD WATER SOLUBLE GELATIN AND PROCESS

Peter M. Bosco, and Robert L. Danielson, both of Brookfield Center, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 22, 1982, Ser. No. 350,558

Int. Cl.³ A23L *1/04*; A23J *1/10, 3/00*

U.S. Cl. 426—576 **22 Claims**

1. A process for preparing a cold water soluble gelatin product comprising: preparing an aqueous solution comprising gelatin, sugar comprising a major amount of a combination of corn syrup solids having a DE of 42 or less and maltodextrin, the ratio of sugar to gelatin being in the range of from about 3:1 to about 7:1, acid and an amount of surface-active agent effective to increase dispersibility, the solution having a total solids content and a ratio of sugar to gelatin effective to form a foam; extruding the solution under conditions effective to provide foam; and drying the foam.

4,407,837

SEMOLINA DESSERT MIX

Edward J. Holley, Banbury, England, assignor to General Foods Limited, Banbury, England

Filed Mar. 15, 1982, Ser. No. 358,138

Claims priority, application United Kingdom, Mar. 16, 1981, 8108149

Int. Cl.³ A23L *1/195, 1/187*

U.S. Cl. 426—578 **5 Claims**

1. A dry semolina dessert powdered composition which comprises 15–30% of a fine hard wheat semolina, 14–30% of a powdered starch, 20–35% of pulverized sugar, 0–11% of a spray-dried skim milk powder and 15–25% of a spray-dried fat emulsion, all percentages being by weight based on the total weight of the composition.

4,407,838

FLUID NON-DAIRY COFFEE WHITENER

Charles E. Rule, Lakewood, and Donald E. Miller, Strongsville, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 251,161, Apr. 3, 1981, abandoned. This application Feb. 10, 1983, Ser. No. 465,470

Int. Cl.³ A23D *5/00*

U.S. Cl. 426—602 **13 Claims**

1. A fluid, protein-free, lipoidal coffee whitener in the form of a pasteurized, homogenized, water-rich lipoidal emulsion, suitable for addition to an acidic environment, the functional ingredients of which consist essentially of

about 83.5–93.4% water;

about 6–15% edible fat;

about 0.6–1.5% mixed lipoidal emulsifier;

said fat having a Wiley Melting Point below about 120° F.;

said emulsifier constituting about 0.3–1.05% mono- and diglyceride or propylene glycol partial ester of fat-foaming acids having an HLB not substantially greater than about 5 and about 0.1–0.45% of a solid, ionizable, lipoidal, emulsifier component; said ingredients providing a viscosity similar to that of a conventional casein-containing fluid coffee whitener and less than about 20 centipoises at 40° F. as measured on a Brookfield Viscometer, Model LVF, using a No. 1 spindle at 60 RPM.

4,407,839

DUSTING BLEND

Roger Corbeil, Montreal, and Gobind Sadaranganey, Mississauga, both of Canada, assignors to Robin Hood Multifoods Inc., Ontario, Canada

Filed Jul. 6, 1981, Ser. No. 280,469
Int. Cl.³ A21D 8/10, 2/02
U.S. Cl. 426—622 19 Claims

1. An improved dusting blend for application to baking and cooking equipment and material, to prevent dough from sticking to said equipment, said dusting blend consisting essentially of a base material of flour or starch, and from 5% to 20% salt by weight sufficient to retard insect infestation while at the same time not adversely affecting fermentation of the dough.

4,407,840

INSTANT REFRIED BEAN POWDER AND PROCESS FOR PRODUCING THE SAME

Patrick J. Lathrop, Chatsworth, and Phyllis C. Rothrock, Tarzana, both of Calif., assignors to Carnation Company, Los Angeles, Calif.

Filed May 15, 1981, Ser. No. 263,850
Int. Cl.³ A23B 7/02; A23L 1/36
U.S. Cl. 426—629 10 Claims

1. A process for producing dried bean powder which is instantly reconstitutable with water to form a product having a characteristic flavor, texture and color of conventional refried beans, which comprises

blanching raw beans in hot water in an amount of from 1.25 to 2 parts by weight of water per part by weight of beans for a period of time sufficient to increase the moisture content of the beans to a minimum of about 40%,

introducing the beans and blanch water into a pressure cooker in which the beans are cooked in the blanch water at a pressure of between about 25 to 75 psi under time-temperature conditions sufficient to render the beans digestable and impart a cooked bean flavor and color to the beans,

discharging the cooked beans and water from the pressure cooker into a container which is at ambient temperature and atmospheric pressure to provide an almost instantaneous release of pressure on the cooked beans whereby the beans are physically degraded to form a bean slurry having a solids content of about 25%–35% by weight and containing finely divided bean mash, whole bean pieces and bean skin particles,

milling the bean slurry through a screen having a relatively coarse sieve opening, with minimal grinding action, so that the whole bean pieces in the slurry are reduced to a relatively small particle size while the bean skin particles are retained in the slurry, and

drying the milled bean slurry to a maximum moisture content of about 6% to thereby provide a dried bean powder containing a major proportion of finely divided cooked bean particles and an appreciable quantity of bean skin particulate, which is substantially larger in size than said cooked bean particles, said powder being instantly reconstitutable with water to form a product containing particulate matter and having the flavor, texture and color characteristics of conventional refried beans.

4,407,841

RECOVERY OF A PROTEINACEOUS OAT FRACTION FROM A DISPERSION THEREOF IN HYDROCARBON SOLVENT

John R. B. Boocock, Kingston, and Ronald E. Murray, Napanee, both of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Filed Oct. 28, 1981, Ser. No. 315,921
Claims priority, application Canada, Nov. 6, 1980, 364117
Int. Cl.³ A23J 3/00
U.S. Cl. 426—656 10 Claims

1. A process for the recovery of a proteinaceous oat fraction from a dispersion thereof in an aliphatic hydrocarbon solvent, said hydrocarbon having 5–8 carbon atoms and said fraction containing at least 50%, by weight of the fraction, of protein, said process comprising the steps of:

(a) admixing the dispersion with at least 2.5%, by weight of the dispersion, of an aqueous ethyl alcohol solution comprising 82–92%, by weight of the solution, of ethyl alcohol and 18–8% water, with the proviso that the resultant admixture contains at least 0.35%, by weight of the admixture, of water, so as to agglomerate proteinaceous oat fraction in said dispersion;

(b) removing water from the liquid phase of the resultant admixture of agglomerated proteinaceous oat fraction in solvent so as to reduce the amount of water to less than 0.3%, by weight of the admixture; and

(c) recovering such proteinaceous oat fraction by separating the agglomerated fraction from the admixture.

4,407,842

METHOD AND COMPOSITION FOR RAPIDLY DEVELOPING LATENT FINGERPRINTS

Billy H. Shepard, 170 MarBil Rd. (P.O. Box 225), Milton, Fla. 32570

Filed Apr. 21, 1982, Ser. No. 370,382
Int. Cl.³ A61B 5/10
U.S. Cl. 427—1 17 Claims

1. The method of developing latent fingerprints on various surfaces comprising subjection of the surface on which a latent fingerprint exists to gaseous fumes produced by a mixture of cyanoacrylate ester, sulfur and sodium bicarbonate.

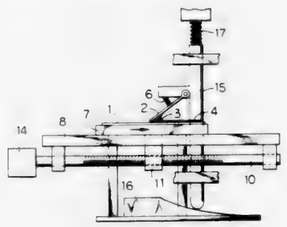
8. A composition for developing latent fingerprints on various surfaces by subjecting the surfaces and fingerprints to gaseous fumes produced by the composition, said composition comprising a mixture of cyanoacrylate ester, and a material selected from the group consisting of sodium bicarbonate, sodium carbonate and sodium chloride.

4,407,843

SMEAR SAMPLE PREPARING METHOD

Susumu Sasaki, 2-75, Shoei-cho, Mizuho-ku, Nagoya-shi, Aichi-ken, and Tomohiko Sakaki, 2-60, Ikesono-cho, Chikusa-ku, Nagoya-shi, Aichi-ken, both of Japan

Continuation of Ser. No. 92,282, Nov. 8, 1979, abandoned, which is a continuation of Ser. No. 891,766, Mar. 30, 1978, abandoned. This application Aug. 21, 1981, Ser. No. 295,083
Claims priority, application Japan, Mar. 31, 1977, 52-36536
Int. Cl.³ B05C 11/04
U.S. Cl. 427—2 6 Claims



1. A method of preparing a smear of a nonfree flowing fluid comprising the steps of:

(1) placing a drop of the fluid on a slide;

(2) contacting the slide with a spreader at an acute angle θ to define a wedge-shaped space containing said drop;

(3) causing relative motion at a speed u between the slide and the spreader away from the drop in said space;

(4) creating a smear of said drop on said slide of substantially constant and uniform thickness over substantially the entire length of said smear; and

(5) holding said constant thickness of said smear over said length by performing at least one of the following steps (5*a*) and (5*b*) while performing step (3);

(5*a*) causing the speed u of said relative motion to increase continuously the entire time while said smear is being created; and

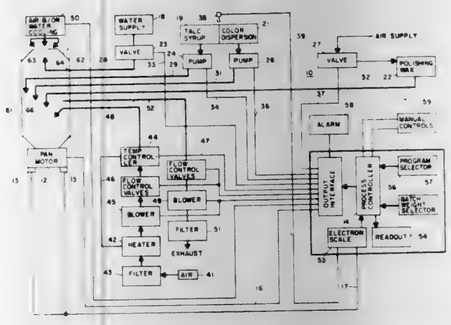
(5*b*) causing said angle θ to increase continuously the entire time while said smear is being created.

4,407,844

COATING PROCESS

Guido W. Melliger, Dover Garden Motel, Apartment 44, S. Salem St., Victory Garden, Dover, N.J. 07801, assignor to Guido W. Melliger, Dover, N.J.

Division of Ser. No. 140,469, Apr. 17, 1980, Pat. No. 4,310,562, which is a division of Ser. No. 934,519, Aug. 17, 1978, abandoned, which is a division of Ser. No. 777,468, Mar. 14, 1977, Pat. No. 4,133,290, which is a continuation-in-part of Ser. No. 672,766, Apr. 1, 1976, abandoned. This application Sep. 21, 1981, Ser. No. 304,100
Int. Cl.³ A01N 25/10
U.S. Cl. 427—3 6 Claims



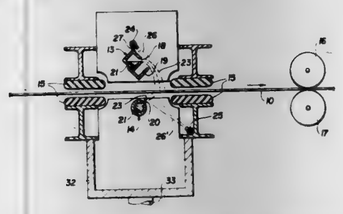
1. In a process for coating solid pharmaceutical dosage forms which comprises charging a plurality of tablets into a coating pan, rotating the pan to tumble the tablets while applying a series of coatings to the tablets, the improvement which comprises cooling the coating pan to control the deposit of coating material on the inside of the pan wall by applying a cooling medium to the external surface of the coating pan, while coating the tablets.

4,407,845

IONIC STRIP COATING METHOD

Edward J. Schaming, P.O. Box 1070, Butler, Pa. 16001

Division of Ser. No. 283,643, Jul. 15, 1981, Pat. No. 4,391,219. This application Jun. 17, 1982, Ser. No. 389,270
Int. Cl.³ B05D 1/04, 5/08
U.S. Cl. 427—13 7 Claims



1. A method of coating a moving strip with lubricant or the like comprising directing streams of liquid lubricant from a body of liquid lubricant onto at least one side of a moving strip, simultaneously directing pressurized air sprays onto said streams to disperse the streams into a multitude of much finer streams substantially in a crossing pattern to thereby coat the moving strip completely and uniform, and propelling said streams toward said strip by attraction created by impressing a high voltage low current charge on said body of liquid lubricant and electrically grounding the moving strip.

4,407,846

METHOD OF PRODUCING A HYDROPHILIC MEMBRANE FROM A POLYETHYLENE BASE FILM

Sueo Machi, Takasaki; Isao Ishigaki, Maebashi; Takanobu Sugo, Gunma; Kazuo Murata; Shiro Tanso, both of Takatsuki, and Keizi Senoo, Takasaki, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo and Yuasa Battery Co., Ltd., Osaka, both of, Japan

Continuation of Ser. No. 118,106, Feb. 4, 1980, abandoned. This application Oct. 13, 1981, Ser. No. 311,032
Claims priority, application Japan, Feb. 5, 1979, 54-11983
Int. Cl.³ B05D 3/06
U.S. Cl. 427—35 4 Claims

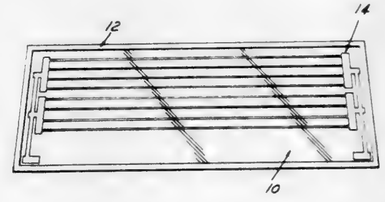
1. A method of producing a hydrophylic membrane from a polyethylene base film by first irradiating the film of thickness not more than 150 μm with ionizing radiation in air or an oxygen atmosphere to give a total dose of 2 to 30 Mrad at a dose rate of 5×10^4 to 10^7 rad/sec, and then grafting without additional radiation acrylic acid and/or methacrylic acid present in the form of a 10–60 wt% aqueous solution onto the irradiated film at a temperature of 10° C. to 60° C.

4,407,847

PROCESS FOR THE MANUFACTURE OF GLASS SHEETS

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 335,124
Int. Cl.³ B05D 3/06, 5/12
U.S. Cl. 427—35 9 Claims



1. A process for the manufacture of glass sheets used as windows, including the steps of:

(a) selecting a glass sheet;

(b) applying an opaque band to a surface of said glass sheet, said opaque band being formed from a radiation curable paste which includes both a filler material which can fuse to said surface of said glass sheet when heated to a fusion temperature and a radiation curable material which is heat decomposable into components which are nonreactive with said glass sheet when heated to said fusion temperature;

(c) curing said radiation curable material thereby to form a temporary bonding of said radiation curable paste to said surface of said glass sheet; and

(d) passing said glass sheet through a heating lehr which is operated at a temperature sufficiently high to heat said glass sheet to said fusion temperature whereby said fusable material of said radiation curable paste is fused to said surface of said glass sheet and whereby said radiation curable material is heat decomposed into components which are nonreactive with said surface of said glass sheet.

3. The process of claim 1, in which said radiation curable material is curable by the application of electron beam energy and said radiation curable material is cured by passing it under

an electron beam gun which applies electron beam energy thereto.

4,407,848

PROCESS FOR DURABLY MODIFYING A SHAPED SYNTHETIC POLYMER ARTICLE

Taturo Yamaguchi, Ikeda, and Norihiro Minemura, Takatsuki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Jun. 12, 1980, Ser. No. 158,731
Claims priority, application Japan, Jun. 26, 1979, 54/79613
Int. Cl.³ B05D *3/06, 3/02*
U.S. Cl. 427—36 12 Claims

1. A process for durably modifying a shaped synthetic polymer article, comprising the steps of:

applying, onto at leat a peripheral surface portion of a shaped synthetic polymer article, 0.1 percent to 40 percent, based on the weight of said shaped article, of the compound diallyl phthalate then applying 0.05 percent to 20 percent, based on the weight of said shaped article, of the compound polyoxyethyleneglycolacrylate, which is capable of imparting at least one function selected from the group consisting of anti-static, perspiration-absorbing, anti-soiling, water-absorbing, moisture-absorbing, water-repellent, oil-repellent, anti-pilling, anti-snagging, anti-flaming, anti-melting, anti-bacterial, bonding property-enhancing and dyeing property-enhancing to said shaped article; and

copolymerizing said compounds in said shaped article.

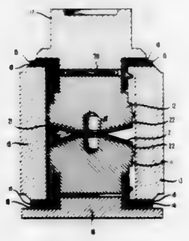
10. A process as claimed in claim 1, wherein said copolymerization of said diallyl phthalate with said polyoxyethylene glycol acrylate is initiated by applying actinic rays to the copolymerization system.

4,407,849

PROCESS FOR IMPROVING ELECTRODE COATINGS

Laird K. S. Haas, Orefield; Larry H. Herring, Nazareth, and Yoshinao Nakada, Emmaus, all of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 23, 1981, Ser. No. 333,974
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—37 9 Claims



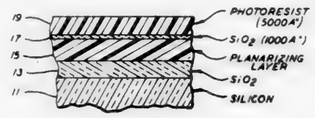
1. A method of fabricating a sealed gas surge limiter having two electrodes (11 and 12) with a coating (21) on a portion of at least one electrode and a spark gap (19) between said electrodes comprising the step of applying a pulsed signal to the electrode by means of a circuit including an AC current source (23), first means (portion I) for causing a relaxation oscillation waveform across the electrodes throughout each half-cycle of the current, second means (portion II) for producing a plurality of current spikes through the electrodes at the end of each period of the relaxation oscillation waveform and to produce a small polarity reversal each time the waveform goes to zero, and third means (portion III) for producing current spikes of high amplitude, such that a limited portion of the coating bonds with the electrode for each conduction so that said coating is bonded over essentially the entire interface with the electrode.

4,407,850

PROFILE CONTROL PHOTORESIST

Richard H. Bruce, Sandy Hook, and Alan R. Reinberg, Westport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 11, 1982, Ser. No. 338,752
Int. Cl.³ B05D *1/36, 3/04*
U.S. Cl. 427—38 10 Claims



1. A method of patterning a photoresist such as to obtain a vertical wall comprising:

(a) depositing the photoresist in a thick layer on the order of one micron thick on a substrate;

(b) depositing a thin layer of silicon dioxide over said thick resist;

(c) depositing a thin layer of resist on said layer of silicon dioxide;

(d) patterning said thin resist;

(e) patterning said layer of silicon dioxide;

(f) patterning said thick photoresist with steps comprising:

(1) disposing said substrate between the plates of parallel plate reactor operating in the frequency range between 50 and 5000 KHz;

(2) supplying a reactant gas containing to said reactor for generation of a plasma containing chemically active species;

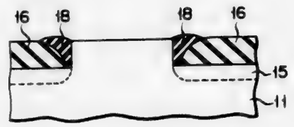
(3) establishing a pressure in said reactor in the range of 0.1 to 2 Torr.

4,407,851

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

Kei Kurosawa, Tokyo, and Tadashi Shibata, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 29, 1981, Ser. No. 335,714
Claims priority, application Japan, Apr. 13, 1981, 56/55450; Jun. 10, 1981, 56/88254
Int. Cl.³ H01L *21/76*
U.S. Cl. 427—39 6 Claims



1. A method for manufacturing a semiconductor device comprising the steps of:

(a) forming a masking material at a predetermined part of a surface of a semiconductor substrate, and etching said semiconductor substrate using said masking material as a mask to form a recess;

(b) applying under low pressure conditions a first insulating film on the surface of said semiconductor substrate having said masking material still disposed thereon, said first insulating film being such that the side surfaces of step portions of said recess are etched at a greater rate than other surfaces thereof;

(c) etching said first insulating film to selectively remove said first insulating film covering the side surface of said recess to thereby reproducibly form a V-shaped groove between the side surface of said recess and said first insulating film remaining in said recess;

(d) simultaneously removing said masking material and said first insulating film formed thereover;

(e) forming a second insulating film on an upper surface of said semiconductor substrate including said V-shaped groove formed in said step (c) in such a way to form a smooth upper surface thereof; and

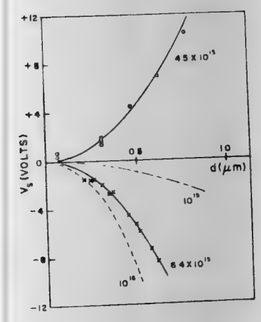
(f) etching the upper surface of said second insulating film to leave said first and second insulating films in said recess.

4,407,852

ELECTRETS FROM PLASMA POLYMERIZED MATERIAL

Slawomir W. Sapieha, 3380 Edouard Montpetit Blvd., Apt. 305, Montreal, Quebec, Canada, and Michael R. Wertheimer, Privada Clavel 121, Cuernavaca, Morelos, Mexico

Filed Oct. 16, 1980, Ser. No. 197,599
Claims priority, application Canada, Oct. 19, 1979, 337980
Int. Cl.³ G11C *13/02*
U.S. Cl. 427—41 20 Claims



1. In a device utilizing an electret, the improvement wherein the electret comprises a film of a plasma polymerized dielectric material having a substantially uniform volumetric space charge therethrough.

7. A method of manufacturing an electret comprising the steps of providing a substrate, and depositing on said substrate a plasma polymerized material.

4,407,853

PROCESS FOR PRODUCING A MAGNETIC RECORDING MEDIUM

Tsutomu Okita; Kyoichi Naruo, both of Fujinomiya, and Goro Akashi, Odawara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1982, Ser. No. 364,346
Claims priority, application Japan, Apr. 2, 1981, 56-49887
Int. Cl.³ H01F *10/02;* B05D *3/06*
U.S. Cl. 427—44 3 Claims

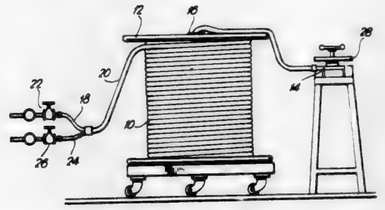
1. In a process for producing a magnetic recording medium by applying onto a base a magnetic coating composition comprising ferromagnetic particles dispersed in a solution comprising a compound polymerizable by electron beams and a low boiling solvent, irradiating the web with electron beams and drying the irradiated web, the improvement wherein the ferromagnetic particles are oriented while the applied magnetic coating composition is still wet and the oriented web is irradiated with electron beams within 5 seconds after orientation and dried by evaporating the solvent.

4,407,854

MANUFACTURE OF CABLE CORES

Ali Pan, Ontario, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 24, 1981, Ser. No. 247,127
Int. Cl.³ H01B *13/16*
U.S. Cl. 427—49 2 Claims



1. A method of treating a stranded construction of a plurality of similar stranded together insulated conductors in a core for telecommunications cable comprising:

having the core in a reeled condition with the core having two end portions accessibly positioned outside the reel;

forming the conductors into two groups with the number of conductors in a first of the groups being substantially equal to that in the second of the groups;

disposing the groups electrically in series with one another by electrically connecting the first and second groups together at one end of the core, electrically connecting the groups at the other end of the core, one to each of two terminals of opposite potential;

heating the core with it in the reeled condition by passing an AC single phase current from said other end to said one end of the core, along the first group of conductors in one direction around the reel, into and along the second group of conductors in the opposite direction around the reel from said one end to said other end of the core, heat in the conductors flowing into the insulation to increase the temperature at the outer surface of the insulation; and periodically measuring the current and voltage applied to the conductors and from these measurements determining the resistance of the conductors to provide a measurement of the temperature of the conductors; and

unreeling the stranded construction and passing the unreeled construction through a chamber containing a flowable core filling substance, the flowability of which increases with an increase in temperature, the filling substance being caused to flow into the interstices beween the insulated conductors to fill the core, the heated core retaining a higher than ambient temperature in the filling substance to assist its flowability.

4,407,855

METHOD FOR FORMING AN ABRASION RESISTANT COATING FROM CELLULOSE ESTER AND PENTAERYTHRITOL ACRYLATES

Raymond J. Russell, Lincoln Park, N.J., assignor to Panelographic Corporation, West Caldwell, N.J.

Division of Ser. No. 104,351, Jan. 7, 1980, Pat. No. 4,308,119, which is a continuation-in-part of Ser. No. 13,418, Feb. 21, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,129
Int. Cl.³ B05D *3/14, 3/06*
U.S. Cl. 427—54.1 29 Claims

1. A method for providing an abrasion resistant coating on a substrate comprising:

(a) forming a composition curable by actinic radiation consisting essentially of a pentaerythritol-based polyacrylate selected from the group consisting of a pentaerythritol polyacrylate, a pentaerythritol polymethacrylate, a dipentaerythritol polyacrylate, a dipentaerythritol polymethacrylate, a tripentaerythritol polyacrylate and a tripen-

taerythritol polymethacrylate, a cellulose ester comprising the reaction product of cellulose with at least one organic carboxylic acid having from 2 to 4 carbon atoms or nitric acid and a photoinitiator, wherein the weight ratio of said polyacrylate to said ester is from about 6 to 1 to about 100 to 1.

4,407,856

ANAEROBIC PROCESS FOR CURING RADIATION CURABLE COMPOSITIONS

Warren R. Pitts, Needham, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 140,333, Apr. 14, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,417

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **9 Claims**

1. A process for anaerobic curing of a composition which comprises the steps of

(a) applying to a surface an unoxygenated radiation curable composition consisting of a monomer and a tri-functional oligomer;

(b) excluding oxygen from said composition on said surface and

(c) allowing said composition to solidify.

4,407,857

METHOD FOR PROCESSING A LITHIUM-SODIUM-ANTIMONY PHOTOCATHODE

Gilbert N. Butterwick, Leola, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 30, 1981, Ser. No. 279,182

Int. Cl.³ H01J *39/00*

U.S. Cl. 427—74 **4 Claims**



1. A method of making a lithium-sodium-antimony photocathode comprising in order:

(a) forming a base layer including antimony on a substrate,

(b) depositing sodium onto said base layer such that the responsivity of the resultant sodium-antimony surface increases to a first peak value and then decreases to 90 percent of said peak value,

(c) depositing lithium onto said sodium-antimony surface until said lithium-sodium-antimony photocathode develops a hazy brown color,

(d) sensitizing said lithium-sodium-antimony photocathode until a second peak value greater than said first peak is obtained, and

(e) alternately depositing antimony, sodium and lithium onto said photocathode until said second peak is stabilized.

4,407,858

METHOD FOR PRODUCING FILMS OF SINTERED POLYCRYSTALLINE SILICON

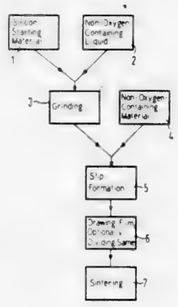
Leopold Hanke, Beyharting, Austria; Hans Hellebrand, Munich, and Helmut Schmelz, Prien, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 29, 1981, Ser. No. 335,587

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1981, 3100776

Int. Cl.³ H01L *31/18*

U.S. Cl. 427—86 **5 Claims**



1. In a method of producing films of sintered polycrystalline silicon whereby relatively fine silicon particles are worked-up with additives into a slip, which is drawn-out into a film and then sintered, the improvement comprising:

grinding initial silicon material in a non-oxygen-containing liquid to an average grain size corresponding to specific surface of at least $50m^2/g$;

directly thickening the ground silicon particles and non-oxygen-containing liquid by adding a further non-oxygen-containing material so as to attain a viscosity in the resultant slip suitable for drawing a film from such slip; and

in a manner known per se, drawing a film from such slip and sintering the resultant film.

4,407,859

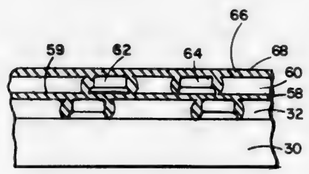
PLANAR BUBBLE MEMORY CIRCUIT FABRICATION

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 17, 1980, Ser. No. 197,740

Int. Cl.³ B44C *1/22;* **H01L** *21/312;* **C03C** *25/00, 15/00*

U.S. Cl. 427—89 **18 Claims**



1. A method of manufacturing microcircuits having multi-level, uniformly spaced, dielectrically isolated conductor patterns on a planar substrate, which includes:

(1) forming a first insulator material layer on a planar surface of said substrate,

(2) selectively masking said first insulator material layer to define pre-configured, channel regions to be etched in said first insulator material layer,

(3) etching away said first insulator material mask defined regions to form relatively overwide channels by providing areas of overetch in the walls of said relatively overwide channels,

(4) forming a first level conductor material pattern in aid channels with the top of said conductor material being substantially co-planar with the top surface of the channel-defining first insulator material and with said conductor material being free of contact with the overetch areas,

(5) depositing additional insulator material atop said first level conductor material and said first insulator layer backfilling said channel overetch areas with said additional insulator material, said additional insulator material defining a planar surface uniformally spaced above said substrate and thereafter,

(6) forming a second level conductor material pattern at least partially overlaying said first level conductor material pattern on said additional insulator material planar surface.

4,407,860

PROCESS FOR PRODUCING AN IMPROVED QUALITY ELECTROLESSLY DEPOSITED NICKEL LAYER

Rebecca P. Fleming, Fairfax, Va.; Samuel Lawhorne, Jr., Poughkeepsie, N.Y.; John J. Mele, Cornwall-on-Hudson, N.Y., and Chandrika Prasad, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1981, Ser. No. 278,945

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—98 **4 Claims**



1. A process for providing a stress-free pure nickel layer on a ceramic substrate comprising

screening on said ceramic substrate selected metallized surface areas formed of a particulate paste mixture that includes a refractory metal selected from the group consisting of Mo, Ta, W and Mn and mixtures thereof, and a particulate glass material in an amount in the range of 0.5 to 15% by weight, and sintering the surface areas,

selectively depositing a layer of nickel-boron on said metallized surface areas of said substrate by electroless plating techniques, wherein said boron content is in the range of 0.1 to 3% by weight, and

heating the resultant substrate and nickel-boron layer in a non-reacting environment at a temperature of at least 750° C. for a time sufficient to diffuse the boron from the nickel-boron layer to said glass in said metallized surface areas of the substrate, leaving essentially a pure stress-free nickel layer bonded to said substrate.

4,407,861

METHOD OF MANUFACTURING A MAGNETIC RECORDING MEDIUM OF THIN METALLIC FILM TYPE

Seizo Watanabe, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,867

Claims priority, application Japan, Aug. 10, 1981, 56-125122

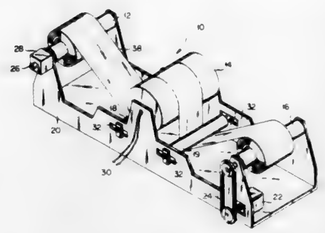
Int. Cl.³ H01F *10/02*

U.S. Cl. 427—130 **4 Claims**

1. A method of manufacturing a magnetic recording medium of thin metallic film type comprising:

a first step of forming a thin magnetic metallic film layer on a base film which heat-contracts both in a first direction and in a second direction perpendicular to the first direction; and

a second step of heating the base film, while preventing the base film from heat-contracting in the first direction and



thus heat-contracting the base film in the second direction, thereby making cracks in the thin magnetic metallic film layer which extend substantially parallel to the first direction of the base film.

4,407,862

METHOD OF MAKING LETTERPRESS PRINTING PLATES

Forrest Wessells, Deltona; Joseph Startari, Tallahasse, both of Fla., and Michael E. Estes, Marietta, Ga., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 228,638, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 910,721, May 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 892,438, Mar. 31, 1978, abandoned. This application Oct. 29, 1981, Ser. No. 316,386

Int. Cl.³ B41L *7/00, 9/00*

U.S. Cl. 427—144 **4 Claims**

1. In the method for preparing a letterpress printing plate consisting essentially of positioning a substrate for receipt of a liquid light polymerizable composition, depositing said liquid light polymerizable composition on said substrate, exposing said liquid light polymerizable composition to light with a patterning means to polymerize said light polymerizable composition and form a latent relief image in said liquid light polymerizable composition and mechanically removing the unpolymerized liquid light polymerizable composition with a liquid free procedure, the improvement comprising said substrate consisting essentially of a paper laminae having a side on which the liquid light polymerizable composition is deposited and a polymeric sealing laminae sealing said side of said paper laminae on which said liquid light polymerizable composition is deposited, said paper lamina characterized by cellulosic pulp and consisting of a single sheet of smooth finish tag stock that is 5 to 20 mils thick, has a tensile strength in the press direction of at least 70 pounds per inch in width, a tensile strength in the cross press direction of at least 20 pounds per inch in width and having dark colored fibers independently colored with a dark color having a good ultraviolet light absorption/reflectivity ratio before being incorporated into said sheet.

4,407,863

PROCESS FOR PRODUCING GRANULE COATED WITH TANNIC ACID METAL CHELATE COMPOUND

Tohru Yui, Fujisawa; Hachiro Hirai, Yokohama, and Ken Takamaru, Kawasaki, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo and Toshiba Pharmaceutical Co., Ltd., Kawasaki, both of, Japan

Filed Dec. 31, 1981, Ser. No. 336,187

Claims priority, application Japan, Jan. 14, 1981, 56-4202

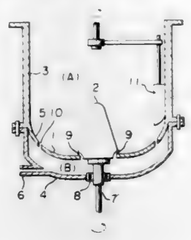
Int. Cl.³ A24D *1/06*

U.S. Cl. 427—213 **9 Claims**

1. A method for preparing a granular substrate coated with a tannic acid metal chelate compound which comprises:

granulating a non-toxic supporting substrate into granular core material; and

adding a particulate tannic acid metal chelate compound to



said granular core material while simultaneously spraying a binder solution, thereby fixedly applying a coating of said particulate tannic acid metal chelate compound on said granular core material.

4,407,864

PROCESS FOR TREATING IRON SPONGE

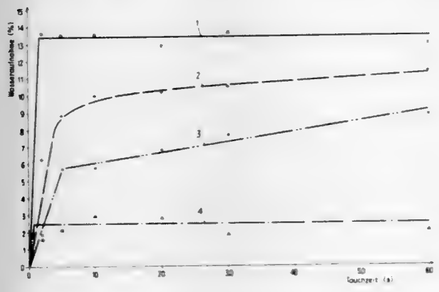
Kurt Stift; Horst Sulzbacher, both of Leoben, and Günther Saiger, Trofaiach, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Oct. 1, 1981, Ser. No. 307,577

Claims priority, application Austria, Oct. 1, 1980, 4904/80

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—216 **10 Claims**



1. Process for treating porous iron-containing particles, in particular iron sponge, for preventing reoxidation and/or corrosion on storage and transport, said process comprising rolling the iron sponge particles in calcined lime dust subsequently to the production of iron sponge and then humidifying said particles with an amount of hydrating water which is smaller than required for completely hydrating the lime, characterized in that hydrophobing additives are added to the calcined lime by adding said substances to the hydrating water.

4,407,865

PROCESS FOR COATING A STERILIZING FILTER MATERIAL WITH SILVER AND PRODUCT FORMED THEREBY

Ralph A. Nice, Dublin, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jun. 9, 1981, Ser. No. 271,890

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—217 **7 Claims**

1. The process for coating a sterilizing filter composed of a particulate material comprising the steps of:

(a) immersing the filter material in a silver compound in solution,

(b) applying a chemical reducing agent to said solution causing elemental silver to plate on the surface of said material as a thin coating,

(c) filtering and washing said material, and

(d) applying heat to said material at a sintering temperature to form a more adherent bond with said elemental silver coating.

4,407,866

PROCESS FOR COATING CHOPPED STRAND OF GLASS FIBER WITH THERMOSETTING RESIN

Tadanori Kitamura, and Nobuyuki Takao, both of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Mar. 26, 1982, Ser. No. 362,065

Claims priority, application Japan, Apr. 2, 1981, 56-49938

Int. Cl.³ B32B *7/02*

U.S. Cl. 427—221 **11 Claims**

1. A process for coating chopped strands of glass fiber with thermosetting resin which comprises dipping chopped strands of glass fiber in a solution of thermosetting resin of A-stage in a polar solvent soluble or miscible with an aqueous medium to impregnate the chopped strand with the resin solution, separating the impregnated chopped strand, stirring the impregnated chopped strand in the aqueous medium to disperse the impregnated chopped strand and to remove the solvent present in the resin solution contained in the chopped strand into the aqueous medium, separating the chopped resin coated with the desolvated resin form the aqueous medium, and drying the chopped strand.

4,407,867

APPARATUS AND A METHOD FOR THE COMPLETELY AUTOMATIC LACQUERING OF STRIP-FORM MATERIALS

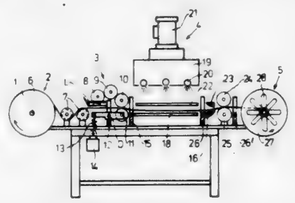
Herbert Brück; Günter H. Steinbüchel, both of Leverkusen; Hans Hofmann, Cologne; Josef Busch, Bergisch Gladbach, and Franz Hoffacker, Langenfeld, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 11, 1980, Ser. No. 215,377

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951802

Int. Cl.³ B05D *1/28, 3/12;* B05C *1/00;* B05B *5/00*

U.S. Cl. 427—365 **10 Claims**



10. A method for automatic initiation of lacquering of strip-form materials comprising the steps of

feeding a strip of material into a lacquer application device,

inserting the leading end of the strip between a lacquer application roller and a pressure roller, said rollers being spaced apart in said application device

actuating a lacquer initiating signal with said leading end to operate means moving said rollers together and applying lacquer to said strip surface and grasping said strip between said rollers and guiding the strip to drying and curing in a drier

and then feeding the lacquered strip to a strip receiving spool and winding the strip in a roll on the spool.

4,407,868

PROCESS FOR THE PREPARATION OF INORGANIC FIBER CONTAINING ENAMELWARE

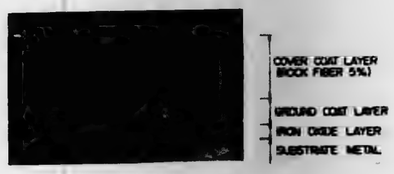
Yoshihiro Iizawa, Sayama, Japan, assignor to Ikebukuro Horo Kogyo Co., Ltd., Tokorozawa, Japan

Continuation of Ser. No. 220,726, Dec. 29, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,640

Claims priority, application Japan, Nov. 18, 1980, 55-161357

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—376.2 **2 Claims**



1. In a process for preparing enamelware which comprises preparing a slip, enameling a ware with the slip, drying the enameled ware and firing the dried ware, the improvement wherein inorganic fibers having a diameter of 5 to 30 microns and a length of 1 to 5 millimeters are added to the slip prior to enameling, and an enamel film having a thickness of 1–3 mm is produced by a single enameling step.

4,407,869

CONTROLLING BORON CONTENT OF ELECTROLESS NICKEL-BORON DEPOSITS

Glenn O. Mallory, Los Angeles, Calif., and Theresa R. Horhn, Detroit, Mich., assignors to Richardson Chemical Company, Des Plaines, Ill.

Continuation of Ser. No. 295,523, Aug. 24, 1981, abandoned. This application Dec. 13, 1982, Ser. No. 449,223

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—443.1 **24 Claims**

1. An electroless nickel bath for laying down a nickel-boron deposit having a relatively high percentage of boron, said bath comprising an electroless nickel bath that excludes a borohydride and that is a borane-reduced bath including:

a bath-soluble source of nickel;

a bath-soluble borane reducing agent; and

a bath-soluble boron deposition enhancing compound, said boron deposition enhancing compound being a source of ions selected from the group consisting of zirconyl ions, vanadyl ions, and combinations thereof, and said zirconyl or vanadyl ions remain substantially undeposited with the nickel-boron deposit.

4,407,870

PROCESS FOR POSITIONING THE LIQUID MEDIUM IN A LIQUID MEDIUM CELL AND A CORRESPONDING CELL

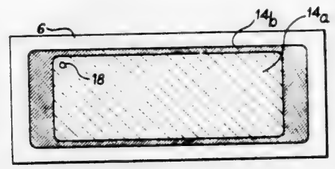
Jean F. Clerc, Meylan, and Francoise Vinet, Grenoble, both of France, assignors to Commissariat a l'Energie Atomique, France

Filed May 12, 1982, Ser. No. 377,588

Int. Cl.³ C09K *3/34;* G02F *1/13*

U.S. Cl. 428—1 **10 Claims**

1. A cell comprising a liquid medium placed between two walls kept spaced from one another, the walls being joined to one another along their edge, wherein it comprises first means for producing in a first area a first surface tension force and second means for producing in a second area a second surface tension force, the first surface tension force being higher than the second surface tension force, the means for producing the different surface tension forces serving to correctly position the liquid medium between the two walls, the liquid medium



then being located at least partly in the first area and at least partly outside the second area.

4,407,871

VACUUM METALLIZED DIELECTRIC SUBSTRATES AND METHOD OF MAKING SAME

Richard C. Eisfeller, Greenland, N.H., assignor to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 133,857, Mar. 25, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,783

Int. Cl.³ B32B *3/10, 3/18, 5/16;* C23C *13/02*

U.S. Cl. 428—31 **16 Claims**



5. An automobile trim component comprising:

a. a flexible elastomeric base having a prepared surface;

b. minute discrete rounded islands consisting of a corrosion prone metal adhered to said surface, said islands appearing visually as a continuous film but being electrically isolated one from another with said film being electrically non-conductive over the surface thereof, while having a light transmission of less than 25% substantially all of said islands having an average diameter of less than 3000 A and a normal film thickness of less than 1000 A; and

c. a dielectric clear synthetic plastic top coat adhered to said surface and encapsulating and insulating said islands.

4,407,872

SHEET MATERIAL AND ENVELOPE FOR PACKAGING ELECTRONIC PARTS

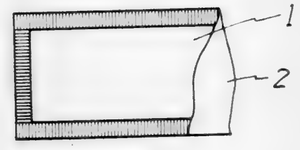
Shigeo Horii, Kyoto, Japan, assignor to Ricoh Co. Ltd., Japan

Filed Dec. 2, 1981, Ser. No. 326,917

Claims priority, application Japan, Jun. 2, 1981, 56-85310; Jun. 2, 1981, 56-85311

Int. Cl.³ B65D *27/18;* B32B *3/10, 15/08*

U.S. Cl. 428—35 **14 Claims**



1. An envelope for packaging electronic parts, which is

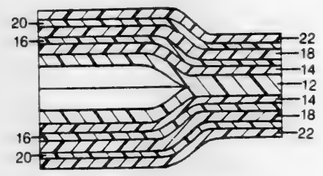
made of a laminated material comprising a transparent plastic film layer and a thin metal film layer having a light transmittance of at least 25% and electric resistance of less than 10^8 ohms/cm^2, the laminated material being heat-sealed to form said envelope with the metal film layer provided on an inner surface of the envelope.

4,407,873

RETORTABLE PACKAGING STRUCTURE

Ronald C. Christensen, Oshkosh; Roger P. Genske; Dennis E. Kester, both of Neenah, and William F. Ossian, Appleton, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 6, 1982, Ser. No. 405,717
Int. Cl.[3] B65D *85/72, 65/40, 81/18;* B32B *27/08*
U.S. Cl. 428—35 6 Claims



1. A laminated multiple layer flexible packaging structure, wherein the layers are firmly adhered to each other in face to face contact, the structure comprising, in order:
(a) a first layer of linear low density polyethylene;
(b) a second layer of linear low density polyethylene;
(c) a third layer of anhydride modified medium density polyethylene; and
(d) fourth, fifth and sixth layers respectively of nylon, ethylene vinyl alcohol, and nylon.

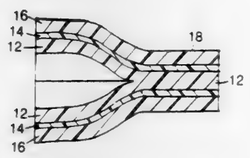
6. A pouch made from the packaging structure of claim 1, 2, 3, or 4.

4,407,874

STERILIZABLE FLEXIBLE PACKAGING STRUCTURE

Russell P. Gehrke, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Aug. 6, 1982, Ser. No. 405,753
Int. Cl.[3] B65D *85/72, 65/40, 81/18;* B32B *27/08*
U.S. Cl. 428—35 8 Claims



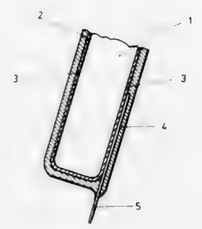
5. A bag, said bag comprising two facing sidewalls, said sidewalls being joined to each other by heat seals about the periphery of said pouch, said pouch being capable of maintaining strong heat seals and strong interlayer adhesions after being subjected to retort processing conditions, each said sidewall of said bag comprising a first layer disposed toward the interior of said bag and including said heat seals, said first layer comprising a propylene ethylene copolymer; a second layer adhered on one of its surfaces to said first layer and being disposed outwardly of said bag from said first layer, said second layer being a blend of 20% to 80% propylene ethylene copolymer and 80% to 20% linear low density polyethylene; and a third layer adhered to the other said surface of said second layer, said third layer comprising linear low density polyethylene.

4,407,875

TABLEWARE AND DECORATIVE ARTICLES WITH A SURFACE OF SILVER

Hans Schlegel, Ulm; Theodor Nowotny, and Rolf Mayer, both of Geislingen, all of Fed. Rep. of Germany, assignors to Wurttembergische Metallwarenfabrik AG, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,563
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022316
Int. Cl.[3] B65D *5/54, 65/28*
U.S. Cl. 428—43 9 Claims



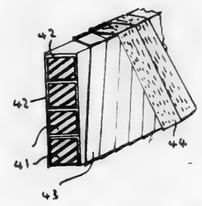
1. A tableware or decorative article with a surface of silver coated with a protective varnish layer of an enamel with a cellulose or synthetic resin base to prevent the article from tarnishing, wherein the article (1) has another transparent varnish coating (4) which adheres intimately to said protective varnish layer without being bonded thereto and which is removable from said protective varnish layer (3).

4,407,876

ELECTRICAL INSULATING STITCH BONDED MATERIAL

Malcolm Otty, Westering, Mill Hay Rd., Caldy, Merseyside, England

Continuation-in-part of Ser. No. 66,315, Aug. 8, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,493
Int. Cl.[3] B05D *5/12*
U.S. Cl. 428—102 9 Claims



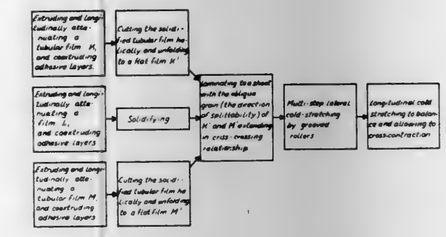
1. A method for electrically insulating the coils of electrical rotating machinery in which a fabric comprising high temperature fibres stitched together in the form of a stitch bonded fabric is applied to the machinery and is then impregnated with a resin which is subsequently cured so that the resin-impregnated fabric adapts to the shape of the part of the machinery to which it is applied.

4,407,877

HIGH-STRENGTH LAMINATE

Ole-Bendt Rasmussen, 7, Topetykket, 3460 Birkeroed, Denmark

Continuation of Ser. No. 229,968, Jan. 30, 1981, abandoned, which is a continuation of Ser. No. 66,878, Aug. 16, 1979, abandoned, which is a continuation of Ser. No. 803,897, Jun. 6, 1977, abandoned, which is a division of Ser. No. 592,273, Jul. 1, 1975, Pat. No. 4,039,364. This application May 27, 1982, Ser. No. 382,724
Claims priority, application United Kingdom, Jul. 5, 1974, 29807/74; Dec. 11, 1974, 53644/74; Feb. 12, 1975, 5971/75; Feb. 12, 1975, 5972/75
Int. Cl.[3] B32B *5/12*
U.S. Cl. 428—105 18 Claims



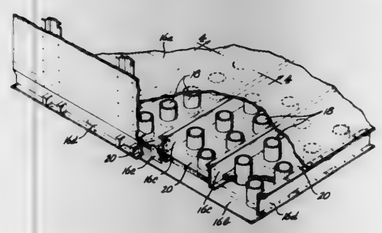
1. A high-strength generally continuous flexible laminate comprised of at least two generally continuous films each being biaxially oriented and generally weakly adhered to an adjacent such film in face-to-face relation, each such film being formed by extrusion with coincidental melt attenuation of a blend of at least two polymers which are sufficiently incompatible as to exhibit upon said extrusion an internal microscopic fibrillar morphology in which elongated fibrils are arranged in a generalized grain-like pattern having one predominant grain direction and imparting a corresponding direction of splittability to such film, such generalized grain pattern including fibrils having microscopically visible recurrent deflections from said predominant grain direction at intervals therealong which form a substantially zig-zagging specific grain configuration incorporated within said generalized grain pattern, the films being arranged in the laminate in such manner that the respective directions of splittability for at least two such films intersect each other.

4,407,878

LOAD-BEARING HOLLOW CORE BASE PANEL

Graydon E. Smith, 13861 18th Ave. SW., Seattle, Wash. 98166, and Barry J. Lewis, 31511 41st Ave. SW., Federal Way, Wash. 98003

Filed Mar. 9, 1981, Ser. No. 242,022
Int. Cl.[3] B32B *9/00*
U.S. Cl. 428—119 9 Claims



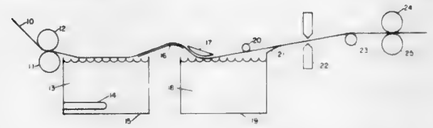
1. A load-bearing base panel for incorporation in airfreight containers, load-bearing pallets, vehicle cargo platforms and the like, said panel being of hollow core reinforced construction comprising substantially continuous top and bottom structural sheets interconnected and maintained in parallel relationship by transversely spaced reinforcing members, and intercostal additional support means for the top and bottom sheets comprising a plurality of transversely spaced-apart compression load-bearing columns bridging between said top and bottom sheets and having opposing ends abutted but unfastened to said sheets at selected positions in at least certain of the spaces between such reinforcing members, and positioning means maintained in position by contact with a plurality of such reinforcing members and in turn maintaining the columns in spaced-apart positions in each of said spaces.

4,407,879

METHOD OF PRODUCING A TEXTURED FILM

John A. Smart, Newark, Ohio, assignor to Northern Petrochemical Company, Omaha, Nebr.

Filed Aug. 7, 1981, Ser. No. 290,860
Int. Cl.[3] B32B *3/30, 27/32*
U.S. Cl. 428—141 9 Claims



1. A method for producing a textured thermoplastic film which comprises the steps of:
(a) preparing a film from a blend or mixture of at least two compatible thermoplastics which have distinctly dissimilar softening points,
(b) orienting the film,
(c) heating the film to a temperature at or near the softening point of at least one of the thermoplastics to soften it but sufficiently below the softening point of at least one of the other thermoplastics to allow it to remain unsoftened, thereby relieving part but not all of the orientation of the film and causing the formation of protuberances in the film, said protuberances being 1/32 to ¼ inch in height, and
(d) cooling the film.

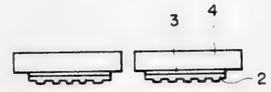
6. A textured film product comprised of at least two compatible thermoplastics which have distinctly dissimilar softening points and characterized by protuberances which are 1/32 to ¼ inches in height and spaced 1/100 to ½ inch apart, and which number from 10 to 150 points per square inch of film surface.

4,407,880

SUBSTRATE OF MEMBER FOR RECORDING INFORMATION WITH LIGHT AND METHOD OF MANUFACTURING THE SAME

Motoyasu Terao, Hinodemachi; Shinkichi Horigome, Tachikawa; Kazuo Shigematsu, Kawasaki; Yoshinori Miyamura, Hinodemachi, and Seiji Yonezawa, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 7, 1980, Ser. No. 204,780
Claims priority, application Japan, Nov. 7, 1979, 54-153638[U]; Sep. 19, 1980, 55-129322
Int. Cl.[3] B32B *5/00*
U.S. Cl. 428—156 15 Claims



1. A method of manufacturing a substrate of a recording member, comprising the step of forming a second organic

substance layer made of a solvent-soluble organic substance on a mold to provide a second organic substance layer whose first surface, adjacent the mold, follows the contour of the mold and whose surface opposite said first surface is substantially flat, said second organic substance layer having a thickness at its thinnest part of 0.05–10 μm, said second organic substance layer being formed by depositing a stratum of the solvent-soluble organic substance on a mold and drying said stratum, said second organic substance layer being formed directly on the mold, the step of forming a first organic substance layer on said second organic substance layer, said first organic substance layer being made of an ultraviolet-curing resin of a solventless type, and of a material which is curable from its liquid state and which has a bonding property, the step of arranging a hard base on said first organic substance layer, at least one of said mold and said base being substantially transparent, the step of curing said first organic substance layer to bond said base and said second organic substance layer, said curing being carried out by irradiating said first organic substance layer with ultraviolet rays through said mold or said base, and the step of releasing said base from said mold together with said first and second organic substance layers.

4,407,881

DECORATIVE SHEETS AND PROCESSES FOR PRODUCING DECORATIVE ARTICLES BY USING THE SAME

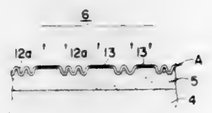
Mutsuo Shima, Tokorozawa; Kensuke Aoyama, Hatoyama, and Michiro Naka, Koganei, all of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 380,836

Claims priority, application Japan, May 30, 1981, 56-84130; Mar. 31, 1982, 57-53211

Int. Cl.³ B32B *3/00, 7/00, 31/14*

U.S. Cl. 428—156 **9 Claims**



1. A decorative sheet comprising (a) a hydrophilic deformative sheet which is susceptible to expansion deformation by swelling due to water absorption and (b) a moisture penetration controlling layer formed on the entire surface of at least one side of the hydrophilic deformative sheet, the decorative sheet having regions of different degrees of said expansion deformation caused by water absorption.

4,407,882

PRINTING INK COMPOSITIONS AND USE THEREOF FOR THE PRODUCTION OF TEXTURED FOAMED RESIN MATERIALS

Hanspeter Hauser, Aesch, and Peter Eckert, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

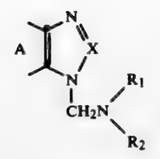
Filed Jul. 13, 1981, Ser. No. 282,573

Claims priority, application Switzerland, Jul. 15, 1980, 5413/80

Int. Cl.³ B29D *27/00*; C09D *11/02*

U.S. Cl. 428—159 **10 Claims**

1. A printing ink composition comprising a pigment or pigment preparation, a thermoplastic resin, water, a water-soluble organic solvent and an inhibitor for preventing the foaming of a foamable material containing a blowing agent, said inhibitor being an azole of the formula



(1)

wherein A is a benzene or naphthalene radical, X is a nitrogen atom or the



group, wherein R is a hydrogen atom or an alkyl group of 1 to 4 carbon atoms, R_1 is an alkyl or alkenyl group, each of 1 to 20 carbon atoms, a hydroxyalkyl group of 2 to 20 carbon atoms, an alkoxyalkyl or cyanoalkyl group, each of 3 to 20 carbon atoms, a cycloalkyl group of 5 to 12 carbon atoms, or a phenalkyl group of 7 to 9 carbon atoms, R_2 has the same meaning as R_1 and can in addition be hydrogen, or R_1 and R_2, together with the nitrogen atom to which they are attached, form a heterocyclic ring.

4,407,883

LAMINATES FOR PRINTED CIRCUIT BOARDS

Thomas D. Newton, Onalaska, Wis., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 3, 1982, Ser. No. 354,311

Int. Cl.³ B32B *27/34*

U.S. Cl. 428—215 **1 Claim**

1. A laminate for use as a circuit board comprising at least one barrier material having a thickness in the range of from about 0.0005 to about 0.004 inches consisting essentially of a high temperature resistant resin selected from the group consisting of a resin based on a polyimide resin, a triazine resin, a bis-maleimide triazine resin and an epoxy resin containing a layer of a conductive metal on one surface thereof, wherein said metal is selected from the group consisting of copper, aluminum, gold and silver, and wherein said barrier material is bonded to at least one side of a core material possessing a thickness in the range of from about 0.005 to about 0.5 inches and possessing a temperature resistance that is lower than that of said barrier material and which is selected from the group consisting of a phenolic resin, an epoxy resin, an epoxy-woven glass laminate and a phenolic resin-glass laminate.

4,407,884

STAIN-RESISTANT EARTHEN ARTICLES

Alvin E. Witt, Media, Pa., assignor to PermaGrain Products, Inc., Media, Pa.

Filed Aug. 11, 1981, Ser. No. 292,018

Int. Cl.³ B32B *9/04*; E04F *13/08*

U.S. Cl. 428—220 **16 Claims**

1. A composite earthen-plastic article having improved stain resistance and strength comprising (an) a porous earthen body having a synthetic plastic polymerized in situ therein and being further impregnated with a penetrating solution comprising a drying oil or a semi-drying oil, said polymerized synthetic plastic being substantially uniformly distributed throughout the volume of said earthen body, and said drying oil or semi-drying oil also being substantially uniformly distributed throughout said earthen body whereby an article having a substantially uniform composition throughout its thickness is provided which, having its pores substantially filled with said plastic and oil, is resistant to staining.

4,407,885

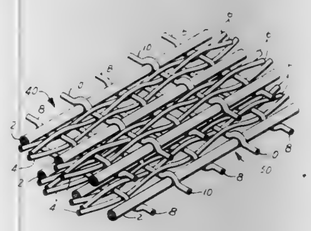
COMPOSITE ARTICLE

Guy C. Murphy; Jackie D. Jones, both of Fairfield, and Charles T. Salemme, Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 28, 1981, Ser. No. 229,047

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—246 **2 Claims**



1. A substantially dry, composite fabric preform comprising:
a plurality of layers of woven fabric each including reinforcing fibrous yarn defining the fabric form and made of fibers of materials selected from the group consisting of carbon, graphite, glass, boron, silicon, refractories and their combinations;
the plurality of layers being disposed in a stacked assembly with the layers sequentially adjacent and in contact with each other;
at least each alternating of the layers in the stacked assembly including a thermoplastic fibrous material intermixed with the reinforcing fibrous material and selected from the group consisting of heat softenable polyamide polyacrylic, polyester, polyolefins, derivatives of the foregoing, and mixtures thereof;
the plurality of layers being bonded together by the thermoplastic material at junctures between the fibrous materials.

4,407,886

PRESSURE-SENSITIVE AND HEAT-SENSITIVE RECORDING MATERIAL

Dietrich Hoffman, Roedersheim-Gronau, and Holger Schöpke, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

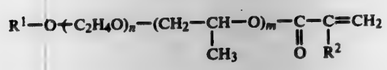
Filed Oct. 29, 1981, Ser. No. 316,445

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044120

Int. Cl.³ B41M *3/12*; B41L *1/20*

U.S. Cl. 428—320.8 **12 Claims**

1. A pressure-sensitive and heat-sensitive recording material comprising a carrier bearing a color-developing coating which reacts with color formers, wherein the color-developing coating consists essentially of
(a) a finely divided solid phenol-isobutyraldehyde resin of the novolac type with spherical particles of size ≦5 μm,
(b) as the dispersant, one or more copolymers containing, as copolymerized units,
(α) from 5 to 95% by weight of a copolymerizable compound of the formula



where R^1 is C_8–C_{20}-alkyl or unsubstituted or C_1–C_{20}-alkyl-substituted phenyl, R^2 is hydrogen or methyl, n is from 2 to 100 and m is from 0 to 50,
(β) from 5 to 95% by weight of a copolymerizable ethylenically unsaturated C_3–C_5-carboxylic acid or of a sulfonic acid or phosphonic acid of 2 to 5 carbon atoms carrying a polymerizable ethylenically unsaturated group, and
(γ) from 0 to 50% by weight of one or more copolymerizable ethylenically unsaturated compounds different from (α) and (β), and
(c) one or more aliphatic alcohols, which are solid at room temperature, of 12 to 18 carbon atoms,
(a) together with (b) having been applied in the form of an aqueous or aqueous-organic secondary dispersion.

4,407,887

POLYVINYLIDENE FLUORIDE FILM HAVING SUPERIOR DIELECTRIC STRENGTH AND A PROCESS FOR PRODUCING THE SAME

Hideyuki Hashizume, and Tadashi Tsuchiya, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 28, 1979, Ser. No. 24,802

Claims priority, application Japan, Mar. 31, 1978, 53-36588

Int. Cl.³ B32B *27/00, 27/36*; B29C *19/02*

U.S. Cl. 428—332 **15 Claims**

1. A polyvinylidene fluoride film having a high dielectric strength measured between a brass ball and a flat electrode of at least 10 MV/cm at room temperature and at least 8 MV/cm at 100° C.

2. A process for producing a polyvinylidene fluoride film having a high dielectric strength, which comprises laying a dielectric polymer film having a thickness of at least 1μ on one or both surfaces of a polyvinylidene fluoride film, said dielectric polymer film having a lower conductivity than the polyvinylidene fluoride film and having a dielectric strength equal to or larger than that of the polyvinylidene fluoride film; and applying an electric field of at least 10 KV/cm but less than the dielectric strength of the polyvinylidene fluoride film to these films at room temperature or higher but at a temperature lower than the temperature at which the polyvinylidene fluoride film or the dielectric polymer film thermally decompose until the dielectric strength of the polyvinylidene fluoride film measured between a brass ball and a flat electrode is at least 10 MV/cm at room temperature and at least 8 MV/cm at 100° C.

11. The polyvinylidene fluoride film of claim 1, wherein said film is prepared by the process of claim 2.

12. The polyvinylidene fluoride film of claim 11, wherein said dielectric polymer film is about 2 to 100 microns thick.

4,407,888

DIMENSIONALLY RECOVERABLE ARTICLE WITH ADHESIVE PORTION

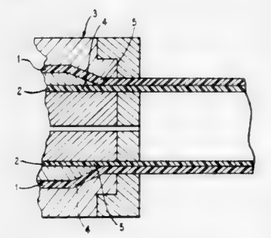
David Crofts, Keynes, England, assignor to Raychem Limited, England

Filed Dec. 1, 1980, Ser. No. 211,803

Claims priority, application United Kingdom, Dec. 7, 1979, 7942293

Int. Cl.³ C09J *7/02*; B32B *27/06*

U.S. Cl. 428—355 **17 Claims**



1. An article which comprises a dimensionally recoverable portion formed from a material comprising a cross-linked segmented polyester-ester block copolymer, and a hot-melt

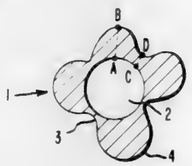
adhesive portion comprising a substantial non-cross-linked polyether-ester random copolymer derived from at least one aromatic dicarboxylic acid and at least one polymerized glycol having varying degrees of polymerization throughout the polyester, which portions are bonded together to form a single integral structure.

4,407,889

SPLITTABLE HOLLOW POLYESTER FILAMENT

Daniel Gintis, and Elmer E. Most, Jr., both of Kinston, N.C., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 19, 1982, Ser. No. 350,345
Int. Cl.³ D02G *3/00*
U.S. Cl. 428—398 **7 Claims**



1. A polyester filament having a denier in the range of about 0.8 to about 3.35, and a centrally located continuous longitudinally extending void, said void having an area of 15 to 30% of the total cross-sectional area of the filament, including the void, when measured on a cross section cut at a right angle to the longitudinal axis of the filament, the outer surface of said filament having the form of a plurality of ridges that extend longitudinally of the filament and a plurality of grooves that extend longitudinally along the filament, and having a groove ratio in the range of about 1.7 to about 2.3, said filament having a break elongation of less than about 30%.

4,407,890

RUBBER ARTICLES, PARTICULARLY MOULDED RUBBER ARTICLES FOR USE IN SANITARY FITTINGS

Günter Buzzi, Schiltach, Fed. Rep. of Germany, assignor to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Continuation of Ser. No. 102,503, Dec. 11, 1979, abandoned.
This application Jul. 6, 1981, Ser. No. 280,707
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1978, 2854471
Int. Cl.³ B32B *9/00*
U.S. Cl. 428—408 **11 Claims**

1. Rubber articles, particularly shaped rubber articles through which water is sprayed and on which evaporation takes place, for use in sanitary fittings, comprising a mixture of

a. 60 to 140 parts by weight of rubber,

b. 140 to 60 parts by weight of graphite,

c. 2 to 7 parts by weight of paraffin based on 200 parts by weight of rubber and graphite, and

d. an accelerating system for rubber, whereby deposition of lime deposits on the articles is substantially prevented.

4,407,891

LOW TEMPERATURE REDUCTION PROCESS FOR LARGE PHOTOMASKS

Fred M. Ernsberger, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 20, 1981, Ser. No. 323,332
Int. Cl.³ C03C *21/00*
U.S. Cl. 428—410 **10 Claims**

1. In a method for producing a stain pattern in a glass substrate comprising the steps of injecting stain-producing cations into a surface of a glass substrate and heating the glass in the presence of a reducing agent to reduce and agglomerate the stain-producing cations to produce a stained pattern within the surface of the glass, the improvement which comprises heating the glass in a pressure vessel containing an inert liquid saturated with hydrogen under pressure.

7. An article of manufacture prepared according to the method of claim 1, wherein the roll-off region of the stained pattern edges is not more than one micron.

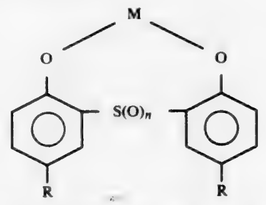
4,407,892

HEAT SENSITIVE RECORDING SHEET

Akihiro Yamaguchi, Kamakura; Keizaburo Yamaguchi, Kawasaki, and Hisamichi Murakami, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 229,562, filed as PCT JP80/00135, Jun. 18, 1979, published as WO80/02820, Dec. 24, 1980, § 102(e) dated Jan. 2, 1981, abandoned.
This application Jul. 20, 1982, Ser. No. 400,016
Claims priority, application Japan, Jun. 18, 1979, 54-75623
Int. Cl.³ B41M *5/18*
U.S. Cl. 428—411 **6 Claims**

1. A heat sensitive recording sheet prepared by coating a developer, coupler which develops a color by a heat fusion reaction with said developer and binder, on a sheet substrate, or by impregnating such therein, characterized in that said developer is one or more than one of the compounds represented by formula (I):



(I)

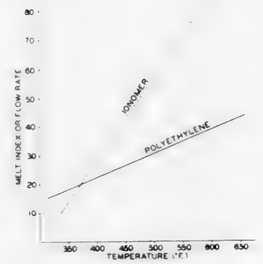
wherein each R is hydrogen, an alkyl radical of 1 to 12 carbon atoms, a cycloalkyl radical of 3 to 10 carbon atoms, an aralkyl radical of 7 to 10 carbon atoms or a phenyl radical, and can be identical to or different from each other, M is a polyvalent metal, except for Group IA of the Periodic Table, and n is zero or an integer of 1 or 2 and said sheet is substantially colorless at room temperature.

4,407,893

POLYOLEFIN COATING CONTAINING AN IONOMER FOR METAL SUBSTRATES

Andrew B. Malizio, Pelham, Ala., assignor to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Dec. 3, 1981, Ser. No. 326,979
Int. Cl.³ B32B *27/32*; B05D *3/12*
U.S. Cl. 428—454 **32 Claims**



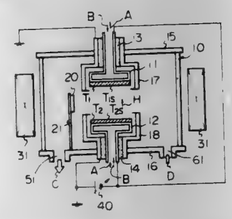
24. A composite article comprising a ferrous metal substrate having an anchor pattern on a surface thereof, and a coating adhered to said anchor pattern, said coating comprising a mixture of a polyolefin and an ionomer, said polyolefin being a member selected from the group consisting of polyethylene, polypropylene, an ethylene-vinyl acetate copolymer, an ethylene-unsaturated carboxylic acid copolymer, and an ethylene-unsaturated carboxylic acid ester copolymer.

4,407,894

METHOD FOR PRODUCING A PERPENDICULAR MAGNETIC RECORDING MEDIUM

Sadao Kadokura, Hachioji; Takashi Tomie, Hino, and Masahiko Naoe, Tokyo, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 11, 1981, Ser. No. 329,822
Claims priority, application Japan, Dec. 12, 1980, 55/174680
Int. Cl.³ H01F *10/02*; C23C *15/00*
U.S. Cl. 428—457 **10 Claims**



1. A method for producing a perpendicular magnetic recording medium, wherein an hcp cobalt alloy layer which comprises mainly cobalt and additionally chromium and which has a direction of easy magnetization in a direction normal to the base is deposited on the base by means of a sputtering method, characterized in that a magnetic field is generated in a direction perpendicular to the surfaces of a pair of cathode targets arranged opposite to one another within a sputtering device, and said hcp cobalt alloy layer is deposited on the base, which is located beside a space between said pair of cathode targets and which faces said space.

4,407,895

SENSITIVE RESINS COMPRISING 2-ALKYLGLYCIDYL METHACRYLATE HOMOPOLYMER OR COPOLYMER

Jun Nakauchi, and Tomihiko Kawamura, both of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 161,225, Jun. 20, 1980, abandoned.
This application Jan. 25, 1982, Ser. No. 342,361
Claims priority, application Japan, Jul. 16, 1979, 54-90034
Int. Cl.³ B32B *15/08, 27/30*; C08F *20/32*
U.S. Cl. 428—463 **4 Claims**

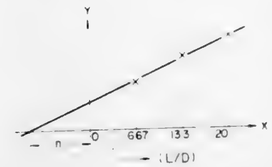
1. An article for use in electron beam lithography which comprises a suitable substrate and a suitable thickness of a negative resist film of a 2-alkylglycidyl methacrylate homopolymer or the copolymer containing at least 50 mol % of 2-alkylglycidyl methacrylate, the alkyl group of said 2-alkylglycidyl methacrylate having 1 to 4 carbon atoms and a number average molecular weight (Mn) of from 4,000 to 300,000 and the ratio (Mw/Mn) of weight average molecular weight (Mw) to number average molecular weight (Mn) is less than 3.0, the average molecular weight and weight average molecular weight being obtained from polystyrene conversion using gel permeation chromtography.

4,407,896

PROCESS FOR PREPARING A POLYOLEFIN RESIN-COATED PAPER FOR PHOTOGRAPHIC USE

Masashi Kubbota, and Touru Noda, both of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 23, 1981, Ser. No. 333,776
Claims priority, application Japan, Dec. 26, 1980, 55-188374
Int. Cl.³ B05D *3/02*; G03C *1/85, 1/86*
U.S. Cl. 428—513 **14 Claims**



1. In a process for preparing a polyolefin resin-coated paper for photographic use which comprises melt-extruding and coating a polyolefin resin composition containing titanium dioxide onto at least one surface of a paper sheet or a synthetic paper base,

the improvement comprises using as said polyolefin resin composition a composition having a physical property value n of not greater than 5 at 200° C. and a shearing rate of 1000/sec., where n is as shown in FIG. 3 of the drawings and is defined by an intersecting point of a straight line connecting the three measurement points and the X-axis, the three measurement points being obtained by employing three capillaries having different lengths L and different diameters D and plotting the L/D values, n being an absolute value which represents the contribution of admission resistance to the total resistance.

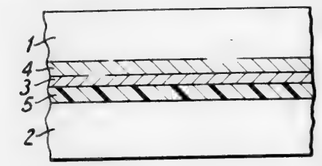
14. A polyolefin resin-coated paper for photographic use obtained by carrying out the process defined in claim 1.

4,407,897

DRYING AGENT IN MULTI-LAYER POLYMERIC STRUCTURE

Christopher J. Farrell, Arlington Heights; Boh C. Tsai, Rolling Meadows, and James A. Wachtel, Buffalo Grove, all of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 10, 1979, Ser. No. 101,703
Int. Cl.³ B32B *9/00, 27/18*
U.S. Cl. 428—516 **75 Claims**



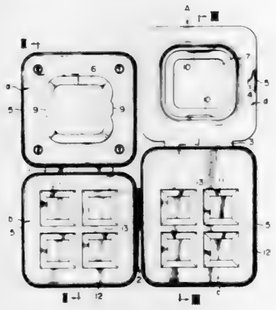
1. In a multi-layer polymeric structure having an interior layer of a moisture sensitive oxygen barrier polymer, the improvement which comprises the incorporation of a drying agent entrapped in a layer of the structure to protect said moisture sensitive layer.

4,407,898

CORNER PAD

Hideo Kato, and Hiroto Wada, both of Tokyo, Japan, assignors to Fukuoka Paper Manufacturing Co., Ltd., Fukuoka, Japan

Filed Feb. 24, 1982, Ser. No. 351,880
Int. Cl.³ B65D *81/02*
U.S. Cl. 428—542.8 **13 Claims**



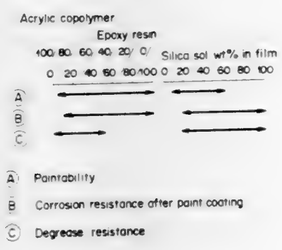
1. A corner pad comprising four substantially square hollow bodies made of a synthetic resin arranged substantially in a checkerboard pattern, all but one adjacent set of the hollow bodies being connected to each other along their adjacent edges by foldable pieces so as to form a three-faced body whose respective surfaces are substantially at right angles to each other in an erected condition by folding said four hollow bodies at the foldable pieces, and the two hollow bodies to be superposed in said erected condition being formed respectively with a protrusion and an opening fitting engageable with each other in said erected condition to retain the superposed condition of said two hollow bodies.

4,407,899

SURFACE TREATED STEEL SHEETS FOR PAINT COATING

Tomihiro Hara; Masahiro Ogawa; Masaaki Yamashita, and Yasuhisa Tajiri, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,664
Claims priority, application Japan, Dec. 24, 1980, 55-182111
Int. Cl.³ C25D *3/04, 11/38*
U.S. Cl. 428—626 **12 Claims**



1. A steel sheet having its surface prepared for paint coating consisting essentially of a base steel sheet "with an iron content of from 5 to 20% by weight", an iron-zinc film plated on the surface of said base sheet in an amount of at least 0.1 g/m²with an iron content of from 3 to 30% by weight, and a composite silicate resin film coated on said iron-zinc alloy film in an amount of 0.05 to 5.0 g/m² and consisting essentially of an acrylic copolymer, an epoxy resin, a silica sol and a trialkoxysilane compound.

4,407,900

ELECTROPLATED CORROSION RESISTANT STEELS AND METHOD FOR MANUFACTURING SAME

Shigeki Kirihara, Kobe, and Masatoshi Iwai, Kakogawa, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 8, 1981, Ser. No. 309,782
Claims priority, application Japan, Oct. 17, 1980, 55-146019
Int. Cl.³ C25D *5/10*; B32B *15/18*
U.S. Cl. 428—659 **10 Claims**

1. A steel material with a treated high corrosion resistant surface, comprising on a base steel a first plated layer of a Zn-Ni alloy consisting essentially of 5–20% of Ni and the balance Zn; and a second electroplated layer consisting essentially of zinc containing 0.005–0.5% of Cr.

4. A method for producing a steel material with a treated high corrosion resistant surface, comprising electroplating on said steel material a first layer of a Zn-Ni alloy consisting essentially of Zn and Ni in a first plating bath containing Zn and Ni wherein each concentration of Zn and Ni in said plating bath is over 20 g/l, respectively, and having a ratio of Zn concentration (g/l) to Ni concentration (g/l) in the range of 0.25–4, and electroplating on said first layer a second layer consisting essentially of Cr-containing zinc in a second electrogalvanizing bath with 0.1–10 g/l of Cr^{3+} and/or 0.05–0.5 g/l of Cr^{6+} content.

4,407,901

MAGNETIC RECORDING MEDIUM

Hajime Miyatsuka; Akira Kasuga, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1981, Ser. No. 300,823
Claims priority, application Japan, Sep. 12, 1980, 55/126815
Int. Cl.³ G11B *5/70*; B32B *5/16*
U.S. Cl. 428—694 **10 Claims**

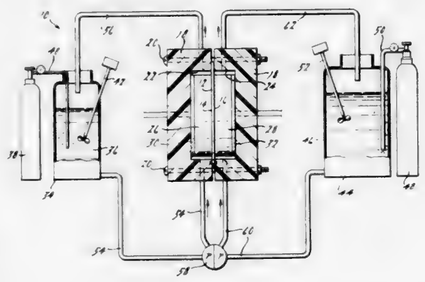
1. A magnetic recording medium, comprising:
a non-magnetic base; and
a magnetic layer on said base consisting mainly of ferromagnetic metal particles and a binder, said ferromagnetic particles are surface-treated with a polymer having a polar functional group and a degree of polymerization of not more than 100 and then dispersed in said binder.

4,407,902

CHEMICALLY REGENERABLE REDOX FUEL CELL AND METHOD OF OPERATING THE SAME

Joseph T. Kummer, Ypsilanti, and Djong-Gie Oei, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1980, Ser. No. 214,365
Int. Cl.³ H01M *8/06*
U.S. Cl. 429—15 **3 Claims**



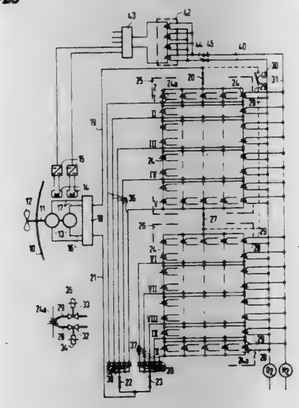
1. A method of operating a chemically regenerable redox fuel cell which comprises the steps of:
providing a catholyte solution, said catholyte solution being one which is reoxidized from a reduced state to an oxidized state by direct exposure of said catholyte solution to oxygen, said catholyte solution also being reducible from its oxidized state ot its reduced state;
providing an anolyte solution, said anolyte solution being one which is reduced from an oxidized state to a reduced state by direct exposure of said anolyte solution to hydrogen, said anolyte solution also being oxidizable from its reduced state to its oxidized state;
exposing said catholyte solution to oxygen at a first reservoir;
heating said first reservoir to a temperature suitable for oxidation of said catholyte solution;
exposing said anolyte solution to hydrogen at a second reservoir;
heating said second reservoir to a temperature suitable for reduction of said anolyte solution;
providing a cationic exchange membrane having first and second faces separated by a thickness thereof;
circulating said catholyte solution between said first reservoir and one face of said cationic exchange membrane;
circulating said anolyte solution between said second reservoir and the other face of said cationic exchange membrane;
whereby said catholyte solution is alternately oxidized at said first reservoir and reduced at said one face of said cationic exchange membrane and said anolyte solution is alternatively reduced at said second reservoir and oxidized at said other face of said cationic exchange membrane.

4,407,903

ELECTRIC DC SOURCE

Heinrich Gutbier, Röttenbach; Karl Strasser, Erlangen; Elmar Limberg, Lübeck, and Volker Jensen, Krummesse, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich and Ingenieurkontor Lübeck, Lübeck, both of, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,709
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043692
Int. Cl.³ H01M *8/04*
U.S. Cl. 429—23 **3 Claims**



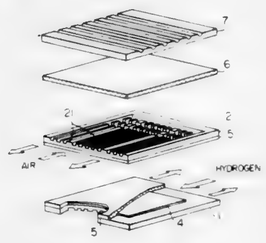
1. In an electric dc source made up of fuel cells or fuel batteries, each having terminals of one and the other polarity, which are fed by gas supplies and are connected in series or in series and parallel, one end of the series connection being of the one polarity and having a terminal coupled to a bus bar of that same polarity, the improvement comprising:
(a) a separate gas supply line and a controlled valve disposed in each gas supply line for each fuel cell or fuel battery; and
(b) electric valves coupling the respective terminals of each of the series connected fuel cells or fuel batteries having the other polarity to a bus bar of said other polarity, whereby said fuel cells or fuel batteries can be controlled by controlling the supply of gas thereto thus controlling the overall voltage supplied by said dc source with isolation achieved by means of said electric valves.

4,407,904

FUEL CELL

Norihira Uozumi, Hitachi; Takeo Yamagata, Takahagi; Saburo Yasukawa, Hitachi; Yasuyuki Tsutsumi, Hitachi, and Seiichiro Ono, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,813
Claims priority, application Japan, Feb. 20, 1981, 56/24654
Int. Cl.³ H01M *8/02, 8/24*
U.S. Cl. 429—26 **8 Claims**



1. In a fuel cell comprising a plurality of unit cells each comprising a fuel electrode plate, an oxidizing agent electrode plate and a matrix, the fuel electrode plate and the oxidizing agent plate being disposed face-to-face through the matrix, the unit cells being stacked through separators between the unit cells, forming a stacked assembly, a gas flow passage for fuel electrode and oxidizing agent electrode being provided on one side each of the electrode plates or the separators, and manifolds for gas supply and discharge to the gas flow passages on the electrode plates or the separators being provided at sides of the stacked assembly, an improvement comprising the gas flow passage having at least one gas inlet and at least one gas outlet at one outer edge of the electrode plate or separator, the at least one gas inlet and the at least one gas outlet adjacent thereto being isolated by at least one partition wall extended therebetween along a gas flow direction and open at a position most remote from the gas inlet and gas outlet, thereby forming a U-type passage having at least one gas inflow path starting at said at least one inlet and at least one gas outflow path ending at said at least one outlet, said at least one gas inflow path and said at least one gas outflow path communicating with each other at the most remote position, the gas flow passage for the fuel electrode and the gas flow passage for the oxidizing agent electrode being arranged in a counter-current relation to each other, the at least one gas inlet and the at least one gas outlet for the fuel electrode and the at least one gas inlet and the at least one gas outlet for the oxidizing agent electrode being provided at the opposite sides of the stacked assembly, respectively, and communicated respectively with the manifolds provided at the same opposite sides of the stacked assembly.

4,407,905
FUEL CELL

Seizi Takeuchi, Hitachiota; Kenzo Ishii, Hitachi; Toshiki Kahara, Tokaimura; Jinichi Imahashi, Hitachi; Masato Takeuchi, Katsuta; Hideo Okada; Sigeru Okabe, both of Hitachi; Shimpei Matsuda, Tokaimura; Fumito Nakajima, Hitachi; Hirosi Tobita, Kitaibaraki, and Kohki Tamura, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1981, Ser. No. 311,179
Claims priority, application Japan, Oct. 14, 1980, 55-142378
Int. Cl.³ H01M *4/86*
U.S. Cl. 429—42 **32 Claims**

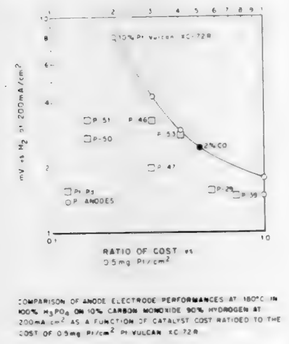


1. A fuel cell which comprises at least one gas diffusion electrode, said gas diffusion electrode comprising an electron-conductive, gas-permeable substrate and an electrode catalyst uniformly distributed on the substrate, the electrode catalyst comprising colonies each consisting of not more than about 20 primary particles of nobel metal, with each particle having a size of 10–30 Å, and the colonies being uniformly distributed and deposited on carrier powder.

4,407,906
FUEL CELL WITH PT/PD ELECTROCATALYST ELECTRODE

Paul Stonehart, Madison, Conn., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Nov. 3, 1981, Ser. No. 317,818
Int. Cl.³ H01M *4/86*
U.S. Cl. 429—42 **10 Claims**



COMPARISON OF ANODE ELECTRODE PERFORMANCES AT 180°C IN 100% H_3PO_4 ON 10% CARBON MONOXIDE 90% HYDROGEN AT 200mA/cm² AS A FUNCTION OF CATALYST COST RATIOED TO THE COST OF 0.5mg Pt/cm² Pt VULCAN XC-72R

1. An electrochemical cell comprising: (1) a pair of electrodes separated by an electrolyte and (2) a fuel gas comprising about 10 to 30% CO wherein the improvement comprises having at least one of said electrodes consisting of a graphitized or partially graphitized carbon support having on the surface thereof, an electrocatalytic material consisting of a platinum-palladium alloy and a hydrophobic binder.

4,407,907
AIR ELECTRODE

Tsutomu Takamura, Yokohama; Yuichi Sato, Atsugi; Toshiaki Nakamura, Yono, and Nobukazu Suzuki, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 30, 1981, Ser. No. 325,753
Claims priority, application Japan, Dec. 23, 1980, 55-181394
Int. Cl.³ H01M *4/90, 4/96*
U.S. Cl. 429—42 **18 Claims**

1. An air electrode for use in carrying out electrochemical reduction of an oxygen gas, which comprises an electrode body comprised of a porous body and a fluorine-containing solvent incorporated therein, said fluorine-containing solvent being a liquid at room temperature and having a boiling point of from about 50° to 350° C., an oxygen-dissolving power of at least about 15% by volume, and a surface tension of not greater than about 50 dyne/cm.

4,407,908
CATHODE FOR AN ELECTROLYSER

Anthony J. Appleby, Boulogne, and Gilles Crepy, Evry, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

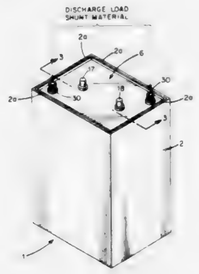
Filed Feb. 1, 1979, Ser. No. 8,443
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ H01M *4/52;* **C25B** *11/04*
U.S. Cl. 429—45 **2 Claims**

1. A cathode for an electrolyser, said cathode comprising a porous conductive material which includes sintered nickel impregnated with a catalyst, said catalyst comprising a molybdate of at least one metal chosen from the group consisting of nickel, iron and mixtures thereof, wherein the ratio of weight between the molybdate and the sintered nickel lies substantially between 20 and 40%.

4,407,909
METHOD FOR INTERNALLY DISCHARGING AN ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 23, 1981, Ser. No. 286,218
Int. Cl.³ H01M *10/44, 14/00, 6/00, 6/20*
U.S. Cl. 429—50 **15 Claims**



1. A method for completing the discharge of an electrochemical cell in which the discharge has prematurely ceased or has significantly diminished as a result of which chemically consumable components of the cell remain to be consumed, said electrochemical cell including at least one anode structure, at least one cathode structure, and an eletrolytic solution disposed within a housing, one or more of the aforesaid components being subject to consumption during discharge of the cell, said cell further including a pair of electrical terminals extending external of the housing adapted to be coupled to an external load during discharge, and electrical metal terminal

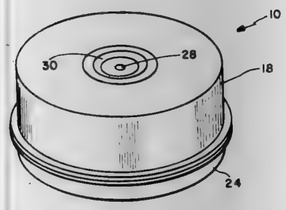
connections internal of the housing between the anode and cathode structures and the electrical terminals for making electrical connections between the anode and cathode structures and the associated terminals, said method being utilized in the event of an open circuit break or other impairment of the electrical connections between the anode and/or cathode structures and associated terminals causing a cessation or significant diminishing of the discharge of the cell, said method comprising the step of:

introducing an electrically-conductive load shunt material into the cell internal of the housing to bridge the electrical metal terminal connections internal of the housing, said material being selected to be chemically inert with the internal components of the cell and being operative to establish an electrical load shunt internal of the housing across the electrical metal terminal connections internal of the housing for permitting discharge of the cell until consumable components of the cell have been consumed by chemical reaction within the cell causing termination of chemical action within the cell; wherein the electrically-conductive load shunt material is selected to permit discharge of the cell to take place at a rate below the original rated discharge rate of the cell.

4,407,910
ANODE NEUTRALIZATION

Vincent O. Catanzarite, 7044 Mira Vista, Las Vegas, Nev. 89120

Continuation-in-part of Ser. No. 32,298, Apr. 23, 1979, abandoned, which is a continuation of Ser. No. 893,201, Apr. 3, 1978, abandoned. This application Sep. 28, 1981, Ser. No. 306,132
Int. Cl.³ H01M *10/34*
U.S. Cl. 429—57 **6 Claims**



1. A method of preventing violent reaction in an electrochemical cell comprising an alkali metal anode material, cathode material and electrolyte consisting of a solute dissolved in an oxyhalide or thiohalide solvent comprising the step of placing a ceramic material contiguous to said anode material within said cell, said ceramic material being substantially inactive below a predetermined temperature whereby said ceramic material is capable of reacting at said predetermined temperature to form a product with said anode material, said product being substantially inactive and said reaction being at most mildly exothermic, wherein said ceramic material consists essentially of 95% Al_2O_3 and 5% SiO_2 by weight.

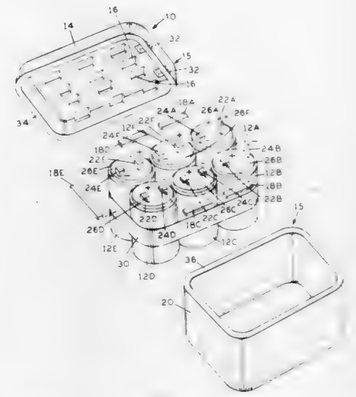
4,407,911
RECHARGEABLE ELECTROCHEMICAL CELL PACK HAVING RESISTANCE TO IMPACT AND VIBRATION

John W. Hooke, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Filed Oct. 1, 1980, Ser. No. 192,826
Int. Cl.³ H01M *2/10*
U.S. Cl. 429—94 **14 Claims**

1. A rechargeable electrochemical cell pack comprising:

a plurality of rechargeable electrochemical cells mounted in said casing, and said plurality of electrochemical cells each being in integral connection with said casing, said integral connection between each of said plurality of electrochemical cells and said casing comprised of at least one lug projection which extends from said casing and is integrally connected to each of said plurality of electrochemical cells; and

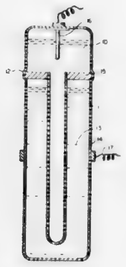


means at the interior of said casing for interconnecting said casing for interconnecting said electrochemical cells in an electrical circuit, said electrical circuit having a positive lead and a negative lead.

4,407,912
ELECTROCHEMICAL CELL UTILIZING MOLTEN ALKALI METAL ELECTRODE-REACTANT

Anil V. Virkar, Sandy, and Gerald R. Miller, Salt Lake City, both of Utah, assignors to Ceramatec, Inc. and University of Utah, both of Salt Lake City, Utah

Filed Oct. 13, 1981, Ser. No. 310,859
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—104 **14 Claims**



1. An improved electrochemical cell comprising;

a first electrode of a molten alkali metal;

a solid, impervious electrolyte containing a mobile alkali metal ion of the same alkali metal as is present in said first electrode, said electrolyte separating said first electrode from a second electrode;

a second electrode of a molten material receptive to the mobile alkali metal ion in said electrolyte; and

at least sufficient selenium present at the interface between said molten alkali metal of said first electrode and said electrolyte to effect a lowering of the internal cell resistance.

4,407,913

ELECTRODE COATING COMPOSED OF COPOLYMERS DERIVED FROM DIACETONE ACRYLAMIDE

Guy Rampel, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 157,313, Jun. 9, 1980, Pat. No. 4,298,667, which is a division of Ser. No. 966,745, Dec. 5, 1978, Pat. No. 4,245,016. This application Mar. 17, 1981, Ser. No. 244,789

The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.

Int. Cl.³ H01M *4/62*

U.S. Cl. 429—137 **8 Claims**

1. In an electrode, the improvement comprising an electrode coating consisting essentially of a copolymer derived from diacetone acrylamide and a polymerizable monomer; and a finely divided active electrode material.

4,407,914

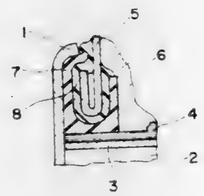
ALKALINE GALVANIC CELL

Takao Inoue, Hirakata; Tamotsu Wakahata, Katano; Keigo Momose, and Yukio Maeda, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Dec. 21, 1981, Ser. No. 333,190

Int. Cl.³ H01M *2/08*

U.S. Cl. 429—174 **7 Claims**



1. An alkaline galvanic cell which comprises an anode sealing plate in the form of a layered clad plate having an innermost copper layer, in which an anode active substance is accommodated, a cathode container in which a cathode active substance is housed, an insulating packing provided around the peripheral edge of said anode sealing plate which is fitted into said cathode container for hermetically sealing said cell, a layer of epoxy adduct polyamide amine disposed at a sealing portion of said anode sealing plate between said innermost copper layer of said anode sealing plate and said insulating packing, said epoxy adduct polyamide amine being thermo-plastic, with a tack even after assembly of said cell and having amine valence in the range of 50 to 400.

4,407,915

SECONDARY ZINC ELECTRODE

David J. Brown, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

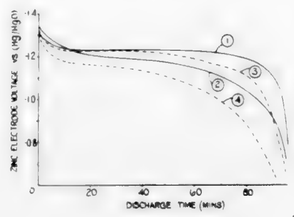
Continuation of Ser. No. 159,656, Jun. 16, 1980. This application Nov. 12, 1981, Ser. No. 320,841

Claims priority, application United Kingdom, Jun. 26, 1979, 7922176

Int. Cl.³ H01M *4/62*

U.S. Cl. 429—217 **13 Claims**

1. In a pressed, secondary zinc electrode for a secondary cell, the improvement comprising said electrode having dispersed therein particulate carbon in an amount between 20 and 50% by weight of the total weight of zinc and carbon and an



organic binder in an amount between 0.5 and 10% by weight of the total weight of zinc and carbon.

4,407,916

PROCESS FOR FORMING FLUORESCENT SCREEN

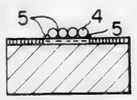
Motoo Akagi, Hinodemachi; Shoichi Uchino, Hachioji, and Saburo Nonogaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,263

Claims priority, application Japan, Mar. 19, 1981, 56-37636[U]; Feb. 1, 1982, 57-13279

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—23 **23 Claims**



1. A process for forming a fluorescent screen, where patterns each of individual phosphors are formed in zones discrete from one phosphor to another on a substrate surface from at least two kinds of phosphors, which comprises (1) a first step of applying a thin layer of a photosensitive substance capable of turning tacky by light exposure, (2) a second step of exposing the thin layer to light irradiation according to a pattern of one kind of the phosphors, thereby tackifying the light-exposed parts, and (3) a third step of applying particles of the said one kind of the phosphors, and a finer particulate filling material than the particles of the phosphor, to the tackified parts of the thin layer after the light exposure, said finer particulate filling material being at least one material selected from the group consisting of:

(i) metal phosphates;

(ii) SiO_2;

(iii) $MgCO_3$;

(iv) powders of organic polymer having a heat decomposition point of less than 450° C.; and

(v) much finer particles of phosphor having substantially the same color emission as that of the phosphor in the phosphor layer to be treated with the finer particulate filling material, thereby forming the pattern of the said one kind of the phosphors having the finer particulate filling material filling in clearances between the phosphor particles and between the phosphor particles and peripheries of the tackified parts.

4,407,917

INFORMATION IMAGE SYNTHESIZING AND COPYING METHOD

Katsuo Sakai, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

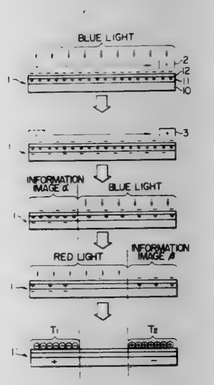
Filed Aug. 22, 1979, Ser. No. 68,666

Claims priority, application Japan, Aug. 28, 1978, 53-104727

The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.

Int. Cl.³ G03G *13/01*

U.S. Cl. 430—42 **9 Claims**



1. A method of synthesizing the information image of a first original (I) and the information image of a second original (II) and copying the respective information images on one copying sheet, using a photoconductor comprising a conductive base member, a first photoconductive layer having a spectral sensitivity to A-colored light, but not having a spectral sensitivity to B-colored light, said first photoconductive layer formed on said conductive base member, a second photoconductive layer having a spectral sensitivity to said B-colored light but not having a spectral sensitivity to said A-colored light, said second photoconductive layer formed on said first photoconductive layer, comprising the steps of:

performing a first charging for charging a photoconductor to a predetermined polarity under the illumination of light capable of making either said first photoconductive layer or said second photoconductive layer conductive,

performing a second charging for applying charges of the polarity opposite to the polarity of said first charging to said photoconductor,

exposing said photoconductor to an A-colored light image of said first original (I) and a B-colored light image of said second original (II),

forming synthesized latent electrostatic images, in which the surface potential of a portion of said photoconductor, corresponding to the blank portions common to said originals (I) and (II), is nearly zero, and the surface potential of a portion of said photoconductor, corresponding to information image of said first original (I), and the surface potential of a portion of said photoconductor, corresponding to information image of said second original (II) are opposite in the polarity, and

developing said synthesized latent electrostatic images by developer.

4,407,918

ELECTROPHOTOGRAPHIC PROCESS AND APPARATUS FOR MAKING PLURAL COPIES FROM A SINGLE IMAGE
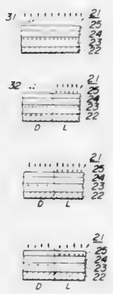
Eiichi Sato, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,839

Claims priority, application Japan, Feb. 17, 1981, 56-20825

Int. Cl.³ G03G *13/22*

U.S. Cl. 430—54 **52 Claims**



1. An electrophotographic process for forming at least one copy of a document by means of an electrophotographic photosensitive member including an electrically conductive substrate, a first photoconductive layer applied on the substrate, a charge retentive layer made of electrically insulating material and applied on the first photoconductive layer and a second photoconductive layer applied on the charge retentive layer, comprising

the step of projecting an image of the document to be duplicated onto the photosensitive member with the aid of a first light to which the second photoconductive layer is substantially insensitive, but the first photoconductive layer is sensitive, while the photosensitive member is charged;

the step of uniformly exposing the photosensitive member to said first light, said exposing step being effected after said image projecting step; and

the step of uniformly exposing the photosensitive member to second light to which said second photoconductive layer is sensitive, whereby an electrostatic charge image is formed in said photosensitive member by means of electrostatic charges trapped across said charge retention layer.

36. An electrophotographic photosensitive member for use in an electrophotographic process according to claim 1, comprising

a substrate made of electrically conductive material;

a first photoconductive layer applied on said conductive substrate;

a charge retentive layer made of electrically insulating material and applied on said first photoconductive layer; and

a second photoconductive layer applied on said charge retentive layer which is substantially insensitive to the first light to which the first photoconductive layer is sensitive.

4,407,919

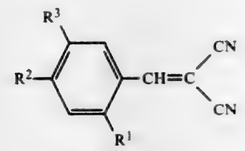
ELECTROPHOTOGRAPHIC PLATE

Tetsuo Murayama, Machida; Shigenori Otsuka, Tokyo; Tsunemitsu Tajima, Kawasaki, and Yukihiro Sato, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jun. 22, 1982, Ser. No. 390,842
Claims priority, application Japan, Jul. 7, 1981, 56-105954
Int. Cl.³ G03G *5/14*
U.S. Cl. 430—58 **5 Claims**

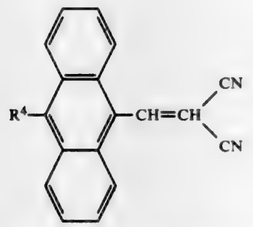
1. A double-layered electrophotographic plate having at least a charge generating layer and a charge transporting layer on an electroconductive substrate, wherein said charge transporting layer comprises

(a) a dicyano vinyl compound represented by general formula (I):



(I)

where R^1 and R^3 independently represent hydrogen, halogen, cyano, nitro or a substituted- or unsubstituted-arylcarbonyloxy group, and R^2 represents hydrogen, halogen, cyano or a substituted- or unsubstituted-arylcarbonyloxy group with the proviso that R^1, R^2 and R^3 are not simultaneously hydrogen, and/or a dicyano vinyl compound repreented by general formula (II):



(II)

where R^4 represents hydrogen, halogen, lower alkyl or aryl group, and

(b) an electron-donating organic compound.

4,407,920

SILICONE AMMONIUM SALTS AND PHOTORESPONSIVE DEVICES CONTAINING SAME

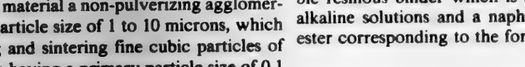
Lieng-Huang Lee, Webster, and Deborah N. Landry, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 19, 1982, Ser. No. 360,109
Int. Cl.³ G03G *8/00*
U.S. Cl. 430—59 **26 Claims**

1. An improved photoresponsive device consisting essentially of a substrate, a photoconductive composition comprised of an inorganic photoconductive composition, or a layered organic photoresponsive device comprised of a photogenerating layer and a charge transport layer, followed by an overcoating top layer of a silicone resin containing therein as an adhesive layer a silicone containing ammonium salt of the formula



wherein, R_1, R_2, R_3, are independently selected from the group consisting of aliphatic and substituted aliphatic radicals, R_4 is selected from the group consisting of aliphatic radicals, substituted aliphatic radicals, and the group



wherein Y is anumber of from about 2 to about 4, and R_5 is hydrogen or an alkyl radical, X is an anion, and Z is a number of from 1 to about 5.

4,407,921

ELECTROPHOTOGRAPHIC ELEMENTS WITH POLYESTER BINDER RESINS HAVING APROTIC END GROUPS

Everett W. Bennett, Longmeadow, and Jan B. Suchy, Holyoke, both of Mass., assignors to James River-Graphics, Inc., South Hadley, Mass.

Filed Nov. 10, 1981, Ser. No. 320,064
Int. Cl.³ G03G *5/087, 5/04*
U.S. Cl. 430—96 **13 Claims**

1. A photoconductive element suitable for use in electrophotography comprising a support having coated thereon a photoconductive composition comprising a photoconductor and a matrix for said photoconductor, said matrix comprising a linear, film-forming polyester resin having the terminal hydroxyl and carboxyl groups thereof modified with an aprotic group, said polyester resin having a number average molecular weight of from about 8,000 to about 50,000, wherein said aprotic group is a urethane group derived from a monoisocyanate, an ether group, an ester group, an amide group or a combination thereof.

4,407,922

PRESSURE SENSITIVE TONER COMPOSITIONS

Bernard Grushkin, Pittsford, and Jacques C. Bertrand, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1982, Ser. No. 338,683
Int. Cl.³ G03G *11/00*
U.S. Cl. 430—98 **21 Claims**

1. An improved cold pressure fixable toner composition comprised of a blend of two immiscible polymers selected from the group consisting of (1) a polymer of polystyrene-co-stearylmethacrylate as a hard component, having a number average molecular weight of from about 8,000 to about 20,000, and a glass transition temperature within the range of from about 50 degrees Centigrade to about 65 degrees Centigrade, and poly[octadecyl vinyl ether-co-maleic anhydride], having a number average molecular weight of from about 5,000 to about 20,000, as a soft component, and (2) polyisobutylmethacrylate compositions as a hard component, having a number average molecular weight of from about 100,000 to about 200,000, and a glass transition temperature of from about 50 degrees Centigrade to about 60 degrees Centigrade, and poly[octadecyl vinyl ether-co-maleic anhydride] as a soft component, the soft component being present in an amount of from about 35 percent by weight to about 75 percent by weight, and the hard component being present in an amount of from about 25 weight percent to about 65 weight percent.

4,407,923

ONE COMPONENT MAGNETIC DEVELOPER

Nobuhiro Miyakawa, Suita; Masanori Fujii, Sakai; Kouzi Maekawa, Kyoto; Haruo Koyama, Hirakata, and Takashi Teshima, Amagasaki, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 24, 1982, Ser. No. 391,721
Claims priority, application Japan, Jun. 26, 1981, 56-98281
Int. Cl.³ G03G *9/14, 9/08*
U.S. Cl. 430—106.6 **6 Claims**

1. A dry magnetic developer consisting essentially of a particulate shaped article of a composition comprising a binder resin medium and a powdery magnetic material dispersed in the binder resin medium, wherein said composition comprises as the powdery magnetic material a non-pulverizing agglomerate having a secondary particle size of 1 to 10 microns, which is formed by granulating and sintering fine cubic particles of magnetite or other ferrite having a primary particle size of 0.1 to 1 micron.

4,407,924

TONER COMPLEXES FOR DEVELOPING ELECTROSTATIC IMAGES

Hisashi Senshu, Neyagawa; Kazuhiro Ishikawa, Nara; Yukihiko Ishida, Neyagawa, and Yoji Kawagishi, Yawata, all of Japan, assignors to Orient Chemical Industries, Ltd., Japan

Filed Jan. 15, 1982, Ser. No. 339,491
Claims priority, application Japan, Jan. 23, 1981, 56-9249
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—109 **28 Claims**

1. A toner for developing electrostatic images comprising a metal complex of an aromatic dicarboxylic acid, which such acid is capable of forming its corresponding acid anhydride, and an aromatic hydroxycarboxylic acid which is capable of forming a corresponding complex compound.

4,407,925

PROCESS FOR DEVELOPING ELECTROSTATIC IMAGES WITH MAGNETIC TONER

Alan J. Liebman, Skokie, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 13, 1981, Ser. No. 243,393
Int. Cl.³ G03G *13/09*
U.S. Cl. 430—122 **13 Claims**

1. A method of developing electrostatic latent images comprising providing a developer composition comprising substantially uncharged magnetic toner particles having a resistivity greater than about 10^{16} ohm-cm and less than about 10^{18} ohm-cm at an electric field of about 10 volts/cm and a resistivity greater than about 10^{12} ohm-cm at an electric field of about 1,000 volts/cm magnetically bound by an induced magnetic field to conductive magnetic carrier particles, providing a magnetic brush member having magnetic fields which temporarily magnetize said magnetic toner particles, magnetically transporting said developer composition on said magnetic brush member into and through a development zone between an electrostatic latent image bearing member and said magnetic brush member, maintaining the thickness of the toner particle layer on the outermost carrier particles on said magnetic brush member in said development zone between about 5 micrometers and about 100 micrometers, and maintaining the potential of said electrostatic latent image in said development zone at a level sufficient to induce an opposite charge in toner particles in said toner particle layer in said development zone and to overcome the magnetic attraction between the magnetic toner particles and the magnetic carrier particles whereby toner particles are attracted from carrier particles in said development zone to said electrostatic latent image.

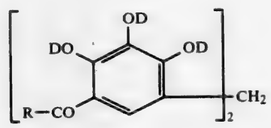
4,407,926

LIGHT-SENSITIVE MIXTURE COMPRISING O-NAPHTHOQUINONE-DIAZIDES AND LIGHT SENSITIVE COPYING MATERIAL PREPARED THEREFROM

Paul Stahlhofen, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,489
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1980, 3043967
Int. Cl.³ G03C *1/54*; C07C *113/00*
U.S. Cl. 430—165 **35 Claims**

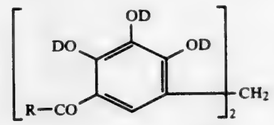
1. A light-sensitive composition comprising a water-insoluble resinous binder which is soluble or swellable in aqueous alkaline solutions and a naphthoquinonediazide-sulfonic acid ester corresponding to the formula I



(I)

wherein D represents a radical selected from the group consisting of 1,2-naphthoquinone-2-diazide-4-sulfonyl radicals and 1,2-naphthoquinone-2diazide-5-sulfonyl radicals and R represents a radical selected from the group consisting of alkyl radicals and aryl radicals.

30. A light-sensitive compound of the formula I



(I)

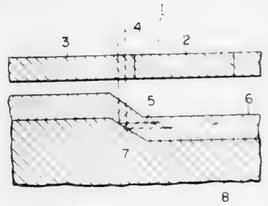
wherein D represents a radical selected from the group consisting of 1,2-naphthoquinone-2-diazide-4-sulfonyl radicals and 1,2-naphthoquinone-2-diazide-5-sulfonyl radicals and R represents a radical selected from the group consisting of alkyl radicals and aryl radicals.

4,407,927

PHOTORESIST COMPOSITION

Yoichi Kamoshida; Toshiaki Yoshihara, both of Yokohama; Yoshiyuki Harita, Kawasaki, and Kunihiro Harada, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

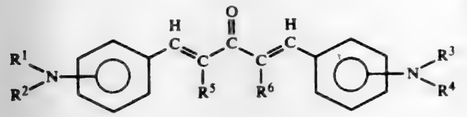
Filed Jun. 3, 1982, Ser. No. 384,480
Claims priority, application Japan, Jun. 23, 1981, 56-96963
Int. Cl.³ G03C *5/00, 1/84, 1/58, 1/68*
U.S. Cl. 430—197 **14 Claims**



1. A photoresist composition comprising a cyclized product of a conjugated diene homopolymer or copolymer, a photocrosslinking agent soluble in an organic solvent and at least one

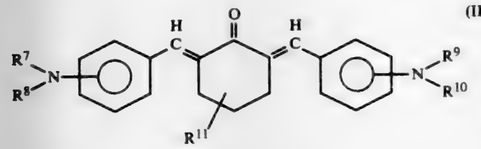
member selected from the group consisting of compounds represented by the formulas (I) and (II):

(I)



or

(II)



wherein R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10} and R^{11}, which may be identical or different, represent substituents selected from the group consisting of hydrogen atom and alkyl groups.

8. A photoresist composition according to claim 1, 2, 3, 4 or 5, wherein said photo-crosslinking agent soluble in an organic solvent is an azide type photosensitive substance.

4,407,928

USE OF KETAL BLOCKED QUINONES TO REDUCE POST-PROCESS D_{min} INCREASE IN POSITIVE REDOX DYE-RELEASING IMAGE TRANSFER SYSTEMS

Noel R. Vanier, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,502
Int. Cl.³ G03C *1/40, 5/54, 1/10*
U.S. Cl. 430—214 **27 Claims**

1. In a photographic assemblage comprising.

(a) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a nondiffusible, positive-working, redox dye-releaser capable of releasing a diffusible dye upon reduction;

(b) a dye image-receiving layer;

(c) an alkaline processing composition and means for discharging same within said assemblage; and

(d) a transparent cover sheet located over the layer outermost from said support; said photographic element or said processing composition containing an electron transfer agent, said photographic element or said cover sheet containing a neutralizing layer;

the improvement wherein said alkaline processing composition contains a ketal blocked quinone which is soluble therein.

4,407,929

COLOR PHOTOGRAPHIC RECORDING MATERIAL FOR THE PRODUCTION OF COLORED IMAGES BY THE DYE DIFFUSION TRANSFER PROCESS

Immo Boie, Langenfeld, and Kaspar Wingender, Leverkusen, both of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 324,777
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1980, 3045183
Int. Cl.³ G03C *5/54, 1/40, 1/10*
U.S. Cl. 430—220 **6 Claims**

6. The color photographic recording material, comprising a transparent layer support, a photo-sensitive element containing at least one photo-sensitive silver halide emulsion layer and a non-diffusing color providing compound associated therewith, an opaque light-reflecting layer and an image-receiving layer which may be dyed by diffusible dyes, in which the improvement comprises the transparent layer support, the photo-sensitive element, the opaque light-reflecting layer and the image-receiving layer form a non-disconnectable laminate in which the support, the element and the layers adhere firmly to each other in the sequence indicated and the silver halide emulsion layer or layers has/have associated to it/them:

(1) an electron donor compound (ED compound);

(2) as color-providing compound a non-diffusing reducible compound which, in reduced form, liberates a diffusible dye under alkaline development conditions and an additional transparent layer is arranged on the reverse side of the transparent layer support, said additional layer containing an agent capable of producing a white haze during processing.

4,407,930

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING SUBSTITUTED SULFONAMIDOPHENOL OR SULFONAMIDONAPHTHOL DYE-RELEASERS

Robert E. Ross; Lee J. Fleckenstein, both of Rochester, and Michael E. Campbell, Kendall, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 21, 1982, Ser. No. 380,845
Int. Cl.³ G03C *1/40, 1/10, 5/54*
U.S. Cl. 430—223 **28 Claims**

11. In a photographic assemblage comprising:

(I) a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible, redox, dye-releasing compound comprising a ballasted, sulfonamidophenol or sulfonamidonaphthol compound having a dye moiety attached thereto through the sulfonamido group of said compound, said sulfonamido group being located in a position which is conjugated with respect to the position of the hydroxy group of said compound; and

(II) a dye image-receiving layer; the improvement wherein:

(a) said compound has at least one substituent thereon in a position which is conjugated with respect to the position of said sulfonamido group, said substituent being selected from the group consisting of OH, $NHSO_2R$ and NHCOR, wherein R is alkyl having from 1 to about 40 carbon atoms, substituted alkyl having from 1 to about 40 carbon atoms, aryl having from 6 to about 50 carbon atoms, or substituted aryl having from 6 to about 50 carbon atoms, and

(b) said compound not having a hydroxy, alkoxy, aryloxy, sulfonamido, phosphonamido or carbonamido group thereon in a position which is conjugated with respect to the position of the hydroxy group of said compound,

with the proviso that when said compound is a 2-sulfonamidophenol, said substituent is located in the 5-position or in both the 3- and 5-positions.

4,407,931

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NONDIFFUSIBLE YELLOW AZO METAL COMPLEXED DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

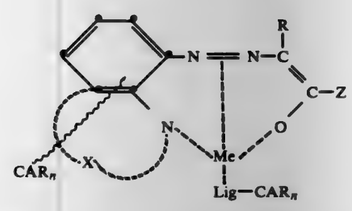
Steven Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,509
Int. Cl.³ G03C *1/40, 1/10, 7/00, 5/54*
U.S. Cl. 430—223 **38 Claims**

20. In a photographic assemblage comprising:

(i) a support having thereon at least one photosensitive silver halide emulsion layer having associated therewith a dye image-providing material; and

(ii) a dye image-receiving layer; the improvement wherein said dye image-providing material is a nondiffusible compound having at least one releasable yellow dye moiety or precursor thereof, said compound having the formula:



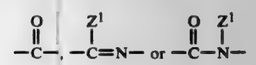
wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) Z represents alkyl, substituted alkyl, aryl or substituted aryl;

(c) R represents CN or J—L;

(d) J represents a bivalent



group;

(e) L represents alkyl, substituted alkyl, aryl, substituted aryl, or can be taken together with Z to complete a carbonyl-containing 5- or 6-membered heterocyclic or carbocyclic ring;

(f) Z^1 represents the same groups as Z;

(g) each CAR independently represents a ballasted carrier moiety capable of releasing said diffusible yellow dye moiety or precursor thereof as a function of development of said silver halide emulsion layer under alkaline conditions;

(h) each n is 0 or 1, with the proviso that at least one n is 1;

(i) Lig is a monoanionic tridentate ligand; and

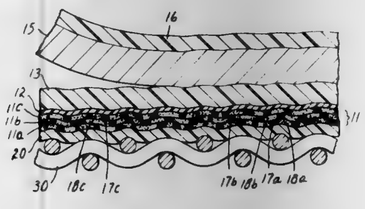
(j) Me is a polyvalent, hexacoordinate metal ion.

4,407,932

FADE-RESISTANT AND ABRASION RESISTANT PHOTOGRAPHIC REPRODUCTION, METHOD OF PREPARING, AND PHOTOGRAPHIC PRODUCT THEREFOR

Harry A. Loder, Mahtomedi, and Charles A. Mathna, St. Paul, both of Minn., assignors to Minnesota Mining & Manufacturing Co., St. Paul, Minn.

Division of Ser. No. 242,842, Mar. 12, 1981, abandoned, Continuation-in-part of Ser. No. 50,686, Jun. 21, 1979, abandoned. This application Jan. 4, 1982, Ser. No. 337,071
Int. Cl.³ G03C *1/90, 1/84, 7/00*
U.S. Cl. 430—256 **1 Claim**



1. A simple and convenient method of preparing a fade-resistant and abrasion-resistant full color photographic reproduction comprising the steps of

a. obtaining a photographic paper comprising

(1) a paper core having a face side and a back side,

(2) a first low density polyethylene foil bonded to the face side but removable therefrom with a force of 6-10 grams per centimeter width,

(3) a second low density polyethylene foil bonded to the back side,

(4) overlying the first foil and bonded thereto a full-color light-sensitive element comprising a plurality of superposed strata of photographic emulsions containing disposed siver halide particles, each stratum containing a dye coupler, the outermost stratum containing a cyan or magenta coupler precursor and the innermost stratum containing a yellow coupler,

b. exposing the light-sensitive element through a colored negative to create a latent image and,

c. developing and fixing the latent image,

d. applying a uniform layer of adhesive over the outermost stratum,

e. bonding the image-bearing photographic paper to a desired substrate via said adhesive, and

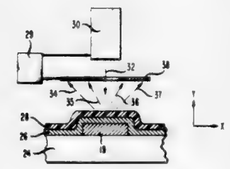
f. stripping away the paper core and second polyethylene foil to leave a full-colored photograph bonded to said substrate, the outermost stratum of the previously light-sensitive element now containing the yellow dye, which absorbs ultraviolet radiation, whereby the photographic reproduction is rendered resistant to fading, said first polyethylene foil covering the previously light-sensitive element, whereby the photographic reproduction is protected from abrasion.

4,407,933

ALIGNMENT MARKS FOR ELECTRON BEAM LITHOGRAPHY

David B. Fraser, Berkeley Heights, and Roderick K. Watts, Summit, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 11, 1981, Ser. No. 272,497
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 **12 Claims**



1. A method of fabricating integrated circuits on a semiconductive wafer by directly processing the wafer in an electron beam exposure system, said method comprising the steps of

forming tantalum disilicide alignment marks in spaced-apart regions of said wafer,

depositing a resist structure including at least a layer of electron-sensitive resist material on said wafer overlying said alignment marks,

scanning the marks with said electron beam,

detecting electrons back-scattered from said scanned marks thereby to generate signals utilized for alignment purposes,

in response to said signals, aligning said electron beam with respect to said wafer,

and selectively irradiating the resist layer with said aligned electron beam to define circuit patterns in said resist layer.

4,407,934

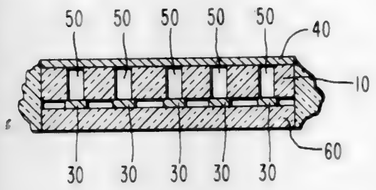
METHOD OF MAKING AN ASSEMBLY OF ELECTRODES

Saul Kuchinsky, Bridgewater, N.J.; Robert H. Bellman, Horseheads, N.Y., and James A. Ogle, Neshanic Station, N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Dec. 4, 1981, Ser. No. 327,598

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—314 **12 Claims**



1. A method for making an electrode assembly comprising the steps of

(a) exposing a plate of photosensitive, electrically insulating glass to ultraviolet radiation to develop a latent image therein in a pattern of parallel strips across a face of said plate, but not extending to the edges thereof;

(b) heat treating said plate at a temperature below the softening point of the glass to develop crystallites in the previously-exposed strip portions which can be selectively chemically removed from said glass plate;

(c) applying an array of first elongated electrodes to one surface of said plate in transverse orientation to said strip portions;

(d) contacting the obverse surface of said plate in at least said strip portions thereof with a solvent to selectively chemically remove said crystallites in said strip portions fully into said plate to form parallel slots therein; and

(e) applying to the obverse surface of said plate having said parallel slots therein a support plate of electrically insulating glass carrying elongated parallel second electrodes, said support plate being oriented in such relation that the second electrodes carried thereby are aligned with and positioned within said slots, said second electrodes being transverse to said first electrodes and in operative relation therewith through said slots.

4,407,935

PHOTOGRAPHIC RECORDING MATERIAL

Mario Fryberg, Praroman-le-Mouret, and David G. Leppard, Rheinfelden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 15, 1982, Ser. No. 339,816

Claims priority, application Switzerland, Jan. 20, 1981, 352/81

Int. Cl.³ G03C *5/30, 1/06*

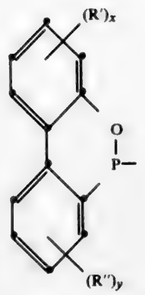
U.S. Cl. 430—487 **22 Claims**

1. A photographic recording material, which contains at least one development accelerator in at least one silver halide emulsion layer or in a colloid layer adjacent to the silver halide emulsion layer, wherein the development accelerator is of the formula

A—R (1)

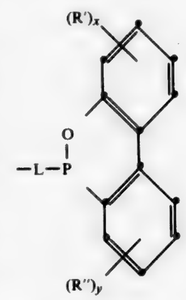
in which A is a dibenzo[c,e][1,2]oxaphosphorine radical of the formula

(2)

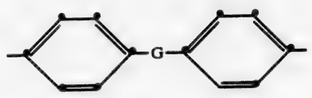


in which R′ and R″ independently of one another are hydrogen, substituted or unsubstituted alkyl having 1 to 4 carbon atoms or halogen, x and y independently of one another are 0, 1, 2 or 3 and R is substituted or unsubstituted amino, substituted or unsubstituted cyclic amino, substituted or unsubstituted aryloxy or a group of the formula

(3)



in which L is a radical of the formula =N—Z, with Z being substituted or unsubstituted alkyl or cycloalkyl, or a substituted or unsubstituted 5-membered or 6-membered, saturated or unsaturated ring which contains at least 2 hetero-atoms and which is bonded to the oxaphosphorine radicals via the hetero-atoms, or substituted or unsubstituted aryleneoxy, substituted or unsubstituted oxyaryleneoxy or a radical of the formula $-NB_1-E-NB_2$, in which B_1 and B_2 independently of one another are hydrogen, alkyl or the radical A and E is alkylene or



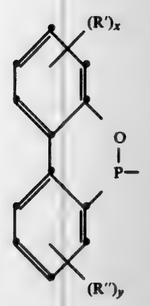
in which G is —O—, —S— or alkylene, and R′, R″, x and y are as defined above.

22. A developing bath for photographic silver halide recording material, which both contains a silver halide developing agent and a development accelerator in a quantity of 1 to 50 g per mol of silver halide in said photographic silver halide recording material, said development accelerator is of the formula

A—R (1)

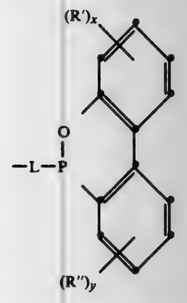
in which A is a dibenzo[c,e][1,2]oxaphosphorine radical of the formula

(2)

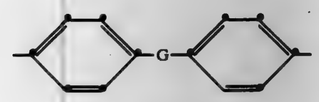


in which R′ and R″ independently of one another are hydrogen, substituted or unsubstituted alkyl having 1 to 4 carbon atoms or halogen, x and y independently of one another are 0, 1, 2 or 3 and R is substituted or unsubstituted amino, substituted or unsubstituted cyclic amino, substituted or unsubstituted aryloxy or a group of the formula

(3)



in which L is a radical of the formula =N—Z, with Z being substituted or unsubstituted alkyl or cycloalkyl, or a substituted or unsubstituted 5-membered or 6-membered, saturated or unsaturated ring which contains at least 2 hetero-atoms and which is bonded to the oxaphosphorine radicals via the hetero-atoms, or substituted or unsubstituted aryleneoxy, substituted or unsubstituted oxyaryleneoxy or a radical of the formula $-NB_1-E-NB_2$, in which B_1 and B_2 independently of one another are hydrogen, alkyl or the radical A and E is alkylene or



in which G is —O—, —S— or alkylene, and R′, R″, x and y are as defined above.

4,407,936

PROCESS AND MATERIAL FOR FORMING COLOR PHOTOGRAPHIC IMAGE

Seiji Ichijima; Toshiyuki Watanabe; Nobuo Furutachi, and Nobuo Seto, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1981, Ser. No. 243,159

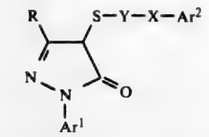
Claims priority, application Japan, Mar. 12, 1980, 55-31320

Int. Cl.³ G03C *1/40*

U.S. Cl. 430—505 **8 Claims**

1. A color photographic light-sensitive material comprising a support having coated thereon at least one silver halide emulsion layer containing a 5-pyrazolone magenta coupler represented by formula (I)

(I)



wherein R represents an acylamino group, an anilino group or a ureido group; Ar^1 represents a phenyl group which may be substituted with one or more halogen groups, alkyl groups, or alkoxy groups; Ar^2 represents a phenyl group or a naphthyl group, each of which may be substituted with one or more halogen groups, hydroxy groups, carboxy groups, cyano groups, alkyl groups, acylamino groups, carbamoyl groups, ureido groups, sulfonamido groups, diacylamino groups, sulfamoyl groups, alkoxycarbonyl groups, phenyl groups, arylsulfonyl groups or alkoxy groups; X represents oxygen; and Y represents a straight chain or branched chain alkylene group having from 1 to 6 carbon atoms, or an alkylene group containing an ether bond.

4,407,937

SILVER HALIDE PHOTOGRAPHIC SENSITIVE ELEMENT CONTAINING A FLUORINE CONTAINING COMPOUND AS AN ANTISTATIC AGENT

Naohiko Sugimoto; Yukio Maekawa, and Yasunori Ichikawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 4, 1982, Ser. No. 354,677

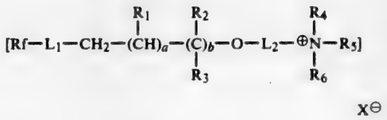
Claims priority, application Japan, Mar. 4, 1981, 56/30293

Int. Cl.³ G03C *1/78*

U.S. Cl. 430—527 **6 Claims**

1. A light sensitive photographic element having at least a support and a silver halide emulsion layer wherein at least one layer of the element contains an antistatic compound represented by formula (I)

(I)



wherein Rf represents a saturated or unsaturated hydrocarbon group having from 3 to 20 carbon atoms wherein all or a part of the hydrogen atoms are substituted by fluorine atoms, each of L_1 and L_2 represents a divalent linking group, each of R_1, R_2, and R_3 represents a hydrogen atom, a methyl group, or an ethyl group, each of R_4, R_5, and R_6 represents an alkyl group having from 1 to 6 carbon atoms, X represents an anion, and each of a and b represents 0, 1, or 2, and wherein the concentration of the compound represented by formula (I) is at least 0.0001 grams per square meter of the photographic sensitive material.

4,407,938

PHOTOGRAPHIC ELEMENT WITH LACTONE POLYMER

Noboru Mizukura, Tsukui, and Mikio Koyama, Tokorozawa, both of Japan, assignors to Konishiroku Photo Ind. Co., Ltd., Japan

Filed Apr. 19, 1982, Ser. No. 369,362

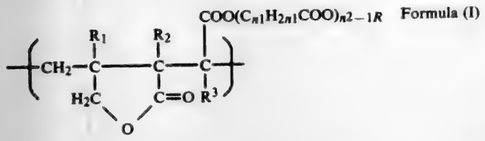
Claims priority, application Japan, Apr. 29, 1981, 56-65445

Int. Cl.³ G03C *1/40, 1/48, 1/78*

U.S. Cl. 430—533 **8 Claims**

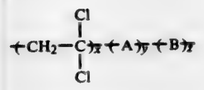
1. A photographic element comprising a support having thereof at least one silver halide emulsion layer and at least one

temporary barrier layer, said temporary barrier layer comprising a mixture of a lactone polymer with repetitive units represented by the formula (I);



Formula (I)

and a vinylidene chloride terpolymer represented by the formula (II);



Formula (II)

wherein R is a hydrogen atom, an alkyl or an aralkyl group; R^1, R^2 and R^3 each is a hydrogen atom or a methyl group; n^1 is an integer of from 1 to 5, while n^2 is an integer of 1 or 2; A is a monomer unit of a copolymerizable ethylenically unsaturated acid or of the salt thereof, while B is a copolymerizable ethylenically unsaturated monomer unit; x represents from 50 to 99.5% by weight, y represents from 0.5 to 44.5% by weight, and z represents from 0 to 49.5% by weight.

4,407,939

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH SUBBING LAYERS

Takashi Naoi; Hiroshi Kawasaki; Jun Yamaguchi; Sumitaka Tatsuta, all of Fujinomiya, and Hidefumi Sera, Minamiashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 2, 1981, Ser. No. 250,331

Claims priority, application Japan, Apr. 2, 1980, 55-43378; Apr. 2, 1980, 55-43379

Int. Cl.³ G03C *1/78, 1/96*

U.S. Cl. 430—536 **17 Claims**

7. A photographic light-sensitive material comprising:

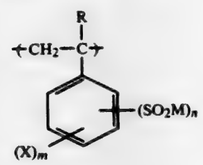
a support;

a subbing layer;

a light-sensitive photographic layer containing an hydrophilic organic colloid and a hardener; and

a layer containing an hydrophilic organic colloid and a polymer having a recurring unit,

said layer being positioned between said subbing layer and said photographic layer, wherein said polymer having a recurring unit contains at least 0.1 mol% of said recurring unit which is represented by the general formula (I), wherein said general formula (I) is:



(I)

wherein R is a hydrogen, an alkyl group having 1 to 6 carbon atoms or a halogen; M is a hydrogen, an alkali metal, an alkaline earth metal or an organic base; X is an alkyl group having 1 to 6 carbon atoms, an alkoxy group having 1 to 6 carbon atoms, an alkylamino group having 1 to 6 carbon atoms or a halogen; m is 0, 1 or 2; and n is 1 or 2.

4,407,940

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shinichi Nakamura, Tokyo; Takashi Kadowaki, Odawara; Mitsuhiro Okumura, Odawara, and Syun Takada, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

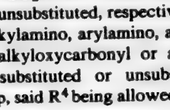
Filed Aug. 16, 1982, Ser. No. 408,487

Claims priority, application Japan, Aug. 24, 1981, 56-133202

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—546 **3 Claims**

1. A silver halide color photographic material which comprises a support, a silver halide emulsion layer provided thereon and a layer provided contiguous to said silver halide emulsion layer, said silver halide emulsion layer containing silver halide crystals of which average crystal size is not greater than 0.9 microns and at least 95% by number of total crystals have crystal sizes falling within ±40% said average crystal size, and at least one of said silver halide emulsion layer and/or said layer contiguous thereto containing a compound represented by the following general formula [I]



[I]

where R_1 and R_2 independently represent an alkyl group having 6 to 12 carbon atoms.

4,407,941

PHOTOGRAPHIC ELEMENT WITH PYRAZOLE ELECTRON DONORS

Shunji Suginaka; Ryuichiro Kobayashi; Satoru Ikeuchi; Noboru Mizukura, and Noriko Fujita, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 355,464

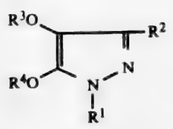
Claims priority, application Japan, Mar. 13, 1981, 56-36162

Int. Cl.³ G03C *1/40, 5/30, 5/54*

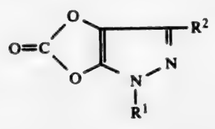
U.S. Cl. 430—566 **1 Claim**

1. A photographic element comprising a support provided thereon with at least one light-sensitive silver halide emulsion layer containing a nondiffusible compound which receives at least one electron in an alkaline condition to release a photographically useful material and a nondiffusible electron donor or a precursor thereof having the following formula (I) or (II):

Formula (I)



Formula (II)



wherein R^1 represents hydrogen, an alkyl, an aryl or a heterocyclic group, R^2 represents hydrogen, an alkyl, an aryl, a heterocyclic, an amino, a carbamide, a sulfonamide, a sulfamoyl, a carbamoyl or a ureido group, R^3 and R^4 each is hydrogen, $—COR^5$, $—SO_2R^6$ or $—CSR^7$ wherein R^5 and R^6 each is a substituted or unsubstituted, respectively, alkyl, alkenyl, aryl, heterocyclic, alkylamino, arylamino, alkyloxy, aryloxy, alkylthio, arylthio, alkyloxycarbonyl or aryloxycarbonyl group, and R^7 is a substituted or unsubstituted alkylamino or arylamino group, said R^4 being allowed to form a ring together with said R^1.

4,407,942

FLUORESCENT DETECTION OF DNA DAMAGE

Hyman C. Birnboim, Deep River, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Jan. 29, 1981, Ser. No. 229,539

Int. Cl.³ C12Q *1/68, 1/29*

U.S. Cl. 435—6 **33 Claims**

1. A method of measuring the extent of DNA damage in living cells which have been exposed to an actual or potential damaging influence, without purifying the DNA, comprising:

(a) partially lysing the cells under test to render the DNA accessible;

(b) incorporating an alkaline reagent, in sufficient amounts to denature DNA, into at least one sample comprising the cell lysate, and allowing the DNA strand separation to proceed;

(c) at a chosen point of time during the denaturation period when the difference in amounts of double-stranded DNA between damaged and undamaged DNA is large, lowering the pH of each sample to a selected pH sufficiently low to stop the alkaline denaturation, but above that causing any precipitation;

(d) providing that each sample is substantially homogeneous;

(e) adding a fluorescent dye which interacts and fluoresces at the lowered pH with non-denatured double stand DNA but not with single strand DNA or other cell components, to each homogeneous sample of lowered pH containing DNA, denatured DNA and other cell components, and measuring the resulting fluorescence; and

(f) comparing the fluorescence with that of known undamaged DNA subject to the same denaturation, the amount of any decrease in fluorescence being directly proportional to the extent of DNA damage.

4,407,943

IMMOBILIZED ANTIBODY OR ANTIGEN FOR IMMUNOASSAY

Francis X. Cole, Stow, and Deborah M. Van Voorhis, Watertown, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Continuation of Ser. No. 15,724, Feb. 27, 1979, abandoned, which is a continuation of Ser. No. 924,561, Jul. 14, 1978, abandoned, which is a continuation of Ser. No. 751,099, Dec. 16, 1976, abandoned. This application Mar. 13, 1980, Ser. No. 129,671

Int. Cl.³ G01N *33/54;* **C12Q** *1/04;* **C12N** *11/02*

U.S. Cl. 435—7. **6 Claims**

1. A method of nonimmunochemically immobilizing two proteins on the internal and external surfaces of a microporous membrane having pore sizes in the range from 25 nanometers to 25 micrometers in its uncoated state, comprising:

coating the internal and external surfaces of the membrane with a protein selected from the group consisting of zein and collagen, to provide a coated membrane that is at least 50% microporous,

immersing the coated membrane in a solution of a biologically active first protein selected from the group consisting of the antigen of and the antibody to *Toxoplasma gondii,* in order to immobilize the first protein, then

immersing the coated membrane having the biologically active first protein immobilized thereon in a solution of an immunochemically neutral second protein selected from the group consisting of fetal calf serum and bovine gamma globulin fraction II, in order to immobilize the second protein while the first protein remains immobilized and retains its biological activity.

4,407,944

METHOD FOR DETERMINING THE ACTIVITY OF THE ANGIOTENSIN-CONVERTING ENZYME

Yasushi Kasahara, Tama, and Yoshihiro Ashihara, Fuchu, both of Japan, assignors to Fujizoki Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1981, Ser. No. 330,110

Claims priority, application Japan, Dec. 23, 1980, 55-181307

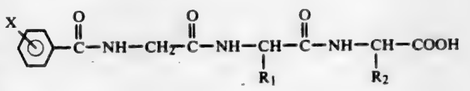
The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.

Int. Cl.³ C12Q *1/34, 1/36*

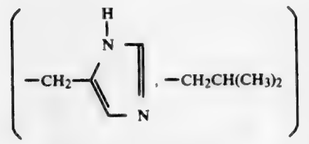
U.S. Cl. 435—18 **4 Claims**

1. A method for determining the activity of angiotensin-converting enzyme comprising the steps of:

(1) mixing a liquid containing (i) X-hippuryl-L-dipeptide having the formula



wherein X is OH, NH_2 or $N(CH_3)_2$, and wherein the pair of substituents (R_1, R_2) is (a). (H, H,) or (b).



(ii) hippuricase and (iii) 4-aminoantipyrine, with a liquid containing said angiotensin-converting enzyme to form a reaction mixture;

(2) adding an oxidizing agent to said reaction mixture under reaction conditions effective to form quinonimine dye, and

(3) colorimetrically measuring the concentration of said quinonimine dye.

4,407,945

CONSTITUTIVE PRODUCTION OF INTERLEUKIN 2 BY A T CELL HYBRIDOMA

Steven Gillis, Woodinville, Wash., assignor to Immunex Corporation, Seattle, Wash.

Filed Apr. 29, 1981, Ser. No. 258,804

Int. Cl.³ C12P *21/00, 21/02;* **C12N** *15/00, 5/00;* **C13R** *1/91*

U.S. Cl. 435—68 **49 Claims**

1. A process for constitutively producing murine interleukin-2, comprising:

stimulating murine mononuclear leukocytes in a first culture medium containing a T cell mitogen stimulant;

marking murine neoplastic cells with a sensitizing drug to produce driver cells;

fusing said murine mononuclear leukocyte cells with said driver cells to produce a hybridoma capable of constitutively producing interleukin-2; and

culturing the hybridoma cells in a second culture medium, containing selective suppressing agents which allow only hybrid cells to proliferate.

4,407,946

PROCESS FOR PRODUCING ANTIBIOTIC X-14868A

David P. Labeda, Monsey; John H. E. J. Martin, New City, and Joseph J. Goodman, Spring Valley, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 22, 1981, Ser. No. 313,849

Int. Cl.³ C12P *19/60, 1/04;* C12R *1/03;* C12N *1/20*

U.S. Cl. 435—75 **5 Claims**

1. A process for preparing antibiotic X-14868A which comprises aerobically fermenting an antibiotic X-14868A-producing *Actinomadura yumaense* NRRL 125 15 or an antibiotic X-14868A-producing mutant thereof in a liquid medium containing assimilable sources of carbon, nitrogen, and inorganic salts, until substantial antibiotic activity is imparted to the fermentation broth and then recovering the antibiotic therefrom.

4,407,947

PROCESS FOR OBTAINING METAL-FREE CORRINOIDS

Volker Koppenhagen, Braunschweig-Stöckheim, Fed. Rep. of Germany; Gerhard Schlingmann, Berkeley, Calif.; Bernd Dresow, Brunswick; Ludwig Bischoff, Braunschweig-Geitelde; Rosemarie Penkert, Brunswick, and Eicke Siefert, Göttingen, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig-Stöckheim, Fed. Rep. of Germany

Continuation of Ser. No. 127,365, Mar. 4, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 302,022

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1979, 2908769

Int. Cl.³ C12P *19/28, 19/42*

U.S. Cl. 435—85 **26 Claims**

1. A process for obtaining metal-free corrinoids consisting of inoculating a culture media free of added compounds of metals of the VIIIth group of the Periodic Table with from 5% to 25% of a parent culture of a strain of Rhodopseudomas, cultivating under illumination, repeating the steps of inoculating and cultivating employing a fresh culture media free of added compounds of the VIIIth group of the Periodic Table and said illumination employing from 5% to 25% of the culture from the sequentially next preceding stage as an inoculum in each subsequent stage, for a series of several pre-production culture stages, inoculating a fresh culture media free of added compounds of metals of the VIIIth group of the Periodic Table with from 5% to 25% of the sequentially next preceding culture for the last time, cultivating under illumination, separating the microorganism from the culture media of the last culture stage and isolating metal-free corrinoids from the culture media of the last culture stage.

4,407,948

PURIFICATION OF NUCLEOTIDE SEQUENCES SUITABLE FOR EXPRESSION IN BACTERIA

Howard M. Goodman; John Shine, and Peter H. Seeburg, all of San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 897,710, Apr. 19, 1978, Pat. No. 4,363,877, and a continuation-in-part of Ser. No. 836,218, Sep. 23, 1977, abandoned. This application Feb. 5, 1982, Ser. No. 346,123

Int. Cl.³ C12P *19/34;* C12N *15/00*

U.S. Cl. 435—91 **9 Claims**

1. A method of purifying linear DNA of specific nucleotide sequence containing a restriction site, from an essentially homogeneous length population of DNA molecules, comprising the steps of:

(a) pretreating the DNA to remove any 5′ phosphate end groups,

(b) incubating the DNA with a restriction endonuclease capable of acting on the specific desired nucleotide sequence to produce two linear sub-fragments thereof,

(c) fractionating the sub-fragments according to their length,

(d) isolating the two sub-fragments,

(e) rejoining the sub-fragments covalently, in a DNA ligase catalyzed reaction, to reconstitute the original specific sequence, and

(f) fractionating the rejoined DNA molecules according to their length, whereby the specific sequence is purified from a population of DNA molecules of essentially homogeneous length.

4,407,949

MENINGITIS VACCINE

Peter J. Kniskern; Arpi Hagopian, both of Sayreville, and Dennis J. Carlo, Middlesex, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 189,416, Sep. 22, 1980, Pat. No. 4,307,080, which is a division of Ser. No. 78,430, Sep. 24, 1979, Pat. No. 4,264,764, which is a continuation-in-part of Ser. No. 2,818, Jan. 12, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,335

Int. Cl.³ C12P *19/04;* C12R *1/21*

U.S. Cl. 435—101 **9 Claims**

1. A process for obtaining a capsular polysaccharide, which is an antigenic and immunogenic capsular polysaccharide from *H. influenza* type b consisting of about equal parts of ribose, ribitol and phosphate, substantially all of the polysaccharide having a molecular weight of at least about 5,000,000, and about half of the polysaccharide having a molecular weight of at least about 10,000,000, comprising:

a. growing a cultures of *H. influenza* in a nutrient medium.

b. removing cell paste from the medium upon completion of the fermentation to produce a remaining liquid,

c. treating the remaining liquid to precipitate unwanted materials,

d. then concentrating the remaining liquid, to produce a concentrated liquid,

e. adding a water-miscible alcohol to the concentrated liquid in concentration effective to precipitate unwanted material without precipitating a substantial quantity of the capsular polysaccharide,

f. extracting the capsular polysaccharide with an aqueous solution of $CaCl_2$,

g. adding a water-miscible alcohol to the extract in concentration effective to precipitate unwanted material without precipitating a substantial quantity of the capsular polysaccharide, and

h. adding an additional quantity of a water-miscible alcohol effective to precipitate substantially all of the capsular polysaccharide.

4,407,950

XANTHOMONAS CAMPESTRIS ATCC 31602 AND PROCESS FOR USE

William P. Weisrock, Tulsa, Okla., and Edward F. McCarthy, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,869

Int. Cl.³ C12P *19/06;* C12N *1/20;* C12R *1/64*

U.S. Cl. 435—104 **14 Claims**

1. A method for the production of a heteropolysaccharide which comprises continuously culturing a degenerative resistant strain of bacteria designated *Xanthomonas campestris* P-107 having the identifying characteristics of ATCC 31602, in an aqueous nutrient medium comprising essentially assimilable sources of carbon, nitrogen, and inorganic substances, wherein said medium is continuously fed to a fermentation zone to produce said polysaccharide, and withdrawing the resulting fermented medium from said zone.

4,407,951

XANTHOMONAS CAMPESTRIS ATCC 31600 AND PROCESS FOR USE

William P. Weisrock, Tulsa, Okla., and Edward F. McCarthy, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,871

Int. Cl.³ C12P *19/06;* C12N *1/20;* C12R *1/64*

U.S. Cl. 435—104 **14 Claims**

1. A method for the production of a heteropolysaccharide which comprises continuously culturing a degenerative resistant strain of bacteria designated *Xanthomonas campestris* XCP-1, having the identifying characteristics of ATCC 31600, in an aqueous medium comprising the assimilable sources of carbon, nitrogen and inorganic substances wherein said medium is continuously fed to a fermentation zone to produce said polysaccharide, and withdrawing the resulting fermented medium from said zone.

4,407,952

METHOD FOR PRODUCING L-PHENYLALANINE BY FERMENTATION

Takayasu Tsuchida, Kawasaki, Japan, and Konosuke Sano, Madison, Wis., assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,477

Claims priority, application Japan, Jun. 15, 1979, 75483

Int. Cl.³ C12N *15/00;* C12P *13/22;* C12R *1/19*

U.S. Cl. 435—108 **5 Claims**

1. A method for producing L-phenylalanine by fermentation, which comprises:

culturing in a culture medium an L-phenylalanine producing microorganism selected from the group consisting of *Escherichia coli* NRRL B-12141, *Escherichia coli* NRRL B-12145, *Escherichia coli* NRRL B-12146 and *Escherichia coli* NRRL B-12147 constructed by incorporating a hybrid plasmid in a recipient strain of the genus Escherichia and recovering the L-phenylalanine which accumulates in the culture medium, said hybrid plasmid containing a deoxyribonucleic acid fragment possessing genetic information related to L-phenylalanine production and obtained from a phenylalanine analogue resistant mutant of the genus Escherichia.

4,407,953

FERMENTATION PROCESS FOR PRODUCTION OF ALPHA-ISOPROPYLMALIC ACID

John R. DeZeeuw, Stonington, and Irene Stasko, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed May 24, 1982, Ser. No. 381,595

Int. Cl.³ C12P *7/00;* C12N *15/00, 1/14;* C12R *1/645*

U.S. Cl. 435—145 **8 Claims**

1. A process for producing alpha-isopropylmalic acid which comprises cultivating *Y. lipolytica* ATCC 20628 in an aqueous nutrient medium having an initial pH of about 6.0–7.0 and containing assimilable sources of carbon, nitrogen, L-leucine and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of alpha-isopropylmalic acid accumulates in the medium.

4,407,954

FIBER FERMENTER

Robert A. Clyde, P.O. Box 983, Asheville, N.C. 28802

Continuation-in-part of Ser. No. 216,310, Dec. 15, 1980, Pat. No. 4,351,905. This application Dec. 7, 1981, Ser. No. 328,125

The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.

Int. Cl.³ C12P *7/06, 7/02;* C12M *1/40, 1/02*

U.S. Cl. 435—161 **20 Claims**

1. In a method for allowing the growth of an organism suitable for converting a selected nutrient medium into a selected chemical including the steps of:

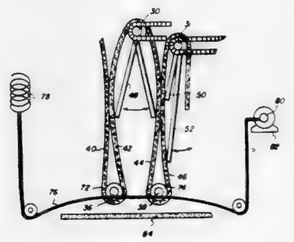
(a) sterilizing, innoculating and incubating the nutrient medium;

(b) incubating the converting organism;

(c) placing the nutrient medium and the converting organism in a container having a substrate supported therein comprising a multiplicity of fibers suitable for supporting the organism, the improvement comprising:

(d) moving one of the converting organism and the nutrient medium relative to the other at a speed which is slightly below the speed at which the converting organism becomes detached from the supporting substrate while maintaining contact between the converting organism and the nutrient medium for a time period sufficient to produce a satisfactory chemical yield.

10. Apparatus for allowing the growth of an organism suitable for converting a selected nutrient medium into a selected chemical comprising:



a container suitable for containing the nurient medium, the container including a port for receiving the nutrient medium, an exhaust port for discharging a flow of excess organisms and a port for removing the selected chemical;

a porous support substrate mounted within the container, the substrate comprising a multiplicity of fibers suitable for supporting the selected organism; and

means for moving one of the support substrate and the nutrient medium relative to the other at a speed slightly below the speed at which the converting organism becomes detached from the support substrate and for maintaining contact between the support substrate and the nutrient medium for a period of time sufficient to produce a satisfactory chemical yield.

4,407,955

FERMENTABLE SUGAR FROM THE HYDROLYSIS OF STARCH DERIVED FROM DRY MILLED CEREAL GRAINS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,278

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ C13K *1/06;* C12P *7/06*

U.S. Cl. 435—161 **14 Claims**

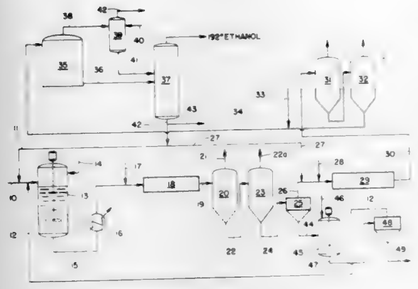
1. A process for converting the starch fraction derived from whole dry milled cereal grain to a sterile aqueous solution of fermentable sugar, said starch containing water insoluble protein and oil, which comprises:

(a) hydrolyzing in a preliminary hydrolysis step an aqueous slurry of the starch in the presence of an acid hydrolysis catalyst at an elevated pressure and temperature to provide a starch hydrolysate slurry containing water insoluble protein and oil and water soluble components;

(b) separating water insoluble protein and oil with or without water soluble components from the hydrolysate resulting from step (a); and,

(c) hydrolyzing in a further hydrolysis step the aqueous

sterile starch hydrolysate slurry resulting from step (a) in the presence of added aqueous water soluble non-ferment-



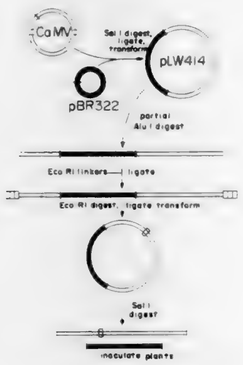
able carbohydrate to provide a sterile aqueous solution of fermentable sugar.

4,407,956

CLONED CAULIFLOWER MOSAIC VIRUS DNA AS A PLANT VEHICLE

Stephen H. Howell, Del Mar, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 13, 1981, Ser. No. 243,330
Int. Cl.³ C12N *15/00, 5/00, 1/00*
U.S. Cl. 435—172 **10 Claims**



1. A method for modifying Cauliflower mosaic viral DNA while maintaining the capability of movement, said movement capability comprising replication and systemic infection, which comprises:

combining linear cauliflower mosaic viral DNA with a bacterial cloning vehicle permitting propagation of the resulting hybrid DNA plasmids in an appropriate microorganism host;

cloning said hybrid DNA plasmids in said microorganism to provide a source of said hybrid DNA plasmid;

inserting foreign DNA into said cloned hybrid DNA plasmids at the intergenic region between reading frames VI and I of said Cauliflower mosaic viral DNA to provide a modified Cauliflower mosaic hybrid DNA plasmid containing modified viral DNA, where said intergenic region is non-essential to propagation and movement of said viral DNA;

cloning said modified hybrid DNA plasmids in a microorganism host; and

excising said modified Cauliflower mosaic viral DNA from said hybrid DNA plasmid to provide a plant virus capable of propagation and movement.

4,407,957

REVERSIBLE MICROENCAPSULATION OF A CORE MATERIAL

Franklin Lim, Richmond, Va., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 243,584, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 24,600, Mar. 28, 1979, Pat. No. 4,352,883, which is a continuation-in-part of Ser. No. 953,413, Oct. 23, 1978, abandoned. This application Apr. 28, 1982, Ser. No. 372,836
Int. Cl.³ C12N *11/10, 11/08, 11/04, 5/02*
U.S. Cl. 435—178 **18 Claims**

1. A method of encapsulating a core material within a protective environment and of subsequently releasing said core material, said method comprising:

encapsulating said core material by the steps of:

A. placing the core material in an aqueous medium which contains a water-soluble polymer containing anionic groups and having a first charge density;

B. forming the medium into droplets;

C. subjecting the droplets to a solution of multivalent cations to gel the droplets as discrete, shape-retaining, water-insoluble temporary capsules;

D. cross-linking surface layers of said temporary capsules to produce semipermeable membranes about said droplets by subjecting them to a first polymer containing cationic moieties reactive with the anionic groups of said water-soluble polymer;

and releasing said core material by the steps of:

E. exposing the capsules resulting from step D to a solution of monatomic, multivalent cations and a stripping polymer having plural anionic moieties, said stripping polymer having a charge density at least equal to said first charge density;

F. allowing said monatomic cations to compete with said first polymer for anionic groups on the water-soluble polymer and allowing said stripping polymer having plural anionic moieties to compete with said water-soluble polymer for cationic sites on said first polymer; and

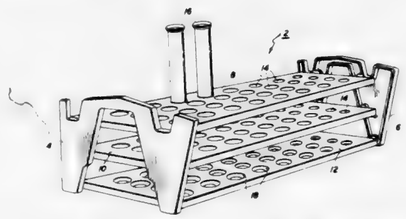
G. sequestering monatomic cations associated with said water-soluble polymer after step F.

4,407,958

SLANT CULTURE TUBE RACK

Harold F. DeGraff, Jr., Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,847
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 **3 Claims**



1. A culture tube rack for preparation and growth of cultures, including:

a plurality of apertured plates for holding culture tubes in a generally upright position, said plates being mounted between right and left upright end plates,

said end plates each including a front and a rear leg member, said front leg member having a front edge extending upward and forward to a height above the center of gravity of said rack, said rear leg member having a rear edge extending upward and rearward to a height above the center of gravity of said rack,

said end plates being so configured that the front and rear leg members of one of said end plates straddle the corresponding end plate of another such tube rack for positive interlock stacking of a plurality of said racks,

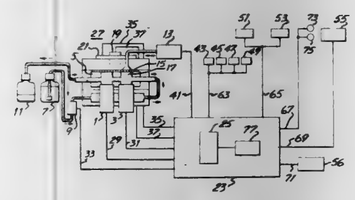
whereby said rack is selectively positionable upright on said front and rear foot portions, or at a first angle of tube slant, or at a second angle of tube slant.

4,407,959

BLOOD SUGAR ANALYZING APPARATUS

Nobuhiko Tsuji; Keijiroh Nakamura, both of Yokosuka; Koichi Endoh, Hino; Toshiyoshi Hamada, Sekimachi, and Keiichi Ishida, Tokyo, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Oct. 21, 1981, Ser. No. 313,666
Claims priority, application Japan, Oct. 29, 1980, 55-150756; Dec. 9, 1980, 55-172665; Dec. 9, 1980, 55-172666
Int. Cl.³ G01N *35/00, 33/66*
U.S. Cl. 435—288 **3 Claims**



1. A blood sugar analyzing apparatus for analyzing the blood sugar concentration in a blood specimen, comprising:

a reaction cell which houses an enzyme membrane sensor including a fixed enzyme membrane and a measuring electrode, said cell having means for receiving a blood specimen in contact with said sensor to thereby cause a chemical reaction to occur between the specimen and the membrane, and wherein the measuring electrode produces a reaction current in response to the chemical reaction;

means for sampling an output from said sensor at given intervals of time;

means for storing data representing the sampled outputs;

processing means for separating the stored data into new and old data groups, for calculating the average data values of said new and old data groups and for calculating the difference between the average data values, and for determining a background offset portion of the reaction current at a first time point when said difference exceeds a first predetermined value and for determining a steady state level of the reaction current at a second time point, after said first time point, when the difference does not exceed a second predetermined value, and for calculating a blood sugar concentration level of the specimen which is proportional to the difference between the steady state level and the background offset portion of the reaction current.

4,407,960

VISUAL CHEMICAL INDICATING COMPOSITION FOR MONITORING STERILIZATION

Joseph P. Tratnyek, Sudbury, Mass., assignor to American Sterilizer Company, Erie, Pa.

Filed Jun. 25, 1980, Ser. No. 162,811
Int. Cl.³ G01N *21/06*; C09K *3/34*
U.S. Cl. 436—1 **11 Claims**

1. A chemical indicating composition for visually monitoring ethylene oxide sterilization comprising:

the reaction product of (i) at least one indicator compound selected from the group consisting of Michler's hydrol, crystal violet lactone, malachite green leuco and crystal violet leuco and (ii) an acidic material selected from the group consisting of acid-earths and diphenolic acids; said reaction product being in the presence of ethylene oxide.

10. A chemical indicating composition for visually monitoring ethylene oxide sterilization comprising:

at least one indicator compound selected from the group consisting of Michler's hydrol, crystal violet lactone, malachite green leuco and crystal violet leuco; and 4,4-bis(4hydroxyphenol)pentanoic acid.

11. A method for visually monitoring ethylene oxide sterilization comprising the steps of:

introducting into a sterilization chamber the reaction product of

(i) at least one indicator compound selected from the group consisting of Michler's hydrol, crystal violet lactone, malachite green leuco and crystal violet leuco, and

(ii) an acidic material selected from the group consisting of acid-earths and diphenolic acids;

contacting said reaction product with ethylene oxide; and observing the presence or absence of an irreversible color change in said reaction product.

4,407,961

ION-EXCHANGE SYSTEM AND METHOD FOR ISOLATION AND DETERMINATION OF GLYCOSYLATED HEMOGLOBIN IN HUMAN BLOOD

James L. Sanders, 841 N. Zang Blvd., Apt. #236, Dallas, Tex. 75208

Filed Mar. 16, 1981, Ser. No. 244,265
Int. Cl.³ G01N *33/72*
U.S. Cl. 436—67 **3 Claims**

2. A method of separating glycosylated hemoglobin from non-glycosylated hemoglobin and determining the amount of glycosylated hemoglobin in human blood without rigid control of pH and ionic strength and with little temperature dependence comprising the steps of:

preparing a lysate of human blood;

introducing an ion exchange system into said lysate, said ion exchange system including a zwitterionic buffer, said zwitterionic buffer being present in said ion exchange system in a concentration of from about 0.02 to 0.1 molar, said buffer having a pH of from about 6.4 to 7.2 and a pKa of from about 6.6 to about 7.5 at 20° C., said zwitterionic buffer being selected from the group consisting of 3-(N-morpholino) propanesulfonic acid, N-2-acetamidoiminodiacetic acid, N-2-acetamido-2-aminoethane-sulfonic acid, piperazine-N,N'-bis-2-ethanesulfonic acid, N,N-bis-(2-hydroxyethyl)-2-aminoethanesulfonic acid, and 2-[tris-(hydroxymethyl)methyl] aminoethanesulfonic acid, and

a cation exchange resin, said cation exchange resin being present in said ion exchange system in an amount of from about 30 milliequivalents to about 50 milliequivalents of building capacity per liter of ion exchange system;

said cation exchange resin being effective in the presence of said buffer to form a bound fraction of non-glycosylated hemoglobin and an unbound fraction of glycosylated hemoglobin in said lysate; and

analyzing said bound and unbound fractions for hemoglobin.

4,407,962

COMPOSITION FOR THE COLORIMETRIC DETERMINATION OF METALS

Alessandro Tabacco, Siena, and Paolo Tarli, Monteriggioni, both of Italy, assignors to Istituto Sieroteropico E. Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

Filed Dec. 11, 1980, Ser. No. 215,176
Claims priority, application Italy, Feb. 26, 1980, 20177 A/80
Int. Cl.³ G01N *33/48, 33/52*
U.S. Cl. 436—74 **11 Claims**

7. A method for the determination of the iron content of blood serum which comprises:

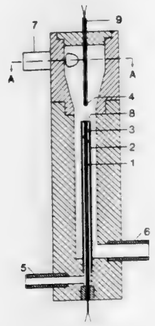
(a) combining a sample of serum with a chromogenic reagent which comprises a buffer; a soluble salt of a metal selected from the group consisting of the alkali metals and alkaline earth metals; a soluble form of Chromazurol B; and a cationic surface-active agent or a nonionic surface-active agent to form a test sample;
(b) combining a sample of serum with a masking reagent which comprises a buffer, a soluble salt of a metal selected from the group consisting of the alkali metals and alkaline earth metals; a soluble form of Chromazurol B; a cationic surface-active agent or a nonionic surface-active agent; and a complexing agent capable of hindering the formation of a complex between the Chromazurol B and iron to form a blank sample;
(c) combining a standard with the chromogenic agent of step (a) to form a test standard;
(d) combining distilled water with the chromogenic reagent of step (a) to form a blank reagent;
(e) combining the masking reagent of step (b) with the standard to form a masking blank of step (b);
(f) determining the optical density of each of the materials from steps (a), (b), (c), (d), and (e) in a colorimeter;
(g) comparing the optical density of the test sample with the test standard after allowance is taken for the optical density of the blank reagent, the blank sample, and the masking blank to determine the amount of iron that is present.

4,407,963

METHOD FOR DETERMINING THE CONCENTRATION OF AN ABSORBABLE COMPONENT IN A GASEOUS MIXTURE

Ansgar C. H. Sørensen, Anemonevej 4, Allerød DK-3450, Denmark

PCT No. PCT/DK80/00072, § 371 Date Jul. 24, 1981, § 102(e) Date Jul. 24, 1981, PCT Pub. No. WO81/01615, PCT Pub. Date Jun. 11, 1981
PCT Filed Nov. 19, 1980, Ser. No. 287,728
Claims priority, application Denmark, Nov. 30, 1979, 5100/79
Int. Cl.³ G01N *31/06*
U.S. Cl. 436—147 **4 Claims**



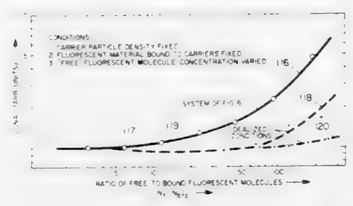
1. A method of determining the concentration of an absorbable component in a gaseous mixture by subjecting the stream of gaseous mixture to an absorption process in which heat is developed, said method comprising the steps of
providing a vertically oriented tube,
continuously feeding a liquid absorbent upwardly into said tube so as to fill said tube and create a free surface area at its upper end, the liquid absorbent in the free surface area being continuously replenished with fresh liquid absorbent,
causing the gaseous mixture containing the absorbable component to flow in a stream towards and past said free surface area in surface contact therewith such that an amount of absorbable component per unit of time is absorbed from the stream of gaseous mixture into the liquid absorbent at said free surface area,
measuring the temperature in the liquid absorbent at a point just below said free surface area,
measuring the temperature of the stream of gaseous mixture containing the absorbable component at a point adjacent said free surface area but sufficiently distant therefrom that the temperature measurement is not affected by the absorption process taking place at said free surface area,
preheating or precooling the liquid absorbent supplied to said free surface area such that its temperature is substantially equal to the temperature of the liquid absorbent which this will assume when the amount of heat developed therein per unit of time by absorption of absorbable component from the gaseous stream equals the heat lost therefrom per unit of time into the gaseous stream as it flows therepast, in the following referred to as the dynamic equilibrium temperature, and
conducting the method such that the resistance to the absorption in the liquid phase is negligible as compared to that in the gaseous phase and the equilibrium concentration of the absorbable component in the gaseous stream immediately adjacent said free surface area is negligible compared to the concentration in the gaseous stream.

4,407,964

HOMOGENEOUS FLUOROIMMUNOASSAY INVOLVING SENSING RADIATION FOR FORWARD AND BACK DIRECTIONS

Virgil B. Elings, Santa Barbara, and David F. Nicoli, Goleta, both of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Filed Oct. 7, 1980, Ser. No. 194,856
Int. Cl.³ G01N *33/54, 33/58, 33/52, 21/64*
U.S. Cl. 436—518 **6 Claims**



1. In a fluorescent, homogeneous immunoassay wherein there is provided a reagent comprising in solution carrier particles with antibodies residing at a plurality of sites on each of said carrier particles the improvement comprising:
(a) providing said carrier particles as relatively large particles which are electromagnetically opaque both to an exciting illumination at a first frequency and to a resulting fluorescent output radiation at a second frequency;
(b) illuminating, with optical radiation at a first frequency, the solution resulting from combining the unknown antigen with said reagent and with a fluorescently tagged immuno-active component;
(c) optically sensing output radiation at said second frequency resulting from said fluorescent output radiation, whereby the output radiation from said sample is substantially reduced when said fluorescently tagged component becomes bound to said carrier particle;
said sensing including the steps of (1) sensing fluorescent radiation from the "forward" direction relative to said first frequency radiation, whereby the carrier particles shield or shadow the radiation from the bound fluorescent molecules, and (2) sensing said fluorescent radiation is also in the "back" direction, to obtain full fluorescent radiation from the bound fluorescent molecules; and
(d) comparing the signals sensed in the "forward" and in the "back" directions to determine the relative levels of bound and free fluorescent molecules, without physically separating the free and bound fluorescent components.

4,407,965

PROCESS FOR PREPARING ANTIBODY

Noboru Yanaihara, Shizuoka, Japan, assignor to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 21, 1981, Ser. No. 265,926
Claims priority, application Japan, May 21, 1980, 55-68040
Int. Cl.³ C07G *7/00*; C07C *103/52*; G01N *23/00, 33/00*
U.S. Cl. 436—547 **8 Claims**

1. A gut glucagon-specific antibody prepared by administering to a mammal an antigen composed of a peptide-carrier complex obtained by
(a) reacting a peptide as a hapten with a carrier in the presence of a binding agent for binding the hapten and the carrier to each other, and
(b) collecting the resulting antibody, wherein the peptide is represented by the general formula:

R-Lys-Arg-Asn-Lys-Asn-Asn-Ile-Ala-OH

wherein R represents a member selected from the group consisting of H, H-Arg-, H-Trp-, H-Asn-, H-Ala, H-Val-, H-Met, H-Leu-, H-Phe-, H-Lys-, H-Thr-, H-Ile-,

H—Cys—,
|
H—Cys—

H-Gly-, H-His-, H-Pro-, H-Cys, H-Gly-Lys-, H-Asn-Tyr-, H-Met-Thr-, H-Met-Asn-, H-Leu-Thr-, H-Trp-Thr-, H-Phe-Val-, H-Gln-Ala-, H-Asp-Arg-, H-Leu-Tyr-, H-Ser-Lys-, H-Met-Asn-Thr-, H-Leu-Met-Asn-Thr-, H-Trp-Leu-Met-Asn-Thr-, H-Gln-Trp-Leu-Met-Asn-Thr-, H-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, H-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-, and H-Ser-Lys-Tyr-Leu-Asp-Ser-Arg-Arg-Ala-Gln-Asp-Phe-Val-Gln-Trp-Leu-Met-Asn-Thr-.

4,407,966

VERY FAST FADING PHOTOCHROMIC GLASS

David J. Kerko, and David L. Morse, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 16, 1982, Ser. No. 418,971
Int. Cl.³ C03C *3/26, 3/08*
U.S. Cl. 501—13 **2 Claims**

1. A photochromic glass composition consisting essentially, expressed in terms of weight percent on the oxide basis, with the levels of Ag, Br, Cl, and CuO representing values as analyzed in the glass, of

SiO_2	56–60
Al_2O_3	6–9
B_2O_3	18–21
Li_2O	>2.5–3.5
Na_2O	0.5–2.5
K_2O	5–7
ZrO_2	3.75–5
PbO	0.1–0.15
Ag	>0.15–0.25
Cl	0.2–0.35
Br	0.075–0.15
CuO	0.004–0.02
CeO_2	0–0.5

capable of being chemically strengthened to modulus of rupture values in excess of 35,000 psi with a depth of compression layer of at least 0.030 inch and demonstrating the following photochromic properties when present in cross section of about 1.5–3 mm;
(a) a clear luminous transmittance of approximately 90% when free from added tint;
(b) a darkened luminous transmittance at 40° C. below 35% when the glass is free from added tint and a fading rate at 40° C. such that after five minutes the luminous transmittance will have increased at least 40 percentage units;
(b) a darkened luminous transmittance at 25° C. below 25% when the glass is free from added tint and a fading rate at 25° C. such that after five minutes the luminous transmittance will have increased at least 35 percentage units; and
(c) a darkened luminous transmittance at 0° C. greater than 15%.

4,407,967

METHOD FOR PRODUCING SPHEROIDAL CERAMICS

Daniel W. Luks, Frenchtown, N.J., assignor to Frenchtown American Corp., Frenchtown, N.J.

Continuation-in-part of Ser. No. 67,201, Aug. 16, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,931
Int. Cl.³ C04B *21/06*
U.S. Cl. 501—81 **8 Claims**



1. The method of producing spheroidal ceramic particles comprising:
preparing a ceramic slip including particles of a particular composition and known curing temperature;
forming green, spheroidal ceramic particles by spray drying said slip;
firing said green particles at about 100° to 150° C. below the optimum curing temperature to produce spheroidal particles of less than maximum bulk density and to avoid any substantial sintering together of said particles; and
agitating the fired particles to separate particles that have sintered together during firing into individual spheroidal particles.

4,407,968

CERAMIC AL_2O_3 SUBSTOICHIOMETRIC TIC BODY

Minyoung Lee, Schenectady, and Lawrence E. Szala, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 332,903, Dec. 21, 1981. This application Aug. 27, 1982, Ser. No. 412,336
Int. Cl.³ C04B *35/10, 35/56*
U.S. Cl. 501—87 **5 Claims**

1. A polycrystalline body consisting essentially of a significantly uniform intermixture of an Al_2O_3 phase and a substoichiometric Ti_1C_x phase where x ranges from about 0.65 to about 0.95, said Ti_1C_x phase ranging from about 20% by

weight to about 40% by weight of said body, and said Al_2O_3 phase ranging from about 80% by weight to about 60% by



weight of said body, said body having a minimum Rockwell A hardness of about 92, said Al_2O_3 phase being a continuous interconnecting network.

4,407,969

FLEXIBLE REFRACTORY COMPOSITION

Joseph Widener, Belvedere, S.C.; James M. Britt, Martinez, Ga., and Steve A. LaPrade, North Augusta, S.C., assignors to The Babcock & Wilcox Company, New Orleans, La.

Continuation-in-part of Ser. No. 283,860, Jul. 16, 1981, abandoned. This application Mar. 16, 1982, Ser. No. 357,024

Int. Cl.³ C04B *35/80*

U.S. Cl. 501—95 **10 Claims**

1. A flexible thermally insulative refractory composition suitable for use for the containment of molten material comprising, in approximate percentage by dry weight, 70 to 90% of an inorganic fiber and 10 to 30% of a material selected from the group consisting of asphalt, carbon black, graphite, silicon carbide, and furan resin.

4,407,970

SINTERED BODY OF CERAMICS AND PREPARATION THEREOF

Michiyasu Komatsu; Akihiko Tsuge, and Hiroyasu Ota, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 9, 1982, Ser. No. 406,440

Claims priority, application Japan, Aug. 10, 1981, 56-124102

Int. Cl.³ C04B *35/50, 35/58*

U.S. Cl. 501—97 **12 Claims**

1. A sintered body of ceramics, comprising 0.1 to 10% by weight of yttrium oxide (Y_2O_3); 0.1 to 10% by weight of aluminum oxide (Al_2O_3); 0.1 to 10% by weight of aluminum nitride (AlN); 0.1 to 5% by weight of at least one first oxide selected from the group consisting of lithium oxide (Li_2O), beryllium oxide (BeO), calcium oxide (CaO), vanadium oxide (V_2O_5), manganese oxide (MnO_2), molybdenum oxide (MoO_3) and tungsten oxide (WO_3) or a combination of at least one of these first oxides with at least one second oxide selected from the group consisting of boron oxide (B_2O_3), magnesium oxide (MgO), titanium oxide (TiO_2), chromium oxide (Cr_2O_3), cobalt oxide (CoO), nickel oxide (NiO), zirconium oxide (ZrO_2), niobium oxide (Nb_2O_5), hafnium oxide (HfO_2) and tantalum oxide (Ta_2O_5); and the balance being silicon nitride (Si_3N_4).

4,407,971

SINTERED BODY OF SILICON NITRIDE-BASED CERAMICS

Michiyasu Komatsu; Akihiko Tsuge, and Hiroyasu Ohta, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 26, 1982, Ser. No. 411,982

Claims priority, application Japan, Sep. 1, 1981, 56-136142

Int. Cl.³ C04B *35/58*

U.S. Cl. 501—97 **10 Claims**

1. A sintered body of ceramics having high density, high flexural strength, and high impact resistance, comprising 0.1 to 10% by weight of yttrium oxide (Y_2O_3); 0.1 to 10% by weight of aluminum oxide (Al_2O_3); 0.1 to 10% by weight of aluminum nitride (AlN); 0.1 to 5% by weight of at least one silicide selected from the group consisting of magnesium silicide (Mg_2Si), calcium silicide ($CaSi_2$), titanium silicide ($TiSi_2$), vanadium silicide (VSi_2), chromium silicide ($CrSi_2$), manganese silicide (MnSi), zirconium silicide ($ZrSi_2$), niobium silicide ($NbSi_2$), molybdenum silicide ($MoSi_2$), tantalum silicide ($TaSi_2$), and tungsten silicide (WSi_2); and the balance being silicon nitride (Si_3N_4).

4,407,972

EROSION-RESISTANT REFRACTORY

Bohus Brezny, Middletown, Ohio, assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 258,025, Apr. 27, 1981, abandoned. This application Jan. 26, 1983, Ser. No. 461,175

Int. Cl.³ C04B *35/52*

U.S. Cl. 501—99 **20 Claims**

1. A chemically bonded refractory shape having improved resistance to erosion for use in a steel making plant wherein the hot face of the shape is subjected to temperatures of at least about 1600° C. and the cold face is shielded from oxygen penetration, consisting essentially of an anhydrous refractory material, an anhydrous organic binder in an amount sufficient to bond said refractory material, from 0.3% to about 3% finely divided elemental carbon having a particle size ranging from 0.01 to about 1 mm, and from 0.3% to about 3.5% particulate elemental magnesium, based on the total weight of the refractory shape.

4,407,973

METHANOL FROM COAL AND NATURAL GAS

Christiaan P. van Dijk, Houston; Aage Solbakken, Montgomery, and Jerry M. Rovner, Houston, all of Tex., assignors to The M. W. Kellogg Company, Houston, Tex.

Filed Jul. 28, 1982, Ser. No. 402,521

Int. Cl.³ C07C *27/06, 31/04*

U.S. Cl. 518—703 **7 Claims**

1. In a process for producing methanol which comprises converting a methane-rich gas by steam reforming into a mixture comprising hydrogen and carbon oxides and reacting said mixture in a first methanol plant which produces a methanol stream and a purge gas stream, the improvement to produce a total capacity of methanol between 1.45 and 1.75 of the design capacity of said first methanol plant comprising:

(a) converting by high temperature partial oxidation using essentially pure oxygen a heavy carbonaceous material into a raw gas comprising hydrogen, carbon monoxide, carbon dioxide, other acid gases and hydrocarbons;

(b) removing said other acid gases and trace elements of sulfur to produce a clean syn-gas; and

(c) reacting said purge gas and said clean syn-gas in a second methanol plant to produce a second methanol stream.

4,407,974

METHOD OF AND APPARATUS FOR CATALYTIC CONVERSION OF GASES

Claus Flockenhaus; Erich Hackler, and Werner Lommerzheim, all of Essen, Fed. Rep. of Germany, assignors to Thyssengas GmbH, Duisburg and Didier Engineering GmbH, Essen, both of, Fed. Rep. of Germany

Continuation of Ser. No. 214,646, Dec. 10, 1980, abandoned, which is a division of Ser. No. 59,522, Jul. 23, 1979, Pat. No. 4,258,006. This application Apr. 23, 1982, Ser. No. 371,265

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834589

Int. Cl.³ C07C *1/04*

U.S. Cl. 518—711 **5 Claims**

1. In a method of catalytically converting feed gases comprising hydrogen and carbon monoxide into a mixture containing hydrocarbon gases under high pressure within an upwardly extending fluidized bed reactor, and including removing by means of an evaporable cooling medium the heat of reaction from said catalytic conversion in the reactor from a reaction zone located in the fluidized bed which zone is elongated in the direction of the flow of the feed gases therethrough from a gas inlet at the lower end to a gas outlet at the upper end of the reaction zone, the improvement comprising that said cooling medium is in the form of feedwater and steam and comprising the steps of introducing pressurized feedwater from a closed space exterior of the reaction zone into the reaction zone at a first location spaced from the inlet end of the reaction zone and flowing the feedwater in indirect heat transfer relation with the gases flowing through the first location in the reaction zone for maintaining the temperature in the first location of the reaction zone approximately 300° K. below the temperature at a second location adjacent the inlet to the reaction zone, and at least partially vaporizing the feedwater in the first location, returning the at least partially vaporized feedwater back to the closed spaced after its passage through the reaction zone, withdrawing the steam in the at least partially vaporized feedwater from the closed space and introducing the steam along with feedwater from a supply source into the reaction zone at the second location adjacent to the inlet end and superheating the steam and feedwter as it flows in indirect heat transfer relation with the gases flowing through the second location of the reaction zone for maintaining the temperature in the second location of the reaction zone approximately 300° K. above the temperature at the first location, removing the superheated steam from the reaction zone and converting said superheated steam into another form of energy at a location spaced from the reactor, reheating the superheated steam, which is partially expanded in said energy conversion, by conveying the partially expanded steam back from the location spaced from the reactor into the reaction zone at a third location within the reaction zone positioned between the second location where superheating takes place and the first location where at least partial vaporization takes place and flowing the partially expanded steam in indirect heat transfer relation with the gases flowing through the reaction zone and then removing said reheated steam from the reaction zone and converting said reheated steam to another form of energy, and conducting a portion of said steam being conveyed to the third location, which has been partially expanded in the course of said energy conversion, into said reaction zone in direct heat transfer with the feed gases flowing through the gas inlet into said reaction zone to form a reaction steam in said catalytic conversion.

4,407,975

POLYMERIC MEMBRANE HAVING MALEIC ANHYDRIDE RESIDUES

Tomohiko Yamaguchi, Yatake, Japan, assignor to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Feb. 26, 1982, Ser. No. 352,863

Claims priority, application Japan, May 22, 1981, 56-77485

Int. Cl.³ B01J *47/12*

U.S. Cl. 521—27 **8 Claims**

1. A polymeric membrane having maleic anhydride residues which comprise a blend of (1) a copolymer of maleic anhydride and an olefin or vinyl monomer and (2) a polyalkyl methacrylate, said blend being partially cross-linked with a bifunctional cross-linking reagent and being prepared by dissolving and mixing said copolymer and polyalkyl methacrylate in an organic solvent together with said bifunctional cross-linking reagent and thereafter removing the organic solvent.

4,407,976

ANIONIC ADSORBENT

Jürg Merz, Therwil; Hans Wegmüller, Riehen, and Rudolf F. Wurster, Pfeffingen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1981, Ser. No. 271,882

Claims priority, application Switzerland, Jun. 16, 1980, 4616/80

Int. Cl.³ C08G *12/00, 69/46*

U.S. Cl. 521—36 **14 Claims**

1. An anionic adsorbent obtained by reaction of

(a) a monomeric compound which contains at least one anionic group and at least one free or methylolated amide group, with

(b) an aminoplast precondensate which is free from salt-forming anionic groups.

4,407,977

FIRE RETARDANT PARTICULATE EXPANDABLE STYRENE POLYMERS

Josef K. Rigler, Recklinghausen; Ekkehard Wienhöfer, Marl; Horst Leithäuser, Marl, and Karl Trukenbrod, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed May 20, 1982, Ser. No. 380,071

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122341

Int. Cl.³ C08J *9/20, 9/22*

U.S. Cl. 521—56 **6 Claims**

1. In a process for the preparation of shaped bodies based on expanded styrene polymers comprising: the polymerization of styrene or a mixture thereof with at least one monomer copolymerizable therewith in a suspension having an organic phase, the addition of an expanding agent and a fire retardant organic halogen compound, pre-forming of the resulting expandable particles, ageing of the formed particles, and molding thereof in a pressure resistant mold, the improvement comprising:

adding to the polymerization about 0.0001 to 0.1 percent by weight based on said monomers and comonomers of an epoxidation product of an aliphatic hydrocarbon having an epoxidated aliphatic chain containing from 6 to 18 C atoms, said epoxidation product being soluble in said organic phase.

4,407,978

POLYMERIC POLYDONOR COMPLEXONS AND METHOD FOR PREPARATION THEREOF

Jaroslav Kahovec; Zdenek Matejka, and Josef Tomasek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Liberec, Czechoslovakia

Filed Oct. 29, 1982, Ser. No. 437,619

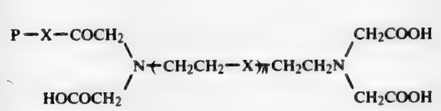
Claims priority, application Czechoslovakia, Oct. 29, 1981, 7919-81

Int. Cl.³ C08J *9/36*

U.S. Cl. 521—56 **4 Claims**

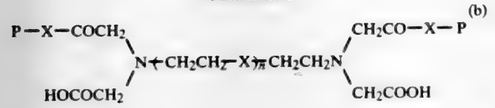
1. Polymeric polydonor complexon having more than six donor sites in a structural unit selected from the group consisting of

(a)



and

-continued



wherein

P is selected from the group consisting of linear and three-dimensional polymeric skeletons;

X is selected from the group consisting of oxygen and an

group wherein R is selected from the group consisting of hydrogen, and alkyl group of 1–6 carbon atoms, a phenyl group, and a phenyl group substituted with from 1–2 alkyl or alkoxyl groups of 1–6 carbon atoms,

Y is selected from the group consisting of oxygen, sulfur and an N—CH_2COOH group and

n is an integer from 1–3.

4,407,979

PROCESS FOR FORMING FAST-COOL VINYL AROMATIC EXPANDABLE POLYMERS

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 31, 1983, Ser. No. 462,158

Int. Cl.³ C08J *9/18*

U.S. Cl. 521—59 **10 Claims**

1. A process for producing expandable vinyl aromatic polymer particles which exhibit fast-cooling properties in molded products produced therefrom comprising:

polymerizing a vinyl aromatic monomer in which is dissolved about 1.0 to 10.0 percent by weight, based on the vinyl aromatic monomer, of a thermoplastic, branched, block copolymer of 55–95 weight percent of polymerized vinyl aromatic monomer and 5–45 weight percent of polymerized conjugated diene, to form vinyl aromatic polymer particles containing said thermoplastic, branched, block copolymer; and impregnating the vinyl aromatic polymer particles, containing said thermoplastic, branched, block copolymer, with a blowing agent.

4,407,980

CLOSED CELL POLYIMIDE FOAMS AND METHODS OF MAKING SAME

John Gagliani, 6280 Lance Pl., San Diego, Calif. 92120, and John V. Long, 1756 Lexington Pl., El Cajon, Calif. 92021

Filed Sep. 27, 1982, Ser. No. 423,802

Int. Cl.³ C08J *9/22, 9/24, 9/32*

U.S. Cl. 521—99 **22 Claims**

1. A process for producing high temperature and flame resistant closed cell foam which comprises the steps of:

reacting an oxoimine having the general formula:

$$CH_2—(CH_2)_x—NHCO$$

where "X" is a positive integer from 2 to 4, with an aromatic tetracarboxylic acid dianhydride in a mole ratio thereof between about 0.05:1 and 1.5:1 to produce an N-substituted imide;

esterfying said N-substituted imide by mixing therewith a reactive solvent;

adding thereto at least one diamine;

drying the resulting liquid composition;

reducing the dried material to an average particle diameter of from about 0.5 to 10 mm.;

placing a suitable quantity of said particles into a mold; and

heating said particles to a temperature in the range of about 90° to 150° C.;

whereby said particles expand producing a closed cell foam of substantial uniform density throughout the mold.

4,407,981

FLAME RETARDANT MIXTURE FOR POLYURETHANES

Alan M. Aaronson, Fresh Meadows, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 217,967, Dec. 19, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,138

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—107 **10 Claims**

1. A flame-retarded polyurethane composition comprising polyurethane, a two-component flame retardant system consisting of an additive first flame retardant containing dialkyl alkylphosphonate and a second flame retardant containing organochlorine or organobromine incorporated in a polyether polyol.

4,407,982

PROCESS FOR THE MANUFACTURE OF FOAMED STRUCTURES

John M. Elgie, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Filed Feb. 3, 1982, Ser. No. 345,616

Claims priority, application United Kingdom, Feb. 6, 1981, 81003794

Int. Cl.³ C08G *18/14, 18/00*

U.S. Cl. 521—122 **4 Claims**

1. In a process for the production of polyurethane foam in which a first component is admixed and reacted, in the presence of a normally liquid blowing agent, with a second component said first component being an isocyanate, and said second component being a polyol and in which the first component has a viscosity at least two times the viscosity of the second component, the difference in the viscosities being such that but for the improvement hereinafter set forth the resultant polyurethane foam would have nonuniform distribution of cells, the improvement comprising admixing the second component with 1–5%, by weight, of the second component, of fumed silica prior to admixing said first and second components, the amount of silica so admixed being such that the polyurethane foam subsequently obtained has a substantially uniform distribution of cells.

4,407,983

POLYOXAMATE POLYMER/POLYOLS

Richard M. Gerkin, Charleston, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 29, 1982, Ser. No. 363,102

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—128 **19 Claims**

1. A polymer/polyol dispersion comprising a polyoxamate polymer dispersed in a polyhydroxyl containing medium wherein said polyhydroxyl containing medium has a molecular weight of from 250 to 14,000.

4,407,984

DENTAL COMPOSITIONS

Maurice J. Ratcliffe, and Thomas A. Roberts, both of Congleton, England, assignors to Imperial Chemical Industries PLC, London, England

Filed Nov. 13, 1981, Ser. No. 321,225

Claims priority, application United Kingdom, Dec. 3, 1980, 8038805; Jul. 9, 1981, 8121235

Int. Cl.³ C08L *35/02*

U.S. Cl. 523—115 **17 Claims**

1. A fluid dental composition which comprises

(a) liquid ethylenically unsaturated polymerisable resin suitable for dental applications (A)

(b) a mixture of fillers (B) in volume fraction from 60% to 85% where volume fraction is expressed as

$$\left(\frac{\text{volume } B \times 100}{\text{volume } A + \text{volume } B}\right)$$

said mixture of fillers comprising fine particle size filler and large particle size filler, the fine particle size filler being hydrophilic and having a mean size value in the longest direction of less than 0.1 μm and being present in volume fraction from 10% to 55% where volume fraction is expressed as

$$\left(\frac{\text{volume fine} \times 100}{\text{volume } A + \text{volume fine}}\right),$$

and the large particle filler having mean size value in the longest dimension of 0.5 μm to 80 μm,

(c) polymerisation catalyst for the liquid polymerisable resin, and

(d) dispersing agent.

4,407,985

METHOD OF MAKING AND IMPROVED COMPOSITIONS FOR AN INITIALLY ERASABLE INK FOR A BALL POINT WRITING INSTRUMENT

Frank A. Muller, Los Angeles, Calif., assignor to Scripto, Inc., Doraville, Ga.

Filed May 5, 1982, Ser. No. 374,938

Int. Cl.³ C09D *11/18;* **B41K** *7/00;* **B43K** *7/10;* **C08K** *5/01*

U.S. Cl. 523—161 **13 Claims**

1. In a ball point writing instrument containing an ink capable of depositing a trace on an absorbent, paper-like writing surface having minute voids therein, said trace being characterized by initial erasability thereof by ordinary pencil erasers and the capability of developing permanence over a period of time, said ink comprising pigment, a polar elastomer, said polar elastomer having a selected molecular weight range of about 90,000 to 1,000,000 and a selected Mooney viscosity range of about 15 to 60 and requiring no mastication for use in said ink, and a solvent system, said solvent system comprising a volatile component having a boiling point less than about 180° C. and an essentially non-volatile component which includes pigment vehicle having a boiling point greater than about 300° C. and low viscosity plasticizer having a boiling point greater than 180° C. but less than 300° C., the solvent system being present in amount sufficient to impart a final ink viscosity in the range of about 1.5 million cps.

4,407,986

POLYPROPYLENE COMPOSITION

Manabu Nomura; Norio Sugi; Takayoshi Tanaka, and Koichi Hara, all of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 235,513, Feb. 18, 1981, abandoned. This application Jun. 14, 1982, Ser. No. 388,206

Claims priority, application Japan, Feb. 29, 1980, 55-24004

Int. Cl.³ C08K *3/26*

U.S. Cl. 523—200 **9 Claims**

1. A polypropylene composition comprising 60 to 90% by weight of crystalline polypropylene selected from the group consisting of (a) block copolymer of propylene and ethylene or butene-1 having a melt index of from 0.1 to 8, (b) random copolymer of propylene and ethylene or butene-1 having a melt index of from 0.1 to 10 and (c) propylene homopolymer having a melt index of from 0.1 to 5 and 40 to 10% by weight of precipitated calcium carbonate which had been subjected to a surface-treatment by the use of a dispersant selected from the group consisting of (a) stearic acid and its metal salts and (b) palmitic acid and its metal salts and has an average particle diameter of from 0.1 to 0.3μ and the standard deviation value of particle diameter of said calcium carbonate is 0.05μ or less.

4,407,987

POLYMERIC RESINS AND BLENDS WITH HIGH PACKING DENSITIES

Zenas Crocker, Westmount, and David V. Wise, St. Bruno, both of Canada, assignors to Synergistics Chemicals Limited, Quebec, Canada

Filed Oct. 27, 1981, Ser. No. 315,370

Int. Cl.³ C08J *3/02*

U.S. Cl. 523—322 **10 Claims**

1. In a process for the manufacture of a particulate polymeric resin blend suitable for forming plastic articles in which a particulate composition comprising a thermoplastic polymeric resin is mixed and thermokinetically heated in a high intensity mixer having a plurality of blades attached to arms rotating with a blade tip speed of at least about 25 meters per second to effect blending of the composition and heating thereof to an elevated temperature below commencement of agglomeration of the particulate composition, and in which the blended and heated particulate composition is cooled in a mixer to a temperature at which the particulate composition can be stored without agglomeration, the improvement wherein the blend and heated particulate composition is cooled in a high intensity mixer with blades attached to arms rotating in said mixer, said arms being rotated at a blade tip speed of not more than 16 meters per second whereby the particulate cooled polymeric resin blend has a high packing density.

4,407,988

METHOD FOR PREPARING A WEAR-RESISTANT COMPOSITION CONTAINING FLUORINATED GRAPHITE, GRAPHITE FIBERS AND PTFE

Louis Abrahams, Worcester, and Thomas P. J. Izod, Holliston, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Division of Ser. No. 181,909, Aug. 27, 1980, Pat. No. 4,342,679. This application Mar. 25, 1982, Ser. No. 361,700

Int. Cl.³ C08K *7/02, 3/04*

U.S. Cl. 523—334 **12 Claims**

1. The method of preparing a composition consisting essentially of a mixture of 74–84% by weight polytetrafluoroethylene, 7–17% graphite fibers and 4–14% fluorinated graphite comprising the steps of:

mixing together 74–84 parts by weight of polytetrafluoroethylene in a chlorinated ethane or methane solvent to form a first slurry,

mixing 7–17 parts graphite fibers and 4–14 parts fluorinated graphite in a chlorinated ethane or methane solvent to form a second slurry,

mixing said first and second slurries to form a third slurry, and

draining said third slurry so as to give the mixture a granular consistency.

4,407,989

PROCESS FOR THE SEPARATION TREATMENT OF POLYMER FROM POLYMER SOLUTION

Hiroyoshi Takao, Chiba, and Yoshio Inoue, Ichihara, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Feb. 16, 1982, Ser. No. 348,772

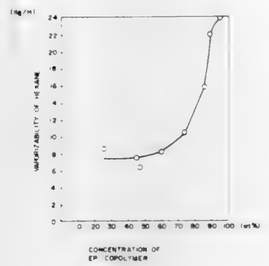
Claims priority, application Japan, Feb. 23, 1981, 56-25753; May 25, 1981, 56-79872

Int. Cl.³ C08J *9/28*

U.S. Cl. 523—340 **10 Claims**

1. In a process for the separation treatment of a polymer

solution, the improvement in separating and recovering polymer and polymerization solvent by flashing a polymer solution, which comprises heating said polymer solution under an elevated pressure sufficient to maintain said solution in a liquid state, sending said solution into a flashing tank kept at an inner surface temperature of 140° C. or above and a pressure ranging



from ordinary pressure to 5 kg/cm² G, flashing said solution to evaporate and separate the solvent, thereby concentrating said solution so that concentration of the polymer in said solution becomes 80% by weight or more, and recovering the concentrated solution from the bottom part of the flashing tank.

4,407,990

ACRYLIC COATING COMPOSITIONS

Derrard M. Hall, Glen Waverley; Roy A. Kemp, Fernglen, and Christopher H. Such, Mount Eliza, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

Filed Feb. 11, 1982, Ser. No. 348,088

Claims priority, application Australia, Feb. 13, 1981, PE7589

Int. Cl.³ C08L *1/14*

U.S. Cl. 524—38 **4 Claims**

1. A liquid coating composition comprising a mixture of

(a) a solution in volatile organic liquid of a copolymer of from 75-90% methyl methacrylate, 1.5-4.0% dimethyl aminoethyl methacrylate and 8-23.5% of monomer selected from butyl methacrylate, butyl acrylate and lauryl methacrylate, which copolymer shall have a glass transition temperature of 80°-95° C.;

(b) a solution in volatile organic liquid of cellulose acetate butyrate which has a viscosity of 0.5-5.0 sec when measured according to Test Method D1343 of the American Society for Testing and Materials, and a hydroxyl value of 2 maximum; and

(c) a monomeric ester plasticiser compatible with the selected mixture of the said components (a) plus (b)

such that the non-volatile constituents of (a), (b) and (c) comprise respectively 43.5-64.0%, 15.0-25.5% and 21.0-31.5% of the total weight of non-volatile material of (a) plus (b) plus (c).

4,407,991

OXALIC ACID STABILIZED THERMOSETTABLE VINYL ESTER RESINS

Virginia B. Messick, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 265,473, May 20, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 426,413

Int. Cl.³ C08K *5/47, 5/09*

U.S. Cl. 524—83 **13 Claims**

1. A thermosettable resin composition having improved storage stability, said composition comprising a vinyl ester resin and a stabilizing amount of oxalic acid.

12. The composition of claim 1 wherein the oxalic acid is present together with phenothiazine.

4,407,992

FLAME RETARDANT COMPOSITIONS BASED ON ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 127,509, Mar. 5, 1980, abandoned, and Ser. No. 192,356, Sep. 30, 1980, abandoned, which is a continuation-in-part of Ser. No. 944,336, Sep. 21, 1978, Pat. No. 4,243,579. This application Aug. 30, 1982, Ser. No. 411,561

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ C08K *5/54, 3/22, 3/26, 3/30*

U.S. Cl. 524—94 **27 Claims**

1. A flame retardant composition comprising an alkylene-alkyl acrylate copolymer, from about one to about 30 percent by weight of a halogenated flame retardant additive, from about 0.5 to about 50 percent by weight of an oxide, carbonate, hydroxide or sulfate of magnesium or calcium and from about 0.5 to about 15 percent by weight of antimony oxide.

4,407,993

HINDERED PIPERIDINE POLYMER STABILIZERS

Hans Hinsken, Kandern, Fed. Rep. of Germany; Wolfgang Mueller, Allschwil, Switzerland, and Hermann Schneider, Grenzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

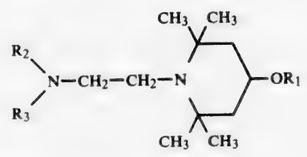
Filed Mar. 15, 1982, Ser. No. 357,886

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110969

Int. Cl.³ C08K *5/34;* C07D *211/44;* C08K *5/35*

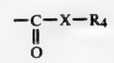
U.S. Cl. 524—96 **13 Claims**

1. A compound of formula I



1

in which R_1 is hydrogen or a group

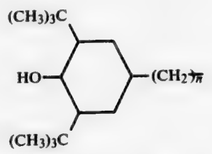


(a)

in which

X is a direct bond, —O— or —NH—; and

R_4 is C_{1-18}alkyl, C_{5-8}cycloalkyl, phenyl (C_{1-4}) alkyl, phenyl, phenyl substituted with 1 or 2 C_{1-12}alkyl groups having together no more than 18 carbon atoms, or the group

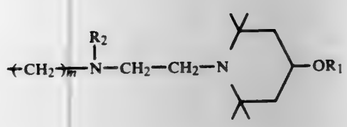


(e)

in which n=0, 1 or 2, or, when X is —NH—, R_4 may also be C_{1-18}alkyl monosubstituted by isocyanate

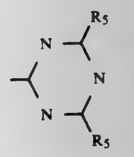
R_2 is hydrogen, C_{1-18}alkyl or a group (a); and

R_3 is hydrogen, C_{1-18}alkyl or a group (b), (c) or (d)



(b)

in which m is 2-10 and R_1 and R_2 are as defined above,



(c)

in which each R_5 independently is chlorine;



(f)

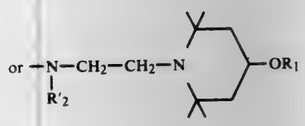
in which

R_7 is hydrogen, C_{1-18}alkyl or β-hydroxyethyl

and

R_8 is C_{1-18}alkyl, β-hydroxyethyl or phenyl or

R_7 and R_8 together with the nitrogen atom to which they are attached form a piperidine or morpholine ring;

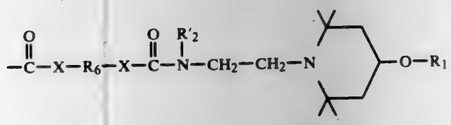


(g)

in which

R_2' is hydrogen or C_{1-18}alkyl and

R_1 is as defined above;



(d)

in which

X, R_1 and R_2' are as defined above, and

R_6 is C_{2-10}alkylene, phenylene, phenylene mono- or di-substituted by C_{1-9}alkyl, or, when X is a direct bond, R_6 may also be —CH_2— or a direct bond,

provided that, when R_3 is a group (c) or (d) then R_2 is R_2'; or R_2 and R_3, together with the nitrogen atom to which they are attached, form a succinimide, maleimide or phthalimide ring.

6. A process for the stabilization of polymeric materials against the effect of light comprising the incorporation of from 0.01 to 5% by weight of a compound of claim 1, into the polymeric material to be stabilized.

4,407,994

AQUEOUS SIZING COMPOSITION COMPRISING KETENE DIMER AND EPIHALOHYDRIN/POLYAMINO POLYAMIDE/BIS(HEXAMETHYLENE)TRIAMINE REACTION PRODUCT

Ralph A. Bankert, New Castle, and David H. Dumas, Wilmington, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Jul. 2, 1981, Ser. No. 279,914

Int. Cl.³ C08L *77/06;* C08G *69/48*

U.S. Cl. 524—107 **2 Claims**

1. An aqueous ketene dimer emulsion consisting essentially of, by weight, (I) from about 3 to about 30 parts solids and (II) from about 97 to about 70 parts water, the total of (I) and (II) being 100 parts, the solids (I) consisting essentially of, by weight, (a) from about 1 part to about 12 parts ketene dimer, (b) from about 1 part to about 25 parts water-soluble resinous reaction product, and (c) from about 1 part to about 25 parts of an emulsifier, the amounts of (a), (b) and (c) being selected so that the total weight thereof will be in the range of 3 to 30 parts, said component (b) being a water-soluble resinous reaction product derived by reaction of (i) an epihalohydrin, (ii) a water-soluble polyaminopolyamide resin, and (iii) a composition comprised of from about 20% to about 65% by weight of bis(hexamethylene)triamine wherein (iii) is used in an amount of from about 2 to 10 parts by weight for each part by weight of (ii) and (i) is used in an amount of from about 0.5 mole to about 1.5 moles for each basic amino group present in (ii) and (iii), said component (iii) being in the residue obtained after recovery of hexamethylenediamine from its manufacture by hydrogenation of adiponitrile and said component (ii) being derived by reaction of a dicarboxylic acid and a polyalkylene-polyamine in a mole ratio of amine to acid of from about 0.8:1 to about 1.4:1.

4,407,995

STABILIZED POLYCARBONATE COMPOSITIONS CONTAINING CYCLIC CARBONATES AND ORGANOPHOSPHOROUS COMPOUNDS

Kevin F. Dick, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 28, 1982, Ser. No. 402,497

Int. Cl.³ C08K *5/15, 5/52, 5/53*

U.S. Cl. 524—108 **9 Claims**

1. A heat stabilized aromatic polycarbonate composition resistant to yellowing which comprises an aromatic polycarbonate blended with 100 to 10,000 parts per million of a cyclic carbonate compound having a boiling point greater than about 250° C. and 100 to 10,000 parts per million of an organophosphorous compound selected from neutral phosphites and phosphonites.

4,407,996

STABILIZED POLYCARBONATE COMPOSITIONS

Stephen M. Cooper; Sheldon J. Shafer, both of Pittsfield, Mass., and John A. Tyrell, Mt. Vernon, Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Aug. 26, 1981, Ser. No. 296,336

Int. Cl.³ C08K *5/41;* C08L *69/00*

U.S. Cl. 524—167 **7 Claims**

1. A composition which comprises an aromatic carbonate polymer in admixture with an effective amount of a stabilizer of the group consisting of

(a) thermally stabilizing compound of the formula

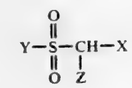


Figure 1

wherein

X is phenyl or phenyl substituted with one to three members

of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine;

Y is alkyl of one to six carbon atoms, inclusive; phenyl substituted alkyl of one to six carbon atoms, inclusive, the phenyl unsubstituted or substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine; phenyl; and phenyl substituted with one to three members of the group consisting of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine;

Z is hydrogen; alkyl of one to six carbon atoms, inclusive; phenyl; or phenyl substituted with one to three members consisting of the group of alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, chlorine and bromine;

(b) a thermally stabilizing polymer having as a repeating unit a sulfonyl group with a C—H bond alpha to the sulfonyl group and a phenyl is attached to the said C—H bond.

4,407,997

MARINE PAINT

Cristian M. Sghibartz, Washington, England, assignor to The International Paint Company Limited, London, England

Filed Oct. 21, 1981, Ser. No. 313,290

Claims priority, application United Kingdom, Oct. 30, 1980, 8034798

Int. Cl.³ C08L *31/02*

U.S. Cl. 524—202 **10 Claims**

1. A marine paint comprising a film-forming acrylic polymer and a metalliferous pigment which is sparingly soluble in seawater, in which the acrylic polymer comprises 20 to 70 percent by weight of monomer units (A) selected from methyl acrylate and ethyl acrylate, 10 to 45 percent by weight of monomer units (B) of a triorganotin salts of an olefinically unsaturated carboxylic acid, and 20 to 50 percent by weight of units (C) which are alkyl methacrylate units having 1 to 4 carbon atoms in the alkyl group or styrene units, provided that if the acrylic polymer is prepared by emulsion polymerisation it contains no more than 40 percent by weight of monomer units (C), the monomer units (A), (B) and (C) forming at least 80 percent by weight of the polymer and the balance of the polymer if any being units of at least one other olefinically unsaturated comonomer.

4,407,998

HIGH IMPACT POLYPROPYLENE RESIN

Ilan Duvdevani, Leonia, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 222,371, Jan. 5, 1981, abandoned. This application Aug. 12, 1981, Ser. No. 292,298

Int. Cl.³ C08G *23/12*; C08K *5/09, 5/20*

U.S. Cl. 524—229 **8 Claims**

1. A polypropylene resin which consists essentially of a blend of:

(a) an isotactic polypropylene homopolymer having an $\overline{M}_n$ as measured by GPC of at least about 15,000;

(b) about 5 to about 15 parts by weight of a zinc neutralized sulfonated EPDM terpolymer per 100 parts by weight of said isotactic polypropylene homopolymer; and

(d) about 5 to about 15 parts by weight of a high molecular weight polypropylene per 100 parts by weight of said isotactic polypropylene resin, said high molecular weight polypropylene having an $\overline{M}_n$ of about 80,000.

4,407,999

WATER REPELLENT ADHESIVE COMPOSITION FOR WOODEN MATERIAL

Takeshi Fushiki, Yokohama; Tohru Tagawa, Machida, and Satoru Kawakami, Urawa, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed May 28, 1982, Ser. No. 383,037

Claims priority, application Japan, Feb. 25, 1980, 55-22522

Int. Cl.³ C08L *91/06*

U.S. Cl. 524—276 **18 Claims**

1. A water-repellent adhesive composition for wooden materials, which consists essentially of:

(1) a paraffin emulsion comprising a paraffin hydrocarbon component which does not evaporate and scatter during hot pressing of wooden material to which the adhesive composition has been applied and an oxidized paraffin component; and

(2) a resin material selected from the group consisting of urea resins, urea-melamine resins and phenol resins.

4,408,000

COMPOSITIONS COMPRISING THERMOPLASTIC RESIN, MOLD RELEASE AGENT AND LONG CHAINED FATTY ACID

Garland G. Lee, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Continuation-in-part of Ser. No. 273,589, Jun. 15, 1981. This application Dec. 7, 1981, Ser. No. 327,947

Int. Cl.³ C08K *5/09, 5/10*; C08L *69/00, 91/06*

U.S. Cl. 524—315 **18 Claims**

1. A composition which comprises a thermoplastic resin selected from the group consisting of aromatic polycarbonates, polyesters, polysulfones, polyethersulfones, polyamides, polysulfides, polyacrylates, acrylonitrile butadiene styrene, butadiene styrene, methacrylate butadiene and blends thereof and a mold release effective amount of a mold release agent and a mold release enhancing effective amount of a saturated or unsaturated normal fatty acid having from about fourteen (14) to about thirty-six (36) carbon atoms, inclusive which is insufficient to cause appreciable degradation of the polymer during normal processing and use.

4,408,001

DEGENERATION INHIBITED SANITIZING COMPLEXES

Sally P. Ginter, Sanford, and Percy J. Hamlin, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

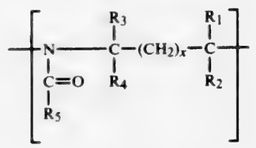
Filed Apr. 6, 1981, Ser. No. 251,626

Int. Cl.³ C08L *79/04*

U.S. Cl. 524—376 **18 Claims**

1. A composition comprising:

(a) a polymer containing a characterizing amount of units of the formula



(I)

wherein R_1–R_4 are independently hydrogen, methyl or ethyl and wherein R_5 is hydrogen or an alkyl radical containing 1 to 3 carbon atoms and x is 0 or 1;

(b) $IBrCl^-$, IBr_2^-, $BrCl_2^-$ or mixtures thereof;

(c) a cation selected from the group consisting of alkali metal ions, alkaline earth metal ions, hydrogen ion, ammonium ion and mixtures thereof; said cation being obtained from a source independent of the polymer;

(d) water; and

(e) a degeneration inhibiting amount of an alcohol of the formula:

$$R—(OCH_2CH_2)_n—OH$$

wherein R is methyl, ethyl or 2-hydroxyethyl and n is a number from 0 to 3.

4,408,002

STABILIZATION OF ZINC-CONTAINING COATING COMPOSITIONS

Paul E. Wills, Berwyn, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 220,996, Dec. 29, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,704

Int. Cl.³ C08L *23/36*

U.S. Cl. 524—357 **4 Claims**

1. An iminated acrylate coating composition containing zinc which contains also an amount of acetyl acetone effective to chelate with the zinc and prevent gelation of the composition upon standing.

4,408,003

VARNISHES FOR GLASSCLOTH LAMINATES, METHODS OF THEIR PRODUCTION AND LAMINATES MADE THEREFROM

Joseph G. Robinson, Winchcombe, and Sally A. Brain, Evesham, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 15, 1981, Ser. No. 311,647

Claims priority, application United Kingdom, Nov. 7, 1980, 8035809

Int. Cl.³ C08K *5/07*

U.S. Cl. 524—364 **5 Claims**

1. A varnish for the preparation of glasscloth laminates, comprising a mixture of:

a solution of 100 parts of a TFP resin having a number average molecular weight of about 1000 and an oxygen content of about 8% dissolved in a solvent selected from the group consisting of C_4 to C_6 alkanones and C_3 or C_4 alkanols; and

a solution of from 8 to 12 parts of hexamine dissolved in a minimum amount of a solvent comprising water and a lower alkanol in a ratio of about 3:5.

4,408,004

HIGH CLARITY, LOW HAZE POLYESTERS HAVING REDUCED INFRARED HEAT-UP TIMES

Brian W. Pengilly, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 24, 1982, Ser. No. 351,841

Int. Cl.³ C08L *67/02*; C08K *3/04*

U.S. Cl. 524—398 **19 Claims**

1. A high clarity, low haze polyester comprising:

a polyester, said polyester having a small amount of an infrared absorbing material wherein said infrared absorbing material is carbon black, wherein the amount of said carbon black is present from 0.1 to 10 parts by weight per million parts by weight of said polyester, wherein said carbon black has an average particle size of from 10 to 500 nanometers and wherein said polyester has a Hunter "a" coordinate value of from minus 1 to 1 and a Hunter coordinate "b" value of from minus 2 to 2.0 and a Hunter haze value of less than 3.0

4,408,005

FLAME RETARDANT POLYCARBONATES

Joseph B. Byrne, Antioch, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 22, 1982, Ser. No. 360,712

Int. Cl.³ C08K *3/30*

U.S. Cl. 524—421 **6 Claims**

1. A flame retardant thermoplastic composition comprising an aromatic polycarbonate and an amount of an alkali metal hydrogen sulfite effective to retard flaming.

4,408,006

STAR ELASTOMERS IN FOOTWEAR COMPOUNDS

Ralph Milkovich, Paoli, and David R. Warfel, Exton, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 73,393, Sep. 7, 1979, abandoned. This application Jun. 17, 1981, Ser. No. 274,699

Int. Cl.³ C08L *9/06, 47/00*

U.S. Cl. 524—534 **4 Claims**

1. A composition useful as a shoe-sole compound consisting of:

(a) 100 parts by weight of thermoplastic elastomer of 25 to 55% by weight of a monovinyl aromatic monomer and 45 to 75% by weight of a conjugated diene monomer of 4 to 8 carbon atoms, which elastomer has an average general formula $(A\text{-}B)_{\overline{m}}X$ where A is a non-elastomer polymer block based on the monovinyl aromatic monomer and having a number average molecular weight of from 10,000 to 35,000; B is an elastomeric polymer block based on the conjugated diene monomer and having a number average molecular weight of from 11,000 to 85,000; m is an integer between 7 and 12, and X is the radical of a polyfunctional coupling agent selected from o-divinylbenzene, m-divinylbenzene, p-divinylbenzene, and mixtures thereof;

(b) about 80–250 parts by weight of a naphthenic extender oil;

(c) about 40–150 parts by weight of a polystyrene material;

(d) about 0–80 parts by weight of a finely divided filler; and

(e) about 0–5.0 parts by weight of stabilizers.

4,408,007

FREE-FLOWING SINTERING POWDERS WHICH HAVE IMPROVED PROPERTIES AND ARE BASED ON TETRAFLUOROETHYLENE POLYMERS AND A PROCESS FOR THEIR MANUFACTURE

Jürgen Kuhls, and Robert Hartwimmer, both of Burghausen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 214,465, Dec. 8, 1980, Pat. No. 4,368,296. This application Sep. 13, 1982, Ser. No. 417,122

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1979, 2949908

Int. Cl.³ C08J *3/12*; C08F *214/26, 114/26*

U.S. Cl. 524—546 **4 Claims**

1. Process for the manufacture of a sinterable polymer powder which optionally contains a filler and is based on a polymer which has been obtained by polymerization in an aqueous medium in the presence of 0.01 to 0.5% by weight, relative to the aqueous medium, of at least one fluorinated dispersing agent inactive as telogen with formation of a colloidal dispersion of polymer particles of an average size of 0.05 to 0.8 μm and a total solids content of 10 to 50% by weight, relative to the dispersion, and which contains 98.5 to 100% by weight of polymerized tetrafluoroethylene units and 1.5 to 0% by weight of polymerized units of at least one perfluorinated monomer in which one fluorine atom can be replaced by chlorine and which is copolymerizable with tetrafluoroethylene, the polymer dispersion being adjusted to a solids content of about 5 to 15% by weight and being stirred at 10° to 85° C. at an energy of 4 to about 200 $J.s^{-1}.l^{-1}$ and an organic liquid being added, after which, if appropriate, the filler is added and, after the

formation of granules, the product is washed, finally separated from the liquid phase and dried, and, prior to the addition of said organic liquid, stirring the dispersion until an adequate degree of thickening of the dispersion is obtained, indicated by a clearly visible optical inhomogeneity, while adding 0 to 2% by weight, relative to the dispersion, of at least one water-soluble, dissociating, inorganic salt which contains an ammonium cation or a metal cation, and/or a water-soluble acid by means of which the pH of the dispersion is adjusted to 0 to 6, and then adding 0 to 10 minutes later, without intermediately separating, drying and grinding the polymer, 1 to 5% by weight, relative to the dispersion, of an organic liquid which readily wets the polymer particles present in the dispersion and which is soluble to the extent of less than 15% by weight in water at 20° C., to the dispersion.

4,408,008

STABLE, COLLOIDAL, AQUEOUS DISPERSIONS OF CROSS-LINKED UREA-URETHANE POLYMERS AND THEIR METHOD OF PRODUCTION

Peter Markusch, McMurray, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jul. 24, 1981, Ser. No. 286,493
Int. Cl.³ C08L *75/10, 75/02*
U.S. Cl. 524—591 **69 Claims**

1. A process for the preparation of a stable, colloidal, aqueous dispersion of cross-linked urea-urethanes which comprises

(a) forming a substantially linear, isocyanate-terminated prepolymer having a molecular weight of up to about 25,000 by reacting

(i) an organic polyisocyanate which contains at least two aliphatically or cycloaliphatically bound isocyanate groups,

(ii) an organic compound which has at least two isocyanate-reactive groups,

(iii) an organic compound which comprises a member selected from the group consisting of diisocyanates which contain lateral, hydrophilic ethylene oxide units; compounds which are difunctional in the isocyanate-polyaddition reaction and contain lateral, hydrophilic ethylene oxide units; monoisocyanates which contain terminal, hydrophilic ethylene oxide units; compounds which are monofunctional in the isocyanate-polyaddition reaction and contain terminal, hydrophilic ethylene oxide units, and mixtures thereof; and optionally,

(iv) an organic compound which comprises a member selected from the group consisting of monoisocyanates or diisocyanates which contain ionic group(s) or potential ionic group(s); and compounds which are monofunctional or difunctional in the isocyanate-polyaddition reaction and contain ionic group(s) or potential ionic group(s),

wherein components (i), (ii), (iii) and (iv) are reacted in the presence of excess isocyanate groups and are chosen to provide a ratio of isocyanate groups to isocyanate-reactive groups of about 1.1 to 3.0 on an equivalent basis; component (iii) is present in an amount sufficient to provide about 0.35 to 10% by weight, based on the weight of the prepolymer, of lateral and/or terminal, hydrophilic ethylene oxide units; and component (iv) is treated with a neutralizing agent either before, during or after formation of the prepolymer in an amount sufficient to provide up to about 120 milliequivalents of ionic groups per 100 grams of said prepolymers, the amount of component (iii) and the neutralized portion of component (iv) being present in an amount sufficient to provide a stable, aqueous dispersion of the prepolymer;

(b) forming a dispersion of said prepolymer in water; and subsequently

(c) chain extending said prepolymer to form said cross-linked urea-urethane with a sufficient amount of a polyfunctional amine chain extender having an average functionality (number of amine nitrogens per molecule) between about 2.2 and 6.0 to provide a ratio of the terminal isocyanate groups of the prepolymer to the amino hydrogens of the polyfunctional amine of between about 1.0:0.6 and 1.0:1.1.

4,408,009

CO-CONDENSATES OF ALKYL SILICATES AND ALKOXY SILANES

Charles B. Mallon, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 17, 1982, Ser. No. 349,596
Int. Cl.³ C08L *83/00, 83/02*
U.S. Cl. 524—858 **12 Claims**

1. Coating composition comprising a co-condensate of an organic orthosilicate and an alkyl or aryl trialkoxy or a dialkyl or arylalkyl dialkoxy silane in a ratio of about 3:1 to about 1:3 admixed with about 200 to about 1000 parts per 100 parts by volume of said co-condensate of a high temperature resistant pigment or filler.

4,408,010

POLYBLEND OF STYRENE COPOLYMERS AND MOLDED ARTICLE PRODUCED THEREFROM

Bi Le-Khac, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 4, 1982, Ser. No. 432,492
Int. Cl.³ C08L *35/06, 39/00, 25/08*
U.S. Cl. 525—73 **8 Claims**

1. A polyblend comprising a first and a second copolymer, the first copolymer consisting essentially of an α, β ethylenically unsaturated dicarboxylic acid or its anhydride copolymerized with at least one monovinyl-substituted aryl hydrocarbon monomer and, the second copolymer consisting essentially of maleimide copolymerized with at least one monovinyl substituted aryl hydrocarbon monomer and being present in the polyblend in an amount effective to increase the heat resistant properties of the first copolymer.

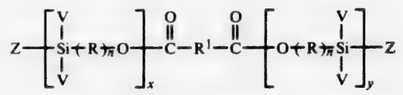
4,408,011

POLYSILOXANES AND THE USE THEREOF IN THE PRODUCTION OF SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMERS

Austin E. Barnabeo, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 13, 1982, Ser. No. 416,601
Int. Cl.³ C08F *8/00*
U.S. Cl. 525—100 **27 Claims**

16. A process of preparing a water curable, silane modified alkylene-alkyl acrylate copolymer which comprises reacting a mixture containing an alkylene-alkyl acrylate copolymer, an organo titanate catalyst and a polysiloxane having the formula:



wherein each R is a hydrocarbon radical, R^1 is a hydrocarbon radical, each V is hydrogen, a hydrocarbon radical or a hydrolyzable group, Z is a hydrolyzable group, each n is an integer having a value of at least one, and x and y are integers each having a value of at least 1.

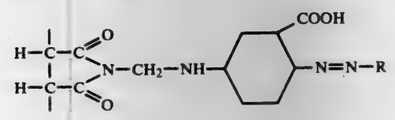
4,408,012

POLY-2(-2'-THIAZOLYL CONTAINING AZO)-5-MALEIMIDE BENZOIC ACID CHELATE POLYMER

Setsuko Furuya, Toride; Shunji Ohnishi, Yatabemachi, and Masao Kato, Sakuramura, all of Japan, assignors to Agnency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Mar. 1, 1982, Ser. No. 353,103
Claims priority, application Japan, Mar. 31, 1981, 56/48831
Int. Cl.³ C08F *8/28, 8/30, 8/34*
U.S. Cl. 525—161 **2 Claims**

1. A polymaleimide chelate polymer comprising a repeating unit component having the formula:



wherein R is selected from the group consisting of 2-thiazolyl and 2-benzothiazolyl groups.

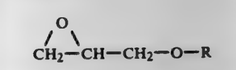
4,408,013

EPIHALOHYDRIN POLYMER CURE SYSTEMS

James P. Barahouse, North Ridgeville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 24, 1982, Ser. No. 381,117
Int. Cl.³ C08L *71/02*
U.S. Cl. 525—187 **20 Claims**

1. A composition comprising a polymer of an epihalohydrin and an unsaturated glycidyl ether of the general formula



wherein R is an ethylenically unsaturated radical, an organic peroxide and acrylic acid esters of polyols containing 2 to 12 carbon atoms.

4,408,014

METHOD FOR BLENDING PLASTIC AND RUBBER PHASE LATICES AND IMPROVING IMPACT PROPERTIES OF PLASTICS

Binnur Günesin, Warren, N.J., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed May 10, 1982, Ser. No. 376,530
Int. Cl.³ C08L *9/10, 33/24, 25/08*
U.S. Cl. 525—218 **24 Claims**

1. A method for modifying the impact strength of plastics comprising the steps of:

blending a plastic phase latex comprising a copolymer of an N-(alkoxymethyl)acrylamide monomer and at least one vinyl monomer selected from the group consisting of monovinyl aromatic compounds and acrylic compounds with a rubber phase latex comprising a second copolymer of said N-(alkoxymethyl)acrylamide monomer and a conjugated diene monomer to form a mixture; and

coagulating said mixture.

4,408,015

PRODUCTION OF POLYVINYL CHLORIDE AND ACRYLATE COPOLYMER MODIFIER USEFUL FOR HIGH-SPEED CALENDAR MANUFACTURE OF SHEET STOCK

Karsten Flatau, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,946
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105817
Int. Cl.³ C08L *33/12, 27/06*
U.S. Cl. 525—227 **6 Claims**

1. A process for producing polyvinyl chloride which is processable by high speed calendering comprising suspension polymerizing vinyl chloride in the presence of a monomer-soluble catalyst and a protective colloid as suspension stabilizer; after the polymerization, adding 0.1–3% by weight, based on the amount of polyvinyl chloride of a latex of a copolymer of 75–95% by weight of methyl methacrylate, 0–20% by weight of styrene, and 5–25% by weight of an acrylic acid ester of a C_{4-8}-alkanol, the total weight percentage adding up to 100, while agitating the mixture; precipitating the latex onto the polyvinyl chloride while continuing the agitation; and, thereafter, separating the resultant modified suspension polyvinyl chloride by filtration and drying.

4,408,016

MONOMERIC COMPOSITION OF A DIOL BIS(ALLYL CARBONATE), A DISPERSED POLYMER, AND A MULTIFUNCTIONAL ACRYLATE MONOMER, AND POLYMERS PREPARED THEREFROM

Carl W. Eads, Wadsworth, and Ronald L. Haynes, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1982, Ser. No. 362,705
Int. Cl.³ C08L *47/00*
U.S. Cl. 525—277 **21 Claims**

1. A composition of matter comprising:

(a) an aliphatic diol bis(allyl carbonate);

(b) an acrylate polymer; and

(c) a multifunctional acrylate monomer.

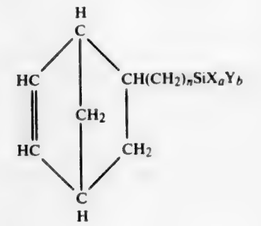
4,408,017

COUPLING PROCESS

Michael K. Martin, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 26, 1982, Ser. No. 382,019
Int. Cl.³ C08F *8/00, 8/18, 297/04*
U.S. Cl. 525—288 **9 Claims**

1. A process for preparing a polymer comprising reacting a living lithium-terminated polymer having the formula P-Li wherein P is selected from the group consisting of polymer chains of one or more conjugated alkadienes having 4–12 carbon atoms and copolymer chains of one or more conjugated alkadienes having 4–12 carbon atoms and one or more monoalkenyl arenes of 8–18 carbon atoms, having the alkenyl radical attached to an arene ring carbon atom, with a coupling agent in a reaction zone, which agent has the general formula



where n is 0 or an integer from 1 to 10, and where each "X" is selected from the group consisting of hydrogen, a halogen or an alkyl radical having from 1 to 10 carbon atoms, each "Y" is selected from the group consisting of a halogen and —OR where "R" is an alkyl group having from 1 to 10 carbon atoms, "a" is zero or an integer selected from the group consisting of 1 and 2, and "b" is an integer equal to 3 minus "a", and where the halogen is selected from the group consisting of chlorine, fluorine, bromine and iodine.

2. The process according to claim **1** where n is zero.

3. The process according to claim **2** wherein said coupling agent is selected from the group consisting of bicycloheptenyl-2-trichlorosilane, bicycloheptenyltriethoxysilane, and (bicyloheptenyl)methyldichlorosilane.

9. The polymer produced by the process of claim **1** or claim **3**.

4,408,018

ACETOACETATE FUNCTIONALIZED POLYMERS AND MONOMERS USEFUL FOR CROSSLINKING FORMULATIONS

Benjamin Bartman, Maple Glen, and Graham Swift, Blue Bell, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 29, 1982, Ser. No. 437,710
Int. Cl.³ C08L *33/14*
U.S. Cl. 525—300 **9 Claims**

1. A method for effecting the crosslinking of polymers comprising the steps of introducing into an acrylate polymer backbone a plurality of pendant acetoacetate moieties, mixing said polymer with a crosslinking quantity of at least one polyacrylate having at least two groups of the structure



pendantly attached to an organic radical selected from the group consisting of alkyl, aryl, alkyl-aryl and polymeric radicals, and with a strong base catalyst effective to initiate a Michael Reaction and effecting reaction between said pendant acetoacetate moieties and said polyacrylate.

4,408,019

BLOCK COPOLYMERS OF ETHYLENE AND PROPYLENE

Harry W. Blunt, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 11, 1981, Ser. No. 272,452
Int. Cl.³ C08F *297/08*
U.S. Cl. 525—323 **4 Claims**

1. As a new copolymer product, a thermoplastic elastomeric block copolymer having the general formula $(AB)_nA$ wherein each A is a crystalline polypropylene block having an intrinsic viscosity in the range of from about 0.25 to about 1.6 dl./gm., each B is a random ethylene-propylene copolymer block having an intrinsic viscosity in the range of from about 3.0 to about 7.0 dl./gm., said intrinsic viscosities being measured in decahydronaphthalene at 135° C., and n is an integer from 1 to about 12, said ethylene-propylene copolymer block being further characterized by containing from about 5 to about 15% by weight, based on the total monomer content in the block copolymer product, of crystalline polyethylene segments and by showing two principal absorbences in the infrared wave length region between about 12.8 and about 14.5 microns.

4,408,020

CURABLE POLYURETHANES

Edmond G. Kolycheck, Lorain, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 28, 1982, Ser. No. 392,851
Int. Cl.³ C08G *18/30*
U.S. Cl. 525—415 **14 Claims**

1. Electron beam-curable polyurethanes comprising the reaction product of (1) hydroxyl terminated polyesters, polyethers, polylactones, polycarbonates, or polyhydrocarbon maacropolyols, (2) unsaturated polyethers having an average of ½ to 18 double bonds per molecule selected from the group consisting of polyethers having one terminal hydroxyl group and one terminal double bond group and polyether glycols having pendant double bond groups, and (3) an organic diisocyanate.

4,408,021

ADHESIVE COMPRISING REACTION PRODUCT OF GAMMA-ISOCYANATOPROPYLTRIETHOXY SILANE AND A THERMOPLASTIC POLYESTER

Howard I. Penn, Skokie, Ill., assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Aug. 12, 1981, Ser. No. 292,225
Int. Cl.³ C08L *67/02, 67/00*
U.S. Cl. 525—440 **12 Claims**

1. An adhesive comprising the reacted product of
(A) gamma-isocyanatopropyltriethoxy silane and
(B) a thermoplastic polyester formed by reacting
(i) a dibasic acid selected from the group consisting of terephthalic acid, isophthalic acid, and hexahydrophthalic acid and mixtures thereof, with (ii) a polymethylene glycol of the formula $HO(CH_2)_xOH$ where x is an integer from 2 to 10, neopentyl glycol or glycerin, and mixtures thereof, and (iii) an aliphatic dibasic acid selected from the group consisting of those having the formula $HOOC(CH_2)_nCOOH$ where n is an integer from 1 to 8, and mixtures of such acids whereby substantially no free isocyanate (NCO) remains in the adhesive.

4,408,022

BLEND OF POLYALKYLENE TEREPHTHALATE AND WHOLLY AROMATIC POLYESTER AND PROCESS FOR PRODUCING THE SAME

David E. Cincotta, South Orange, and Frank M. Berardinelli, Millington, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 15, 1981, Ser. No. 330,987
Int. Cl.³ C08L *67/00*
U.S. Cl. 525—444 **8 Claims**

1. A process for producing a polymer blend which exibits an anisotropic melt phase and is capable of forming shaped articles having satisfactory mechanical properties, said process comprising the steps of:
(a) intimately mixing together approximately 50 to 75 percent by weight of a previously formed polyalkylene terephthalate and approximately 25 to 50 percent by weight of a previously formed melt processable wholly aromatic polyester which is capable of forming an anisotropic melt phase apart from the blend, and
(b) subsequently subjecting the blend thus formed to post-polymerization, said post-polymerization being conducted in the solid phase in a non-oxidizing atmosphere at a temperature within the range of approximately 250° C. to 300° C. and for a period of time within the range of approximately 8 to 72 hours so as to cause chemical interaction between said previously formed polymeric blend components.

4,408,023

POLYURETHANE DIACRYLATE COMPOSITIONS USEFUL FOR CONTACT LENSES AND THE LIKE

Francis E. Gould, Princeton, and Christian W. Johnston, Neshanic Station, both of N.J., assignors to Tyndale Plains-Hunter, Ltd., Princeton, N.J.

Division of Ser. No. 206,407, Nov. 12, 1980, Pat. No. 4,359,558. This application Jun. 14, 1982, Ser. No. 387,913
Int. Cl.³ C08G *18/32, 18/67;* C08F *283/04;* C08G *71/04*
U.S. Cl. 525—454 **19 Claims**

1. A contact lens comprising a hydrophilic polyurethane diacrylate composition which will form a hydrogel upon immersion in water and is permeable to gases, ions and other low molecular weight species, which composition is dimensionally stable and exhibits memory, said polyurethane diacrylate composition comprising from about 90 to about 65 weight percent of a hydrophilic polyurethane resin characterized by terminal hydroxyl groups and from about 10 to about 35 weight percent of a diacrylate.

4,408,024

METHOD FOR THE HEAT REMOVAL FROM POLYMERIZATION REACTOR

Kiyoshi Matsuyama, and Hitoshi Hashimoto, both of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Feb. 9, 1981, Ser. No. 232,486
Claims priority, application Japan, Feb. 7, 1980, 55-14536
Int. Cl.³ C08F *6/06*
U.S. Cl. 526—67 **1 Claim**

1. In a method of the heat removal from a polymerization reactor with a reflux condenser, wherein an unsaturated hydrocarbon monomer having 2 to 8 carbon atoms is polymerized in an inert hydrocarbon or in the liquefied monomer having 3 to 8 carbon atoms as a solvent, in the presence of an olefin polymerization catalyst, by introducing a gas mixture withdrawn from the polymerization reactor into the reflux condenser where the gas mixture is condensed and separated into a condensed liquid and an uncondensed gas and returning the condensed liquid to the polymerization reactor and the uncondensed gas into the liquid phase in the polymerization reactor by the use of a compressor, the improvement comprising washing the gas mixture by bringing it into countercurrent contact with at least one of the condensed liquid obtained in the reflux condenser and the solvent to be supplied to the polymerization reactor, after it leaves the polymerization reactor and before it reaches the heat transfer surface of the reflux condenser.



4,408,025

PROCESS FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, Tex.; Kirby Lowery, Jr., Baton Rouge, La., and Ronald L. Gibbs, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 12, 1981, Ser. No. 320,231
Int. Cl.³ C08F *4/02, 10/00*
U.S. Cl. 526—119 **15 Claims**

1. In a process for polymerizing one or more α-olefins in the presence of, as a catalyst for said polymerization, a catalytic reaction product of (A) a tetravalent titanium compound; (B) an organomagnesium component represented by the formula $MgR''_{2-x}MR''_y$ wherein each R'' is independently a hydrocarbyl group; M is aluminum, zinc or mixture thereof; x has a value from zero to about 10, and y has a value corresponding to the valence of M; and (C) a halide source selected from (1) a nonmetallic halide corresponding to the empirical formula R'X wherein R' is hydrogen or an active monovalent organic radical and X is halogen; (2) a metallic halide corresponding to the empirical formula $MR_{y-a}X_a$ wherein M is a metal of Group IIIA or IVA of Mendeleev's Periodic Table of the Elements, R is a monovalent organic radical, X is halogen, y is

a number corresponding to the valence of M and a is a number from 1 to y; or (3) mixture thereof; however if either component (B) or (C) does not contain sufficient quantities of aluminum, then (D) an organoaluminum compound represented by the empirical formula $AlR_{3-a}X_a$ wherein R is hydrocarbyl or hydrocarbyloxy; X is a halogen and a is a number from zero to 3 is also present; said catalytic reaction product having atomic ratios of

Mg:Ti of from about 2:1 to about 100:1;
Al:Ti of from about 0.5:1 to about 200:1;
excess X:Al of from about 0.001:1 to about 2:1;
the improvement which comprises employing as the tetravalent titanium compound, a mixture of (a) a tetrahydrocarbyloxytitanium compound and (b) a dihydrocarbyloxytitanium oxide in a molar ratio of (a):(b) of from about 0.1:1 to about 10:1.

4,408,026

MIXTURES OF POLYMERS FOR MEDICAL USE

Christian Pusineri, Serezin du Rhone, and Jean Goletto, Ecully, both of France, assignors to Hospal-Sodip, S.A., Meyzieu, France

Filed Dec. 17, 1979, Ser. No. 103,894
Claims priority, application France, Dec. 15, 1978, 78 36065
Int. Cl.³ C08F *8/30*
U.S. Cl. 525—128 **11 Claims**

1. Organic polymer compositions, which can be used, in particular, for producing shaped articles, having good compatibility with biological materials characterised in that they consist of a mixture of vinyl chloride polymer and of polyether-urethane with tertiary amine and/or ammonium groups with the proportion of the polyether-urethane being from 1 to 99 percent by weight, relative to the total mixture.

4,408,027

FOILS OF POLYACETYLENE

Jürgen Hocker, Bergisch-Gladbach, Fed. Rep. of Germany; Wolfgang Wieder, Lillebonne, France, and Rolf Dhein, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Jul. 31, 1981, Ser. No. 288,887
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030194
Int. Cl.³ C08F *38/02*
U.S. Cl. 526—185 **2 Claims**



1. Process for the production of a suspension of polyacetylene in the form of particles having a diameter of from 0.01 to 1 mm and having a great number of fibrous appendices, wherein acetylene is introduced in an organic suspending agent under constant stirring, in the presence of an aluminum-containing organometallic mixed catalyst in an amount corresponding to 10–100 mmol aluminium per liter suspending agent, at temperatures of from −100° to +80° C., until a maximum of 10 g, preferably 1 to 3 g of polyacetylene per liter of suspending agent have formed.

4,408,028

OXIDATION-CURABLE EMULSION COMPOSITION CONTAINING A CELLULOSE DERIVATIVE

Yasuharu Nakayama; Hiroshi Iwai, and Hajime Sukejima, all of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Japan

Filed Nov. 26, 1980, Ser. No. 210,576
Claims priority, application Japan, Nov. 29, 1979, 54-153649
Int. Cl.³ C08F *2/32, 242/00, 299/00;* C08L *1/08*
U.S. Cl. 526—200 **15 Claims**

1. An oxidation-curable emulsion composition containing a cellulose derivative, said composition being prepared by polymerizing in emulsion a mixture consisting of at least one radical-polymerization unsaturated monomer and at least one cellulose derivative in the presence of an oxidation-curable fatty acid-modified, water-soluble acrylic resin.

2. The composition of claim 1 wherein said cellulose derivative is an ester-modified or ether-modified cellulose derivative having a number average molecular weight of about 3,000 to about 200,000.

4,408,029

POLYMER PREPARED FROM OCTADIENOL AND UNSATURATED DICARBOXYLIC ACID, PROCESS OF PREPARING THE SAME, AND COATING COMPOSITION PREPARED THEREFROM

Jerome L. Stavinoha, and Anthony W. McCollum, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 324,233, Nov. 23, 1981, Pat. No. 4,378,251. This application Oct. 21, 1982, Ser. No. 435,828
Int. Cl.³ C08F *22/10, 122/10, 222/10*
U.S. Cl. 526—321 **28 Claims**

1. A relatively low molecular weight polymer comprising units derived from an unsaturated dicarboxylic acid selected from fumaric acid, maleic acid, and mixtures thereof and units derived from octadienol, said polymer exhibiting a fluid viscosity of at least about 200 cp when measured in the neat state at room temperature using a Brookfield viscosimeter.

6. A process for producing a relatively low molecular weight polymer of a compound selected from dioctadienyl fumarate, dioctadienyl maleate, and mixtures thereof, said process comprising reacting octadienol with an unsaturated dicarboxylic acid or derivative thereof selected from fumaric acid, maleic acid, maleic anhydride, lower alkyl diesters of said acid, and mixtures thereof in the presence of an esterification catalyst.

4,408,030

WASTE CHLOROSILANE TREATMENT

Ollie W. Marko, Carrollton, Ky., assignor to Dow Corning Corporation, Midland, Mich.

Filed Mar. 22, 1982, Ser. No. 360,271
Int. Cl.³ C08G *77/00*
U.S. Cl. 528—10 **8 Claims**

1. A waste treatment process for treating a plurality of streams containing chlorosilicon compounds which waste treatment process comprises the steps of

(A) determining the average SiCl functionality of the streams,

(B) blending at least two streams so that the average SiCl functionality of the blended stream is greater than or equal to 2.8,

(C) hydrolyzing the blended stream by mixing the blended stream with an aqueous medium at a temperature between 50° C. and the boiling point of the aqueous medium, and

(D) removing the aqueous medium

to obtain a granular gel from said waste treatment process where said granular gel is easily handleable in further processing steps, shipment or disposal operations.

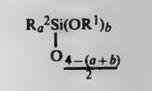
4,408,031

PROCESS FOR THE PREPARATION OF HEAT-CURABLE SILICONE RESINS USABLE ESPECIALLY AS ELECTRICAL INSULATING RESINS

Ulrich Holtschmidt; Götz Koerner, both of Essen; Manfred Priesch, Recklinghausen; Harald Rau, and Christian Weitemeyer, both of Essen, all of Fed. Rep. of Germany, assignors to TH. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,185
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1981, 3103932
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—26 **12 Claims**

1. In a method for the preparation of heat-curable silicone resins, usable especially as insulating resins, by the reaction of low molecular weight multihydric alcohols with alkoxy siloxanes having the formula



in which

OR^1 represents an alkoxy group of primary or secondary aliphatic alcohols with 1 to 4 carbon atoms,

R^2 represents an alkyl or a phenyl group,

a has a value of 1.0 to 1.5,

b has a value of 0.1 to 1.0.

at temperatures of 80° to 200° C., optionally in the presence of known transesterification catalysts and solvents, with removal of the alcohol R^1OH, the alkoxy siloxanes being reacted with the alcohols in such relative amounts that one $SiOR^1$ group corresponds approximately to one COH group, and the reaction being terminated at a degree of conversion of 25 to 80% by cooling to a temperature of less than 80° C., the improvement which comprises the low molecular weight multihydric alcohols being a mixture of

(a) 25 to 95 mole percent of neopentylglycol hydroxypivalate, and

(b) 75 to 5 mole percent of a low molecular weight, at least trihydric alcohol.

4,408,032

MODIFIED POLYAMIDE-IMIDE RESINS AND METHOD FOR MAKING THE SAME

George H. Sollner, New Haven; Donny R. Disque, and Allan R. Knerr, both of Fort Wayne, all of Ind., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,777
Int. Cl.³ C08G *18/34*
U.S. Cl. 528—48 **28 Claims**

1. An improved polyamide-imide composition of matter comprising the reaction product of aromatic tricarboxylic acid anhydride reactant, aromatic diisocyanate reactant and aliphatic dicarboxylic acid reactant reacted in a solution comprising aprotic solvent at a temperature ranging from about 70° C. to about 160° C. at atmospheric pressure, said tricarboxylic acid anhydride reactant being present in an amount which is greater than about twenty-five mol percent of the total tricarboxylic acid anhydride and aliphatic dicarboxylic acid reactant.

4,408,033

POLYURETHANES PREPARED FROM POLYISOCYANATE, POLYOL AND PHOSPHONOPOLYESTER OLIGOMERS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 330,106, Dec. 14, 1981. This application Sep. 27, 1982, Ser. No. 423,904
Int. Cl.³ C08G *18/06, 18/28*
U.S. Cl. 528—72 **4 Claims**

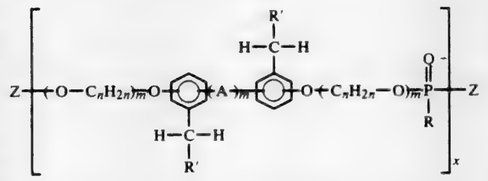
1. A polyurethane prepared by reacting in the presence of a suitable catalyst system a composition comprising

(A) an organic compound containing a plurality of —NCO or —NCS groups; with

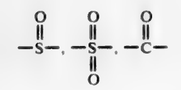
(B) a mixture of

(1) a polyol containing from about 2 to about 8 active hydrogen groups per molecule and an average active hydrogen equivalent weight of from about 30 to about 3000; and

(2) an oligomer or mixture of oligomers containing hydroxyl groups having recurring units represented by the following general formula



wherein each A is independently —O—, —S—, —S—S—,



or a divalent hydrocarbon group having from 1 to about 8 carbon atoms; each Q is independently oxygen or sulfur; each R is independently a hydrocarbon group having from about 1 to about 10 carbon atoms; each R′ is independently a $—CH{=}CH_2$ group or a $—CX{-}H—CXH_2$ group, wherein X is chlorine or bromine; each Z is independently a terminal moiety; each m is independently zero or one; each m′ independently has a value from 1 to about 5; each n independently has a value of 2, 3 or 4; and x has an average value of from 1 to about 10; and wherein components (1) and (2) are present in quantities such that from about 0 to about 95 percent of the active hydrogen atoms are contributed by component (1) and from about 5 to about 100 of the active hydrogen atoms are contributed by component (2) and wherein components (A) and (B) are present in quantities such that the ratio of —NCO and/or —NCS groups to active hydrogen groups is from about 0.85:1 to about 4:1.

4,408,034

METHOD FOR CURING URETHANE RESINS

Seiji Kazama, Kawanishi, and Michio Tanaka, Takatsuki, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 9, 1982, Ser. No. 347,272
Claims priority, application Japan, Feb. 9, 1981, 56-18320; Dec. 16, 1981, 56-204037
Int. Cl.³ C08G *18/08, 18/18, 18/81*
U.S. Cl. 528—54 **7 Claims**

1. A method for curing an isocyanate group-containing

compound, which comprises treating, with a tertiary amine in a vapor-phase state, an isocyanate compound having in one molecule not less than two isocyanate groups linked to an aromatic nucleus through a methylene group, or an isocyanate-terminated urethane resin obtained by the reaction thereof with an active-hydrogen containing compound.

4,408,035

PHTHALONITRILE RESIN FROM DIPHTHALONITRILE MONOMER AND AMINE

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1981, Ser. No. 295,894
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—183 **29 Claims**

1. A phthalontrile resin obtained by admixing a primary amine in an amount from about 1 to about 40 percent of total resin weight with a diphthalonitrile monomer at a temperature from about the melting point of said phthalonitrile monomer to about the decomposition temperature of the resulting resin.

4,408,036

PREPARATION OF POLYTETRAMETHYLENE ADIPAMIDE

Reinoud J. Gaymans, Enschede, and Edmond H. J. P. Bour, Limbricht, both of Netherlands, assignors to Stamicarbon BV, Geleen, Netherlands

Filed Mar. 25, 1981, Ser. No. 247,548
Claims priority, application Netherlands, Mar. 26, 1980, 8001763
Int. Cl.³ C08G *69/28*
U.S. Cl. 528—335 **8 Claims**

1. A process for the preparation of a white, high-molecular-weight nylon 4,6 polyamide, substantially consisting of repeating units of

$$-NH-(CH_2)_4-NH-CO-(CH_2)_4-CO-,$$

which process consists essentially in

(a) first forming in a separate first stage a polyamide prepolymer by heating a salt of 1,4-diaminobutane and adipic acid at a temperature between 150° C. and 310° C., wherein said heating within a temperature range of 150° C. to 210° C. is maintained for 15 to 120 minutes, and wherein said heating between 220° C. and 310° C. is minimized, while under a water-vapor-containing atmosphere, wherein the water-vapor partial pressure does not exceed 30 bar, discontinuing said first stage reaction when there has been obtained a polyamide prepolymer having

(1) a content of cyclic end groups not exceeding 0.20 mg equivalent per g of prepolymer, and

(2) having an η_{rel} of between 1.08 and 2.03 at 1 g of polymer in 100 g of 96% sulfuric acid at 20° C. and thereafter

(b) in a separate second stage, after-condensing said polyamide prepolymer, while

(1) under a water-vapor-containing atmosphere,

(2) and at a temperature of at least 200° C., to obtain a white, high-molecular-weight nylon 4,6 polymer having a η_{rel} of at least 2.20 at 1 g of polymer in 100 g 96% sulfuric acid at 20° C.

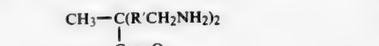
4,408,037

POLYAMIDE FROM CYCLOALIPHATIC SUBSTITUTED NONANE DIAMINE

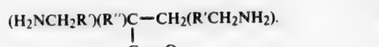
Charles A. Drake, and Stanley D. Turk, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 138,942, Apr. 9, 1980, Pat. No. 4,324,738, which is a division of Ser. No. 716,406, Aug. 23, 1976, Pat. No. 4,288,625, which is a continuation of Ser. No. 499,660, Aug. 22, 1974, abandoned. This application Nov. 30, 1981, Ser. No. 326,107
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—346 **21 Claims**

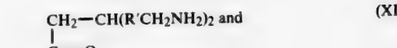
1. As a composition of matter, a polyamide resin prepared by reacting at least one cycloalkylalkylene diamine selected from the group consisting of:



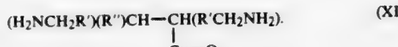
(XI)



(XII)



and (XIII)



(XIV)

wherein each R′ is an alkylene or alkylidene radical of at least one carbon atom, R″ is an alkyl radical of at least one carbon atom, wherein Cy represents a cyclohexylene or perhydronaphthylene radical, and wherein Q is selected from the group consisting of —H, —X, —R‴, —N(R‴)$_2$, —NH$_2$.HX, —OR‴, —SH, —OH, and —SR‴; X is halogen and is fluorine, chlorine, bromine, or iodine; and R‴ is an alkyl radical of up to 6 carbon atoms;

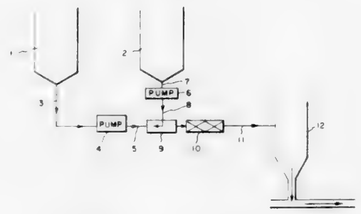
with at least one alpha, omega-hydrocarbon dicarboxylic acid of C_6 to C_{16} carbon atoms per molecule under reaction conditions effective for forming said polyamide.

4,408,038

IN-LINE COAGULATION PROCESS FOR FLUOROELASTOMER EMULSIONS

Robert A. Covington, Jr., and Okan M. Ekiner, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Mar. 29, 1982, Ser. No. 363,377
Int. Cl.³ C08F *6/22*
U.S. Cl. 528—485 **8 Claims**



1. A process for coagulating and agglomerating fluoroelastomer particles to prepare agglomerates of large particle size in a fluoroelastomer slurry process stream, which process stream containing the resultant large fluoroelastomer agglomerates is then passed to a dewatering device, the process comprising

(a) continuously injecting a coagulant solution under high pressure atomization into and countercurrent to the direction of flow of the fluoroelastomer slurry process stream, said coagulant solution being injected at a pressure of at least 1.38 MPa greater than the pressure of the fluoroelastomer slurry process stream, thereby creating a cogulant solution/fluoroelastomer slurry mixture, and

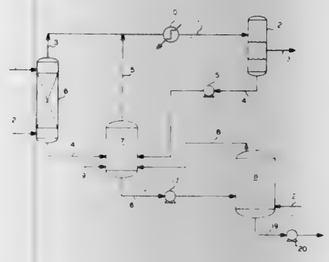
(b) maintaining the mixture under conditions of low shear and low turbulence for a predetermined amount of time subsequent to the injection of coagulant solution and prior to the mechanical dewatering, thereby forming agglomerated fluoroelastomer particles of large particle size.

4,408,039

SEPARATION OF POLYMER OF CONJUGATED DIENE FROM A SOLUTION POLYMERIZATION SOLVENT USING PRESTRIPPING STEP

Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 28, 1981, Ser. No. 297,451
Int. Cl.³ C08F *6/10*
U.S. Cl. 528—500 **10 Claims**



1. A process of separating a polymer of conjugated diene in solution polymerization solvent from said solvent, said process comprising:

(1) removing a portion of the solvent from the solution without precipitation of polymer by subjecting said polymer of conjugated diene in solution polymerization solvent to a prestripping operation using hot gas as a stripping agent; and

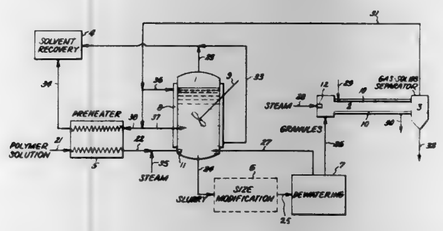
(2) subjecting the solution from step (1) to at least one further solvent removal treatment.

4,408,040

SLURRY GRANULATION-STEAM STRIPPING PROCESS FOR SOLVENT REMOVAL

John W. Flock, and Stephen L. Matson, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 262,738, May 12, 1981, abandoned. This application Feb. 23, 1982, Ser. No. 351,380
Int. Cl.³ C08G *63/74, 63/72*
U.S. Cl. 528—500 **17 Claims**



1. A continuous process for recovering a thermoplastic polycarbonate or polyphenylene oxide resin from a solution of said resin in a solvent comprising introducing said solution into a first vessel through atomizing means along with steam, below the surface of the liquid contained in said first vessel; removing solvent vapor and water vapor overhead resulting in a bottom product water slurry of polymer-solvent granules maintained at about 1 to 50 weight percent solids with makeup hot water; removing said bottom product slurry from said first vessel; removing hot water from said slurry, resulting in polymer granules with absorbed solvent and water introducing said granules along with superheated steam into a second vessel wherein remaining solvent and water are volatilized from said granules while being carried through said second vessel by said superheated steam; separating polymer granules from the steam-solvent vapor mixture using separating means; recycling said steam-solvent vapor mixture for injection to the first vessel for steam jacket heating of the first vessel or for preheating the polymer solution before injection into the first vessel; and recovery granular polymer product from said separating means.

4,408,041

ANHYDROUS CRYSTALS OF MALTITOL AND THE WHOLE CRYSTALLINE HYDROGENATED STARCH HYDROLYSATE MIXTURE SOLID CONTAINING THE CRYSTALS, AND PROCESS FOR THE PRODUCTION AND USES THEREOF

Mamoru Hirao; Hiromi Hijiya, and Toshio Miyaka, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Nov. 13, 1981, Ser. No. 321,311
Claims priority, application Japan, Feb. 12, 1981, 56-19512
Int. Cl.³ C07G *15/04*; A23L *1/226*; A61K *31/605, 9/68*
U.S. Cl. 536—4.1 **4 Claims**

1. Anhydrous crystals of maltitol.

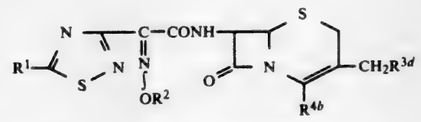
4,408,042

CEPHEM COMPOUNDS

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 214,785, Dec. 9, 1980, Pat. No. 4,332,800, which is a continuation-in-part of Ser. No. 180,295, Aug. 22, 1980, Pat. No. 4,338,313. This application Mar. 10, 1982, Ser. No. 356,724
Claims priority, application United Kingdom, Oct. 12, 1979, 793538; South Africa, Oct. 1, 1980, 80/6068
Int. Cl.³ C07D *501/20*
U.S. Cl. 544—22 **7 Claims**

1. A compound of the formula:



wherein R^1 is amino or protected amino, R^2 is lower alkyl of from 1 to 6 carbon atoms, R^{3d} is lower alkanoyl(lower)alkanoyloxy and R^{4b} is carboxy or protected carboxy, and pharmaceutically acceptable salts thereof.

4,408,043

FLUOROCARBON SURFACTANTS

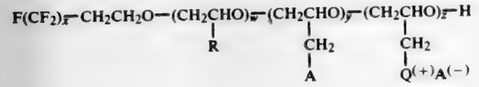
Virgil L. Seale, Houston, Tex.; James R. Stanford, Duncan, Okla.; James E. Briscoe, Duncan, Okla., and Glenn S. Penny, Duncan, Okla., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 8, 1982, Ser. No. 355,398

Int. Cl.[3] **C07C** *95/02, 95/08;* **C07D** *295/08;* **C07C** *43/13*

U.S. Cl. 544—87 **10 Claims**

1. A chemical composition represented by the formula:



wherein:

(a) x is from 2–12;

(b) w is from 1–20;

(c) y is from 0–20, and z is from 0–20, provided that the sum, y+z is from 1–20;

(d) R is from the group of hydrogen, methyl, ethyl, propyl radicals and mixtures thereof;

(e) A is a halogen chosen from chlorine, bromine, or iodine; and

(f) Q is a cationic nitrogen radical from the group consisting of:

(1) an aromatic amino radical,

(2) an heterocyclic amino radical, and

(3) an amine radical represented by the formula:



wherein R_1, R_2 and R_3 are from the group consisting of hydrocarbon radicals containing from 1–30 carbon atoms and hydrogen radicals, provided that at least one of R_1, R_2 and R_3 is from the group consisting of alkyl, aryl, alkaryl and cyclo-aliphatic hydrocarbon radicals containing from 1–30 carbon atoms and that when any one of R_1, R_2 and R_3 radicals contains more than 4 carbon atoms, the other two radicals are each chosen from the group consisting of hydrogen, methyl, and ethyl radicals.

4,408,044

PREPARATION OF 3,6-DISUBSTITUTED 4-AMINO-1,2,4-TRIAZIN-5-ONES

Thomas Schmidt, Haan; Helmut Timmler, Wuppertal; Gerhard Bonse, Cologne; Heinz U. Blank, Odenthal, and Gerhard Marzolph, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

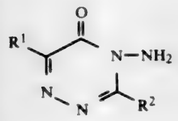
Filed Jan. 11, 1982, Ser. No. 338,811

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1981, 3102318

Int. Cl.[3] **C07D** *253/06*

U.S. Cl. 544—182 **12 Claims**

1. A process for the production of a 3,6-disubstituted 4-amino-1,2,4-triazin-5-one of the formula



in which

R^1 is hydrogen, an alkyl radical having 1 to 12 carbon atoms, cycloalkyl radical having 3 to 6 carbon atoms or a cycloalkenyl radical having 4 to 6 carbon atoms, an alkenyl radical having 2 to 6 carbon atoms, a furyl or thienyl radical or an aryl or aralkyl radical having 6 to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, and

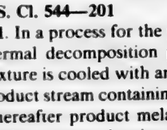
R^2 is an alkyl radical having 1 to 6 carbon atoms, cycloalkyl having 3 to 6 carbon atoms, and an aryl or aralkyl radical having 6 to 10 carbon atoms in the aryl part and 1 or 2 carbon atoms in the alkyl part, comprising in two stages reacting an α-ketocarboxylic acid amide of the formula

$$R^1—CO—CO—NHR^3$$

in which

R^3 is hydrogen, or a group of the formula —CO—R^4, and

R^4 is an alkyl, cycloalkyl, optionally substituted aryl or optionally substituted aralkyl radical, with a hydrazidine of the formula



or an acid addition salt thereof, in the first process stage a condensation reaction taking place to give condensation products which still have open chains, and in the second process stage an elimination reaction with ring closure taking place to give the desired end product.

4,408,045

PROCESS FOR THE PREPARATION OF PARTIALLY ETHERIFIED METHYLOLMELAMINES

Wilhelm Dobramysl; Gerhard Stern, and Walter Raml, all of Linz, Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

Filed Mar. 23, 1982, Ser. No. 361,308

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1981, 3112808

Int. Cl.[3] **C07D** *251/70*

U.S. Cl. 544—196 **4 Claims**

1. A process for the preparation of a monomeric methylolmelamine which is partially etherified with methanol or ethanol and which contains at least 4 moles of formaldehyde per mole of melamine, which comprises carrying out, in a virtually anhydrous medium, a single stage addition reaction between formaldehyde, used as paraformaldehyde, and melamine and a simultaneous etherification reaction with methanol or ethanol, in a molar ratio of melamine:formaldehyde:alcohol of 1:5 to 10:6 to 20, under a nitrogen atmosphere at a temperature within the range of 50° to 90° C., a pH of 7 to 8 and a reaction time of from 3 to 30 hours, and subsequently evaporating the excess alcohol and formaldehyde.

4,408,046

PROCESS OF PREPARING MELAMINE

Rudolf Van Hardeveld, Geleen, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Apr. 16, 1982, Ser. No. 368,971

Claims priority, application Netherlands, Apr. 7, 1982, 8201479

Int. Cl.[3] **C07D** *251/60*

U.S. Cl. 544—201 **12 Claims**

1. In a process for the preparation of melamine from urea or thermal decomposition products thereof wherein a reaction mixture is cooled with an aqueous medium to form an aqueous product stream containing melamine and reaction by-products, whereafter product melamine is separated from said aqueous product stream leaving a residual aqueous stream which is recycled into said process, the improvement wherein a portion of said residual aqueous stream still containing reaction by-products is separated from the remainder of such stream and is

treated to remove by-products therefrom prior to being recycled to said process.

4,408,047

IMIDAZODIAZINES

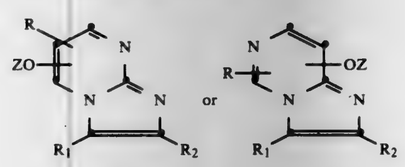
John J. Baldwin, Lansdale, and William C. Lumma, Jr., Pennsburg, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 135,022, Mar. 28, 1980, Pat. No. 4,330,543, which is a division of Ser. No. 969,631, Dec. 14, 1978, Pat. No. 4,233,301, which is a division of Ser. No. 796,958, May 16, 1977, Pat. No. 4,166,851. This application Nov. 19, 1981, Ser. No. 322,796

Int. Cl.[3] **C07D** *487/04, 487/14*

U.S. Cl. 544—250 **7 Claims**

1. A compound having the formula



(III) (IV)

and pharmaceutically acceptable salts thereof wherein

Z is $—CH_2—CHOR_3—CH_2—NHR_4$ wherein R_3 is H or C_2–C_{12} acyl and R_4 is C_1–C_{12}alkyl,

R is H, $—SCF_3$, —CN, halogen $C_{1\text{-}6}$alkyl, NH_2, C_1–C_6 haloalkyl, C_1–C_{12}acyl, phenyl

$—COOR_5$ wherein R_5 is H C_1–C_6alkyl or C_6–C_{12} carbocyclic aryl,

$—CONR_6R_7$ wherein R_6 and R_7 when separate, are H or C_1–C_6alkyl and when joined, are $—CH_2—(CH_2)_3—CH_2$, $—CH_2—CH_2—O—CH_2—CH_2—$, $—CH_2—CH_2—NH—CH_2—CH_2—$, or $—CH_2—CH_2—N(CH_3)—CH_2—CH_2—$,

C_1–C_6alkylthio, C_1–C_6 alkylsulfinyl or

C_1–C_6alkylsulfonyl, and

R_1 and R_2 when separate are R and when joined are $—(CH_2)_n$ wherein n is 3,4 or 5.

4,408,048

PROCESS FOR MAKING 5-FLUOROURACIL

Ralph J. DePasquale, Gainesville, and Paul D. Schuman, Hawthorne, both of Fla., assignors to PCR Incorporated, Gainesville, Fla.

Division of Ser. No. 110,192, Jan. 7, 1980, Pat. No. 4,299,961. This application May 18, 1981, Ser. No. 264,714

Int. Cl.[3] **C07D** *239/20*

U.S. Cl. 544—313 **8 Claims**

1. Process for preparing 5-fluorouracil comprising hydrolyzing 2,4,5-trifluoropyrimidine at a temperature of about 2° to about 100° C. to produce 5-fluorouracil.

4,408,049

SUBSTITUTED PIPERAZINYL-1,2,4-TRIAZOLES

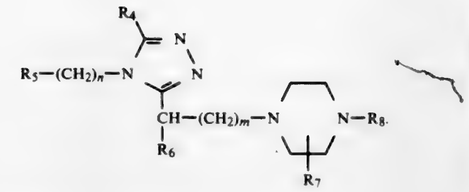
Martin Gall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 187,920, Sep. 17, 1980, Pat. No. 4,338,453. This application Mar. 26, 1982, Ser. No. 362,445

Int. Cl.[3] **C07D** *401/00, 403/00;* **A61K** *31/41*

U.S. Cl. 544—360 **29 Claims**

1. A compound according to formula I



or a pharmacologically acceptable salt thereof,

wherein m is zero, one, 2 or 3;

wherein n is zero, one or 2,

wherein R_4 is:

(a) hydrogen;

(b) alkyl of one to three carbon atoms, inclusive;

(c) $R_{54}OCH_2—$, wherein R_{54} is defined below;

(d) $—CH(R_{35})(OH)$;

(e) $—R_{35}$;

(f) —SH;

(g) $S(O)_qR_{17}$, wherein q is zero, one, or two, and R_{17} is as defined below;

(h) 1-hydroxy-1-cyclohexyl; or

(i) 1-cyclohexen-1-yl;

wherein R_5, R_{15}, R_{25} and R_{35} are the same or different and are

(i) 2,3, or 4 pyridinyl, or

(ii) phenyl substituted by zero to 2 chloro, fluoro, bromo, alkyl of from one to 3 carbon atoms, or alkoxy of from one to 3 carbon atoms, or

(iii) phenyl substituted by one trifluoromethyl and zero to one of the previous phenyl substituents,

wherein R_6 is:

(a) hydrogen;

(b) $—OR_{54}$;

(c) alkanoyloxy of from one to 3 carbon atoms; or

(d) alkyl of from one to 3 carbon atoms; with the proviso that when m is zero, R_6 does not contain oxygen;

wherein R_7 is

(i) hydrogen,

(ii) methyl,

(iii) phenylmethyl, or

(iv) 2-phenylethyl,

wherein R_8 is:

(i) $—R_{15}$;

(ii) $—CH_2R_{15}$, or

(iii) $—CHR_{15}R_{25}$;

wherein R_{17} is methyl, phenyl, benzyl, or 2-phenylethyl; and wherein R_{54} is hydrogen or alkyl of one to 3 carbon atoms;

or an enantiomer (when R_4 is $—CH(R_{35})OH$ or when R_6 is not hydrogen) or diastereomer (when R_4 is $—CH(R_{35})OH$ and R_6 is not hydrogen) of such compound.

4,408,050

SPIRO(INDOLINE-3,4'-PIPERIDINE) AND RELATED COMPOUNDS

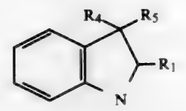
Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to American Hoechst Corporation, Somerville, N.J.

Division of Ser. No. 121,824, Feb. 15, 1980, Pat. No. 4,307,235, which is a continuation-in-part of Ser. No. 936,185, Aug. 23, 1978, Pat. No. 4,209,625, which is a continuation-in-part of Ser. No. 789,723, Apr. 21, 1977, abandoned. This application Dec. 18, 1981, Ser. No. 332,178

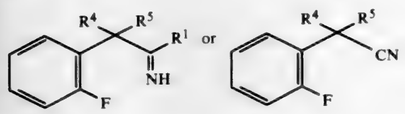
Int. Cl.[3] **C07D** *471/10*

U.S. Cl. 546—17 **1 Claim**

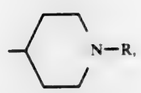
1. A method for preparing an indoline ring structure of the formula



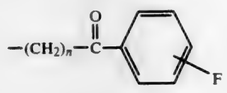
which comprises reductively cyclizing a compound of the formula



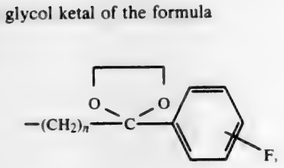
in which R^1 is hydrogen, loweralkyl or phenyl and R^4 and R^5 are the same or different and each can be loweralkyl or amino loweralkyl or, when taken together with the carbon atom to which they are attached, form a cyclic moiety of the formula



wherein R is hydrogen, loweralkyl, cyano, loweralkanoyl, phenoxycarbonyl, phenylloweralkyl, loweralkenyl, cycloalkylloweralkyl, in which the cycloalkyl moiety contains 3 to 8 carbon atoms benzoyl, carbamoyl,



or ethylene glycol ketal of the formula



and n is an integer of 1 to 4.

4,408,051

1-OXA-3,8-DIAZASPIRO[4.5]DECANES

Hans Hinsken, Kandern, Fed. Rep. of Germany; Wolfgang Mueller, Allschwil, Switzerland, and Hermann Schneider, Granzach-Wyhlen, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

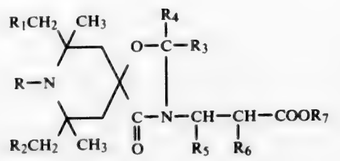
Filed Dec. 18, 1981, Ser. No. 331,986

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049041

Int. Cl.³ C07D *405/04*

U.S. Cl. 546—19 **14 Claims**

1. A compound of formula I



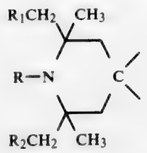
I

in which

R is hydrogen or C_{1-8}alkyl;

R_1 and R_2, independently, are hydrogen or C_{1-4}alkyl;

R_3 and R_4, independently, are hydrogen, C_{1-30}alkyl or benzyl; or R_3 is hydrogen or C_{1-4}alkyl and R_4 is phenyl, (C_{1-4}alkyl)phenyl, chlorophenyl, 4-hydroxy-3,5-t.-butylphenyl or naphthyl; or R_3 and R_4 together with the carbon atom to which they are attached form a C_{5-15}cycloalkylidene ring which may be unsubstituted or substituted by one C_{1-4}alkyl group, or form a group of formula (a)



(a)

R_5 is hydrogen, methyl, phenyl or —COO(C_{1-21}-alkyl);

R_6 is hydrogen or methyl; and

R_7 is hydrogen; a C_{1-21}alkyl or C_{2-21}alkenyl group which may be unsubstituted or monosubstituted by phenyl or naphthyl and which may be interrupted by oxygen or by a C_{1-4}-alkylimine group; phenyl; (C_{1-12}alkyl)phenyl; C_{5-12}cycloalkyl or an saturated aliphatic hydrocarbon residue having 2–20 carbon atoms which may be interrupted by oxygen or by a C_{1-4}alkylimine group and which is substituted by 1–3 groups selected from (C_{1-21}alkyl)COO— and groups of formula (b).

(b)

4,408,052

PHOSPHOLIPID CARBAMATES

Motoo Hozumi, Omiya; Hiroaki Nomura, Takatsuki, and Yoshio Yoshioka, Nara, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

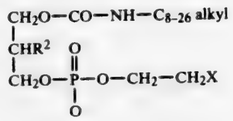
Filed Feb. 25, 1981, Ser. No. 237,970

Claims priority, application Japan, Feb. 27, 1980, 55-24333; Oct. 14, 1980, 55-143980

Int. Cl.³ C07F *9/58, 9/65*

U.S. Cl. 546—22 **5 Claims**

1. A compound of the formula:



wherein R^2 is H or methoxy and X is pyridinio or thiazolio or a pharmaceutically acceptable salt thereof.

4,408,053

(4-PIPERIDYL)-SUBSTITUTED PHENYL KETONES

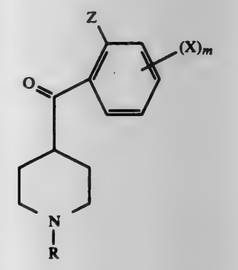
Joseph T. Strupczewski, Flemington, N.J.; Beth A. Gardner, San Jose, Calif., and Richard C. Allen, Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 319,871, Nov. 12, 1981, Pat. No. 4,355,037. This application Aug. 6, 1982, Ser. No. 405,965

Int. Cl.³ C07D *211/30*

U.S. Cl. 546—226 **16 Claims**

1. A compound of the formula



wherein R is hydrogen, loweralkyl, benzyl or a group of the formula



wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is benzyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or hydroxy; Z is halogen or hydroxy; m is 1 or 2; the optical antipodes thereof; or salts thereof when R is hydrogen, loweralkyl or benzyl.

3. The compound of claim **1** which is 4-(2,4-difluorobenzoyl)-N-formylpiperidine.

4,408,054

OXIMES OF 4-BENZOYL-PIPERIDINES

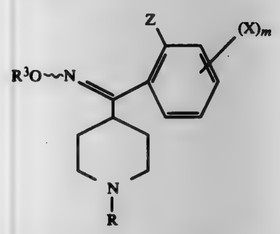
Joseph T. Strupczewski, Flemington, N.J.; Beth A. Gardner, San Jose, Calif., and Richard C. Allen, Flemington, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 319,871, Nov. 12, 1981, Pat. No. 4,355,037. This application Aug. 11, 1982, Ser. No. 407,235

Int. Cl.³ C07D *211/28*

U.S. Cl. 546—226 **22 Claims**

1. A compound of the formula



wherein R is hydrogen, loweralkyl, loweralkenyl or a group of the formula



wherein R^1 is hydrogen, loweralkyl or a group of the formula OR^2 wherein R^2 is benzyl; R^3 is hydrogen or a group of the formula



wherein R^4 is hydrogen, loweralkyl; X is hydrogen, loweralkoxy, loweralkyl, halogen or hydroxy; Z is halogen or hydroxy; m is 1 or 2; the geometric isomers and optical antipodes thereof; or salts thereof where R is hydrogen, loweralkyl or loweralkenyl.

5. The compound of claim **1** which is 1-acetyl-4-(2-hydroxy-5-methoxybenzoyl)piperidine oxime.

4,408,055

AZOLYLOXY-CARBOXYLIC ACID N-OXY-AMIDE COMPOUNDS

Heinz Forster; Fritz Maurer; Volker Mues, all of Wuppertal; Ludwig Eue, Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

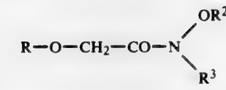
Filed Nov. 5, 1980, Ser. No. 204,147

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1979, 2946524

Int. Cl.³ C07D *283/02, 285/02, 269/02, 271/00*

U.S. Cl. 548—125 **23 Claims**

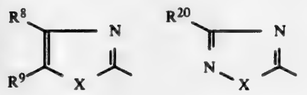
1. Azolyloxy-carboxylic acid N-oxy-amide compound of the formula

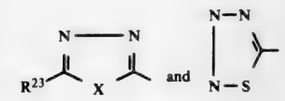


wherein

R^2 represents a C_1–C_6-alkyl, C_1–C_4alkoxy-ethyl, allyl or propargyl radical and R^3 represents a C_1–C_6-alkyl, allyl, propargyl or cyclohexyl, and in which

R represents an azolyl radical selected from





wherein

X represents oxygen or sulphur, the radicals R^8, R^9, R^{20} and R^{23} which can be identical or different, independently represent a hydrogen, bromine or chlorine atom or a nitro, cyano, C_1–C_3-alkyl-carbonyl or C_1–C_3-alkoxycarbonyl radical, a phenyl radical monosubstituted or disubstituted by fluorine, chlorine or bromine, methyl, methoxy, nitro, amino and/or cyano, or a phenoxy, phenylthio, C_1–C_3-alkylthio, C_1–C_3-alkoxy, C_1–C_3 alkylsulphinyl, C_1–C_3-alkylsulphonyl, C_1–C_4-alkyltrifluoromethyl, cyano-C_1–C_4-alkyl or C_2–C_4-alkenyl.

4,408,056

ANTHRAQUINONE VAT DYESTUFFS

Walter Hohmann, Leverkusen, and Josef Stawitz, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

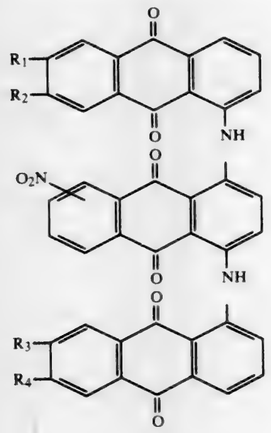
Filed Dec. 29, 1982, Ser. No. 454,300

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1982, 3200707

Int. Cl.³ C09B *5/26*

U.S. Cl. 548—416 **2 Claims**

1. Nitrotrianthrimidecarbazoles of the formula



(I)

in which

the NO_2 group is in the α- or β-position and

R_1, R_2, R_3 and R_4 designate hydrogen or halogen, such as chlorine and bromine.

4,408,057

4-HETEROCYCLIC-SUBSTITUTED-2-INDANYL ALCOHOLS AND INSECTICIDAL ESTER DERIVATIVES

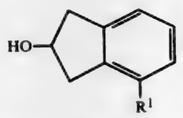
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 303,292, Sep. 17, 1981, Pat. No. 4,368,205, and a continuation-in-part of Ser. No. 202,813, Oct. 31, 1980, Pat. No. 4,346,251, which is a continuation-in-part of Ser. No. 42,372, May 24, 1979, Pat. No. 4,263,319. This application Dec. 20, 1982, Ser. No. 451,293

Int. Cl.³ C07D *231/06, 207/12, 333/24*; A01N *43/46*

U.S. Cl. 548—562 **3 Claims**

1. A compound of the formula



in which R^1 is a heterocyclic radical selected from furanyl, thienyl, pyridyl, pyrimidyl, oxazolyl, pyrrolyl, isoxazolyl, thiazolyl, and isothiazolyl.

4,408,058

PREPARATION OF ORTHO-SULFOBENZOIC ACID ANHYDRIDE BY CATALYZED THERMOLYSIS

Mark L. Mitchell, III, and Richard P. Carr, both of Cincinnati, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Filed May 26, 1982, Ser. No. 382,316

Int. Cl.³ C07D *327/04*

U.S. Cl. 549—33 **25 Claims**

1. A process for the synthetic of ortho-sulfobenzoic acid anhydride which comprises heating a 2-sulfohalide benzoate in the presence of a catalytic amount of a Friedel-Crafts catalyst.

4,408,059

SPIROKETALS USEFUL AS INTERMEDIATES IN THE SYNTHESIS OF MILBEMYCIN AND AVERMECTIN MACROLIDES

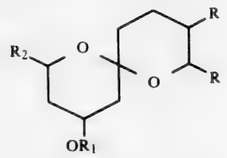
Amos B. Smith, III, Merion, Pa., and Steven R. Schow, Wilmington, Del., assignors to University Patents, Inc., Norwalk, Conn.

Filed Dec. 4, 1981, Ser. No. 327,641

Int. Cl.³ C07D *309/06, 493/22*; C07H *17/08*; C07C *65/00*

U.S. Cl. 549—214 **6 Claims**

1. A spiroketal having the general formula:



wherein

R is alkyl;

R_1 is hydrogen, alkyl, aryl, aralkyl, COR. or SiR_3;

R_2 is $(CH_2)_xCHO$, $(CH_2)_xCH(OZ')CR{=}CH_2$, or $(CH_2)_xCH{=}CRCH_2CHRZ$;

x is 1 to 20

Z is CHO, CH_2OH, COOH, or $COSiR_3$; and

Z′ is hydrogen or $COCH_2R$.

4,408,060

CHEMICAL COMPOUNDS AND PROCESSES

Ramesh M. Kanojia, Somerville; Michael P. Wachter, Bloomsbury, and Robert H. K. Chen, Belle Mead, all of N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Division of Ser. No. 29,231, Apr. 11, 1979, abandoned. This application Jan. 12, 1981, Ser. No. 224,416

Int. Cl.³ C07D *493/10, 407/06*

U.S. Cl. 549—332 **13 Claims**

1. 2S,3R-6-[2′-hydroxy-(6,1′-oxido)-ethy]-2-methyl-2-(4,8-dimethyl-5-oxo-7-nonenyl)-oxepan-3-ol.

3. 2S,3R-6-(2-hydroxyethylidene)-2-methyl-2-(6,7-oxido-5-oxo-4,7,8-trimethylnonyl)-oxepan-3-ol.

13. 2S,3R-6-[6,1′-oxido-2′-(tetrahydropyran-2-yloxy)-ethyl]-2-methyl-2-(4,8-dimethyl-7,8-oxido-5-oxo-7-nonyl)-3-(tetrahydropyran-2-yloxy)-oxepane.

4,408,061

PROCESS FOR THE PREPARATION OF 1,4-3,6-DIANHYDRO-HEXITOLS

Herbert Salzburg, Cologne; Holger Meyborg, Odenthal, and Heinz Ziemann, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,353

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3111092

Int. Cl.³ C07D *493/04*

U.S. Cl. 549—464 **11 Claims**

1. In a process for the preparation of 1,4-3,6-dianhydro-hexitols from hexitol comprising splitting off of water by means of strong acids, the improvement wherein gaseous hydrogen halide is used as the acid and the reaction is carried out in the absence of both water and organic solvents.

4,408,062

PROCESS FOR PREPARING LOW MOLECULAR WEIGHT EPOXY RESINS

James L. Bertram; George E. Ham, and Wuu-Nan Chen, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 18, 1982, Ser. No. 359,463

Int. Cl.³ C07D *301/28*

U.S. Cl. 549—517 **4 Claims**

1. In a process for preparing low molecular weight epoxy resins by (1) reacting at least one epihalohydrin with at least one polyhydric phenol in the presence of at least one alkali metal hydroxide thereby forming a halohydrin-containing intermediate product and (2) subsequently dehydrohalogenating said intermediate product; the improvement which comprises

(a) employing said alkali metal hydroxide in a quantity which is stoichiometric with the quantity of polyhydric phenol employed;

(b) adding the total amount of alkali metal hydroxide at the beginning; and

(c) conducting the epihalohydrin-polyhydric phenol reaction in the presence of an additional halohydrin other than that which is formed in the reaction and which has a reaction rate constant with respect to said alkali metal hydroxide at least as high as that of the halohydrin intermediate product and which additional halohydrin has been added in a quantity which is sufficient to increase the yield based on said epihalohydrin.

4,408,063

PREPARATION OF EPIHALOHYDRIN ENANTIOMERS

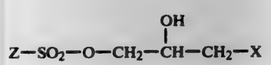
John J. Baldwin, Gwynedd Valley, and David E. McClure, Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 176,236, Aug. 8, 1980, abandoned, which is a continuation of Ser. No. 940,681, Sep. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 919,590, Jun. 27, 1978, abandoned. This application Apr. 19, 1982, Ser. No. 369,724

Int. Cl.³ C07D *301/02*

U.S. Cl. 549—518 **6 Claims**

1. A process for preparing an enantiomer of epihalohydrin which comprises treating an enantiomer of an alcohol of the formula:



wherein Z is phenyl, monosubstituted phenyl, CF_3 or C_1–C_6 alkyl and X is Cl or Br, with alkali metal glycolate and removing said epihalohydrin by distillation.

4,408,064

BIS-(SILYLETHYL)-OLIGOSULPHIDES AND PROCESS FOR THEIR PRODUCTION

Rudolf Schwarz, Alzenau-Wasserlos; Peter Kleinschmit, Hanau; Christa Liedtke, Bruchköbel, and Siegfried Wolff, Bornheim-Merten, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,862

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856229

Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—427 **7 Claims**

1. A process for producing a bis-(silyethyl)-oligosulphide corresponding to the following average formula

$$\{R_4-(m+n)\ R_n{}^1Si[CH_2CH_2]\}_2S_{mx} \qquad I$$

comprising reacting a vinyl silane corresponding to the formula

$$(CH_2{=}CH)_m\text{-}SiR_n{}^1R_{4-(m+n)} \qquad II$$

with sulphur and, optionally, hydrogen sulphide in molar ratios of vinyl silane to sulphur of from 1:2.5 to 1.10 and vinyl silane to hydrogen sulphide of from 1:0 to 1:5 at a temperature in the range of from about 100° to 210° C., under a pressure of from 1 to 25 bars (total pressure at the reaction temperature) and in the presence of a sulphidation catalyst, after which, optionally, one or more of the groups R of the reaction product are hydrolysed.

4,408,065

PROCESS FOR THE SEPARATION OF METHYLPARABEN FROM WINTERGREEN OIL

Armand J. deRosset, Sarasota, Fla.; James W. Priegnitz, Elgin, and Arthur M. Landis, Carpentersville, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Mar. 23, 1981, Ser. No. 246,547

Int. Cl.³ C07C *69/88*

U.S. Cl. 560—67 **14 Claims**

1. A process for separating methylparaben from a feed mixture comprising methylparaben and wintergreen oil which process employs an adsorbent comprising a type X or type Y zeolite, which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed input stream at an upstream boundary of said zone and a raffinate output stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, saod purification zone defined by the adsorbent located between an extract output stream at an upstream boundary of said purification zone and said feed input stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent input stream at an upstream boundary of said zone and said extract output stream at a downstream boundary of said zone;

(e) passing said feed mixture into said adsorption zone at adsorption conditions to effect the selective adsorption of said methylparaben to the substantial exclusion of the wintergreen oil by said adsorbent in said adsorption zone

and withdrawing a raffinate output stream comprising said wintergreen oil from said adsorption zone;

(f) passing a desorbent material having an average boiling point substantially different from that of the feed mixture into said desorption zone at desorption conditions to effect the displacement of said methylparaben from the adsorbent in said desorption zone;

(g) withdrawing an extract output stream comprising said methylparaben from said desorption zone; and

(h) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone said feed input stream, a raffinate output stream, desorbent input stream, and extract output stream to effect the shifting of zones through said adsorbent and the production of said extract output and raffinate output streams.

4,408,066

METHYL CYCLOPROPANE-1,3-DICARBOXYLATE

Alain Krief, Wepion, Belgium, assignor to Roussel Uclaf, Paris, France

Filed Oct. 2, 1981, Ser. No. 308,026

Claims priority, application France, Oct. 10, 1980, 80 21690

Int. Cl.³ C07C *69/757*

U.S. Cl. 560—124 **1 Claim**

1. A compound selected from the group consisting of the salts of d and l α-methyl-benzylamine and the monomethyl esters of (1R,3S)cis and (1S,3R)cis 2,2-dimethyl-cyclopropane-1,3-dicarboxylic acid.

4,408,067

PROCESS FOR PRODUCING CARBOXYLIC ACID ESTERS FROM NITRILES

Tomio Nakamura, Ichikawa, and Shunichi Doi, Yokohama, both of Japan, assignors to Nitto Chemical Industries, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 116,198, Jan. 28, 1980, abandoned. This application Jul. 28, 1981, Ser. No. 287,655

Claims priority, application Japan, Jan. 26, 1979, 54-7218; Jan. 26, 1979, 54-7219

Int. Cl.³ C07C *67/22*

U.S. Cl. 560—215 **10 Claims**

1. In a process for preparing a carboxylic acid ester from a nitrile, water and alcohol in the vapor phase, wherein the vapor is brought into contact with a catalyst, the improvement which comprises said catalyst being a titanium containing oxide catalyst which is obtained by hydrolyzing or neutralizing a water soluble titanium salt and subsequently calcining the resulting precipitate at a temperature in a range of about 300° to 750° C. and having the empirical formula $Ti_aMe_bX_cO_d$, wherein Me represents at least one element selected from the group consisting of Cu, Ag, Au, Mg, Zn, Sn, Pb, Zr, V, Bi, Cr, W, Mo, Mn, Fe, Co, and Ni and X represents at least one element selected from the group consisting of Si and Sb and the subscripts a, b, c and d designate the atomic ratio and when a is 1, b is 0.01 to 12, c is 0 to 12 and b+c is 0.01 to 12 and d is the oxygen content of the catalyst formed by the combination of the above components.

4,408,068

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE 2-CHLOROPROPIONIC ACID ESTERS

Manfred Koch, Eppstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 25, 1982, Ser. No. 342,584

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102516

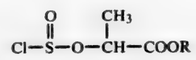
Int. Cl.³ C07C *69/63*

U.S. Cl. 560—226 **8 Claims**

1. A method for making an optically active 2-chloropropionic acid ester of the formula



wherein R is (C_1–C_6) alkyl, which method comprises decomposing an optically active 2-chlorosulfinoxypropionic acid ester of the formula



in the presence of a quaternary ammonium salt or of a phosphonium salt as a catalyst.

4,408,069

CONVERSION OF METHANOL TO METHYL ACETATE USING IRON-COBALT CATALYST

Gerald Doyle, Bedminster, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 78,564, Sep. 24, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,147

Int. Cl.³ C07C *67/36, 69/14*

U.S. Cl. 560—232 **10 Claims**

1. A process for the homogeneous catalytic conversion of methanol to methyl acetate which comprises contacting methanol with carbon monoxide in an organic solvent in the presence of a catalytically effective amount of an iron-cobalt carbonyl cluster complex of the formula $M[FeCo_3(CO)_{12}]$ or $M[CoFe_3(CO)_{13}]$ where M is hydrogen, alkali metal cation, $(C_6H_5)_3PNP(C_6H_5)_3^+$, cations of C_3 to C_9 heterocyclic compounds having nitrogen in a ring, $R_1R_2R_3R_4N^+$, $R_1R_2R_3R_4P^+$ or $R_1R_2R_3R_4As^+$ where R_1 to R_4 are each hydrogen, C_1 to C_{20} alkyl, C_3 to C_8 cycloalkyl, benzyl, phenyl or phenyl substituted by lower alkyl, lower alkoxy or halogen and an effective amount of an iodide promoter, and heating the resulting mixture to a temperature of from about 100° C. to 250° C. at a pressure of from about 5 to 100 MPa.

4,408,070

PURE CRYSTALLINE RACEMIC SODIUM PARAHYDROXYMANDELATE, PROCESS FOR ITS PREPARATION AND USES THEREOF

Alain Schouteeten, 17, rue de Normandie, Ezanville, Val d'Oise, and Yani Christidis, 12, rue de Constantinople, Paris 8eme, Seine, both of France

Continuation of Ser. No. 96,597, Nov. 21, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 284,835

Claims priority, application France, Jun. 15, 1979, 79 15392

Int. Cl.³ C07C *65/135*

U.S. Cl. 562—470 **3 Claims**

1. A process for the preparation of crystalline sodium paraformylphenolate comprising

subjecting crystalline racemic sodium parahydroxymandelate in aqueous solution to catalytic decarboxylating oxidizing degradation hot, under oxygen pressure, and in the presence of sodium hydroxide,

said crystalline racemic sodium parahydroxymandelate being prepared, as a preliminary operation, in pure crystalline form according to the steps consisting essentially of

condensing, over a period of approximately one-half hour, glyoxylic acid or sodium glyoxylate with an excess of 2 to 3 mols of phenol, in water, and in the presence of 2 to 3 mols of sodium hydroxide per mol of glyoxylic acid, at a temperatue between 70° and 100° C.;

neutralizing the resultant reaction medium, and removing unconverted phenol either by steam distillation or by extraction with a water-immiscible organic solvent;

concentrating the resultant reaction medium until the start of the formation of crystals, and cooling the resultant crystals; and

drying said crystals to constant weight at approximately 40° C. to provide pure sodium parahydroxymandelate crystallized with one molecule of water and substantially free of any ions of chloride, acetate, formate or sulphate, or drying said crystals at approximately 110° C. to provide pure anhydrous crystalline sodium parahydroxymandelate substantially free of any ions of chloride, acetate, formate or sulphate.

4,408,071

PROCESS FOR THE PRODUCTION OF CARBOXYLIC ACIDS

S. Erik Pedersen, Mentor; Harley F. Hardman, Lyndhurst, and Louis F. Wagner, Solon, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed May 11, 1981, Ser. No. 262,077

Int. Cl.³ C07C *51/235, 51/255, 53/08, 63/06*

U.S. Cl. 562—536 **12 Claims**

1. A process for preparing a carboxylic acid from an aldehyde, the process comprising contacting a gaseous aldehyde selected from the group consisting of acetaldehyde and benzaldehyde with oxygen in the presence of a catalyst of the formula

$$Mo_{12}P_{0.1\text{-}3}Cu_{0.01\text{-}2}V_{0.1\text{-}3}M_{0.1\text{-}3}M'_{0.01\text{-}3}O_x \quad (I)$$

where

M is at least one of K, Rb, Cs and Tl;

M′ is at least one of Be, Mg, Ca, Sr, Ba, Nb, Ti, Zr, Mn, Fe, Co, Ni, Zn, Ag, Al, Ge, Sn, Pb, As, Bi, Te, Ce, Th, U and Sb; and

x is a number that satisfies the valence requirements of the other elements present.

4,408,072

AMIDO METHOXYETHYLAMINES

Sivaraman Raghu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 152,268, May 21, 1980, Pat. No. 4,314,079, which is a division of Ser. No. 63,289, Aug. 2, 1979, Pat. No. 4,245,103, which is a continuation of Ser. No. 958,222, Nov. 6, 1978, abandoned. This application May 8, 1981, Ser. No. 261,866

Int. Cl.³ C07C *103/82*

U.S. Cl. 564—185 **1 Claim**

1. The compound N-(2-phenyl-2-benzoylamino)ethyl-2-methoxyethylamine.

4,408,073

PROCESS FOR PREPARATION OF α, β-UNSATURATED N-SUBSTITUTED-CARBOXYLIC ACID AMIDES

Bernhard Goossens, Velbert; Erich Küster, Krefeld; Kurt Dahmen, Monchen-Gladbach, and Eduard Barthell, Krefeld, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Stockhausen & Cie, Krefeld, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 107,245

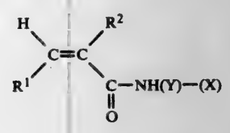
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856383; Mar. 24, 1979, 2911642

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

Int. Cl.³ C07C *102/00*

U.S. Cl. 564—204 **8 Claims**

1. A process for the preparation of α,β-unsaturated N-substituted carboxylic acid amides of the general formula



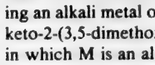
where

R^1 and R^2 are hydrogen or methyl,

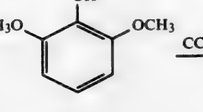
Y is a divalent/straight-chain or branched organic moiety having 2 to 30 carbon atoms, and

X is hydrogen or the radical of an amine of the formula $-N(R^4)(R^5)$, where R^4 and R^5 represent alkyl radicals having 1 to 4 carbon atoms,

by transamidation of β-substituted carboxylic acid amides with primary amines of the general formula



where Y and X have the meaning given above, with elimination of ammonia and conversion of the N-substituted carboxylic acid amides to the α,β-unsaturated N-substituted acid amides, characterized in that there are used as starting products β-substituted carboxylic acid amides of the general formula



where

R^1 and R^2 are hydrogen or methyl, and

Z is a hydroxyl group or the moiety of an alcohol of the formula R^8O-, where

R^8 represents an alkyl radical having 1 to 4 carbon atoms and the conversion of the N-substituted α,β-unsaturated carboxylic acid amides is effected by heating in the vapor phase in the presence of catalysts.

4,408,074

PROCESS FOR PREPARING 1-(3,5-DIMETHOXY-4-HYDROXY PHENYL)-2-(N-METHYLAMINO) ETHANOL HYDROCHLORIDE

Massimo Signorini; Attilio Trebbi, both of Baranzate, and Luigi Molteni, Malnate, all of Italy, assignors to Dr. Lo. Zambeletti S.p.A., Milan, Italy

Filed Nov. 2, 1981, Ser. No. 317,517

Claims priority, application Italy, Nov. 28, 1980, 26293 A/80

Int. Cl.³ C07C *91/16*

U.S. Cl. 564—361 **5 Claims**

1. A process for manufacturing 1-(3,5-dimethoxy-4-hydroxy phenyl)-2-(N-methylamino) ethanol hydrochloride which comprises:

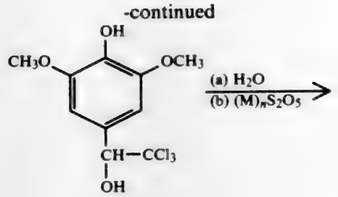
(a) condensing 2,6-dimethoxy phenol with anhydrous chloral, thus obtaining 1-(3,5-dimethoxy-4-hydroxy phenyl)-2,2,2-trichloro ethanol;

(b) heating an aqueous solution of said 1-(3,5-dimethoxy-4-hydroxyphenyl)-2,2,2-trichloro ethanol with an alkali metal or an alkaline-earth metal metabisulfite thus obtaining an alkali metal or an alkaline-earth metal 1-hydroxy-2-keto-2-(3,5-dimethoxy-4-hydroxyphenyl) ethanesulfonate in which M is an alkali or alkaline earth metal; and

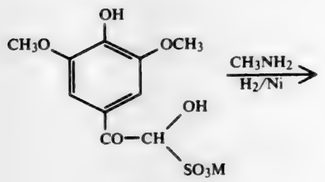
(c) subjecting to amination under reducing conditions with methylamine in the presence of hydrogenation catalysts said compound followed by reaction with hydrochloric acid:

(XI)

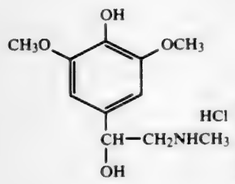
-continued



(XII)



(XIII)



(I)

wherein n=1 or 2.

4,408,075

PROCESS FOR THE PREPARATION OF TRIS-(ETHER-AMINES) AND THE TRIS-(ETHER-AMINES) PRODUCED

Gerard Soula, Meyzieu, and Louis Linguenheld, Saint-Genis-Laval, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 21, 1980, Ser. No. 142,258

Claims priority, application France, May 3, 1979, 79 11100

Int. Cl.³ C07C *91/02*

U.S. Cl. 564—474 **19 Claims**

1. An improved process of preparing tris-(ether-amines) of formula (I):

(I) N-[A-O-(B-O)$_n$R]$_3$ (I)

in which R represents a member selected from the class consisting of an alkyl radical containing from about 1 to 24 carbon atoms, a clcylohexyl radical, a phenyl radical, and an alkylphenyl radical whose alkyl group contains from about 1 to 12 carbon atoms;

A and B are similar or different and represent a linear alkanediyl group containing 2 or 3 carbon atoms, and

n represents a whole number between zero and 4, by ammonolysis in liquid phase of an alkylene glycol mono-ether of formula (II):

HO-A-O-(B-O-)$_n$R (II)

in which R, A, B, and n ave the meaning given above, by means of at least one ammonolysis agent selected from among ammonia and the ether-amines of formula (III):

(3-$_p$HN)-[A'-O-(B'-O-)$_{n'}$R']$_p$ (III)

in which R', A', B', and n' are identical to R, A, B, and n, respectively, and p is equal to 1 or 2, in the presence of a hydrogenation-dehydrogenation catalyst at a temperature of between about 150° and 250° C. followed by recovery of the tris-(ether-amine) formed, the improvement consisting of using an amount of said catalyst between about 10 and 40 percent by weight based on the weight of the alkylene glycol mono-ether employed.

4,408,076

PHENOXY UNSATURATED CARBOXYLIC ACID ESTERS AND DERIVATIVES

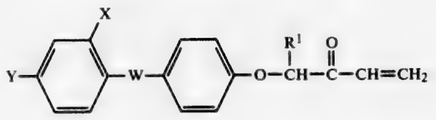
Shy-Fuh Lee, Sunnyvale, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 270,938, Jun. 5, 1981, abandoned, and Ser. No. 196,795, Oct. 14, 1980, abandoned. This application Sep. 4, 1981, Ser. No. 299,413

Int. Cl.³ C07C *43/205*

U.S. Cl. 568—325 **5 Claims**

1. A compound of the formula



wherein W is oxygen, R^1 is hydrogen or lower alkyl and each of X and Y is independently selected from hydrogen, bromo, chloro, fluoro, lower alkyl, lower alkoxy, lower alkoxycarbonyl, nitro, cyano, trifluoromethyl, chlorodifluoromethyl, fluoromethyl, chloromethyl and difluoromethoxy.

4. The compound, 4-[4-(4-trifluoromethyl phenoxy)phenoxy]-3-oxo-1-pentene, according to claim 1.

4,408,077

6-(LOWER ALKOXY)-5-(TRIFLUOROMETHYL)-1-NAPHTHALENECARBOXALDEHYDES

Kazimir Sestanj, St. Laurent; Steven Fung, Montreal; Nedumparambil A. Abraham, Dollard des Ormeaux, and Francesco Bellini, Mount Royal, all of Canada, assignors to Ayerst, McKeena & Harrison, Inc., Montreal, Canada

Filed Nov. 13, 1981, Ser. No. 321,302

Int. Cl.³ C07C *47/115*

U.S. Cl. 568—441 **2 Claims**

1. 6-(Lower alkoxy)-5-(trifluoromethyl)-1-naphthalenecarboxaldehyde.

4,408,078

PROCESS FOR THE HYDROFORMYLATION OF OLEFINS

Petrus W. N. M. Van Leeuwen, and Cornelis F. Roobeek, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 16, 1982, Ser. No. 399,161

Claims priority, application United Kingdom, Dec. 23, 1981, 8138734

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **18 Claims**

1. A process for the hydroformylation of olefins having carbon numbers up to 20 carbon atoms to aldehydes and alcohols which process comprises contacting at a temperature ranging from about 50° C. to about 180° C. and a pressure of up to about 200 bar said olefins with carbon monoxide and hydrogen in a molar ratio between about 12:1 to about 1:12 in the presence of a ligand-stabilized, platinum-containing catalytic system comprising at least one secondary phosphine moiety.

4,408,079

PREPARATION OF ALPHA-ALKYLACROLEINS

Franz Merger, Frankenthal, and Hans-Juergen Foerster, Bobenheim-Roxheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

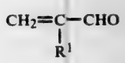
Filed Jan. 15, 1982, Ser. No. 339,505

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106557

Int. Cl.³ C07C *47/22*

U.S. Cl. 568—463 **10 Claims**

1. A process for the preparation of an α-alkylacrolein of the formula



I

where R^1 is an aliphatic radical, by reacting an alkanal of the formula



II

where R^1 has the above meaning, with formaldehyde and a secondary amine in the presence of an acid, wherein the reaction is carried out with a molar ratio of starting material II to formaldehyde of 0.9–1.5:1, at a pH of 2.5–7 and at form 0° to 150° C. in the presence of

(a) between 0.05 and 1.5 equivalents of an aliphatic monocarboxylic acid of 2 to 10 carbon atoms per mole of starting material II or

(b) between 0.3 and 1.25 equivalents of a dicarboxylic or polycarboxylic acid of 2 to 10 carbon atoms per mole of starting substance II, as the acid, and in the presence of a secondary amine, using an equivalent ratio of carboxylic acid to amine of 1–2:1.

4,408,080

PROCESS FOR PRODUCING ACETALDEHYDE

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,360

Claims priority, application Japan, Jun. 18, 1980, 55-82299

Int. Cl.³ C07C *47/06, 45/49*

U.S. Cl. 568—484 **5 Claims**

1. In a process for producing acetaldehyde which comprises reacting a mixture of methanol and methyl acetate with carbon monoxide and hydrogen in the presence of a cobalt-iodine catalyst, the improvement wherein methyl acetate is used in an amount of 0.5 to 4 parts by weight per part by weight of methanol, cobalt and iodine are used in an amount of 2 to 100 milligram-atoms and 8 to 200 milligram-atoms, respectively, per mole of the entire methyl groups in the methanol and methyl acetate, 1 to 4 iodine atoms being present per cobalt atom, and the reaction is carried out at a temperature of from 80° to 160° C. and a pressure of from 50 to 300 kg/cm^2.

4,408,081

PROCESS FOR OXIDATION OF ISOBUTANE

Elton G. Foster, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1981, Ser. No. 308,629

Int. Cl.³ C07C *179/02*

U.S. Cl. 568—571 **9 Claims**

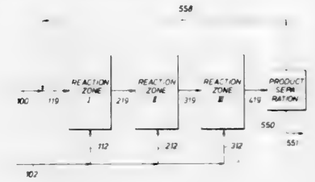
1. In the preparation of tertiary-butyl hydroperoxide by the direct oxidation of isobutane in dense-phase reaction mixture at a reaction temperature in the range from about 140° C. to 170° C. and at a reaction pressure in excess of the critical pressure of the mixture and greater than about 700 psig, the improvement which comprises the steps of:

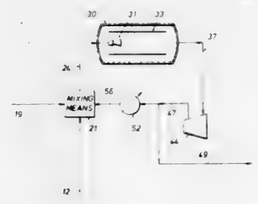
(a) conducting a plurality of essentially steady-state isobutane oxidation reactions, each reaction in one of a series of reaction zones, each zone containing an agitated dense-phase oxidation reaction mixture,

(b) introducing a continuous flow of isobutane reactant into the mixture of the first zone of the series,

(c) introducing a continuous flow of oxygen reactant into the mixture of each zone of the series,

(d) withdrawing continuous flows of reaction mixture from each zone of the series, and





(e) introducing each of the withdrawn flows into the mixture of the zone that is next subsequent to the one from which it is withdrawn, with the provision that the flow withdrawn from the last zone of the series is taken from the process as a tertiary-butyl hydroperoxide containing product mixture characterized by a conversion of isobutane of between about 3 and 25 percent.

4,408,082

OXIDATION OF ISOBUTANE IN THE DENSE PHASE AND AT LOW OXYGEN CONCENTRATION

Herman J. Baumgartner, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 5, 1981, Ser. No. 308,630

Int. Cl.³ C07C *179/02*

U.S. Cl. 568—571 **8 Claims**

1. In a process for the preparation of tertiary-butyl hydroperoxide by the direct oxidation of isobutanes which comprises reacting isobutane with molecular oxygen in a dense phase reaction mixture at a reaction temperature in the range from about 140° C. to 170° C. and at a reaction pressure above the critical pressure of the mixture and above 525 psig, the improvement which comprises limiting the oxygen concentration in the mixture to less than 0.1%M, and controlling said reaction to afford an overall isobutane conversion of from about 5 to about 20%M.

4,408,083

METHOD OF TREATING HYDROPEROXIDE MIXTURES

Masakazu Toyoura; Koichi Shomura, both of Iwakuni; Hirotoshi Tsuchida, and Tadateru Murakami, both of Otake, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 17, 1981, Ser. No. 293,510

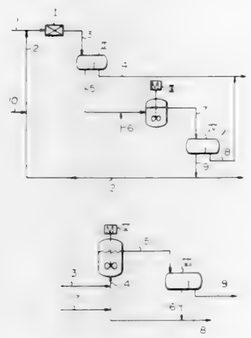
Claims priority, application Japan, Aug. 19, 1981, 56-113028

Int. Cl.³ C07C *179/02*

U.S. Cl. 568—576 **20 Claims**

1. A method of treating hydroperoxide mixtures, which comprises contacting an oily hydroperoxide mixture containing (A) a primary aromatic benzene or naphthalene hydroper-

oxide having a hydroperoxymethyl group directly bonded to the aromatic benzene or naphthalene nucleus and (B) a tertiary aromatic benzene or naphthalene hydroperoxide having a 2-hydroxyperoxy-2-propyl group bonded directly to the aromatic benzene or naphthalene nucleus with an aqueous alkali solution having a pH value of 12 to 14 thereby to form an aqueous layer wherein the ratio of A/(A+B) in the aqueous



layer is higher than the ratio of A/(A+B) in the starting oily mixture and an oily layer wherein the A/(A+B) in the oily layer is lower than the ratio of A/(A+B) in the starting oily mixture, separating the aqueous layer from the oily layer, and decomposing at least a part of the primary aromatic hydroperoxide (A) in the aqueous layer by heating the aqueous layer at a temperature higher than the temperature used for said contacting with the aqueous alkali solution.

4,408,085

PROCESS FOR PREPARING SEC-BUTYL ALCOHOL AND SEC-BUTYL TERT-BUTYL ETHER

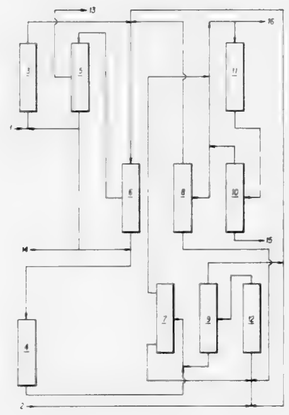
Klaus Gottlieb, Herdecke-Ende, and Wilfried Graf, Dorsten, both of Fed. Rep. of Germany, assignors to VEBA OEL AG, Gelsenkirchen-Buer, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,803

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1981, 3116780

Int. Cl.[3] **C07C** *41/06, 29/86*

U.S. Cl. 568—697 **9 Claims**



1. A process for producing sec-butanol and sec-butyl tert-butyl ether from butane comprising:

(a) partially isomerizing n-butane to produce a mixture of n-butane and isobutane;

(b) catalytically dehydrogenating the mixture of n-butane and iso-butane from step (a) to produce a mixture containing at least butene-1, iso-butene and butadiene;

(c) selectively hydrogenating and hydroisomerizing the mixture from step (b) so as to convert at least a part of the butadiene to butene-1 and to convert essentially all of the butene-1, that from the dehydrogenation step (b) and from the selective hydrogenation of butadiene, to butene-2, whereby a mixture of C_4-hydrocarbons is produced which contains at least unreacted isobutene from step (b) and butene-2;

(d) etherifying at least a part of the isobutene contained in the mixture obtained from step (c) with sec-butanol to form a mixture containing at least sec-butyl tert-butyl ether and unreacted hydrocarbons, including butene-2;

(e) converting at least a part of the butene-2 contained in the unreacted hydrocarbons of step (d) to sec-butanol by a hydration reaction;

(f) recycling the sec-butanol of step (e) to the etherification step (d);

(g) recovering the sec-butyl tert butyl ether reaction product of step (d).

4. The process according to claim **1** or **2** wherein unconverted sec-butanol is extracted from the etherification reaction product mixture of step (d) by treating said mixture with water.

4,408,084

NON-IONIC SURFACTANTS CONTAINING ACETAL GROUPS

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

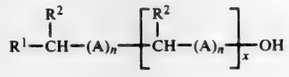
Filed Jan. 9, 1981, Ser. No. 223,880

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.[3] **C07C** *2/76, 1/00*

U.S. Cl. 568—601 **7 Claims**

1. A composition of matter having the formula:



wherein R^1 is the residue of at least one hydrophobic monofunctional organic compound derived from a compound selected from the group consisting of an aliphatic alcohol; an alkylarylalkyl alcohol; alkoxylated derivatives of each of the foregoing; and an alkoxylated alkylphenol; wherein R^2 is hydrogen or alkyl of 1 to 4 carbon atoms, A is the residue of (1) at least one hydrophilic oxyalkylene polymer derived from different alkylene oxides, or (2) different hydrophilic oxyalkylene polymers, at least one of said polymers being derived from different alkylene oxides wherein said alkylene oxides have 2 to 4 carbon atoms and said polymers are the reaction product of said alkylene oxides with an active hydrogen hydroxyl group-containing compound having at least 2 active hydrogen atoms, x is an integer of 1 to 20, and n is individually selected from integers such that the molecular weight is up to about 1000.

4,408,086

OLIGOMERIZATION OF M-ISOPROPENYLPHENOL

Shunsuke Matsushima, Otsu; Kazuhiko Hata, Niihama; Kentaro Mashita, Ibaraki; Shuichi Kanagawa, Osaka; Shinji Nakao, Sakai; Kiyoshi Nakai, and Kunimasa Kamio, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 24,424, Mar. 27, 1979, Pat. No. 4,260,831. This application Dec. 3, 1980, Ser. No. 212,511

Claims priority, application Japan, Apr. 3, 1978, 53-39599; Apr. 4, 1978, 53-40090

Int. Cl.[3] **C07C** *39/14, 37/14*

U.S. Cl. 568—719 **4 Claims**

1. A solid state oligomerization process, which comprises freezing m-isopropenylphenol at a temperature of from −120° to 20° C., in the presence of an oligomerizaion catalyst selected from the group consisting of boron trifluoride, boron trifluoride etherate, boron trifluoride alcoholate, boron trifluoride phenolate, sulfuric acid, phosphoric acid, alkylphosphoric acid, alkylbenzenesulfonic acid, naphthalenesulfonic acid, monoalkyl sulfate, aluminum trichloride and iron chloride, said catalyst being present in the amount of 0.01 to 3% by weight of m-isopropenylphenol.

4. An oligomer obtained by the process of claim **1**.

4,408,087

PURIFICATION OF BISPHENOL-A

Ming K. Li, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 29, 1979, Ser. No. 88,768

Int. Cl.[3] **C07C** *29/92, 29/78*

U.S. Cl. 568—724 **3 Claims**

1. The method of recovering 2,2-bis(4-hydroxyphenyl)propane in a purified state from a mixture of the latter and impurities derived from the acid condensation of phenol and acetone which comprises:

(1) combining a mixture of (a) an adduct of phenol and said 2,2-bis(4-hydroxyphenyl)propane and (b) impurities associated with (a), with from 1 to 4 parts, by weight, water per weight part of adduct,

(2) heating the mixture of the adduct and water at a temperature from 85° to 110° C., to break said adduct and form a two-phase liquid aqueous-organic system,

(3) separating the organic phase containing said 2,2-bis(4-hydroxyphenyl)propane from the aqueous phase formed in (2) while the two phases are at an elevated temperature,

(4) adding the organic phase an amount of water less than that used in step (1), wherein the water and organic phase mixture is at a temperature of at least 85° C., and

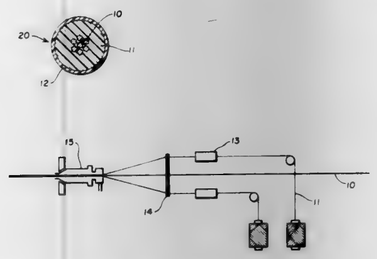
(5) cooling the mixture to precipitate said 2,2-bis(4-hydroxyphenyl)propane in a highly purified state.

4,408,088

ARAMID REINFORCED THERMOCOUPLE CABLE

Danny R. Foote, Spirit Lake, Iowa, assignor to Berkley and Company, Inc., Spirit Lake, Iowa

Filed Feb. 10, 1982, Ser. No. 347,524
Int. Cl.³ H01F *35/28*
U.S. Cl. 136—226 **5 Claims**



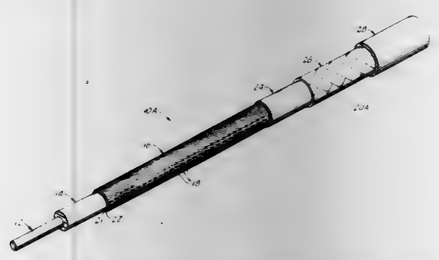
1. A thermocouple cable comprising:
thermocouple wires in parallel relation;
a pultrusion of aramid fibers concentrically layered over said thermocouple wires; and
an extruded water impervious abrasion resistant layer over said aramid fibers and said thermocouple wires.

4,408,089

EXTREMELY LOW-ATTENUATION, EXTREMELY LOW RADIATION LOSS FLEXIBLE COAXIAL CABLE FOR MICROWAVE ENERGY IN THE GIGAHERTZ FREQUENCY RANGE

Charles E. Nixon, 224 Edwards Ave., Sayville, N.Y. 11782

Continuation-in-part of Ser. No. 95,179, Nov. 16, 1979, abandoned, which is a continuation of Ser. No. 970,191, Dec. 18, 1978, abandoned, which is a continuation of Ser. No. 842,072, Oct. 14, 1977, abandoned. This application Jun. 9, 1981, Ser. No. 271,770
Int. Cl.³ H01B *11/18*
U.S. Cl. 174—34 **9 Claims**



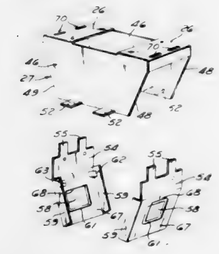
1. A low-attenuation flexible high frequency coaxial cable capable of use at higher frequencies above 10 gigaHertz comprising:
a center solid single-strand conductor extending longitudinally of the cable along the axis of the cable,
a flexible solid dielectric medium surrounding said center conductor,
a plurality of longitudinally extending parallel conductive elements adjacent one to another and in electrical contact one with another and adjacent to the outside of said dielectric medium for defining the outer conductor of the coaxial cable concentric to said center conductor and electrically conductively encircling said dielectric medium,
said parallel conductive elements comprising at least two layers extending nearly parallel with the length of said cable adjacent one to another and each having a very slight helical lay extending in the same direction about said dielectric medium along the entire length of said cable for assuring that said conductive elements are uniformly distributed around said dielectric medium,
means tightly surrounding said outer conductor for retaining said parallel conductive elements tightly pressed against the outside of said dielectric medium and against one another in electrical contact with one another, and
an outer jacket over said retaining means.

4,408,090

TRIMLESS CARPET BASE INSERT DEVICE

John E. Kohaut, West Orange, N.J., assignor to Raceway Components, Inc., Nutley, N.J.

Filed Jan. 23, 1981, Ser. No. 227,757
Int. Cl.³ H02G *3/28*
U.S. Cl. 174—48 **7 Claims**



1. An assembly for providing passageways for access to cables in cells in a cellular raceway, which cellular raceway includes raceway sections comprised of opposed side walls of, and a floor section between, adjacent pairs of cells, each raceway section including a plurality of raceway sub-sections each having opposed access openings in the opposed cell side walls, each access opening having a perimeter, which assembly is adapted to form grommet-like surfaces about the perimeter of the opposed pair of access openings in a raceway sub-section, which assembly comprises:
(a) a frame member, having a passageway therein for passage of cables therethrough, and including means for positioning the frame member in one of the plurality of sub-sections of the raceway, adapted to generally complementarily register with the raceway sub-section, and further including means engagable generally complementarily with other means to form the assembly; and
(b) a pair of end members, each adapted to be positioned in one of the plurality of raceway sub-sections, including means for forming a grommet-like surface about the perimeter in each of an opposed pair of access openings in the raceway sub-section, and means for interconnecting each side member to the frame member, adapted to be generally complementarily engagable with the engagable means of the frame member.

4,408,091

DEVICE AT CABLE ENDS TO SERVE AS A PREPARATION FOR SPLICING

Hans Laar, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 258,905
Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019640
Int. Cl.³ H02G *1/14, 15/02*
U.S. Cl. 174—74 R **9 Claims**

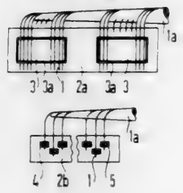
8. In combination, a large capacity cable including two cable ends and a plurality of wires extending between said ends; and at one of said ends, a device for holding the ends of the wires, including

at least one flexible support including means for receiving and holding the ends of the wires in a predetermined spaced relationship, said support having dimensions for insertion into conventional conduits,

said support comprising a pair of stretch-proof flexible strips areally bonded together and holding the wire ends immobile therebetween, said flexible strips including a pair of aligned apertures in the areas of said wires for access to said wires, and

each of said wires being exposed by a respective pair of said apertures.

9. In combination, a large capacity cable including two cable ends and a plurality of wires extending between said ends; and



at one of said ends, a device for holding the ends of the wires, including

at least one flexible support including means for receiving and holding the ends of the wires in a predetermined spaced relationship, said support having dimensions for insertion into conventional conduits,

said support comprising a pair of stretch-proof flexible strips areally bonded together and holding the wire ends immobile therebetween, said flexible strips including a pair of aligned apertures in the areas of said wires for access to said wires, and

each pair of said aligned apertures exposing a respective plurality of said wires.

4,408,092

ELECTRICAL FEEDTHROUGH

William D. Eatwell, and James K. Garner, Jr., both of Houston, Tex., assignors to Camco, Incorporated, Houston, Tex.

Filed Feb. 4, 1982, Ser. No. 345,897

Int. Cl.³ H02G *15/117*

U.S. Cl. 174—88 R **5 Claims**



1. An electrical power feedthrough for supporting and sealing a well electrical cable connection comprising,

a sealing insulator having a cavity for holding and sealing an electrical connection,

a sealing grommet at each end of the insulator for aligning the electrical cable with the insulator,

a cable gripping retainer adjacent each grommet end remote from the insulator,

a housing surrounding the insulator, grommets, and retainers, said housing including first and second telescoping housing parts,

means for telescoping the first and second parts together, and

coacting wedge means between each of the housing parts and one of the retainers for causing the retainers to grip the cable when the first and second housing parts are telescoped together.

4,408,093

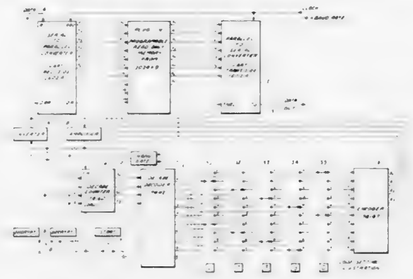
CRYPTOGRAPHIC ENCODER-DECODER

Harry Place, Ridgewood, N.J., assignor to ITT Industries, Inc., New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,694

Int. Cl.³ H04K *1/00*

U.S. Cl. 178—22.19 **33 Claims**



1. A cryptographic encoder-decoder comprising:

a parallel addressable memory means capable of being changed storing therein a plurality of different predetermined encryption-decryption character code groups addressed by parallel input data; and

first means coupled to said memory means to establish a unique code and to select appropriate ones of said plurality of code groups as determined by said unique code to provide in response to said input data from said selected one of said plurality of code groups parallel output data from said memory means.

4,408,094

OUTPUT CIRCUIT

Toshio Oura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,431

Claims priority, application Japan, Oct. 16, 1979, 54-133118

Int. Cl.³ H03K *13/02*

U.S. Cl. 381—120 **9 Claims**



1. An output circuit comprising:

a speaker having first (**115**) and second (**116**) input terminals;

a voltage terminal (GND);

a first node (**103**);

a second node (**112**);

variable means (**R1** or D/A) for providing a variable bias current to said first node;

a first field effect transistor (**N3**) having a gate and a source-drain conduction path and controlling the conductivity of said source-drain conduction path in accordance with the voltage at said gate, said source-drain conduction path of said first field effect transistor being coupled between said first node and said voltage terminal;

connection means (**N1**) for electrically connecting said gate of said first field effect transistor to said first node;

a plurality of current source transistors (**N6, N10, N13**) each having a gate and a source-drain conduction path and each controlling the conductivity of its source-drain conduction path in accordance with the voltage at its gate, said source-drain conduction paths of said plurality of current source transistors being coupled in parallel with one another between said second node and said voltage terminal;

a plurality of transfer field effect transistors (**N4, N8, N11**) each having a gate and a source-drain conduction path and each varying the conductivity of its source-drain conduction path in accordance with the voltage at its gate, the source-drain conduction paths of each of said plurality of transfer field effect transistors each being coupled between said first node and the gate of a respective one of said current source transistors and each receiving at its gate a respective one of a plurality of digital signals (i_0, i_1, i_2);

a first terminal (**113**) receiving a first frequency signal (i_3);

a second terminal (**114**) receiving a second frequency signal having an opposite phase to said first frequency signal;

a further voltage terminal (**117**); and

first (**P1**), second (**P2**), third (**P3**) and fourth (**P4**) switch field effect transistors each having a gate and a source-drain conduction path and each varying the conductivity of its source-drain conduction path in accordance with the voltage at its gate, said first switch field effect transistor (**P1**) having its source-drain conduction path coupled between said first input terminal of said speaker and said further voltage terminal and having its gate coupled to said second terminal, said second switch field effect transistor (**P2**) having its source-drain conduction path coupled between said first input terminal of said speaker and said second node and having its gate coupled to said first terminal, said third switch field effect transistor (**P3**) having its source-drain conduction path coupled between said second input terminal of said speaker and said further voltage terminal and having its gate coupled to said further terminal, and said fourth switch field effect transistor (**P4**) having its source-drain conduction path coupled between said second input terminal of said speaker and said second node and having its gate coupled to said second terminal.

4,408,095

ACOUSTIC APPARATUS

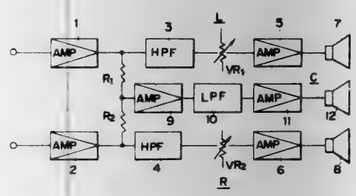
Shoji Ariga, and Tadashi Tomita, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,877

Claims priority, application Japan, Mar. 4, 1980, 55-27944[U]

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—24 **4 Claims**



1. An acoustic apparatus which comprises:

a left-channel reproducing means including a high-pass filter for outputting middle and high frequency components from a left-channel signal;

a left-channel speaker driven by said left-channel reproducing means for reproducing said left-channel middle and high frequency components;

a right-channel reproducing means including a high-pass filter for outputting middle and high frequency components from a right-channel signal;

a right-channel speaker driven by said right-channel reproducing means for reproducing said right-channel middle and high frequency components;

in intermediate-channel reproducing means including a mixing circuit for mixing said left- and right-channel signals and a low-pass filter for outputting low-frequency component from the mixed left- and right-channel signal; and

a low-frequency speaker driven by said intermediate-channel reproducing means for reproducing said mixed left- and right-channel low-frequency component;

the reproduction power of the middle and high frequency components outputted from the left- and right-channel reproducing means being set lower than the reproduction power of the low frequency component outputted from the intermediate-channel reproducing means, wherein each of the left- and right-channel reproducing means includes buffer amplifiers before and after said high-pass filter, respectively.

4,408,096

SOUND OR VOICE RESPONSIVE TIMEPIECE

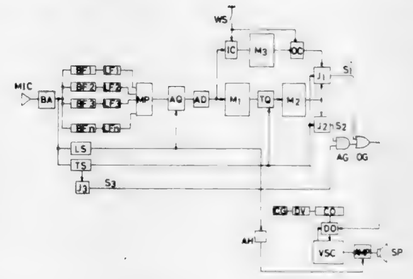
Isamu Washizuka, and Mitsuhiro Saiji, both of Kyoto, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1981, Ser. No. 247,054

Claims priority, application Japan, Mar. 25, 1980, 55-38753

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—107 **1 Claim**



1. A timepiece comprising:

means for receiving sound;

means for setting said timepiece in a first or second mode of operation;

means for storing at least one first sound received by said sound receiving means when said timepiece is in said first mode of operation;

means for comparing second sounds received by said sound receiving means when said timepiece is in said second mode of operation with said at least one first sound;

means for providing a signal when said second sounds are the same as said at least one first sound;

means for providing an audible indication of time information in response to said signal; and

means for varying the amplitude of said audible indication of time information in response to the amplitude of said second sounds.

4,408,097

AM-FM RADIO RECEIVER FOR RECEIVING AM-STEREO SIGNALS

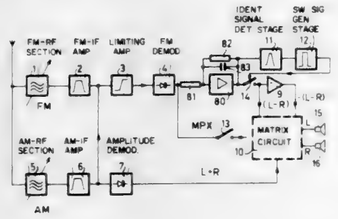
Bahne P. Bahnsen, Henstedt-Ulzburg, and Willy Kanow, Schenefeld, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1981, Ser. No. 259,797

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024085

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—15 **1 Claim**



1. An AM-FM radio receiver having an FM-RF section and an AM-RF section each coupled to an aerial input, an FM intermediate frequency amplifier coupled to said FM-RF section, an AM intermediate frequency amplifier coupled to said AM-RF section, an FM demodulator coupled to said FM intermediate frequency amplifier by a limiting amplifier, an amplitude demodulator coupled to said AM intermediate frequency amplifier, and a matrix circuit coupled to both said FM and amplitude demodulators, characterized in that on the reception of AM-stereo signals in which a sum signal (L+R) is amplitude modulated on a carrier wave and a difference signal (L−R), together with a stereo program identification signal, is phase modulated on the same carrier wave, said FM demodulator is further coupled to said AM intermediate frequency amplifier, said FM demodulator comprising a network having two serially connected parallel resonant circuits, one tuned to the FM intermediate frequency and the other tuned to the AM intermediate frequency, and said receiver further comprising an integrating circuit coupled to the output of said FM demodulator, for forming said difference signal (L−R), an identification signal detection stage connected to said integrating circuit, a switching signal generating stage connected to the output of said detection stage, and switching means, having a control input coupled to said switching signal generating stage, for connecting said integrating circuit to said matrix circuit in which separate left and right stereo signals are formed from the sum signal of the amplitude demodulator and the difference signal of the integrating circuit.

4,408,098

RECEIVER WITH FIELD-STRENGTH DEPENDENT NOISE REDUCTION CONTROL

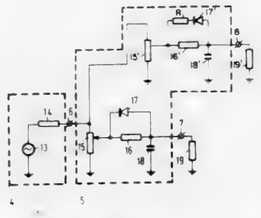
Theodor I. E. Kamalski, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,979

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—11 **5 Claims**

1. A receiver comprising a field-strength detector for measuring the received signal amplitude and a noise reduction circuit connected thereto via control signal generating means for reducing audio-frequency noise in the output signal of the receiver, which control signal generating means has an attack time constant at a decrease of the received signal amplitude measured by the field-strength detector, and a recovery time constant at an increase of the received signal amplitude, said recovery time constant being greater than the attack time constant, the noise reduction circuit comprising a continuously variable tone control circuit and a continuously variable mono-stereo control circuit, these two circuits being connected to the control signal generating means for a gradual control during at least an increase of the field strength, characterized in that said control signal generator means comprises a first control signal generating circuit, connected to the continuously variable mono-stereo control circuit of the noise reduction circuit, which applies thereto a mono-stereo control signal which varies continuously versus the field strength having an attack time constant of not more than 40 msec. and a recovery time



constant of at last 200 msec., and said control signal generating means further comprises a second control signal generating circuit, connected to the continuously variable tone control circuit of the noise reduction circuit, which applies thereto a tone control signal which continuously varies versus the field strength with a recovery time constant of at least 300 msec. and an attack time constant of not more than 0.8 times the recovery time constant.

4,408,099

RADIO PAGING SYSTEM CAPABLE OF ACCEPTING MESSAGE WITH ACCESS OF PAGING RECEIVER

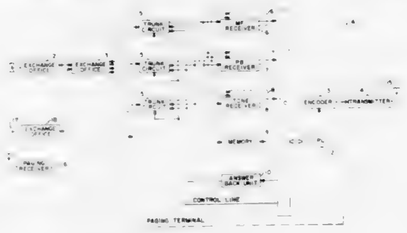
Daisuke Ishii, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 270,992

Claims priority, application Japan, Jun. 13, 1980, 55-80025

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 EC **10 Claims**



1. A radio paging method for calling a paging receiver from a telephone set by way of a paging terminal, said method comprising the steps of:

(a) sending a paging signal assigned to a paging receiver together with a message, said sending being from a first telephone set to a paging terminal;

(b) transmitting said paging signal from said paging terminal over a radio frequency to said paging receiver;

(c) storing said message at said paging terminal;

(d) receiving, at said paging receiver, said paging signal transmitted by said step (b);

(e) pre-storing the paging number for said paging receiver in said paging receiver;

(f) sending tones corresponding to the pre-stored paging number (e), said tones being sent from said paging receiver to said paging terminal by way of a second telephone set; and

(g) sending said message stored by said step (c) to said second telephone set, in response to said tones of step (f).

4,408,100

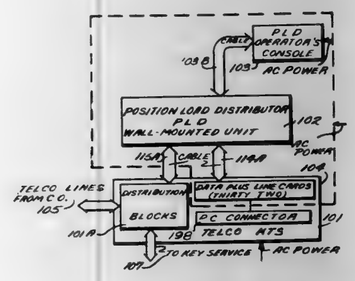
POSITION LOAD DISTRIBUTION AND MANAGEMENT SYSTEM FOR KEY TELEPHONE SYSTEMS

George E. Pritz, Locust Grove, and Robert Novakowski, Fairfax, both of Va., assignors to Data Plus, Inc., Lorton, Va.

Filed Mar. 2, 1981, Ser. No. 239,347

Int. Cl.³ H04M *3/50, 5/06*

U.S. Cl. 179—27 D **33 Claims**



1. For use in combination with a key telephone system having a plurality of incoming telephone lines and a plurality of agent-serviced positions, an incoming call distribution and management system, comprising:

means in operative relationship with said telephone system for distributing incoming telephone calls among said agent positions to an available position having the longest idle time since its last on-line condition, by directing said available agent position to answer an incoming call; and

means in operative relationship with said distributing means and with said telephone system for automatically answering an incoming call if an agent position fails to answer said incoming call in a predetermined time or if all of said agent positions are busy.

4,408,101

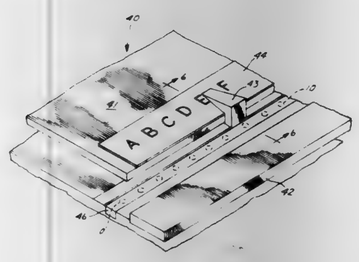
AUTOMATIC TELEPHONE DIALING APPARATUS WITH MAGNETIC SWITCH ASSEMBLY

Robert M. Brodbeck, Littleton, Colo., assignor to Marcamor, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 193,658, Oct. 30, 1980. This application Apr. 16, 1982, Ser. No. 369,137

Int. Cl.³ H04M *1/274*

U.S. Cl. 179—90 BD **8 Claims**



1. In a telephone index and combined switch device for memory stored dialing data for automatic telephone dialing, the combination comprising:

multiple card index means including a plurality of cards one on another for visual listing of names and telephone numbers, each card including individual lines for individual names and telephone numbers, and finding means arranged for movement along a preestablished path of movement relative to said cards;

card switch means activated by positioning said finding means having a first mode and a second mode, said card switch means being connected in a first circuit arranged for engaging a latching circuit for an individual card, said first circuit being completed via said card switch means in said first mode and interrupted via said card switch means in said second mode, whereby, with a first card selection and with said card switch means in said first mode, the latching circuit for the first card selected remains in effect independently of the operation of said card switch means until said finding means is moved to a second card selection and said card switch means is in said first mode,

said card switch means including a plurality of magnetic flux actuated switching devices each including circuit connecting means for completing a circuit via each associated switching device when in the vicinity of a magnetic flux of a preselected strength, said switching devices being mounted at fixed positions with similarly oriented corresponding surfaces disposed along said preestablished path of movement of said finding means;

a single magnetic flux producing actuator movable with said finding means along said path in the vicinity of but not in physical contact with each switching device to provide a substantially uniform distance between said actuator and each switching device for applying substantially the same magnetic force on each switching device when that switching device is directly opposite said actuator during the movement of said actuator along said path while successively actuating said switching devices; and

selector switch means operable separate and independent of said card switch means connected in a second circuit corresponding to a particular line and a particular card which, upon actuation after the card switch means is in the first mode, is effective to retrieve and automatically dial a telephone number stored at a location in a memory associated with said particular line.

4,408,102

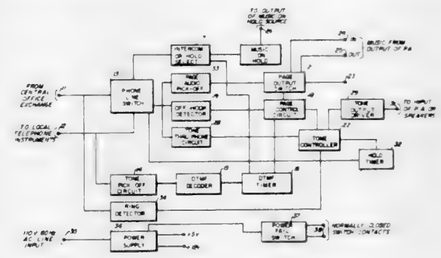
TWO-WIRE EXCHANGE TELEPHONE SYSTEM

Steven B. Lumpkin, 164 Acadian Dr., Lafayette, La. 70503

Filed Apr. 27, 1981, Ser. No. 257,596

Int. Cl.³ H04M *1/72, 9/02*

U.S. Cl. 179—99 H **11 Claims**



1. A two wire telephone system, comprising:

first terminating means for connection to an incoming central office line;

second terminating means for connection to a local telephone instrument;

a DTMF timer circuit;

phone line switch means for selectively connecting said first and second terminating means;

means responsive to a preselected signal tone of a first preselected duration from said telephone instrument for actuating said DTMF timer circuit;

means responsive to a first value in said DTMF timer circuit for actuating said switching means to disconnect said first and second terminating means from one another and con-

nect said first terminating means to a conductive holding path and to a source of music signals; and

means responsive to said preselected signal tone of a first preselected duration from said local telephone instrument for disconnecting said first terminating means from said holding path and music signals and connecting it to said second terminating means.

4,408,103

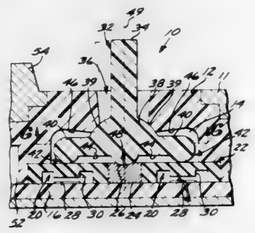
JOYSTICK OPERATED MULTIPLE POSITION SWITCH

Jay Smith, III, Pacific Palisades, Calif., assignor to Smith Engineering, Santa Monica, Calif.

Filed Jan. 6, 1982, Ser. No. 337,228

Int. Cl.³ H01H *13/70, 25/00*

U.S. Cl. 200—6 A **6 Claims**



1. A multiposition switch comprising:

a surface;

a plurality of contact regions on the surface each formed by a pair of first and second adjacent contacts of an electrical switch, one of which being a resilient member, said contacts being spaced apart and electrically insulated one from the other with said resilient member having an indented surface thereon which is spaced apart from the contact regions, and an electrical conductor in electrical contact with a common point for each of the electrical switches formed by the respective contact regions;

said plurality of conductive regions each being located within a separate hollow formed concentrically in the resilient material and thereby spaced apart from the surface, with the conductive region formed in a protrusion within each hollow;

a joy stick mounted in swiveling relation to the surface and having a manipulating rod and a plurality of urging members disposed radially outward from the longitudinal axis of the manipulating rod at generally the swivelingly mounted end of the joy stick, and corresponding in number and position to the number and position of the respective contact regions;

said joy stick, upon being actuated to depress the resilient member, moving at least one of the urging members towards the stationary contact regions, with the urging member aligned with a conductive region bringing this conductive region into contact with an aligned stationary contact region; and

the resilient member forming a donut shape about the swivelingly mounted end of the joy stick, with a hub of rigid material located at the center of the donut shaped resilient member and having formed thereon a swivel mounting surface for the swiveling mounting of the joy stick, said hub forming the electrical conductor in the resilient member.

4,408,104

LEVER SWITCH ARRANGEMENT FOR MOTOR VEHICLE

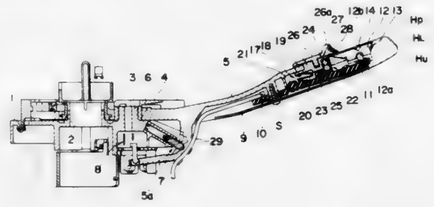
Masayosi Iwata, Hashima; Kenshi Furuhashi, Nagoya, and Hiroyasu Ito, Ichinomiya, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Mar. 15, 1982, Ser. No. 358,603

Claims priority, application Japan, Mar. 27, 1981, 56-43896[U]

Int. Cl.³ H01H *9/16*

U.S. Cl. 200—61.54 **9 Claims**



1. A lever switch arrangement for use in a motor vehicle and the like, which comprises:

a base member securable around a steering shaft of the motor vehicle and having switch means therein;

a control lever pivotally connected to said base member for operating said switch means in said base member;

a light source in said control lever;

a light transmitting member on the outer end of said control lever for transmitting light from said light source;

a further switch means provided in said control lever;

an operating member provided on said control lever for operating said further switch means and being slidingly displaceable between a first position where said operating member overlaps a portion of said light transmitting member for hiding said portion from view and a second position where said operating member is out of overlapping relation with said portion of said light transmitting member so as to expose said portion; and

a display means provided at said portion of said light transmitting member for indicating a functional condition of said further switch means when said portion of said light transmitting member is exposed.

4,408,105

SEESAW SWITCH

Toshio Tanaka, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Nov. 19, 1981, Ser. No. 323,033

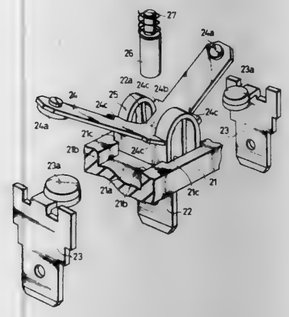
Claims priority, application Japan, Nov. 19, 1980, 55-166013

Int. Cl.³ H01H *1/22, 5/08*

U.S. Cl. 200—68 **5 Claims**

1. In a switch having a central terminal, stationary terminals disposed on respective sides of the central terminal, and a movable contact piece placed over the central terminal, the movable contact piece being movable pivotally so as to connect or disconnect the central terminal and a corresponding stationary terminal, the improvement wherein a receiver for the movable contact piece is provided with means including arcuate guide portions extending upwardly from opposite sides of said movable contact piece for supporting said movable contact piece against lateral movement during its pivotal movement, and said movable contact piece including engaging means adapted to ride along said arcuate guide portions

whereby said guide portions serve to support said movable contact piece laterally while providing a arcuate guide for



supporting said movable contact during its entire range of movement.

4,408,106

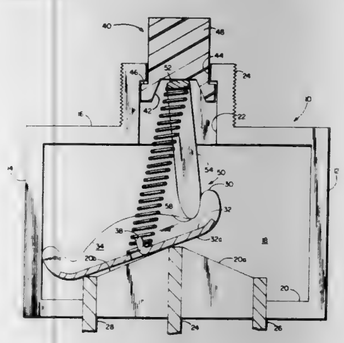
PUSHBUTTON SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,474

Int. Cl.³ H01H *13/28, 13/60*

U.S. Cl. 200—68 **16 Claims**



1. A pushbutton switch assembly comprising a switch housing having a boss defining an opening, a pushbutton slidably received in said opening for movement from and to a normal position, said housing having an internal cavity communicating with said opening, fixed contacts in the bottom wall of said housing cavity and including a center fixed contact having its upper end located above the upper end of another of said fixed contacts, a movable contact element in said cavity and having a lower surface in sliding engagement with said upper end of said fixed contact, strut means acting between said movable contact element and said pushbutton to cause pivotal movement of the contact element in response to downward movement of said pushbutton, a spring acting between said contact element and an upper end of said strut means to return said pushbutton to said normal position, said strut means having said upper end loosely received in a downwardly open recess in said pushbutton, and said contact element having an upper camming surface engaging the lower end of said strut means.

4,408,107

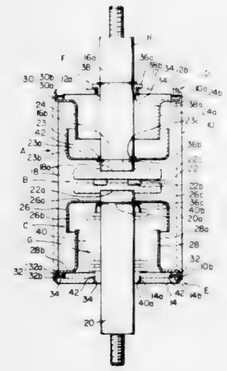
VACUUM INTERRUPTER

Shinzo Sakuma, Kawasaki; Eiji Umeya, Numazu; Junichi Warabi, Shizuoka; Yukio Kobari, and Hidemi Kawaguchi, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,862

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **22 Claims**



1. A vacuum interrupter comprising in combination:

an envelope including a cylindrical housing made of a metallic material, a disc-shaped upper end plate made of an inorganic insulating material having an aperture in the center portion thereof and a disc-shaped lower end plate made of an inorganic insulating material having an aperture in the center portion thereof;

an electrical contact member including a stationary contact rod inserted into said envelope through said aperture of the upper end plate, a stationary electrical contact secured to said stationary contact rod, a movable contact rod inserted into said envelope through said aperture of the lower end plate and a movable electrical contact secured to said movable contact

a shielding member for shielding the inner surface of said envelope;

a first sealing means for sealing hermetically said upper end plate to said housing and including a first auxiliary sealing member made of a plastic deformable metallic material which is deformable by the thermal stress and a metallized portion provided between said first auxiliary sealing member and said upper end plate;

a second sealing member for sealing hermetically said lower end plate to said housing and including a second auxiliary sealing member made of a plastic deformable metallic material which is deformable by the thermal stress and a metallized portion provided between said second auxiliary sealing member and said lower end plate;

first supporting means for supporting and securing hermetically said stationary contact rod to said upper end plate including a metallized portion provided between said upper end plate and said stationary contact rod; and

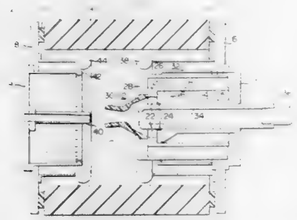
hermetic seal means for sealing movably and hermetically said movable contact rod to said lower end plate including a bellows for securing said movable contact rod to said lower end plate and a metallized portion provided between said lower end plate and said bellows.

4,408,108

PUFFER TYPE GAS INTERRUPTER

Keizo Takatsuka; Hiroshi Yamamoto, and Toshihiro Baba, all of Amagasaki, Japan, assignors to Mutsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,603
Claims priority, application Japan, Apr. 25, 1980, 55-56629
Int. Cl.³ H01H *33/74*
U.S. Cl. 200—148 A **7 Claims**



1. A puffer type gas circuit interrupter comprising an insulating housing containing therein an arc extinguishing gas;
a stationary contact assembly disposed within said housing and electrically connectable to an external circuit, and including a stationary arcing contact and a stationary main contact in conductive contact with said stationary arcing contact;
a movable contact assembly disposed within said housing and electrically connectable to an external circuit, said movable contact assembly including a movable arcing contact operable into and out of electrical contact with said stationary arcing contact;
a hollow puffer piston disposed within and secured to said housing, said movable arcing contact slidably extending through said hollow puffer piston;
a puffer cylinder secured to said movable arcing contact and slidable over said puffer piston for defining a puffer chamber therebetween and having an aperture for allowing the arc extinguishing gas to pass therethrough;
an insulating flow guide nozzle secured to said puffer cylinder for directing the arc extinguishing gas compressed within said puffer chamber toward an electric arc established between separated arcing contacts through said aperture in the puffer cylinder upon separation of said arcing contacts;
electrical conductor means rigidly connected to said puffer cylinder with a space disposed therebetween, said electricl conductor means being in conductive contact with said movable arcing contact, said conductor means being movable together with said arcing contact into and out of contact with said stationary main contact, said conductor means separating from said stationary main contact before said arcing contacts separate; and
a cluster of stationary finger contacts connectable to the external circuit and disposed around said conductor means for a permanent relative sliding electrical contact thereto.

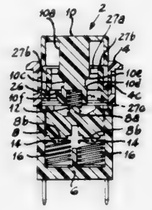
4,408,109

LATCH DOWN DEVICE FOR PUSH-BUTTON SWITCHES

Gursharan P. S. Nat, Smithfield, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 13, 1981, Ser. No. 321,002
Int. Cl.³ H01H *13/56*
U.S. Cl. 200—153 J **16 Claims**

1. In a push-button switch comprising:
a housing having an opening therein;
a push-button mounted in said opening and having a stem extending into said housing;
spring means biasing said push-button outwardly of said housing; and
switch contacts in said housing operable by said push-button;
the improvement comprising:
a leaf spring mounted in said housing and extending across said opening, said leaf spring being mounted under compression to be bistable and being biased against said push-button stem in one stable position;
a latching surface on said stem;



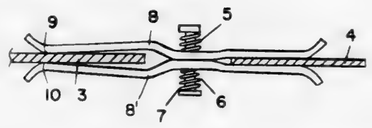
wherein depression of said push-button to an intermediate position operates said switch contacts to an ON condition and moves said latching surface inwardly of said leaf spring, said leaf spring engaging said latching surface to hold said push-button depressed in said intermediate position and said switch contacts operated in said ON condition, and
means subsequently operable by said push-button for removing said leaf spring from said latching surface for releasing said push-button.

4,408,110

ALUMINUM ELECTRICAL CONTACTS AND METHOD OF MAKING SAME

Michel Ladet, Grenoble; Jacques Lefebvre, Voiron, and Jos Patrie, Grenoble, all of France, assignors to Societe de Vente de l'Aluminium Pechiney, Paris, France

Continuation of Ser. No. 25,488, Mar. 30, 1979, abandoned. This application Jan. 7, 1981, Ser. No. 222,975
Claims priority, application France, Mar. 31, 1978, 7810333
Int. Cl.³ H01H *1/04*
U.S. Cl. 200—263 **5 Claims**



1. A device for establishing an electrical connection in an electrical circuit subjected to relatively high amperage current flow in which at least two conductive elements adapted to be brought into electrical contact, wherein at least one of the conductive elements includes an aluminum substrate having a surface free of oxide at least in a zone which is juxtaposed a zone which is to come in contact with another of said at least two conductive elements, said oxide free surface being produced by the deposition of a transient nickel coating by chemical displacement in an aqueous bath comprising:

HF	5 to 50 g/l
H_3BO_3	10 to 60 g/l
$NiCl_2.6H_2O$	50 to 500 g/l.

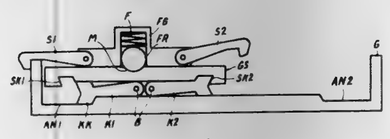
and subsequent dissolution of the transient nickel coating, and an electrolytically deposited layer of essentially pure nickel adhered without an intermediate layer directly to the so produced oxide free surface of the aluminum substrate and wherein there is negligible diffusion of the electrolytically deposited nickel layer into the aluminum substrate.

4,408,111

INTERNAL LOCKING ARRANGEMENT FOR A SWITCH MACHINE

Gerold Domhan, Stuttgart; Franz Hartl, Keltern-Dietenhausen, and Kurt Vogelgsang, Rutesheim, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 28, 1981, Ser. No. 267,955
Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020788
Int. Cl.³ H01H *1/52, 9/00, 9/20*
U.S. Cl. 200—318 **6 Claims**



1. In a switch machine connected by two throw rods to the respective switch points to be operated and including a driving unit, a casing, a sliding member in the casing operatively connected to the throw rods for movement therewith in the directions of movement of the switch points, a displacement member displaceable by the driving unit in the casing in the aforementioned directions between two limiting positions, and means for releasably connecting the sliding and displacement members with one another for joint movement, including a depression in one of the members and a spring-loaded connecting element mounted on the other member and engageable in the depression,
an internal locking arrangement in the casing comprising:
means for releasably arresting the displacement member in said limiting positions thereof;
means for transmitting forces between the sliding member, the casing and the throw rods and for holding the latter in respective end positions thereof relative to the casing including
means for delimiting a gap between the sliding member and the casing, including mutually facing delimiting surfaces on the sliding member and on the casing bounding said gap and spaced by a predetermined distance from one another,
at least two holding elements situated in said gap and each pivotally mounted on one of the throw rods and having at least two projections each extending toward one of said delimiting surfaces to such an extent that the dimension of the respective holding element measured across said projections exceeds said predetermined distance, and
means for defining in the sliding member and in the casing respective recesses which open onto the respective limiting surfaces and are arranged to receive the respective projections of the respective holding elements therein.

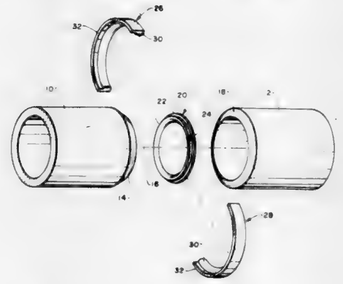
4,408,112

WELDING INSERT RING AND METHOD OF WELDING THEREFOR

Gasparas Kazlauskas, 4455 Los Feliz, Apt. 1108, Los Angeles, Calif. 90027

Filed Jun. 12, 1981, Ser. No. 273,206
Int. Cl.³ B23K *31/06, 9/02*
U.S. Cl. 219—61 **9 Claims**

1. The method of welding abutting edges of a pair of in-line pipes comprising the steps of:
locating an inner insert ring between said edges directly adjacent the interior surface of said pipes;
performing a root pass weld of said inner insert ring to said pipes;
locating an outer insert ring between said pipes and exteriorly of said inner insert ring;
welding of said outer insert ring to one of said pipes; and
performing a complete welding of said outer insert ring by fusing of said outer insert ring to said pipes.
6. In combination with a pair of in-line substantially abutting pipes, an insert ring to facilitate the welding together of said



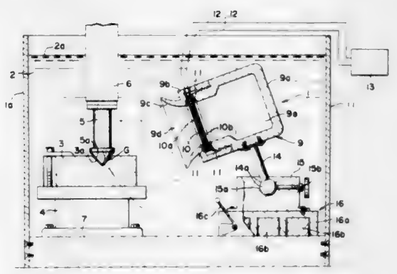
pair of in-line substantially abutting pipes, said in-line pipes forming an annular recess at their abutted ends, said insert ring comprising:
a main section to be located within said annular recess; and
a flange extending from said main section, said flange being substantially equal to the length of said main section, said flange to be located against the exterior surface of one of said pipes, said flange is to be welded to said one of said pipes and then said main section is to be melted to fill said annular recess thereby welding together said pipes.

4,408,113

ELECTRICAL MACHINING APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation-in-part of Ser. No. 4,987, Jan. 19, 1979, Pat. No. 4,289,947. This application Oct. 30, 1980, Ser. No. 202,232
Claims priority, application Japan, Mar. 2, 1978, 53-25633; Aug. 28, 1978, 53-117434
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 M **18 Claims**



1. An electrical machining apparatus having a worktank for containing a machining liquid and having a workpiece immersed therein, and a tool electrode positionable to be juxtaposed with the workpiece in the worktank to define an electrical machining gap therebetween filled with the machining liquid, said apparatus including:
an ultrasonic assembly disposed in said worktank and com-

prising a head member and a support member, said head member being constituted by a housing means having an ultrasonic transducer element supported therein and an opening for permiting only one of the two opposite side surfaces of said transducer element to be held in contact with the machining liquid and to communicate with the region of said electrical machining gap via the machining liquid, the head member being supported in the machining liquid by said support member to direct said opening selectively towards the region of said machining gap; and

a power supply for energizing said transducer element to produce ultrasonic vibrations therein and to impart the vibrations to the machining liquid in contact with said one side surface thereof, thereby transmitting the imparted ultrasonic vibration at least preferentially to the region of said machining gap.

4,408,114

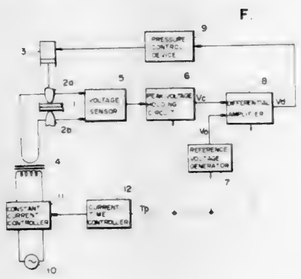
RESISTANCE WELDING WITH PRESSURE CONTROL IN RESPONSE TO DEVIATION BETWEEN WELDING VOLTAGE AND TIME VARYING REFERENCE VALUES THEREFOR

Shuji Nakata, 7-17 Hon-machi 5-chome, Toyonaka-shi, Osaka-fu, Japan; Masahiro Nishikawa, 394-3, Minamihanada-cho, Sakai-shi, Osaka-fu, Japan, and Yoshio Kawaguchi, Yokohama, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan, by said Yoshio Kawaguchi

Continuation of Ser. No. 177,363, Aug. 11, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,955

Int. Cl.³ B23K *11/24*

U.S. Cl. 219—110 **22 Claims**



1. A welding control system comprising:

(a) a constant current controller for holding at a constant value welding current flowing through a pair of welding electrodes between which members to be welded are pinched;

(b) a voltage sensor for detecting a voltage V_c between the pair of welding electrodes while the welding current is flowing:

(c) a reference voltage generator for generating a series of predetermined different reference welding voltages V_o based on a reference voltage vs. welding time curve;

(d) means for comparing the voltage V_c detected by said voltage sensor with the voltage V_o based on the reference voltage curve and deriving a control signal having a magnitude indicative of the deviation between voltages V_c and V_o;

(e) a pressure control device for controlling the welding pressure applied to the two welding electrodes in accordance with the signal magnitude V_d derived from said comparing means; and

(f) a current-time controller for deriving a start-stop signal for controlling starting and stopping of said constant current controller and for deriving a timing signal T_p for synchronizing said reference voltage generator and said comparing means;

whereby the welding voltage between the electrodes is controlled by changing the pressure between the electrodes in accordance with the predetermined reference voltage curve so as to obtain a stable welding quality.

4,408,115

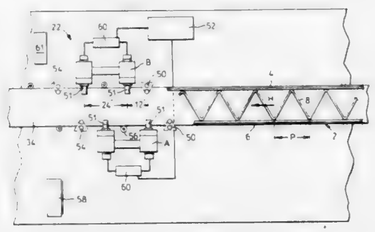
ELECTRICAL RESISTANCE WELDING METHOD AND APPARATUS FOR SAME; AND IMPROVED APPARATUS FOR TESTING WELDS

Joseph M. Tanenbaum, 4 Dewbourne Ave., Toronto, Ontario, Canada M5P 1Z2

Division of Ser. No. 179,634, Aug. 20, 1980. This application Jul. 21, 1981, Ser. No. 285,497

Int. Cl.³ B23K *11/00*

U.S. Cl. 219—119 **7 Claims**



1. In an electrical resistance welding machine for simultaneously welding together opposed chord members to a uniformly undulating web-like structural member or the like along alternate juxtaposed common regions of contact to define a truss or the like wherein the cross-section of one such structural member substantially exceeds the cross-section of the other structural member at each such common region of contact,

(a) a plurality of electrode means adapted simultaneously releasably clamp said members so as to urge and hold same together in truss defining relation and establish at least four alternate juxtaposed conmon regions of contact, each said electrode means including a first electrode of a composition having a relatively high electrical resistance to the transmission of electrical energy for contacting the member of lesser cross-section and a second electrode of a composition having relatively low electrical resistance to the transmission of electrical energy for contacting said member of greater cross-section;

(b) transformer means associated with each said electrode means for simultaneously supplying electrical energy to said members clamped between each said first and said second electrodes, and;

(c) control means associated with said transformer means for simultaneously supplying electrical energy to each said first and second electrodes for selected timed intervals said control means including first timing means for supplying electrical energy at preset selected timed intervals and second timing means for interrupting the supply of electrical energy for a limited period at preset selected timed intervals so as to generate only intermittent impulses and thereby simultaneously incrementally raise the temperature of said members in said aforementioned four regions of contact in stages to the fusion point whereby the escape of heat energy from said region of contact is minimized and the quality of weld maximized.

4,408,116

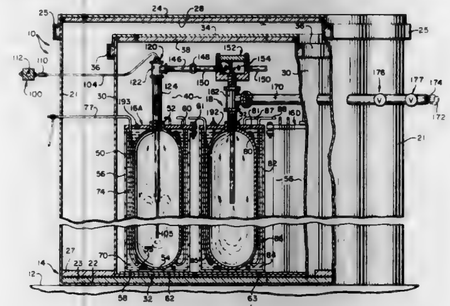
SUPERHEATED STEAM GENERATOR

Jesse R. Turner, deceased, late of Glenwood, Ark. by Allene A. Turner; executrix, assignor to Superthermal, Inc., New Hope, Ark.

Filed Sep. 22, 1980, Ser. No. 189,091

Int. Cl.³ F22B *1/28, 27/00;* B05B *15/02*

U.S. Cl. 219—273 **1 Claim**



1. A two stage, superheated steam generator comprising:

a plurality of first stage heaters for producing low temperature steam, each of said first stage heaters comprising:

a rigid, generally cylindrical first stage tank body having a mouth at one end;

a rigid, generally tubular casing coaxially surrounding said first stage tank body;

a meltable heat transfer substance disposed between said casing and said tank body;

at least one electric heating element disposed within said heat transfer substance between said casing and said tank body;

means for injecting a narrow stream of water interiorly of said first stage tank body, said last mentioned means comprising an elongated tube having at least a portion thereof extending longitudinally coaxially through the mouth of said tank body, and terminating in spaced relation to the other end of the tank body;

rigid, coaxially positioned tubular sheath means surrounding and reinforcing that portion of said elongated tube extending within said tank body;

steam output passage means for conducting steam exteriorly of said first stage tank body, said steam output passage being coaxially defined between a steam output pipe coupled to said mouth of said body and said sheath means;

primary water input manifold means for receiving incoming water and distributing water to each of said first stage heaters, said manifold means comprising:

an internal reservoir adapted to receive pressurized water from an external water source;

a pluraltiy of spaced-apart output passageways equal in number to said first stage heaters in fluid flow communication with said internal reservoir, each of said output passageways coupled in fluid flow communication with a separate one of said means for injecting a narrow stream of water interiorly of said first stage tank bodies by a conduit;

constriction means positioned within each of said manifold output passageways for severely restricting the flow of water therethrough,

said constriction means including a tapered nozzle portion directed interiorly of said water manifold means toward said internal reservoir; and,

a plurality of inspection orifices on said manifold means, each of said orifices being substantially aligned with a different one of said constriction means nozzle portions and each being closed by a removable plug for permitting nozzle portion maintenance;

a second stage heater for converting relatively low temperature steam to superheated steam, said second stage heater comprising:

a rigid, generally cylindrical second stage tank body for receiving low temperature steam generated by said first stage heaters;

a rigid, generally tubular casing coaxially surrounding said second stage tank body;

elongated second pipe means extending coaxially through and within said second stage tank body for delivering steam thereto;

a meltable heat transfer substance disposed between said last mentioned casing and said second stage heater tank body;

at least one electric heating element disposed within said last mentioned heat transfer substance for heating said second stage tank body; and,

means for outputting superheated steam from said second stage tank;

said first stage heaters being disposed in encircling relation with respect to said second stage heater at radially spaced-apart intervals about second stage heater circumference;

a centrally disposed steam manifold for receiving steam from each of said first stage steam output passage means and coupled to said second pipe means for delivering steam to said second stage tank body; and,

a plurality of radially spaced-apart, spoke-like conduits of equal length extending between said steam output passage means of said first stage heaters and said steam manifold for conducting low temperature steam thereto.

4,408,117

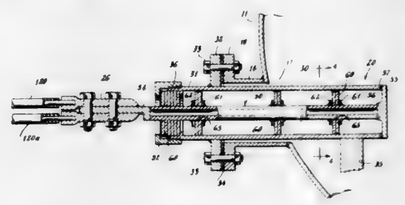
IMPEDANCE HEATING SYSTEM WITH SKIN EFFECT PARTICULARLY FOR RAILROAD TANK CARS

Robert M. Yurkanin, 38 Hobart Gap Rd., Short Hills, N.J. 07078

Filed May 28, 1980, Ser. No. 154,115

Int. Cl.³ F24H *1/20;* H05B *3/82*

U.S. Cl. 219—320 **15 Claims**



1. The combination of a tank for containing liquid and an impedance heating system for heating liquid in the tank, the combination comprising:

(A) a tank having a tank wall defining an interior space for containing a liquid;

said impedance heating system including at least one heating unit immersed in the liquid within the tank, each heating unit including:

(B) a rigid cylindrical outer pipe conductor, the first end of which is mounted to the tank wall at an opening in the tank wall, said mounting providing a liquid-tight seal between the tank wall and the exterior of the cylindrical outer pipe conductor, said outer pipe conductor extending into said tank and terminating at a second end therein which is spaced-apart from the tank wall, said outer pipe conductor being positioned to be immersed in liquid contained in the tank;

(C) means supporting the rigid outer pipe conductor within the tank;

(D) a conductive end cap secured to and sealing the second end of the outer pipe conductor;

(E) a rigid central conductor positioned within the outer

pipe conductor, one end of the central conductor being secured to the conductive end cap whereby the end cap electrically connects the outer pipe conductor and the central conductor, the central conductor extending substantially the entire length of the outer pipe conductor;

(F) a plurality of temperature resistant electrical insulation discs each having an opening for passing the central conductor therethrough, the insulation discs being deployed at spaced-apart intervals along the central conductor and extending radially outwardly from the central conductor for supporting the central conductor away from the inside surface of the outer pipe conductor;

(G) collar means holding the insulation discs at spaced-apart intervals along the central conductor, said collar means including a plurality of pairs of metal collars, each pair of metal collars being secured to the central conductor and embracing therebetween at least one insulation disc, whereby the insulation discs are held in position on the central conductor as the central conductor with the insulation discs mounted thereon is inserted into the outer pipe conductor;

(H) a source of AC power, the outer pipe conductor and the central conductor being connected thereto in series,

wherein the flow of alternating current causes impedance heating of both the outer pipe conductor and the central conductor as well as heating by reactance and hysteresis and eddy currents, the outer pipe conductor, end cap and central conductor having sufficient thickness that current flow therethrough is concentrated by skin effect on the inside surface of the outer pipe conductor and end cap and the outer surface of the central conductor, whereby the outside surfaces of the outer pipe conductor and end cap within the tank have substantially no voltage or current thereon, and the outer pipe conductor transfers heat generated to the contents of the tank.

4,408,118

CONTROL NETWORK FOR USE IN KNITTING MACHINES AND THE LIKE

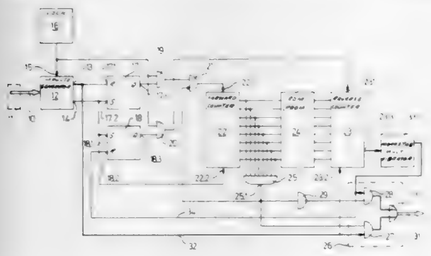
Gerhard Grözinger, Spaichingen; Hartmut Schindler, Albstadt, and Franz Schmid, Bodelshausen, all of Fed. Rep. of Germany, assignors to Sipra Patententwicklungs- und Beteiligungsgesellschaft mbH, both of Stuttgart, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,253

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928076

Int. Cl.[3] D04B *15/68;* H03K *5/13, 21/36*

U.S. Cl. 377—2 8 Claims



1. A control system for use in electrically operated rotary knitting machines to provide during each cycle of the machine output pulses at a phase relationship to the machine cycle which depends on rotary speed of the machine, comprising a pulse generator coupled to said machine to generate an input train of pulses at a rate corresponding to the rotary speed of the machine; a clock generator for producing clock pulses at a rate which is much greater than the rate of the input pulses and independent therefrom; a forward counter and a reverse counter each having a plurality of counting stages; a programmable memory having a plurality of address terminals connected to respective stages of said forward counter and a plurality of read-out terminals connected to corresponding stages of said reverse counter; a logic switching circuit connected between said pulse generator, said clock generator and said counters to pass to said forward counter during each cycle of the machine a number of clock pulses which is proportional to the rotary speed of the machine and to generate a control signal when all stages of the forward counter have been set; a logic output stage connected between said switching circuit and said reverse counter to output in response to said control signal said input train of pulses while in the absence of the control signal, outputting via said reverse counter output pulses shifted in time relative to the input pulses by an amount which is determined by the program in said memory.

4,408,119

INDIVIDUALIZED PORTABLE OBJECT SUCH AS A CREDIT CARD

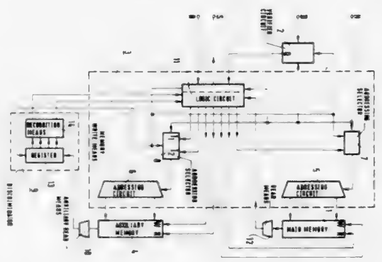
Dominique Decavele, Chevreuse, France, assignor to Transac-Alcatel-Compagnie pour le Development des Transactions Automatiques, Paris, France

Filed Jul. 10, 1981, Ser. No. 282,317

Claims priority, application France, Jul. 11, 1980, 80 15484

Int. Cl.[3] G06K *3/00, 5/00*

U.S. Cl. 235—382 14 Claims



1. An individualized portable object which requires a user to supply an authorization code in order to use the object, and which includes memory means in which the results of attempts at use are stored permanently and irreversibly in binary form for the purpose of rendering the object invalid after a predetermined number of failed attempts at use, wherein the object further includes memory write means; and discriminator means for distinguishing an un-interrupted sequence of said predetermined number of failed attempts from a sequence of failed attempts including the same number of failed attempts but interrupted by at least one successful attempt for controlling said memory write means as a function of attempts at use prior to a current attempt and for invalidating the object only after an un-interrupted sequence of said predetermined number of failed attempts.

4,408,120

BAR CODE SCANNER

Masahiro Hara; Toshiyasu Sakai, both of Kariya, and Atsutoshi Okamoto, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 26, 1982, Ser. No. 352,564

Claims priority, application Japan, Mar. 16, 1981, 56-38158

Int. Cl.[3] G06K *7/10*

U.S. Cl. 235—462 8 Claims

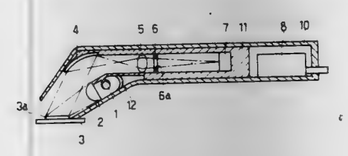
1. In a system for scanning bar codes having a plurality of parallel bar symbols recorded in different light reflective colors, a bar code scanner comprising:

a casing;

a light source supported within said casing and illuminating said bar symbols;

an image sensor supported within said casing and being electronically activated one by one to convert reflected light applied from said parallel bar symbols into responsive electric signals, the longitudinal axis of said bar symbols being reflected orthogonally onto the straight read-in line of said image sensor; and

diaphragm member supported within said casing at a portion between said bar symbols and said image sensor and having an aperture, the longitudinal axis of said aperture extending in orthogonal relation with said straight read-in line of said image sensor.



4,408,121

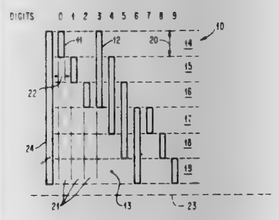
CODE FORMAT FOR BANK CHECK IDENTIFICATION

Matthew J. Galatha, Charlotte, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 9, 1982, Ser. No. 347,131

Int. Cl.[3] G06K *19/06*

U.S. Cl. 235—494 10 Claims



1. A record for machine reading, comprising a record base having on a surface thereof a background region of a first optical characteristic and a plurality of marking elements of a second, contrasting optical characteristic, said marking elements being individually arranged in successive spaces which are disposed side-by-side in a line, and wherein the improvement comprises:

said elements being selected from a plurality of different predetermined lengths in their dimension transverse to said line, and being positioned in different ones of a predetermined set of equal height zones extending parallel to said line, each of said different lengths differing from the length nearest thereto by at least the height of two of said zones,

whereby each element uniquely identifies by its length and location, a character of a predetermined set of characters.

4,408,122

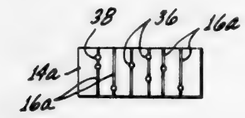
KEY CARD AND METHOD OF MANUFACTURING SAME

Martin S. Casden, Calabasas, Calif., assignor to Soundcraft, Inc., Woodland Hills, Calif.

Continuation-in-part of Ser. No. 119,502, Feb. 7, 1980, abandoned. This application Jan. 14, 1981, Ser. No. 225,144

Int. Cl.[3] G06K *7/08*

U.S. Cl. 235—449 23 Claims



1. The method of fabricating a passcard comprising:

(a) providing a relatively rigid backing lamination and a carrier sheet secured thereto, said carrier sheet having a plurality of bi-stable magnetic wires disposed thereon in a predetermined pattern, and at least a part of said carrier sheet being of barium ferrite or other similarly magnetizable material and extending over an area adjacent at least some of said wires; and

(b) subjecting said magnetizable material at at least one preselected location in said area adjacent at least one of said wires, to a magnetic force to magnetize the barium ferrite in said preselected location with a different polarity from that of the magnetization of the wires.

4,408,123

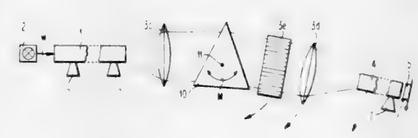
FIBER OPTICAL SENSOR DEVICE FOR MEASURING A PHYSICAL PARAMETER

Georg H. Sichling, Corvallis, Oreg.; Helmut Schwab, and Bernard Schwab, both of Princeton, N.J., assignors to Siemens Corporation, Iselin, N.J.

Filed Feb. 2, 1981, Ser. No. 230,808

Int. Cl.[3] G01D *5/30;* G01J *3/34*

U.S. Cl. 250—226 6 Claims



1. A fiber optical sensor device for measuring a physical parameter, comprising in combination:

(a) a light source for emitting light;

(b) a first light transmitting fiber having a first light input end receiving light from said light source, and having a first light output end delivering light which is transmitted thereto from said light input end;

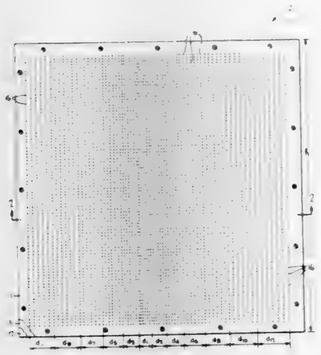
(c) means for dispersing the light transmitted by said first light transmitted fiber into its spectral components;

(d) a second light transmitting fiber having a second light input end receiving said spectral components dependent upon said physical parameter, and having a second light output end emitting said spectral components; and

(e) detector means for detecting the spectral components emitted by said second light transmitting fiber;

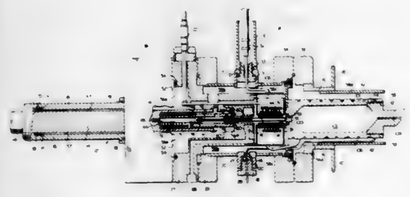
wherein said means for dispersing the light is a prism, which is arranged between the first light output end of said first light transmitting fiber and the second light input end of said second light transmitting fiber, said prism being rotatable around an axis dependent upon said physical parameter.

4,408,124
BRH TEST PATTERN FOR GAMMA CAMERA PERFORMANCE (AN EVALUATOR)
Peter Paras, Derwood, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.
Filed Apr. 14, 1981, Ser. No. 254,097
Int. Cl.³ G01D *18/00*; G02B *5/00*
U.S. Cl. 250—252.1 **11 Claims**



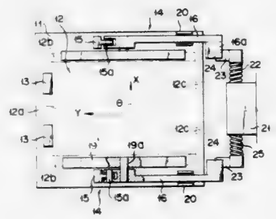
1. A test phantom for testing performance of gamma cameras, said test phantom comprising a plate made of a material impervious to gamma rays and having an array of apertures defined therethrough, said array being arranged in parallel columns of apertures extending in a first direction and parallel rows of apertures extending in a second direction, said columns being arranged in plural groups wherein the spacing between adjacent columns in each group is different from the spacing between adjacent columns in all other groups but wherein the adjacent column spacing within each group is uniform throughout that group.

4,408,125
MODULAR PYROLYSIS INLET AND METHOD FOR PYROLYZING COMPOUNDS FOR ANALYSIS BY MASS SPECTROMETER
Hendrik L. C. Meuzelaar, Summit Park, Utah, assignor to University of Utah, Salt Lake City, Utah
Filed Jul. 13, 1981, Ser. No. 282,789
Int. Cl.³ H01J *49/04*
U.S. Cl. 250—288 **39 Claims**



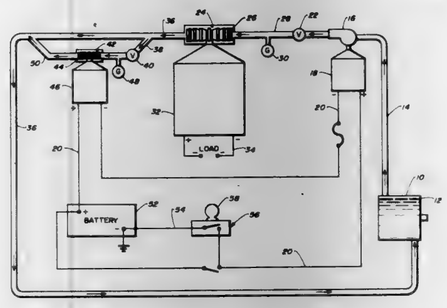
1. An apparatus for pyrolyzing a sample prior to analysis by a mass spectrometer, comprising:
an insertion probe for bearing the sample;
a reaction chamber which is mounted to the insertion probe so as to encompass the sample;
means for preheating at least a portion of the reaction chamber;
means for rapidly heating the sample within the preheated portion of the reactant chamber sufficient to pyrolyze the sample, said means for rapidly heating the sample being independent of the preheating means; and
an outlet formed in the reaction chamber to allow passage of the pyrolyzed sample into a mass spectrometer positioned adjacent the reaction chamber, said outlet being positioned so as to direct the pyrolyzed sample into the mass spectrometer while substantially prohibiting passage of the pyrolyzed sample into regions of the pyrolyzing apparatus outside of the reaction chamber.

4,408,126
CASSETTE RETAINING DEVICE OF ELECTRON BEAM APPARATUS
Toru Tojo, Yamato; Kazuyoshi Sugihara, Yokohama; Shuntaro Hata, Yokosuka; Hirooki Numaga, Numazu; Haruhisa Mukooyama, Fuji, and Yoshio Suzuki, Numazu, all of Japan, assignors to Toshiba Machine Co., Ltd., Tokyo and Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, both of, Japan
Filed Apr. 2, 1981, Ser. No. 250,386
Claims priority, application Japan, Apr. 7, 1980, 55/45479
Int. Cl.³ G21K *5/10*
U.S. Cl. 250—442.1 **9 Claims**



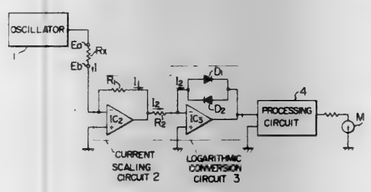
1. A cassette retaining device comprising:
a sample table;
a stop means disposed on the top surface of said sample table and engaging the front end face of a cassette transferred along said top surface, whereby said cassette is stopped at a predetermined position in surface contact with said top surface; and
a pair of retaining mechanisms disposed respectively on both sides of the top surface of said sample table and mounted for pressing respectively on both sides of the top surface of the cassette to hold said cassette in said predetermined position between said retaining mechanisms and said sample table,
each said retaining mechanism including:
a presser capable of moving in a direction having a component perpendicular to said top surface of said cassette, between a first position where said presser presses in said direction on a side portion of the top surface of the cassette to hold said cassette in surface contact with said top surface, and a second position where said presser is separated from the top surface of said sample table to allow said cassette to be inserted or removed from between said presser and said sample table;
a rocking arm rockable around a first horizontal axis relatively to said sample table and bearing said presser so that said presser may rock around a second horizontal axis parallel to said first horizontal axis; and
an urging means urging said rocking arm to rock in one direction, thereby locating said presser in said first position.

4,408,127
POWER GENERATING APPARATUS
Astrogildo Santos, Sr., 20301 Cantara St., Canoga Park, Calif. 91304
Filed May 13, 1982, Ser. No. 377,950
Int. Cl.³ F03B *13/00*
U.S. Cl. 290—54 **4 Claims**



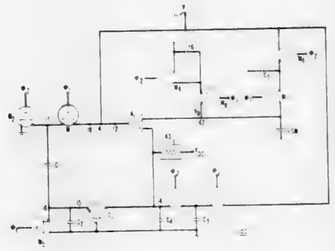
1. A power generating apparatus comprising:
a closed fluid conducting conduit assembly;
a fluid reservoir connected to said conduit assembly, a fluid contained within said reservoir;
a pump connected to said conduit assembly, said pump to move said fluid through said conduit assembly, said pump being driven solely from energy from a first energy source;
a primary turbine rotatably driven by the movement of said fluid from said pump, said primary turbine producing primary output energy, a load receiving said primary output energy;
a secondary turbine connected in said conduit assembly, said secondary turbine being rotatably driven by the movement of the fluid from said primary turbine, said secondary turbine producing secondary output energy, said secondary turbine being located downstream of said primary turbine, said secondary output energy comprising in part said first energy source;
a battery, said battery being connected to and comprising in part said first energy source; and
switching means manually connected to said first energy source for activating said pump.

4,408,128
ELECTRIC RESISTANCE TYPE WIDE RANGE MOISTURE METER
Toshio Fujita, Tokyo, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan
Filed Sep. 1, 1981, Ser. No. 298,542
Claims priority, application Japan, Mar. 8, 1979, 54-27206; Sep. 10, 1980, 55-125849
Int. Cl.³ G01R *27/02, 15/10*
U.S. Cl. 324—65 R **8 Claims**



1. In an electric resistance type moisture measurement apparatus comprising a means for measuring the electric resistance of a sample to be measured, a current-voltage logarithmic conversion means coupled to said resistance measuring means for converting a current flowing through the sample when a constant voltage is applied thereto to a voltage signal as a moisture content corresponding to the measured electric resistance and converting an expoential characteristic of the moisture content signal to an essentially linear characteristic, and an indicator means for indicating the converted signal outputted from said conversion means in terms of the moisture content,
a wide range moisture content measuring device comprising an operational amplifier having a current feedback path, connected between said resistance measuring means and said current-voltage logarithmic conversion means, said operational amplifier including a load resistor and a feedback resistor, whereby a current flowing through said sample is scaled into said resistors and the scaled current flowing through said load resistor is supplied to said current-voltage logarithmic conversion means.

4,408,129
CONSTANT ENERGY DRIVE CIRCUIT FOR ELECTROMAGNETIC PRINT HAMMERS
Robert W. Arnold, Glen Aubrey, and Dean W. Skinner, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 18, 1981, Ser. No. 274,848
Int. Cl.³ H03K *3/01, 3/26, 17/26, 5/22*
U.S. Cl. 307—270 **13 Claims**



1. In combination with a coil of an electromagnetic actuator for a print hammer or the like, a drive circuit for supplying a fixed amount of energy to said coil comprising
switch means operable in a cyclical manner for connecting said coil alternately to a supply voltage source to energize said coil and to a grounding circuit to deenergize said coil,
means for enabling said switch means for connecting said coil to said supply voltage source for an operating interval of fixed duration,
said operating interval having a fixed rise time portion followed by a remaining portion,
first circuit means operable in response to rising current in said coil for cycling said switch means at a first switching frequency as determined by a rising reference signal during said fixed rise time portion of said operating interval, and
second circuit means responsive to first and second peak current levels in said coil as determined by alternating first and second peak reference signals for cycling said switch means at a second switching frequency so as to maintain a desired average current in said coil during said remaining portion of said operating interval.

4,408,130

TEMPERATURE STABILIZED VOLTAGE REFERENCE

Harry J. Boll, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 5, 1981, Ser. No. 308,657
Int. Cl.³ H03K *5/22, 3/01*
U.S. Cl. 307—296 R **9 Claims**



1. A network (**10** or **100**) comprising
(a) a bipolar transistor (T_1);
(b) first clocked voltage source means (C_1, C_2, M_1, M_2, M_5) having an input terminal (**18**) and an output terminal (**15**);
(c) means for connecting the output terminal (**15**) of the first clocked means (C_1, C_2) to an emitter terminal of said transistor (T_1);
(d) second clocked voltage source means (C_3, C_4, M_3, M_4) having an output terminal (**14**);
(e) means for connecting the output terminal (**14**) of said second clocked means (C_3, C_4, M_3, M_4) to a collector terminal of said transistor (T_1);
(f) a difference amplifier (A_1) having first (+) and second (−) input terminals of opposite polarity;
(g) means for connecting said collector terminal of said transistor (T_1) to the first input terminal (+) of said difference amplifier (A_1); and
(h) means for connecting an output terminal (**12**) of said difference amplifier (A_1) to the input terminal (**18**) of said first clocked means (C_1, C_2, M_1, M_2, M_5), the output terminal (**12**) of said difference amplifier (A_1) being connected to an output terminal (**11**) of said network (**10** or **100**).

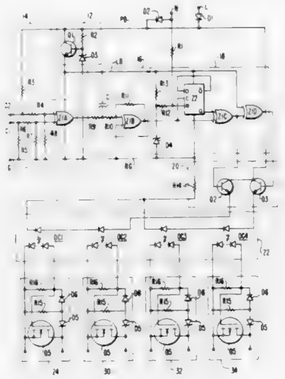
4,408,131

OPTICALLY ISOLATED SOLID STATE RELAY

David A. Fox, Shawnee Township, Allen County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1981, Ser. No. 303,811
Int. Cl.³ H03K *3/42, 19/42*
U.S. Cl. 307—311 **8 Claims**

1. A solid state relay comprising:
sensing means for responding to an input voltage signal by producing a logic signal of a relatively fixed magnitude;
a logic gate having a first input terminal operatively connected to receive said logic signal from said sensing means, an output terminal, and a second input terminal;
said second input terminal having a fixed interconnection to means for generating a first signal changing in logic state only upon a predetermined change in the waveform of said logic signal from said sensing means;
means for selectively overriding said first signal connected to said second input terminal;
a light emitting diode responsive to said logic first signal appearing at said output terminal for generating radiation;
an array of photodiodes connected in series between a pair of array electrodes and operatively coupled to said light emitting diode for developing a control voltage across said array electrodes in response to radiation from said light emitting diode;
a field effect transistor including a pair of current carrying electrodes, a gate electrode and a substrate electrode, one of said array electrodes connected to said gate electrode and the other of said array electrodes connected to said substrate electrode whereby the impedance between said current carrying electrodes has one value in the absence of and a greatly different value in the presence of said control voltage between said gate electrode and said substrate electrode;



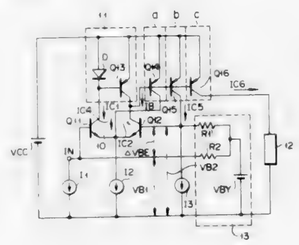
means for providing a large resistive impedance between said gate electrode and said substrate electrode;
and
a pair of output terminals, each connected to a respective one of said current carrying electrodes.

4,408,132

HYSTERESIS CIRCUIT

Hisao Kuwahara, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 3, 1981, Ser. No. 299,227
Claims priority, application Japan, Sep. 10, 1980, 55-125755
Int. Cl.³ H03K *3/295, 5/153*
U.S. Cl. 307—359 **4 Claims**



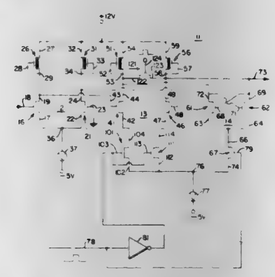
1. A hysteresis circuit comprising first and second transistors constituting a differential amplifier, a first constant current source connected between the common emitter of said first and second transistors and a reference potential point, an input signal source connected to the base of said first transistor, a second constant current source connected between the base of said second transistor and said reference potential point, a bias voltage source connected through a first resistor to the base of said second transistor, and third, fourth and fifth transistors of the opposite conductivity type to said first and second transistors and each having the emitter connected to one end of a power supply and the base connected to the collector of said second transistor, said third transistor having the collector connected to the emitter of said second transistor, said fourth transistor having the collector connected to the base of said second transistor, said fifth transistor having the collector connected to a load circuit.

4,408,133

COMPARATOR CIRCUIT WITH IMPROVED RELIABILITY AND/OR SPEED

Michael Cooperman, and William L. Geller, both of Framingham, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 30, 1981, Ser. No. 249,036
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—362 **10 Claims**



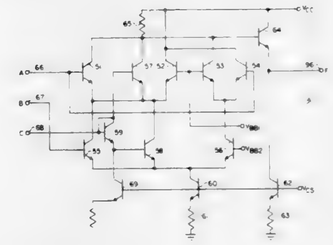
1. An improved comparator circuit utilizing a plurality of triodes, each having a pair of primary electrodes and one control electrode, including
a first differential amplifier having one primary electrode of a first triode and one primary electrode of a second triode coupled together for coupling to a negative potential source via a first conductive medium, one control electrode of said first triode for receiving an analog input signal, one control electrode of said second triode being coupled to a point of reference potential, a third triode connected as a resistive load for coupling a positive potential source to a second primary electrode of said first triode, and a fourth triode connected as a resistive load for coupling said positive potential source to a second primary electrode of said second triode;
a second differential amplifier having one primary electrode of a fifth triode and one primary electrode of a sixth triode coupled via suitable means for coupling to said negative potential source via a second conductive medium, one control electrode of said fifth triode being coupled to said second primary electrode of said first triode, one control electrode of said sixth triode being coupled to said second primary electrode of said second triode, a seventh triode connected as a resistive load for coupling said positive potential source to a second primary electrode of said fifth triode, and an eighth triode connected as a resistive load for coupling said positive potential source to a second primary electrode of said sixth triode;
a latch having one primary electrode of a ninth triode and one primary electrode of a tenth triode coupled together to one primary electrode of an eleventh triode, a second primary electrode of said eleventh triode for coupling to said negative potential source via said second conductive medium, one control electrode of said ninth triode coupled to a second primary electrode of said tenth triode, one control electrode of said tenth triode coupled to a second primary electrode of said ninth triode, said second primary electrode of said ninth triode coupled to said second primary electrode of said fifth triode, said second primary electrode of said tenth triode coupled to said second primary electrode of said sixth triode, and said second primary electrode of said tenth triode, providing a digital output therefrom; and
a switching circuit including means for receiving a storage pulse for coupling to one control electrode of said eleventh triode, and means for coupling an inverted form of said storage pulse to said suitable means,
the improvement wherein said suitable means comprises
a twelfth triode having one control electrode coupled to receive said inverted form of said storage pulse, a first primary electrode coupled to said negative potential source via said second conductive medium, and a second primary electrode coupled to said one primary electrode of said fifth triode; and
a thirteenth triode having one control electrode coupled to receive said inverted form of said storage pulse, a first primary electrode coupled to said negative potential source via said second conductive medium, and a second primary electrode coupled to said one primary electrode of said sixth triode.

4,408,134

UNITARY EXCLUSIVE OR-AND LOGIC CIRCUIT

Michael Allen, San Francisco, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 19, 1981, Ser. No. 226,323
Int. Cl.³ H03K *19/086, 19/20, 19/21*
U.S. Cl. 307—471 **19 Claims**



1. A circuit comprising
first and second transistors having emitters coupled together, collectors of said first and second transistors connected to a first voltage source with a first impedance means between the collector of said first transistor and said first voltage source, a base of said first transistor connected to a first input terminal, a base of said second transistor connected to a first reference voltage source,
third and fourth transistors having emitters coupled together, a collector of said third transistor connected to the collector of said first transistor, a collector of said fourth transistor connected to the collector of said second transistor, a base of said third transistor connected to said first reference voltage source, a base of said fourth transistor connected to said first input terminal,
fifth and sixth transistors having emitters coupled together, a collector of said fifth transistor connected to the coupled emitters of said first and second transistors, a collector of said sixth transistor connected to the coupled emitters of said third and fourth transistors, a base of said fifth transistor connected to a second input terminal, a base of said sixth transistor connected to a second reference voltage source,
a first current source connected to the coupled emitters of said fifth and sixth transistors,
a seventh transistor having an emitter connected to the coupled emitters of said first and second transistors, a collector connected to the collector of said first transistor, a base connected to a third input terminal,
an eighth transistor having an emitter connected to the coupled emitters of said fifth and sixth transistors, a collector connected to the coupled emitters of said first and second transistors, a base connected to said third input terminal through a voltage displacement means, and

a second current source connected to the base of said eighth transistor,

whereby functionally said first and second input terminals form the input terminals of an EXCLUSIVE OR logic gate, the output terminal of said EXCLUSIVE OR logic gate forms a first input terminal to an AND logic gate, and said third input terminal forms a second input of said AND logic gate.

4,408,135

MULTI-LEVEL SIGNAL GENERATING CIRCUIT

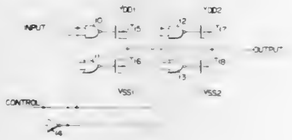
Toshio Yuyama, Kawasaki; Ryuzo Shiraki, and Seizi Watanabe, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

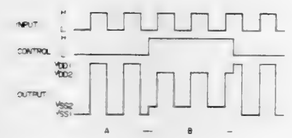
Filed Dec. 16, 1980, Ser. No. 216,818

Claims priority, application Japan, Dec. 26, 1979, 54-169755; Dec. 26, 1979, 54-169756

Int. Cl.³ H03K *19/094, 17/687*

U.S. Cl. 307—474 **2 Claims**





1. A multi-level signal generating circuit for changing, in response to a control pulse signal, the high and low levels of an input signal between voltage levels supplied by a first voltage source and voltage levels supplied by a second voltage source, said circuit comprising:

an input terminal coupled to said input signal;

a first voltage source terminal connected to a high voltage level of said first voltage source;

a second voltage source terminal connected to a low voltage level of said first voltage source;

a third voltage source terminal connected to a high voltage level of said second voltage source;

a fourth voltage source terminal connected to a low voltage level of said second voltage source;

a control terminal coupled to said control pulse signal;

a first CMOS circuit coupled to said input terminal, said control terminal and said first and second voltage source terminals, said first CMOS circuit producing, when enabled by said control pulse signal, a first output signal varying in response to said input signal between approximately said high and low voltage levels of said first voltage source, said first CMOS circuit comprising first and second MOS transistors complementary to each other and connected in series between said first and second voltage source terminals and first logic means connected between said input and control terminals and the gates of said first and second MOS transistors for supplying said input signal to said gates of said first and second transistors when said control pulse signal is in a first state thereby to enable said first CMOS circuit; and

a second CMOS circuit coupled to said input terminal, said control terminal, and said third and fourth voltage source terminals, said second CMOS circuit producing, when enabled, a second output signal varying in response to said input signal between approximately said high and low voltage levels of said second voltage source, said second CMOS circuit comprising third and fourth MOS transistors complementary to each other and connected in series between said third and fourth voltage source terminals and second logic means connected between said input and control terminals and the gates of said third and fourth MOS transistors for supplying said input signal to the gates of said third and fourth transistors when said control pulse signal is in a second state thereby to enable said second CMOS circuit.

4,408,136

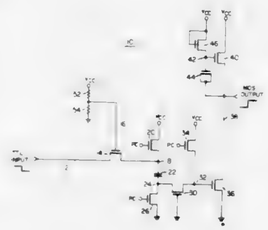
MOS BOOTSTRAPPED BUFFER FOR VOLTAGE LEVEL CONVERSION WITH FAST OUTPUT RISE TIME

Howard C. Kirsch, Colorado Springs, Colo., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 7, 1981, Ser. No. 328,375

Int. Cl.³ H03K *19/017, 19/096*

U.S. Cl. 307—475 **10 Claims**



1. A buffer circuit, comprising:

a capacitor;

means for precharging said capacitor to a first state;

input transistor means connected to receive an input signal for driving said capacitor from said first state to a second state when said input signal transistions from a first voltage level to a second voltage level;

a control node;

means for precharging said control node;

means connected to said capacitor and said control node for discharging said control node when said capacitor is driven from said first state to said second state; and

output transistor means connected to said control node for driving an output node to a third voltage level when said control node is precharged and for driving said output node to a fourth voltage level when said control node is discharged.

4,408,137

BREAK-BEFORE-MAKE SOLID STATE RELAY

David A. Fox, Shawnee Township, Lima County, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1981, Ser. No. 331,408

Int. Cl.³ H03K *3/295, 19/21, 3/42*

U.S. Cl. 307—598 **10 Claims**

1. A solid state relay comprising:

sensing means for responding to an input voltage signal by producing a logic signal of a relatively fixed magnitude;

a logic gate having a first input terminal operatively connected to receive said logic signal from said sensing means, an output, and having a second input terminal;

said second input terminal having a fixed interconnection to means for generating a first signal changing in logic state only upon a predetermined change in the waveform of said logic signal from said sensing means;

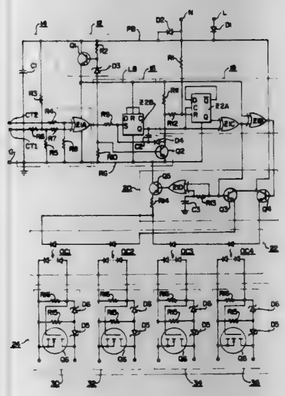
means for selectively overriding said first signal connected to said second input terminal with an externally available function terminal;

said function terminal requiring no connection for an output signal from said logic gate to provide latching type operation of the relay;

at least two light emitting diodes responsive to said logic signal, appearing at said output, for generating radiation;

at least two arrays of photodiodes each connected in series between a pair of array electrodes and operatively coupled to said light emitting diodes for developing a control voltage across said array electrodes in response to radiation from said light emitting diode;

at least two field effect transistors each including a pair of current carrying electrodes, a gate electrode and a substrate electrode, one of said array electrodes connected to said gate electrode and the other of said array electrodes connected to said substrate electrode whereby the impedance between said current carrying electrodes has one value in the absence of and a greatly different value in the presence of said control voltage between said gate electrode and said substrate electrode;



means for providing a large resistive impedance between said gate electrode and said substrate electrode of each of said field effect transistors;

a pluraltiy of output terminals, each connected to a respective one of said current carrying electrodes; and

means for momentarily turning off said light emitting diodes in response to a change in said logic signal, appearing at said output said light emitting diodes remaining in the off condition for a time period longer than the worst case difference between the turn off time and the turn on time of said field effect transistors.

4,408,138

LINEAR STEPPER MOTOR

Takachiyo Okamoto, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Mar. 20, 1981, Ser. No. 245,958

Claims priority, application Japan, Apr. 15, 1980, 55-50181

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—12 **6 Claims**

1. In a linear stepper motor including

a stator bar having teeth portion along a longitudinal axis thereof, and a pair of rail portions which are provided on both sides of said teeth portion;

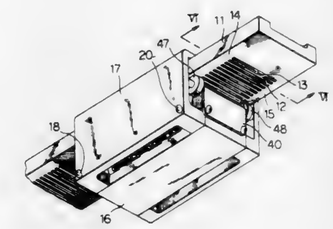
said teeth portion having a plurality of stator teeth transverse to said longitudinal axis, with a pitch proportional to a minimum distance of the motion of said motor; and

a slider movably mounted on said stator bar;

said slider including a plurality of rollers engagable with said rail portions, an armature formed with poles having surfaces cooperative with said teeth portion of said stator bar, and windings on said poles;

said pole surfaces having teeth with a pitch correlated to the pitch of said stator teeth and being opposite to said teeth portion of said stator bar with a predetermined small gap therebetween when said rollers engage with said rail portions;

the improvement wherein said teeth portion and said rail portions are formed on one surface of said stator bar, said stator bar being made of soft steel having high permeability magnetic properties, said rail portions being covered with metallic material which is substantially harder than said soft steel, and wherein said metallic material is chemically plated with a nickel compound thereby to form a nickel coating on said rail portions.



4,408,139

ASYNCHRONOUS LINEAR ELECTRIC MOTOR

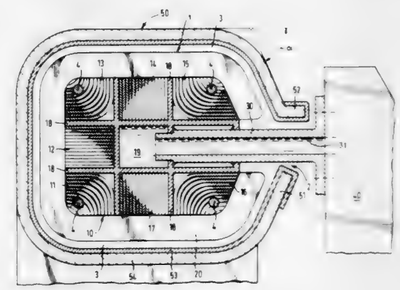
Peter Schwärzler, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,575

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1980, 3029618

Int. Cl.³ H02K *41/00*

U.S. Cl. 310—13 **6 Claims**



1. An asynchronous linear motor comprising:

a reaction rail of generally U-shaped cross section having an inner conductive layer and opening at one side of said rail while extending along a path; and

a stator receivable in said rail and defining an air gap therewith whereby a traveling magnetic field across said gap displaces said stator relative to said rail along said path, said stator comprising:

a stator core elongated in the direction of said path,

a comb-like array of outer sheet stacks surrounding said core and spaced apart therealong while lying in planes perpendicular to said path, and

respective coils surrounding said core and disposed between the outer sheet stacks of said array, said core comprising:

a multipocketed grid-shaped frame of non-magnetic material connectable to a load and supporting said

stator, said frame having pockets confronting the shanks and web of said rail, and

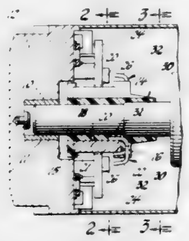
respective inner core sheet stacks received in said pockets.

4,408,140

COMMUTATOR ASSEMBLY WITH HOOK MEMBERS

Ricky D. Thompson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1981, Ser. No. 326,802
Int. Cl.³ H01R *39/16*
U.S. Cl. 310—234 **2 Claims**



1. A commutator assembly for a dynamoelectric machine having metallic brushes, said assembly comprising:

a generally cylindrical core comprising a hard molded plastic insulating material;

a plurality of commutator bars comprising a composite carbon material, said bars being affixed to said core in axial alignment and predetermined circumferential spacing for radial brush contact during operation of the machine; and

a plurality of commutator hook members, one being associated with each of said bars, each said hook member comprising an electrically conducting metal, and further comprising a substantially U-shaped portion clamping one axial end of its associated bar and a hook portion projecting away from said associated bar for electrical wire connection thereto, at least part of said hook member being trapped in said core, whereby its associated bar is prevented from migrating from its predetermined spacing and axial alignment in response to brush forces during operation of the machine.

4,408,141

DUAL CATHODE BEAM MODE FLUORESCENT LAMP

Wojciech W. Byszewski, Arlington; A. Bowman Budinger, Westford, and Joseph M. Proud, Wellesley Hills, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 4, 1982, Ser. No. 337,046
Int. Cl.³ H01J *23/16, 29/96, 7/44, 13/46, 17/34, 19/78*
U.S. Cl. 315—56 **11 Claims**

1. A dual cathode beam mode fluorescent lamp comprising:

a light transmitting envelope enclosing a fill material which emits ultraviolet radiation upon excitation;

an AC power source external to said envelope;

a phosphor coating, which emits visible light upon absorption of ultraviolet radiation, on an inner surface of said envelope;

a start circuit;

a first and a second thermionic electrode, each of said electrodes located within said envelope and each having first and second ends;

first means for connecting said first ends of each of said first and second electrodes to said power source;

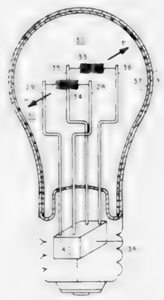
second means for connecting said second ends of each of said first and second electrodes to said start circuit;

said first and second electrodes oriented lengthwise and parallel to each other;

said first and second electrodes operated in response to a first polarity of said AC power source so that, said first electrode operates as a thermionic cathode for emitting electrons and said second electrode operates as an anode for accelerating said electrons and forming a first electron beam;

said first and second electrodes alternately operated in response to a second polarity of said AC power source so that, said second electrode operates as a thermionic cathode for emitting electrons and said first electrode operates as an anode for accelerating said electrons and forming a second electron beam in a direction generally opposite to that of said first electron beam;

said first and second electrodes further operated so that during said first polarity of said AC power source, said second electrode is heated for subsequent operation as a



cathode by said collected electrons of said first electron beam and alternately during said second polarity of said AC power source, said first electrode is heated for subsequent operation as a cathode by said collected electrons of said second electron beam;

first and second drift regions, each located within said envelope through which said first and said second electron beams drift after passing said first and said second anodes respectively, each of said drift regions having a dimension in the direction of travel of said respective electron beam which is greater than the electron range in said fill material, whereby the electrons in each of said drift regions collide with the atoms of said fill material, thereby causing excitation of first and second respective portions of said fill material atoms and emission of ultraviolet radiation and causing ionization of other portions of said fill material atoms thereby yielding secondary electrons, said secondary electrons causing emission of additional ultraviolet radiation.

4,408,142

DEVICE FOR THE CONTROL OF THE LUMINOUS FLUX FROM A MAIN BEAM BULB IN A MOTOR VEHICLE

Sven O. E. Wilje, Sagvägen 1, 791 00 Falun, Sweden

Filed May 20, 1981, Ser. No. 265,401
Int. Cl.³ B60Q *1/02*
U.S. Cl. 315—82 **8 Claims**

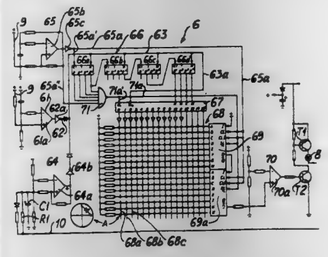
1. A circuit providing a gradual decrease in the luminous flux emitted by a main beam headlamp in a motor vehicle upon the generation of a switching signal indicating a changeover from main beam to dimmed beam, comprising:

an oscillator for generating output pulses;

a counter for counting said output pulses upon the occurrence of said switching signal;

means responsive to said counter for producing a headlamp control signal that varies over time to represent a gradual

decrease in luminous flux according to a predetermined pattern; and



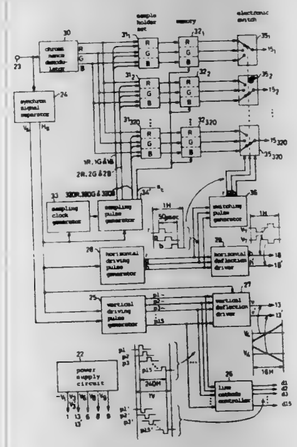
an exciter responsive to said headlamp control signal for reducing the current in the main beam headlamp in accordance with said pattern.

4,408,143

COLOR IMAGE DISPLAY APPARATUS

Shizuo Inohara, Toyonaka; Mitsuya Masuda, Kyoto; Sadahiro Iyehara, Suita; Minoru Ueda, Takatsuki, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 10, 1982, Ser. No. 387,144
Claims priority, application Japan, Jun. 18, 1981, 56-94994
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **3 Claims**



1. An image display apparaus comprising:

a phosphor screen having a phosphor layer for emitting light at impingement by electron beam, said phosphor screen having a predetermined number of segments formed by dividing in vertical direction, and also having another predetermined number of subsegment formed by dividing in horizontal direction, each subsegment having three primary color phosphor regions disposed in horizontal direction,

an electron beam source for in-turn emitting a predetermined number of horizontal rows of electron beams, for producing one horizontal line of image on said phosphor screen,

a vertical deflection means for vertical deflections of said electron beams of said horizontal rows in a manner that electron beams of a horizontal row impinging said phosphor screen at one of said vertically divided segment corresponding to one of said horizontal row is simultaneously driven vertically, thereby vertically moving one of said horizontal line in said vertically divided segment,

a horizontal deflection means for horizontal deflections of said electron beams of said horizontal rows thereby sequentially to impinge selected color phosphors to display a selected color images sequentially in said segment,

a control means for controlling intensities of said electron beams responding to control electric signals applied thereto, and

a flat shaped vacuum enclosure containing the above-mentioned components therein, one end face thereof forming a screen face in which the color phosphor screen is provided,

characterized by further comprising

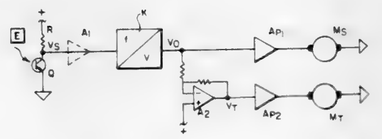
a control signal producing means for producing said control signals by decoding color picture signals thereby producing primary color signals, and sampling said primary color signal by a set of three sampling pulses for three primary colors of light, which three sampling pulses are issued in a time sequence in the color order corresponding to that of displaying, and within a time period corresponding to electron beam scanning for one horizontal picture element, and sampled chrominance signals are applied in said time sequence to said control means.

4,408,144

TAPE TENSION CONTROL FOR A TAPE TRANSDUCER

Henry J. Lukes, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jan. 28, 1982, Ser. No. 343,562
Int. Cl.³ B65H *59/38*
U.S. Cl. 318—7 **6 Claims**



1. A torque control circuit for controlling the currents of both take-up and supply reel motors of a three-motor tape recorder/reproducer, in which

the take-up reel motor is equipped with a motion encoder which delivers an AC signal with frequency proportional to the motor speed,

in which this signal, after amplification, is fed to the input of a frequency-to-voltage converter whose output voltage drives, via a first power amplifier, the supply reel motor,

said signal being inverted and amplified in an additional inverting amplifier whose output voltage drives, via a second power amplifier, the take-up reel motor.

4,408,145

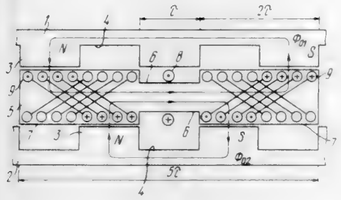
LINEAR ELECTRIC MOTOR

Vladimir I. Artemenko; Viktor T. Belikov; Anatoly D. Ivlev, and Viktor A. Mamzelev, all of Odessa, U.S.S.R., assignors to Odessky Politekhnichesky Institut, Odessa, U.S.S.R.

PCT No. PCT/SU80/00167, § 371 Date May 20, 1982, § 102(e) Date May 20, 1982, PCT Pub. No. WO82/01284, PCT Pub. Date Apr. 15, 1982
PCT Filed Sep. 29, 1980, Ser. No. 385,373
Int. Cl.³ H02K *41/00*
U.S. Cl. 318—135 **1 Claim**

1. A linear electric motor comprising a stator whose magnetic core is formed by two equidistant strips made of a ferromagnetic material and provided with uniformly alternating projections and recesses, the projections of one strip, being turned to the projections of the other strip a movable core having regions with high and low magnetic permeability and

disposed between said strips, an armature winding provided with two coil groups having equal number of sections in each group, the electrical connection between said groups being accomplished by means of a commutation device, and an excitation system, characterized in that the projections /3/ and the recesses /4/ of each of the strips /1/, /2/ of the magnetic core of the stator have a length equal to the pole pitch of the motor and are so dispoed that the projections /3/ of one strip /1/ are shfted along the movable core /5/ relative to the projections /3/ of the other strip by the magnitude of the pole pitch of the motor, the movable core /5/ has a middle portion /6/ whose length is equal to the pole pitch of the motor and two extreme



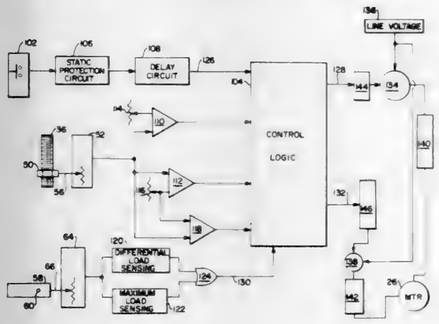
portions whose length is a multiple of two pole pitches of the motor, the excitation system is an excitation winding /8/ laid on the middle portion /6/ of the movable core, the armature winding /9/ is laid within grooves on the extreme portions of said core in symmetrical relationship with respect to the excitation winding /8/ and is connected to the commutation device /10/ so that the ends of the sections of the first coil group and the beginnings of the sections of the second coil group are connected to the commutation device /10/ via semiconductor devices having elements connected with the opposite polarity, and the last section of the first coil group and the first section of the second coil group are electrically connected in the commutation device /10/.

4,408,146

AUTOMATIC DOOR OPERATOR

Howard L. Beckerman, Middletown, N.J., assignor to Automatic Doorman, Inc., Paterson, N.J.

Filed Jan. 30, 1981, Ser. No. 229,793
Int. Cl.³ H02P *1/22*
U.S. Cl. 318—264 **19 Claims**



1. An operator for moving a door between first and second positions including a selectively energizable reversible electric motor, drive means for coupling said motor to said door, means for providing a contact closure signal, and control means responsive to the occurrence of a contact closure signal when said door is in one of said first and second positions for energizing said motor to move said door toward the other of said first and second positions, wherein the improvement comprises:

means coupled to said drive means for generating a force signal having a magnitude directly corresponding to the instantaneous magnitude of the force opposing movement of said door;

differentiation means for measuring the magnitude of the instantaneous rate of change of said force signal with respect to time and providing an obstruction signal related thereto; and

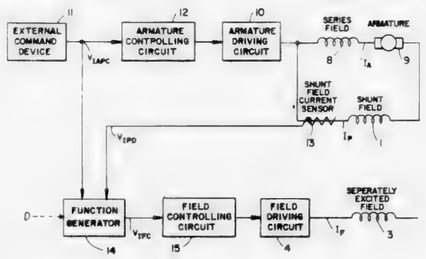
safety means responsive to said obstruction signal exceeding a predetermined threshold value for causing said control means to deenergize said motor.

4,408,147

METHOD AND APPARATUS FOR HIGH EFFICIENCY OPERATION OF ELECTROMECHANICAL ENERGY CONVERSION DEVICES

Jonathan Gabel, 5800 Ocean View Dr., Oakland, Calif. 94618

Continuation-in-part of Ser. No. 143,044, Mar. 19, 1981. This application Mar. 16, 1982, Ser. No. 358,697
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—493 **21 Claims**



1. A method for minimizing, by use of a predetermined optimizing function, the loss of power in a separately excited electromechanical energy conversion device and in a controller of said energy conversion device, said energy conversion device having n spatially fixed windings, $n \geqq 1$, for producing a first magnetic field, and having m movable windings, $m \geqq 1$, for producing a second magnetic field which opposes said first magnetic field produced by said n spatially fixed windings, such that said first magnetic field produced by said n spatially fixed windings can be varied, at least in part, independently of said second magnetic field produced by said m movable windings, said method comprising:

the step of first generating a command signal having a magnitude A;

the step of generating currents $I_1(A), I_2(A), \ldots, I_n(A)$ in said n spatially fixed windings, respectively;

and the step of generating currents $I_{n+1}(A), I_{n+2}(A), \ldots, I_{n+m}(A)$ in said m movable windings, respectively;

wherein said currents $I_1(A), I_2(A), \ldots, I_n(A), I_{n+1}(A), I_{n+2}(A), \ldots, I_{n+m}(A)$ are selected in such a manner that their magnitudes as a function of said command signal having a magnitude A satisfy said predetermined optimizing function;

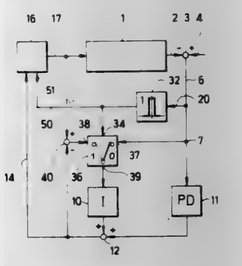
and wherein said predetermined optimizing function takes into account the incremental changes in said first and second magnetic fields caused by each of said n+m currents in each of said n+m windings.

4,408,148

CONTROLLER FOR A LOCKABLE SERVO MOTOR

Rudolf Herzog, Tobel, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 16, 1981, Ser. No. 321,613
Claims priority, application Switzerland, Dec. 5, 1980, 9006/80
Int. Cl.³ G05B *11/42*
U.S. Cl. 318—610 **4 Claims**



1. A controller for a blockable servomotor comprising

comparing means for comparing an actual value and a set value to generate a difference signal in response to a difference therebetween;

a proportional network connected to said means to receive said difference signal and to generate a proportional action signal in response thereto;

an integral network connected to said means in parallel with said proportional network to receive said difference signal and to generate an integral action signal in response thereto;

a summating member connected to said networks to receive and add said proportional action signal and said integral action signal to generate an input signal for the servomotor;

a subtraction member connected to said summating member to receive said input signal for subtraction from an output signal of the servomotor to generate a deviation signal;

a selector having one input connected to said means to receive said difference signal, a second input connected to said subtraction member to receive said deviation signal, and an output connected to said first input and said integral network to deliver said difference signal thereto; and

a comparator connected to said means to receive said difference signal, said comparator having an output connected to said selector and a blocking input of the servomotor whereby in response to said difference signal falling within a preset range of values, said comparator switches said selector output to said second selector input to deliver said deviation signal to said integral network and delivers a blocking signal to a blocking input of the servomotor.

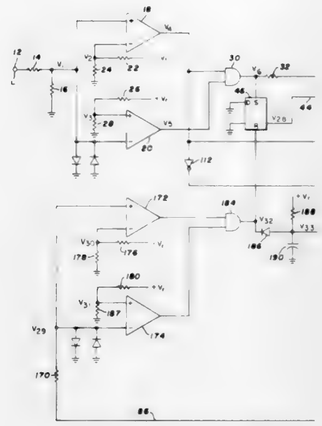
4,408,149

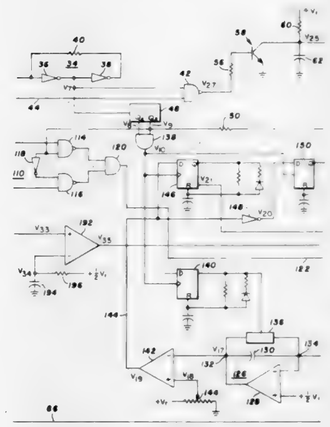
SELF-OPTIMIZING VOLTAGE CONTROL OF AN INDUCTION MOTOR

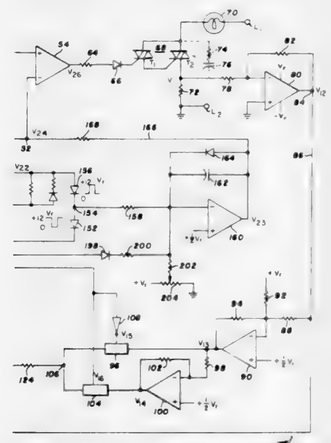
Thomas W. Collins, and Charles L. Croskey, both of State College, Pa., assignors to Optimizer Control Corporation, Burnsville, Minn.

Filed Sep. 8, 1981, Ser. No. 300,391
Int. Cl.³ H02P *1/44*
U.S. Cl. 318—729 **10 Claims**

1. In combination with an electric motor of the type having a triggerable electronic switching means connected in series with said motor and across a source of alternating current voltage, means for adaptively adjusting the firing angle of said electronic switching means relative to the zero-crossing of said alternating current voltage upon changes in loading on said motor to optimize the efficiency of said motor, comprising:







(a) first timing means for repetitively establishing a timing interval which is relatively long compared to the period of said alternating current voltage;

(b) second timing means adapted to be coupled to said trig-

gerable electronic switching means for setting said firing angle at an initial value at the beginning of each of said timing intervals;

(c) firing angle dithering means coupled to said triggerable electronic switching means and to said first timing means for perturbating said firing angle about said initial value;

(d) sampling means coupled to said motor for repetitively sampling the instantaneous power delivered to said motor at a rate which is high compared to the rate at which said firing angle is perturbated by said firing angle dithering means; and

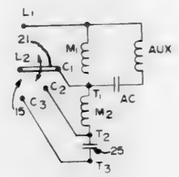
(e) means coupled between said sampling means and said second timing means for producing a signal for advancing or retarding said firing angle from said initial value depending upon the output from said sampling means.

4,408,150

SPEED CONTROL SYSTEM AND METHOD FOR ELECTRIC MOTOR

Roger W. Holston, and Carl P. Hinesley, both of St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 151,679, May 20, 1980, abandoned.
This application Dec. 21, 1981, Ser. No. 332,879
Int. Cl.[3] H02P 5/28
U.S. Cl. 318—779 **15 Claims**



1. In an electric motor having at least one main winding, a multi-position speed selector switch for energization of the main winding of operation of the motor at high speed and one or more slower speeds, said motor being adapted to be connected to a source of line voltage, wherein the improvement comprises: capacitor means connected in series with one of said at least one main windings and being energizable by said speed selector switch when said one main winding is energized thereby to result in operation of said motor at a speed slower than when said one main winding is energized, said one main winding being energized by said line voltage when said motor is operated at high speed and being energized by a voltage less than said line voltage upon energization of said at least one main winding and said capacitor means when the motor is operated at said slower speed.

4,408,151

ELECTRIC POWER APPARATUS

Donald S. Justice, 1816 N. Queens La., Arlington, Va. 22201

Filed Oct. 14, 1977, Ser. No. 842,235
Int. Cl.[2] H01M 10/46
U.S. Cl. 320—2 **1 Claim**

1. Electric power apparatus comprising the combination of a coiled tubular battery, an automatic switch, an electromagnet having a coil and a permeable core, and a secondary coil in common with the core, wherein the battery output is connected through the automatic switch to the electromagnet and



wherein the components are nested around the core whereby the unit ratio of the output to space is augmented.

4,408,152

SINGLE PHASE, SELF-REGULATED ALTERNATOR

Andrew F. Szippl, and Robert B. Walker, both of Lima, Ohio, assignors to The Lima Electric Co., Inc., Lima, Ohio

Filed Jun. 22, 1981, Ser. No. 275,968
Int. Cl.[3] H02P 9/10; H02K 19/3
U.S. Cl. 322—29 **37 Claims**



1. A generator for producing a higher or lower voltage output comprising an alternator stator, an exciter stator, said exciter stator including two series windings, and means to energize both series windings every other half cycle at the lower voltage output and alternate series windings during every half cycle at the higher voltage output.

4,408,153

CURRENT SUPPLEMENTATION CIRCUIT FOR POWER SUPPLY

Michael B. Terry, Denton, Tex., assignor to Mostek Corporation, Carrollton, Tex.

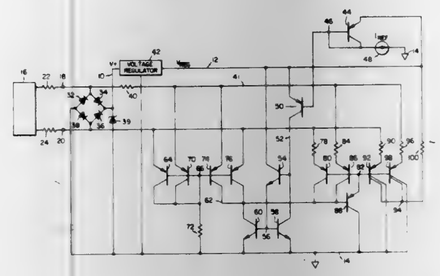
Filed Dec. 28, 1981, Ser. No. 335,147
Int. Cl.[3] G05F 3/20
U.S. Cl. 323—224 **5 Claims**

1. A current supplementation circuit for operation in a system that receives a nonregulated voltage between first and second terminals and produces an essentially regulated voltage at a third terminal, the circuit comprising:

means for producing a reference current flowing from said third terminal to said second terminal, and

means responsive to said reference current for drawing an essentially constant current from said first terminal, said constant current split into first and second partial currents, said first partial current routed to said second terminal and said second partial current routed to said third terminal,

said means for drawing an essentially constant current establishing the amplitude of said second partial current



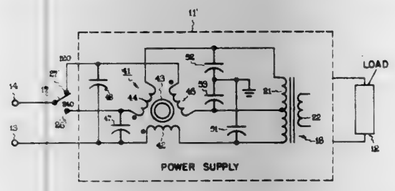
inversely to the amplitude of the voltage of said third terminal.

4,408,154

DUAL VOLTAGE POWER SUPPLY WITH INPUT FILTER

Paul T. Cote, Cleveland Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,833
Int. Cl.[3] H02M 1/12
U.S. Cl. 323—340 **5 Claims**



1. A filtered dual voltage power supply for receiving power from a single phase alternating current line having two terminals, comprising a three terminal input voltage means comprising a common input terminal and input terminals for two differing voltages, in which the improvement comprises a voltage selector means connected to a first one of said line terminals and having two output terminals, and an input filter having three windings on a common core, a first one of said windings being connected between said common terminal and the second one of said line terminals, and the second and third of said windings being respectively connected between said input terminals for differing voltages and said output terminals of the voltage selector means, said connection of the voltage selector means to the line terminal thereby preceding connection of the input filter thereto.

4,408,155

FAULT DETECTOR WITH IMPROVED RESPONSE TIME FOR ELECTRICAL TRANSMISSION SYSTEM

Joseph R. McBride, Mauldin, S.C., assignor to Bridges Electric, Inc., Heber Springs, Ark.

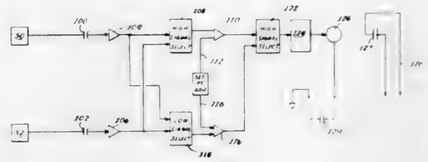
Filed Mar. 2, 1981, Ser. No. 239,344
Int. Cl.[3] G01R 31/02, 19/00, 29/16
U.S. Cl. 324—51 **15 Claims**

1. In a fault detector for an electrical transmission system having a conductor through which an alternating current flows and a sensor for monitoring the current flowing through said conductor, said sensor having an A.C. output signal proportional to the current and having positive and negative half cycles, an improved means for detecting a fault within one quarter of a fault current cycle, comprising:

a high signal selecting means for selecting the positive half cycle of said sensor signal;

means for comparing the signal selected by said high signal selector to a first reference signal;

a low signal selecting means for selecting the negative half cycle of said sensor signal;



means for comparing the signal selected by said low signal selector to a second reference signal; and

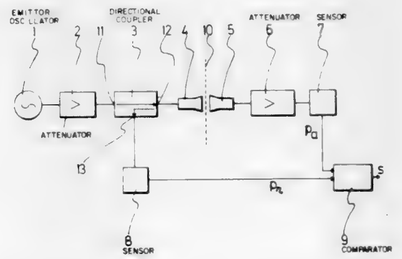
means for providing a fault indication signal if the signal selected by said high signal selector exceeds said first reference signal or if the signal selected by said low signal selector is less than said second reference signal.

4,408,156

SHEET ARTICLES OF NON-CONDUCTIVE MATERIAL MARKED FOR IDENTIFICATION PURPOSES, AND METHOD AND APPARATUS FOR IDENTIFYING SUCH ARTICLES

Pierre Veys, Wexford, Pa., assignor to N. V. Bekaert S.A., Zweuegem, Belgium

Filed Apr. 9, 1980, Ser. No. 138,738
Claims priority, application United Kingdom, May 5, 1979, 7915193
Int. Cl.[3] G01R 27/04
U.S. Cl. 324—58.5 R **11 Claims**



1. A method of producing an identification signal for a sheet article of non-conductive material, which article is marked for identification purposes by the incorporation therein of a small quantity of very thin conductive fibers which are capable of absorbing and reflecting certain substantial proportions of microwave radiation energy impinging thereon, which comprises placing the part of said article in which the very thin conductive fibers are incorporated in the path of an unguided microwave beam, measuring the excess of microwave radiation energy arrested over the energy reflected and producing an output signal which is representative of the presence of such excess.

4,408,157

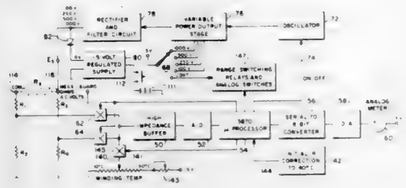
RESISTANCE MEASURING ARRANGEMENT

William H. Beaubien, Mundelein, Ill., assignor to Associated Research, Inc., Skokie, Ill.

Filed May 4, 1981, Ser. No. 260,303
Int. Cl.[3] G01R 27/02
U.S. Cl. 324—62 **39 Claims**

1. The method of measuring the resistance of an unknown

resistor which comprises the steps of measuring the voltage VR across a known resistor when said known resistor is connected to a source of voltage, measuring the voltage V'R across said known resistor when said known resistor is connected in series with an unknown resistor to said source of voltage, computing the quantity (VR/V'R)−1, and developing an output signal proportional to said computed quantity which corresponds to the resistance value of said unknown resistor.



4,408,158

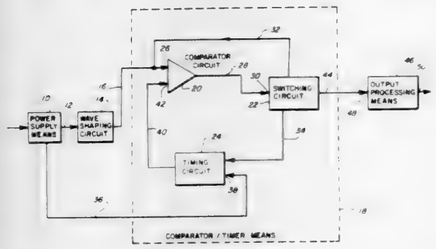
FREQUENCY TRANSDUCER

Roy S. Brozovich, Oldsmar, and Prentice G. Moore, Clearwater, both of Fla., assignors to Square D Company, Palatine, Ill.

Filed Oct. 5, 1981, Ser. No. 308,767

Int. Cl.³ G01R *23/02*

U.S. Cl. 324—78 R **7 Claims**



1. A transducer for monitoring frequency in a power line comprising:

a. power supply means for supplying operating and reference voltages to various components of the transducer and for producing a power representative signal and a constant voltage signal, said power supply means being connected to said power line and receiving input therefrom, and said power representative signal having a frequency which is a multiple of the frequency of the input from the power line;

b. wave shaping means for producing a triggering output signal equal in frequency to the frequency of said power representative signal, said wave shaping means being connected to said power supply means and receiving said power representative signal as input;

c. comparator/timer means for producing a frequency representative signal, said comparator/timer means further comprising:

(1) switching means for switching between two of said reference voltages in response to a frequency representative signal to produce a stabilized frequency representative signal, and for providing on-off status control of a timing means, said switching means receiving said frequency representative signal as an input, and producing said stabilized frequency representative signal as an output;

(2) timing means for providing a reference signal, said timing means' on-off status being controlled by said switching means, said timing means being connected to said switching means and to said power supply means, and receiving said constant voltage signal from said power supply means; and,

(3) comparator means for comparing said triggering output signal and said stabilized frequency representative signal at a first input with said reference signal at a second input for producing said frequency representative signal, said comparator means being connected to said wave shaping means and receiving said triggering output signal as an input therefrom, connected to said switching means, and receiving said stabilized frequency representative signal as a feedback input therefrom, connected to said timing means and receiving said reference signal as an input therefrom, and connected to said switching means, and providing said frequency representative signal as an output thereto; and,

d. output processing means for producing an averaged frequency representative signal which is proportional to the frequency of the input from the power line, said output processing means being connected to said switching means of said comparator/timer means and receiving the stabilized frequency representative signal as input.

4,408,159

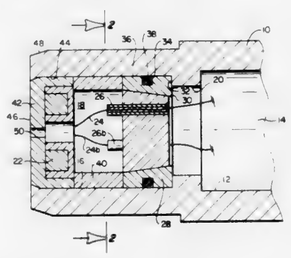
PROXIMITY SENSING HEAD

Rolf Prox, Mettmann, Fed. Rep. of Germany, assignor to Abex Corporation, New York, N.Y.

Filed Apr. 2, 1981, Ser. No. 250,516

Int. Cl.³ G01V *3/11*

U.S. Cl. 324—207 **2 Claims**



1. An inductive proximity sensor which comprises a sensor housing, a first cavity formed in one end of the housing, a second cavity formed in the housing adjacent the first cavity, a plurality of components forming an oscillator control circuit positioned in the second cavity, a sensing head positioned in the first cavity, the sensing head including an oscillator coil assembly and a cover which closes the first cavity, a seal assembly positioned between the oscillator coil assembly and the second cavity, a fluid passage between the outside of the housing and the first cavity to permit fluid to flow into the first cavity and around the coil assembly to thereby pressure balance the coil assembly, and wherein the seal assembly prevents the passage of fluid from the first cavity into the second cavity.

4,408,160

ACOUSTIC BARKHAUSEN STRESS DETECTOR APPARATUS AND METHOD

James D. King; Gary L. Burkhardt; John R. Barton, and George A. Matzkanin, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Apr. 8, 1981, Ser. No. 252,246

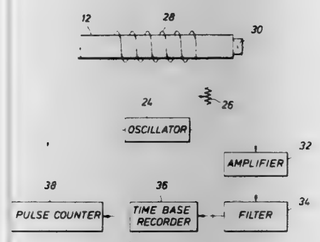
Int. Cl.³ G01B *7/24*; G01N *27/72*; G01R *33/12*

U.S. Cl. 324—209 **28 Claims**

18. Apparatus for measuring stress in a ferromagnetic specimen comprising:

(a) magnetic field forming means forming a field characterized by a minimum and a maximum flux value and which means is adapted to form flux in a specimen fully thereacross;

(b) acoustic vibration sensor means operatively coupled to the specimen to detect acoustic vibrations of a specified pulse width size on change of flux value and such acoustic vibrations are received fully thereacross;



(c) amplifier means connected to said acoustic vibration sensor means for amplifying individual pulses representative of the acoustic vibrations; and

(d) an indicating means connected to said amplifier means for measuring stress within the material, as a function of said amplified pulses.

4,408,161

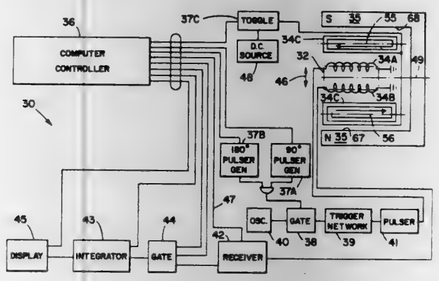
COMPUTER-CONTROLLED, PORTABLE SPIN ECHO NMR INSTRUMENT AND METHOD OF USE

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 15, 1981, Ser. No. 255,976

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—303 **17 Claims**



1. Automatic apparatus for determining permeability properties of a carbonate sample based on spin echo diffusion response of hydrogen nuclei of interstitial fluids within pore spaces of said samples comprising:

(a) magnet means for producing a DC magnetic field acting on said carbonate sample, said magnetic field having an intensity of at least 1 kilogauss and an inhomogeneity of at least D gauss to aid providing nuclear magnetization build-ups associated with said interstitial fluids within said sample as a function of time;

(b) RF coil means acting at right angles to said DC magnetic field;

(c) transmitter means including digital control means for generating first and second series of digital control codes associated with 90° and 180° RF magnetic pulses of selected frequency, amplitude and duration, connected to said RF coil means to produce a series of pairs of 90° and 180° RF magnetic pulses for interrogating said sample to obtain spin echo diffusional responses of said fluid within said sample, said amplitude of each pulse being controlled to be at least greater than the variation D in said DC field over said sample;

(d) gradient DC coil means connected to generating a series of gradient DC fields across said sample as a function of a third series of control pulses; and

(e) receiver means connected to said digital control means and to said RF coil means for detecting as a function of a fourth series of digital control code associated with a plurality of time windows, output signals proportional to said spin echo diffusional responses of said interstitial fluids whereby said responses can be meaningfully related to permeability of said sample.

4,408,162

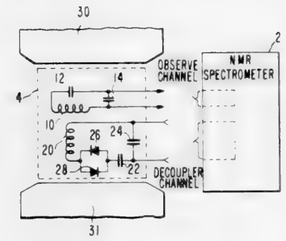
SENSITIVITY NMR PROBE

Herman Egger, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Dec. 22, 1980, Ser. No. 219,287

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—318 **3 Claims**



1. An NMR spectrometer comprising:

a probe;

a receive channel further comprising a receive coil within said probe;

a decoupler channel further comprising a decoupler coil within said probe and disposed in proximity to said receive coil, said decoupler connected in series with a pair of RF diodes, said diodes connected cathode-to-anode, whereby said decoupler circuit is an open circuit for sufficiently small signals coupled in said decoupler circuit from said receive coil.

4,408,163

METHOD AND APPARATUS FOR DETERMINING BEAM DIMENSIONS AT THE SCREEN OF A SHADOW MASK CATHODE-RAY TUBE

Peter Burr, Winchester, all of; Brian D. Chase; Andrew Paton, both of Eastleigh, and Brian R. Sowter, Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 2, 1980, Ser. No. 212,284

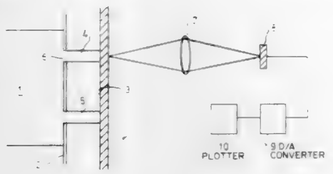
Claims priority, application United Kingdom, Dec. 7, 1979, 7942391

Int. Cl.³ G01R *31/024*

U.S. Cl. 324—404 **8 Claims**

1. A method of determining the beam cross-sectional dimensions and light output at the screen of a shadow mask cathode-ray tube, comprising the steps of arranging a detector to detect light emitted due to a portion of the beam passing through a

single aperture in the shadow mask, deflecting the beam incrementally so that the whole cross-sectional area of the beam is

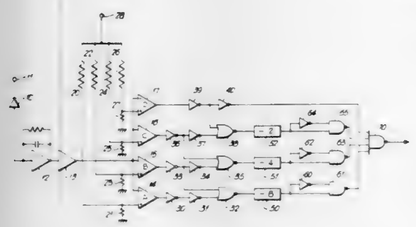


scanned across the said aperture, and recording the light output received by the detector while said beam is stationary.

4,408,164
COMPENSATION CIRCUIT FOR RADIATION DETECTORS

Phillip C. East, Nepean, and Malcolm S. McGowan, Ottawa, both of Canada, assignors to Her Majesty the Queen in right of Canada, Ottawa, Canada

Filed Sep. 1, 1981, Ser. No. 298,373
Claims priority, application Canada, Sep. 18, 1980, 380687
Int. Cl.³ H03K *5/24, 13/09*
U.S. Cl. 328—117 **4 Claims**



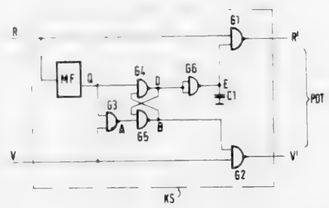
1. A signal processing circuit for use with a proportional radiation detector comprising: circuit means defining a plurality of different channels; logic means coupled to pulses from said detector to direct said pulse to one of said channels according to the amplitude of said pulse so that each channel receives a different range of pulse amplitudes; pulse-dividing means in each channel except the channel receiving pulses in the highest range, each said pulse-dividing means reducing the number of pulses at the respective channel output by a factor which is a function of the average amplitude of the pulses received by that channel; summing means connected to the output of each channel to provide an output pulse train whereby the count rate of the output pulse train is indicative of the dose rate of radiation incident on the detector.

4,408,165
DIGITAL PHASE DETECTOR

Reinhold Braun, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 321,831
Int. Cl.³ H03D *13/00;* **H03K** *5/26*
U.S. Cl. 328—134 **7 Claims**

1. In a digital phase detector having two inputs and two outputs for a phase-locked-loop (PLL) system with a reference signal and a comparison signal, in which the reference signal is capable of being applied to the first input and in which the comparison signal is capable of being applied to the second input, and in which the first output delivers a first output signal whenever the reference signal, in its phase, leads the comparison signal, and the second output delivers a second output signal whenever the reference signal, in its phase, lags behind the comparison signal, with the pulse widths of these output signals each being in proportion to the value of the phase shift between the reference signal and the comparison signal, the improvement comprising that the inputs of said phase detector (PDT) are preceded by a correction circuit (KS) having two inputs and two outputs, with the outputs of said correction circuit (KS) being connected to the inputs of said phase detector (PDT), with both said reference signal (R) and said comparison signal (V) capable of being applied to the inputs of said

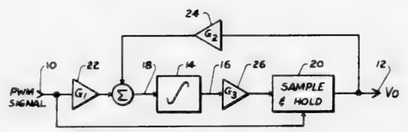


correction circuit (KS), and that said correction circuit (KS), following an interruption of said reference signal (R), includes means for switching its inputs to its outputs such that the trailing edges of both said reference signal (R) and said comparison signal (V) are switched through simultaneously, or that the trailing edge of said reference signal (R) is switched through subsequently to the trailing edge of said comparison signal (V).

4,408,166
PULSE WIDTH MODULATION DECODER

Roy P. Moeller, Hayward, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Continuation of Ser. No. 220,869, Dec. 29, 1980, abandoned.
This application Jun. 14, 1982, Ser. No. 388,315
Int. Cl.³ H03K *9/08*
U.S. Cl. 329—106 **8 Claims**



1. Apparatus for decoding a pulse width modulated (PWM) signal which alternates between first and second values comprising:

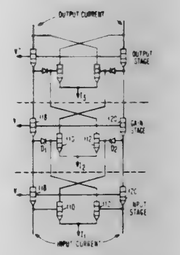
an integrator circuit, responsive to the PWM signal and a decoder output signal, for producing an integrator output signal whose value equals the sum of a first value proportional to the time integral of the PWM signal and a second value proportional to the time integral of the decoder output signal; and

a sample-and-hold circuit, responsive to the PWM signal and the integrator output signal, for producing the decoder output signal proportional to the value of the integrator output signal at the time of the most recent transition of the PWM signal from its second value to its first value.

4,408,167
CURRENT AMPLIFIER STAGE WITH DIODE INTERSTAGE CONNECTION

Dennis L. Rogers, Croton on Hudson, and Albert X. Widmer, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1981, Ser. No. 250,775
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—261 **4 Claims**



1. A multi-stage current mode differential amplifier having an input stage and a plurality of cascaded stages, characterized by each cascaded stage, comprising:

a pair of input transistors;

a pair of control transistors;

four input lines;

four output lines adapted to be connected to the input lines of the succeeding stage; and

first and second diode devices;

said four output lines extending respectively from the collectors of said four transistors;

two of said input lines being connected respectively to the emitters of said input transistors;

the other two of said input lines being connected respectively to the bases of said control transistors;

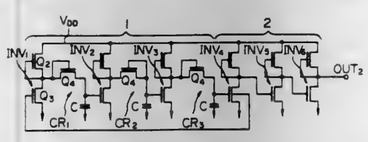
the emitter of each said control transistor being connected to a common current source and the base of each said input transistor being connected to a common bias voltage source;

each said diode device being connected between the base of one of said control transistors and the emitter of one of said input transistors, whereby the load impedance at each said control transistor in one stage is effectively increased by the diode device in the succeeding stage without requiring a corresponding increase in bias voltage for said succeeding stage relative to the bias voltage for said preceding stage.

4,408,168
DELAY CIRCUIT OSCILLATOR HAVING UNEQUAL ON AND OFF TIMES

Mitsuo Higuchi, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 26, 1980, Ser. No. 210,676
Claims priority, application Japan, Nov. 29, 1979, 54-154579
Int. Cl.³ H03K *3/03, 3/354*
U.S. Cl. 331—57 **6 Claims**



1. An oscillator circuit for providing an oscillating output having a duty ratio significantly different from 50%, comprising

a delay circuit, the output of said delay circuit being provided to the input of said delay circuit as positive feedback,

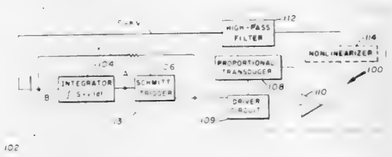
said delay circuit including a plurality of successively connected delay stages, wherein a signal corresponding to the output of each said delay stage is provided to the input of the successive delay stage, and a signal corresponding to the output of the last one of said delay stages is provided as said positive feedback to the input of the first one of said delay stages,

each said delay stage comprising a series connection of an inverter and a time constant circuit, each said time constant circuit comprising a resistance provided by a first depletion type MOS transistor and a capacitor connected in series, each said first depletion type MOS transistor being connected so that a difference in the delay time is provided within each said delay stage depending upon whether the portion of a signal being delayed is a rising or falling waveform, the respective connection of each said first depletion type MOS transistor of each said delay stage being such that all the differences in all the stages are added to provide said duty ratio significantly different from 50%.

4,408,169
FREQUENCY ENCODING CLOSED LOOP CIRCUIT WITH TRANSDUCER

Allan B. Fraser, Woodbine, Md., assignor to The John Hopkins University, Baltimore, Md.

Filed May 18, 1981, Ser. No. 264,952
Int. Cl.³ G01N *27/00*
U.S. Cl. 331—65 **20 Claims**



1. A method for producing an output frequency which is a function of the amplitude of a varying physical quantity acting on a transducer having an output impedance, the method comprising the steps of:

generating, in a relaxation oscillator with an input impedance, a digital drive signal at the output frequency;

driving the transducer with a function of the digital drive signal and producing an amplitude modulated bilevel signal in-phase with the drive signal and having an amplitude which is a function of the amplitude of the physical quantity sensed by the transducer;

isolating the output impedance of the driven transducer from the input impedance of the relaxation oscillator;

combining the drive signal and the amplitude modulated bilevel signal, thereby providing a composite signal; and

feeding the composite signal back as the input to the relaxation oscillator.

4,408,170

COMPONENT WITH TRIMMABLE ELECTRIC IMPEDANCE

Juha Rapeli, Kuikkatie 4 E 6, 90150 Oulu 15, and Seppo Leppävuori, Hiukkavaarantie 1 A 9, 90650 Oulu 65, both of Finland

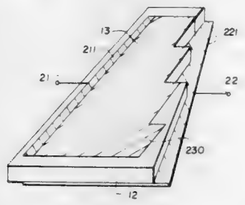
PCT No. PCT/FI81/00017, § 371 Date Oct. 23, 1981, § 102(e) Date Oct. 23, 1981, PCT Pub. No. WO81/02652, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 11, 1981, Ser. No. 315,533

Claims priority, application Finland, Mar. 11, 1980, 800740

Int. Cl.³ H03H *1/02, 3/00*

U.S. Cl. 333—172 **10 Claims**



1. An electric component with trimmable complex resistive-capacitive impedance comprising:

a first resistor layer forming a ground plane;

an insulation layer connected over said ground plane; and

a second resistor layer connected connected over said insulation layer and divided into a plurality of resistor layer portions that are selectively connected and disconnected from each other to produce a selected resistive-capacitive impedance, the second resistor layer having a drive point conductor connected along one edge thereof and having an opposite edge which is step shaped to produce said resistor layer portions which have varied lengths and widths according to said step shaped edge.

4,408,171

NOISE FILTER WITH SOCKET ATTACHED THERETO

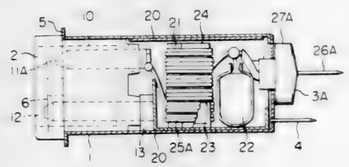
Tadaharu Akino, Kashiwa; Akira Nakamura, Funabashi, and Hiroyuki Uemura, Narashino, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 13, 1981, Ser. No. 243,607

Claims priority, application Japan, Mar. 13, 1980, 55-31879[U]

Int. Cl.³ H03H *7/01, 7/09*

U.S. Cl. 333—177 **5 Claims**



1. A noise filter comprising;

a casing made of metallic material;

a power input socket having a pair of power input contacts and a grounding contact that is mounted on one of the walls of said casing and is electrically coupled to said casing;

a pair of feed through type capacitors, each including a ground conductor mounted on another wall of said casing and a center rod that extends outwardly to serve as a power output contact;

a choke coil with a pair of windings mounted in said casing;

a capacitor mounted in said casing and electrically coupling together said center rods of said feed through capacitors;

each of said power input contacts being electrically coupled to a center rod of said feed through type capacitor by an individual one of said windings.

4,408,172

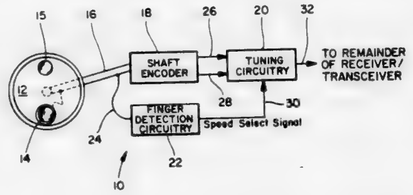
VARIABLE SPEED TUNING SELECTOR

Terry A. Perdue, St. Joseph, Mich., assignor to Heath Company, St. Joseph, Mich.

Filed Oct. 8, 1981, Ser. No. 309,666

Int. Cl.³ H03J *1/14, 1/22, 3/02*

U.S. Cl. 334—11 **8 Claims**



1. A system for controlling the rate of change in frequency of a variable speed tuner in tuning to a selected frequency, said system comprising:

user selectable rotary control means;

detector means coupled to said tuner and to said rotary control means and responsive to the rotation thereof for providing a plurality of pulses to said tuner representing a first tuning rate; and

touch sensitive means including conductive finger receptacle means integral with said rotary control means and coupled to said tuner for providing a control signal to said tuner when touched by a user for changing the tuning speed of said tuner to a second tuning rate in response thereto.

4,408,173

ELECTRIC SWITCH

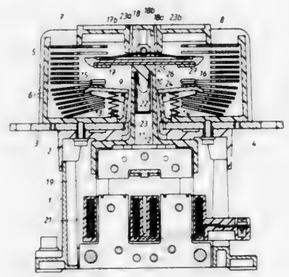
Bo Adlerteg, and Lennart Grees, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Oct. 28, 1981, Ser. No. 315,901

Claims priority, application Sweden, Oct. 30, 1980, 8007633

Int. Cl.³ H01H *73/00, 77/00*

U.S. Cl. 335—16 **9 Claims**



1. An electromagnetically operable electric switch having a predetermined current rating comprising:

at least one breaking unit comprising:

a first openable contact system; and

a second openable contact system electrically series connected to said first openable contact system;

said first openable contact system comprising:

a movable first contact;

a fixed second contact; and

electromagnetic means controlling engagement of said first contact with said second contact;

said second openable contact system comprising:

a movable third contact normally engaged with said fixed second contact and disengageable from said fixed second contact exclusively in response to electrodynamic forces created by the passage of a current through said switch greater than ten times said predetermined current rating and comprising a second material having properties suitable for interrupting short circuit currents;

said fixed second contact being disposed intermediate said first and third contacts and comprising:

a first contact element forming a part of said first contact system and comprising a first material suitable for making and breaking currents occurring during normal operation of said switch; and

a second contact element forming a part of said second contact system and electrically connected to said first contact element and comprising said second material different from said first material.

4,408,174

ACCESSORY MOUNTING MODULE FOR J AND K FRAME BREAKERS

Raymond K. Seymour, and Dennis J. Doughty, both of Plainville, Conn., assignors to General Electric Co., New York, N.Y.

Filed Dec. 14, 1981, Ser. No. 330,109

Int. Cl.³ H01H *83/00*

U.S. Cl. 335—20 **19 Claims**

1. An accessory mounting module for circuit breakers comprising:

a base having a pair of upright posts for carrying an electrical accessory device and including means at one end for receiving a locating pin on a circuit breaker and means at an opposite end for fastening said base to said circuit breaker;

a reset lever pivotally and vertically mounted on said base having a lever arm at one end for actuating said accessory device and an actuator arm at another end for contacting a circuit breaker tripping arm;

a trip assembly slidably mounted on a pair of cams extending from a bracket attached to said base and attached to a trip mechanism on said circuit breaker; and

latch means on said base carrying a detent for engaging with said trip assembly to hold said trip assembly against a trip spring force until said latch means is pivoted by operation of a solenoid to move said detent away from said trip assembly causing said trip assembly to move said circuit breaker trip mechanism to trip said breaker.

4,408,175

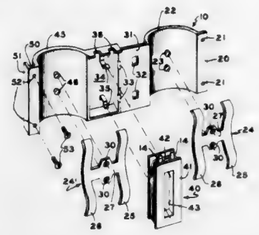
SELF CENTERING CURRENT RESPONSIVE PICKUP MEANS

Marvin D. Nelson, St. Louis Park, and B. Hubert Pinckaers, Edina, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 18, 1982, Ser. No. 340,416

Int. Cl.³ H01F *27/02*

U.S. Cl. 336—92 **10 Claims**



1. A current responsive pickup means adapted to be resiliently mounted on a conductor carrying an electric current to sense said electric current, inclding: nonmagnetic housing means with said housing means being capable of encircling said conductor; said housing means including a recessed portion and a cover portion with said portions forming a pickup means mounting chamber with said cover portion closing over said recessed portion when said housing means encircles said conductor; a pair of resilient guide means mounted on said housing means with said pair of guide means displaced from each other so that upon said housing means being closed around said conductor said pair of resilient guide means mounting said housing means resiliently upon said conductor by said resilient guide means being compressed by said housing means against said conductor; a bobbin having a pickup coil wound upon said bobbin to form said pickup means; said pickup means placed in said pickup means mounting chamber prior to said housing means being closed around said conductor; and retainer means attaching opposite ends of said housing means in engagement to resiliently hold said housing means to said conductor with said pickup coil in proximity to said conductor to sense the presence of current in said conductor.

4,408,176

FLYBACK TRANSFORMER

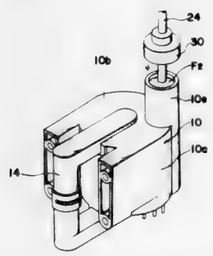
Kengi Nakamura, Katano, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 12, 1981, Ser. No. 242,986

Claims priority, application Japan, Mar. 12, 1980, 55-32952[U]

Int. Cl.³ H01F *27/04*

U.S. Cl. 336—107 **13 Claims**



1. A electrical connecting apparatus for use in effecting an electrical connection between an electrical device positioned

within a casing and a lead wire extending from said casing, said electrical connecting apparatus comprising:

a chamber formed within a casing, said device being positioned within said casing, said casing having at least one guide opening that communicates from the chamber to the outside of said casing;

a tongue portion extending from said device, said tongue portion having an opening defined therein, said opening being in alignment with said guide opening;

a cap member made of an electrically conductive material and having a body portion and a bore defined therein, one end of said bore being opened, said cap member being inserted into said opening of said tongue portion with said open end of said bore facing said guide opening;

electrical connecting means for connecting said cap member and said device;

wherein a lead wire extending from the casing has one end portion inserted into said bore through said guide opening for effecting an electric connection between said lead wire and said device, and the other end portion of said lead wire extending outwardly from the casing; and

a cast-in material injected into said chamber.

2. A flyback transformer comprising:

a casing having a chamber formed therein and at least one guide opening that communicates from the chamber to the outside of said casing;

a coil-block housed in said chamber of said casing, said coil-block comprising:

(i) at least one bobbin having a tongue portion extending from said bobbin, said tongue portion having an opening defined therein, said opening being in alignment with said guide opening;

(ii) a series of coils wound on said bobbin;

(iii) a cap member made of an electrically conductive material having a body portion and a bore defined therein, one end of said bore being opened, said cap member inserted into said opening of said tongue portion with said open end of said bore facing said guide opening; and

(iv) electrical connecting means for connecting said cap member and one of said coils;

lead wire having one end portion inserted into said bore through said guide opening for effecting an electric connection between said lead wire and said coil, and the other end portion of said lead wire extending outwardly from the casing; and

a first cast-in material injected into said chamber.

4,408,177

VARIABLE INDUCTOR HAVING EXTENDED USEABLE FREQUENCY RANGE

Jack C. Thornton, Satellite Beach, Fla., and Randy G. Russell, Arlington Heights, Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

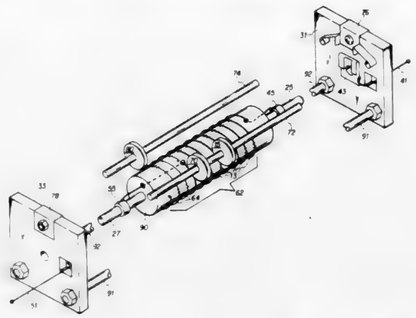
Filed Apr. 1, 1982, Ser. No. 364,293
Int. Cl.³ H01H *51/08*
U.S. Cl. 336—139 **6 Claims**

1. A variable inductor comprising:

rotatable, substantially helical coil means comprising first and second coil portions situated substantially end to end, said first coil portion comprising multiple turns of electrical conductor, said second coil portion comprising an electrically non-conductive extension of said first coil portion such that said first and second coil portions together serve substantially as a mechanical worm;

a plurality of moveable contactors located exteriorly of said coil means and each comprising conductive means for, as the coil means is rotated, (i) continuously contacting said coil means one turn at a time and (ii) traveling substantially parallel to the side of the coil means;

said contactors being situated relative to one another such that in a first tuning condition, two of the plurality of contactors may simultaneously contact the first coil portion, and such that in a second tuning condition one of the



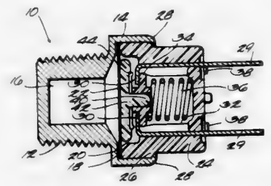
same two contactors may contact the first coil portion while the other contacts the second coil portion.

4,408,178

THERMOSTATIC SWITCH

Tore B. Hanssen, Hoffman Estates, and Chester S. Zwirek, Elmhurst, both of Ill., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 12, 1982, Ser. No. 397,140
Int. Cl.³ H01H *37/40*
U.S. Cl. 337—320 **4 Claims**



1. A temperature responsive switch assembly comprising,

a heat conducting body,

a switch housing mounted on the body,

a diaphragm between the housing and the body,

a chamber in the body on one side of the diaphragm,

switch means in the housing,

a diaphragm pad on the other side of the diaphragm operative to actuate the switch means,

a spring opposing movement of the pad to actuate the switch in response to increasing pressure in the chamber,

a temperature responsive liquid charge in said chamber having a boiling point below the temperature at which the switch is operated whereby the charge is in the liquid/vapor state at the switch operating temperature.

4,408,179

COMMUNICATIONS SYSTEM FOR AUTOMOTIVE VEHICLES

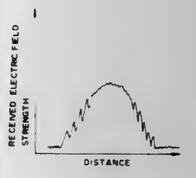
Akira Matsumura, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Division of Ser. No. 133,259, Mar. 24, 1980, Pat. No. 4,359,712.
This application Jun. 8, 1981, Ser. No. 271,229
Claims priority, application Japan, Mar. 26, 1979, 54-35387
Int. Cl.³ G08G *1/00, 1/12;* G08C *21/00*
U.S. Cl. 340—32 **2 Claims**

1. A communications system for automotive vehicles, which comprises:

(a) a fixed communications unit which transmits an area signal at all times and an information signal if requested; and

(b) a mobile communications unit which transmits a request signal when the area signal is received within a communications area, and receives the information signal from said fixed unit in accordance with the request signal, the electric field strength transmitted from said fixed communica-



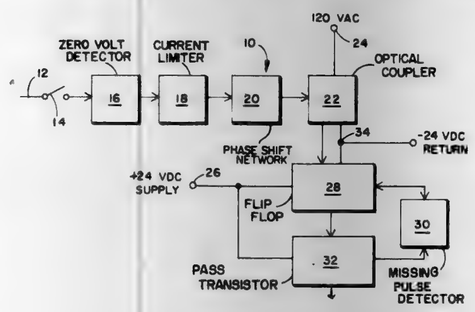
tions unit being predetermined higher than that transmitted from said mobile communications unit in the case where the threshold level determined in said fixed communications unit for receiving signals transmitted from said mobile communications unit is equal to the threshold level determined in said mobile communications unit for receiving signals transmitted from said fixed communications unit.

4,408,180

TRAFFIC SIGNAL LIGHT INTENSITY CONTROL

Ramey B. Metz, 18605 S. Mesa Dr., Villa Park, Calif. 92667

Continuation-in-part of Ser. No. 184,966, Sep. 8, 1980, abandoned. This application Nov. 21, 1980, Ser. No. 208,989
Int. Cl.³ G08G *1/00;* H05B *37/02;* H03K *19/14*
U.S. Cl. 340—40 **5 Claims**



1. A circuit capable of reducing power consumed by all of the signal lights at a street intersection, comprising:

activating switching means to activate the circuit;

timing current interruption means turned on by the activating means, which timing current interruption means inhibit the 24 volt low voltage supply to load switches of the selected signal lights, thereby preventing the power normally supplied to the signal lights from being supplied to the signal lights while the 24 volt low voltage supply as inhibited, wherein the activating switching means comprises at least one of the following:

a timer,

a light intensity detector,

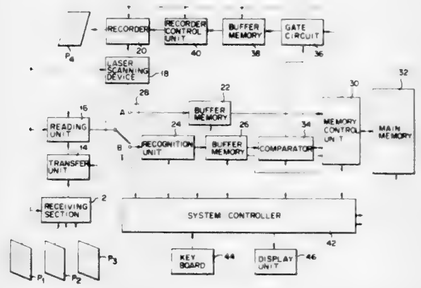
signals from signal means coupled to the timing current interruption means to selectively activate and deactivate the timing current interruption means.

4,408,181

DOCUMENT DATA FILING/RETRIEVAL SYSTEM

Naoto Nakayama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 9, 1980, Ser. No. 138,508
Claims priority, application Japan, Apr. 10, 1979, 54-43367; Apr. 16, 1979, 54-46483
Int. Cl.³ G06K *9/00;* G06F *7/10*
U.S. Cl. 82—61 **7 Claims**



1. A document data filing and retrieval system used with an index data list bearing the index data associated with the document data in a plurality of documents to be filed, and a retrieval data list bearing the index data associated with the document data in a plurality of documents to be retrieved, comprising:

a single read means for optically reading the document data on the documents and the associated index data on the index data list and the retrieval data list;

a first buffer memory for temporarily storing the document data read by said read means;

recognizing means for recognizing the index data read by said read means;

a second buffer memory for temporarily storing the index data recognized by said recognizing means;

switch means coupling said first and second memories to said single read means for supplying said document data to said first buffer memory and said index data to said second buffer memory;

a main memory; and

memory control means for loading into said main memory the document data from said first buffer memory and the associated index data from said second buffer memory.

4,408,182

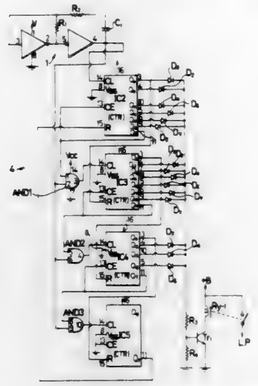
LIGHTING AND MORSE CODE SIGNALING DEVICE

Kazuo Hashimoto, No. 28-2 Komazawa, and Mutsuo Konno, No. 26-7 setagaya 4-chome, both of Setagaya-ku, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,511
Claims priority, application Japan, Aug. 5, 1980, 55-106713
Int. Cl.³ G08B *5/31;* H05B *41/34*
U.S. Cl. 340—321 **2 Claims**

1. A lighting and S.O.S. Morse code signaling device device, comprising a lamp and means for selectively connecting said lamp to a power source, said connecting means including means for selecting among an unlit mode, a continuous lighting mode and an intermittent lighting mode; means operative during said intermittent lighting mode for generating constant pulse repetition rate pulses; plural decade counters for counting said pulses during said intermittent lighting mode and having an output terminal corresponding respectively to each count value; and means for controlling said lamp to develop an S.O.S. Morse code signal including means for driving said lamp initially by alternate terminals in succession of said plural decade counters to develop three successive "dot" signals, then by three sets successively of three successive terminals,

with one unused terminal between each set, of said plural decade counters to develop three successive "dash" signals and



then by alternate terminals in succession of said plural decade counters to develop three successive "dot" signals.

4,408,183

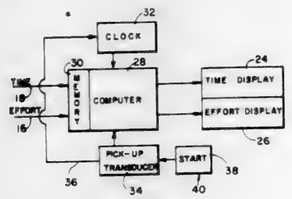
EXERCISE MONITORING DEVICE

Thomas A. Wills, 2113 Mt. Vernon St., Philadelphia, Pa. 19103

Filed Jun. 6, 1977, Ser. No. 803,593

Int. Cl.³ G08B *5/00*; A63B *23/00*

U.S. Cl. 340—323 R **7 Claims**



1. A monitoring device enabling a human user to compare elapsed time with effort performed comprising:

separate graph generating means which are similar in nature to provide generation of graph patterns in proportion to elapsed time and in proportion to effort, respectively, and positioned adjacent and relative to one another such that the elapsed time and effort generations can be visually directly compared,

clock means generating repetitive timing signals,

pickup transducer means sensing efforts and generating signals representative thereof, and connected by linkage means for starting the clock means by an initiating impulse,

completed effort cycle selection means to select a scale for the effort graph pattern,

time period selection means to select the scale of the total elapsed time graph pattern, and

selective activation means, including computer means, connected to and permitting the respective graph patterns to receive and record timing signals from the clock means and effort signals from the pickup transducer means.

4,408,184

KEYBOARD SWITCH CIRCUIT

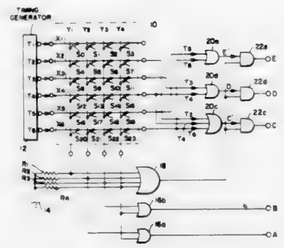
Jun Ishii, Yokohamashi, Japan, assignor to Tokoy Shibaura Denki Kabushiki Kaisha, Japan

Filed Jul. 18, 1980, Ser. No. 170,179

Claims priority, application Japan, Aug. 24, 1979, 54-107941

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 S **34 Claims**



1. A keyboard switch circuit comprising:

a switch matrix circuit having 2^m columns and $(2^{n-1}+2)$ to 2^n rows, where m and n represent positive integers greater than or equal to 2, and a plurality of key switches, each key switch being connected across a particular one of said columns and a particular one of said rows:

circuit means for sequentially applying pulses to the respective rows;

a first set of m logic gates each connected to selected ones of 2^{m-1} columns;

a logic circuit having 2^m inputs each connected to a different one of said columns;

a second set of n logic gates each connected to a selected one or ones of the rows;

a third set of n logic gates each having first and second inputs, said first inputs of said third set of logic gates each being connected to the output of a different one of the second set of logic gates, and said second inputs being connected to the output of said logic circuit having 2^m inputs, whereby each logic gate of said third set of logic gates in ON only when the logic state of the gate of the second set of logic gates connected to the logic gate and the logic state of the logic circuit having 2^m inputs are coincident with each other; and

(m+n) outputs each producing a different digit of a binary coded signal associated with the operation of a specific key switch, in which m outputs are the respective outputs of the first set of logic gates and n outputs are the respective outputs of the third set of logic gates.

4,408,185

PROCESS FOR TRANSFERRING INFORMATION AND SYSTEM FOR CARRYING OUT THE PROCESS

Jorgen B. Rasmussen, Copenhagen, Denmark, assignor to Elsmark A/S, Denmark

PCT No. PCT/DK79/00049, § 371 Date Jul. 11, 1980, § 102(e) Date Jul. 11, 1980, PCT Pub. No. WO80/01024, PCT Pub. Date May 15, 1980

PCT Filed Nov. 13, 1979, Ser. No. 201,024

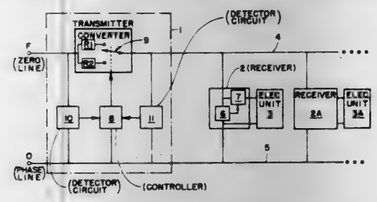
Claims priority, application Denmark, Nov. 13, 1978, 5031/78

Int. Cl.³ H04M *11/00*; H04Q *5/00*

U.S. Cl. 340—310 A **7 Claims**

1. A process for transferring information between electrical devices interconnected via at least two power supply lines which at least carry an alternating supply current, and wherein current in a power supply line is at least partially blocked for transferring information, characterized by the operation that depending upon a first type of information to be transferred, current flow in a power supply line is blocked at least partially

in positionally determined periods constituting a fraction of a halfwave interval, and that a second type of information is



transmitted on the power supply lines from at least one of the devices in at least one of said positionally determined periods.

4,408,186

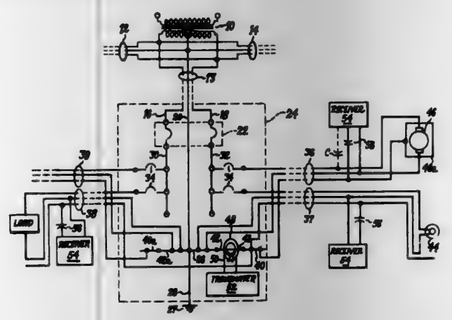
POWER LINE COMMUNICATION OVER GROUND AND NEUTRAL CONDUCTORS OF PLURAL RESIDENTIAL BRANCH CIRCUITS

Edward K. Howell, Simsbury, Conn., assignor to General Electric Co., New York, N.Y.

Filed Feb. 4, 1981, Ser. No. 231,632

Int. Cl.³ H04M *11/04*

U.S. Cl. 340—310 A **15 Claims**



1. A power line communication system for signalling over a low voltage AC power distribution system for distributing electrical power at an AC power frequency throughout a building, wherein the power distribution system includes a load center and a plurality of branch circuits, the load center having at least one main busbar to which a main of a service entry feed is connected and a neutral bus to which a neutral cable of the service entry feed is connected, the neutral bus being solidly clamped to ground potential, each branch circuit having a line conductor electrically connected with the main busbar and a neutral conductor terminated in electrical connection with the neutral bus, said communication system comprising, in combination:

A. a ground bus included in the load center;

B. a tie conductor electrically connecting said ground and neutral buses in common;

C. a signal communication link consisting of at least one of the branch circuits, said one branch circuit including, in addition to a line conductor and a neutral conductor, a ground conductor terminated in electrical connection with said ground bus and otherwise electrically isolated from the neutral conductor thereof downstream from the load center;

D. a transmitter for transmitting voltage signals of a frequency greater than the power frequency and coupled onto said communication link;

E. a receiver tuned to said voltage signals and coupled onto said communication link; and

F. inductive means associated with said tie conductor to introduce an impedance between said ground and neutral buses at the signal frequency such as to accomodate the propagation of voltage signals along said one branch circuit between said transmitter and receiver, said voltage signals being precluded from propagating onto the neutral cable of the service entry feed by virtue of the neutral bus being clamped to ground potential at the voltage signal frequency.

4,408,187

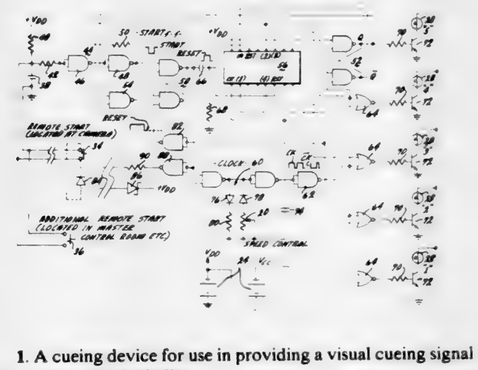
CUEING DEVICE

Edward J. Rollins, P.O. Box 523, Meadow Vista, Calif. 95722

Filed Dec. 1, 1980, Ser. No. 212,080

Int. Cl.³ G08B *5/00*; H05B *39/00*

U.S. Cl. 340—332 **10 Claims**



1. A cueing device for use in providing a visual cueing signal to a performer, including

a plurality of visual indicators arranged adjacent each other for providing a visual cueing signal in accordance with a fixed program producing a sequential actuation of individual ones of the plurality of visual indicators to form a single cueing cycle spanning a predetermined period of time,

a plurality of first means individually coupled to individual ones of the visual indicators for individually controlling the actuation of the individual ones of the plurality of visual indicators,

second means coupled to the plurality of first means for controlling the individual ones of the first means in accordance with the fixed program to sequentially actuate the individual ones of plurality of visual indicators to produce sequential visual signals through the single cueing cycle spanning the predetermined period of time to serve as the visual cueing signal to a performer,

the second means controlling the individual ones of the first means in groups to produce sequential group visual signals and wherein the sequential group visual signals include alternate illumination and blinking off of groups of the visual indicators and wherein the alternate illumination and blinking off of groups of the visual indicators provides a progressive reduction of the number of visual indicators in the groups, and

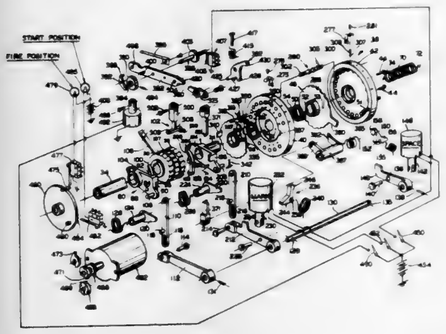
third means coupled to the second means for initiating the single cueing cycle spanning the predetermined period of time by initiating the operation of the second means.

4,408,188

ELECTROMECHANICAL DECODER

Peter J. Caruso, Wayne, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sep. 5, 1963, Ser. No. 306,792
Int. Cl.³ G08C *11/00*
U.S. Cl. 340—345 **28 Claims**



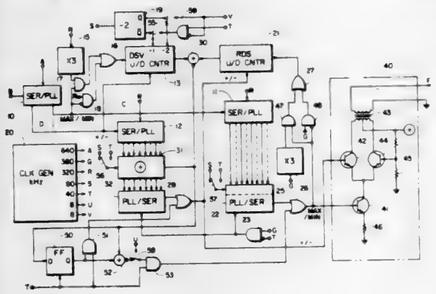
1. An electromagnetic decoder comprising a code wheel assembly including
a base member,
a shaft supported by the base member,
a first wheel element and a second wheel element carried by the shaft,
a plurality of code posts carried by the first wheel element and preset for locking the first and second wheel elements together in driving relation,
selectively operable means carried by the base member for actuating the code posts sequentially in a predetermined sense for unlocking the first and second wheel elements,
and means actuated by one of the wheel elements for performing a control function upon the first wheel element being unlocked from the second wheel element.

4,408,189

METHOD AND APPARATUS FOR CODE CONVERSION OF BINARY TO MULTILEVEL SIGNALS

Malcolm C. Betts, Sherwood Park; Alan F. Graves, Kanata; Frederick M. Pascoe, Nepean, and James E. Dilley, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 18, 1981, Ser. No. 264,281
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **6 Claims**



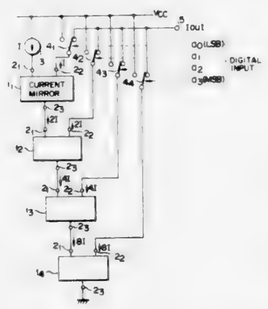
1. A code converter comprising:
means for converting blocks of binary bits into words of multilevel symbols, the words being grouped into frames;
a running digital sum counter for determining the running digital sum of all previously converted multilevel symbol words;
a digital sum variation counter for determining the digital sum variation of each word;
means responsive to the counters for inverting selected words so as to minimize the accumulated running digital sum of the previously converted multilevel symbol words, and the selected words; characterized by:
means for including a separate multilevel symbol at the end of each frame to indicate the inversion of said selected words; and
means for initializing the digital sum variation counter at the beginning of each word to a value which compensates for the digital sum variation of the separate multilevel symbol, whereby the polarity of the digital sum variation of the current word may be compared against that of the preceding running digital sum to reestablish frme synchronization.

4,408,190

RESISTORLESS DIGITAL-TO-ANALOG CONVERTER USING CASCADED CURRENT MIRROR CIRCUITS

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 28, 1981, Ser. No. 267,536
Claims priority, application Japan, Jun. 3, 1980, 55-74573
Int. Cl.³ H03K *13/05*
U.S. Cl. 340—347 DA **8 Claims**



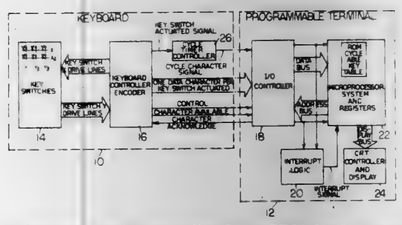
1. A digital-to-analog converter for converting an input digital signal consisting of a plurality of bits into an analog quantity at an output terminal, said converter comprising:
a two-terminal constant current source having a first terminal connected to a supply voltage;
a plurality of current mirror circuits each corresponding to a different one of said plurality of bits in said input digital signal,
each of said current mirror circuits including first, second and third terminals, said first terminal receiving a current whose magnitude bears a prescribed ratio to a current at said second terminal, and said third terminal having a current whose magnitude is substantially equal to the sum of said currents at said first and second terminals,
said current mirror circuits being connected such that the third terminal of a current mirror circuit corresponding to one of said bits is connected to the first terminal of the current mirror circuit corresponding to the next most significant bit, the third terminal of the current mirror circuit corresponding to the most significant bit of said input digital signal being connected to ground and the first terminal of the current mirror circuit corresponding to the least significant bit of said digital signal being connected to a second terminal of said constant current source; and
a plurality of current switch circuits each controlled by a different one of said plurality of bits in said input digital signal and each of said current switch circuits selectively connecting to said output terminal, in response to the state of the connected bit, the second terminal of the current mirror circuit corresponding to the controlling bit,
each of said switches including first and second transistors whose emitters are connected together to the second terminal of the corresponding current mirror circuit, the base of said first transistor being coupled to said controlling bit of said input digital signal, a collector of said first transistor being connected to said output terminal, a collector of said second transistor being connected to said supply voltage and the base of said second transistor being connected to a reference voltage.

4,408,191

KEY CYCLE TIMER CONTROL PROVIDING A UNIVERSAL KEYBOARD

David M. Fowler, III, West Jordan, Utah, assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 102,698, Dec. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 908,346, May 22, 1978, abandoned. This application Dec. 24, 1981, Ser. No. 334,276
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 R **3 Claims**



1. A character cycle controller for a CRT display terminal, comprising:
a plurality of key switches, a separate character associated with each one of said key switches;
means responsively coupled to said plurality of key switches for generating a Key Switch Actuated signal that is indicative that one of said key switches is being depressed;
cycle timer controller means responsively coupled to said Key Switch Actuated signal for generating a Cycle Character signal only if said Key Switch Actuated signal is received for a predetermined period;
memory means for storing a plurality of addressable recycle codes, a recycle code associated with each of said key switches for indicating that the associated key switch is or is not recyclable; and,
said memory means responsively coupled to said Cycle Character signal for enabling said recycle code to recycle a recyclable character that is associated with a depressed recyclable key switch.

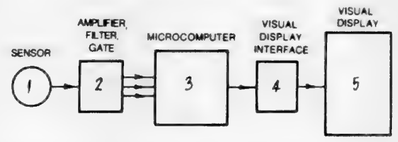
4,408,192

METHOD AND DEVICE FOR USE BY DISABLED PERSONS IN COMMUNICATING

Geoffrey A. Ward, Cheltenham, and Kevin E. Forward, Coburg, both of Australia

PCT No. PCT/AU80/00047, § 371 Date Apr. 8, 1981, § 102(e) Date Apr. 2, 1981, PCT Pub. No. WO81/00478, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 8, 1980, Ser. No. 253,517
Claims priority, application Australia, Aug. 8, 1979, PD9923
Int. Cl.³ G08B *21/00*; A61B *5/10*
U.S. Cl. 340—407 **12 Claims**

1. Apparatus for use by disabled persons in communicating characters by voluntary muscle movement comprising: means for producing a first electrical signal in response to a positive voluntary muscle movement of a first character that is time indeterminate above a threshold means for producing a second electrical signal in response to a positive voluntary muscle movement of a second character that is time indeterminate above a threshold; means for producing a third electrical signal in response to a positive voluntary muscle movement of a third character that is time indeterminate above a threshold; and



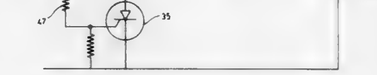
translation means coupled to said signal producing means and responsive to said signals for translating said signals into an output signal adapted to produce a visual character display, said translating means utilizing a signal code in which characters are indicated by the sequential occurrence of components capable of exhibiting two different signal characteristics, said first and second signals indicating said signal code components and said third signal indicating intervals therebetween.

4,408,193

WAVE RESPONSIVE SWIMMING POOL ALARM

Theodore I. Millen, Don Mills, Canada, assignor to Georgian Manufacturing Ltd., Don Mills, Canada

Filed Jun. 8, 1981, Ser. No. 271,774
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—566 **17 Claims**



1. A device for sensing waves of predetermined magnitude in a swimming pool and the like, said device comprising a body portion and an electrical circuit provided with alert means and power source for said alert means carried by said body portion, said circuit including first electrode which, when said device is in use, is in electrical contact with the water, and a second ring electrode mounted to and extending around said body portion and positioned normally out of the water above said first electrode for closure therewith by the waves of predetermined magnitude regardless of the direction of approach of the waves, said body portion comprising an upper body section on which said ring electrode is monted and a lower buoyant body section for floating of said device, said upper body section being adjustable relative to said lower body section to adjust height setting of said ring electrode relative to the water level and sensitivity of said device, said electrical circuit normally being open to substantially eliminate all power drain from said source when said circuit is open and being provided with conductive means in said circuit which is in a conductive state to enable operation of said alert means and which is changeable to a nonconductive state for opening the circuit to deactivate said alert means and which is automatically returned to the conductive state such that said circuit is automatically reset for further activation of said alert means and including timing

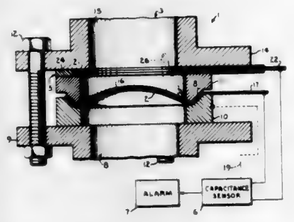
means for changing said conductive means to the nonconductive state.

4,408,194

CAPACITIVE PRESSURE RELIEF RUPTURE DISC MONITOR

Leonard K. Thompson, Independence, Mo., assignor to Continental Disc Corporation, Kansas City, Mo.

Filed Feb. 2, 1981, Ser. No. 230,662
Int. Cl.³ G08B 21/00
U.S. Cl. 340—626 **13 Claims**



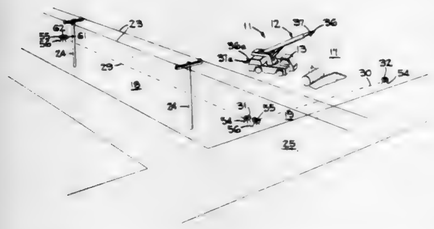
1. In combination:
(a) a pressure relief rupture disc mounted in a pressure relief vent, said disc being electrically conductive and operative to rupture at a selected pressure differential within said vent on one side of said disc;
(b) capacitor means positioned in spaced relation to said rupture disc and forming an electrical capacitor therewith, said capacitor plate means being a loop of electrically conductive material, surrounding the interior of the vent and disposed to allow flow through said loop upon rupture of said disc, the capacitance between said rupture disc and said capacitor plate means varying in proportion to changes in the position of portions of said disc;
(c) capacitance sensor means connected to said rupture disc and said capacitor plate means and operative to sense changes in a capacitance between said rupture disc and said capacitor plate means; said sensor means providing an output signal upon a selected change in said capacitance; and
(d) alarm means connected to said capacitance sensor means and operative to trigger an indicator in response to said output signal to thereby indicate the rupture of said disc.

4,408,195

BOUNDARY PLANE WARNING SYSTEM

Barclay J. Tullis, Palo Alto; Randy J. Tan, Hayward, both of Calif., and John F. McKeon, Carmel, Ind., assignors to FMC Corporation, Chicago, Ill.

Filed Aug. 17, 1981, Ser. No. 293,814
Int. Cl.³ G08B 21/00
U.S. Cl. 340—685 **19 Claims**



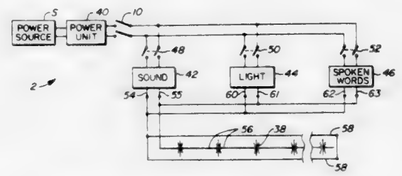
1. A warning system for alerting an equipment operator that a portion of the equipment has reached the boundary of a working space, said system comprising:
an energy source for developing a curtain of energy to define the boundary of said working space;
an energy sensitive sensor mounted on an outboard portion of said equipment to provide a warning signal when said sensor reaches said energy curtain; and
means for using said warning signal to alert said equipment operator that said equipment has reached the boundary of said working space.

4,408,196

SEISMIC ALARM SYSTEM

Albert J. Freeman, 2051 - 43rd Ave., San Francisco, Calif. 94116

Filed Apr. 6, 1981, Ser. No. 251,585
Int. Cl.³ G08B 21/00
U.S. Cl. 340—690 **17 Claims**



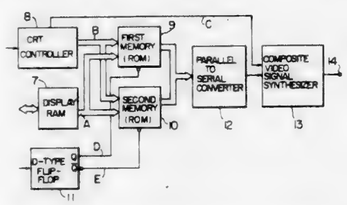
1. A seismic alarm comprising:
a plurality of motion sensors, each said sensor comprising:
a weight;
a housing for movably maintaining said weight within said housing parallel to an internal dimension, said weight including a depending positioning tab and said housing including a slot through which said tab extends to allow said weight to be positioned along said internal dimension; and
electric contacts operable by said weights being displaced from a central position along said internal dimension;
means for adjustably mounting said motion sensors in a generally horizontal plane, said motion sensors being positioned at various angles to one another;
a warning device electrically coupled to said electric contacts; and
means for powering said warning device for indicating when one or more of said weights have been displaced from said central position as a result of a seismic event.

4,408,197

PATTERN DISPLAY APPARATUS

Shigeru Komatsu, Yokohama; Kunihiko Nagai, Zushi; Takuo Koyama, Yokohama; Tsuguji Tachiuchi, Yokohama, and Shigeru Hirahata, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,162
Claims priority, application Japan, May 8, 1980, 55-59891
Int. Cl.³ G09G 1/16
U.S. Cl. 340—720 **7 Claims**



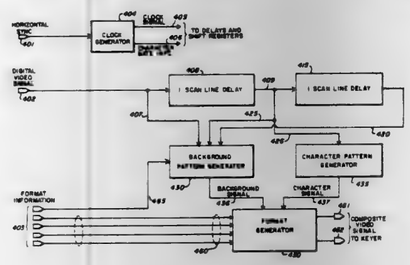
1. A display apparatus for use with a cathode-ray tube capable of displaying patterns in interlaced scanning and non-interlaced scanning operation modes, comprising:
means for synthesizing a signal to be supplied to said cathode-ray tube:
means for storing data representative of patterns to be displayed;
means for setting said storing means for one of said two operation modes, depending upon the complexity of patterns to be displayed;
means for generating a data selection signal for reading pattern data in said storing means in accordance with information to be displayed and supplying the pattern data which has been read to said signal synthesizing means for synthesizing a signal carrying said information to be displayed; and
means for generating a raster line number signal indicative of a scanning line being produced on said cathode-ray tube, said data selection signal and said raster line number signal serving in combination as an access signal to said storing means during said data reading operation.

4,408,198

VIDEO CHARACTER GENERATOR

Paul E. Kudirka, Acton, Mass., assignor to Shintron Company, Inc., Cambridge, Mass.

Filed Sep. 14, 1981, Ser. No. 302,160
Int. Cl.³ G09G 1/16
U.S. Cl. 340—729 **10 Claims**



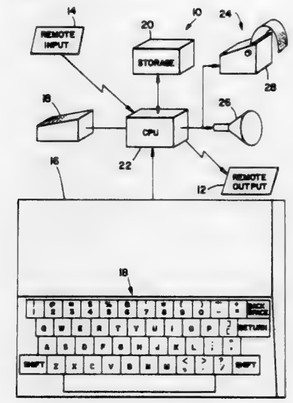
1. In display enhancement apparatus for use in a video display system having circuitry for producing digital signals having first and second values representative of a video character, said apparatus having at least one delay means for generating delayed signals which are equivalent to said signals delayed by a time interval equal to the time duration of one horizontal scan line and a clock signal generator for generating clocking signals in synchronism with said digital signals, the improvement comprising,
gate means responsive to said digital signals and said delayed signals comprising said character for producing an output when said signals have said first value,
a parallel-loading shift register responsive to said output for loading a predetermined pattern of digital information into each stage of said register, and responsive to said clocking signals for shifting said predetermined pattern through said register stages, and
means responsive to the digital information stored in one of said shift register stages for generating a background signal output.

4,408,199

IDEOGRAM GENERATOR

Douglass A. White; Susan J. Moore, and David F. Clark, all of Fairfield, Iowa, assignors to Global Integration Technologies, Inc., Fairfield, Iowa

Filed Sep. 12, 1980, Ser. No. 186,580
Int. Cl.³ G09G 1/16
U.S. Cl. 340—731 **21 Claims**



1. In a computer display system including input means for receiving coded sequences of signals, processor means for storing a control program, output means responsive to said control program and said coded sequence of said signals for displaying two-dimensional shapes, storage means for hierarchically storing a set of ideograms, and means responsive to one of said coded sequences for controlling said storage means to provide to the said output means for display thereon one of said ideograms in a predetermined space; the improvement comprising:
reduction means responsive to said control program for selectively reducing at least one dimension of at least one of said ideograms by selecting pixels in said one ideogram which may be omitted while retaining the intelligence associated with the ideogram;
position means responsive to said control program for placing said one reduced ideogram adjacent a second ideogram for simultaneous display on said output means in the same predetermined space.

4,408,200

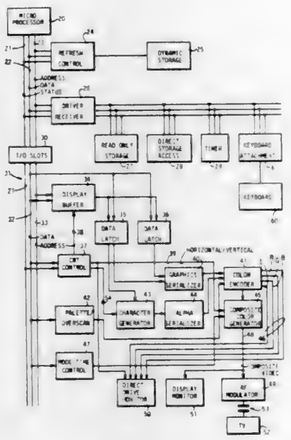
APPARATUS AND METHOD FOR READING AND WRITING TEXT CHARACTERS IN A GRAPHICS DISPLAY

David J. Bradley, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,084
Int. Cl.³ G09G 1/02
U.S. Cl. 340—747 **9 Claims**

1. A raster scan video display control apparatus of the type including a graphic video display refresh buffer operable in an all points addressable mode for refreshing said display with graphics data, a processor for writing graphic data into said display refresh buffer, and a character storage for storing the character dot patterns of a display character font, characterized by:
means for selecting a character to be displayed; and
programmable control means referenced by said processor for
(1) loading from said storage into said graphic video display refresh buffer a character dot pattern corresponding to the character to be displayed;
(2) expanding the selected character dot pattern into a

predetermined pixel format and then color encoding the expanded dot pattern to establish a resultant expanded-/encoded dot pattern; and



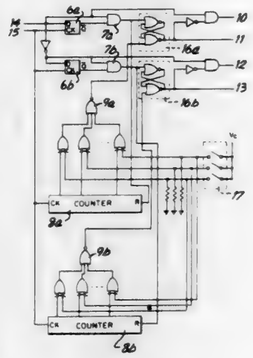
(3) loading said expanded/encoded dot pattern into said graphic video display refresh buffer.

4,408,201

ELECTRO-OPTIC DISPLAY DEVICE USING PHASE TRANSITION MODE LIQUID CRYSTAL

Takamasa Harada, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,183
Claims priority, application Japan, Dec. 25, 1979, 54/168644
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—784 **5 Claims**



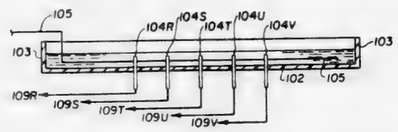
1. In a display device having a phase transition mode liquid crystal sandwiched between display electrodes and a common electrode, and a driving circuit for driving the phase transition mode liquid crystal, the improvement comprising: said driving circuit including means for generating and applying to the display and common electrodes two square voltage waves, one of which has an effective voltage to place said liquid crystal in a homeotropic state and a first predetermined interval of zero volts level between successive waves, the other of which has an effective voltage to place said liquid crystal in a focal-conic state and a second predetermined interval of zero volts level between successive waves, the effective voltages of the two square voltage waves being dependent on the first and second predetermined intervals of zero volts level and the first and second predetermined intervals of zero volts level being determined independently of one another.

4,408,202

ELECTROKINETIC DISPLAY SYSTEM

John D. Fales, 5 Maria Ct., Huntington Station, N.Y. 11746

Continuation-in-part of Ser. No. 93,849, Nov. 13, 1979, abandoned. This application Dec. 2, 1981, Ser. No. 326,554
Int. Cl.³ G09G *3/16*
U.S. Cl. 340—785 **70 Claims**



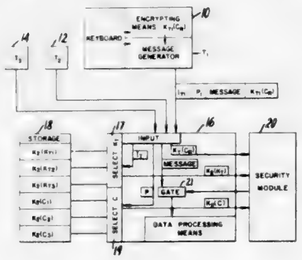
1. A method for displaying chemical concentrations and gradients associated therewith, comprising forming in an electrochemical cell a starting electrolyte which contains at least one reagent which during electrolysis forms reaction product species that react chemically substantially reversibly, said electrochemical cell having at least two spaced electrodes extending in and defining a current path in said electrolyte and having a wall at least part of which is transparent and a second wall extending in spaced relation along opposite sides of said current path, the distance between said walls across said path being no greater than about three inches and between said electrodes being such that the ratio of the interelectrode distance to the interwall distance is at least about 5 to 1, said electrolyte during electrolysis containing electrolysis reaction-product species movable along said path in the space between the cell electrodes, said reagent being selected from the group consisting of (a) self-indicating reagents the reaction products of which provide one or more indications of the chemical concentration thereof, (b) reagents which include an indicator reagent that provides one or more indications of the presence of electrolysis reaction products, and (c) mixtures of (a) and (b), and passing at least enough current in one direction between the cell electrodes to establish at least one flow of electrolysis reaction-products in said electrolyte along said path between said electrodes visible through the transparent wall and accompanied by a chemical concentration gradient.

4,408,203

SECURITY SYSTEM FOR ELECTRONIC FUNDS TRANSFER SYSTEM

Carl M. Campbell, Newtown Square, Pa., assignor to Master-Card International, Inc., New York, N.Y.

Division of Ser. No. 867,924, Jan. 9, 1978, Pat. No. 4,259,720. This application Nov. 10, 1980, Ser. No. 205,295
Int. Cl.³ H04Q *9/00*; H04L *9/00*; G06F *15/30*; G06K *5/00*
U.S. Cl. 340—825.34 **8 Claims**



1. In a system having a data processing unit and at least one transaction terminal, for automatically processing data entered

at said terminal by an authorized person, apparatus for verifying the identity of said authorized person, comprising:

manual code entry means at said terminal, for receiving a secret code entered by said person and for generating first electrical signals representative of said code;

encrypting means at said terminal, associated with said manual code entry means, and responsive to said first electrical signals and a first encrypting key, for generating second electrical signals representative of said secret code encrypted by said first key;

means at said terminal for receiving identifying information other than said secret code, and for generating third electrical signals representative of said identifying information;

storage means, associated with said data processing unit for storing a plurality of signals representative of a plurality of said secret codes, each encrypted by a second encrypting key, said storage means including means responsive to said third electrical signals for selecting one of said encrypted stored codes;

a security module, separate from said data processing unit and in communication therewith, responsive to said second electrical signals and said selected encrypted stored code, for decrypting said second electrical signals and said selected encrypted stored code and for providing an output indication to said data processing unit if said second electrical signals are representative of said selected stored code, said security module being operationally arranged to prevent output of said code in decrypted form;

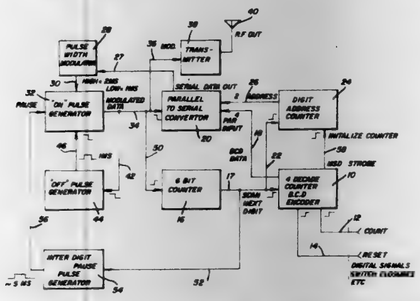
and system enabling means, associated with said data processing unit, and responsive to said output indication for allowing the automatic processing of data entered by said person at said terminal.

4,408,204

DIGITAL COUNTER/TRANSMITTER WITH REMOTE RECEIVER/DISPLAY

Richard S. Salvesen, Hampton, Iowa, assignor to Midwest Computer Register Corp., Hampton, Iowa

Filed Aug. 6, 1980, Ser. No. 175,857
Int. Cl.³ G08C *19/16*
U.S. Cl. 340—870.24 **16 Claims**



1. An asynchronous system for remotely monitoring a counted total and locally displaying that total, said system comprising:

counter means for receiving input pulses and maintaining a stored count of said received pulses as data in counter elements;

scanning means for sequentially accessing data in each element of said counter means;

address counter means for assigning an address to data from each said element indicative of the position of the element containing the addressed data relative to the other elements in said counter means;

pulse width modulator means for receiving data from each element of said counter means when accessed by said scanning means and the assigned address and pulse width modulating said data and assigned address;

transmitter means for receiving said pulse width modulated data and assigned address and transmitting pulses in response thereto;

receiving means for receiving said pulses;

discriminator means for converting said pulses into discrete amplitude signals indicative of said data and assigned addresses; and

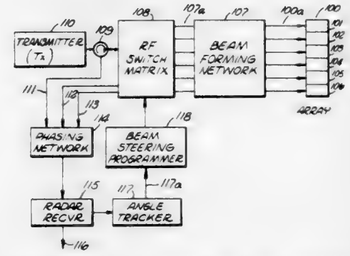
display and control means for displaying said discrete amplitude signals indicative of said data in accordance with the assigned address.

4,408,205

MULTIPLE BEAM ANTENNA FEED ARRANGEMENT FOR GENERATING AN ARBITRARY NUMBER OF INDEPENDENT STEERABLE NULLS

George A. Hockham, Haslemere, England, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,149
Int. Cl.³ G01S *13/00*; H04B *15/00*
U.S. Cl. 343—16 R **12 Claims**



1. A directive antenna and feed system for providing a main beam pattern at a first predetermined angle and an arbitrary number of pattern nulls each at a corresponding angle with respect to said main beam predetermined angle, comprising:

a plurality of independent antenna elements deployed in an array;

a reciprocal beam-forming network having a plurality of first ports and a plurality of second ports, each of said second ports being discretely connected to a corresponding one of said independent antenna elements, said network providing excitation of said array so as to form a main beam at a different angle for each of said first ports excited;

duplexing means having transmitter, receiver and antenna ports and connected at its antenna port to a selected one of said beam-forming network first ports corresponding to a predetermined angle of said main beam for conducting transmitted energy to said selected first port; and

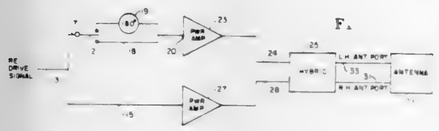
a phasing network connected to receive incoming signal energy through said duplexing means from said selected beam-forming network first port and directly from at least one other of said first ports on separate terminals of said phasing network, said phasing network having an output terminal for receiver connection and also including means for controllably phasing said incoming signal energy to provide a null at an angle of array reception corresponding to each of said other first ports.

4,408,206

SYSTEM FOR TRANSMITTING POWER FROM A SOLAR SATELLITE TO EARTH AND SUBSEQUENT CONVERSION TO A 60 HERTZ THREE PHASE SIGNAL

John L. Fitch, Seattle, and Donald B. Spencer, Federal Way, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 21, 1979, Ser. No. 106,099
Int. Cl.³ H04B 7/00
U.S. Cl. 343—352 **18 Claims**



1. A system for transmission of power which is in the form of continuous-wave microwave-frequency electrical signal energy, comprising:

first antenna means configured and arranged to transmit the microwave signal with a given polarization;

means for driving said first antenna means with a microwave signal in such a manner that the polarization of the transmitted microwave signal changes regularly with time throughout the transmission of the microwave signal, in a predetermined manner, at a selected rate which is substantially less than the frequency of the microwave signal;

second antenna means for receiving the transmitted microwave signal;

means associated with said second antenna means for recovering the power in the transmitted microwave signal received by said second antenna means; and

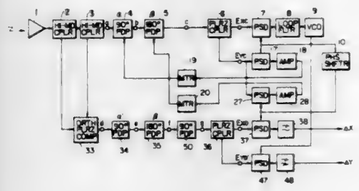
means responsive to said recovering means for converting the recovered microwave signal into a three phase signal at a power frequency, the resulting signal being suitable for use as a power signal.

4,408,207

ANGULAR ERROR DETECTING DEVICE

Yoshihiko Yoshikawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,294
Int. Cl.³ H04B 7/00
U.S. Cl. 343—362 **7 Claims**



1. An angular error detecting device in which reference signals are obtained from fundamental mode components in a waveguide which have passed a first set of at least one 180° phase difference plate and one 90° phase difference plate, phase lag surfaces of which are disposed so that a polarization loss of a unit adapted to receive waves from a target is minimized, angular error signals are obtained utilizing two higher mode components which are in orthogonal relation, and said angular error signals are subjected to synchronous detection by a local oscillator output synchronous with said reference signals thereby to detect two orthogonal angular errors, the improvement wherein a circuit for obtaining said angular error signals comprises:

at least higher mode detector means for obtaining said two higher mode components which are in orthogonal relation;

a circuit for combining said two higher mode components in such a manner that said two higher mode components are in orthogonal relation;

a circuit having a second set of at least one 90° phase difference plate and one 180° phase difference plate which have rotatable phase lag surfaces and are cascade-connected, said 90° phase difference plate in said second set being provided on the side of said circuit for combining said two higher order components, said phase lag surface of said 90° phase difference plate in said second set being disposed in an angular ratio of 2:1 with respect to said phase lag surface of said 180° phase difference plate in said first set, and said phase lag surface of said 180° phase difference plate in said second set being disposed in an angular ratio of 1:1 with respect to said phase lag surface of said 180° phase difference plate in said first set;

means for dividing an output of said 180° phase difference plate in said second set into first and second polarization components which are orthogonal to each other;

means for synchronously detecting said first-polarization component with said local oscillator output synchronous with said reference signals to provide a first angular error output; and

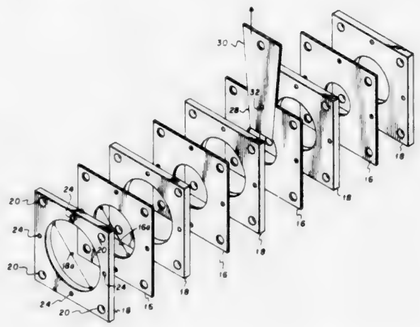
means for synchronously detecting said second polarization component with a signal different by 90° in phase from that in providing said first angular error output so as to provide a second angular error output which is orthogonal to said first angular error output.

4,408,208

DIP BRAZED CORRUGATED FEED HORN

Theodore A. Dumas, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 23, 1981, Ser. No. 246,520
Int. Cl.³ H01Q 13/02
U.S. Cl. 343—786 **10 Claims**



1. A method for making a corrugated feed horn for an antenna, comprising:

dip brazing a plurality of laminations providing alternate fins and grooves including controlling a braze metal to creep along the interfaces between the laminations, while preventing buildup of the metal in the grooves, said brazing including

providing aligned apertures in said laminations;

running braze metal wire through said aligned apertures; and

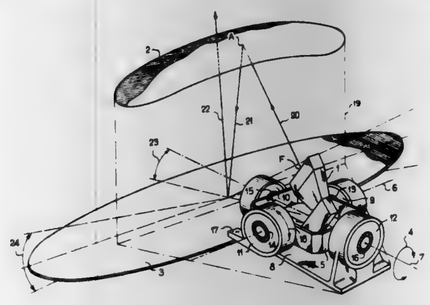
melting said wire by dipping said laminations in a solution heated above the melting point of the wire but below the melting point of the laminations.

4,408,209

ORIENTABLE BEAM ANTENNA FOR TELECOMMUNICATIONS SATELLITE

Jacques Urien, and Bruno Vidal Sainte Andre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Dec. 23, 1980, Ser. No. 220,156
Claims priority, application France, Dec. 27, 1979, 79 31803
Int. Cl.³ H01Q 1/50
U.S. Cl. 343—861 **5 Claims**



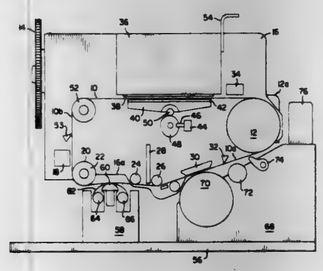
1. In an orientable beam antenna comprising a fixed primary source on board a satellite operable in spatial vacuum: a first reflector mechanically integral with the primary source and receiving the radiation emitted by the primary source, and a second orientable reflector receiving the waves reflected by the first reflector, the primary source being offset so as not to intercept the waves reflected by the first reflector, and a kinematic system mechanically coupling the second reflector at its periphery to the primary source.

4,408,210

PAPER FEED AND FUSING ASSEMBLY FOR MAGNETOGRAPHIC PRINTING APPARATUS

Ronald J. Cieplik, Mountain Lakes, N.J., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Aug. 12, 1981, Ser. No. 292,092
Int. Cl.³ G01D 15/12
U.S. Cl. 346—74.2 **14 Claims**



1. Apparatus for magnetographic recording and production of a permanent visual image on an image recording medium, comprising:

(a) first means responsive to electrical information signals for producing a preliminary visual image on said image recording medium, said first means including

(1) first support means supporting first components including:

(1a) a magnetizable recording medium on which said visual images are recorded responsive to said signals and are then made visual by developing them with toner,

(1b) means for advancing said magnetizable recording medium, and

(1c) means for transferring a toner-developed image from said magnetizable recording medium to said image recording medium,

and said first support means is movable to collectively move said first components between a first position wherein said first components cooperate to produce the permanent visual image on the image recording medium and a second position wherein said first components may be accessed, and

(2) second support means and fixedly supporting second components of said first means for registration with selected ones of said first components upon such movement of said first support means from such second position into said first position thereof; and

(b) second means for receiving said image recording medium from said first means for receiving said image recording medium from said first means and rendering said preliminary visual image permanent,

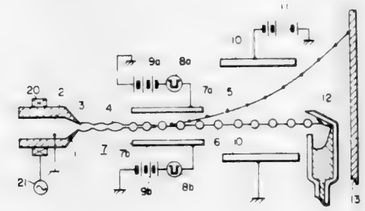
said first support means and said second support means defining respective first and second channels therein for passage of said image recording medium, said first and second channels being selectively registered upon said movement of said first support means from said second position to said first position thereof to provide a composite channel for movement of said image recording medium through said apparatus.

4,408,211

INK-JET RECORDING DEVICE FEATURING SEPARATING OF LARGE AND SMALL DROPLETS

Takahiro Yamada, Tokai, Japan, assignor to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,738
Claims priority, application Japan, Mar. 26, 1980, 55/37429
Int. Cl.³ G01D 15/18
U.S. Cl. 346—75 **14 Claims**



1. An ink-jet recording device comprising:

a nozzle which is supplied with ink pressurized to a predetermined pressure and which spouts an ink column from a nozzle hole thereof,

vibration applying means to apply mechanical vibrations of predetermined magnitude to said nozzle so as to separate a larger ink droplet and a smaller ink droplet from said ink column alternately and successively and to cause them to fly,

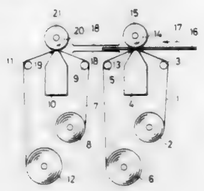
charging and deflecting means arranged in a manner to hold therein a part of said ink column in which said ink droplets separate and fly from said ink column, said charging and deflecting means charging the smaller one of said ink droplets in response to a recording signal applied to said charging and deflecting means and deflecting the charged ink droplets in correspondence with a quantity of static charges thereon immediately after the separation of said ink droplets from said ink column.

4,408,212

MULTI-COLOR RECORDING DEVICE

Fujio Moriguchi, and Masami Kurata, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,692
Claims priority, application Japan, Feb. 5, 1981, 56-15042
Int. Cl.³ G01G *15/10*
U.S. Cl. 346—76 PH **4 Claims**



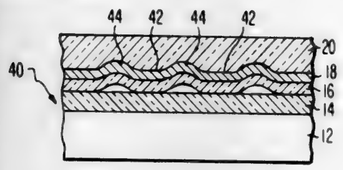
1. In a multi-color recording device of the type including at least first and second recording stations each including first and second thermal heads, respectively, and a rotatable pressure means for urging a recording paper sheet against said thermal head and for forwarding said recording paper sheet through said recording device, the improvement characterized in that said pressure means comprises a band-like member extending from said first to said second recording stations.

4,408,213

REINFORCED BUBBLE RECORDING MEDIUM AND INFORMATION RECORD

Alan E. Bell, Hampton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1981, Ser. No. 316,916
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **13 Claims**



1. An optical recording medium comprising
a substrate;
a spacer layer overlying a surface of the substrate;
a substantially transparent reinforcement layer overlying the spacer layer; and
a light absorptive layer overlying the spacer layer;
wherein the spacer layer melts, sublimes or decomposes at a temperature less than the melting temperature of the light absorptive layer and wherein the reinforcement layer does not melt, sublime or decompose at a temperature less than the melting temperature of the light absorptive layer and preferentially adheres to the light absorptive layer.

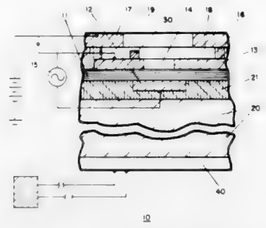
4,408,214

THERMALLY REGULATED ION GENERATION

Richard A. Fotland, Holliston, and Leo A. Beaudet, Milford, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Aug. 24, 1981, Ser. No. 295,941
Int. Cl.³ G01D *15/06*; H01J *7/24*; H05B *31/26*
U.S. Cl. 346—159 **20 Claims**

7. Improved apparatus for generating ions comprising a glow discharge device of the type including a solid dielectric member; a plurality of electrodes separated by the solid dielectric member, with an air region adjacent the junction of at least one of the electrodes and the solid dielectric member; and means for applying a time-varying potential between the electrodes to generate ions in the air region;



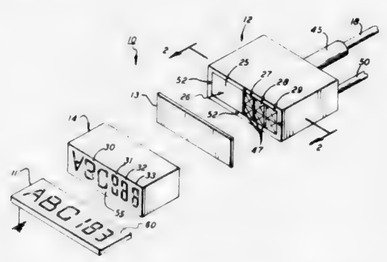
wherein the improvement comprises means for heating the glow discharge device to an elevated temperature above the intrinsic operating temperature of said device.

4,408,215

ELECTROCHEMICAL MARKING APPARATUS

William D. Kitchen, Utica, N.Y., assignor to Electromark, division of Mohawk International Inc., Utica, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,844
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—165 **10 Claims**



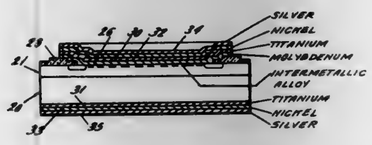
1. Apparatus for electrochemically marking a grounded conductive part that includes
a dielectric stencil having a front face for being positioned adjacent to a grounded conductive part and further includes a series of slotted openings passing therethrough to create at least one seven bit character generating format,
an electroded head positioned behind the stencil having an electrically isolated elongated electrode overlying each of the slotted openings in the stencil,
electrical means for independently firing each of the electrodes whereby a preselected character is electrically imaged upon the surface of said part, and
wicking means positioned between the electroded head and said part for wetting the part with an electrolyte for developing the electrical image recorded on the part.

4,408,216

SCHOTTKY DEVICE AND METHOD OF MANUFACTURE USING PALLADIUM AND PLATINUM INTERMETALLIC ALLOYS AND TITANIUM BARRIER FOR LOW-REVERSE LEAKAGE OVER WIDE TEMPERATURE RANGE

Herbert J. Gould, Howthorn, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Continuation of Ser. No. 104,102, Dec. 17, 1979, abandoned, which is a division of Ser. No. 911,764, Jun. 2, 1978, Pat. No. 4,206,540. This application Jun. 28, 1982, Ser. No. 393,029
Int. Cl.³ H01L *29/48*
U.S. Cl. 357—15 **11 Claims**



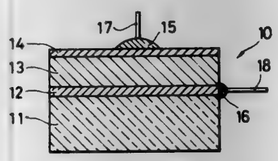
1. A schottky diode comprising a single crystal epitaxial silicon semiconductor substrate; means for reducing the reverse bias leakage current over a wide temperature range across the entire schottky junction interface of said schottky diode, said means including a layer of metal-diffused silicon on one surface of said substrate; said layer being produced by first sintering a first metal into said one surface and then removing all traces of said first metal and its silicides; and a second metal in surface-to-surface contact with said layer to form said schottky junction interface with said layer; said second metal having a work function which is about that of high work function metals such as molybdenum and platinum; said first metal being selected from the group consisting of palladium and platinum; said first metal being different from said second metal.

4,408,217

GAN ELECTROLUMINESCENT SEMICONDUCTOR DEVICE AND METHOD FOR MAKING THE SAME

Hiroyuki Kobayashi; Yoshimasa Ohki, both of Sagamihara; Yukio Toyoda, Tokyo, and Isamu Akasaki, Machida, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,599
Claims priority, application Japan, Dec. 5, 1979, 54-158664
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **5 Claims**



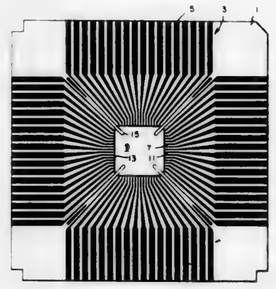
1. An electroluminescent semiconductor device comprising:
a substrate;
a multilayered structure of crystalline gallium nitride having an undoped conductive region with a high concentration of donors to make it conductive on said substrate, an undoped resistive region continued from said undoped conductive region as a homogeneous structure and an insulative region on said resistive region and doped with acceptor impurities to make it insulative; and
a pair of first and second electrodes, said first electrode being formed on said insulative region.

4,408,218

CERAMIC CHIP CARRIER WITH LEAD FRAME HAVING REMOVABLE RIM

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1981, Ser. No. 248,605
Int. Cl.³ H01L *23/48*
U.S. Cl. 357—70 **2 Claims**



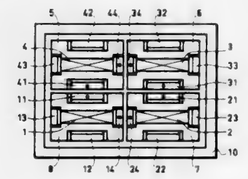
1. A semiconductor chip carrier of the type comprising a ceramic substrate with a metallic lead frame attached thereto, said lead frame comprising a plurality of leads having outer portions which extend to the edge of said substrate and tip portions proximate to the interior region of said substrate, said tip portions having integral support means attached thereto, characterized in that said lead frame is bonded directly to said substrate, said support means comprising a common rim overlying said interior region of said substrate and spaced therefrom, said rim having extended portions which connect adjacent tip portions which are substantially non-parallel, said extended portions having a length greater than the shortest straight line distance between said adjacent non-parallel tip portions, said rim being bent to a non-coplanar relationship to the rest of said lead frame.

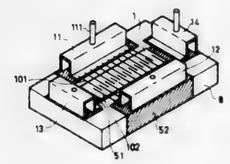
4,408,219

DEVICE FOR CONNECTING IN PARALLEL POWER TRANSISTORS IN VERY HIGH FREQUENCY

Jean C. Resneau; Marius Cirio, and Jean Doyen, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 18, 1980, Ser. No. 208,006
Claims priority, application France, Nov. 21, 1979, 79 28692
Int. Cl.³ H01L *39/02*
U.S. Cl. 357—80 **6 Claims**





1. A device for connecting in parallel 2n transistor chips (1,

2, 3, 4) for operating at high power and very high frequency, said device comprising:

a lower thermally and electrically conducting plate (10),

2n wafers (5, 6, 7, 8) electrically insulating and thermally conductive, welded to said conducting plate (10), arranged in n columns, and on each of which one of said 2n chips is placed,

an upper electrically insulating plate (15) supporting two metallized zones (60, 70) on its outer face, said insulating plate facing said conducting plate, and

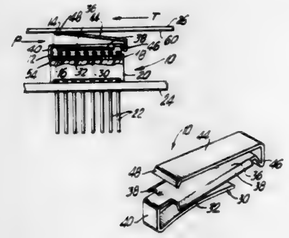
wherein each wafer is provided with at least three terminals (11, 12, 13, 14) respectively connected with each electrode of said one of said 2n transistor chips, one of said terminals (12) being connected with said conducting plate and two of said terminals (11, 14) supporting conducting projections (111) traversing said upper insulating plate and each of said two terminals respectively contacting one of said metallized zones (60, 70).

4,408,220

HEAT DISSIPATOR FOR A DUAL IN LINE INTEGRATED CIRCUIT PACKAGE

Anthony D. Calabro, 8738 W. Chester Pike, Upper Darby, Pa. 19082

Filed Jan. 29, 1981, Ser. No. 229,449
Int. Cl.³ H01L *23/02, 23/48, 29/44*
U.S. Cl. 357—81 **8 Claims**



1. A heat dissipator for a dual in line integrated circuit package, said package having a longitudinally extending, generally rectangular housing with opposed top and bottom walls, opposed pairs of side and end walls, and a plurality of downwardly extending leads disposed in two longitudinally extending rows adjacent said side walls, said heat dissipator comprising:

a longitudinally extending bottom contact plate, the width of said bottom contact plate being less than the distance between said rows of leads;

a longitudinally extending top contact plate disposed in spaced relationship to said bottom contact plate, the width of said top contact plate substantially equalling the width of said integrated circuit package, said top contact plate including a pair of longitudinally aligned rails extending angularly downward from the side edges thereof;

an intermediate segment extending between and connecting one end of each of said contact plates; and

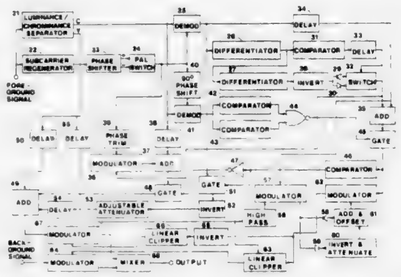
a radiator plate extending from the opposed remaining end of said top contact plate, and a downwardly projecting locking flange being interconnected between said top contact and radiator plates, said heat dissipator being unitary in construction, and formed from a resilient material whereby said heat dissipator can be slidably mounted on said integrated circuit package with said bottom contact plate being in contact with said bottom wall intermediate said rows of leads, and with said top contact plate being in coplanar and contiguous relationship with said top wall, with the rails thereof gripping the side edges of said top wall and the downwardly projecting locking flange engaging one end of said integrated circuit package, the rails and the locking flange stabilizing said heat dissipator on said integrated circuit package, such that the heat generated by said integrated circuit package during use is conducted by said top and bottom contact plates to said radiator plate for dissipating said heat and reducing the operating temperature of said integrated circuit package.

4,408,221

TELEVISION CHROMA-KEY SYSTEMS

Reginald F. H. McCoy, Gainesville, Fla.

Filed Sep. 22, 1981, Ser. No. 304,588
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **17 Claims**



1. Apparatus for combining a signal, including a color subcarrier, representing a first television image and a signal representing a second television image to produce a signal representing a combined image having the picture content of said first television image except in those areas of said first television image having a chosen color, the picture content of said combined image in said areas of said chosen color being the picture content of said second television image, whereby objects in said first television image of colors other than said chosen color will appear in said combined image to be in front of said second television image; incorporating a means of determination of the occurrence of said chosen color and preventing undesired response to other colors, comprising:

a. First means for providing an output responsive to the amplitude and phase of said color subcarrier, said first means responding preferentially to said subcarrier when having a phase corresponding to the phase resulting from the presence of said chosen color in said first television image,

b. Second means for providing an output responsive to the amplitude and phase of said subcarrier responding preferentially when said phase of said subcarrier differs from that phase to which said first means responds preferentially,

c. Means responsive to the amplitude of the output of said second means causing a first inhibit signal to be present whenever said output of said second means exceeds a first chosen value of one polarity and causing a second inhibit signal to be present whenever said output of said second means exceeds a second chosen value having opposite polarity to said first chosen value,

d. Control means whereby the output of said first means responsive to the amplitude and phase of said subcarrier controls the combination of said first television image and said second television image, to form said combined image, and

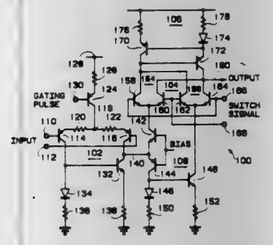
e. Means for the application of said first and second inhibit signals to said control means, the presence of said first inhibit signal inhibiting said control means from including said second television image in said combined image, and likewise, the presence of said second inhibit signal inhibiting said control means from including said second television image in said combined image, whereby the range of colors in said first television image causing said control means to include said second television image may be constrained.

4,408,222

PHASE DETECTOR FOR TELEVISION TUNING SYSTEMS AND THE LIKE

Michael J. Gay, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 9, 1980, Ser. No. 148,348
Int. Cl.³ H04N *5/44*
U.S. Cl. 358—24 **15 Claims**



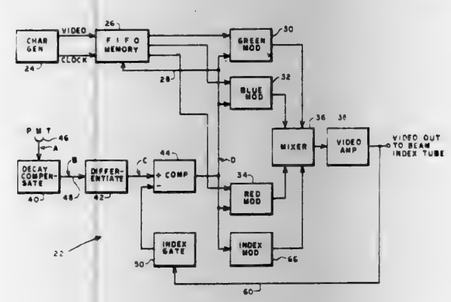
11. In a PAL/SECAM television receiver system having a chroma demodulator section including a frequency discriminator for producing output pulses the sense of which alternate in accordance with the particular television line sequence, a phase detector coupled with the frequency discriminator for identifying the line sequence, the phase detector including a differential amplifier input stage having differential inputs which are adapted for receiving the outputs from the frequency discriminator, a multiplier section having control input terminals adapted to receive switching signals at half the line sequence frequency and a current mirror circuit coupled to outputs of the multiplier section for providing an output signal the sense of which is determined by the phase relationship between the output signals from the frequency discriminator and the switching signals, the improvement comprising a rectifier section that is coupled between the output of the differential amplifier section of the phase detector and inputs of the multiplier section for preserving the sense of any error current components produced by the differential amplifier which are coupled to the multiplier section to substantially eliminate said error currents.

4,408,223

BEAM INDEX COLOR DISPLAY SYSTEM

Richard W. Midland, Inverness, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 5, 1981, Ser. No. 270,944
Int. Cl.³ H04N *9/22, 9/24*
U.S. Cl. 358—67 **11 Claims**



1. In a system having a character generator and a beam index tube which generates a periodic index signal as the tube's beam strikes index stripes within the tube, said character generator being activated to generate data independently of the index tube, a display system for driving the tube with data received from the character generator comprising:

means responsive to the index signal for generating an index clock signal;

a memory coupled to the character generator for storing data received from the character generator and for outputting the stored data in response to the index clock signal; and

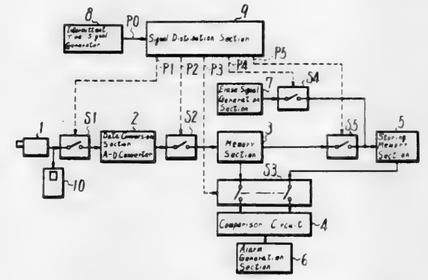
output means receiving the data output of the memory and responsive to the index clock signal for outputting the data in a given sequence for application to the beam index tube.

4,408,224

SURVEILLANCE METHOD AND APPARATUS

Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Apr. 22, 1981, Ser. No. 256,653
Claims priority, application Japan, May 9, 1980, 55-61597
Int. Cl.³ H04M *7/18*
U.S. Cl. 358—108 **3 Claims**



1. A place scenery surveillance apparatus comprising:

(a) a video camera picking up a place scenery to be surveyed and producing a video signal;

(b) a data conversion means for converting the video signal responding to the place scenery from said video camera into data signal;

(c) a first memory means for memorizing said data signal from said data conversion means as a current data signal;

(d) a second memory means for memorizing a data signal from said first memory means as a previous data signal provided during a previous surveillance;

(e) a comparison means for comparing said current data signal stored in said first memory means with said previous data signal stored in said second memory means;

(f) an erasing means for erasing the previous data signal memorized in said second memory means;

(g) first, second and third switching means which are respectively inserted between said first and second memory means and said comparison means, said erasing means and said second memory means as well as between said first memory means and said second memory means;

(h) a control means for controlling ON and OFF of said first, second and third switching means in time sharing manner such that said first switching means is made ON at first to supply said current data signal and previous data signal to said comparison means, after said comparison being finished said second switching means being made ON to erase said previous data signal memorized in said second memory means, and then said third switching means being made ON to supply said current data signal to said second memory means to be memorized as a new previous data signal for next surveillance; and

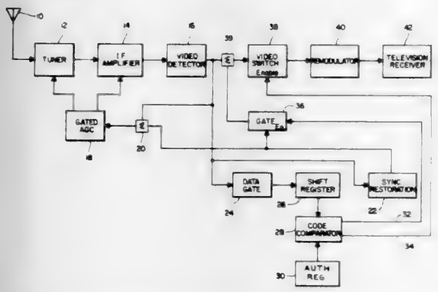
(i) an alarm generating means for generating an alarm upon receiving an output that is generated by said comparison means.

4,408,225

SUBSCRIPTION TELEVISION DECODER

James W. Ensinger, Roselle, and Melvin C. Hendrickson, Elmhurst, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Jul. 6, 1981, Ser. No. 280,722
Int. Cl.³ H04N *7/16*
U.S. Cl. 358—120 **5 Claims**



1. A decoder for unscrambling a broadcast RF television signal used to transmit one or more levels of programming information, said television signal being characterized by randomly suppressed horizontal blanking and synchronization pulses and including a program code identifying the level of programming information currently being transmitted, said decoder comprising:

means for receiving and converting said broadcast RF television signal to a corresponding baseband video signal, said receiving and converting means including a gated automatic gain control circuit operable in response to the horizontal synchronization pulses of a standard television signal;

means storing a subscriber authorization code identifying one or more of said levels of programming information;

means for developing a decode authorization signal in response to the detection of a predetermined relationship between said stored subscriber authorization code and the program code characterizing said transmitted television signal;

means developing a standard horizontal synchronization pulse in response to each suppressed horizontal blanking pulse of said baseband video signal; and

first circuit means for combining said baseband video signal with said standard horizontal synchronization pulses for continuously operating said gated automatic gain control circuit;

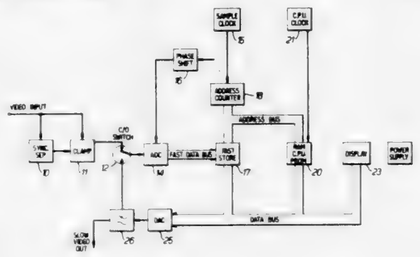
second circuit means operable independently of the first circuit means for combining said baseband video signal with said standard horizontal synchronization pulses for unscrambling said baseband video signal only in response to the development of said decode authorization signal.

4,408,226

TEST APPARATUS FOR MONITORING DIGITAL TRANSMISSIONS

Andrew Dean, Winnall, and Peter R. Hutt, Petersfield, both of England, assignors to Independent Broadcasting Authority, London, England

Filed Jan. 9, 1981, Ser. No. 223,830
Claims priority, application United Kingdom, Jan. 11, 1980, 8001036
Int. Cl.³ H04N *5/13*
U.S. Cl. 358—139 **6 Claims**



1. Apparatus for monitoring a digital waveform contained in a broad band television video signal, comprising

(a) sampling means (**14, 15**) for sampling the digital waveform at first locations and at an integer multiple of the digital bit rate which is above the Nyguist level to produce output digital words indicative of the samples;

(b) temporary storage means (**17**) for storing said output digital words;

(c) analyzing means including a microprocessor (**20**) for producing from the output digital words stored in said storage means a value of a given parameter of the digital waveform;

(d) display means (**23**) for displaying said value;

(e) conversion means (**25, 26**) connected with said temporary storage means for producing from the stored output digital words a recreated digital waveform; and

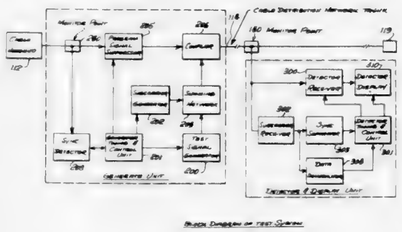
(f) control means (**16**) responsive to said analyzing means for sampling the recreated digital waveform at different locations, thereby to monitor and display another parameter value.

4,408,227

METHOD AND APPARATUS FOR TELEVISION DISTRIBUTION SYSTEM SWEEP TESTING

Jack Bradley, Cupertino, Calif., assignor to Cushman Electronics, Inc., San Jose, Calif.

Filed Jun. 3, 1981, Ser. No. 269,796
Int. Cl.³ H04N *7/02*
U.S. Cl. 358—139 **1 Claim**



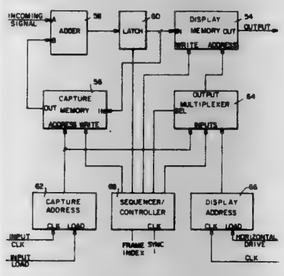
1. Apparatus for testing television distribution networks comprising in combination: a synchronization detector connected to a television distribution network; a test signal generator; means connecting the test signal generator and the synchronization detector to a generator timing and control unit means; means controlled by the generator timing and control unit for periodically suppressing program material; subcarrier generator means controlled by the generator timing and control unit; means for combining the test signal and the subcarrier; means coupling the combined subcarrier and the test signal to the television network; means along the television distribution network at a distance from the test signal generating means suitable to be connected to a test signal detector receiver; a test signal detector receiver connectable to said means to connect; a subcarrier receiver operable with said detector to receiver subcarried signals; data demodulator and synchronization seperator connected to said subcarrier receiver; detector timing and control means connected to said synchronization seperator and data demodulator; and a means connecting said detector receiver and detector timing and control means to a detector display.

4,408,228

METHOD AND MEANS FOR REDUCING NOISE IN TELEVISION DISPLAY SYSTEM

John E. Mahony, Sacramento, Calif., assignor to General Electric Company, Rancho Cordova, Calif.

Filed Nov. 2, 1980, Ser. No. 203,658
Int. Cl.³ H04N *5/21, 5/30;* G01N *29/00;* H04N *5/02*
U.S. Cl. 358—167 **1 Claim**



1. In a television display system in which video magnitude data is stored as digital data in a memory for control of the television display, apparatus for reducing noise in a displayed image comprising

means for generating first digital signals corresponding to magnitude of a video signal at a plurality of time intervals,

first memory means for storing said digital signals at addresses defined by said time intervals,

means for combining digital signals corresponding to magnitude of another video signal with corresponding digital signals stored in said first memory means,

a second memory means,

means for storing said combined values in said second memory means,

means for controlling said first memory means and said second memory means whereby said first memory means and said second memory means alternately receive combined digital data, and

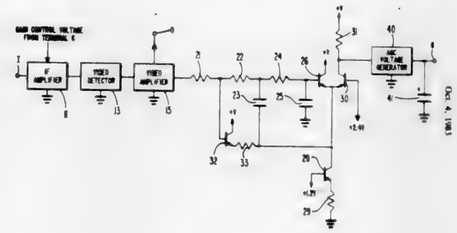
means interconnecting said firstmemory means and said second memory means with a television display whereby said combined digital data in said first memory means and in said second memory means alternately control said television display.

4,408,229

NOISE SENSITIVITY REDUCTION APPARATUS FOR A TV RECEIVER AGC SYSTEM

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,497
Int. Cl.³ H04N *5/52*
U.S. Cl. 358—177 **7 Claims**



1. In a television receiver including an IF amplifier having a gain subject to control in accordance with a gain control potential supplied thereto, and a video detector responsive to the output of said gain controlled IF amplifier; an automatic gain control system comprising:

a low pass filter having an input and an output, and exhibiting a given cutoff frequency;

means responsive to an output of said video detector for supplying a composite video signal to said input of said low pass filter;

a source of reference potential;

voltage comparison means having a first input coupled to said source of reference potential and a second input coupled to said output of said low pass filter for developing an output variation when the potential at said second comparator input reaches a threshold potential related to said reference potential;

means having an input responsive to said output of said video detector, and having an output coupled to said second comparator input, for bypassing said low pass filter; said bypassing means being enabled only in the presence of a difference between the potentials at the input and output of said bypassing means of a given sense and of a magnitude exceeding a given magnitude; said bypassing means have a passband encompassing the passband of said low pass filter and extending beyond said cutoff frequency; and

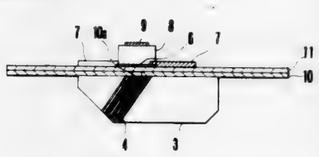
means responsive to output variations of said voltage comparison means for developing said gain control potential.

4,408,230

PHOTOSENSOR ARRAY DEVICE

Katsuyoshi Tamura, Mobara, and Hiromi Kanai, Chiba, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 6, 1981, Ser. No. 280,906
Claims priority, application Japan, Jul. 14, 1980, 55-95094
Int. Cl.³ H04N *1/12*
U.S. Cl. 358—213 **2 Claims**



1. In a photosensor array device comprising an optical base having its bottom surface close to an original, a photoelectric conversion element formed above the upper surface of the

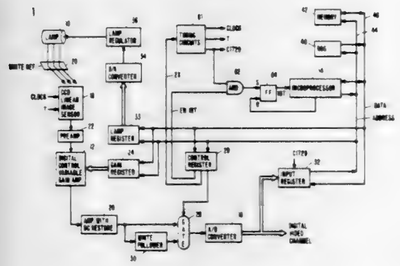
base, a plurality of conductor electrodes each connected at one end thereof to the photoelectric conversion element, and a drive circuit element connected to the other end of each of the conductor electrodes, the improvement wherein said device comprises a metal plate and a transparent insulating plate in combination of an area greater than the area of the upper surface of the base which is disposed on the upper surface of the base and on which the photoelectric conversion element, conductor electrodes and driving circuit element are formed and wherein said metal plate is formed with reinforcing grooves.

4,408,231

METHOD AND APPARATUS FOR CALIBRATING A LINEAR ARRAY SCANNING SYSTEM

Kenneth A. Bushaw, Longmont; Ronald D. Gillingham, Berthoud; Gary W. Jorgenson; Clyde L. Manning, both of Longmont, and Michael A. Steffes, Louisville, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 31, 1981, Ser. No. 288,721
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **20 Claims**



1. In a scanning system having means for illuminating the area to be scanned and scanning means having an array of photosensors for scanning the illuminated area and generating a video signal time segmented into pel (picture element) intervals representative of the light reflected from picture elements (pels) of the illuminated area, the improvement comprising:

means for monitoring at least one pel interval in the time segmented video signal to detect saturation of said scanning means;

means for incrementing the intensity of illumination provided by said illuminating means until said monitor means detects said scanning means has saturated; and

means responsive to scanner saturation detection by said monitor means for decrementing the intensity of illumination provided by said illuminating means to a predetermined proportion of the saturation intensity.

4,408,232

IMAGE READING DEVICE

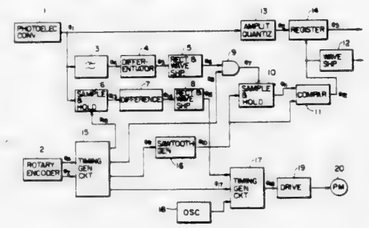
Satoru Itoh, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,144
Claims priority, application Japan, Sep. 9, 1980, 55-124049
Int. Cl.³ H04M *1/40*
U.S. Cl. 358—280 **5 Claims**

1. An image reading device of a type wherein an analog image signal representing an image on an original is sampled to provide a binary electrical signal corresponding to a density distribution of the original, comprising:

a sampling pulse generating circuit for detecting a phase difference between a reference line provided on said original and a first sample pulse signal and outputting a second sampling pulse in phase with said reference line as a function of said detected phase difference;

an amplitude quantizing circuit for converting said analog image signal into a binary electrical signal; and



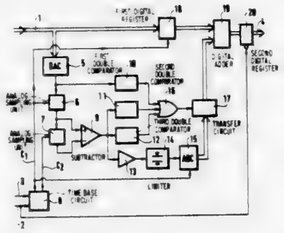
a register receiving an output signal of said amplitude quantizing circuit and said sampling pulse signal for producing a sampled binary electrical signal such that, after said sampling pulse signal is in phase with said reference line on said original, said analog image signal is converted into said binary electrical signal.

4,408,233

METHOD AND APPARATUS FOR ACCENTUATING THE FEATURES OF A MONOCHROME IMAGE REPRODUCED BY MEANS OF A DIGITAL TRANSCRIPTION

Richard Nahon, and Jean-Claude Decuyper, both of Maurepas, France, assignors to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Mar. 12, 1982, Ser. No. 357,541
Claims priority, application France, Mar. 12, 1981, 81 04941
Int. Cl.³ H04N *1/40, 5/14*
U.S. Cl. 358—284 **5 Claims**



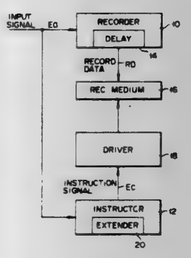
1. A method of accentuating features in a monochrome image, comprising the steps of scanning said image as a succession of elementary zones and transcribing the grey level of each successive zone as a digitally encoded number, the improvement comprising selecting a number from the resulting sequence of numbers when said number falls within a predetermined range of mid value greys and when said number differs from the immediately preceding number in the sequence by a non-zero value of absolute amplitude which is lower than a predetermined threshold, modifying the value of each selected number by adding an accentuation term thereto which is proportional to the difference between the selected number and the immediately preceding number in the sequence, at least over a predetermined range of differences.

4,408,234

RECORDING APPARATUS WITH AUTOMATIC ACTUATOR

Kenji Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1981, Ser. No. 279,629
Claims priority, application Japan, Jul. 11, 1980, 55-94795
Int. Cl.³ G11B *15/00*
U.S. Cl. 360—69 **8 Claims**



1. A recording apparatus with automatic actuator comprising:

(a) recording means for recording a recording signal on a recording medium;

(b) drive means for moving said recording medium at a prescribed speed;

(c) instruction means coupled to said drive means and responsive to said recording signal for providing an instruction signal for moving said recording medium to said drive means for a period, during which the magnitude of said recording signal is above a fixed sense level; and

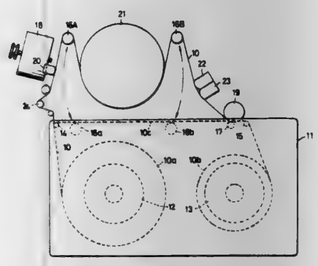
(d) delay means coupled to said recording means for delaying said recording signal for a delay period substantially equal to or longer than a first period from an instant when said instruction means provides said instruction signal till an instant when said prescribed speed is substantially reached by said recording medium.

4,408,235

RECORDING MODE LOCKING SYSTEM IN A VIDEO SIGNAL MAGNETIC RECORDING APPARATUS

Yukio Ito, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 3, 1981, Ser. No. 269,886
Claims priority, application Japan, Jun. 4, 1980, 55/75313
Int. Cl.³ G11B *15/18, 5/52*
U.S. Cl. 360—71 **4 Claims**



1. A recording mode locking system in a video signal magnetic recording apparatus having loading means operating between loaded and unloaded states, a magnetic tape which is loaded from a predetermined position into a predetermined tape path and which is unloaded from the loaded state, a power source swith which closes or opens for supplying or interrupting a source power to the apparatus, and means for enabling said loading means to perform an unloading operation when said power source switch is closed, said recording mode locking system comprising:

locking switch means which is activated for locking the recording mode; and

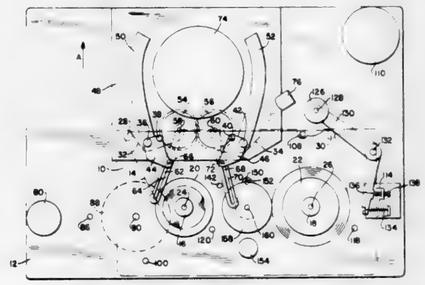
recording mode signal producing means for producing a recording mode signal upon the closing of said power source switch where said locking switch means is in an activated state and said tape is in a loaded state, said loading means remaining in said loaded state responding to the recording mode signal.

4,408,236

MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Shigeki Murata, Nara; Jirou Kajino, and Hitoshi Minabe, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 30, 1981, Ser. No. 230,367
Claims priority, application Japan, Feb. 8, 1980, 55-15263
Int. Cl.³ G11B *5/08, 15/00*
U.S. Cl. 360—85 **9 Claims**



1. A magnetic tape recording and/or reproducing apparatus for recording and/or reproducing signals on a magnetic tape wound on reels contained in a tape cartridge, said apparatus comprising:

a pair of reel drive turntables engagable with the reels for rotating the reels;

tape moving means for moving the magnetic tape at a constant speed;

means for carrying out recording and/or reproducing of signals on/from the magnetic tape in a specific tape path outside of the tape cartridge;

loading means for drawing the magnetic tape out of the tape cartridge and loading the magnetic tape in said specific path;

a loading means and operating mode changing means driving motor;

intermittent driving means driven by said motor and connected to said loading means for changing the rotational motion of a motor to an intermittent motion for driving said loading means; and

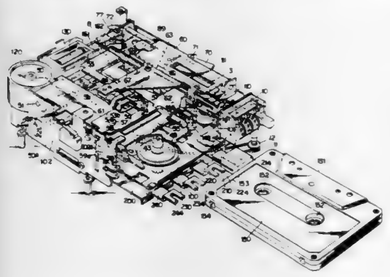
operating mode changing means comprising a rotating member driven by said motor and which rotates to a plurality of positions in synchronization with the rotation of said motor for changing the operating mode of said apparatus to operating modes corresponding to the respective ones of said plurality of positions.

4,408,237

MAGNETIC RECORD/PLAYBACK APPARATUS

Yuji Takahashi; Hideki Hayashi; Satoshi Takagi, and Ito Yukio, all of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,266
Claims priority, application Japan, Sep. 29, 1979, 54-125916
Int. Cl.³ G11B *15/28, 15/22, 5/54, 21/22*
U.S. Cl. 360—96.3 **3 Claims**



1. In a magnetic record/playback apparatus including a head plate on which a recording/playback head and first and second pinch rollers are supported, first and second capstans associated respectively with said first and second pinch rollers, manually operable play-operation means for displacing said head plate from an inoperative position to a play position where said head is adjacent the tape and the pinch rollers are adjacent to said capstans, first changeover means having first and second positions respectively before and subsequent to an end of tape condition of the apparatus for alternatively moving said first and second pinch rollers respectively against the tape to press the same against the associated one of the capstans, so as to effect respectively forward and reverse tape feeding directions, second changeover means movable with said first changeover means and having corresponding first and second positions respectively for rotating the takeup side of the tape pack to effect respectively forward and reverse tape feeding directions, tape pack receiving and positioning means for receiving and positioning a magnetic tape pack inserted into the apparatus in a play-position so that the tape is adjacent to said head and pinch rollers when said head plate is in said play-position, and manually operable ejecting means for ejecting said tape pack from said play-position, the improvement which comprises: first means moved upon operation of said manually operable ejecting means when effecting an ejecting operation, and second means associated with said changeover means which is engaged by said first means during an ejection operation when said changeover means are in said second position to effect a reverse tape feeding direction, moving said changeover means into said first position whereby reproducing is automatically resumed in a forward feeding direction after a tape pack ejection operation is carried out and upon resumption of a play-operation.

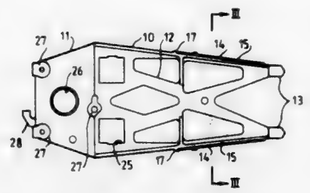
4,408,238

MAGNETIC HEAD ARM ASSEMBLY

Anthony R. Hearn, Winchester, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,218
Claims priority, application European Pat. Off., Mar. 18, 1981, 81301162.4
Int. Cl.³ G11B *5/48, 5/016, 21/16*
U.S. Cl. 360—104 **8 Claims**

1. A head support arm for a disk file adapted to support a transducing head at one end and adapted at the other end to be mounted on a positioning apparatus in cantilever fashion, the arm comprising a relatively rigid beam structure of flattened cross section defining a plane therethrough, which structure is susceptible to out-of-plane resonances, and damping means to damp said resonances, characterized in that said damping means comprises a relatively rigid sidebar means located alongside one longitudinally extending edge of the beam structure, and a layer of relatively compliant damping material



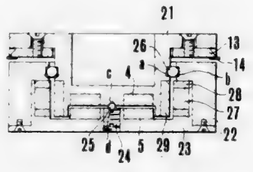
providing a mechanical connection between the sidebar means and the beam structure whereby out-of-plane resonances of the beam structure are damped by shear of the damping material as a result of relative motion between the beam and sidebar means.

4,408,239

ROTARY MAGNETIC HEAD DRUM ASSEMBLY FOR MAGNETICALLY RECORDING AND/OR REPRODUCING DEVICE

Tatsuzo Ushiro, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 11, 1981, Ser. No. 272,543
Claims priority, application Japan, Jun. 12, 1980, 55-79258
Int. Cl.³ G11B *5/52, 15/60*
U.S. Cl. 360—107 **13 Claims**



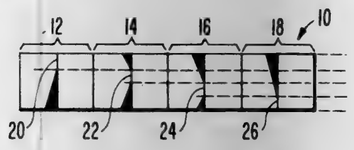
1. A rotary magnetic head drum assembly for a helical scanning type magnetically recording and/or reproducing device comprising a rotary drum having a magnetic head on the circumference and a driving part at the part inside of the circumference and a stationary drum having a driving coil arranged so as to face to the driving part and a circumference whose diameter is almost the same as that of the circumference of the rotary drum, wherein on the circumferential surface of a cylinder whose diameter is smaller than that of the circumference of the rotary drum at least one ring groove is provided, while in a space between the ring groove and that provided on the internal circumference of the cylinder of the stationary drum so as to face to the former ring groove a plurality of steel balls are inserted so as to constitute a bearing, by means of which the rotary drum is freely rotatable.

4,408,240

MULTICHANNEL MAGNETIC HEAD FOR A RECORDER-REPRODUCER SYSTEM

David C. Pastore, Berlin, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 87,450, Oct. 22, 1979, abandoned. This application Aug. 6, 1981, Ser. No. 290,499
Claims priority, application United Kingdom, Aug. 23, 1979, 7929476
Int. Cl.³ G11B *5/27, 5/28*
U.S. Cl. 360—121 **2 Claims**



1. A multichannel magnetic transducer head arrangement for transducing parallel tape tracks in a video tape recorder, comprising:

a plurality of individual transducers, each transducer including first and second magnetic pole pieces, said first and second pole pieces defining a block with first and second parallel sides having a predetermined width and also defining a face substantially orthogonal to said first and second sides, said face being adapted for operative contact with magnetic tape, said first and second pole pieces defining said face being separated by a magnetic gap in said face, said gap lying in a plane substantially parallel with said first and second sides and having a width equal to that of said width of said pole pieces, the length of said gap being small over a predetermined portion of the width of said pole pieces and gradually becoming larger over at least a portion of the remainder of said width, each of said plurality of transducers having said small portion of said gap along a different portion of said width; and

nonmagnetic bonding means for mechanically bonding together said plurality of individual transducers along adjacent ones of said parallel sides with said faces of said transducers lying substantially in the same plane and with said gaps lying in parallel planes, said bonding means producing magnetic isolation between the pole pieces of adjacent transducers for reducing crosstalk between said transducers whereby said small portion of each of said gaps can scan across a different lateral portion of said tape with substantially no separation between said tracks.

4,408,241

CLEANING DEVICE

Kenji Ogawa, Kiyose, Japan, assignor to Bruce R. Maier, Columbia, Mo.

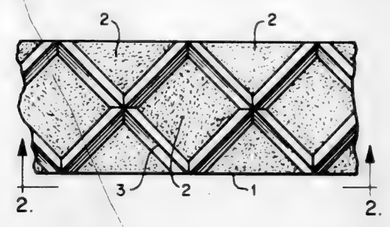
Filed Jun. 9, 1981, Ser. No. 271,948
Int. Cl.³ G11B *5/10, 5/41, 3/58;* **B47L** *25/00*
U.S. Cl. 360—128 **25 Claims**

1. A cleaning device for a contact-type information transducing head comprising:

a base;

means for defining a plurality of raised areas projecting away from at least one surface of the base, said raised areas adapted to remove material from and clean the transducing head; and

an adhesive deposited on the at least one surface of the base between the plurality of raised areas, said adhesive



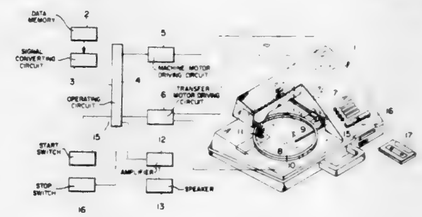
adapted to capture material removed from the transducing head by the raised areas.

4,408,242

MAGNETIC RECORDING MEMBER FOR AUTOMATIC EMBROIDERING MACHINE

Koji Nishida, and Taneichi Kawai, both of Anjo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariva, Japan

Filed Sep. 16, 1981, Ser. No. 302,821
Claims priority, application Japan, Sep. 29, 1980, 55-135549
Int. Cl.³ G11B *31/00, 23/16*
U.S. Cl. 360—131 **3 Claims**



1. A magnetically-recorded program member for use with a program-operated, automatic embroidery machine having embroidery controlling circuitry and an audio speaker, the recorder program member comprising:

a plurality of control data recording blocks, each of said control data recording blocks including control data indicating at least one of a thread change, frame change, and applique cloth application; and

a plurality of voice recording blocks, each of said voice recording blocks being associated with a different one of said control data recording blocks and including signals for actuating said speaker to generate an audio message identifying the control data stored in said associated control data recording block.

4,408,243

TAPE CLEANER

Clive E. Bonner, and Herbert F. Sanford, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 21, 1981, Ser. No. 295,151
Int. Cl.³ G11B *5/76*
U.S. Cl. 360—137 **10 Claims**

1. A tape cleaner comprising

a tape wiping medium,

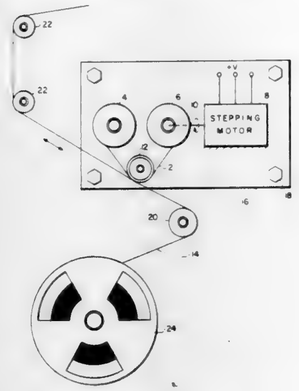
medium support means for supporting said medium in contact with a face of a tape to be cleaned,

medium drive means for transporting said medium past said face of the tape to the cleaned in response to a drive signal,

tape drive means for driving a tape to be cleaned at a preselected tape speed in response to a control signal,

tape speed selection means for producing said control signal

for controlling said tape drive means at a selected one of a plurality of different tape speeds, and



drive signal means connected to said tape drive means for developing said drive signal to drive said wiping medium at a sub-multiple of said selected tape speed.

4,408,244

CIRCUIT SAFE AGAINST OVERLOAD FOR VARYING THE AMOUNT OF POWER TO AN ELECTRIC BLOWER MOTOR

Reinhold Weible, Stuttgart, Fed. Rep. of Germany, assignor to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 913,687, Jun. 8, 1978, abandoned. This application May 14, 1980, Ser. No. 149,832

Int. Cl.³ H02H *7/085*

U.S. Cl. 361—24 **10 Claims**



1. In a vehicle having a direct current blower motor used for heating, ventilating or air conditioning, a circuit for controlling said motor to cause the motor to operate at one of at least two incremental speeds, a direct current power source, a main power line extending from said power source to a selector switch, a main system fuse in said power line between said source and said selector switch,

at least two branch circuits corresponding in number to said at least two speeds at which said motor is to be operated, a first of said two branch circuits interconnecting said motor to said selector switch, said selector switch selecting one only of said branch circuits at a time to interconnect said motor and said power source, said fuse being operative to protect a first one of said branch circuits, and at least one PTC resistor in at least a second one of said branch circuits; whereby said PTC resistor in said at least second one of said branch circuits protects said motor when said selector switch connects said at least one PTC resistor to said motor by limiting the current to said motor, thereby automatically reducing the speed of said motor when the predetermined temperature of said PTC resistor is exceeded, and whereby said at least one PTC-resistor protects itself against thermal overload and the blower motor and the circuit for supplying variable power are also protected from thermal overload; and whereby said main system fuse protects said motor when a branch circuit not containing a PTC resistor is connected by said selector switch to said motor.

4,408,245

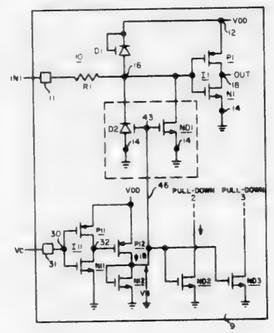
PROTECTION AND ANTI-FLOATING NETWORK FOR INSULATED-GATE FIELD-EFFECT CIRCUITRY

Richard L. Pryor, Voorhees, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 28, 1981, Ser. No. 334,819

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—56 **9 Claims**



1. A combined gated diode and insulated-gate field-effect transistor (IGFET) comprising:

a heavily doped first region of first conductivity type;

a lightly doped second region of second conductivity type enclosing said first region;

a control electrode isolated from and overlying said second region;

a heavily doped third region of said second conductivity type substantially surrounding said second region, said third region having a gap;

said first and third regions forming the anode and cathode of said gated diode;

a fourth heavily doped region of said first conductivity type formed within said gap, spaced apart from the ends of said third region and abutting said second region, said first and fourth region forming the source and drain of said IGFET, and said control electrode being the common gate electrode of said IGFET and the gate electrode of said gated diode.

4,408,246

PROTECTIVE RELAY APPARATUS

Roger E. Ray, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1982, Ser. No. 339,031

Int. Cl.³ H02H *7/26, 3/28*

U.S. Cl. 361—64 **11 Claims**

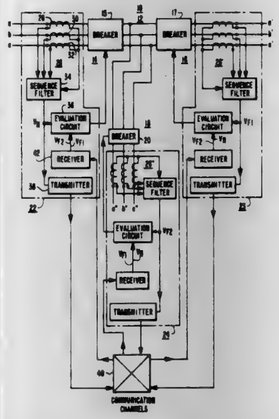
1. A protective relay system for providing pilot protection for an alternating current transmission line section having circuit interrupting means at its near and far ends to be protectively controlled, comprising:

line current deriving means at the near and far ends of the line section, providing near and far composite sequence signals responsive to the magnitudes and phases of the line currents at the near and far ends, respectively,

communication means communicating the far signal to the near end,

first means providing an operating quantity in response to the absolute value of the vector combination of said near and far signals, with said vector combination being selected such that the absolute value thereof increases when a fault occurs in the protected section,

second means providing a restraining quantity in response to the absolute value of at least one of said near and far signals,



and third means modifying one of said quantities with a predetermined constant such that the difference between the quantities is indicative of a fault in the protected section when said difference bears a predetermined relationship with a predetermined pick-up value, with the magnitude of said modifying constant being determinative of the tripping characteristic of the protective relay system.

4,408,247

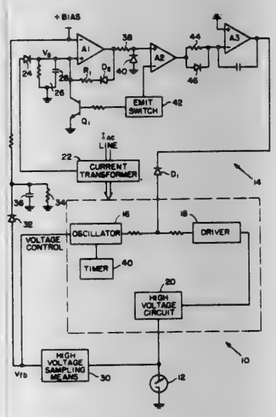
HIGH VOLTAGE PROTECTION CIRCUIT FOR X-RAY SYSTEMS

David Cowell, Webster, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Sep. 10, 1980, Ser. No. 185,776

Int. Cl.³ H02H *3/38*

U.S. Cl. 361—79 **5 Claims**



1. A protection circuit, for a x-ray power supply energized by line current of the type which multiplies a low voltage drive signal to obtain a high voltage, comprised of:

means for providing a line current monitor signal;

means for providing a high voltage monitor signal;

means for providing a first voltage if the line current monitor signal is more than the high voltage monitor signal, and a second voltage if the line current monitor signal is less than the high voltage monitor signal; and

means for turning off the high voltage of the x-ray power supply in response to the first voltage.

4,408,248

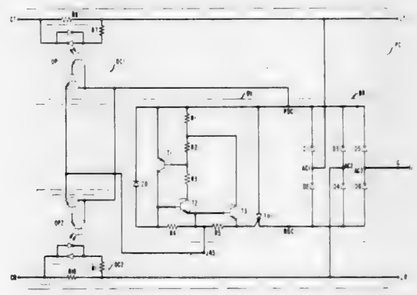
PROTECTION CIRCUIT

Raymond M. Bulley, Whippany, N.J.; William F. MacPherson, Wheaton, Ill., and Robert F. Youhas, Parsippany, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1981, Ser. No. 335,623

Int. Cl.³ H02H *9/04*

U.S. Cl. 361—91 **11 Claims**



1. A protective circuit connected between communication equipment having tip and ring leads and a communication line having tip and ring conductors, the protective circuit comprising

a six element bridge rectifier (BR1) having three alternating current terminals (AC1, AC2, AC3) and two direct current terminals (PDC, NDC), the alternating current terminals being connected to, respectively, the tip and ring conductors, and to ground, and

means (OC, OV, TH1) connected between said direct current terminals responsive to a range of predetermined voltage and current conditions in the tip and ring conductors for reflecting foreign electrical energy applied to the tip and ring conductors.

4,408,249

TOTALLY ENCLOSED SURGE ARRESTER

Gaston Ecklin, Wettswil, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

PCT No. PCT/CH81/00022, § 371 Date Nov. 17, 1981, § 102(e) Date Nov. 17, 1981, PCT Pub. No. WO81/02812, PCT Pub. Date Oct. 1, 1981

PCT Filed Feb. 26, 1981, Ser. No. 324,392

Claims priority, application Switzerland, Mar. 19, 1980, 2148/80

Int. Cl.³ H01T *5/04*

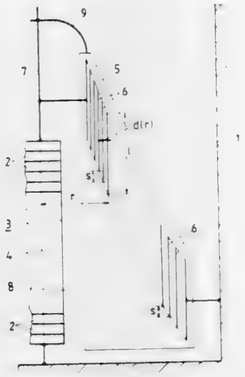
U.S. Cl. 361—127 **2 Claims**

1. A surge arrester comprising an electrically conductive, grounded enclosure filled with an insulating gas in which are disposed disc-shaped active arrester elements arranged one above another to form at least one columnar active portion which is connected between a high potential and a ground potential, and screening and controlling bodies for producing a linear potential distribution along said columnar active portion of the arrester,

said screening and controlling bodies comprising electrically conducting coatings disposed in a body composed of insulating material, wherein the coatings are offset with respect to each other, are parallel to the column-axis of

said active portion, and surround said active portion substantially concentrically,

wherein the coating which is located at the shortest distance from said active portion is disposed opposite that part of said active portion which is at high potential and the coating which is located at the largest distance from said active portion is disposed opposite that part of said active portion which is at ground potential,



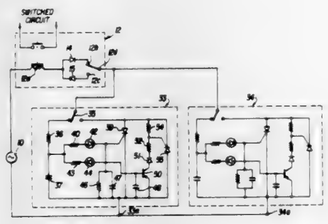
and wherein said insulating body is externally configured, at least partially, as a truncated cone, and internally defines channels, extending along said at least one active portion, through which the insulating gas circulates, thereby carrying away any heat which may occur at the active portion.

4,408,250

CIRCUIT FOR REMOTELY OPERATING AN ELECTROMAGNETIC RELAY

Toshiyuki Masuda, Matsuzaka, Japan, assignor to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed Jun. 22, 1981, Ser. No. 275,850
Claims priority, application Japan, Jul. 8, 1980, 55-096686[U]
Int. Cl.³ H01H *47/22*
U.S. Cl. 361—160 **7 Claims**



1. A system for controlling an electrical load comprising:

a magnetic latching relay, said relay comprising a pair of relay control conductors, a load switching pair of contacts, a switch assembly comprising an auxiliary pair of contacts selectively connected to a moving contact and first and second diodes, one end of each of said diodes being connected to a respective one of said auxiliary contacts, the remaining ends of said diodes being commonly connected, said first diode being connected to conduct an electrical current in a direction opposite to an electrical current conducted in said second diode, said switching assembly having a first current carrying conductor defined by the common connection of the diodes and a second current carrying conductor defined by the moving contact, and a control winding, said moving contact and switching contacts having a state determined by the direction of an electrical current in said control winding, one end of said control winding being connected to one of said current carrying conductors, the other end of said control winding being connected to one of said relay control conductors, the other of said current carrying conductors being connected to the other of said relay control conductors;

a control circuit for switching electrical current through said relay control conductors comprising:

a switch having a movable contact, positionable between first and second fixed contacts, said movable contact being connected to one of said relay control conductors;

a common terminal;

a first current path connected between said first contact and said common terminal, said path including a capacitor and resistor;

a second current path connected between said second contact and said common terminal, said second current path comprising first and second silicon controlled rectifiers connected in parallel for carrying current in opposite directions; and

means for supplying a control current from said capacitor to control gates of said rectifiers; and

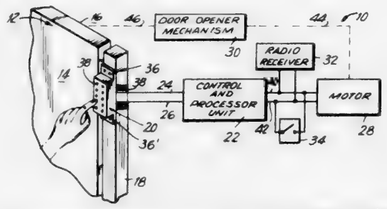
means for applying a voltage between said common terminal and a remaining one of said relay control conductors, whereby when said switch movable contact is moved from said first contact to said second contact a current flows through said relay winding changing the state of said relay contacts.

4,408,251

TAMPER-RESISTANT SECURITY SYSTEM FOR AND METHOD OF OPERATING AND INSTALLING SAME

Irwin M. Kaplan, East Northport, N.Y., assignor to Spectrum Four-Syte Corporation, Hauppauge, N.Y.

Filed Jul. 13, 1981, Ser. No. 282,945
Int. Cl.³ E05B *49/00*
U.S. Cl. 361—172 **14 Claims**



1. A tamper-resistant security system for electronically controlling the movement of a garage door which has an exterior side wall that faces a publicly accessible exterior area, and an interior side wall that faces a secured interior garage area, said garage door being movable relative to an adjacent garage door jamb between a closed and an open position in which entry from the exterior area to the interior garage area is barred and permitted, respectively, said security system comprising:

(a) manual encoding means mounted on the door jamb and being located solely in the exterior area, said encoding means being operative for generating coded electrical signals including a predetermined sequence of coded electrical timing signals required to move the garage door from the closed to the open position, each timing signal having a time duration indicative solely of each individual user's sense of timing;

(b) non-prompting control means located solely in the interior garage area and operative for detecting the generation of the coded electrical signals, and for moving the garage door from the closed to the open position in response to detection of the predetermined coded timing signal sequence; and

(c) electrical signal transmission means for conducting the coded electrical signals from the exterior area to the interior garage area, said transmission means being constituted solely by a pair of electrical conductors extending between the exterior and interior areas and interconnecting the encoding means and the control means,

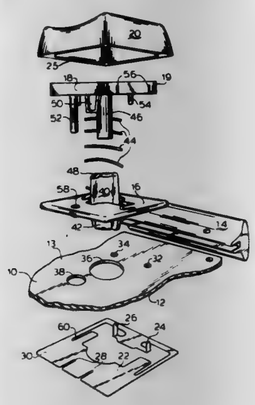
whereby the transmission of the predetermined coded signal sequence over the pair of electrical conductors is the sole way of moving the garage door by operation of the encoding means on the door jamb so that the intruder access to any point along the pair of electrical conductors, and particularly to the connection in the exterior area between the encoding means and the pair of electrical conductors, is the equivalent in terms of system security to intruder access to the encoding means, to thereby deter the intruder from compromising system security by shorting or bridging the pair of electrical conductors or otherwise tampering with the system.

4,408,252

LOW PROFILE KEYBOARD SWITCH

Andrew Voge, Arcadia; Daniel R. Sparks, Temple City, and Barry W. Mullins, Glendora, all of Calif., assignors to Becton Dickinson and Company, Paramus, N.J.

Filed Feb. 16, 1982, Ser. No. 349,349
Int. Cl.³ H01G *5/16*; H01H *3/12*
U.S. Cl. 361—288 **20 Claims**



1. Apparatus for a capacitive switch for a low profile keyboard comprising

(a) a printed circuit board;

(b) a fixed capacitor plate;

(c) a movable capacitor plate;

(d) a movable plunger key body for moving said movable capacitor plate from a first position adjacent said fixed capacitor plate to a second position away from said fixed capacitor plate;

(e) resilient means positioned between said plunger key body and said printed circuit board for urging said plunger key body from said second position to said first position;

the improvement characterized by

(f) an etched metallic laminate on the bottom surface of said printed circuit board with a portion thereof forming said printed circuit and said fixed capacitor plate;

(g) a guide opening in said printed circuit board;

(h) a guide body with a portion thereof extending through and in snap-fit engagement with said guide opening;

(i) a guide stem integral with said plunger body for reciprocable cooperating guiding engagement with said guide body;

(j) cooperating integral locking means on said guide body and said plunger body for maintaining said guide body and said plunger in a fixed reciprocable relationship with each other;

(k) an integral switch activation stem on said plunger body reciprocable with said plunger body through cooperating openings in said guide body and said printed board;

(l) said switch activation stem for moving said movable capacitor plate from said first position to said second position.

11. The apparatus of claim 1, further characterized by

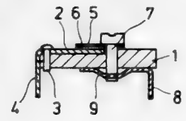
(a) a key cap snap-fitted to the top of said plunger key body.

4,408,253

VARIABLE CAPACITOR

Atsushi Nishino, Neyagawa; Tadashi Suzuki, Katano; Masaki Ikeda, Hirakata, and Tadashi Ohtani, Yao, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed May 7, 1981, Ser. No. 261,739
Claims priority, application Japan, May 12, 1980, 55-63255; May 12, 1980, 55-63256
Int. Cl.³ H01G *5/06*
U.S. Cl. 361—293 **12 Claims**



1. A variable capacitor including a stator electrode, a base plate for supporting said stator electrode, a rotor electrode rotatably mounted on said base plate and above said stator electrode and a layer of a dielectric material being sandwiched between the both electrodes;

characterized in that;

at least one of said stator and rotor electrodes is made of an aluminum alloy and is coated with a baked layer containing fluorocarbon resin as its principal ingredient which serves as said layer of dielectric material,

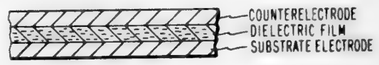
said aluminum alloy being of a purity under 96 w/w %, and containing 0.1–5.0 w/w % of copper, silicon, iron and manganese.

4,408,254

THIN FILM CAPACITORS

Wei-Kan Chu, Poughkeepsie, and James K. Howard, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armomk, N.Y.

Filed Nov. 18, 1981, Ser. No. 322,360
Int. Cl.³ H01G *4/20*
U.S. Cl. 361—321 **4 Claims**



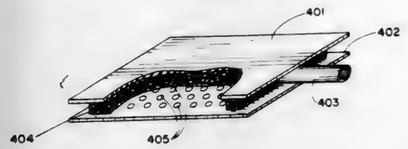
1. A thin film capacitor comprising a substrate electrode, a dielectric film on said electrode with said film comprising an amorphous titanate implanted with noble gas ions, and a counterelectrode opposing said substrate electrode and spaced therefrom by said dielectric film.

4,408,255

ABSORPTIVE ELECTROMAGNETIC SHIELDING FOR HIGH SPEED COMPUTER APPLICATIONS

Harold Adkins, 56 Camille La., East Patchogue, N.Y. 11772

Filed Jan. 12, 1981, Ser. No. 224,319
Int. Cl.³ H05K 7/20
U.S. Cl. 361—382 **2 Claims**



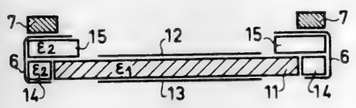
1. An electromagnetic interference shield for direct application to circuitry, comprising:
(a) a flexible mat of porous electrically lossy material,
(b) a first sheet of continuous conductive material which is impervious to liquids,
(c) means for bonding the first sheet to a first side of the mat to form a composite shield,
(d) a second sheet of conductive material bonded to the second side of the mat, the second sheet of conductive material containing a plurality of openings passing through the sheet and the shield further comprising means for forcing the fluid between the sheets through the pores of the mat and out through the plurality of openings to aid in adjusting the temperature of the circuitry adjacent the second sheet of conductive material.

4,408,256

MICROBOX FOR ELECTRONIC CIRCUIT AND HYBRID CIRCUIT HAVING SUCH A MICROBOX

Christian Val, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 148,043, May 8, 1980, abandoned. This application Feb. 8, 1982, Ser. No. 346,907
Claims priority, application France, May 10, 1979, 79 11852
Int. Cl.³ H05K 7/02
U.S. Cl. 361—403 **5 Claims**



1. A chip carrier for an electronic circuit comprising a partially metallized substrate to which is fixed a circuit chip, wherein said substrate is made up of a plate which has at least one metallized region on each face in order to form the foils of at least one capacitor, wherein said substrate is formed of a rigid material chosen from among those having a high dielectric constant, and wherein said chip carrier has output connections which are supported by a frame integral with said substrate, with said frame being made from a material having a low dielectric constant.

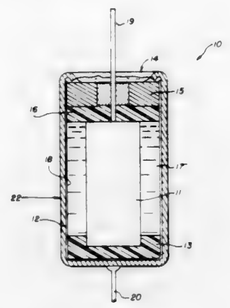
4,408,257

CATHODE ELECTRODE FOR AN ELECTRICAL DEVICE

Charles W. Walters, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Dec. 8, 1980, Ser. No. 214,014
Int. Cl.³ H01G 9/00
U.S. Cl. 361—433 **3 Claims**

1. A capacitor comprising an anode electrode, a copper-based cathode electrode, and dielectric means between the anode electrode and the copper-based cathode electrode, the copper-based cathode electrode including a surface contacted by at least semi-liquid electrolyte, said surface further including a deposit of silver coated with a finely divided electrically conductive material taken from the group consisting essentially of graphite, platinum and palladium.



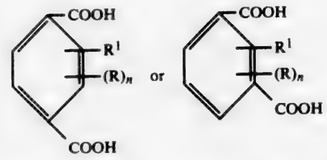
4,408,258

ALUMINUM ELECTRODE CAPACITOR AND GLYCOL FILL ELECTROLYTE THEREFOR

Roland F. Dapo, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 190,147, Sep. 24, 1980, abandoned, which is a continuation of Ser. No. 61,120, Jul. 27, 1979, abandoned. This application Nov. 27, 1981, Ser. No. 325,515
Int. Cl.³ H01G 9/02
U.S. Cl. 361—433 **5 Claims**

1. An electrolytic capacitor comprising aluminum anode and cathode members separated by an insulating spacer impregnated with an electrolyte consisting essentially of a solution in ethylene glycol of the neutralization product of about 2 mols of dimethylamine, diethylamine or piperidine and about 1 mol of dicarboxylic aromatic acid of the formulae



where in each case R is alkyl of 1–6 carbon atoms, alkoxy of 1–6 carbon atoms, alkenyl of up to 6 carbon atoms, benzoyl, phenyl, nitro or phenoxy, R^1 is hydrogen or alkyl of up to 6 carbon atoms and n is an integer of 0–3.

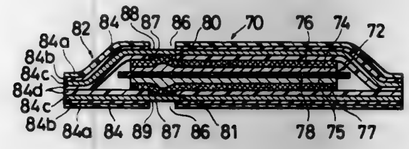
4,408,259

ELECTROCHEMICAL DOUBLE-LAYER CAPACITOR

Takayoshi Muranaka, and Hajime Mori, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Feb. 4, 1980, Ser. No. 118,078
Claims priority, application Japan, Feb. 9, 1979, 54-14743; Feb. 9, 1979, 54-14746; Jun. 1, 1979, 54-69324; Jun. 1, 1979, 54-69325
Int. Cl.³ H01G 9/00, 9/04, 9/08
U.S. Cl. 361—434 **10 Claims**

1. An electrochemical double-layer capacitor which comprises a capacitor element including a pair of polarization electrodes each made of active carbon and a binder for the active carbon, supported on a sheet-like collector; a spacer separating the pair of polarization electrodes and impregnated with an electrolyte solution; and a hermitically sealed enclosure encasing said capacitor element, the enclosure being formed by heat-sealing one or more composite films, each of



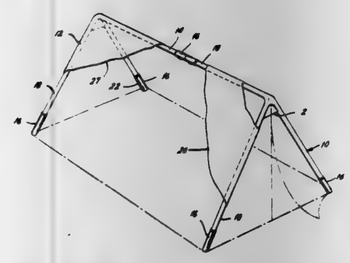
said composite films being a laminate, in order, of a polyethylene film, aluminium film, polyethylene film and polypropylene film, or a laminate, in order, of a polyethyleneterephthalate film, aluminium film, polyethyleneterephthalate film, polyethylene film and polypropylene film.

4,408,260

TENT CONSTRUCTION HAVING ILLUMINATING MEANS

Roland E. Miedel, 604 Seminole Ave., Fox Chase Manor, Philadelphia, Pa. 19111

Filed Feb. 13, 1981, Ser. No. 234,301
Int. Cl.³ F21V 7/04
U.S. Cl. 362—32 **7 Claims**



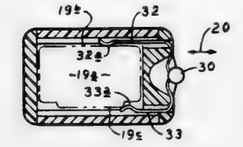
1. A tent comprising
a structural framework composed of a plurality of structural members, the members having a housing and an elongated transparent solid, rigid light post extending away from said housing;
a light source within said housing for introducing light into said transparent light post for passage a through said light post;
a battery unit within said housing for powering said light source;
switch means in said housing for selectively connecting said battery unit to said light source;
a covering fitted over said structural framework to form a shell;
means releasable securing said covering to said structural framework to expose the surface of said structural framework to the interior of said tent; said securing means comprising two mating releasable engaging strips, one secured longitudinally of the structural framework, and the other secured to the tent covering and exposing the inner approximate half of said framework to the interior of said tent; and
a ridge pole comprising light posts and bidirectional illumination means contained in the middle of said pole, said pole fruther containing slots near the ends of said light posts, said slots tightly fitting with slots formed at the apex of the other structural members, and a web between the members for structural support at said apex.

4,408,261

BATTERY OPERATED CHARM LIGHT

Frank Polakoff, 8140 Vanscoy Ave., North Hollywood, Calif. 91605

Filed Jan. 18, 1982, Ser. No. 340,235
Int. Cl.³ F21L 15/08
U.S. Cl. 362—104 **11 Claims**



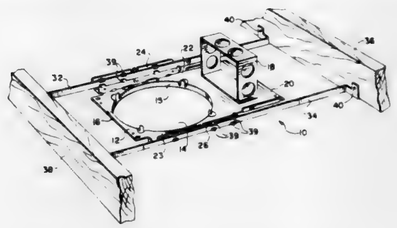
1. In a battery operated charm light, the combination, comprising
(a) a case having a zone to contain a battery having two terminals spaced from the case,
(b) an LED having two unequal length leads within the case and one of which is located to always engage one battery terminal,
(c) and a part linearly movable back and forth relative to the case to effect engagement and disengagement of the other lead with the other battery terminal, said part comprising a cap for the end of the case and carried for movement toward and away from said zone, the LED carried by said cap.

4,408,262

PLASTER FRAME FOR RECESSED LIGHTING

Raymond J. Kusmer, Elgin, Ill., assignor to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jun. 1, 1982, Ser. No. 384,025
Int. Cl.³ F21S 1/02
U.S. Cl. 362—147 **9 Claims**



1. A plaster frame for mounting a lighting fixture in recessed fashion in a predeterminedly dimensioned aperture defined in a ceiling, said ceiling being supported by predeterminedly spaced ceiling joists, said plaster frame including in combination:
a main body portion including a planar member, said planar member defining an aperture therein dimensioned similarly to said aperture defined in said ceiling;
first and second hanger bar brackets integrally formed with said planar member along first and second breakaway junctions, respectively, generally located along first and second sides of said planar member, respectively, said hanger bar brackets being adapted for receipt of hanger bars for mounting said plaster frame in a first orientation between said ceiling joists with said aperture defined in said planar member being aligned with said ceiling aperture, said hanger bar brackets being detachable from said planar member at said breakaway junctions;
each said hanger bar bracket including means for reattaching said hanger bar bracket to said planar member at third and

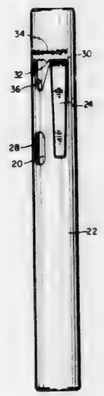
fourth sides thereon, respectively, said third and fourth sides being generally perpendicular to said first and second sides, for mounting said plaster frame between said ceiling joists in a second orientation different from said first orientation.

4,408,263

DISPOSABLE FLASHLIGHT

Mark Sternlicht, Stamford, Conn., assignor to Wonder Corporation of America, Norwalk, Conn.

Filed Dec. 14, 1981, Ser. No. 330,477
Int. Cl.³ F21L 7/00
U.S. Cl. 362—189 **2 Claims**



1. In a disposable flashlight having a battery and light within a casing, a conductive clip engaging the battery, and a conductive member engaging a terminal of the light and extending into proximity with the end of the clip so that the end of the clip can be pushed through a contact opening in the casing into electrical contact with said conductive member to turn on the light, the improvement comprising,

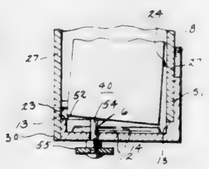
a peripheral slot in the casing through which the clip extends, said slot extending a distance along the circumference of the casing such that the clip can be rotated to an "off" position where said clip end does not overlie said contact opening to thereby prevent the light from being energized by the application of pressure to said clip end, said slot further including a detent between its ends so as to retain the clip in its "off" and "on" positions.

4,408,264

WARNING LIGHT HOUSING

Wilton K. Decker, 249 Antoine Dr., Port Washington, Wis. 53074

Continuation-in-part of Ser. No. 298,009, Aug. 31, 1981. This application Jul. 19, 1982, Ser. No. 399,327
Int. Cl.³ F21L 7/00
U.S. Cl. 362—200 **6 Claims**



1. In a light assembly, the combination comprising:

a base having a supporting platform with a recess in its upper face that has a bottom, side walls and an open top, said base also having an access hole in a recess side wall leading into said recess from the exterior;

a removable casing fitting over said base to form a housing therewith, said casing having a cavity with side walls and a top extending above said recess;

a coupling between said base and casing for assembly and disassembly of said casing with and from said base in a lateral movement, said coupling restricting vertical removal of said casing from said base;

a light assembly component insertable in said casing cavity which recedes into said recess upon assembly of the component with said base and casing, said component being in interfering position with sidewalls of said cavity and said recess to block lateral disassembly of said casing from said base; and

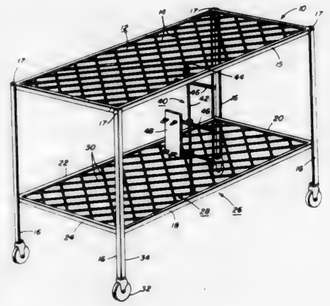
said light assembly component being elevatable out of said recess upon insertion of a tool through said access hole, thereby shifting said component from its interfering position to permit lateral disassembly of said casing and base.

4,408,265

LAMP, IN PARTICULAR FOR MOTOR VEHICLES

Heinz Dick, Odenthal, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 14, 1981, Ser. No. 254,026
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1980, 3015693
Int. Cl.³ F21V 7/22
U.S. Cl. 362—238 **6 Claims**



1. A lamp assembly comprising:

a housing which includes a rear cover portion and a front lens element defining a plurality of light emitting areas;

a plurality of light emitting lamps mounted within said housing and correspondingly associated with a plurality of light emitting areas of said lens element; and

a light reflector element formed of an electrically conducting sheet material, subdivided into a plurality of electrically isolated areas for each defined light emitting area, wherein each subdivision provides separate electrical connection between an externally supplied voltage source and its associated lamp.

4,408,266

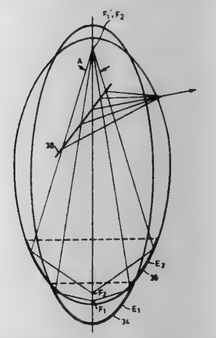
OPTICAL SYSTEM FOR AIRPORT SEMI-FLUSH APPROACH LIGHTS

Ermes Sclippa, R.R. #6, Guelph, Ontario, Canada (N1H 6J3)

Filed Apr. 9, 1981, Ser. No. 252,364
Int. Cl.³ F21V 7/08
U.S. Cl. 362—297 **3 Claims**

1. An optical system suited for an aircraft guidance lighting fixture, comprising a lamp, a reflector, a mirror and an exit prism, said lamp being of the high intensity incandescent type,

having an elongated filament of finite length, said lamp and said reflector being mounted in said fixture such that said reflector surrounds said lamp, said reflector having a plurality of ellipsoidal surface portions of differing eccentricities, such that the surface portions are axially displaced relative to each other to reflect light from said lamp in the same general direction, the major axes of each of the ellipsoidal surface portions being coincident and passing through the axis of said elongated



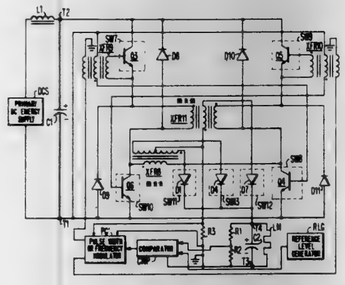
filament, a focus of each ellipsoidal surface portion being located on said filament and spaced apart equidistantly from each end of said filament, the ellipsoidal surface portion having the greatest eccentricity being located nearest the filament of said lamp, and the conjugate foci of said ellipsoidal surface portions being coincident in space said mirror lying on said major axes at an adjustable angle of substantially forty five degrees to said axes arranged to reflect light from said lamp through said prism and thus substantially at right angles to said major axes.

4,408,267

DC-TO-DC SWITCHING CONVERTERS

Duard L. Pruitt, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

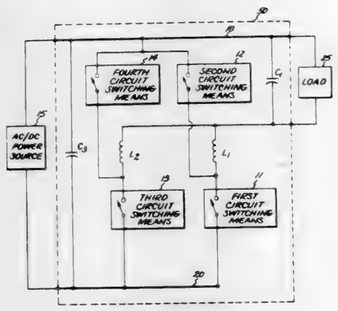
Continuation of Ser. No. 223,495, Jan. 8, 1981, abandoned. This application Sep. 10, 1982, Ser. No. 416,704
Int. Cl.³ H02M 3/335
U.S. Cl. 363—17 **8 Claims**



second circuit switching means connected between the second side of said first inductive means and said common bus, said second circuit switching means operating to connect said first inductive means in parallel with said load whenever said first conductive switching means operates to disconnect said first inductive means from said power bus;

second inductive means having a first side connected to the second side of said load;

third circuit switching means connected between the second side of said second inductive means and said power bus,



said third circuit switching means operating to repeatedly disconnect said second inductive means from said circuit power bus whenever said power source exhibits a voltage polarity opposite said first voltage polarity, with respect to said power bus; and

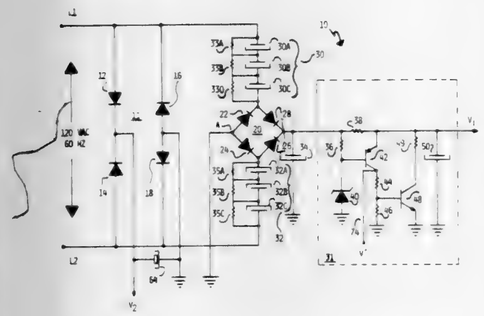
fourth circuit switching means connected between the second side of said second inductive means and said common bus, said fourth circuit switching means operating to connect said second inductive means in parallel with said load whenever said third circuit switching means operates to disconnect said second inductive means from said power bus.

4,408,269

BALANCED POWER SUPPLY WITH POLARIZED CAPACITORS

Philip J. Nowaczyk, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jun. 18, 1982, Ser. No. 389,744
Int. Cl.³ H02M *7/06*
U.S. Cl. 363—126 **13 Claims**



1. A power supply energized by an AC input voltage provided on first and second input lines for generating at least one DC output voltage, said power supply comprising:

first rectifying means having first and second input terminals, a ground terminal and an output terminal upon which a first DC output voltage is developed;

first and second polar capacitive means coupling said first and second input lines to the first and second input terminals of said first rectifying means, respectively, for limiting the voltage applied thereto; and

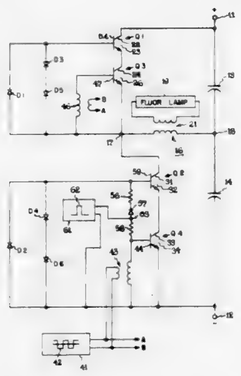
grounded conducting means coupled across said first and second input lines for providing a return current path for limiting the reverse voltage applied across said first and second polar capacitive means in preventing a voltage polarity reversal thereacross.

4,408,270

STORED CHARGE INVERTER CIRCUIT WITH RAPID SWITCHING

Thomas E. Anderson; Alvin A. Bush, and John Giorgis, Jr., all of South Euclid, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1981, Ser. No. 284,016
Int. Cl.³ H02M *7/537*
U.S. Cl. 363—132 **17 Claims**



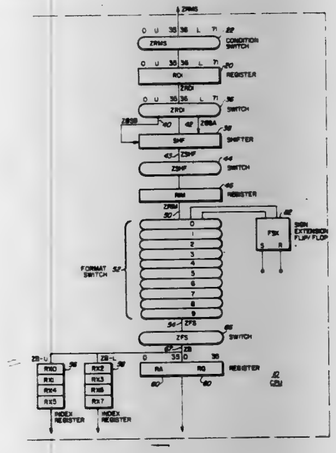
1. An inverter circuit for operating from a d-c power source and applying alternating current through a load which is inductive or has an inductive component, comprising first and second pairs of transistors connected to alternately apply current through said load from said power source, each said pair of transistors comprising first and second transistors having their collector-emitter paths connected in serires between an end of said load and a terminal of said d-c power source, a source of alternating control signal voltage connected in opposite phases to said first transistors to enable them to be sequentially conductive, said second transistors having the characteristic of storing a charge applied to their control electrodes, and said load having the characteristic of inducing a flyback current when current flow therein is terminated, means connected between said load and said control electrodes of the second transistors for applying the flyback current resulting from the turn-off of each of said first transistors through the base-collector path of the second transistor of the other pair thereof for causing it to operate as an inverted transistor and rendering it conductive and storing a charge therein to keep it conductive for a period of time, said circuit being devoid of any other source of repetitive turn-on pulses for said second transistors.

4,408,271

CIRCUIT FOR IMPLEMENTING A DIGITAL COMPUTER INSTRUCTION

Jerry L. Kindell, Glendale, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 328, Jan. 2, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 219,196
The portion of the term of this patent subsequent to Feb. 10, 1998, has been disclaimed.
Int. Cl.³ G06F *5/00, 3/00*
U.S. Cl. 364—200 **5 Claims**



1. In a central processor of a digital data processing system, circuit means for reformating a pure binary number comprising:

a data-in register adapted to have stored into it a first and a second word, with each word having 36 data bits, with the bits of each word being divided into 4 bytes of 9 data bits per byte, with each of the 4 bytes adapted to contain a character of the binary number, and with each character having 8 or 9 data bits; the number of characters of the binary number being in the range of from 1 to 4; the first word stored in the data-in register containing the most significant character of the binary number, which most significant character is stored in an identified one of the four byte positions of said first word; any other characters of the binary number being stored in contiguous byte locations of decreasing significance;

an intermediate register for storing 36 data bits;

shifting means connected to the data-in register and the intermediate register for shifting the words stored in the data-in register so that the byte of the first word containing the most significant character of the binary number is left justified;

means for storing the byte containing the most significant character and any other bytes containing characters of the binary number in the intermediate register, the byte containing the characters of the binary number being arranged contiguously in order of decreasing significance from left to right;

an addressable register of the central processor; and

format switch means connected to the intermediate register and the addressable register for reformating the 36 data bits stored in the intermediate register so that the data bits of the binary number are right justified and contiguous; and

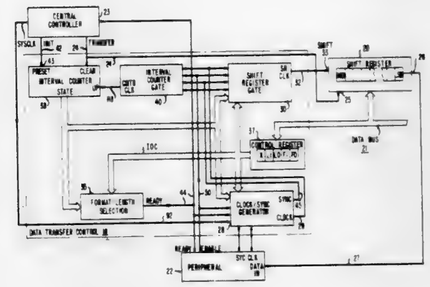
means for storing the binary number as reformated by the format switch means in the addressable register.

4,408,272

DATA CONTROL CIRCUIT

Stephen M. Walters, Aberdeen, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 3, 1980, Ser. No. 203,794
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—200 **5 Claims**



5. A data transfer circuit (**18**) arranged for transferring a data word in serial from a peripheral device (**122**) to a shift register (**120**) and in parallel from the shift register to a data bus (**121**); the transfer circuit including an interval counter (**38**); means (**28**) for applying clock pulses; a control register (**37**) for storing format data; the data transfer circuit characterized by:

first gate means (**40**) for controllably transmitting the clock pulses from the applying means to the interval counter;

second gate means (**30**) for controllably transmitting the clock pulses from the applying means to the shift register;

a selection circuit (**35**) responsive to the format data stored in the control register and to a first count state and subsequent sequential count states of the interval counter for producing a signal (READY) for fully conditioning the first gate means in preparation for transmitting the clock pulses to the interval counter and for partially conditioning the second gate means in preparation for transmitting the clock pulses to the shift register;

means (**45**) for supplying a synchronization signal to the fully conditioned first gate means for enabling the first gate means to transmit the clock pulses to the interval counter and for supplying the synchronization signal to the partially conditioned second gate means for fully conditioning the second gate means in preparation for transmitting the clock pulses to the shift register;

the fully conditioned second gate means being responsive to the format data and being enabled by a second count state and subsequent sequential count states of the interval counter for transmitting the clock pulses to the shift register, each clock pulse causing the shift register to shift in a bit of the data word in serial from the peripheral device;

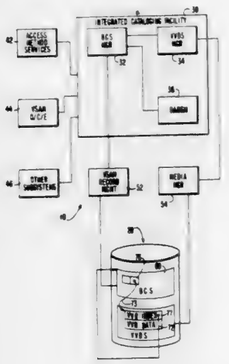
the selection circuit being responsive to the format data stored in the control register and to a third count state of the interval counter for inverting the signal (READY) and thereby disabling the first and second gate means from transmitting the clock pulses to the interval counter and to the shift register, respectively; and

means (**124**) for applying a signal (TRANSFER) to the shift register and to the interval counter for transferring the data word in parallel from the shift register onto the data bus and for resetting the interval counter.

4,408,273
METHOD AND MEANS FOR CATALOGING DATA SETS USING DUAL KEYED DATA SETS AND DIRECT POINTERS

Gregory M. Plow, Gilroy, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 27, 1980, Ser. No. 153,366
Int. Cl.[3] G06F *7/00*
U.S. Cl. 364—200 21 Claims



18. Apparatus for cataloging user data sets stored on a data volume to enable opening of a user data set by a central processor having access to the data volume and a main storage, said apparatus enabling opening of a user data set even though residing on a volume which, due to some external event, has been changed to cause loss of synchronization, the apparatus comprising:

means providing a volume data set for storing a plurality of volume records each containing identification information including at least one key field and extent information for user data sets recorded on the data volume;

base catalog means for storing a plurality of sphere records, each sphere record containing one or more key fields identifying a user data set and a direct address pointer to a corresponding volume record;

means for opening a first user data set having a key name by building, in the main storage, control blocks providing user data set identification and extent information, said means for opening including:

first means for searching said base catalog means for a first sphere record containing said key name in its key field;

second means responsive to the direct address pointer stored in said first sphere record for retrieving a first volume record;

third means for comparing said key name with a first key field of said first volume record;

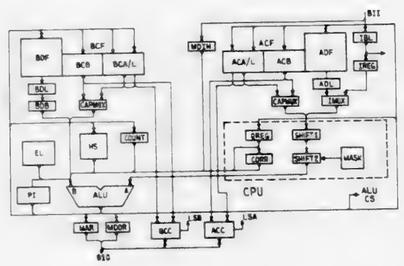
fourth means, responsive to a failure of correspondence between said key name and said first key field and thus indicative of a loss of synchronization, for searching said volume data set means for a second volume record containing a second key field corresponding to said key name, and for writing into said first sphere record a direct address pointer to said second volume record; and

means for retrieving information defining the extent of said first user data set from that one of said volume records which contains a key field corresponding to said key name.

4,408,274
MEMORY PROTECTION SYSTEM USING CAPABILITY REGISTERS

Nigel J. Wheatley, Broadstone, and Martyn P. Andrews, Taplow, both of England, assignors to Plessey Overseas Limited, Ilford, England

Filed Sep. 29, 1980, Ser. No. 191,849
Claims priority, application United Kingdom, Sep. 29, 1979, 7933857
Int. Cl.[3] G06F *11/00*
U.S. Cl. 364—200 9 Claims



1. A data processing system including a processor module incorporating general purpose capability registers which are loaded with base, limit and access information relative to a resource segment under control of the steps of a load capability register instruction operating upon a capability pointer block particular to a process running in said processor module and referencing a system capability table common to all processes in said data processing system, characterized in that each of the general purpose capability registers is provided with a corresponding pointer register which is loaded with capability pointer information by said load capability register instruction derived from the capability pointer block for a process running in the processor module and each general purpose capability register includes a load on use indicator which is set when a corresponding pointer register associated with each respective general purpose capability register is loaded with said pointer information and the processor module includes means for automatically loading base, limit and access information identified by pointer information into an active one of said capability registers when said active capability register is used with the load on use indicator set, said access information comprising a plurality of access bits and said processor module further includes means for executing a load capability register masked instruction which comprises the step of masking out selected access bits of said access information to reduce permitted access rights established by said pointer information loaded in a corresponding pointer register associated with said active capability register.

4,408,275
DATA PROCESSING SYSTEM WITH DATA CROSS-BLOCK-DETECTION FEATURE

Kanji Kubo, Hadano, and Kenichi Wada, Zama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1980, Ser. No. 221,325
Claims priority, application Japan, Dec. 26, 1979, 54-169657
Int. Cl.[3] G06F *11/30;* G11C *7/00*
U.S. Cl. 364—200 12 Claims

7. In a data processing system including main memory means for storing a plurality of instructions and data, and buffer memory means having a plurality of memory banks for storing a duplicate of a part of the contents of said main memory means in blocks each having a predetermined length, the improvement comprising:

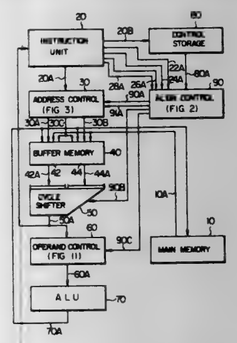
instruction means for indicating an address of data and a length indication of said data to execute an instruction,

said address data including a part indicating an address of a block and a part indicating an address within said block;

data length determining means responsive to said length indication from said instruction means for determining the length of the data to be fetched from said buffer means;

block-cross detecting means responsive to said address from said instruction means and said length information from said length determining means for detecting whether or not said data to be fetched from said buffer memory means with a single access is spread over a plurality of blocks; and

address means for supplying an address for fetching data to each of said plurality of memory banks of said buffer memory means on the basis of said address from said instruction means, said address means including a plurality



of address registers each for storing therein said address supplied to one of said plurality of memory banks, block address generating means for supplying a block address to said plurality of address registers on the basis of said address from said instruction means, and address-in-block generating means for supplying an address-in-block to said plurality of address registers on the basis of said address from said instruction means, said block address generating means including means for applying to one of said plurality of address registers an address of a block adjacent to a block indicated by said address from said instruction means in response to the detection of a block cross by said block-cross detecting means, and for applying the same address to all of said plurality of address registers in the absence of a detection of a block cross by said block-cross detecting means.

4,408,276
READ-OUT CONTROL SYSTEM FOR A CONTROL STORAGE DEVICE

Shinji Nishibe, Hachioji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 17, 1979, Ser. No. 85,596
Claims priority, application Japan, Oct. 24, 1978, 53-130052
Int. Cl.[3] G06F *9/26*
U.S. Cl. 364—200 7 Claims

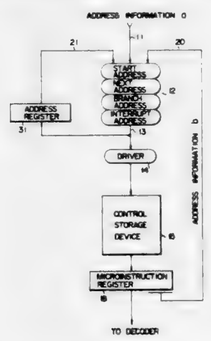
1. A read-out control system for use in a microprogram program-controlled data processor wherein microinstruction are singly supplied in successive machine cycles for execution by the data processor, the machine cycles being defined by a machine clock signal, the read-out control system comprising:

selector switch means for selectively outputting during a first machine cycle a start address, a next address, a branch address or an interrupt address;

control storage means connected to said selector switch means for storing microinstructions at a plurality of address locations and for outputting a said stored microinstruction from a said address location responsive to any one of said addresses outputted by said selector switch means;

microinstruction register means connected to said control storage means for receiving said microinstruction outputted from said control storage means; and

address register means directly coupled to said selector switch means for storing said address outputted by said selector switch means and for incrementing said address to form said next address in a time period sufficient to supply said next address as an input to said selector switch means at the next machine cycle, wherein a plurality of supplementary clock signals correspond to a single machine clock signal, the rising edge of the first of said plu-

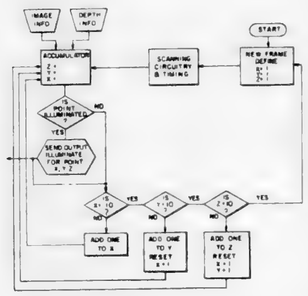


rality of supplementary clock signals corresponding to a said machine clock cycle occurring simultaneously with the rising edge of said corresponding machine clock signal and the following edge of the last of said plurality of supplementary clock signals occurring simultaneously with the following edge of said corresponding machine clock signal, said address register means for storing said address outputted by said selector switch means during the first of said plurality of supplementary clock signals corresponding to said machine clock signal and for incrementing said address stored therein during the last of said plurality of supplementary clock signals corresponding to said machine clock signal.

4,408,277
HOLOGRAPHIC IMAGER

Conrad Cortellini, Indianapolis, Ind.; Jeffrey S. Boone, Midland, Mich., and Richard D. Conard, Indianapolis, Ind., assignors to Moorfeed Corporation, Indianapolis, Ind.

Filed Aug. 6, 1980, Ser. No. 175,652
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—300 2 Claims



1. A method of decoding three-dimensional information addressable by three coordinates, comprising the steps of

(a) defining an origin point;
(b) analyzing the information content of the point and providing a corresponding output;
(c) determining whether t_ last point analyzed is the last point along a first coordinate axis; if not, advancing to the next point along the first coordinate axis and returning to step b; if so, advancing to step d;
(d) determining whether the last point analyzed is the last point along a second coordinate axis perpendicular to the first; if not, advancing to the next point along the second coordinate axis, returning to the origin point along the first coordinate axis, and returning to step b; if so, advancing to step e; and
(e) determining whether the last point analyzed is the last point along a third coordinate axis perpendicular to the first and second coordinate axes; if not, advancing to the next point along the third coordinate axis, returning to the origin points along the first and second coordinate axes, and returning to step b; if so, returning to step a.

4,408,278

ELECTRIC CONTROL METHOD FOR AUTOMOBILE AIR CONDITIONER

Atsunori Saito; Masanori Naganoma, both of Kariya; Yasuhiro Iwata, Aichi, and Kiyoshi Usami, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

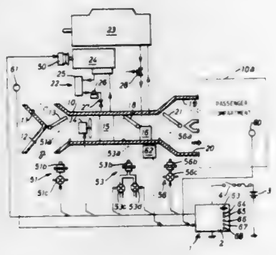
Continuation of Ser. No. 199,920, Oct. 23, 1980, Pat. No. 4,316,251, which is a continuation of Ser. No. 79,260, Sep. 27, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 324,002

Claims priority, application Japan, Oct. 2, 1978, 53-121855

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.[3] **G06F** *15/20;* **B60H** *3/00*

U.S. Cl. 364—424 **7 Claims**



7. An electric control apparatus for an automobile air conditioner including:
an air duct for allowing the flow of air into a passenger compartment of the automobile;
air flow temperature control means for selectively cooling and/or warming the air flowing through said air duct to adjust the temperature of air discharged into said compartment from said air conditioner;
a switch door arranged within said air duct for discharging the conditioned air into the lower portion of said compartment at its first position and for discharging the conditioned air into the upper portion of said compartment at its second position;
an electrically operated mechanism for switching-over said switch door to the second position from the first position upon energization of said mechanism and for switching-over said switch door to the first position from the second position upon deenergization of said mechanism, the energization of said mechanism being conducted when the adjusted temperature of air discharged from said air conditioner is lower than a predetermined value, and the deenergization of said mechanism being conducted when the temperature of air discharged from said air conditioner is higher than the predetermined value;
means for compensating the predetermined value in relation to changes of the actual in-car temperature and the actual temperature outside the automobile;
means for producing first and second output signals respectively when the adjusted temperature of air is lower than the compensated value and is higher than the compensated value; and
means for selectively conducting energization and deenergization of said electrically operated mechanism in response to the first and second output signals.

4,408,279

METHOD AND APPARATUS FOR ADJUSTING THE SUPPLY OF FUEL TO AN INTERNAL COMBUSTION ENGINE FOR AN ACCELERATION CONDITION

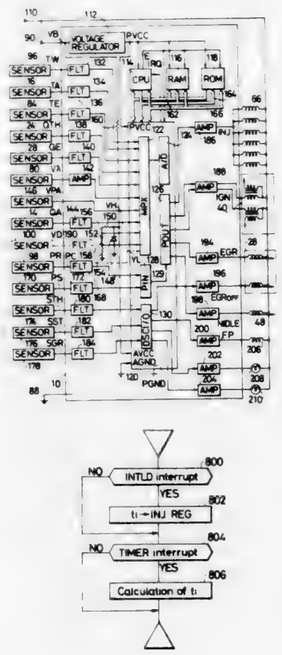
Masumi Imai, and Kotaro Hirasawa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 6, 1979, Ser. No. 73,085

Claims priority, application Japan, Sep. 6, 1978, 53-108608

Int. Cl.[3] **F02M** *51/00;* **F02B** *3/02;* **G06F** *15/20*

U.S. Cl. 364—431.05 **18 Claims**



7. A method of operating a processor-controlled apparatus for controlling the supply of fuel to an internal combustion engine, said apparatus having sensor means for producing signals representative of operating conditions of the engine, actuator means for controlling the supply of fuel to said engine in response to fuel supply control signals applied thereto, and an input/output unit coupled to receive signals produced by said sensor means and to deliver fuel supply control signals to said actuator means, said processor being coupled to said input/output unit, for carrying out engine control data procesing operations including fuel supply control calculations in accordance with signals produced by said sensor means and thereby generating engine control data that are coupled to said input/output unit, said input/output unit including first means for generating an engine control timing signal pattern through which operational events of said engine are controlled, second means for storing said engine control data, third means, coupled to said first means, for generating respective engine timing codes the values of which are selectively modified by said engine control timing pattern, fourth means, coupled to said second and third means, for comparing respective ones of said engine control data with respective ones of said engine timing codes and producing respective output signals when said respective engine control data define a prescribed relationship with respect to said engine timing codes, and fifth means, coupled to said fourth means, for producing a control signal to be coupled to said actuator means in response to an output signal produced by said fourth mean, and wherein said second means includes means for storing engine control data representative of the duration of the supply of fuel to said engine, and said sensor means include means for generating timing pulses in accordance with the rotation of the engine crankshaft, said timing signal pattern being produced independently of said timing pulses generated by said sensor means;
said method comprising the steps of:
(a) in response to one of the timing signals of said engine control timing signal pattern, generating a first interrupt signal and thereby causing said processor to execute a first program for carrying out said fuel supply control calculations and generating engine control data; and
(b) in response to the generation of timing pulses by said sensor means, generating a second interrupt signal and thereby causing said processor to execute a second program, independent of said first program, by way of which said processor supplies said engine control data representative of the duration of the supply of fuel to said engine; and
whereby the periodic generation of data to be supplied to said second means is assured irrespective of the speed of rotation of the engine crankshaft.

4,408,280

ADAPTIVE NUMERICAL CONTROL APPARATUS FOR MACHINE TOOLS

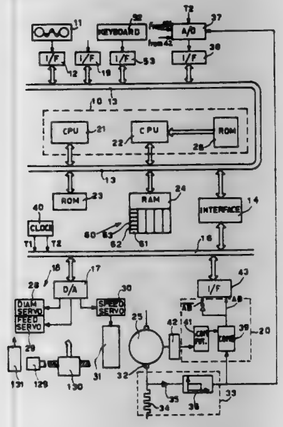
Raffaele Bedini, Pisa; Luciano Lauro, Pavone, and Pier C. Pinotti, Pontremoli, all of Italy, assignors to Olivetti Controllo Numerico S.p.A., Marcianise, Italy

Filed Oct. 8, 1980, Ser. No. 195,087

Claims priority, application Italy, Oct. 11, 1979, 68981 A/79

Int. Cl.[3] **G06F** *15/46*

U.S. Cl. 364—474 **5 Claims**



1. An adaptive numerical control system for a lathe, comprising a cutting tool having optimum cutting conditions when cutting at a predetermined cutting speed and at a predetermined feed rate, a direct-current electric motor operable for rotating a workpiece spindle at a number of revolutions per-unit-time corresponding to an actual cutting speed, said motor having an armature circuit absorbing an electric current proportional to power supplied by the motor, said motor having a predetermined characteristic revolution number defining the optimum working conditions for the motor when the motor operates at the maximum torque and at the maximum power corresponding to a maximum current that said armature circuit can absorb, moving means for moving said tool at the actual feed rate with respect to the workpiece spindle, memory means for storing a machining program, a control unit for executing the machining program stored in said memory means to command said moving means and said motor, recording means for recording a machine technological range around said optimum cutting conditions, said range being defined by maximum and minimum feed rate of said tool, maximum and minimum number of revolutions per-unit-time of said motor and maximum and minimum feed per revolution, said range including said optimum working conditions, said recording means also recording said maximum current and said characteristic revolution number, means for sensing said moving means to indicate the actual feed rate, a tachometer for indicating the number of revolutions per-unit-time of said motor,
a shunt arranged in series with said armature circuit,
shunt sensing means for sensing said shunt to indicate the current flowing in said armature circuit, timing means for defining an optimization cycle, comparison means controlled by said timing means for cyclically effecting a comparison of the actual feed rate indicated by said means for sensing the moving means and the number of revolutions per-unit-time indicated by said tachometer with said range to condition said control unit to command an operation of said moving means and of said motor to first bring the actual feed rate and number of revolutions per-unit-time within said range,
said comparison means being effective when said actual feed rate and number of revolutions per-unit-time are within said range for effecting a comparison of the current indicated by said shunt sensing means and the number of revolutions per-unit-time indicated by said tachometer with said recorded maximum current and characteristic number of revolutions respectively to condition said control unit to command an operation of said moving means and said motor to bring said actual feed rate and said number of revolutions per-unit-time toward said optimum working conditions.

4,408,281

CONTROL SYSTEM FOR SYNCHRONIZING MULTIPLE PRESSES IN A LINE

Carl E. Tack, Jr., Glen Ellyn, and Francis E. Heiberger, Elmhurst, both of Ill., assignors to Danly Machine Corporation, Chicago, Ill.

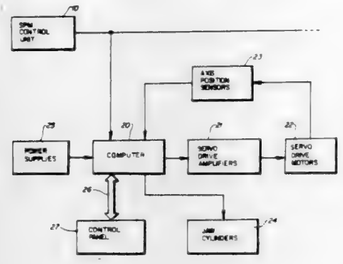
Filed Jul. 27, 1981, Ser. No. 287,536

Int. Cl.[3] **H02P** *5/50;* **C03B** *9/40*

U.S. Cl. 364—476 **19 Claims**

1. A control system for a press line containing a plurality of presses for performing successive operations on the same workpiece, said control system comprising
a plurality of computer control units each of which controls the movement of one of said presses and the workpiece transfer mechanisms associated therewith,
means for producing a timing signal representing the desired time period for one complete cycle of each press in the line, each of said computer control units being responsive to said timing signal for controlling the associated press and transfer mechanisms to complete each press cycle within said desired time period,
means within each of said computer control units for producing a synchronizing signal at a predetermined point in said desired time period for each successive press cycle,
means responsive to (1) the synchronizing signal from one of said computer control units selected as a reference unit

and (2) the synchronizing signals from each of the other computer control units, and producing sync error signals indicating whether each of said other control units is lagging or leading the reference unit, and



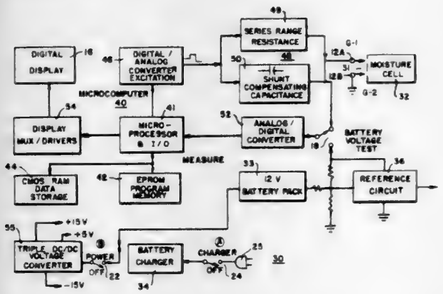
means responsive to each of said sync error signals for increasing or decreasing the desired time periods for the respective control units according to whether each unit is leading or lagging the reference unit.

4,408,282

AC RESISTANCE MEASURING INSTRUMENT

Peter J. Hof, Richland, Wash., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Apr. 22, 1981, Ser. No. 256,372
Int. Cl.³ G01R *27/00*
U.S. Cl. 364—482 **16 Claims**



1. An instrument for measuring the impedance of an electrical device through a transmission line having one end connected to said electrical device and the other end connected to said instrument comprising:

signal generating means for generating an excitation signal having a particular wave shape;

compensation circuit means for compensating for the capacitance of the transmission line coupled between said signal generating means and said other end of the transmission line, said compensation circuit means, the transmission line, and said electrical device being responsive to said excitation signal to develop an output signal at the other end of the transmission line corresponding to the voltage across the transmission line and said electrical device; and

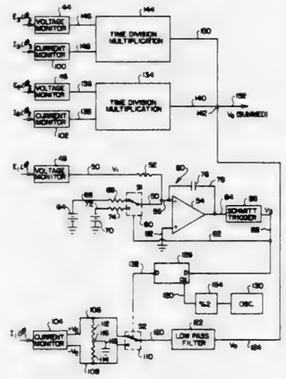
signal processing means coupled to said other end of the transmission line for sampling said output signal and comparing the wave shape of the said signal with said particular wave shape, said signal processing means further being connected to said compensation circuit means and acting to control the impedance of said compensation circuit means to bring the wave shape of the output signal within a preselected correspondence with said particular wave shape wherein the output signal is indicative of the impedance of the transmission line and the device.

4,408,283

TIME DIVISION MULTIPLIER TRANSDUCER WITH DIGITALLY DERIVED PHASE SHIFT ADJUSTMENT FOR REACTIVE POWER AND ENERGY MEASUREMENT

Donald P. Kovalchik, Galloway, and Frank E. Battocletti, Columbus, both of Ohio, assignors to TransData, Inc., Dublin, Ohio

Filed Jun. 8, 1981, Ser. No. 271,375
Int. Cl.³ G01R *21/06*
U.S. Cl. 364—483 **39 Claims**



1. Power and energy evaluating apparatus, comprising:

first monitoring means for providing a first signal corresponding with a first monitored electrical parameter;

second monitoring means for providing a second signal corresponding with a second monitored electrical parameter;

time division converter means responsive to said first signal for deriving a pulse width modulated pulse train signal corresponding therewith at an output;

filter means means for selectively receiving said second signal for deriving a product categorized power evaluating signal;

N position digital circuit means having an input coupled with said time division converter output and responsive to clock inputs at sampling frequency, f_c, for substantially replicating said pulse width modulated pulse train signal continuously at an output thereof to effect a select time delay of said pulse train;

oscillator means having an output coupled with said digital circuit means for generating said clock inputs; and

switching circuit means coupled with said second monitoring means and to said digital circuit means output and actuable in response to said replicated pulse train signal to effect the application of said second signal to said filter means.

4,408,284

SIGNAL PROCESSING SYSTEM

Michael M. Kijesky, Reston, Va., and Charles T. Bogle, Doylestown, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1981, Ser. No. 227,025
Int. Cl.³ G06F *7/38*
U.S. Cl. 364—485 **11 Claims**

1. A system for detecting the presence of a desired signal frequency in a multi-signal environment, comprising:

spectrum analyzer means adapted to sample the multi-signal

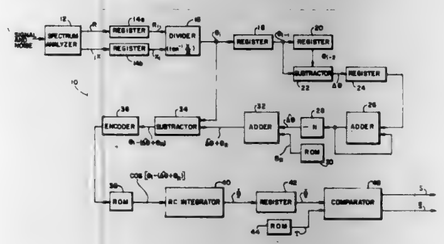
environment for providing digital information indicative of real and imaginary magnitude components of the desired signal frequency;

phase determinator means connected to receive the digital information from said spectrum analyzer means for producing a first digital signal indicative of the instantaneous phase of the desired signal frequency;

phase precession means connected to said phase determinator means for producing a second digital signal representative of a statistical estimate of phase variation of the desired signal frequency;

a first fixed storage device adapted to provide a plurality of third digital signals representative of distinct phase reference values between 0° and 360°;

an adder connected to said phase precession means and said



first fixed storage device for summing the second digital signal with each of the plurality of third digital signals thereby producing a plurality of fourth digital signals representative of revised phase reference values;

cosine integrator means connected to said phase determinator means and said adder for producing a plurality of fifth digital signals representative of relative signal strength for each of the phase reference values;

a second fixed storage device adapted to provide a sixth digital signal representative of a threshold signal value; and

a comparator connected to said cosine integrator means and said second fixed storage device for indicating the presence of the desired signal frequency when any of the plurality of fifth digital signals exceeds the sixth digital signal.

4,408,285

VIBRATION ANALYZING APPARATUS AND METHOD

Edwin D. Sisson, Worthington; Robert S. Morrow, Dubin; Donn V. Stoutenburg, Westerville, and Dean T. Davis, Columbus, all of Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio

Filed Feb. 2, 1981, Ser. No. 230,660
Int. Cl.³ G01M *7/00*
U.S. Cl. 364—508 **47 Claims**

1. Apparatus for use in carrying out vibration analysis of a variety operable in conjunction with transducers having a vibration responsive output, comprising:

conditioning means for selectively treating said vibration responsive output in accordance with a select vibrational parameter to provide a parameter related signal;

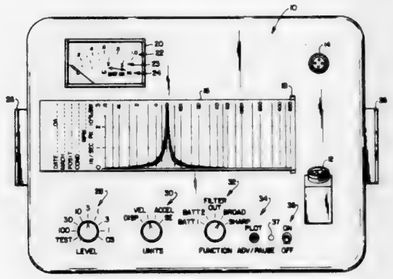
filter means selectively responsive to said parameter related signal, tunable over a predetermined range of frequencies in response to stepped inputs applied thereto in numbers of n steps per selected bandwidth for providing corresponding filtered output signals;

analog-to-digital converter means selectively responsive to said filtered output signals for deriving digital characterized signals corresponding therewith;

printer means responsive to print signals for generating a printout of data indicative of amplitude values corresponding with each one of said n steps and said filter output signals;

level switch means having a plurality of orientation responsive electible output conditions, each corresponding with a predetermined scale factor for said vibration responsive output; and

control means responsive to said analog-to-digital converter means digital characterized signals, including processor means having memory means for effecting the deviation



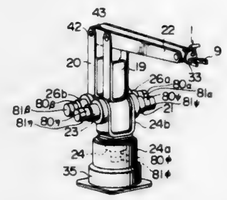
of said stepped inputs in correspondence with each of said n steps, said processor means deriving said print signals for effecting a said printer means printout of a frequency labeled, graphically represented pattern corresponding with said selected parameter, said processor means being responsive to an elected said level switch means output condition for effecting a said printer means printout of said pattern in combination with an amplitude scale pattern corresponding with said scale factor.

4,408,286

METHOD AND APPARATUS OF ROBOT TEACHING

Hiroshi Kikuchi, Hiratsuka, and Koichi Sugimoto, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 11, 1980, Ser. No. 215,333
Claims priority, application Japan, Dec. 14, 1979, 54-161557
Int. Cl.³ G05B *19/42*
U.S. Cl. 364—513 **15 Claims**



1. A teaching method for directly teaching a robot its operation, comprising the steps of:

manually moving an operating portion of a force sensor attached to a wrist, that is movably coupled with a distal end of an arm of a robot that is movable in a plurality of directions, into a predetermined teaching position;

computing a plurality of speed command value signals for moving said distal end of said arm of robot in a plurality of directions, said computation converting the signal produced by said force sensor into force components in a movement of the robot's arm, subtracting moving speed component of the robot's arm from said force components converted, and integrating the result of the subtraction with time;

driving drive means on the basis of said speed command

value signals computed to guide a position of said distal end of said arm; and

storing guiding data, in the form of positional information detected during said driving of the drive means, in memory means.

4,408,287

AUTOMATIC-SEARCH MICROFICHE READER INVOLVING THE USE OF A MICROCOMPUTER

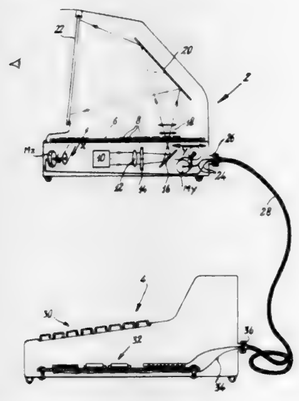
Daniel Parisot, and Dominique Mariaulle, both of 131, Avenue Foch, Residence Les Platanes, F-78400 Chatou, France

Filed May 22, 1981, Ser. No. 266,345

Claims priority, application France, May 23, 1980, 80 11540

Int. Cl.[3] G03B *23/08;* G06F *15/02*

U.S. Cl. 364—518 8 Claims



1. An automatic-search microfiche reader, comprising

a projector including a support plate for a plurality of microfiches and movable along an X-axis and a Y-axis perpendicular to the X-axis, projection means associated to said support plate, and driving means for moving said support plate along the X-axis and the Y-axis so as to place a particular microfiche relative to said projector means;

a control console associated to said projector, said control console including a keyboard having a first group of displacement keys, each of said keys being provided with a literal reference symbol corresponding to a displacement of said support plate along the X-axis and with a digital reference symbol corresponding to a displacement of said support plate along the Y-axis, and a second group of keys, each of which represents additional function keys; and

means for controlling said driving means and including an emitter associated to said keyboard for delivering coded radiation corresponding to each actuated key, means for detecting the coded radiation and delivering a corresponding coded electrical signal, a microcomputer receiving the coded electrical signal and being programmed so that in respect of each controlled operation obtained by a double action on said displacement keys a first code received corresponds to the displacement along the X-axis and a second code received corresponds to the displacement along the Y-axis, thereby decoding the coded electrical signal and generating corresponding control signals, and interface means receiving the control signals delivered by said microcomputer for controlling said driving means.

4,408,288

DISTANCE MEASURING ARRANGEMENT

Takashi Kondo, Izumi, and Nobuo Hashimoto, Ashiya, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

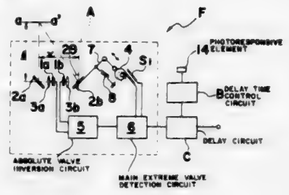
Continuation of Ser. No. 76,954, Sep. 19, 1979, Pat. No. 4,303,981. This application Mar. 6, 1981, Ser. No. 241,232

Claims priority, application Japan, Sep. 19, 1978, 53-115255

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.[3] G03B *7/08*

U.S. Cl. 364—525 2 Claims



1. An arrangement for use in a camera with an automatic focus control system, said arrangement comprising:

a pair of photoresponsive means which are arranged to each respectively receive an optical image of a target area and to generate an output corresponding thereto, each of said outputs having a delay in response to low illuminance conditions;

an optical means for varying the time relationship between said respective optical images on said pair of photoresponsive means;

a means for generating a coincidence signal when said outputs of said pair of photoresponsive means coincide with each other;

a means for detecting the average intensity of illuminance of said target area; and

a means for generating a delayed signal which is delayed from the time of the generation of said coincidence signal by an amount of time having a relationship to said average intensity of illuminance of said target area, wherein said automatic focus control system effects automatic focus control in accordance with said delayed signal.

4,408,289

SIMPLIFIED MONITORING APPARATUS FOR SENSORS IN MOTOR VEHICLES

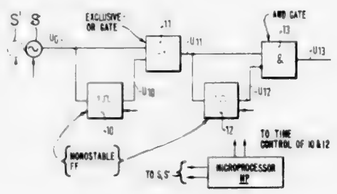
Bernward Boning, Ludwigsburg; Rainer Bone, Vaihingen; Rudolf Nagel, Asperg, and Jens-Detlef Rubrecht, Braunschweig, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,343

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006599

Int. Cl.[3] H03K *5/20*

U.S. Cl. 364—551 8 Claims



1. Apparatus for generating an output signal (U_{13}) indicative of malfunction of a signal generator (S, S') which, under normal operating conditions, generates a sequence of periodically repetitive input signals having a leading edge, and a signal width varying inversely with frequency, comprising

an exclusive OR gate (11);

a first monostable multivibrator (10) having an ON time corresponding to the signal duration of any one of the input signals under normal operation, and providing a time reference signal (U_{10});

a second monostable multivibrator (12) having an ON time corresponding to the permitted variation from normal operation to the signal duration of any one of the input signals;

and a coincidence gate (AND 13);

wherein the input signals from the signal generator (S,S') are connected to the frist monostable multivibrator (10) to trigger said multivibrator and to provide said time reference signals;

the input signals and the time reference signals are connected to the exclusive-OR gate (11) to provide compared output signals (U11) having a time duration representative of the deviation of the input signals (U_G) from the time reference signals (U_{10});

said compared time reference signals are connected to trigger the second monostable multivibrator (12), said second monostable multivibrator providing deviation output signals (U_{12}) having a leading edge corresponding to the leading edge of the time reference signals and a time duration as determined by said permitted variation;

and wherein the deviation output signals (U_{12}) and compared output signals (U_{11}) are connected to said coincidence gate (13) for comparison if the compared output signals have a time duration falling below, or above the time duration of the deviation output signals from the second monostable multivibrator (12),

said coincidence gate providing an output indicative of proper operation if the comparison indicates that the time duration of the compared output signals (U_{11}) is less than that of the deviation output signals (U_{12}) while providing an output indicative of malfunction or improper operation if the compared output signals (U_{11}) are equal to or longer than said deviation output signals (U_{12}).

4,408,290

METHOD AND DEVICE FOR DETERMINING ACCELERATION AND/OR DECELERATION OF A MOVING OBJECT

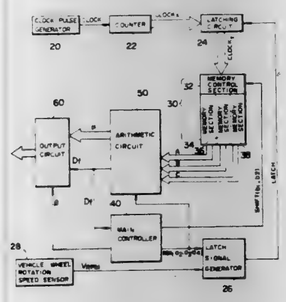
Jun Kubo, Hino, and Minoru Honda, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 9, 1981, Ser. No. 223,845

Claims priority, application Japan, Jan. 14, 1980, 55-2143

Int. Cl.[3] G06F *15/20;* G01P *3/42*

U.S. Cl. 364—566 28 Claims



1. A device for determining the acceleration or deceleration of an object comprising:

a speed sensor for determining the speed of the object and producing a sensor signal in the form a train of pulses, each of a period corresponding to the determined speed of the object;

a clock signal generator for producing a train of clock pulses of a constant frequency;

a counter means for counting the clock pulses and for latching the counted value after a selected number of sensor signal pulses have been received;

a memory means for storing the latched counter values, wherein said memory means renews at least one of the stored values each cycle of device operation in a selected shifting mode;

an arithmetic means for processing the stored values in said memory means and determining the acceleration or deceleration of the object on the basis of any difference between the stored values in said memory means, said arithmetic means producing a command for increasing the number of pulses of the sensor signal over which the clock pulses are to be measured when the difference between the stored value is less than a predetermined value; and

a controller means responsive to said command to determine the number of pulses of the sensor signal over which the clock pulses are measured for a succeeding cycle of device operation, said controller being operative for determining the shifting mode for the values stored in the memory means on the basis of the selected number of pulses, said controller means producing a latch signal for causing said counter means to latch the counted value and a shift control signal for controlling the shifting operation of said memory means.

4,408,291

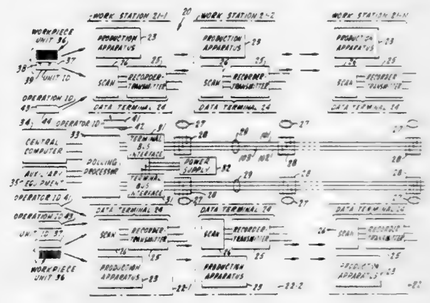
POINT-OF-MANUFACTURE DATA ACQUISITION SYSTEM

Guy W. Gunzberg, Buffalo, and Lawrence G. Lippman, Clarence Center, both of N.Y., assignors to M. Wile & Company, Inc., Buffalo, N.Y.

Continuation of Ser. No. 48,704, Jun. 15, 1979, abandoned, which is a continuation-in-part of Ser. No. 947,720, Oct. 2, 1978, abandoned. This application Jun. 3, 1981, Ser. No. 270,003

Int. Cl.[3] G06F *1/00, 15/46*

U.S. Cl. 364—900 44 Claims



1. A point-of-manufacture data acquisition system for a production facility of the kind comprising a series of work stations through which a multiplicity of workpiece units are transferred for performance of a sequence of production operations, for collecting and recording data for each station, on a real-time basis, representative of operator identity and time present, and workpiece unit identity and time of processing, the system comprising:

a multiplicity of workpiece unit identification members each bearing scannable data identifying an associated workpiece unit;

a plurality of operator identification members, each bearing scannable data identifying an operator;

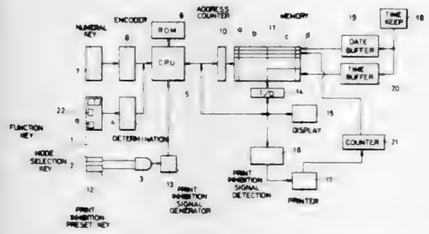
a series of data terminals, one for each work station, each data terminal comprising scanning means at the work station for scanning the data on the identification members, and recording/transmitting means including work station identification means and data storage means for storing the data from each identification member scan;
polling processor means, for repetitively polling the recording/transmitting means of all of the data terminals for data stored therein, the polling processor means including means for recording that data;
transmission means, comprising only two transmission lines connected to all of the data terminals;
a central power supply;
and terminal bus interface means connecting the polling processor means and the central power supply to the transmission means to transmit power continuously from the central power supply to all of the data terminals on a synchronous time-share basis with the transmission of digital information data signals from the data terminals to the polling processor and of digital interrogation and verification data signals from the polling processor to the data terminals;
the system providing complete compilation of the aforesaid data requirements in response to scanning of the identification members, with no additional inputs.

4,408,292

DATA PRINT CONTROL IN AN ELECTRONIC CASH REGISTER

Hiroshi Nakatani, Yamatokoriyama, and Hachizou Yamamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1980, Ser. No. 188,564
Claims priority, application Japan, Sep. 27, 1979, 54-124858; Sep. 27, 1979, 54-124859; Sep. 27, 1979, 54-124860
Int. Cl.³ G06F *15/20, 15/22*
U.S. Cl. 364—405 **1 Claim**



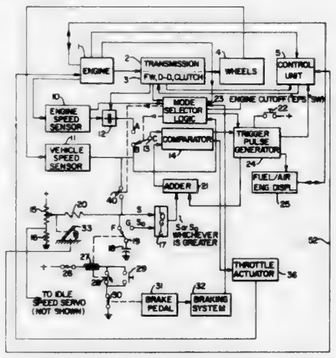
1. A data print control system in an electronic cash register comprising:
a printer system for printing said data;
memory means having locations defined by a location address, said locations each having a first memory section for storing information data therein and a second memory section for storing a code signal instructing said printing system as to whether a printing operation should or should not be performed with respect to said information data, said memory means locations each including a plurality of said first and second memory sections for storing different types of said information data and corresponding code signals for each of said types, said code signals instructing said printer system whether or not to print information data stored in said memory means at the location address selected by said first key input means;
time information generation means for generating date information and time information; said date and time information comprising information data for storage in said first memory section;
counter means operatively associated with said printer system for incrementing a receipt serial number stored therein, said receipt serial number comprising information data for storage in said first memory section;
means for introducing said information data into the first memory sections of said locations;
first key input means for selecting one of said location addresses;
control means for addressing the second memory section at said memory location address selected by said first key input means; and
print preset key means for introducing a code signal into the second memory section corresponding to said selected location address, said print preset key means developing a high level logic signal when the information data stored in the first memory section at the selected one of said location addresses is not required to be printed, whereby a high level logic code signal is stored in said second memory section associated with said selected location address;
detection means for reading said code signals and selectively transferring said types of information data stored in said first memory sections to said printer for printing in accordance with the logic levels of the respective code signals, said detection means functioning to prevent the transferring of said information data stored in the first memory section when the associated second memory section has a high level logic signal stored therein;
said first and second memory sections at each location occupying adjacent bits in memory, said second memory section occupying the last bit at each address.

4,408,293

AUTOMOTIVE CONTROL SYSTEMS FOR IMPROVING FUEL CONSUMPTION

Jack Avins, 178 Herrontown Rd., Princeton, N.J. 08540

Filed Dec. 4, 1980, Ser. No. 212,852
Int. Cl.³ G05D *13/64*; B60K *31/00*
U.S. Cl. 364—426 **1 Claim**



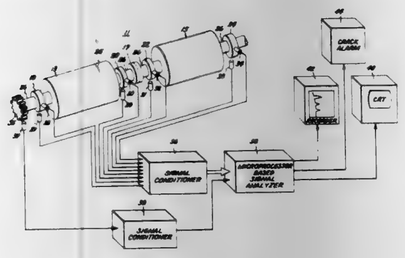
1. In a motor vehicle of the type employing an internal combustion engine coupled to a transmission system with one or more states for driving the wheels of said vehicle to achieve a speed according to the displacement of an accelerator pedal, said pedal controlling the engine via a throttle, said vehicle including a braking system for slowing the vehicle, the combination therewith of an automotive system for improving fuel efficiency, comprising:
engine speed sensor means for providing an output indicative of engine speed;
vehicle speed sensor means for providing an output indicative of vehicle speed;
means coupled to said accelerator pedal for providing an output control signal indicative of the magnitude of pedal actuation;
comparison means operative in a first mode to compare said control signal with said engine speed and operative in a second mode to compare said control signal with said vehicle speed for providing a comparison output signal indicative of any difference between said engine or vehicle speed as compared to said output control signal indicative of pedal actuation;
control means coupled to said engine and responsive to said comparison output signal to control the speed of said engine in said first mode, and to control the speed of said vehicle in a second mode, and
mode selector logic coupled to said engine speed sensor means, said vehicle speed sensor means and said transmission system for automatically operating said comparison means in either said first or second modes to thereby automatically provide either engine speed or vehicle speed control.

4,408,294

METHOD FOR ON-LINE DETECTION OF INCIPIENT CRACKS IN TURBINE-GENERATOR ROTORS

Imdad Imam, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1981, Ser. No. 248,571
Int. Cl.³ G01M *7/00*
U.S. Cl. 364—508 **7 Claims**



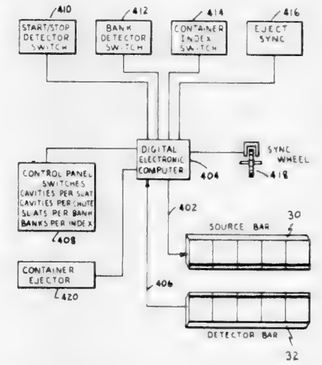
1. A method for detecting incipient cracks in the rotor of a turbine-generator while the turbine-generator is in operation at running speed, comprising the steps of:
(a) sensing mechanical vibrations of the rotor at at least one location thereof to produce at least one time-dependent vibration signal;
(b) providing at least one enhanced background vibration signal prior to development of a crack in the rotor, said signal being obtained and processed by
(b1) collecting an integral number of time segments of said vibration signal, each time segment corresponding to one revolution of the rotor;
(b2) generating said enhanced background signal by summing together all such collected time segments of said vibration signal by superposing each on the other;
(b3) storing said enhanced background signal;
(c) providing at least one enhanced foreground signal by
(c1) collecting an integral number of time segments of said vibration signal equal to the number collected in (b1), each time segment corresponding to one revolution of the rotor;
(c2) generating said enhanced foreground signal by summing together all such collected time segments of said vibration signal by superposing each on the other;
(d) providing a difference signal by subtracting said enhanced background signal from said enhanced foreground signal by superposing one on the other; and
(e) determining the spectral content of said difference signal, the presence and relative amplitude of higher harmonics of the running speed being indicative of the presence and size of a rotor crack.

4,408,295

OPTICAL INSPECTOR FOR SLAT-TYPE CONTAINER FILLING MACHINE

William T. Kavage, and Marvin E. Monroe, both of Sunbury, Ohio, assignors to Optek, Inc., Galena, Ohio

Filed Nov. 28, 1980, Ser. No. 211,211
Int. Cl.³ G06F *15/20*; B65B *57/10, 57/18*
U.S. Cl. 364—552 **19 Claims**



1. An apparatus for detecting the presence and absence of objects in an array of predetermined object positions said apparatus comprising:
(a) A cooperating radiation device means for directing electromagnetic energy toward said array and a radiation detector means for receiving said electromagnetic energy which is incident upon said object position under only one of the two possible conditions which are an object being present and being absent and for not receiving said energy under the other condition, a first one of said cooperating means comprising individually addressable discrete devices spaced along said array, there being at least twice as many of said discrete devices as there are possible object positions;
(b) digital addressing circuit means connected to said discrete devices for sequentially actuating said discrete devices;
(c) circuit means connected to and for actuating the second one of said cooperating means during the actuation of said discrete devices;
(d) data storage circuit means connected to said addressing circuit means and the radiation detector means for storing data representing the presence or absence of received radiation during actuation of each of said discrete devices; and
(e) electronic data processing means for storing the addresses of discrete devices representing the approximate object positions in said array and for comparing the data for each of said object position addresses to the desired data for each of said object position addresses and providing an output in the event they are not identical.

12. A method for detecting the presence and absence of objects in an array of predetermined object positions, using a plurality of discrete light sources and detectors, said method comprising:
(a) positioning at least twice as many of said light sources as there are object positions at spaced intervals along said object positions;
(b) radiating light upon said object positions in time sequence from said light sources;
(c) detecting, each time a source is actuated, the presence or absence of light transmitted through said object positions and electronically storing a signal indicating said presence or absence; and
(d) selecting the light source positions nearest to each object

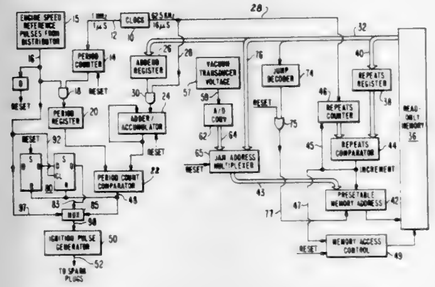
position and storing the presence-absence signal corresponding to the selected positions.

4,408,296

DIGITAL TIMING SYSTEM FOR SPARK ADVANCE

Anthony D. Robbi, Hopewell, and Joseph O. Sinniger, Pennington, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 27, 1980, Ser. No. 181,941
Int. Cl.³ F02P 5/14; G06M 3/02
U.S. Cl. 364—569 **7 Claims**



1. A system for producing an output pulse at a time which is a function of the spacing of two time spaced input pulses comprising, in combination:

first means producing time spaced clock pulses;

second means receptive of said clock pulses and said two time spaced input pulses for determining the time period between said two time spaced input pulses and for storing a signal whose value corresponds to said time period;

a memory having at least two groups of addressable locations, a first group of which stores a first group of addend and repeats numbers in successive locations thereof, a second group of which stores a second group of addend and repeats numbers in successive locations thereof, said memory including a memory address counter;

third means dependent on a sensed condition to jam into said memory address counter the address of a first location of one of said at least two groups of locations, said first location address being dependent on the value of the sensed condition;

fourth means operative after said signal is stored in said second means for changing the addresses in said memory address counter for reading out in succession addend and repeats numbers of the group thereof, the address of the first location of which was jammed into said memory address counter;

fifth means for accumulating each said readout addend number a number of times determined by its corresponding repeats number at a rate which is a function of the spacing of said clock pulses; and

sixth means producing an output pulse when the value accumulated in said fifth means corresponds with said value in said second means.

4,408,297

REDUCTION IN MAXIMUM TIME UNCERTAINTY OF PAIRED TIME SIGNALS

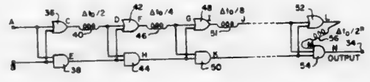
George E. Theodosiou, West Chicago, and John W. Dawson, Clarendon Hills, both of Ill., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Feb. 11, 1981, Ser. No. 233,533
Int. Cl.³ G01T 1/20
U.S. Cl. 364—569 **10 Claims**

1. An apparatus for reducing the maximum time uncertainty Δt_o of a series of paired time signals representative of a series of single events, the series of paired signals varying at two terminals within a predetermined limit of $t_{max}-t_{min}$ with $t_{max}-t_{min}$ being equal to Δt_o, each pair of signals having a first signal t_1 and a second signal t_2 in order of time with $t_1 \leqq t_2$ and t_1+t_2 being equal to a constant, the apparatus comprising:

input means including the two terminals for providing the series of paired signals t_1 and t_2 with t_1 and t_2 varying between the terminals,

output means, and



circuit means interconnecting the input terminals to the output means, the circuit means including:

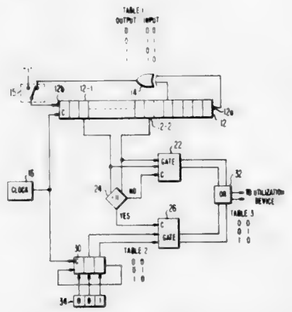
multiple time delays each less than Δt_o and multiple logic means for progressively selecting the first-in-time and second-in-time of signals in signal pairs based on t_1 and t_2 or on t_1 and t_2 plus selected time delays with the time delays being selectively added to the first-in-time signals to progressively reduce the maximum uncertainty between the signals and shift the signals towards t_{max}.

4,408,298

PSEUDO RANDOM NUMBER GENERATOR APPARATUS

Kim Ruhland, Shillington, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,982
Int. Cl.³ H03K 3/84
U.S. Cl. 364—717 **5 Claims**



1. A random number generator for generating three numeric values in random order, comprising in combination:

first means for generating at a given rate a succession of two-bit numbers for generating at random said three values and for also generating a fourth undesired value;

second means generating at said given rate in succession solely said three values; and

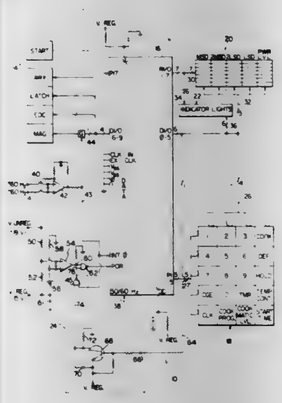
third means responsive to the presence of said fourth undesired value for disabling the output of said fourth value by said first means and for enabling the output of said second means of the value then being generated by said second means.

4,408,299

AUTOMATIC RESETTING OF CONTROL SYSTEM FOR LOSS OF FUNCTIONALITY

Glen C. Young, Fort Wayne, Ind., assignor to Essex Group Inc., Fort Wayne, Ind.

Filed Oct. 30, 1980, Ser. No. 202,105
Int. Cl.³ G06F 11/30; H05B 1/02
U.S. Cl. 364—900 **9 Claims**



1. In an appliance control system for controlling the operation of electrical control signal responsive means associated with an appliance, the control system including input means for entering functional electrical commands, electrical signal processing means connected to the control signal responsive means and receiving input commands from the input means, the signal processing means containing a programmed memory for storing instruction words which define operating sequences for the control signal responsive means, the signal processing means further including logic means for sequentially executing the instruction words to provide control signals to operate the control signal responsive means in response to commands from the input means, the signal processing means being programmed to provide at a location a signal having a voltage level transition normally occurring within a particular time interval relative to a certain reference, and the signal processing means also including means responsive to a reset command extended thereto for setting the execution of the programmed instruction words to a predetermined initial point in the program sequence from which a predetermined sequence of initializing operations is automatically initiated, the improvement comprising:

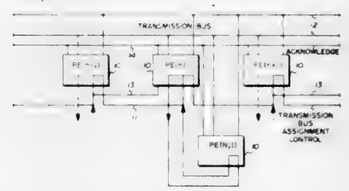
means automatically responsive to said normally occurring signal transition failing to occur at said location within said particular time interval relative to said reference for generating a reset command signal and extending said reset command signal to said means for setting the execution of the programmed instruction words to said initial point, said reset command generating means comprising a timing capacitance means and threshold means for determining said particular time interval, said capacitance means being charged at a predetermined rate and being connected to said threshold means for providing a said reset command signal when said threshold is exceeded, and means responsive to said normally-occurring signal transition for discharging said timing capacitance means, said normally-occurring signal transition recurring at shorter intervals than the interval for said timing capacitance means to charge to said threshold.

4,408,300

SINGLE TRANSMISSION BUS DATA NETWORK EMPLOYING AN EXPANDABLE DAISY-CHAINED BUS ASSIGNMENT CONTROL LINE

George T. Shima, Kamakura, Japan, assignor to Burroughs Corporation, Detroit, Mich.

Filed Sep. 15, 1980, Ser. No. 187,532
Int. Cl.³ H04Q 9/00
U.S. Cl. 364—900 **12 Claims**



1. A network of stations for data transmissions therebetween, said network comprising:

a single transmission bus;

a plurality of stations coupled to said bus;

a bus assignment control line coupled to each of said stations in a serial manner;

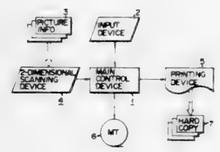
each of such stations including a priority switch means to receive a bus assignment control pulse on said control line and, if that station does not require access to the transmission bus, to retransmit that pulse to a higher priority station or to a lower priority station in accordance with the number of previous bus assignment control pulses that have been received; and each of such stations also including a priority counter means being disposed for counting the number of previous bus assignment control pulses that have been received.

4,408,301

PICTURE INFORMATION FILING SYSTEM

Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 5, 1980, Ser. No. 203,573
Claims priority, application Japan, Nov. 6, 1979, 54-143714; Nov. 6, 1979, 54-143715; Nov. 6, 1979, 54-143717
Int. Cl.³ G06F 3/14
U.S. Cl. 364—900 **3 Claims**



1. A picture information filing system comprising:

a two-dimensional scanning device for scanning picture information in a two-dimensional manner and generating electrical signals related thereto;

a signal compressing circuit for compressing data contained in said electrical signals to form compressed data;

a page buffer for storing one page of picture information embodied in said compressed data;

a nonvolatile storage device, responsive to said page buffer, said storage device having a picture information recording area for storing said compressed data, a character code information recording area storing data in the form of alpha-numeric characters and an auxiliary area;

a record/reproduce circuit for recording/reproducing said information in said storage device;

a signal elongating circuit for reforming said electrical signals from said compressed data received from said record-/reproduce circuit;

a picture element memory for storing said electrical signals from at least one of said scanning device and said elongating circuit;

a display device for displaying picture information in response to said electrical signals from said picture element memory, said picture element memory acting as a display buffer for said display device;

a keyboard device having function keys for specifying areas of picture information displayed on said display device to be extracted and for specifying displacing positions of said extracted areas to obtain picture information, said keyboard device also having character keys for inputting character code information;

a random access memory for storing blank electric signals for indicating blank areas when applied to said display device;

a cursor controller, responsive to said keyboard device and connected to said display device for generating signals related to the location of said extracted areas and said displacing positions and for causing cursors to be displayed on said display device related thereto;

direct memory access means, connected to said random access memory and said picture element memory, for (1) transferring said blank electrical signals to said picture element memory for areas of said picture information outside of said extracted areas and (2) transferring electric signals for said extracted areas from their initial locations in said picture element memory to locations corresponding to said displacing positions to created shifted extracted data, said shifted extracted data being transferred for storage in said nonvolatile storage device auxiliary area through said compressing circuit and said page buffer;

a refresh memory for temporarily storing said character code information input by said keyboard device;

a character pattern generator responsive to said refresh memory for outputting to said display device a character pattern corresponding to said character code information;

logic gate means for selectively synthesizing picture element information from said picture element memory and said nonvolatile storage device, said shifted extracted picture information from said auxiliary area of said nonvolatile storage device and said character pattern information from said character pattern generator; and

a central processing unit, connected to said display device, said keyboard device, said storage device, said direct memory access means, said random access memory and said logic gate means for (1) controlling the display of said picture information from said picture element memory, (2) controlling said transferring of said blank electrical signals and said transferring of said electric signals, (3) controlling the storage of said shifted extracted data in said nonvolatile storage device and (4) controlling the synthesis by said logic gate means of picture element information from said picture element memory and said nonvolatile storage device, said shifted extracted picture information from said auxiliary area of said nonvolatile storage device and said character pattern information from said character pattern generator.

4,408,302

WORD PROCESSOR WITH DISPLAY DEVICE

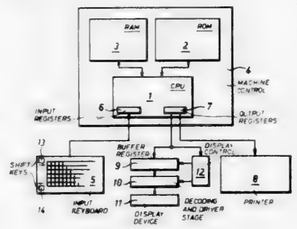
Rudolf Fessel, Jever; Karl-Friedrich von Knorre, Varel; Peter Tillich, and Gottfried Herbermann, both of Wilhelmshaven, all of Fed. Rep. of Germany, assignors to Olympia Werke AG, Wilhelmshaven, Fed. Rep. of Germany

Filed Apr. 10, 1980, Ser. No. 139,115

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915673

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—900 **3 Claims**



1. In a word processing machine which operates to provide text in the form of successive lines of characters, and includes an input keyboard for the input of character representations and special instructions, a data memory connected for storing such representations, a display device connected to receive such representations from the memory and including a horizontally-extending plurality of character display locations the right-hand one of which is an entry location, and control means, connected to said keyboard, said memory and said display device, for controlling the display provided by the display device in a manner to cause the display device to display at least a portion of a line of characters, with each character appearing, in the order of its input to the keyboard, at the entry location of the display and then shifting to the left in the display upon delivery of each subsequent character to the display, the improvement wherein said display device further includes a plurality of further character display location to the right of said entry location; and wherein said control means

(a) are responsive to a shift instruction fed in via said keyboard for causing at least a portion of a line of previously inputted characters to be shifted to the right and displayed at adjacent ones of said character display locations, including said further locations,

(b) are further operable for controlling transfer, from said data memory to said display device, of representations of characters of text previously fed into said machine in such a manner as to cause the associated characters to be displayed at said character display locations, including said further locations, and

(c) are arranged for utilizing said further character display locations, during the performance of character input operations via said keyboard, for displaying non-text information useful to the operator and for suppressing such information when the text is to be displayed in said further locations.

4,408,303

DIRECTLY-COUPLED AND CAPACITIVELY COUPLED NONVOLATILE STATIC RAM CELL

Daniel C. Guterman, Plano, and James D. Kupec, Dallas, both of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Dec. 28, 1981, Ser. No. 335,160

Int. Cl.³ G11C *11/24, 11/40*

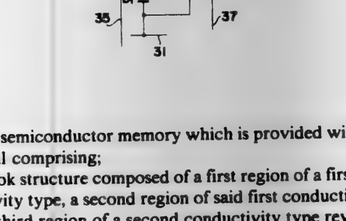
U.S. Cl. 365—205 **15 Claims**

1. A nonvolatile static random access memory cell comprising:

cross-coupled transistor means having first and second nodes which are maintained at complementary logic states for volatile data storage;

at least one tunnel capacitor means, each said tunnel capacitor means connected to a corresponding floating node and operatively coupled to the gate and drain terminals of one of said cross-coupled transistor means;

at least one switch transistor means, each said switch transistor means operatively coupled to one of said first and second nodes and to the floating node of one of said at least one tunnel capacitor means; and



means for coupling each of said switch transistor means to a first power terminal for said memory cell, said at least one tunnel capacitor means charged for nonvolatile data storage wherein volatile data is stored in said cross-coupled transistor means, said means for coupling operatively coactive with said at least one switch transistor means for recalling nonvolatile stored data in its true state to said cross-coupled transistor means.

4,408,304

SEMICONDUCTOR MEMORY

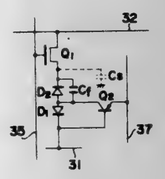
Jun-ichi Nishizawa; Ohmi Tadahiro, and Takashige Tamamushi, all of Sendai, Japan, assignors to Semiconductor Research Foundation, Japan

Filed May 4, 1981, Ser. No. 260,297

Claims priority, application Japan, May 17, 1980, 55/65818

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—174 **6 Claims**



1. A semiconductor memory which is provided with a memory cell comprising;

a hook structure composed of a first region of a first conductivity type, a second region of said first conductivity type, a third region of a second conductivity type reverse from the first conductivity type and a fourth region of said first conductivity type, the first to fourth regions being sequentially formed on a semiconductor substrate and the third and fourth regions being made floating;

a write and/or refresh transistor using the third region of the hook structure as one of its main electrode regions; and

a readout transistor using the fourth region of the hook structure as one of its main electrode regions.

4,408,305

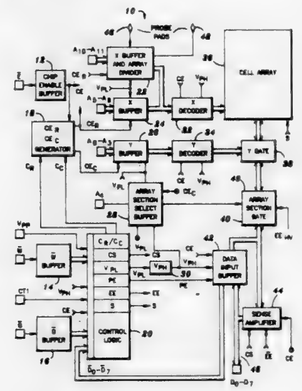
MEMORY WITH PERMANENT ARRAY DIVISION CAPABILITY

Clinton C. K. Kuo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1981, Ser. No. 305,830

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—189 **5 Claims**



1. In a memory comprising:

an array of memory elements, said array divided into first and second halves; and

decoder means for selecting a memory element from the first half of said array when a first address signal is in a first logic state and for selecting a memory element from the second half of said array when the first address signal is in a second logic state;

array divider means for providing the first address signal in a selected one of said first and second logic states in response to having received an array divider signal, wherein the selection of the first or second logic state in response to the array divider signal is permanent, whereby the decoder means permanently select a memory element from only the half of said array which corresponds to the selected logic state of the first address signal.

4,408,306

COLUMN AND ROW ERASABLE EEPROM

Clinton C. K. Kuo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1981, Ser. No. 306,120

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—218 **4 Claims**

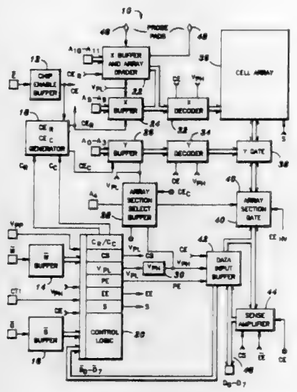
1. An electrically erasable programmable read only memory (EEPROM) comprising:

an array of electrically erasable memory elements arranged with one of said memory elements at the intersection of each of a plurality of rows and columns of said array;

logic means for generating, in response to a row erase mode signal, a row control signal at a first logic state and a column control signal at a second logic state;

column select means for coupling, when the column control signal is at the second logic state, an erase signal to all of the columns of said array; and

row decoder means for enabling, when the row control signal is at the first logic state, said erase signal to electri-



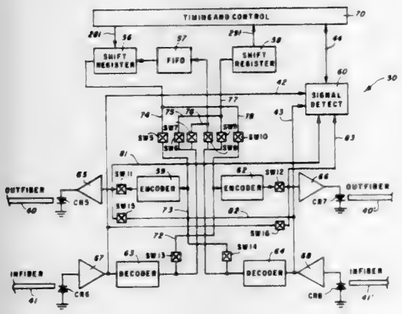
cally erase the memory elements comprising the row of said array selected in response to a row address signal.

4,408,307

OPTICAL TRANSMISSION OF DIGITAL SEISMIC DATA

Ralph A. Harris, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 973,485, Dec. 26, 1978, abandoned.
This application Nov. 24, 1980, Ser. No. 209,638
Int. Cl.³ G01V *1/22*
U.S. Cl. 367—79 **17 Claims**



1. A seismic data acquisition system having a plurality of data acquisition units positioned over a seismic prospect area which units have provision for sensing motion in an elastic body and a controller means for providing command signals to, and for receiving data and status signals from, the data acquisition units, comprising:

(a) telemetry interface means operatively connected to the controller means;

(b) data acquisition means for the data acquisition units for receiving and formatting signals representative of sensed motion;

(c) a pair of optical fibers comprising an in-fiber and an out-fiber for light communication between the telemetry interface means and the data acquisition units; and

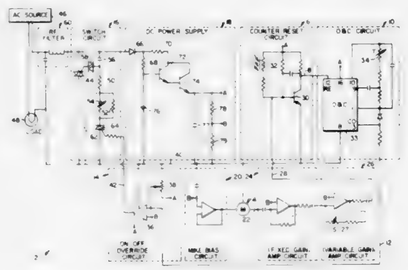
(d) telemetry communications means in each of the data acquisition units, for receiving the pair of optical fibers, operatively connected to the respective data acquisition means and having signal detect means for automatic detection of the optical fiber on which the command signals from the controller means are present, providing automatic orientation of the data acquisition units.

4,408,308

SOUND ACTUATED LIGHT SWITCH

Blaine M. Smith, and James A. Taylor, both of Beaverton, Oreg., assignors to Ehrenreich Electronics, Inc., Great Neck, N.Y.

Filed Jun. 16, 1981, Ser. No. 273,570
Int. Cl.³ H01H *36/00, 35/24;* **G08B** *13/22;* **H04Q** *1/18*
U.S. Cl. 367—197 **12 Claims**



1. A switch connected in series with and between an alternating current power source and a load for actuation of the load upon receipt of an audible external stimulus comprising:

a direct current power supply connected in series with and between said alternating current power source and said load and having at least one direct current output;

means for sensing said audible external stimulus and producing a first electrical signal representative of the stimulus at a first output thereof;

a reset circuit means having a reset circuit input electrically coupled to the first output for producing a reset signal at a reset output when the electrical signal at the reset circuit input exceeds a chosen level;

timing means coupled to the reset output for providing on and off control signals at a control output, said on control signal provided during receipt of the reset signal and for a first period of time after said reset signal ceases, said off control signal provided thereafter;

said timing means further comprising an electronic oscillator means for producing an oscillating signal and an electronic counter coupled to the oscillator means and having a reset input coupled to the reset output and adapted to begin a count cycle by counting oscillations of the oscillating signal starting at a first count upon receipt of said reset signal, said counter means including means for producing an on control signal at a counter output upon receipt of said reset signal and an off control signal after the electronic counter reaches a certain count corresponding to a predetermined time interval during which said reset signal is not received; and

connecting switch means, having a switch input connected to said control output and being responsive to said control signal, for electrically connecting the alternating current power source to the load when the on control signal is present.

4,408,309

TIME DELAYED RECORDING SYSTEM

Roy A. Kiesling, 97 Douglass Way, Atherton, and Roy A. Kiesling, III, 50 Hayfields Rd., Portola Valley, both of Calif. 94025

Filed Jul. 20, 1981, Ser. No. 284,529
Int. Cl.³ G11B *5/86*
U.S. Cl. 369—7 **6 Claims**

1. For a receiver system having a receiver portion, an amplifier portion, a switched power output terminal, an auxiliary output terminal and a monitor input terminal, and a recording system having storage medium, a signal input terminal, a power input terminal and a remote control input terminal, said receiver portion developing a continuous signal at said auxiliary output terminal, said monitor input terminal being operatively connected to said amplifier portion, said signal input terminal being operatively connected to said storage medium, said remote control input terminal being operative to activate said storage medium when said power signal is applied to each of said power input terminal and said remote control input terminal, a time delay apparatus for ex post facto selecting a portion of said continuous signal and storing said portion in said storage medium, said time delay apparatus comprising:

delay means for delaying said continuous signal for a selected time when said delay means is made responsive to said continuous signal and operative to develop a delayed signal; and

switch means defining a first, second, third and fourth switching state;

in said first state, said switch means being for coupling said auxiliary output terminal to said monitor input terminal for application of said continuous signal to said amplifier portion;

in said second state said switch means being for coupling said auxiliary output terminal to each of said monitor input terminal and said delay means for application of said continuous signal to each of said amplifier portion and said delay means, and further for coupling said switched power output terminal to said delay means for application

of said power signal to said delay means to make said delay means responsive to said continuous signal;

in said third state said switch means being for coupling said auxiliary output terminal to said delay means for application of said continuous signal to said delay means, further for coupling said switched power output signal to each of said delay means and said power input terminal for making said delay means responsive to said continuous signal and preparing said recording system for storage of said portion, and further for coupling said delay means to each of said monitor input terminal and said signal input terminal for application of said delay signal to each of said amplifier portion and said storage medium; and

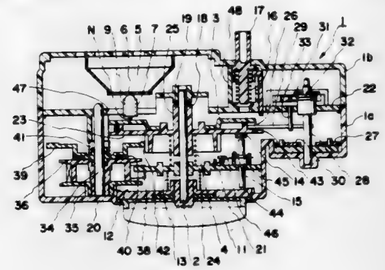
in said fourth state said switch means being for coupling said auxiliary output terminal to said delay means for application of said continuous signal to said delay means, for coupling said switch power output terminal to each of said delay means, said power input terminal and said remote control input terminal for application of said power signal to each of said delay means and said recording system for making said delay means responsive to said continuous signal, and for coupling said delay means to each of said monitor input terminal and said signal input terminal for application of said delayed signal to each of said amplifier portion and said storage medium, said power signal being applied to each of power input terminal and said remote control input terminal for commencing storage of said portion of said continuous signal.

4,408,310

SIMPLIFIED SOUND REPRODUCING DEVICE DRIVEN BY A SPRING MOTOR

Katsumi Watanabe, Kawasaki, Japan, assignor to Ozen Corporation, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,655
Claims priority, application Japan, Mar. 25, 1981, 56-43676
Int. Cl.³ G11B *17/00, 31/00, 3/00*
U.S. Cl. 369—41 **4 Claims**



1. A simplified sound reproduction device driven by a spring motor comprising:

a casing;

an upright center shaft disposed within the casing;

a record disc rotatably and axially movably disposed for advanced and retracted movement about the center shaft, the record disc having a recessed central portion and a recorded face with starting and end points of sound reproduction, the record disc being received and supported by the center shaft;

first spring means disposed about the center shaft for biasing the record disc to its advanced position along the center shaft;

a speaker cone mounted within the casing;

a vibration plate mounted at the bottom of the speaker;

a tone arm swingably mounted on the casing;

second spring means for biasing the tone arm away from the record disc and towards the starting point of sound reproduction;

a pickup carried by the tone arm;

a sound reproducing stylus carried by the pickup;

means for stopping rotation of the record disc when the stylus reaches the end point of sound reproduction;

a winding knob reciprocally movable along the center shaft and rotatable between winding and retracted positions;

a winding wheel reciprocally movable and rotatably disposed about the center shaft and adapted to be coupled and rotatable with the winding knob upon depression of the winding knob and rotation of the winding knob only in the direction of winding the spring motor to wind the spring motor;

third spring means for biasing the winding knob and the winding wheel to the retracted position;

at least one starting post disposed parallel to the center shaft and being axially movably disposed within the casing;

fourth spring means for biasing the starting post away from the record disc;

the starting post, when depressed, engaging and moving the record disc to its retracted position;

means for temporarily stopping rotation of the record disc including:

a locking member affixed to the face of the record disc opposite from the recorded face;

a reverse slippage restraining post mounted in the casing and disposed betwen the winding wheel and the record disc, the reverse slippage restraining post being axially movable and adapted to be moved into engagement with the locking member when engaged and axially advanced by the

winding wheel for temporarily stop plug rotation of the record disc, the reverse slippage restraining post disengaging from the locking member by movement of the record disc towards its retracted position.

4,408,311

OPTICAL TRACKING APPARATUS

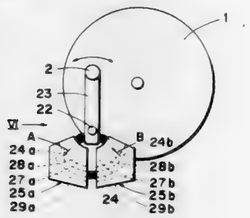
Junichi Suzuki, Kawasaki, and Kenji Shintani, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,514

Claims priority, application Japan, May 16, 1980, 55-67381[U]

Int. Cl.³ G11B *7/00, 21/10*

U.S. Cl. 369—43 **8 Claims**



1. An optical tracking apparatus for tracing at least one track on a recording disk to reproduce an information signal recorded in said at least one track, comprising:

optical pickup means having light-emitting means for projecting a light beam onto said recording disk to modulate said light beam with said information signal and photoelectric conversion means for producing said information signal in response to said modulated light beam;

arm means pivotally mounted to an arm shaft so as to be adapted to rotate in a first plane and having a first and a second end, said pickup means being mounted to said first end so as to be adapted to move substantially along the radial direction of said recording disk;

arm drive coil means attached to said second end of said arm means and having a current path loop in parallel with the first rotational plane of said arm means;

means for producing an arm drive signal;

means for producing a tracking error correction signal in response to said modulated light beam; and

stationary magnetic field forming means having at least one pair of air gaps in which magnetic fields in opposite directions to each other are formed, said arm drive coil means being arranged to move in said at least one pair of air gaps and being supplied with said arm drive signal and said tracking error correction signal for causing said pickup means to trace at least one track.

4,408,312

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS WITH A TRACKING CONTROL DEFEATING CIRCUIT FOR RAPID TRACK ACCESS

Hiroyuki Sugiyama, Isehara; Isami Kaneda; Ryozo Abe, both of Yokohama; Susumu Sakakibara, Sagamihara, and Yasushi Sano, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 21, 1981, Ser. No. 303,982

Claims priority, application Japan, Sep. 22, 1980, 55-131904

Int. Cl.³ G11B *21/08, 21/10;* **H04N** *5/76*

U.S. Cl. 369—43 **5 Claims**

1. A reproducing apparatus for reproducing a rotary recording medium in which one and the other of first and second reference signals are alternately recorded on every track turn, the reference signals being recorded between each track turn of a main information signal track, said rotary recording medium having a third reference signal recorded thereon at positions corresponding to the positions where the recording of said first and second reference signals are alternately changed over every said track turn, said reproducing apparatus comprising:

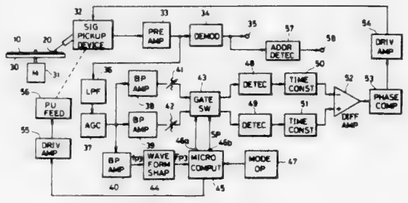
reproducing transducer means having a reproducing element for reproducing said main information signal and the first and second reference signals at both sides of said main information signal track, said reproducing transducer having means for controlling the tracking of said reproducing element;

separation circuit means for respectively separating said first and second reference signals from a signal reproduced by said reproducing transducer means;

wave detection circuit means for respectively wave-detecting said separated reference signals;

time constant circuit means for eliminating an unwanted component in an output signal of said wave detection circuit means and for holding a required signal;

tracking control signal applying circuit means for obtaining a tracking control signal from an output signal of said time constant circuit means and for applying the tracking con-



trol signal to the tracking control means of said reproducing transducer;

interrupting circuit means at a stage before said time constant circuit means, for interrupting the transmission of said reproduced reference signals during a mode in which a tracking control operation is not performed;

circuit means for separating the third reference signal from the signal reproduced by said reproducing transducer means;

switching signal forming circuit means for forming a switching signal in response to said separated third reference signal; and

changeover circuit means responsive to the switching signal supplied from said switching signal forming circuit means, for alternately changing over and supplying said separated first and second reference signals to said detection circuit means,

said switching signal forming circuit means putting said changeover circuit means in a signal transmission interrupting state during the mode in which the tracking control operation is not performed.

4,408,313

OBJECTIVE LENS DRIVING DEVICE FOR TRACKING AND FOCUS CORRECTIONS

Toru Musha, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Dec. 15, 1980, Ser. No. 216,522

Claims priority, application Japan, Jul. 9, 1980, 55-93568

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **8 Claims**

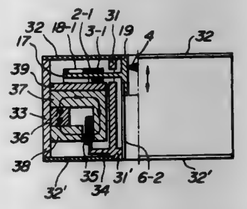
1. In an objective lens driving device for correcting a relative positional error, i.e., a tracking error, between an information track recorded spirally or concentrically on a record medium and a reading-out light spot projected onto the record medium by means of the objective lens by moving the objective lens in a direction perpendicular to the optical axis of said objective lens and information track, the improvement which comprises:

at least one set of objective lens driving means, each set including:

an elongated movable member comprising a magnetic body movable together with the objective lens or a holding frame therefor;

a stationary yoke extending in a direction which is substantially parallel with the moving direction of said movable member and spaced apart from and opposed to said movable member at both end portions to provide interposing gaps;

a magnetic field generation means for producing a closed loop magnetic field passing through said movable member and stationary yoke via said gaps;



a coil wound around at least one end portion of said stationary yoke such that at least one portion of said coil is exposed to the magnetic field produced by said magnetic field generation means in at least one said gap; and

objective lens supporting means for movably supporting said objective lens in said direction perpendicular to the optical axis of said objective lens and information track;

said coil being supplied with an electric current corresponding to a tracking error signal representing said relative positional error so as to displace said movable member comprising the magnetic body and hence said objective lens in said direction perpendicular to the optical axis of said objective lens and information track to correct the tracking error.

4,408,314

RECORD/PLAYBACK TRACK TRACKING SERVO

Tsuneshi Yokota, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 23, 1981, Ser. No. 237,260

Claims priority, application Japan, Feb. 29, 1980, 55-25082; Feb. 29, 1980, 55-25083

Int. Cl.³ G11B *7/00, 19/02, 21/10*

U.S. Cl. 369—46 **14 Claims**

1. A tracking servo control device for maintaining track registration during the recording onto or playback from a track of a rotating disc-shaped recording medium having a recording layer, comprising:

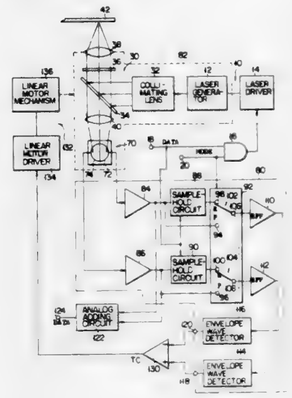
(a) laser source means for alternately generating first and second intensity laser beams during recording and for continuously generating a laser beam of said first intensity during playback, said second intensity being greater than said first intensity and being sufficient to change said recording layer so as to record data on said recording layer in an optically readable manner;

(b) an optical head movable in a radial direction of said rotating recording medium;

(c) laser beam transmitting means, within said optical head, for focusing said laser beams onto said recording layer and conducting light reflected from said recording layer in a predetermined direction;

(d) photoelectric transducing means, within said optical head having two photo detecting elements, for generating, in response to light reflected from said recording layer and transmitted via said laser beam transmitting means, first and second electrical signals corresponding to a first portion of light so transmitted and to a second remaining portion of the light, respectively, each electrical signal containing first and second components corresponding respectively to said first and second intensity laser beams reflected from the record layer;

(e) wave-shaping means, electrically coupled to said photoelectric transducing means, for removing said second component from each of said first and second signals during recording to produce respectively corresponding third and fourth electrical signals;



(f) signal generating means, electrically coupled to said wave-shaping means, for detecting a level difference between said third and fourth electrical signals and generating a fifth electrical signal corresponding to the level difference therebetween; and

(g) drive means, electrically coupled to said signal generating means and mechanically coupled to said optical head, for driving said optical head in response to said fifth electrical signal to thereby adjust its position relative to said track of the recording medium so that said laser beams correctly illuminate said track.

4,408,315

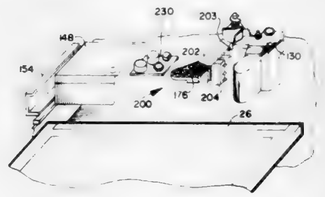
VIDEO DISC PLAYER HAVING STYLUS CLEANING APPARATUS

Gopi N. Mehrotra, Carmel, and Gerald Van Arsdall, Greenwood, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,454

Int. Cl.³ G11B *3/58*

U.S. Cl. 369—71 **4 Claims**



4. In a record player including a pickup stylus subject to engagement with a turntable-supported record for recovering prerecorded information from said record; said stylus being mounted at one end of a stylus arm; the other end of said stylus arm being supported in a carriage which is subject to translatory motion along a path between a starting position and an ending position; said player further including means for selectively lowering said stylus when activated; said stylus lowering

means including a magnetic element secured to a stylus arm rest and an electrical winding which, when energized, acts upon said magnetic element to lower said stylus arm rest and thereby said stylus arm; stylus cleaning apparatus comprising:

(A) a stylus cleaning element;

(B) means for causing relative motion between said cleaning element and said stylus;

(C) means for sensing when said stylus is occupying a position over said cleaning element; said sensing means comprising a mechanically-actuated switch which is operated when said cleaning element is underneath said stylus;

(D) control means coupled to said sensing means for activating said stylus lowering means, whereby said stylus is made to contact said stylus cleaning element; said electrical winding, said control means and said switch being disposed in series between a voltage source and ground; said control means, when turned on, allowing passage of electrical current through said winding to lower said stylus onto said cleaning element upon actuation of said switch; and

(E) timing means responsive to said sensing means for automatically turning off said control means upon elapse of a preset time interval to block any current from flowing through said winding, whereby said stylus is lifted upward away from said cleaning element; wherein said timing means comprises a series resistor/capacitor combination connected between said voltage source and said ground to automatically turn off said control means.

4,408,316

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS HAVING A JACKET OPENING ENLARGING DEVICE

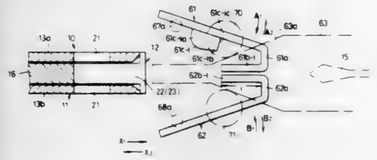
Takashi Saito, Ayase, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 18, 1981, Ser. No. 293,835

Claims priority, application Japan, Aug. 18, 1980, 55-116721[U]

Int. Cl.³ G11B *1/00*

U.S. Cl. 369—77.2 **7 Claims**



1. An apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket having a space for accommodating the rotary recording medium therein and an opening through which said medium can enter and leave the jacket and a lid member inserted through said opening of the jacket for covering and closing the opening, said reproducing apparatus comprising:

a front side having an elongated inserting opening therein through which the case is inserted;

holding means disposed at a rear part of the reproducing apparatus, for holding the rotary recording medium within the reproducing apparatus responsive to an insertion of the case into the reproducing apparatus and then a withdrawal of the jacket from the reproducing apparatus;

turntable means positioned between said inserting opening and a rear part of the reproducing opening for rotating the recording medium thus left within the reproducing apparatus; and

jacket opening enlarging means for coupling with the jacket and being movable over the turntable means between the inserting opening and said rear part of the reproducing apparatus, said enlarging means coordinating with the insertion and extraction of said case having the jacket,

said jacket opening enlarging means comprising

upper and lower elongated enlarging members aligned horizontally with said inserting opening when said jacket opening enlarging means is prepared for receiving the inserted case, said upper and lower enlarging members being pivotally coupled to each other with their front edges being mutually open toward said inserting opening and their rear edges being mutually closed;

finger means projecting toward said inserting opening on the respective front edges of said upper and lower enlarging members, said fingers entering into cutouts in the lid member and mutually separating from each other to enlarge the opening of the jacket as the case is inserted through the inserting opening and into the reproducing apparatus; and

means for opening said respective rear edges of said upper and lower enlarging members to mutually separate from each other as said jacket opening enlarging means moves towards said rear part of said reproducing apparatus during the insertion of the case.

4,408,317

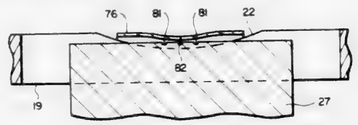
MAGNETIC TAPE APPARATUS

Paul A. Gilovich, Saratoga, and James S. Toreson, Mountain View, both of Calif., assignors to Microcomputer Systems, Inc., Sunnyvale, Calif.

Division of Ser. No. 151,394, May 19, 1980. This application Apr. 16, 1982, Ser. No. 369,204

Int. Cl.³ G11B *15/43*

U.S. Cl. 360—74.3 **3 Claims**



1. A magnetic tape apparatus comprising a drum, means for supporting and rotating said drum, at least one transducer mounted to rotate with said drum and extending past the surface of said drum through a slot formed in said drum, means including a take-up means and supply means for presenting a selected length of tape to said drum and maintaining said length of tape in cooperative relationship with said drum so that the transducer scans along longitudinal tracks as it rotates past said tape, means for moving said transducer longitudinally along said slot so that it moves along a plurality of parallel laterally spaced tracks on said tape, means in said take-up means for providing a predetermined tension to said tape whereby to maintain a constant air cushion between said tape and said drum, said means including means for moving the take-up means a predetermined additional amount after said selected length of tape is presented to said drum from said supply means.

4,408,318

MAGNETIC SHEET MOUNTING DEVICE

Yutaka Sugiura, Chichibu, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 190,864, Jan. 17, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 368,999

Claims priority, application Japan, May 31, 1978, 53-74521

Int. Cl.³ G11B *3/62*

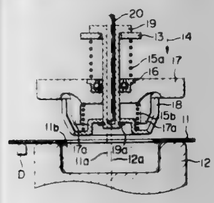
U.S. Cl. 369—261 **8 Claims**

1. A recording sheet mounting device, comprising:

a shaft member having a recess adjacent to the center thereof, for supporting a recording sheet having an aperture;

a first projection member having a first projection engageable with said recess and adapted to engage with the aperture of the recording sheet, said first projection having at least one cut-away portion to facilitate enlargement of the diameter thereof;

a second projection member having a second projection for acting on an inside portion of said first projection member to thereby enlarge same when the center of the aperture of the



recording sheet and the center of said shaft member do not substantially coincide, said second projection being deformable to achieve a decrease in the diameter thereof in response to a force applied thereto by said first projection member when the center of the aperture of the recording sheet and the center of said shaft member substantially coincide; and

an urging member, integral with said second projection member, for urging the recording sheet to said shaft member when the diameter of said second projection decreases.

4,408,319

OPTICAL INFORMATION RECORDING MOTHER DISC AND METHOD OF PRODUCING THE SAME

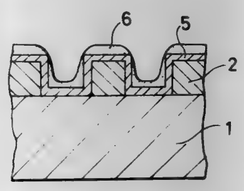
Taiji Tsunoda; Takashi Nishio, and Eiki Tanikawa, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 56,667, Jul. 11, 1979, abandoned. This application Jun. 15, 1981, Ser. No. 273,999

Claims priority, application Japan, Jul. 15, 1978, 53-86356; Jul. 15, 1978, 53-86357; Jul. 15, 1978, 53-86358

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—275 **6 Claims**



6. A method of producing an optical information recording mother disc containing a plurality of pits, the length and the repetitive rate of said pits representing information recorded on said disc, comprising the steps of forming pits in a first layer formed on one major surface of a substrate disc in response to information, each of said pits extending throughout the thickness of said first layer and having vertical walls, providing a liquid film on said first layer and then hardening said liquid film so that a second layer having continuously increased thickness towards the bottom of each of said pits is formed on said first layer to thereby facilitate the forming of replicas of said optical information recording mother disc by transferring said pits to said replicas.

4,408,320

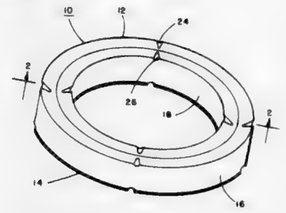
SPACER FOR USE IN TESTING INFORMATION RECORDED DISCS

Alexander W. Buzgo, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,515

Int. Cl.³ G11B *23/00*

U.S. Cl. 369—290 **12 Claims**



1. A spacer ring for use in testing information recorded discs comprising an unbroken annular substantially flat body having concave top and bottom surfaces and at each of the surfaces at least one passage extending radially inwardly from the outer periphery of the body and at least one passage extending radially outwardly from the inner periphery of the body.

4,408,321

DISC-SHAPED RECORDING MEDIUM REPRODUCING APPARATUS

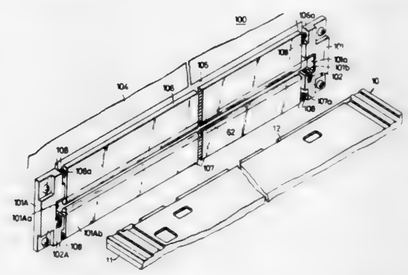
Takashi Yamamura, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 24, 1981, Ser. No. 257,183

Claims priority, application Japan, Apr. 28, 1980, 55/58938[U]

Int. Cl.³ G11B *1/00*

U.S. Cl. 369—77.2 **7 Claims**



1. A reproducing apparatus for reproducing a disc-shaped recording medium which is accommodated within a case, said case comprising a jacket which has a space for accommodating said disc-shaped recording medium and an opening for enabling said disc-shaped recording medium to go in and out of said jacket, and a lid member inserted through said opening of said jacket for closing said opening of said jacket, said reproducing apparatus comprising:

a panel defining an inserting opening through which said case is inserted into said reproducing apparatus, said inserting opening having edges defining a shape generally corresponding to approximately the shape of said case;

a turntable for rotating said disc-shaped recording medium;

clamping means for clamping at least one of said disc-shaped recording medium or said lid member at an inside part of the reproducing apparatus which is opposite the panel defining said inserting opening, with said turntable located between said inside part and said panel; and

guiding members made of a material which is different from

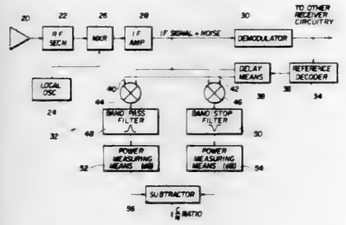
the material of said edges of said inserting opening, said guiding members being positioned adjacent an edge of said inserting opening and arranged to protrude within said inserting opening to prevent a direct contact between said case and said edge of said inserting opening.

4,408,322

METHOD AND APPARATUS FOR MEASURING SIGNAL TO NOISE RATIO IN A TDMA COMMUNICATIONS SYSTEM

Henry D. Chadwick, Reston, Va., and David W. Matthews, Mt. Airy, Md., assignors to Satellite Business Systems, McLean, Va.

Filed Nov. 7, 1980, Ser. No. 204,981
Int. Cl.³ H04J *1/16, 3/06*
U.S. Cl. 370—17 **14 Claims**



8. An apparatus for measuring signal to noise ratio in a time division multiple access communications system in which a plurality of transmission sources communicate with a receiver, without interrupting normal communications, said communications system being of the type in which time is divided into frames which are comprised of a plurality of sequential bursts from different transmission sources, and wherein the preamble of each burst includes an unmodulated carrier signal which is used as a reference signal for the demodulator at the receiver, comprising,

means for measuring the amplitude of said unmodulated carrier signal of a said burst or a quantity indicative of said carrier amplitude, at said receiver,

means for measuring the amplitude of the noise which accompanies said unmodulated carrier signal within a certain frequency range of the carrier frequency, at said receiver, or a quantity indicative of said noise amplitude; and

means for providing an indication of the ratio of said signal amplitude to said noise amplitude.

4,408,323

PROCESSOR FACILITIES FOR INTEGRATED PACKET AND VOICE SWITCHING

Warren A. Montgomery, De Kalb, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 29, 1981, Ser. No. 278,861
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—60 **38 Claims**

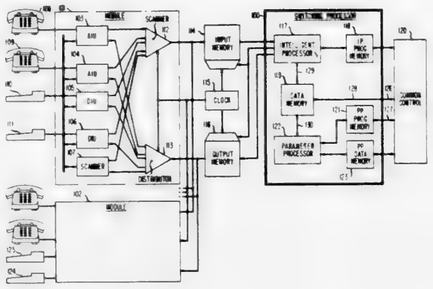
1. A telecommunication switching system for interconnecting digitally encoded voice signals between a set of randomly selectable input ports and a set of randomly selectable output ports and for assembling digital data signals from another set of said randomly selectable input ports into packets and transmitting said packets to another set of said randomly selectable output ports, said system comprising:

a first storage means for storing said digitally encoded voice signals and said digital data signals from said input ports into predetermined storage locations;

switching processor means responsive to a receipt of a first set of program instruction routines for processing said stored digitally encoded voice signals;

a second storage means connectable to said output ports for storing said processed voice signals in predetermined storage locations thereof;

said switching processor means being responsive to a receipt of a second set of program instruction routines for processing said stored digital data signals to assemble and store said packets in said switching processor means; and



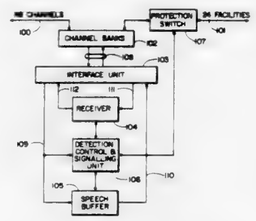
said switching processor means being responsive to a receipt of a third set of program instruction routines for processing each of said packets for transmission of each of said processed packets to said second storage means; whereby said stored packets are transmitted to said other set of said output ports.

4,408,324

NOISE SIGNAL LEVEL CONTROL IN A TASI SYSTEM

David H. A. Black, Box 28, R.R. 1, Chelsea, Quebec, Canada (J0X 1N0), and Georges H. Pelletier, 225 des Voyageurs, Aylmer, Quebec, Canada (J9J 1P8)

Filed Dec. 22, 1980, Ser. No. 218,751
Claims priority, application Canada, Oct. 3, 1980, 361496
Int. Cl.³ H04J *6/02;* **H04M** *9/10*
U.S. Cl. 370—81 **7 Claims**



1. A method of mitigating noise signal contrast in a TASI system in which speech signals from a plurality of channels are interpolated and transmitted via a lesser plurality of transmission facilities, said method comprising the steps of:

monitoring the level of noise received at a receiver of the system via each facility while the facility is idle;

producing a noise signal with a level which is controlled in dependence upon the average monitored level of noise received via said facilities; and

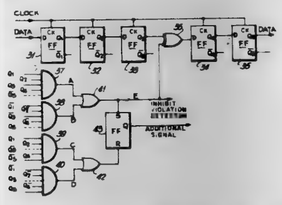
supplying the controlled level noise signal to off-hook channels for which speech signals are not being received via the facilities.

4,408,325

TRANSMITTING ADDITIONAL SIGNALS USING VIOLATIONS OF A REDUNDANT CODE USED FOR TRANSMITTING DIGITAL SIGNALS

Wayne D. Grover, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 28, 1980, Ser. No. 211,697
Int. Cl.³ H04J *3/06*
U.S. Cl. 370—119 **18 Claims**



1. A method of transmitting an additional signal via a transmission link via which a digital signal is transmitted from a transmitter to a receiver using a redundant transmission code, comprising:

at the transmitter, in dependence upon said additional signal, selectively modifying a predetermined code combination, which occurs randomly in the encoded digital signal, to produce a predetermined code violation, and transmitting the encoded selectively modified digital signal; and

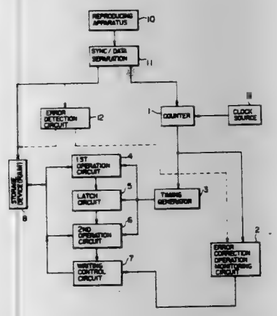
at the receiver, detecting and correcting each such predetermined code violation to reproduce said additional signal and said digital signal.

4,408,326

CIRCUIT FOR CORRECTING ERROR IN DIGITAL INFORMATION SIGNAL

Takashi Takeuchi, Fujisawa, and Harukuni Kobari, Yokohama, both of Japan, assignors to Hitachi, Ltd. and Victor Company of Japan, Ltd., both of Tokyo, Japan

Filed Sep. 24, 1981, Ser. No. 305,375
Claims priority, application Japan, Sep. 26, 1980, 55-132874
Int. Cl.³ G06F *11/10;* **H04N** *5/76*
U.S. Cl. 371—38 **3 Claims**



1. A circuit for correcting errors in an information signal having been subjected to a time-base variation as well as the errors due to passage of said information signal through a system, said information signal including a plurality of digital signal trains each having digital information data and error correction data with recurrent sync pulses interposed between adjacent two signal trains, the correcting circuit comprising:

a source of clock pulses;

means for generating a correction operation start signal in response to each of said sync pulses;

a counter arranged to count the clock pulses from said source during a time period between successive two correction operation start signals from said start signal generating means;

storage means including a first storage section serving to store said information signal and a second storage section;

a correction operation circuit arranged to be supplied with said information signal from said first storage section and having means for performing a plurality of operation steps for correcting the errors in said information signal with said error correction data, the results of said operation steps being stored in said second storage section;

means responsive to the output of said counter for generating an operation timing signal to be supplied to said correction operation circuit so that the performance of said plurality of operation steps are timed with said operation timing signal;

means responsive to the output of said counter for monitoring the degree of execution of operation steps in said correction operation circuit; and

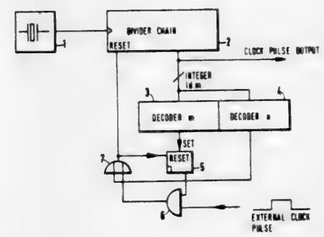
means responsive to the output of said monitoring means for controlling writing of said operation results in said second storage section.

4,408,327

METHOD AND CIRCUIT FOR SYNCHRONIZATION

Helmut Wahl, Weissach, and Hagen Hofmeister, Korb, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1980, Ser. No. 188,991
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938228
Int. Cl.³ G06F *1/04, 9/00;* **H03K** *5/13;* **G05B** *19/02*
U.S. Cl. 371—47 **7 Claims**



6. Method for synchronizing switching mechanisms or program sequences in data transmission devices with an external frame clock pulse subject to fluctuations within a given tolerance range, comprising gradually matching the leading edge of a generated internal frame clock pulse for the switching mechanism or program sequence with the leading edge of the external frame clock pulse arriving at changing points in time by:

(a) generating the internal frame clock pulse in synchronism with the leading edge of the external frame clock pulse if the leading edge of the external clock pulse appears during a fixed time period corresponding to said tolerance range;

(b) generating the internal frame clock pulse in synchronism with the leading edge of said fixed time period if the leading edge of the external frame clock pulse has appeared prior to said fixed time period; and

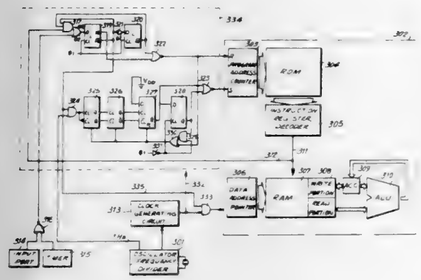
(c) generating the internal frame clock pulse in synchronism with the trailing edge of said fixed time period if the leading edge of the external frame clock pulse appears after said fixed time period.

4,408,328

MICROPROGRAM CONTROL CIRCUIT

Yoichi Wakai, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 11, 1981, Ser. No. 262,358
Claims priority, application Japan, May 12, 1980, 55-62530; May 12, 1980, 55-62532
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—62 **12 Claims**



1. In a processor including a main processor comprising a memory circuit having a plurality of addresses for storing instructions therein, an address counter circuit for selecting the addresses in sequence to be read from said memory circuit, thereby providing instructions in sequence to said main processor to perform a program, said program including a program terminating instruction, and a source of clock signals, said clock signals being input at least to said main processor and being necessary to continue operation of said main processor circuits in performance of said instructions, the improvement therein comprising:

means for triggering performance of said program by setting said address counter circuit to an initial address of said program;

means for controlling the flow from said clock signal source to said main processor circuit of said clock signals, the occurrence of said program terminating instruction in said instruction sequence causing said means for controlling to inhibit flow of said clock signals whereby operations of said main processor on said instructions cease, said means for triggering causing said means for controlling said clock signals to initiate flow of said clock signals;

means for measuring the time of main processor operation from the start of performance of said program instructions, said means for measuring being adapted to cause said address counter circuit to select a designated address when said terminating instruction fails to occur in said sequence of instructions within a predetermined time period.

4,408,329

LASER DEVICE WITH INTRARESONATOR HARMONIC GENERATOR

Gerald D. Ferguson, Yardley, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1978, Ser. No. 965,755
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—21 **14 Claims**

1. A laser system, comprising, in combination:

a laser means for radiating light of a first wavelength in opposite directions along a first path when energized;

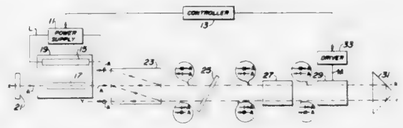
first reflection means positioned on said first path for reflecting the light from one direction into the laser means;

beamsplitter means positioned within the first path for polarizing the light from the other direction into a first component of radiation along the first path and into a second component along a second path parallel to said first path;

second reflection means positioned within said first and second paths for reflecting light in the first path into the second path and light in the second path into said first path;

Q-switch means positioned within said first and second paths for selectively rotating the polarized components one fourth of said first wavelength when energized;

frequency multiplying means positioned within said first and second paths between said beamsplitter means and said Q-switch means for mulitplying the frequency of light of said first wavelength and second component to produce



light along said first and second paths of a second wavelength and of the second component;

third reflection means highly reflective to said first wavelength and highly transmissive to said second wavelength angularly positioned to first and second paths and between said beamsplitter and said frequency multiplier means for reflecting the light of said second wavelength in one direction along parallel third and fourth paths angularly displaced from said first and second paths; and

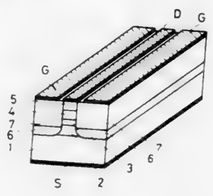
synchronizing means connected for sequentially energizing said laser means and said Q-switch means.

4,408,330

FIELD EFFECT SEMICONDUCTOR LASER, METHOD OF MODULATION THEREOF

Seiji An, 10-3, Nishiawaji 4-chome, Higashiyodogawa-ku; Osaka City, 533, Japan, assignor to Kabushiki Kaisha Towa Giken and Seiji An, both of Osaka, Japan, part interest to each

Filed Dec. 5, 1980, Ser. No. 213,333
Claims priority, application Japan, Dec. 7, 1979, 54-159460
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—45 **28 Claims**



1. A field effect semiconductor laser comprising:

a semiconductor substrate,

a stripe-shaped mesa part of a double heterostructure including a first clad layer, an active layer, and a second clad layer on the top face of said semiconductor substrate in this order, both of said first and said second clad layers having lower refractive indices than that of said active layer,

buried layers buried in both side parts of said stripe-shaped mesa part on said semiconductor substrate,

electrodes provided on the bottom surface of said semiconductor substrate and on said second clad layer,

characterized in that

said active layer has the same conductivity type as that of said first clad layer, light reflecting faces at both ends thereof being cleavage planes of (011),

that each of said buried layers comprises a first buried layer formed on said semiconductor substrate and a second buried layer thereon where said first and said second buried layers have conductivity types different from each other so that these buried layers are reverse-biased when a voltage of the same direction as the forward direction of a voltage to be applied to said stripe-shaped mesa part is applied to said second buried layer,

that a carrier concentration of said second buried layers is lower than that of said first buried layers,

that said first buried layers are formed in a manner that junction interfaces between said first and said second buried layers are disposed lower by a predetermined level difference than a junction place between said first clad layer and said active layer, and

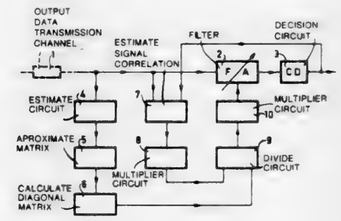
that an electrode is formed on at least one of said second buried layers.

4,408,332

ADAPTIVE SYSTEM IN A DIGITAL DATA RECEIVER PROVIDING COMPENSATION FOR AMPLITUDE AND PHASE DISTORTIONS INTRODUCED BY A DATA TRANSMISSION CHANNELS

Hikmet Sari, Alfortville, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1981, Ser. No. 260,617
Claims priority, application France, May 14, 1980, 80 10862
Int. Cl.³ H03H *21/00*
U.S. Cl. 375—14 **3 Claims**

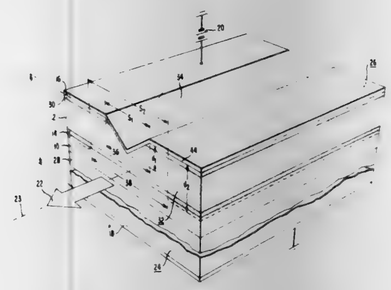


4,408,331

V-GROOVE SEMICONDUCTOR LIGHT EMITTING DEVICES

Robert L. Hartman, Warren; Louis A. Koszi, Scotch Plains, and Bertram Schwartz, Westfield, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1981, Ser. No. 247,627
Int. Cl.³ H01S *3/19*
U.S. Cl. 372—46 **19 Claims**



12. A double heterostructure semiconductor laser comprising

a semiconductor body having a major surface and including first and second cladding layers and an active layer therebetween,

electrode means for applying pumping current to flow from said surface through said active layer, thereby resulting in the emission of stimulated radiation from said active layer,

optical feedback means for resonating said radiation along an axis parallel to said layers, and

means for constraining said pumping current to flow in a channel from said major surface through said active layer, said constraining means comprising

V-groove first means for causing said current to flow in a relatively narrow upper channel which extends from said major surface to a depth short of said active layer, and

second means for causing said current to flow in a relatively wider lower channel which extends from at least said depth through said active layer.

1. In a digital data receiver, an adaptive system providing compensation for amplitude and phase distortions introduced by a data transmission channel and comprising an adaptive equalizing circuit receiving a signal vector X_k from the data transmission channel output and producing an output signal y_k, and a decision circuit receiving this output signal y_k and producing an estimation $\hat{s}_{k-d}$ of each one of the digital data s_{k-d} applied to the data transmission channel input, characterized in that the adaptive equalizing circuit is a non-recursive transversal filter having N adjustable weighting coefficients and the adaptive system comprises for the direct determination of these coefficients:

a first circuit for determining, in an estimated matrix A^e of the square signal autocorrelation matrix $A=E(X_k \cdot X_k{}^{TR})$ where E is the expectation operator and $X_k{}^{TR}$ is the transpose of X_k, the (N/2+1) first elements ($a_0{}^e$, $a_1{}^e$, $a_2{}^e$, . . . $a_{N/2}{}^e$) of the first row if N is even, or the (N+1)/2 first elements ($a_0{}^e$, $a_1{}^e$, $a_2{}^e$, . . . $a_{(N-1)/2}{}^e$) of the first row if N is odd, over an interval equal to a predetermined number M of data symbol periods of duration T on the basis of the relation

$$A^e = \frac{1}{M} \sum_{i=1}^{i=M} X_i \cdot X_i{}^{TR},$$

a second circuit connected to said first circuit for forming a vector $U=(r_0{}^e, r_1{}^e, r_2{}^e, \ldots r_{N-2}{}^e, r_{N-1}{}^e)$ in which $r_i{}^e=a_i{}^e$ for every i not exceeding N/2 if N is even, or not exceeding (N−1)/2 if N is odd, and $r_i{}^e=a_{N-i}{}^e$ for every i exceeding said limits,

a third circuit connected to said second circuit for forming a vector $\Lambda^e=(\lambda_0{}^e, \lambda_1{}^e, \lambda_2{}^e, \ldots, \lambda_{N-1}{}^e)$, whose components are the eigenvalues of a circulant matrix having said vector U as a first row, with the aid of the relation

$$\Lambda^e = \sqrt{N} \cdot P \cdot U^{TR}$$

where U^{TR} is the transpose of U and P is the unitary matrix of the order N defined by

$$P=||P_{fg}||(f,g=0, 1, 2, \ldots, N-2, N-1)$$

and

$$P_{f,g} = \frac{1}{\sqrt{N}} \exp [j\ 2\pi\ f,g/N],$$

a fourth circuit connected to the data transmission channel output and the decision circuit output for determining an estimation V^e of the signal correlation vector $V = E(X_k \hat{s}_{k-d})$ in accordance with the relation

$$V^e = \frac{1}{M} \sum_{i=1}^{i=M} X_i s_{i-d},$$

a fifth circuit connected to said fourth circuit for multiplying said estimated vector V^e by the complex conjugate P^{cc} of said unitary matrix P,

a sixth circuit connected to said fifth and third circuits for dividing the vector $Q = P^{cc}.V^e$ at the output of said fifth circuit by said vector Λ^e at the output of said third circuit on a term-by-term basis so that the resulting vector $F = (f_0, f_1, f_2, \ldots f_{N-1}) = Q/\Lambda^e$ has components $f_i = q_i/\lambda_i^e$ for every i not exceeding N−1,

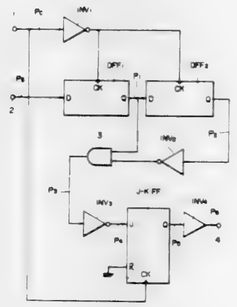
a seventh circuit connected to said sixth circuit for multiplying said vector F by said unitary matrix P, the resulting vector P.F is the estimate of the vector C^R constituting an approximation of the vector of the N optimum weighting coefficients of said transversal filter and being applied to said transversal filter for adjusting the weighting coefficients.

4,408,333

DATA ACQUISITION CIRCUIT

Yasuhiko Fujii, Yamato, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jan. 12, 1982, Ser. No. 338,995
Claims priority, application Japan, Jan. 13, 1981, 56-3104[U]
Int. Cl.³ H03B *12/00*; H04L *7/00*
U.S. Cl. 375—95 **3 Claims**



1. A data acquisition circuit adapted to receive information data, a synchronization pulse and a clock pulse, the clock pulse at a repetition rate twice as high as the transmission rate of said information data, said circuit comprising:

means responsive to said synchronization pulse and said clock pulse for generating a conditioning pulse of which the duration is twice as large as the duration of said clock pulse and the leading edge occurs at a time delayed from the synchronization pulse by the duration of said clock pulse; and

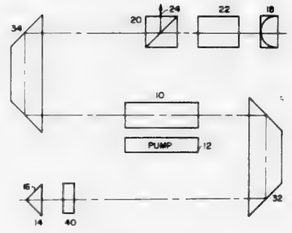
a divide-by-two frequency divider responsive to said conditioning pulse and said clock pulse for generating a data acquisition pulse occurring at one half the rate of said clock pulse.

4,408,334

WAVEPLATE FOR CORRECTING THERMALLY INDUCED STRESS BIREFRINGENCE IN SOLID STATE LASERS

Eric A. Lundstrom, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,416
Int. Cl.³ H01S *3/08*
U.S. Cl. 372—98 **7 Claims**



1. A method of correcting for thermally induced stress birefringence in a laser resonator using a pair of Porro prisms to define the ends of said laser resonator, said birefringence referring to the splitting of a beam of light into two components which travel at different velocities within said laser resonator, the faster orientation defining a fast axis angle, θ_w, and the difference between the two components defining a phase advance angle, ρ_w, transmission of a beam of light described by a polarization transmission matrix containing 2×2 matrix elements, comprising the steps of:

evaluating a corrective polarization transmission matrix which if added to said laser resonator would eliminate birefringence in said laser resonator;

producing a waveplate with said corrective polarization transmission matrix; and

inserting said waveplate in said laser resonator.

4,408,335

METHOD AND APPARATUS FOR CONTROLLING TAPE TRANSPORT APPARATUS FOR CASSETTES

Stephane M. d'Alayer de Costemore d'Arc, and David J. Lockey, both of Brussels, Belgium, assignors to Staar S. A., Belgium

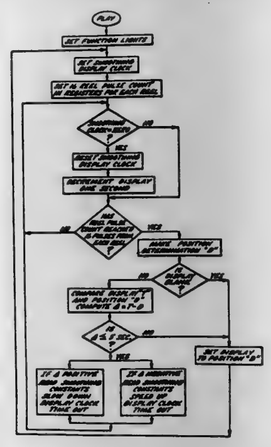
Division of Ser. No. 953,211, Oct. 20, 1978. This application Feb. 6, 1981, Ser. No. 232,364
Claims priority, application France, Dec. 9, 1977, 7737210
Int. Cl.³ B65H *59/38, 77/00*; H02P *5/46, 7/68*
U.S. Cl. 377—18 **10 Claims**

1. The method of synchronizing a display of tape position in a tape transport apparatus with actual tape movement from reel to reel by operating said display by a display clock having an adjustable rate,

determining successive tape positions based on the speeds of said reels,

periodically comparing a determined position with the tape position indicated by said display and providing signals representing the magnitude and sense of any difference, and

increasing or decreasing the rate of said display clock in accordance with the magnitude and sense of any such difference represented by said signals to reduce any such difference over a prolonged interval, thereby smoothing



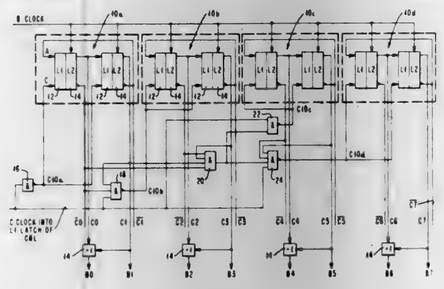
the operation of the display and maintaining the display in synchronization with actual tape movement.

4,408,336

HIGH SPEED BINARY COUNTER

Sumit DasGupta, Wappingers Falls, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed May 4, 1981, Ser. No. 259,878
Int. Cl.³ H03K *23/08*
U.S. Cl. 377—34 **4 Claims**



1. A binary counter comprising,

N two stage Gray code counters each capable of generating a two bit gray code count,

circuit means coupling said N two stage Gray code counters together for generating a 2N digit pseudo gray code count, $C_0, C_1, \ldots, C_{2N-1}$,

N Exclusive OR means each for Exclusive ORing each odd and even bit output position of every N two stage Gray code counter together and,

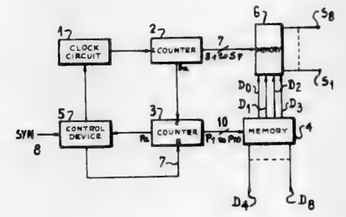
binary output means for generating a 2 N digit binary count $B_0, B_1, \ldots B_{2N-1}$ including means for using the output of the second stage of the two stage Gray code counters as the bits $B_1, B_3, B_5, \ldots, B_{2N-1}$ in the binary count and the output of the Exclusive OR circuits as the bits $B_0, B_2, B_4, \ldots, B_{2N-2}$ in the binary count whereby the pseudo Gray code count is converted to a binary count.

4,408,337

TELEVISION BASE SIGNAL AND TEST SIGNAL GENERATOR

Luc Pham Van Cang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 20, 1981, Ser. No. 236,631
Claims priority, application France, Feb. 26, 1980, 80 04207
Int. Cl.³ H04N *7/02*
U.S. Cl. 377—44 **3 Claims**



1. A generator of television base signals and test signals comprising:

a first memory with p memory zones each having q memory cells (p and q being positive whole numbers), each cell storing an assembly of bits defining entirely, for a quantum of time T_0, the amplitude of base signals and test signals able to be generated, said first memory having a first and a second address input and an output;

a second memory with t memory cells (t being a positive whole number), each cell storing a binary number which is the address of a memory zone of the first memory, this second memory having an address input and having an output coupled to the first address input of the first memory;

a first counter having an output coupled to the address input of the second memory for reading successively its t memory cells;

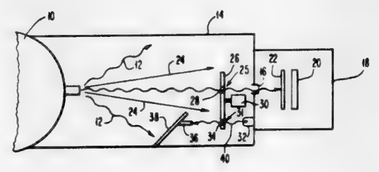
a second counter having an output coupled to the second address input of the first memory for reading, at a frequency $1/T_0$, the memoory cells of the memory zone associated with the binary number delivered by the second memory.

4,408,338

PULSED ELECTROMAGNETIC RADIATION SOURCE HAVING A BARRIER FOR DISCHARGED DEBRIS

Warren D. Grobman, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,468
Int. Cl.³ G03C *5/16*
U.S. Cl. 378—034 **13 Claims**



12. A barrier for debris discharged from a pulsed electromagnetic radiation source, comprising:

a shutter located in the path of the electromagnetic radiation and sufficiently far from the source of said radiation such that a pulse of electromagnetic radiation and simultaneously discharged debris become separated from each

other and arrive at said shutter at different times due to an inherent difference in propagation speed; and

means for synchronizing generation of an electromagnetic radiation pulse with movement of said shutter such that said shutter is open when the electromagnetic pulse arrives at said shutter, said shutter thereby passing said electromagnetic radiation pulse and said shutter is closed when the simultaneously discharged debris arrives at said shutter, said shutter thereby blocking propagation of said debris.

4,408,339

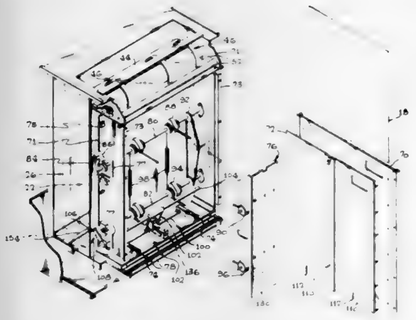
COMPACT X-RAY UNIT

Gunter Schmidt, Malibu, Calif., assignor to Xonics, Inc., Des Plaines, Ill.

Filed Feb. 12, 1981, Ser. No. 233,995

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—173 **8 Claims**



1. An X-ray system comprising:

a supply cassette which includes a feedout roller;

an exposure unit;

means for guiding a film sheet along a path between said cassette and said exposure unit;

a pair of transport rollers disposed along said path to grip a film sheet between them;

motor and transmission means coupled to said rollers to turn them;

said transmission means constructed to turn said transport rollers at a faster peripheral speed than said feedout roller, and said transmission means including an overrunning clutch means which enables said feedout roller to be rotated by a film pulled thereby at a greater speed than said transmission tends to rotate said feedout roller, whereby to permit a film engaged by both feedout and transport rollers to be smoothly moved between them.

4,408,340

MEANS FOR HOLDING X-RAY FILMS

Walter Bauer, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

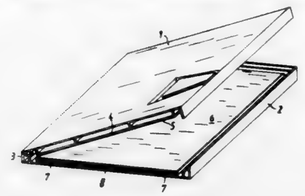
Filed Oct. 21, 1980, Ser. No. 199,378

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943853

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—187 **3 Claims**

1. An arrangement for holding sheet-like X-ray films comprising a support; a magnetic layer and an intensifier screen provided on said support; and a flexible laminate secured to said support, said laminate including a ferromagnetic layer and a flat receptacle for said ferromagnetic layer, said receptacle comprising a second intensifier screen at one side of said ferromagnetic layer, a protective layer at the other side of said ferromagnetic layer and means for securing said second screen to said protective layer, wherein at least one of said layers is movable toward and away from the other of said layers to press a film which is placed between said receptacle and said



screen against such screen when said ferromagnetic layer is sufficiently close to said magnetic layer to be attracted by the latter.

4,408,341

X-RAY EXAMINATION APPARATUS HAVING A MOVABLE X-RAY SOURCE

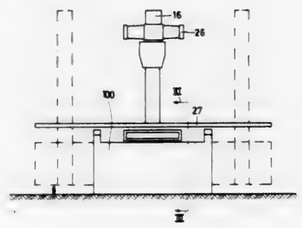
Dieter Christiansen, Schönberg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 127,713, Mar. 6, 1980, abandoned. This application Nov. 12, 1981, Ser. No. 320,359

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908914

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—196 **7 Claims**



1. X-ray examination apparatus comprising:

a frame;

a patient examination table, slidably connected to the frame;

a guide rail extending in a longitudinal direction;

a column, movable on the guide rail in the longitudinal direction; and

an X-ray source on the column;

characterized in that the apparatus further comprises:

a carriage, movable on the frame in the longitudinal direction, the guide rail being movable on the carriage in the longitudinal direction; and

linkage means for assuring that when the carriage, the guide rail, or the column are moved relative to the frame, the guide rail is moved in the same direction as the carriage but at twice the distance relative to the frame, and the column is moved in the same direction as the carriage but at three times the distance relative to the frame.

4,408,342

METHOD FOR RECOGNIZING A MACHINE ENCODED CHARACTER

John S. Grabowski, Kitchener, Canada; Chin-Chih Shiau, Chelmsford, Mass., and John R. Latala, Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 16, 1981, Ser. No. 254,838

Int. Cl.³ G06K *9/34*

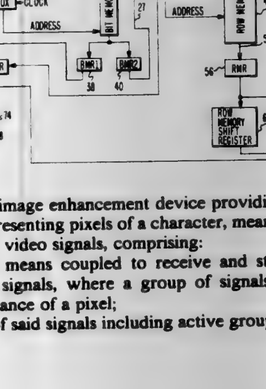
U.S. Cl. 382—9 **14 Claims**

1. A method for optically reading and determining machine-encoded characters from a printed document, said method comprising the steps of:

(a) scanning an area of said printed document to generate digitized data;

(b) storing said digitized data;

(c) analyzing said digitized data for ascertaining the existence of apparent determinable characters and an associated starting location for each apparent determinable character;



(d) storing the starting locations in a location table;

(e) determining on a first pass the machine encoded character for each starting location stored in the location table;

(f) editing the location table for predicting the probable starting locations of additional characters, including blanks; and

(g) determining on a second pass additional characters and blanks based upon the predicted probable starting locations of additional characters and blanks.

4,408,343

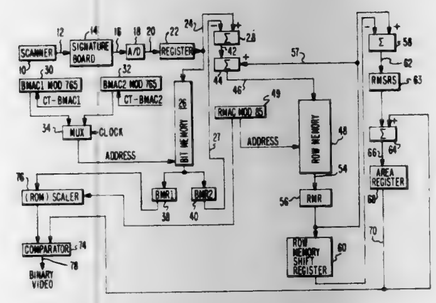
IMAGE ENHANCEMENT FOR OPTICAL CHARACTER READERS

Jimmie Neill, Walled Lake; Nathaniel Webb, Detroit, and Norman F. Hartig, Berkley, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 27, 1981, Ser. No. 238,972

Int. Cl.³ G06K *9/36*

U.S. Cl. 382—52 **9 Claims**



1. In an image enhancement device providing digital video signals representing pixels of a character, means for enhancing said digital video signals, comprising:

memory means coupled to receive and store said digital video signals, where a group of signals represents the reflectance of a pixel;

groups of said signals including active groups of signals and inactive groups of signals where the active groups represent active pixels from areas containing characters and the inactive groups represent inactive pixels corresponding to blank spaces without characters, said inactive groups of signals being formed solely as groups of zeros;

means coupled to said memory means to extract digital video signals representing the reflectance of the central pixel in a given matrix of pixels to provide a central value;

summing means coupled to sum active signals representing the reflectances of all the active pixels in said given matrix to provide a matrix value;

means coupled to receive and scale the central value in accordance with the number of active pixels in the matrix to provide a scaled value; and

means for comparing said scaled value with said matrix value and generating a binary video output which is maximized when said scaled value is greater than said matrix value and minimized when said scaled value is less than said matrix value.

4,408,344

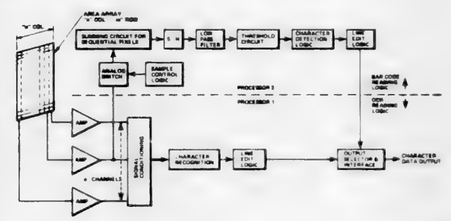
OCR AND BAR CODE READER USING MULTI PORT MATRIX ARRAY

Lynn D. McWaters, Garland, and Medford D. Sanner, Irving, both of Tex., assignors to Recognition Equipment Incorporated, Irving, Tex.

Filed Apr. 9, 1981, Ser. No. 252,554

Int. Cl.³ G06K *9/28*

U.S. Cl. 382—62 **2 Claims**



1. An optical reader for reading alphanumeric and bar code characters using a single area array of photo sensitive diodes wherein there are at least two columns in the array and each column has a plurality of photo sensitive diodes such that the column exceeds in length the height of the character being read, comprising; means for reading the electrical signals for each photo diode in a column sequentially, means for reading the sequential electrical signals for each column in parallel with the signals in all the columns, means for selecting part of the signals from one of the columns and summing the selected signals for one or more scans to identify therefrom bar code characters being scanned, means for utilizing electrical signals from all of the columns to identify alphanumeric characters being scanned, and mdeans to identify which type of character is being read, bar code or alphanumeric, and out putting signals representative of the read characters.

4,408,345

REMOTE LINE MONITORING METHOD AND DEVICE FOR CATV SYSTEM

Kenji Yashiro, and Toshio Tabata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,699

Claims priority, application Japan, Jun. 21, 1979, 54-78308

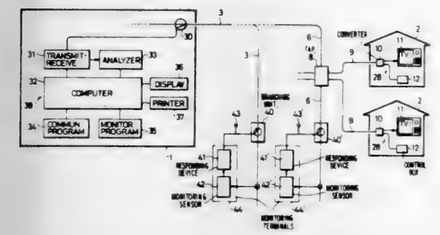
Int. Cl.³ H04B *3/46*

U.S. Cl. 455—3 **6 Claims**

1. A remote line monitoring device for a CATV system in which a single center facility is connected to a plurality of terminal units through cables to transmit television signals through the cables to the terminal units comprising:

a plurality of monitoring units each having a unique identifying address for monitoring line conditions provided at predetermined points along said cables intermediate said center facility and said terminal units; and

a central monitoring system for transmitting and receiving data provided in said center facility;



said central monitoring system comprising means for calling said monitoring units with said individual addresses assigned thereto to cause said monitoring units to transmit data relating to line conditions to said central monitoring system, and means for receiving said data from said monitoring units.

4,408,346

KEY ASSEMBLY

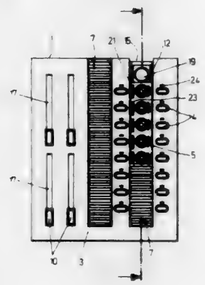
Karl-Heinz Bauer, Bad Neustadt, Fed. Rep. of Germany, assignor to Preh Elektrofeinmechanische Werke Jakob Preh, Bad Neustadt, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 301,660

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1980, 3039402

Int. Cl.³ H04B *1/08*

U.S. Cl. 455—175 **5 Claims**



1. Channel selecting and voltage divider presetting apparatus for high frequency receivers of the type used particularly for broadcasting and television sets, comprising

a housing provided with mutually releasable push buttons for switching on storable, selectively adjustable electrical values of channel memories,

a plurality of rotary and depressible press buttons associated with respective ones of said push buttons for channel tuning and optionally for selecting a frequency range which is adjustable, said housing having a recess and said press buttons being positioned within said recess,

a flexible ribbon slidable in and normally covering said recess, which ribbon is provided with an operating member integrally formed therewith, said recess having tongue guide means extending on opposite sides thereof and said ribbon having associated grooves on opposite sides thereof, said tongue guide means being engaged in said grooves so as to guide said ribbon in moving through said recess, and

an aperture at one end of said recess permitting said ribbon to be introduced, and deflecting means at the other end of said recess for deflecting said ribbon relative to said recess.

4,408,347

HIGH-FREQUENCY CHANNEL SELECTOR HAVING FIXED BANDPASS FILTERS IN THE RF SECTION

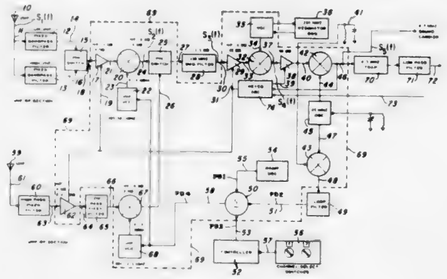
Darrell L. Ash, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 29, 1977, Ser. No. 813,198

The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—179 **22 Claims**



1. In a channel selector for a television receiver including a radio frequency section and an intermediate frequency section, the combination comprising:

fixed bandpass filter means disposed in the radio frequency section, said fixed bandpass filter means including a plurality of fixed bandpass filters, each of said fixed bandpass filters having at least one unalterable predetermined frequency passband for receiving radio frequency signals representative of a plurality of television channels and for filtering at least one fixed frequency spectrum of television channels from the received signals; and

at least one mixing means connected to the output of said fixed bandpass filter means, said mixing means including a metal semiconductor field effect transistor and having first and second inputs coupled to simultaneously receive said fixed frequency spectrum of television channels from said fixed bandpass filter means and mixing signals of a selected intermediate frequency for frequency shifting a selected channel from said fixed frequency spectrum of television channels to a high intermediate frequency substantially greater than 45 MHZ.

4,408,348

MULTIBAND TUNING SYSTEM FOR A TELEVISION RECEIVER

Gerald E. Theriault, Hopewell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1981, Ser. No. 294,133

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—180 **18 Claims**

1. A multiband tuning system for producing an IF signal from RF signals residing in, in the order named, a first broadcast band, a first cable band, a second broadcast band, a second cable band, and a third broadcast band comprising:

control means for generating a tuning signal having a magnitude determined by the frequency of a selected channel;

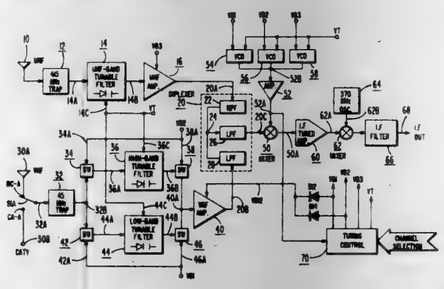
first filter means for selecting RF signals corresponding to channels selected in a first tuning band including said first broadcast band and a lower frequency portion of a said first cable band in response to said tuning signal;

second filter means for selecting RF signals corresponding to channels selected in a second tuning band including a higher frequency portion of said first cable band, said second broadcast band and at least the lower frequency portion of said second cable band in response to said tuning signal;

filter selection means for enabling the operation of said first filter means when the selected channel is in said first tuning band and for enabling the operation of said second filter means when the selected channel is in said second tuning band wherein said filter selection means includes:

an input node at which the signals in said first and second tuning bands are received and an output node,

first and second diode means respectively connecting respective input connections of said first and second filter means to said input node,



third and fourth diode means respectively connecting respective output connections of said first and second filter means to said output node, and

second control means for rendering said first and third diode means conductive when said selected channel is within said first tuning band and for rendering said second and fourth diode means conductive when said selected channel is within said second tuning band;

third filter means for selecting RF signals corresponding to channels selected in a third tuning band including said third broadcast band;

combining means for combining RF signals selected by the enabled one of said first and second filter means and RF signals selected by said third filter means;

local oscillator means for generating a local oscillator signal, the frequency of which is responsive to said tuning signal; and

mixing means for translating the frequency of the combined RF signal from said combining means in response to said local oscillator signal to produce said IF signal.

4,408,349

RECEIVER PROVIDED WITH A FREQUENCY SYNTHESIZER CAPABLE OF STORING FINE TUNING INFORMATION

Tatsuo Yukawa, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

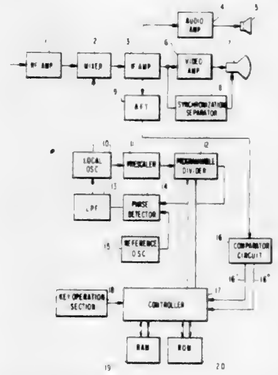
Filed Jul. 16, 1981, Ser. No. 283,858

Claims priority, application Japan, Jul. 22, 1980, 55/103442[U]

Int. Cl.³ H04B *1/16*

U.S. Cl. 455—182 **9 Claims**

1. A receiver comprising a first set of keys, a second set of keys, means coupled to said first set of keys for producing an address signal corresponding to a channel number designated by operation of at least one key of said first set, a first memory device storing frequency-division ratio data for each designatable channel number, a second memory device storing fine tuning data for varying said frequency-division ratio data, means coupled to said producing means and said first and second memory devices for applying the address signal produced by said producing means to said first memory device and at the same time to said second memory device to read out both said frequency-division ratio data and said fine tuning data corresponding to the designated channel number from said first and second memory devices, a frequency divider, means coupled to said first and second memory devices for



generating a new frequency-division ratio data to be set into said frequency divider in response to said frequency-division ratio data and said fine tuning data corresponding to said designated channel number, means responsive to said new frequency-division ratio data set into said frequency divider for providing a local oscillation signal, and means responsive to operation of at least one of said second set of keys for storing a fine tuning data in said second memory device.

4,408,350

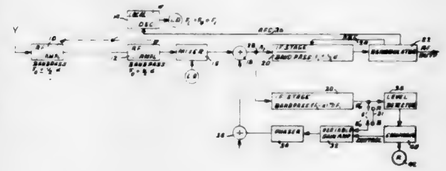
ENHANCED SELECTIVITY SIGNAL RECEIVER

Erwin Donath, 40, Balcourt Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 350,335, Feb. 12, 1982. This application Nov. 30, 1982, Ser. No. 445,725

Int. Cl.³ H04B *1/12*

U.S. Cl. 455—206 **20 Claims**



20. In a reception system including a receiver having a plurality of interconnected stages including a front stage and a demodulator, said demodulator having a predetermined amplitude threshold sensitivity, there appearing at an input of said receiver a desired signal occupying substantially a predetermined bandwidth, and at least one undesired signal occupying a bandwidth different from, though partially overlapping said predetermined bandwidth, said receiver including receiver terminal means operatively located upstream of said demodulator, each signal having a characteristic high frequency spectrum, the spectrum of said desired signal, and at least a fraction of the spectrum characteristic of said undesired signal appearing across said receiver terminal means, at least remnants of said undesired signal still appearing at the input of said demodulator, said demodulator being normally capable of demodulating each of said signals, but requiring at least a prearranged level difference between said signals at its input to demodulate

said desired signal at an acceptable signal-to-noise ratio, the improvement comprising, in combination therewith,

signal selector means coupled to said receiver terminal means for normally continuously selecting the stronger of said signals appearing across said receiver terminal means,

gain-controlled feedback means with one input connected to an output of said signal selector means for negatively feeding back to said receiver terminal means said undesired signal substantially 180° out of phase with said spectrum characteristic of the undesired signal when said undesired signal is the stronger of said signals,

said signal selector including frequency-dependent selection means for selecting said undesired signal, so as to substantially isolate it from any other signals, said undesired signal having at an output of said frequency-dependent selection means a measurable output level,

comparator means for comparing said output level of said undesired signal at said frequency dependent selection means at least with a reference level, and for generating at least one error control signal, said one error control signal feeding another input of said gain-controlled feedback means, said reference level being settable over a wide and non-critical range so as to force said remnants of said undesired signal still appearing at the input of said demodulator to assume, through said error control signal, a controlled level below a level of said desired signal thereat, and differing from said level of said desired signal by at least said level difference, selection of said desired signal by said signal selector means being substantially not affected by the relative amplitude of the desired signal with respect to said undesired signal, from a received desired signal level sufficient to reach said predetermined threshold sensitivity up to when at least said front stage is overloaded due to a signal of excessive signal strength being received by said receiver, whereby, despite the presence of any controlled level of said remnants of said undesired signal upstream of said demodulator, demodulation of said undesired signal by said demodulator is prevented, and

inhibiting means connected to said feedback means for inhibiting operation of said feedback means,

said comparator means including comparison means having an output, and being connected with one input thereof to an output of one of said stages, and with another input thereof to the output of said frequency-dependent selection means, the output of said comparison means being connected to said inhibiting means, and providing another error control signal adjusted to inhibit operation of said feedback means when said desired signal is the stronger of said signals, whereby feedback of the desired signal is prevented.

4,408,351

DIRECTLY MIXING RECEIVING SYSTEM

Robert Maurer, Saarbrücken; Alfons Blum, Schiffweiler-Heiligenwald, and Michael Hoffmann, Saarbrücken, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

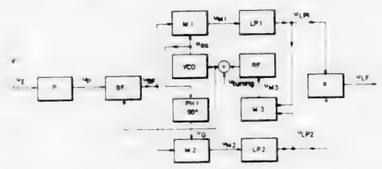
Filed Jan. 25, 1980, Ser. No. 115,213

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902952

Int. Cl.³ H04B 1/16

U.S. Cl. 455—260 **21 Claims**

1. A directly mixing broadcast signal receiving system, in which a received modulated high frequency signal is directly demodulated into a demodulated low frequency base band signal by mixing with a synchronized local oscillator signal, said system including a phase control loop comprising a first mixer having first and second inputs and an output and arranged to provide at said output a signal proportional to the algebraic product of the signals applied to said first and second inputs and including high frequency and low frequency components, means connected for delivering the received modulated high frequency signal to said first input of said first mixer, a voltage controlled oscillator having an input and an output, with said output being connected for supplying to said second input of said first mixer an alternating voltage of substantially constant amplitude and having a frequency which is a function of the voltage at said oscillator input, a first lowpass filter connected to said output of said first mixer for providing a filtered output signal representative of said first mixer output signal with the high frequency component of said first mixer output signal substantially suppressed, and means for applying the filtered output signal of said first lowpass filter to said input of said voltage controlled oscillator, wherein said first mixer



comprises means for decoupling its output signal from said first input, said first mixer and first lowpass filter comprise means for suppressing all frequency components other than that of the algebraic product of the signals to be mixed, said voltage controlled oscillator is constructed to be tuned over a predetermined band of high frequencies to be received, the output signal of said voltage controlled oscillator is substantially sinusoidal and the mixed output signal produced by said first mixer is low in harmonics, whereby the received modulated high frequency signal is directly demodulated by said phase control loop without the aid of an intermediate frequency signal.

4,408,352

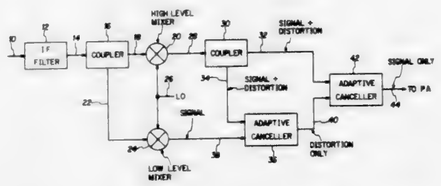
HIGH POWER LEVEL MIXER APPARATUS

Charles H. Dudding, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 10, 1982, Ser. No. 376,858

Int. Cl.³ H04B 1/12

U.S. Cl. 455—295 **4 Claims**



2. The method of reducing intermodulation distortion in a high power level mixer comprising the steps of:

mixing a source signal with a local oscillator signal to provide a high power level signal including primarily desired mixed signals and distortion signals;

mixing an attenuated version of the source signal with the local oscillator signal to provide a low power level signal including primarily a substantially distortion-free mixed signal;

combining an attenuated version of said high power level mixed signals plus distortion signals with the low power level, substantially distortion-free signal to provide an output comprising primarily distortion signal differences; and

combining the high power level signal including primarily the mixed signals plus distortion signals with the signal comprising primarily distortion signals differences only to provide an output high level signal with relatively insignificant distortion signal levels.

4,408,353

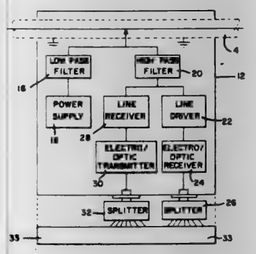
COAXIAL CABLE/FIBER OPTIC BUS NETWORK

Terry P. Bowen, Etters; George J. Lawrence, Mechanicsburg, and Lawrence G. Wiley, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 17, 1980, Ser. No. 198,029

Int. Cl.³ H04B 9/00

U.S. Cl. 455—608 **3 Claims**



1. A network system for distributing digital information comprising:

a coaxial line for bussing a main data signal at relatively high frequencies and bussing power at relatively low frequencies;

at least one tap means for electrically interfacing with said coaxial line, comprising:

a. receiving means for sampling said main signal, said receiving means including transducing means for transforming said sampled main signal into a light signal for output, and optical splitting means for changing said light signal output into a multiple output for distribution to multiple peripheral machines;

b. driving means including optical transducing means for changing light signal inputs from said multiple peripheral machines into an electrical input signals, and means for driving a signal along said coaxial line in response to said electrical input signals, and switching means for connecting and disconnecting said driving means from said coaxial line; and

c. conversion means responsive to said power frequencies for supplying operating power to said receiving and driver means.

4,408,354

SIGNAL TRANSMISSION SYSTEMS

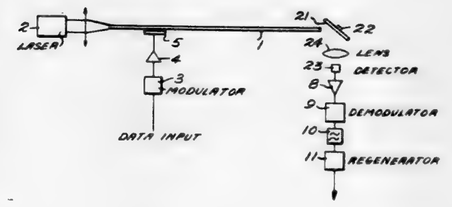
Brian Culshaw, Amersham; Peter R. Ball, Garston; Stuart A. Kingsley, London, and David E. N. Davies, Hemel Hempstead, all of England, assignors to National Research Development Corporation, London, England

Filed Jan. 9, 1981, Ser. No. 223,724

Claims priority, application United Kingdom, Jan. 14, 1980, 8001212

Int. Cl.³ H04B 9/00

U.S. Cl. 455—610 **12 Claims**



1. A signal transmission system comprising:

means for propagating coherent light along a multimode optical fibre waveguide;

modulation means for impressing phase-modulation signals in said waveguide and allowing the impressed signals in different modes to interfere in the waveguide so that an amplitude modulated signal is generated which is subject to random fading across the waveguide;

means provided at the output of the waveguide for inducing intermodal phase-modulation of the amplitude modulated signals from different parts of the cross-section of the waveguide to derive a single optical modulated signal in which the random fading is neutralized; and

detector means comprising a single photodetector to which the said single optical modulated signal is applied.

DESIGN PATENTS

GRANTED OCT. 4, 1983

ERRATA

For CLASS	See PATENT NO.
D15–070	270,793

DESIGNS

OCTOBER 4, 1983

270,774
BRASSIERE OR THE LIKE
Harold Stern, Wyckoff, N.J., and Elisabeth Suleiman, Newark, Del., assignors to International Playtex, Inc., Stamford, Conn.
Filed Jun. 2, 1981, Ser. No. 269,913
Term of patent 14 years
Int. Cl.[3] D2—*01*
U.S. Cl. D2—24



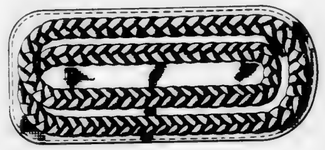
270,775
BRASSIERE OR THE LIKE
Harold Stern, Wyckoff, N.J., and Elisabeth Suleiman, Newark, Del., assignors to International Playtex, Inc., Stamford, Conn.
Filed Jun. 2, 1981, Ser. No. 269,914
Term of patent 14 years
Int. Cl.[3] D2—*01*
U.S. Cl. D2—24



270,776
UPPER TORSO PROTECTOR FOR MOTORCYCLISTS AND THE LIKE
Chris R. Dawson, 9154 Irvington Ave., San Diego, Calif. 92123
Filed Jul. 6, 1981, Ser. No. 281,026
Term of patent 14 years
Int. Cl.[3] D2—*02*
U.S. Cl. D2—27



270,777
THONG-TYPE SHOE
N. Nancy Nakagawa, 11598 Gladstone Cir., Fountain Valley, Calif. 92708
Filed Sep. 11, 1981, Ser. No. 301,325
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270



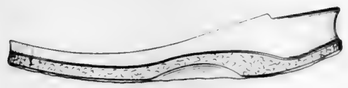
270,778
TENNIS SHOE
Gino Casetta, Pontelongo, Italy, assignor to Simod Patents N.A. N.V., Curacao, Netherlands Antilles
Filed Nov. 12, 1980, Ser. No. 206,165
Claims priority, application Italy, May 16, 1980, 61936/80[U]
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—310



270,779
SHOELACE BOW KNOT RETAINER
John E. Steinberg, 10434 Corfu La., Los Angeles, Calif. 90024
Filed Apr. 16, 1981, Ser. No. 254,670
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314



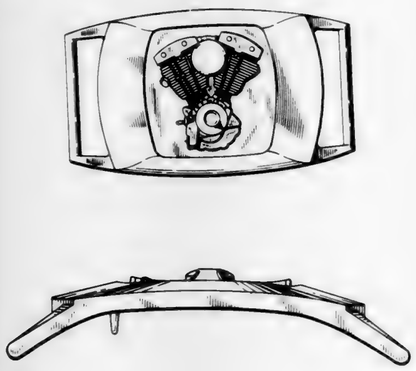
270,780
UNITARY SOLE
John F. Hlustik, London, England, assignor to The United States Shoe Corporation, Cincinnati, Ohio
Division of Ser. No. 11,727, Feb. 12, 1979. This application Mar. 10, 1980, Ser. No. 128,783
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—319



270,781
JEWELRY TIE
George A. Filmer, Jr., 1060 S. Franklin St., Denver, Colo. 80209
Filed Nov. 12, 1980, Ser. No. 206,030
Term of patent 14 years
Int. Cl. D02—*05*
U.S. Cl. D2—353



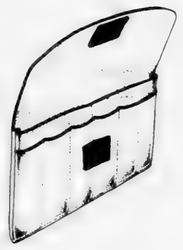
270,782
BELT BUCKLE
Thomas H. Rudd, Wayzata, Minn., assignor to Drag Specialties, Inc., Minneapolis, Minn.
Filed Jul. 22, 1981, Ser. No. 286,015
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—431



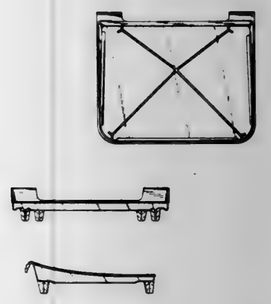
270,783
CROCHET HOOK
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Jan. 26, 1981, Ser. No. 228,204
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—28



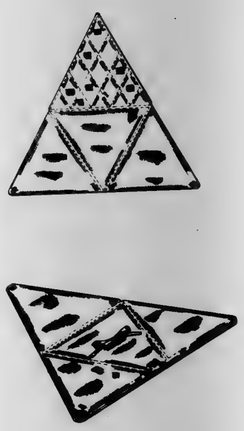
270,784
TEE POUCH FOR GOLFERS
John E. Forrester, P.O. Box 1264, Apopka, Fla. 32703
Filed Aug. 27, 1981, Ser. No. 297,039
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—37



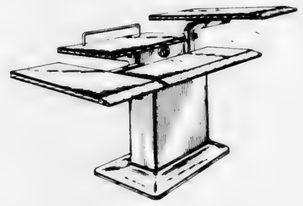
270,785
AUTOMOBILE SERVING TRAY
Robert W. White, 715 NW. 39th St., Oklahoma City, Okla. 73118
Filed Mar. 27, 1981, Ser. No. 248,554
Term of patent 14 years
Int. Cl. D03—*99*; D07—*99*
U.S. Cl. D3—40



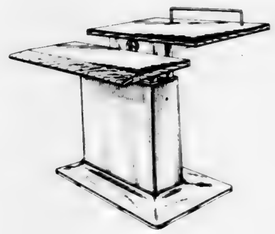
270,786
POUCH FOR CARRYING JEWELRY OR SIMILAR ARTICLES
Binns Handy, West Henrietta, and David O. Chase, Skaneateles, both of N.Y., assignors to Lenox, Incorporated, Lawrenceville, N.J.
Filed May 26, 1981, Ser. No. 267,375
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—75



270,787
COMBINED TABLE AND SIDE EXTENSION UNIT FOR SUPPORTING ELECTRONIC EQUIPMENT
Arthur H. Umanoff, Ardsley, and Alain Huin, Mount Kisco, both of N.Y., assignors to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 10, 1981, Ser. No. 272,309
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—23



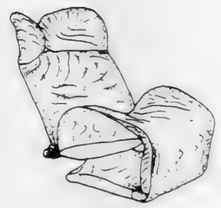
270,788
SUPPORT TABLE FOR ELECTRONIC EQUIPMENT
Arthur H. Umanoff, Ardsley, and Alain Huin, Mount Kisco, both of N.Y., assignors to Hon Industries Inc., Muscatine, Iowa
Filed Jun. 10, 1981, Ser. No. 272,377
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—23



270,789
DISPLAY STAND OR SIMILAR ARTICLE
Russell Blanco, c/o Impulse Display, 457 Lonsdale Ave., Pawtucket, R.I. 02860, and Jeannie Bouchever, Cromwell Pl., Old Saybrook, Conn. 06475
Filed Mar. 18, 1981, Ser. No. 245,134
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28



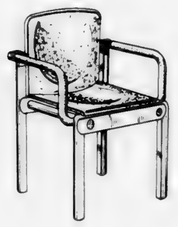
270,790
ADJUSTABLE LOUNGE CHAIR
Rodrigo Rodriquez, Carimate, Italy, assignor to Cassina S.p.A., Meda, Italy
Filed Mar. 17, 1981, Ser. No. 244,749
Claims priority, application Italy, Sep. 18, 1980, 22822 B/80
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37



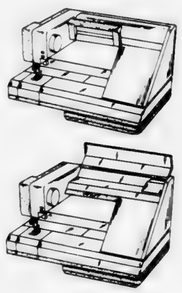
270,791
CHAIR
Gerd Lange, 6749 Kapsweyer, Fed. Rep. of Germany
Filed Nov. 6, 1980, Ser. No. 204,754
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



270,792
CHAIR
Gerd Lange, Kapsweyer, Fed. Rep. of Germany, assignor to Schlapp-Möbel GmbH & Co. KG, Neu-Anspach, Fed. Rep. of Germany
Division of Ser. No. D. 22,157, Mar. 20, 1979. This application Jan. 15, 1981, Ser. No. 225,406
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, MR 59
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



270,793
SEWING MACHINE
Willi Meier, Karlsruhe, Fed. Rep. of Germany, assignor to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany
Filed Jun. 5, 1981, Ser. No. 270,919
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, MR VIII/161
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70



270,794
COMBINED DISPENSING UNIT FOR SQUEEZING TOOTHPASTE TUBES AND HOLDER FOR TOOTHBRUSHES
Larry C. Bird, 3228 Garfield, Des Moines, Iowa 50317
Filed Sep. 17, 1981, Ser. No. 303,033
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—87



270,795
SOAP DISH
Andre Bennato, Paris, France, assignor to Sanistyl Creations - S.A.R.L., Nogent sur Marne, France
Filed Sep. 25, 1980, Ser. No. 190,823
Claims priority, application France, Mar. 26, 1980, 800 981
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—90



270,796
RETRACTABLE PLANT HANGER
Jeanne M. Quirico, P.O. Box 971, La Mesa, Calif. 92041
Filed Feb. 27, 1981, Ser. No. 238,913
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—113



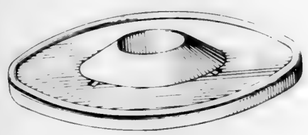
270,797
HANGER FOR ELONGATE ARTICLES
Gilles Marleau, 85 Brady St., Hull, Quebec, Canada J8Y 5L6
Filed Mar. 27, 1981, Ser. No. 248,065
Term of patent 14 years
Int. Cl. D6—*06*; D8—*08*
U.S. Cl. D6—125



270,798
DISPLAY HOLDER
Donald P. McDiarmid, III, Honolulu, Hi., assignor to Ahi Paka, Limited, Honolulu, Hi.
Filed Feb. 9, 1982, Ser. No. 347,143
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—189



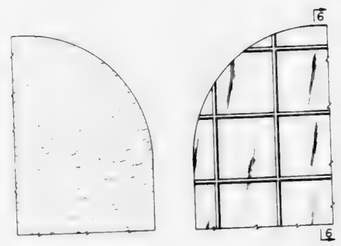
270,799
TABLE TOP
Edward J. Creske, P.O. Box 1520, Wausau, Wis. 54401
Filed Mar. 30, 1981, Ser. No. 249,141
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—192



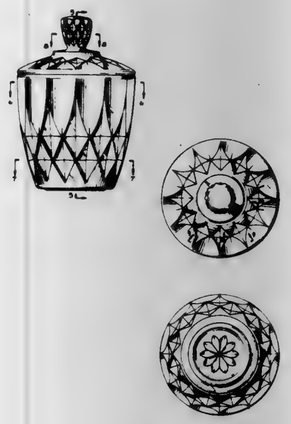
270,800
NESTING PLAY CUSHIONS
Joseph T. Fuller, 9977 Coca, Alta Loma, Calif. 91701
Filed May 15, 1981, Ser. No. 263,986
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201



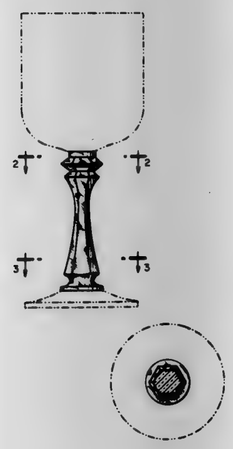
270,801
MAT
Frank Curatolo, 130 Overlook Ave., Hackensack, N.J. 07601
Continuation-in-part of Ser. No. 685,442, May 11, 1976, abandoned. This application Feb. 1, 1979, Ser. No. 8,692
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—209



270,802
COVERED JAR OR SIMILAR ARTICLE
James L. Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio
Division of Ser. No. 140,180, Apr. 14, 1980, Pat. No. Des. 267,697. This application May 6, 1982, Ser. No. 375,482
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—17



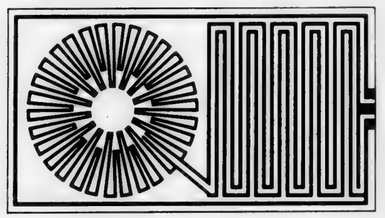
270,803
STEM FOR A GOBLET OR SIMILAR ARTICLE
William D. Gicking, Greensburg, Pa., and Heinz Frisch, Zwiesel, Fed. Rep. of Germany, assignors to American Stemware Corporation, Greensburg, Pa.
Filed Oct. 7, 1981, Ser. No. 309,617
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—39



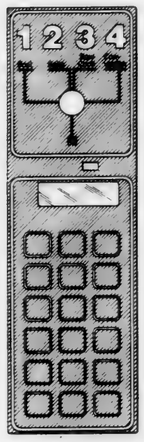
270,804
ICE CHEST
Thomas F. Caves, Tustin, Calif., assignor to John C. Swann, El Toro, Calif.
Filed Aug. 24, 1981, Ser. No. 295,745
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—77



270,805
ELECTRIC HEATING PLATE FOR A FOOD WARMER
Malcolm A. Goldsworthy, Whorlton, England, assignor to Schott Industrial Glass Limited, Newton Aycliffe, England
Filed May 28, 1981, Ser. No. 270,308
Claims priority, application United Kingdom, Apr. 21, 1981, 997807
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—363



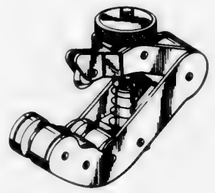
270,806
CONTROL PANEL FOR A COOKING DEVICE
Rex Notbohm, Boone County, Mo., assignor to Toastmaster Inc., Columbia, Mo.
Filed Aug. 17, 1981, Ser. No. 293,596
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—406



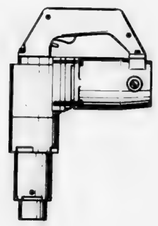
270,807
COMBINED BOTTLE CAP AND PULL TAB OPENER
Monte M. Dilliner, P.O. Box 177, Lineville, Iowa 50147
Filed Jun. 4, 1981, Ser. No. 270,229
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D8—18



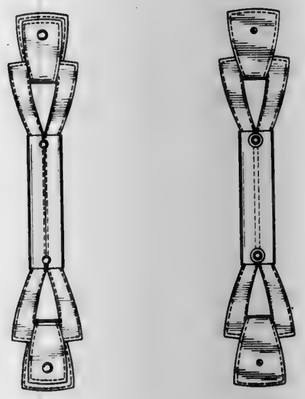
270,808
TUBING CUTTER
Glenn R. Wolcott, Americus, Ga., assignor to Wolcott Tool Company, Marietta, Ga.
Filed Feb. 5, 1981, Ser. No. 231,800
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—60



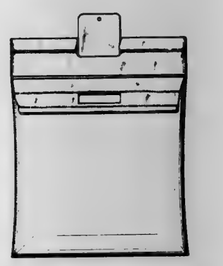
270,809
POWER WRENCH
Seiji Ikeda, Osaka, and Katsuyuki Ono, Moriguchi, both of Japan, assignors to Maeda Metal Industries, Ltd., Osaka, Japan
Filed Sep. 23, 1980, Ser. No. 190,044
Claims priority, application Japan, May 31, 1980, 55-21627
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—68



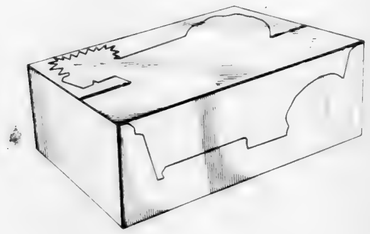
270,810
HANDLE UNIT FOR A LUGGAGE CASE
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to CPG Products Corp., Minneapolis, Minn.
Filed May 4, 1981, Ser. No. 260,224
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—317



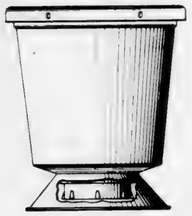
270,811
INSULATED CARRY BAG
Leif O. Skovgaard, 11 A Egelunden, Vrogum, DK-6840 Oksbol, Denmark
Filed Nov. 14, 1980, Ser. No. 206,835
Claims priority, application Denmark, May 22, 1980, 405/80
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305



270,812
COMBINED DISPLAY CONTAINER AND PACKAGING INSERT
Enrique Bernat Fontlladosa, Paris St. 184, Barcelona, Spain
Filed May 13, 1981, Ser. No. 263,176
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—318



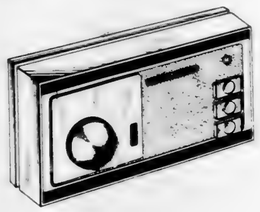
270,813
COMBINED PACKAGING CUP AND BASE THEREFOR
Vincent E. Fortuna, Huntington Beach, and Bertel R. Peterson, San Juan Capistrono, both of Calif., assignors to Vercon Inc., Coleman, Mich.
Filed May 15, 1981, Ser. No. 264,546
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—388



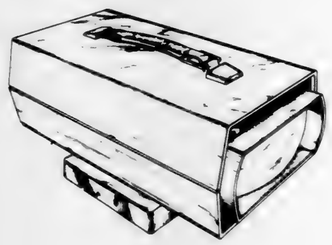
270,814
PACKAGING CUP OR THE LIKE
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jun. 26, 1981, Ser. No. 278,301
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—388



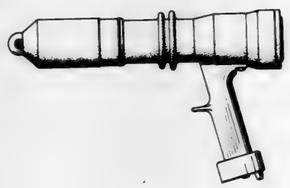
270,815
CLOCK THERMOSTAT
James A. Odom, Apple Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 6, 1981, Ser. No. 261,076
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



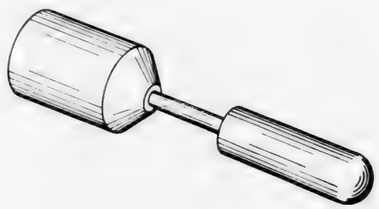
270,816
HOUSING FOR OPTICAL ELECTRONIC DISTANCE MEASURING INSTRUMENT
William A. Hays, Jr., 7788 S. Ogden Way, Littleton, Colo. 80122; Robert A. Gladden, 6719 S. Delaware St., Littleton, Colo. 80120, and John I. Shipp, 1422 Country Club La., Tullahoma, Tenn. 37388
Filed May 19, 1980, Ser. No. 151,206
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



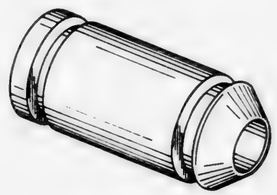
270,817
ELECTROSTATIC VOLTAGE MEASURING INSTRUMENT
James A. Kolibas, Broadview Heights, Ohio, assignor to Nordson Corporation, Amherst, Ohio
Filed Jul. 22, 1981, Ser. No. 285,739
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78



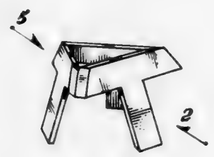
270,818
VIBRATING VISCOMETER PROBE
Sanford L. Simons, 9188 S. Turkey Creek Rd., Morrison, Colo. 80465
Filed Mar. 16, 1981, Ser. No. 243,757
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84



270,819
SAMPLE HOLDER FOR A VIBRATING VISCOMETER
Sanford L. Simons, 9188 S. Turkey Creek Rd., Morrison, Colo. 80465
Filed Mar. 16, 1981, Ser. No. 243,758
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—84



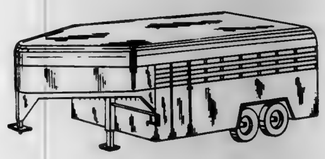
270,820
VISUAL MARKER
Herbert C. Schulze, P.O. Box 6070, Incline Village, Nev. 89450
Filed Feb. 23, 1981, Ser. No. 237,374
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—109



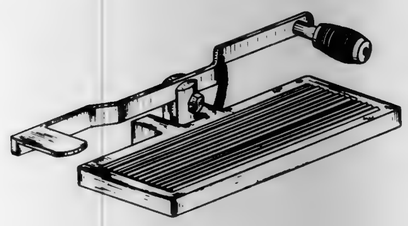
270,821
JEWELRY CHAIN CLASP
Victor Fera, Sr., Lincoln, R.I., assignor to Sage Manufacturing Company, Inc., Providence, R.I.
Filed Oct. 13, 1981, Ser. No. 310,624
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—87



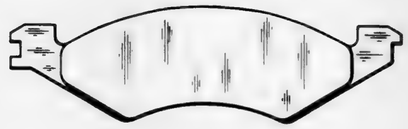
270,822
TRAILER
Clarence Triggs, Belmond, Iowa, assignor to Triggs Manufacturing Company, Belmond, Iowa
Filed Jun. 8, 1981, Ser. No. 271,196
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



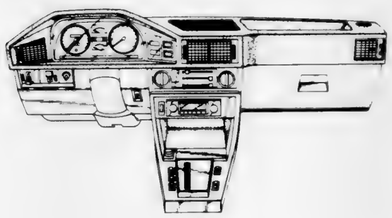
270,823
COMBINED FOOT REST AND TOE AND HEEL SHIFTER MECHANISM FOR A MOTORCYCLE
Andrew J. Mounts, Springfield, Ohio, assignor to Murray-Black Company, Springfield, Ohio
Filed Dec. 29, 1980, Ser. No. 220,307
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—114



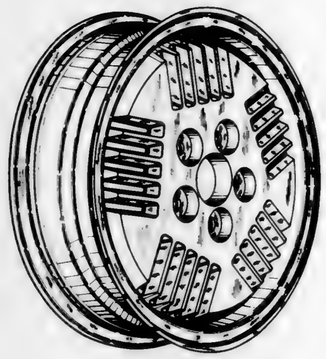
270,824
VEHICLE DISC BRAKE SHOE
Richard T. Robinette, St. Clair Shores, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.
Filed Apr. 22, 1981, Ser. No. 256,449
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—180



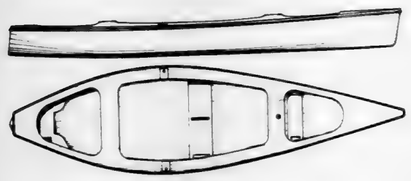
270,825
COMBINED VEHICLE DASHBOARD AND CONSOLE UNIT
Claus Luthe, Munich; Manfred Rennen, Ingolstadt, and Hans Braun, Lohhof, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Mar. 26, 1981, Ser. No. 247,908
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1980, MR 12 272
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—192



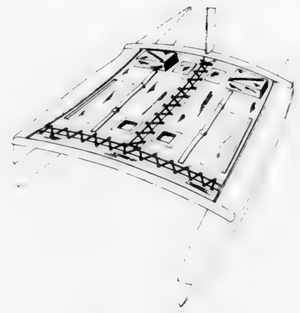
270,826
VEHICLE WHEEL
Donald J. Reid, Plymouth, Mich., assignor to Kelsey-Hayes Co., Romulus, Mich.
Filed Oct. 17, 1980, Ser. No. 197,851
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



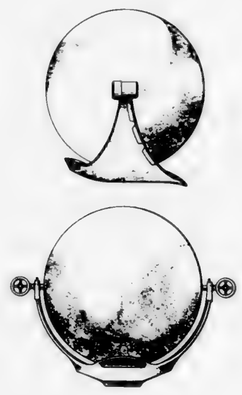
270,827
MULTI-PURPOSE BOAT
Jan W. Dorfman, Box 313, Sinnott Rd., Kennebunkport, Me. 04046
Filed Mar. 18, 1981, Ser. No. 245,133
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—302



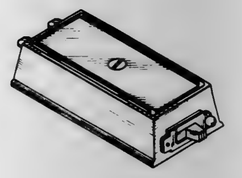
270,828
BOAT PLATFORM
Steven Alden, 2819 Las Vegas Trail, Fort Worth, Tex. 76116
Filed Aug. 11, 1980, Ser. No. 176,961
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—318



270,829
AIRSHIP
Frederick D. Ferguson, 217 Compton Ave., Ottawa, Ontario, Canada
Filed Jan. 26, 1981, Ser. No. 228,051
Claims priority, application Canada, Jan. 6, 1981, 06-01-81-4
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—323



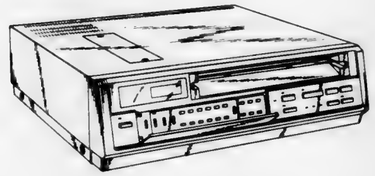
270,830
THEFT-PREVENTION IGNITION-DISABLING UNIT FOR VEHICLES
Stewart N. Jacobs, 19, Brookfield, Kimmage Rd. West, Dublin 12, Ireland
Filed Feb. 11, 1981, Ser. No. 233,545
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



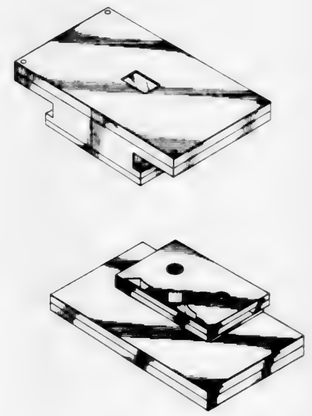
270,831
MULTIPLE SERVICE UNIT
Henning Jensen, Surfers Paradise, Australia, assignor to Common Sense Products Pty. Ltd., Surfers Paradise, Australia
Filed Nov. 7, 1980, Ser. No. 204,999
Claims priority, application Australia, Feb. 15, 1980, 80252; Feb. 15, 1980, 80253; Feb. 15, 1980, 80254; Feb. 19, 1980, PE2443
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D13—40



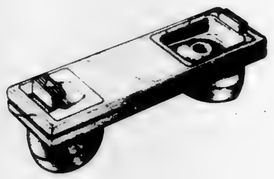
270,832
VIDEO DISC PLAYER
Minoru Hashimoto, Ibaraki; Yoshiyuki Nomura, Hirakata, and Masayoshi Kubo, Neyagawa, all of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan
Filed Jun. 15, 1981, Ser. No. 273,809
Claims priority, application Japan, Dec. 25, 1980, 55-55150
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—1



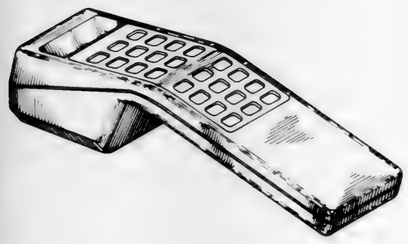
270,833
EXTENDED PLAY CASSETTE
Barry K. Spicer, Riverside, Calif., assignor to Technicolor, Inc., Los Angeles, Calif.
Filed May 27, 1981, Ser. No. 267,479
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11



270,834
ACOUSTIC COUPLER ADAPTER
Donald M. Genaro, Haworth, N.J.; Gordon E. Sylvester, Jamaica, N.Y., and G. Varadarajan, East Windsor, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 5, 1981, Ser. No. 308,508
Term of patent 14 years
Int. Cl. D14—*103*
U.S. Cl. D14—57



270,835
HOUSING FOR A VEHICULAR TELEPHONE CONTROL UNIT OR SIMILAR ARTICLE
Terrance N. Taylor, Cary, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 1, 1981, Ser. No. 269,294
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—64



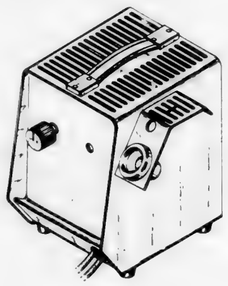
270,836
TELEPHONE INSTRUMENT
Carl-Arne Breger, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Dec. 4, 1980, Ser. No. 213,066
Claims priority, application Sweden, Jun. 11, 1980, 80001186
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



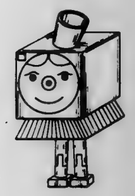
270,837
HAND-CUTTER
Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Oct. 17, 1980, Ser. No. 198,197
Claims priority, application Sweden, May 5, 1980, 80000909
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



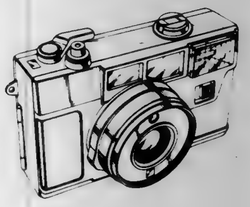
270,838
HOUSING FOR DESOLDERING SYSTEM MECHANISM
Daniel Koturov, Stanton, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Feb. 25, 1981, Ser. No. 237,930
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—144



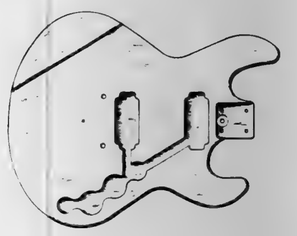
270,839
CAMERA
T. Jane Greif, 445 W. Davis Blvd., Tampa, Fla. 33606
Filed Jun. 12, 1981, Ser. No. 273,192
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—1



270,840
CAMERA
Koichi Soda, Tokyo, Japan, assignor to Ricoh Company, Ltd., Japan
Filed Jul. 31, 1981, Ser. No. 288,696
Claims priority, application Japan, Feb. 2, 1981, 56-3621
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—6



270,841
GUITAR BODY
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed May 22, 1981, Ser. No. 266,292
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



270,842
GUITAR BODY
Hartley D. Peavey, Meridian, Miss., assignor to Peavey Electronics Corp., Meridian, Miss.
Filed May 22, 1981, Ser. No. 266,293
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20



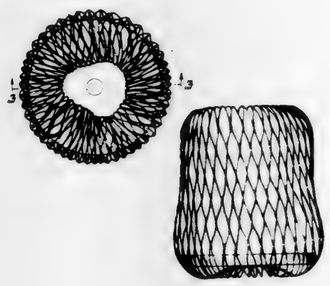
270,843
LIQUID INK BALL PEN
Kunio Itoh, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 16, 1981, Ser. No. 312,306
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—51



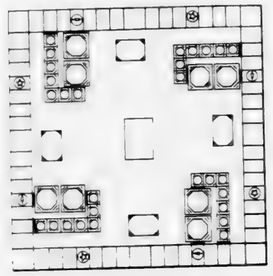
270,844
CIRCULAR SLIDE CHART
Janette K. McIntyre, 26331 Via Lara, Mission Viejo, Calif. 92692
Filed Dec. 1, 1980, Ser. No. 211,831
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—64



270,845
PENCIL HOLDER
Robert S. Hansen, P.O. Box 1040, Doylestown, Pa. 19801
Continuation-in-part of Ser. No. 813,127, Jul. 5, 1977, abandoned. This application May 19, 1980, Ser. No. 151,477
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—85



270,846
GAME BOARD
William J. McSweeney, 806 - 266 Bronson Ave., Ottawa, Ontario, K1R 6H8, Canada
Filed Nov. 23, 1981, Ser. No. 323,872
Claims priority, application Canada, Jun. 12, 1981, 12-06-81-2
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



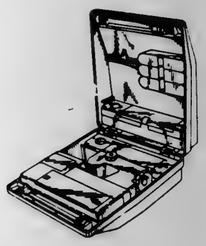
270,847
WHEELED TRUNDLE TOY
Robert Wood, 6010 Cable Ave., Camp Springs, Md.
Filed Apr. 3, 1981, Ser. No. 250,672
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—71



270,848
RIDING TOY
Eugene J. Echterling, 22740 Macfarlane Dr., Woodland Hills, Calif. 91364
Filed May 26, 1981, Ser. No. 267,265
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74



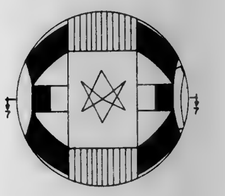
270,849
COMBINED TOY SEWING MACHINE AND CASE THEREFOR
Peter W. Balderston, 17 Lulworth Ct., Kimberley, Nottinghamshire, England
Filed May 21, 1981, Ser. No. 266,050
Claims priority, application United Kingdom, Dec. 4, 1980, 997882
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



270,850
PINATA SHELL
Armando Ortega, 15316 Gard St., Norwalk, Calif. 90650
Filed Sep. 18, 1981, Ser. No. 303,530
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—165



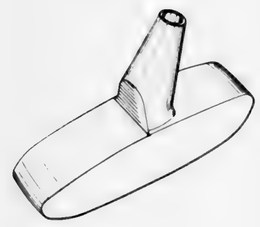
270,851
GAME BALL
James W. Feger, Fuji House Apt. 11-(101) 3-2-4 Ebisu-Minami, Shibuya-Ku-Tokyo 150, Japan
Filed Feb. 6, 1981, Ser. No. 232,207
Claims priority, application Japan, May 19, 1980, 55-019305
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—204



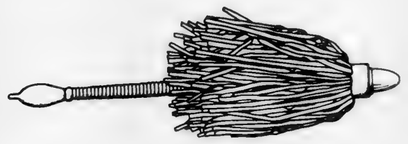
270,852
GOLF PUTTER HEAD
Steven J. Mahaffey, Monson, and Allan W. Bender, Longmeadow, both of Mass., assignors to Questor Corporation, Tampa, Fla.
Filed Oct. 26, 1981, Ser. No. 314,716
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



270,853
GOLF CLUB HEAD
Rolf S. Olsson, P.O. Box 120, 237 00 Bjarred, Sweden
Filed Dec. 16, 1981, Ser. No. 331,450
Claims priority, application Sweden, Jun. 22, 1981, 81-1420
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—218



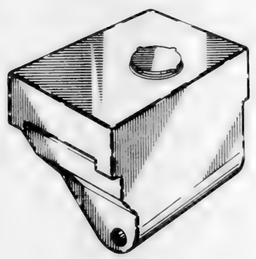
270,854
FISHING LURE
John R. Neese, P.O. Box 6001, Marietta, Ga. 30065
Filed Aug. 25, 1981, Ser. No. 296,131
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



270,855
DEVICE FOR BAITING FISH HOOKS
Joe Vit, Ogden, Utah, assignor to V&H Enterprises, Ogden, Utah
Filed Sep. 17, 1981, Ser. No. 303,166
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31

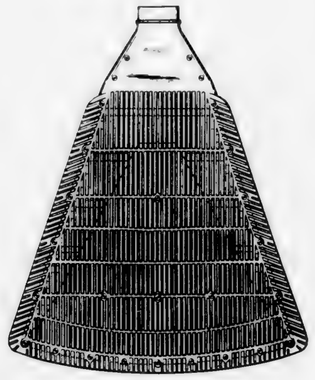


270,856
HOLDING TANK FOR A BOAT OR THE LIKE
Robert Peets, Island Heights; Burton L. Preston, Mansfield, and James A. Sigler, Perrysville, all of Ohio, assignors to Mansfield Sanitary Inc., Perrysville, Ohio
Filed Feb. 23, 1981, Ser. No. 237,478
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

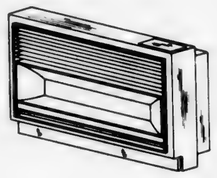


270,857
SECTOR ELEMENT FOR DISK FILTER
Holger Juutilainen, Tampere, Finland, assignor to Tamfelt OY AB, Tampere, Finland
Filed Mar. 7, 1980, Ser. No. 128,364
Claims priority, application Finland, Sep. 10, 1979, 572/79
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4





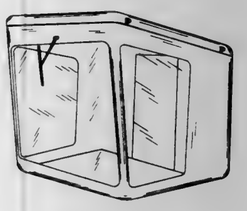
270,858
HEATER
Malcolm B. McInnes, Victoria, Australia, assignor to Pyrox Limited, Moorabbin, Australia
Filed May 11, 1981, Ser. No. 262,328
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



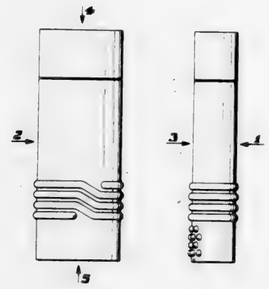
270,859
PHARMACEUTICAL RACK
Richard D. Levy, 10793 Riesline Dr., San Diego, Calif. 92131
Filed Mar. 9, 1981, Ser. No. 242,090
Term of patent 14 years
Int. Cl. D24—*99*; D6—*06*
U.S. Cl. D24—31



270,860
CONTROL BOOTH
M. Wayne Turner, Foley, Ala., assignor to Walker Industrial Plastics, Inc., Foley, Ala.
Filed Dec. 29, 1980, Ser. No. 221,038
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—16

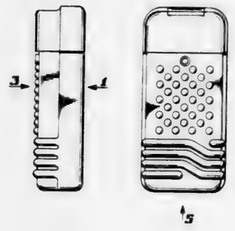


270,861
DISPENSER FOR LIQUID SOAP OR GELATINOUS MATERIAL
Yves Joyaux, Poitiers, and Jean-Pierre Mandon, Chasseneuil-du-Poitou, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 8, 1981, Ser. No. 299,908
Claims priority, application Switzerland, Mar. 20, 1981, 111 701
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—77

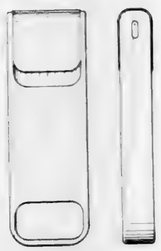




270,862
DISPENSER FOR LIQUID SOAP OR GELATINOUS MATERIAL
Yves Joyaux, Poitiers, and Jean-Pierre Mandon, Chasseneuil-du-Poitou, both of France, assignors to Airwick Industries, Inc., Carlstadt, N.J.
Filed Sep. 8, 1981, Ser. No. 299,909
Claims priority, application Switzerland, Mar. 19, 1981, 111 672
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—77



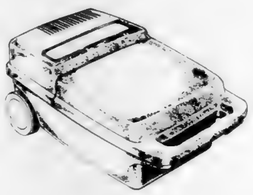
270,863
SPRAY
Carlos M. Martinez, Barcelona, Spain, assignor to Monturas Y Fornituras, S.A., Barcelona, Spain
Filed Jul. 22, 1981, Ser. No. 285,777
Claims priority, application Spain, Feb. 14, 1981, 98814
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—91.1



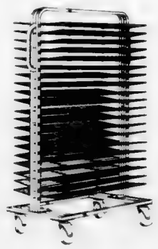
270,864
SPRAY
Carlos M. Martinez, Barcelona, Spain, assignor to Monturas Y Fornituras, S.A., Barcelona, Spain
Filed Jul. 22, 1981, Ser. No. 285,813
Claims priority, application Spain, Feb. 14, 1981, 98814
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—91.1



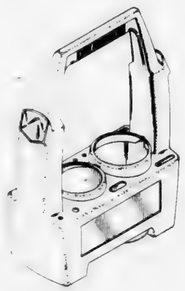
270,865
SUCTION CLEANER OR THE LIKE
David W. Moine, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Sep. 21, 1981, Ser. No. 304,268
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—21



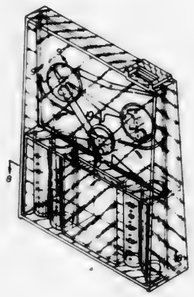
270,866
CART OR SIMILAR ARTICLE
Wayne K. Pfaff, 1316 Savannah, Irving, Tex. 75062
Filed Aug. 10, 1981, Ser. No. 291,363
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—22



270,867
CARRYING CASE FOR PLUMBING TOOLS AND EQUIPMENT
Richard J. Keohan, Braintree, Mass., assignor to Victor Equipment Company, San Francisco, Calif.
Filed Apr. 27, 1981, Ser. No. 257,761
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D34—44



270,868
COIN BANK
John W. Spirk, Jr., 2533 Euclid Heights Blvd., Cleveland Heights, Ohio 44106, and John R. Nottingham, 4875 Stacy Ct., Richmond Heights, Ohio 44143
Filed Apr. 29, 1982, Ser. No. 372,941
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. J. Sparks: *See—*
Stehouwer, William J., 4,407,082., Cl. 40-10.00C.
Aaronson, Alan M., to Stauffer Chemical Company. Flame retardant mixture for polyurethanes. 4,407,981., Cl. 521-107.000.
Aarts, Kornelis J., to Agence Spatiale Europeenne. Method of welding an aluminium object to a stainless steel object. 4,407,441., Cl. 228-176.000.
Abbott Laboratories: *See—*
Haviv, Fortuna; and Denet, Robert W., 4,407,803., Cl. 424-258.000.
Abe, Ryozo: *See—*
Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, 4,408,312., Cl. 369-43.000.
Abel, Otto: *See—*
Wagener, Dietrich; Fach, Horst; Sauder, Peter; and Abel, Otto, 4,407,701., Cl. 202-99.000.
Abeles, Benjamin: *See—*
Moustakas, Theodore D.; Morel, Don L.; and Abeles, Benjamin, 4,407,710., Cl. 204-192.00S.
Abex Corporation: *See—*
Prox, Rolf, 4,408,159., Cl. 324-207.000.
Abo, Toshimi, to Nissan Motor Company, Limited. Plasma ignition system for an internal combustion engine. 4,407,259., Cl. 123-620.000.
Abraham, Nedumparambil A.: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,408,077., Cl. 568-441.000.
Abrahams, Louis; and Izod, Thomas P. J., to Millipore Corporation. Method for preparing a wear-resistant composition containing fluorinated graphite, graphite fibers and PTFE. 4,407,988., Cl. 523-334.000.
Accu-Feed Corp.: *See—*
Schroeder, James D., 4,407,433., Cl. 222-63.000.
ACF Industries, Incorporated: *See—*
Hammonds, James C.; and VanDyke, Ronald D., 4,407,617., Cl. 410-59.000.
Hausler, Frederick A., 4,407,514., Cl. 277-117.000.
Le, Tri C.; and Noble, Bruce P., 4,407,516., Cl. 277-206.00R.
Acker, Clarance R.: *See—*
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarance R., 4,407,697., Cl. 162-137.000.
Acme General Corporation: *See—*
Bohannan, Jerry L., 4,407,476., Cl. 248-235.000.
Acrometal Products, Inc.: *See—*
Steinback, Clarence I., 4,407,096., Cl. 51-328.000.
Ad-Pro Industries, Inc.: *See—*
Ginder, William F., 4,407,662., Cl. 55-33.000.
Adam, Leslie E. S., to Varian Associates, Inc. Drive system. 4,407,659., Cl. 604-155.000.
Adamek, David J.: *See—*
McLaren, Edwin C.; and Adamek, David J., 4,407,426., Cl. 220-306.000.
Adamoli, Contardo; Bernardis, Francesco; Cretaz, Franco; and Gaiardo, Mario, to Ing. C. Olivetti & C., S.p.A. Ballistic wire matrix print head. 4,407,591., Cl. 400-124.000.
Adey, Anthony J.: *See—*
Brotherston, Colin P.; and Adey, Anthony J., 4,407,644., Cl. 417-462.000.
Adkins, Harold. Absorptive electromagnetic shielding for high speed computer applications. 4,408,255., Cl. 361-382.000.
Adlerteg, Bo; and Grees, Lennart, to ASEA Aktiebolag. Electric switch. 4,408,173., Cl. 335-16.000.
Advanced Micro Devices, Inc.: *See—*
Allen, Michael, 4,408,134., Cl. 307-471.000.
Agence Spatiale Europeenne: *See—*
Aarts, Kornelis J., 4,407,441., Cl. 228-176.000.
Agency of Industrial Science & Technology: *See—*
Koda, Yoshio, 4,407,655., Cl. 434-219.000.
Yamaguchi, Tomohiko, 4,407,975., Cl. 521-27.000.
AGFA-Gevaert Aktiengesellschaft: *See—*
Bauer, Walter, 4,408,340., Cl. 378-187.000.
Boie, Immo; and Wingender, Kaspar, 4,407,929., Cl. 430-220.000.
Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, 4,407,867., Cl. 427-365.000.
Thiele, Hartmut; Schmelter, Dieter; and Posch, Rainer, 4,407,412., Cl. 206-404.000.
Agnency of Industrial Science and Technology: *See—*
Furuya, Setsuko; Ohnishi, Shunji; and Kato, Masao, 4,408,012., Cl. 525-161.000.
Air Products and Chemicals, Inc.: *See—*
Eskinazi, Victoria; Kirner, John F.; and Wilson, Charles R., 4,407,738., Cl. 502-334.000.
Aisan Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Yuzo; Kimura, Toshihide; and Takada, Shigetaka, 4,407,248., Cl. 123-439.000.
Aisin Seiki Kabushiki Kaisha: *See—*
Akagi, Motonobu; Tanahashi, Toshio; and Kato, Kichiro, 4,407,244., Cl. 123-339.000.
Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, 4,407,691., Cl. 156-304.200.
Nishida, Koji; and Kawai, Taneichi, 4,408,242., Cl. 360-131.000.
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,407,448., Cl. 236-88.000.
Ajinomoto Company Incorporated: *See—*
Tsuchida, Takayasu; and Sano, Konosuke, 4,407,952., Cl. 435-108.000.
Akagi, Motonobu; Tanahashi, Toshio; and Kato, Kichiro, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the proportion of air and fuel in the air-fuel mixture of the internal combustion engine. 4,407,244., Cl. 123-339.000.
Akagi, Motoo; Uchino, Shoichi; and Nonogaki, Saburo, to Hitachi, Ltd. Process for forming fluorescent screen. 4,407,916., Cl. 430-23.000.
Akasaka, Shigeo: *See—*
Wakabayashi, Hiroshi; Kazami, Kazuyuki; Ohtsubo, Yoshiaki; and Akasaka, Shigeo, 4,407,573., Cl. 354-33.000.
Akasaki, Isamu: *See—*
Kobayashi, Hiroyuki; Ohki, Yoshimasa; Toyoda, Yukio; and Akasaki, Isamu, 4,408,217., Cl. 357-17.000.
Akashi, Goro: *See—*
Okita, Tsutomu; Naruo, Kyoichi; and Akashi, Goro, 4,407,853., Cl. 427-44.000.
Akerstrom, Bengt, to Siemens Aktiengesellschaft. Endocardial electrode arrangement. 4,407,303., Cl. 128-785.000.
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M. Composition for temporary substitution of bone tissue defects. 4,407,793., Cl. 424-81.000.
Akimune, Yoshio: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,407,057., Cl. 29-570.000.
Akino, Tadaharu; Nakamura, Akira; and Uemura, Hiroyuki, to TDK Electronics Co., Ltd. Noise filter with socket attached thereto. 4,408,171., Cl. 333-177.000.
Akkerman, Neil H., to AVA International; and Ava International. Subsurface well apparatus. 4,407,363., Cl. 166-183.000.
Aktiebolaget Bahco Verktyg: *See—*
Jansson, Erik C., 4,407,413., Cl. 206-493.000.
Aktiebolaget Samefa: *See—*
Nilsson, Lars-Erik; and Lofling, Tommy, 4,407,073., Cl. 33-203.180.
Akzo N.V.: *See—*
Groen, Marinus B., 4,407,753., Cl. 260-239.55R.
Alcon Laboratories, Inc.: *See—*
Schoenwald, Ronald D.; and Roehrs, Robert E., 4,407,792., Cl. 424-81.000.
Stark, Raymond L., 4,407,791., Cl. 424-80.000.
Alexander, William J., III. Weavers platform assembly and cloth guide. 4,407,332., Cl. 139-304.000.
Alheid, Robert J., to Beloit Corporation. Apparatus for high speed size application. 4,407,224., Cl. 118-405.000.
Alleman, Raymond A.: *See—*
Raush, Russell G.; and Alleman, Raymond A., 4,407,531., Cl. 285-158.000.
Allen, Hanceford L.; Berry, William W.; and Leibfried, Robert W., to International Minerals & Chemical Corp. Regeneration of activated carbon. 4,407,725., Cl. 502-25.000.
Allen, Jack H. Rain gutter construction. 4,407,097., Cl. 52-11.000.
Allen, Michael, to Advanced Micro Devices, Inc. Unitary exclusive or-and logic circuit. 4,408,134., Cl. 307-471.000.
Allen, Richard C.: *See—*
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,053., Cl. 546-226.000.
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,054., Cl. 546-226.000.
Allied Corporation: *See—*
Paquin, Patrick J., 4,407,693., Cl. 156-436.000.
Ulmer, Harry E.; Pickens, Donald; Rahl, Forrest J.; and Lefrancois, Philip A., 4,407,783., Cl. 423-347.000.
Allori, Aldo; Wilger, John A.; and Voss, Julian D., to International Harvester Co. Dynamic brake mount assembly. 4,407,394., Cl. 188-71.400.
Allsop, Inc.: *See—*
Biasini, Americole R., 4,407,182., Cl. 84-453.000.
Alps Electric Co., Ltd.: *See—*
Tanaka, Toshio, 4,408,105., Cl. 200-68.000.
Altex Scientific, Inc.: *See—*
Moeller, Roy P., 4,408,166., Cl. 329-106.000.

Altmann, Konrad: *See—*
Born, Gunthard; and Altmann, Konrad, 4,407,452., Cl. 239-132.500.
Alusuisse France S.A.: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.
Amazonen Werke H. Dreyer: *See—*
Dreyer, Heinz, 4,407,207., Cl. 111-85.000.
Ambe, Satoshi: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,407,057., Cl. 29-570.000.
AMCO Corporation: *See—*
Bentson, Wade, 4,407,189., Cl. 99-421.0HH.
American Brands, Inc.: *See—*
Hibbitts, Charles H., 4,407,306., Cl. 131-296.000.
American Can Company: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,407,873., Cl. 428-35.000.
Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., 4,407,897., Cl. 428-516.000.
Gehrke, Russell P., 4,407,874., Cl. 428-35.000.
American Cyanamid Company: *See—*
Kiernan, Jane A.; and Baker, Pamela K., 4,407,819., Cl. 424-304.000.
Labeda, David P.; Martin, John H. E. J.; and Goodman, Joseph J., 4,407,946., Cl. 435-75.000.
Miner, Thomas G.; and Bernstein, Seymour, 4,407,796., Cl. 424-180.000.
Nicolau, Gabriela; and Tonelli, Alfred P., 4,407,795., Cl. 424-180.000.
Raghu, Sivaraman, 4,408,072., Cl. 564-185.000.
Siddens, Jack K., 4,407,760., Cl. 260-465.00F.
Tseng, Shin-Shyong, 4,407,743., Cl. 252-700.000.
American Hoechst Corporation: *See—*
Ong, Helen H.; and Profitt, James A., 4,408,050., Cl. 546-17.000.
American Hospital Supply Corporation: *See—*
Lieber, Clement E.; Cooper, Robert P.; and Estes, Michael S., 4,407,304., Cl. 128-786.000.
American Medical Systems, Inc.: *See—*
Burton, John H.; Staehle, Bradford G.; and Kuyava, Charles C., 4,407,278., Cl. 128-79.000.
American Newspaper Publishers Association: *See—*
Matalia, Harshad D.; and Navi, Menashe, 4,407,196., Cl. 101-142.000.
American Standard Inc.: *See—*
Gilcher, Heinz, 4,407,470., Cl. 246-34.00R.
American Sterilizer Company: *See—*
Tratnyek, Joseph P., 4,407,960., Cl. 436-1.000.
Ames, Earl J. Door and lock support. 4,407,537., Cl. 292-337.000.
AMF Incorporated: *See—*
Jung, Wilhelm H.; and Diacont, George P., Jr., 4,407,210., Cl. 112-167.000.
Ammonia Casale S.A.: *See—*
Passariello, Attilio, 4,407,737., Cl. 502-243.000.
AMP Incorporated: *See—*
Bowen, Terry P.; Lawrence, George J.; and Wiley, Lawrence G., 4,408,353., Cl. 455-608.000.
Grabbe, Dimitry G., 4,408,218., Cl. 357-70.000.
Lockard, Joseph L., 4,407,555., Cl. 339-75.00M.
An, Seiji, to Kabushiki Kaisha Towa Giken; and An, Seiji, part interest to each. Field effect semiconductor laser, method of modulation thereof. 4,408,330., Cl. 372-45.000.
Anderson, Dale L., to Protronix, Inc. Mounting frame system for circuit boards. 4,407,416., Cl. 211-41.000.
Anderson, Glenn W.: *See—*
Hutchison, Stanley O.; and Anderson, Glenn W., 4,407,369., Cl. 166-291.000.
Anderson, Kenneth M., to Medtronic, Inc. Integral hermetic impantable pressure transducer. 4,407,296., Cl. 128-675.000.
Anderson, Robert C., Jr. Tack hook assembly for sail boats. 4,407,212., Cl. 114-108.000.
Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, Jr., to General Electric Company. Stored charge inverter circuit with rapid switching. 4,408,270., Cl. 363-132.000.
Andersson, Nils E.; Eriksson, Sten; and Sinner, Bengt, to ASEA Aktiebolag. Apparatus for regulating fiber concentration. 4,407,698., Cl. 162-258.000.
Ando, Hiromi; and Tateoka, Kiyoshi, to Tokico Ltd. Pneumatic servo booster. 4,407,184., Cl. 91-376.00R.
Andrews, Martyn P.: *See—*
Wheatley, Nigel J.; and Andrews, Martyn P., 4,408,274., Cl. 364-200.000.
Andrione, Norbert; and Peruzzi, Federigo, to Aspera S.p.A. Crank mechanism for small, single-cylinder, reciprocating engines, particularly refrigerator compressors. 4,407,168., Cl. 74-579.00E.
Android Corporation: *See—*
Rise, William E.; and Masserang, Gregory J., 4,407,404., Cl. 198-774.000.
Rise, William E., 4,407,405., Cl. 198-774.000.
Anthony, Colin: *See—*
Spretnjak, Steve A.; and Anthony, Colin, 4,407,093., Cl. 49-391.000.
Anthony, Donald R., to Atlantic Richfield Company. High pressure insulating flange. 4,407,528., Cl. 285-50.000.
Aoyama, Kensuke: *See—*
Shima, Mutsuo; Aoyama, Kensuke; and Naka, Michiro, 4,407,881., Cl. 428-156.000.
Aplenc, Andrej M. R., to Sperry Corporation. Thermosyphon boiler for a geothermal pumping system. 4,407,126., Cl. 60-641.400.
Appleby, Anthony J.; and Crepy, Gilles, to Compagnie Generale d'Electricite. Cathode for an electrolyser. 4,407,908., Cl. 429-45.000.
Applied Engineering Co., Inc.: *See—*
Merritt, John H., Jr., 4,407,237., Cl. 122-390.000.
Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, to Omron Tateisi Electronics Co. Electronic oscillation counting timer. 4,407,588., Cl. 368-118.000.
Ariga, Shoji; and Tomita, Tadashi, to Clarion Co., Ltd. Acoustic apparatus. 4,408,095., Cl. 381-24.000.
Arimitsu Industry Co., Ltd.: *See—*
Namekata, Yoriaki, 4,407,640., Cl. 417-296.000.
Armco Inc.: *See—*
Brezny, Bohus, 4,407,972., Cl. 501-99.000.
Arnaud, Jean-Claude; and Devissaguet, Michelle, to Science Union Et Cie. Anti-ischemic pharmaceutic compositions. 4,407,801., Cl. 424-250.000.
Arnold, Herbert: *See—*
Horbelt, Michael; Arnold, Herbert; and Winkelmann, Lothar, 4,407,156., Cl. 73-118.000.
Arnold, Robert W.; and Skinner, Dean W., to International Business Machines Corporation. Constant energy drive circuit for electromagnetic print hammers. 4,408,129., Cl. 307-270.000.
Arrowhead Continental: *See—*
Giebeler, James F., 4,407,533., Cl. 285-281.000.
Artemenko, Vladimir I.; Belikov, Viktor T.; Ivlev, Anatoly D.; and Mamzelev, Viktor A., to Odessky Politekhnichesky Institut. Linear electric motor. 4,408,145., Cl. 318-135.000.
Asada, Tatuo: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.
ASEA Aktiebolag: *See—*
Adlerteg, Bo; and Grees, Lennart, 4,408,173., Cl. 335-16.000.
Andersson, Nils E.; Eriksson, Sten; and Sinner, Bengt, 4,407,698., Cl. 162-258.000.
Ash, Darrell L., to Texas Instruments Incorporated. High-frequency channel selector having fixed bandpass filters in the RF section. 4,408,347., Cl. 455-179.000.
Ashida, Kazutaka, to Victor Company of Japan, Limited. Tape recording reproducing apparatus having improved fast forward drive system. 4,407,463., Cl. 242-201.000.
Ashihara, Yoshihiro: *See—*
Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,407,944., Cl. 435-18.000.
Ashland Oil, Inc.: *See—*
Myers, George D., deceased; Hettinger, William P., Jr.; and Kovach, Stephen M., 4,407,714., Cl. 208-120.000.
Asp, Ralph T. Latch for sliding glass door. 4,407,539., Cl. 292-338.000.
Aspera S.p.A.: *See—*
Andrione, Norbert; and Peruzzi, Federigo, 4,407,168., Cl. 74-579.00E.
Associated Research, Inc.: *See—*
Beaubien, William H., 4,408,157., Cl. 324-62.000.
Atlantic Richfield Company: *See—*
Anthony, Donald R., 4,407,528., Cl. 285-50.000.
DiGiulio, Adolph V., 4,407,979., Cl. 521-59.000.
Harris, James J.; and Hostetler, Donald E., 4,407,727., Cl. 502-115.000.
Le-Khac, Bi, 4,408,010., Cl. 525-73.000.
Milkovich, Ralph; and Warfel, David R., 4,408,006., Cl. 524-534.000.
Nice, Ralph A., 4,407,865., Cl. 427-217.000.
Atomic Energy of Canada Limited: *See—*
Birnboim, Hyman C., 4,407,942., Cl. 435-6.000.
Atsumi, Tomiaki: *See—*
Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, 4,407,491., Cl. 267-140.100.
Augusto, Peter; Hazard, Edwin A.; and Mohrman, Richard C., to Bausch & Lomb Incorporated. Compact refraction instrument. 4,407,571., Cl. 351-13.000.
Aulich, Hubert; and Auracher, Franz, to Siemens Aktiengesellschaft. Apparatus and process for producing a cladded optical fiber having a longitudinal side coupling zone. 4,407,668., Cl. 65-3.110.
Auracher, Franz: *See—*
Aulich, Hubert; and Auracher, Franz, 4,407,668., Cl. 65-3.110.
Austin, Lowell W.: *See—*
Smith, John R.; Bingle, William D.; and Austin, Lowell W., 4,407,149., Cl. 72-47.000.
Automatic Doorman, Inc.: *See—*
Beckerman, Howard L., 4,408,146., Cl. 318-264.000.
Automotive Products Limited: *See—*
Parsons, David, 4,407,125., Cl. 60-584.000.
Autosteer Developments Limited: *See—*
Auty, David, 4,407,384., Cl. 180-146.000.
Auty, David, to Autosteer Developments Limited. Power assisted steering arrangements and devices for use therein. 4,407,384., Cl. 180-146.000.
Ava International: *See—*
Akkerman, Neil H., 4,407,363., Cl. 166-183.000.
Akkerman, Neil H., 4,407,363., Cl. 166-183.000.

Avins, Jack. Automotive control systems for improving fuel consumption. 4,408,293., Cl. 364-426.000.
Ayerst, McKeena & Harrison, Inc.: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Beffini, Francesco, 4,408,077., Cl. 568-441.000.
B. F. Goodrich Company, The: *See—*
Barnhouse, James P., 4,408,013., Cl. 525-187.000.
Kolycheck, Edmond G., 4,408,020., Cl. 525-415.000.
Baba, Toshihiro: *See—*
Takatsuka, Keizo; Yamamoto, Hiroshi; and Baba, Toshihiro, 4,408,108., Cl. 200-148.00A.
Babcock & Wilcox Company, The: *See—*
Widener, Joseph; Britt, James M.; and LaPrade, Steve A., 4,407,969., Cl. 501-95.000.
Baboian, Robert; and Haynes, Gardner, to Texas Instruments Incorporated. Corrosion protection system for hot water tanks. 4,407,711., Cl. 204-196.000.
Backlund, Erik L., to Forenade Fabriksverken. Method for heat absorption from a sea bottom or the like. 4,407,351., Cl. 165-1.000.
Backlund, Jonathan C.; and Duval, Eugene F., to Fafco, Inc. Tiedown fastening device. 4,407,477., Cl. 248-499.000.
Bahnsen, Bahne P.; and Kanow, Willy, to U.S. Philips Corporation. AM-FM Radio receiver for receiving AM-stereo signals. 4,408,097., Cl. 381-15.000.
Bahring, Horst, to Privates Institut fur Physikalisch Technische Auftragsforschung GmbH. Apparatus for elimination play in gear wheel transmissions. 4,407,544., Cl. 297-362.000.
Bailey, James W.: *See—*
Bement, Laurence J.; and Bailey, James W., 4,407,468., Cl. 244-137.00P.
Bailey, William F.: *See—*
Garscadden, Alan; Bailey, William F.; and Duke, Gary L., 4,407,705., Cl. 204-157.10H.
Baker, Pamela K.: *See—*
Kiernan, Jane A.; and Baker, Pamela K., 4,407,819., Cl. 424-304.000.
Baker, Richard R.; and Dashley, Federick J., to British-American Tobacco Company Limited. Smoking articles. 4,407,308., Cl. 131-336.000.
Balcke-Durr Aktiengesellschaft: *See—*
Denner, Peter; Ernst, Egon; and Jockel, Alfred, 4,407,064., Cl. 29-726.000.
Baldwin, John J.; and Lumma, William C., Jr., to Merck & Co., Inc. Imidazodiazines. 4,408,047., Cl. 544-250.000.
Baldwin, John J.; and McClure, David E., to Merck & Co., Inc. Preparation of epihalohydrin enantiomers. 4,408,063., Cl. 549-518.000.
Ball, Alease E. Cover for caskets. 4,407,053., Cl. 27-14.000.
Ball, Peter R.: *See—*
Culshaw, Brian; Ball, Peter R.; Kingsley, Stuart A.; and Davies, David E. N., 4,408,354., Cl. 455-610.000.
Ball, William J.; Palmer, Keith W.; and Stewart, David G., to British Petroleum Company Limited, The. Method for producing crystalline aluminosilicates and their use as catalysts and catalyst supports. 4,407,728., Cl. 502-60.000.
Ballinger, Nicholas K.: *See—*
Gladman, Terence; and Ballinger, Nicholas K., 4,407,680., Cl. 148-12.00F.
Bandel, Paolo; and Caretta, Renato, to Industrie Pirelli S.p.A. Pneumatic tire for motor vehicles having a low power absorption and a high directional control stability. 4,407,346., Cl. 152-209.00R.
Bankert, Ralph A.; and Dumas, David H., to Hercules Incorporated. Aqueous sizing composition comprising ketene dimer and epihalohydrin/polyamino polyamide/bis(hexamethylene)triamine reaction product. 4,407,994., Cl. 524-107.000.
Barnabeo, Austin E., to Union Carbide Corporation. Polysiloxanes and the use thereof in the production of silane modified alkylene-alkyl acrylate copolymers. 4,408,011., Cl. 525-100.000.
Barner, Richard; and Hubscher, Josef, to Hoffmann-La Roche Inc. Cholecalciferol derivatives. 4,407,754., Cl. 260-239.55D.
Barnert, Eike, to Kernforschungsanlage Julich GmbH. Gas-feed nozzle for a pyrolytic particle coating apparatus. 4,407,230., Cl. 118-716.000.
Barnhouse, James P., to B. F. Goodrich Company, The. Epihalohydrin polymer cure systems. 4,408,013., Cl. 525-187.000.
Barthell, Eduard: *See—*
Goossens, Bernhard; Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,408,073., Cl. 564-204.000.
Bartman, Benjamin; and Swift, Graham, to Rohm and Haas Company. Acetoacetate functionalized polymers and monomers useful for crosslinking formulations. 4,408,018., Cl. 525-300.000.
Bartok, William; and Freund, Howard, to Exxon Research and Engineering Co. Partial combustion process for coal. 4,407,206., Cl. 110-347.000.
Barton, John R.: *See—*
King, James D.; Burkhardt, Gary L.; Barton, John R.; and Matzkanin, George A., 4,408,160., Cl. 324-209.000.
BASF Aktiengesellschaft: *See—*
Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, 4,407,810., Cl. 424-270.000.
Hoffman, Dietrich; and Schopke, Holger, 4,407,886., Cl. 428-320.800.
Merger, Franz; and Foerster, Hans-Juergen, 4,408,079., Cl. 568-463.000.
Naarmann, Herbert; Penzien, Klaus; and Schlag, Johannes, 4,407,739., Cl. 252-512.000.
BASF Wyandotte Corporation: *See—*
Langdon, William K., 4,408,084., Cl. 568-601.000.
Bates, Farrell C. Curved ball court. 4,407,501., Cl. 273-118.00R.
Battelle Development Corporation: *See—*
Wilkinson, William H., 4,407,131., Cl. 60-648.000.
Zega, Bogdan, 4,407,713., Cl. 204-298.000.
Battocletti, Frank E.: *See—*
Kovalchik, Donald P.; and Battocletti, Frank E., 4,408,283., Cl. 364-483.000.
Bauer, Karl-Heinz, to Preh Elektrofeinmechanische Werke Jakob Preh. Key assembly. 4,408,346., Cl. 455-175.000.
Bauer, Manfred, to Robert Bosch GmbH. Fuel injection pump for self-igniting internal combustion engines. 4,407,253., Cl. 123-506.000.
Bauer, Peter; and Lazrus, Julian, to Bowles Fluidics Corporation. Washing method using a fluidic oscillator. 4,407,032., Cl. 8-158.000.
Bauer, Peter. Bistable latch. 4,407,538., Cl. 292-87.000.
Bauer, Walter, to AGFA-Gevaert Aktiengesellschaft. Means for holding X-ray films. 4,408,340., Cl. 378-187.000.
Baumgartner, Herman J., to Shell Oil Company. Oxidation of isobutane in the dense phase and at low oxygen concentration. 4,408,082., Cl. 568-571.000.
Bausch & Lomb Incorporated: *See—*
Augusto, Peter; Hazard, Edwin A.; and Mohrman, Richard C., 4,407,571., Cl. 351-13.000.
Bavaria B.V.: *See—*
van de Velde, Reindert, 4,407,160., Cl. 73-296.000.
Baxter Travenol Laboratories, Inc.: *See—*
Nevens, Charles; and Williams, Ronald A., 4,407,660., Cl. 604-6.000.
Bayer Aktiengesellschaft: *See—*
Birkenstock, Udo; and Schmidt, Herbert, 4,407,733., Cl. 502-174.000.
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,407,762., Cl. 260-508.000.
Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,408,055., Cl. 548-125.000.
Hocker, Jurgen; Wieder, Wolfgang; and Dhein, Rolf, 4,408,027., Cl. 526-185.000.
Hohmann, Walter; and Stawitz, Josef, 4,408,056., Cl. 548-416.000.
Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, 4,407,809., Cl. 424-267.000.
Perrey, Hermann; Matner, Martin; Schwinum, Ernst; and Rudolph, Hans, 4,407,724., Cl. 252-312.000.
Salzburg, Herbert; Meyborg, Holger; and Ziemann, Heinz, 4,408,061., Cl. 549-464.000.
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, 4,408,044., Cl. 544-182.000.
Baylor, John M., to J. I. Case Company. Replaceable wear cover for track bushing. 4,407,551., Cl. 305-57.000.
BBC Brown, Boveri & Company, Ltd.: *See—*
Ecklin, Gaston, 4,408,249., Cl. 361-127.000.
Beaubien, William H., to Associated Research, Inc. Resistance measuring arrangement. 4,408,157., Cl. 324-62.000.
Beaudet, Leo A.: *See—*
Fotland, Richard A.; and Beaudet, Leo A., 4,408,214., Cl. 346-159.000.
Beaufrere, Albert H. Regeneratively cooled coal combustor/gasifier with integral dry ash removal. 4,407,205., Cl. 110-264.000.
Bechthold, Howard D., to Otis Engineering Corporation. Flow control apparatus for wells. 4,407,362., Cl. 166-117.500.
Beck, Donald R. Hose handler-keeper. 4,407,472., Cl. 248-89.000.
Beck, Ernst; and Lenard, Peter, to Vollmer Werke Maschinenfabrik GmbH. Method for repairing hard alloy-tipped saw blades. 4,407,172., Cl. 76-112.000.
Beck, Martin H.; Krishnakumar, Suppayan M.; and Collette, Wayne N., to Continental Group, Inc., The. Hybrid reheating system and method for polymer preforms. 4,407,651., Cl. 432-11.000.
Beck, Rene A., to Gram S.A. Complex column. 4,407,106., Cl. 52-722.000.
Beckerman, Howard L., to Automatic Doorman, Inc. Automatic door operator. 4,408,146., Cl. 318-264.000.
Beckman Instruments, Inc.: *See—*
Bernot, Anthony J.; and Brown, Kenneth, 4,407,658., Cl. 445-25.000.
Becton Dickinson and Company: *See—*
Voge, Andrew; Sparks, Daniel R.; and Mullins, Barry W., 4,408,252., Cl. 361-288.000.
Bedini, Raffaele; Lauro, Luciano; and Pinotti, Pier C., to Olivetti Controllo Numerico S.p.A. Adaptive numerical control apparatus for machine tools. 4,408,280., Cl. 364-474.000.
Beecham Group Limited: *See—*
Pearson, Michael J.; and Branch, Clive L., 4,407,815., Cl. 424-274.000.
Beeson, Don E.: *See—*
Butler, Gordon K.; and Beeson, Don E., 4,407,241., Cl. 123-90.160.
Behre, Horst: *See—*
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,407,762., Cl. 260-508.000.
Belikov, Viktor T.: *See—*
Artemenko, Vladimir I.; Belikov, Viktor T.; Ivlev, Anatoly D.; and Mamzelev, Viktor A., 4,408,145., Cl. 318-135.000.
Bell, Alan E., to RCA Corporation. Reinforced bubble recording medium and information record. 4,408,213., Cl. 346-135.100.
Bell Telephone Laboratories, Incorporated: *See—*
Boll, Harry J., 4,408,130., Cl. 307-296.00R.
Bulley, Raymond M.; MacPherson, William F.; and Youhas, Robert F., 4,408,248., Cl. 361-91.000.

Fraser, David B.; and Watts, Roderick K., 4,407,933., Cl. 430-296.000.
Grodkiewicz, William H.; Singh, Shobha; and Van Uitert, LeGrand G., 4,407,061., Cl. 29-576.00B.
Haas, Laird K. S.; Herring, Larry H.; and Nakada, Yoshinao, 4,407,849., Cl. 427-37.000.
Hartman, Robert L.; Koszi, Louis A.; and Schwartz, Bertram, 4,408,331., Cl. 372-46.000.
Montgomery, Warren A., 4,408,323., Cl. 370-60.000.
Walters, Stephen M., 4,408,272., Cl. 364-200.000.
Young, William C., 4,407,562., Cl. 350-96.200.
Zipfel, George G., Jr., 4,407,054., Cl. 29-25.350.

Bellini, Francesco: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,408,077., Cl. 568-441.000.

Bellman, Robert H.: *See—*
Kuchinsky, Saul; Bellman, Robert H.; and Ogle, James A., 4,407,934., Cl. 430-314.000.

Beloit Corporation: *See—*
Alheid, Robert J., 4,407,224., Cl. 118-405.000.

Bement, Laurence J.; and Bailey, James W., to United States of America, National Aeronautics and Space Administration. Explosively activated egress area. 4,407,468., Cl. 244-137.00P.

Bender, Richard; and Feuerstake, Eugen, to Diehl GmbH & Co. Detonator such as an electrical mechanical or flame-sensitive detonator. 4,407,200., Cl. 102-202.500.

Bendix Corporation, The: *See—*
Brown, Arthur K., 4,407,643., Cl. 417-401.000.
Caruso, Peter J., 4,408,188., Cl. 340-345.000.
Crumb, Donald A., 4,407,121., Cl. 60-562.000.
Taft, Darwin O.; and Van Siclen, Howard E., Jr., 4,407,257., Cl. 123-612.000.

Bennett, Emeric S.; and Sauerland, Franz L., to Transat Corp. Apparatus for automatic lapping control. 4,407,094., Cl. 51-165.00R.

Bennett, Everett W.; and Suchy, Jan B., to James River-Graphics, Inc. Electrophotographic elements with polyester binder resins having aprotic end groups. 4,407,921., Cl. 430-96.000.

Benstead, Alan J.: *See—*
Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., 4,407,830., Cl. 426-272.000.

Benton, Robert L.; Martinsons, Dainis O.; and Stimpson, Flave F., to General Motors Corporation. Seal and scraper assembly. 4,407,511., Cl. 277-24.000.

Bentson, Wade, to AMCO Corporation. Roast spit. 4,407,189., Cl. 99-421.0HH.

Berardinelli, Frank M.: *See—*
Cincotta, David E.; and Berardinelli, Frank M., 4,408,022., Cl. 525-444.000.

Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, to Commissariat a l'Energie Atomique; and Alusuisse France S.A. Plate heat exchanger. 4,407,359., Cl. 165-167.000.

Bergwerksverband GmbH: *See—*
Bonn, Berhard; Giertz, Franz; Holl, Lothar; and Schreckenberg, Heinz, 4,407,355., Cl. 165-104.160.
Wallussek, Heinz; Wiebe, Martin; and Roder, Thomas, 4,407,374., Cl. 175-24.000.

Berkley and Company, Inc.: *See—*
Foote, Danny R., 4,408,088., Cl. 136-226.000.

Bernard Matthews Limited: *See—*
Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., 4,407,830., Cl. 426-272.000.

Bernardis, Francesco: *See—*
Adamoli, Contardo; Bernardis, Francesco; Cretaz, Franco; and Gaiardo, Mario, 4,407,591., Cl. 400-124.000.

Bernauer, Karl; Link, Helmut; and Stohler, Harro, to Hoffmann-La Roche Inc. Imidazolidine derivatives. 4,407,814., Cl. 424-273.00R.

Bernot, Anthony J.; and Brown, Kenneth, to Beckman Instruments, Inc. Gas discharge display device sealing method for reducing gas contamination. 4,407,658., Cl. 445-25.000.

Bernstein, Seymour: *See—*
Miner, Thomas G.; and Bernstein, Seymour, 4,407,796., Cl. 424-180.000.

Berry, William W.: *See—*
Allen, Hanceford L.; Berry, William W.; and Leibfried, Robert W., 4,407,725., Cl. 502-25.000.

Bertolacini, Ralph J.: *See—*
Pellet, Regis J.; Gradassi, Michael J.; and Bertolacini, Ralph J., 4,407,736., Cl. 502-230.000.

Bertram, James L.; Ham, George E.; and Chen, Wuu-Nan, to Dow Chemical Company, The. Process for preparing low molecular weight epoxy resins. 4,408,062., Cl. 549-517.000.

Bertrand, Jacques C.: *See—*
Grushkin, Bernard; and Bertrand, Jacques C., 4,407,922., Cl. 430-98.000.

Betts, Malcolm C.; Graves, Alan F.; Pascoe, Frederick M.; and Dilley, James E., to Northern Telecom Limited. Method and apparatus for code conversion of binary to multilevel signals. 4,408,189., Cl. 340-347.0DD.

Betzner, William E.; Holtman, Richard K.; and Hill, Allen R., to Celotex Corporation, The. Blow line addition of isocyanate binder in fiberboard manufacture. 4,407,771., Cl. 264-115.000.

Biasini, Americole R., to Allsop, Inc. Musical instrument stand. 4,407,182., Cl. 84-453.000.

Biddle, Richard A.; Vriesen, Calvin W.; and Sutton, Ernest S., to Thiokol Corporation. Gas generator method for producing cool effluent gases with reduced hydrogen cyanide content. 4,407,119., Cl. 60-219.000.

Bingle, William D.: *See—*
Smith, John R.; Bingle, William D.; and Austin, Lowell W., 4,407,149., Cl. 72-47.000.

Bio-Systems Research, Inc.: *See—*
Lionelle, Joseph E.; and Staffa, Jeffrey A., 4,407,818., Cl. 424-289.000.

Biox Technology, Inc.: *See—*
Wilber, Scott A., 4,407,290., Cl. 128-633.000.

Birkenstock, Udo; and Schmidt, Herbert, to Bayer Aktiengesellschaft. Supported catalysts and process for their preparation. 4,407,733., Cl. 502-174.000.

Birnboim, Hyman C., to Atomic Energy of Canada Limited. Fluorescent detection of DNA damage. 4,407,942., Cl. 435-6.000.

Bischoff, Ludwig: *See—*
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.

Bittner, Klaus-Jurgen: *See—*
Kostner, Armin; Lenhart, Richard; and Bittner, Klaus-Jurgen, 4,407,339., Cl. 141-10.000.

Black, David H. A.; and Pelletier, Georges H. Noise signal level control in a TASI system. 4,408,324., Cl. 370-81.000.

Blair Industries, Inc.: *See—*
Graetz, Herbert; and Unterreiner, Ronald C., 4,407,410., Cl. 206-387.000.

Blanc, Claude; Galy, Henry; and Elgue, Jean, to Societe Nationale Elf Aquitaine (Production). Process for the selective extraction treatment of gaseous hydrocarbon mixture containing carbon dioxide. 4,407,784., Cl. 423-228.000.

Blanc, Maurice: *See—*
Chiovini, Jacky; Margolis, Geoffrey; and Blanc, Maurice, 4,407,834., Cl. 426-422.000.

Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, to Bayer Aktiengesellschaft. Process for the isolation of 1-naphthylamine-4,8-disulphonic acid. 4,407,762., Cl. 260-508.000.

Blank, Heinz U.: *See—*
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, 4,408,044., Cl. 544-182.000.

Bledsoe, Gary R., to Medical Designs, Inc. Brace for articulated limbs. 4,407,276., Cl. 128-80.00C.

Blum, Alfons: *See—*
Maurer, Robert; Blum, Alfons; and Hoffmann, Michael, 4,408,351., Cl. 455-260.000.

Blum, Alfred E. G., to Massey-Ferguson-Perkins Limited. Valve seats. 4,407,242., Cl. 123-188.00S.

Blum, Helmut; and Worms, Karl-Heinz, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of ω-amino-1-hydroxyalkylidene-1,1-bisphosphonic acid. 4,407,761., Cl. 260-502.50C.

Blunt, Harry W., to Hercules Incorporated. Block copolymers of ethylene and propylene. 4,408,019., Cl. 525-323.000.

Boaz, Premakaran T., to Ford Motor Company. Process for the manufacture of glass sheets. 4,407,847., Cl. 427-35.000.

Bobovnikov, Nikolai G.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Bobrycki, Richard: *See—*
Morin, Robert W.; Lewis, Jeffrey M.; and Bobrycki, Richard, 4,407,223., Cl. 118-212.000.

Boeder, Dieter; and Wiemers, Karl-Josef, to Rheinmetall GmbH. Internal diameter measuring device for pipes. 4,407,071., Cl. 33-178.00E.

Boeing Company, The: *See—*
Fitch, John L.; and Spencer, Donald B., 4,408,206., Cl. 343-352.000.

Bogle, Charles T.: *See—*
Kijesky, Michael M.; and Bogle, Charles T., 4,408,284., Cl. 364-485.000.

Bohannan, Jerry L., to Acme General Corporation. Combined shelf and clothes bar assembly. 4,407,476., Cl. 248-235.000.

Bohme, Rolf C.; and Lazerson, Max M., to General Mining Union Corporation Limited. Method of grade determination including compensation. 4,407,415., Cl. 209-556.000.

Boie, Immo; and Wingender, Kaspar, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material for the production of colored images by the dye diffusion transfer process. 4,407,929., Cl. 430-220.000.

Boll, Harry J., to Bell Telephone Laboratories, Incorporated. Temperature stabilized voltage reference. 4,408,130., Cl. 307-296.00R.

Bolton, Philip; and Burdekin, Norman, to Neotechnic Engineering Limited. Valve assembly for a pressurized aerosol-dispensing container. 4,407,481., Cl. 251-353.000.

Bone, Rainer: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; and Rubrecht, Jens-Detlef, 4,408,289., Cl. 364-551.000.

Boning, Bernward; Bone, Rainer; Nagel, Rudolf; and Rubrecht, Jens-Detlef, to Robert Bosch GmbH. Simplified monitoring apparatus for sensors in motor vehicles. 4,408,289., Cl. 364-551.000.

Bonn, Berhard; Giertz, Franz; Holl, Lothar; and Schreckenberg, Heinz, to Bergwerksverband GmbH. Method and apparatus for decreasing the heat and material exchange in the direct vicinity of the walls of fluidized bed reactors. 4,407,355., Cl. 165-104.160.

Bonne, Claude; Coquelet, Claude; and Sincholle, Daniel, to Laboratoires Chauvin-Blache. Etheral imidazoles and use in treatment of thromboses. 4,407,812., Cl. 424-273.00R.

Bonner, Clive E.; and Sanford, Herbert F., to Honeywell Inc. Tape cleaner. 4,408,243., Cl. 360-137.000.

Bonnet, Emile: *See—*
Rey, Pierre; and Bonnet, Emile, 4,407,414., Cl. 206-553.000.

Bonse, Gerhard: *See—*
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, 4,408,044., Cl. 544-182.000.

Boocock, John R. B.; and Murray, Ronald E., to Du Pont Canada Inc. Recovery of a proteinaceous oat fraction from a dispersion thereof in hydrocarbon solvent. 4,407,841., Cl. 426-656.000.

Boone, Jeffrey S.: *See—*
Cortellini, Conrad; Boone, Jeffrey S.; and Conard, Richard D., 4,408,277., Cl. 364-300.000.

Boothe, Leland H. Ladder hinge and multi-position locking mechanism therefor. 4,407,045., Cl. 16-327.000.

Boots, Robert T., to Vermeulen-Hollandia Octrooien B.V. Sliding roof. 4,407,541., Cl. 296-216.000.

Borg-Warner Corporation: *See—*
Haines, Roger W.; and Purinton, Mark A., 4,407,185., Cl. 98-1.500.

Born, Gunthard; and Altmann, Konrad, to Messerschmitt Boelkow Blohm Gesellschaft mit Beschraenkter Haftung. Apparatus for mixing gases in molecular lasers. 4,407,452., Cl. 239-132.500.

Boscher, Daniel: *See—*
Le Noane, Georges; and Boscher, Daniel, 4,407,667., Cl. 65-3.110.

Bosco, Peter M.; and Danielson, Robert L., to Nabisco Brands, Inc. Cold water soluble gelatin and process. 4,407,836., Cl. 426-576.000.

Boston Machine Works Company: *See—*
Morin, Robert W.; Lewis, Jeffrey M.; and Bobrycki, Richard, 4,407,223., Cl. 118-212.000.

Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, to Fonderie et Ateliers des Sablons. Vessel lid especially for a mixer used for the homogenization of a mixture of products. 4,407,584., Cl. 366-279.000.

Bour, Edmond H. J. P.: *See—*
Gaymans, Reinoud J.; and Bour, Edmond H. J. P., 4,408,036., Cl. 528-335.000.

Bowen, B. Dean: *See—*
Mills, Gary L.; and Bowen, B. Dean, 4,407,486., Cl. 266-87.000.

Bowen, Terry P.; Lawrence, George J.; and Wiley, Lawrence G., to AMP Incorporated. Coaxial cable/fiber optic bus network. 4,408,353., Cl. 455-608.000.

Bowles Fluidics Corporation: *See—*
Bauer, Peter; and Lazrus, Julian, 4,407,032., Cl. 8-158.000.

Boyack, John D. Concrete and resin swimming pool wall. 4,407,102., Cl. 52-169.700.

Boyama, Kimihiro, to Kokusan Denki Co., Ltd. Ignition signal generating device for use in contactless ignition system. 4,407,246., Cl. 123-415.000.

Boyle, Daniel J., to Champion International Corporation. Product counter display. 4,407,417., Cl. 211-69.100.

Bozzacco, Eleanor. Safety collar for pets. 4,407,233., Cl. 119-106.000.

Brachet, Claude: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Brachman, Dina I.: *See—*
Eigen, Edward; Brachman, Dina I.; and Friedman, Stuart D., 4,407,789., Cl. 424-69.000.

Bradley, David J., to International Business Machines Corporation. Apparatus and method for reading and writing text characters in a graphics display. 4,408,200., Cl. 340-747.000.

Bradley, Jack, to Cushman Electronics, Inc. Method and apparatus for television distribution system sweep testing. 4,408,227., Cl. 358-139.000.

Brain, Sally A.: *See—*
Robinson, Joseph G.; and Brain, Sally A., 4,408,003., Cl. 524-364.000.

Brammer, John W. Adjustable tie rack. 4,407,418., Cl. 211-87.000.

Branch, Clive L.: *See—*
Pearson, Michael J.; and Branch, Clive L., 4,407,815., Cl. 424-274.000.

Brandt, Ludwig; and Pokar, Hellmut. Intratracheal tube. 4,407,281., Cl. 128-207.150.

Bratten, Jack R. Method and apparatus for filtration of contaminated liquids. 4,407,720., Cl. 210-777.000.

Braun, Ernst; and Braun, Gert, to Halbach & Braun. Mining planer with pivotal tool holder. 4,407,546., Cl. 299-34.000.

Braun, Gert: *See—*
Braun, Ernst; and Braun, Gert, 4,407,546., Cl. 299-34.000.

Braun, Reinhold, to International Standard Electric Corporation. Digital phase detector. 4,408,165., Cl. 328-134.000.

Braunagel, Egon V.: *See—*
Cornelius, Jack M.; and Braunagel, Egon V., 4,407,510., Cl. 277-12.000.

Brefka, Paul E., to Energy Harvesters Corporation. Wood stove air flow regulating. 4,407,265., Cl. 126-193.000.

Breidenbach, Dieter: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.

Brenner, Robert A., to Whirlpool Corporation. Weight indicator for refuse compactor. 4,407,191., Cl. 100-99.000.

Bret, Georges G.: *See—*
Michelet, Guy A.; and Bret, Georges G., 4,407,567., Cl. 350-423.000.

Brezny, Bohus, to Armco Inc. Erosion-resistant refractory. 4,407,972., Cl. 501-99.000.

Bricot, Claude; and Robin, Gerard, to Thomson-Brandt. Apparatus for making video discs. 4,407,646., Cl. 425-174.400.

Bridges Electric, Inc.: *See—*
McBride, Joseph R., 4,408,155., Cl. 324-51.000.

Briere, Alfred D., to GTE Laboratories Incorporated. Methods for prolonging the useful life of a graphite element in an optical fiber-drawing furnace. 4,407,666., Cl. 65-2.000.

Briscoe, James E.: *See—*
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., 4,408,043., Cl. 544-87.000.

Bristol-Myers Company: *See—*
Cundall, Robert L.; and Walker, Derek, 4,407,755., Cl. 260-245.20R.

British Aerospace Public Limited Company: *See—*
Simms, Graham J., 4,407,583., Cl. 356-350.000.

British-American Tobacco Company Limited: *See—*
Baker, Richard R.; and Dashley, Federick J., 4,407,308., Cl. 131-336.000.

British Petroleum Company Limited, The: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,407,728., Cl. 502-60.000.

British Steel Corporation: *See—*
Gladman, Terence; and Ballinger, Nicholas K., 4,407,680., Cl. 148-12.00F.

Britt, James M.: *See—*
Widener, Joseph; Britt, James M.; and LaPrade, Steve A., 4,407,969., Cl. 501-95.000.

Britt, Kenneth W.: *See—*
Harbin, Wayne D.; Stark, Marvin; and Britt, Kenneth W., 4,407,203., Cl. 105-462.000.

Broadfoot, John T.; and Broadfoot, John T., Jr. Metering and/or feeding device for materials. 4,407,436., Cl. 222-636.000.

Broadfoot, John T., Jr.: *See—*
Broadfoot, John T.; and Broadfoot, John T., Jr., 4,407,436., Cl. 222-636.000.

Brodbeck, Robert M., to Marcamor, Inc. Automatic telephone dialing apparatus with magnetic switch assembly. 4,408,101., Cl. 179-90.0BD.

Brother Kogyo Kabushiki Kaisha: *See—*
Kurachi, Hisao; Ito, Takeo; and Onoda, Hiroshi, 4,407,592., Cl. 400-54.000.
Okamoto, Takachiyo, 4,408,138., Cl. 310-12.000.

Brotherston, Colin P.; and Adey, Anthony J., to Lucas Industries Limited. Fuel injection pumping apparatus. 4,407,644., Cl. 417-462.000.

Brotzmann, Karl; and Fassbinder, Hans-Georg, to Eisenwerk-Gesellschaft Maximilianshutte mbH. Method and a means for introducing close-grained carbonaceous fuels into an iron melting bath. 4,407,490., Cl. 266-266.000.

Brouwer, Charles W., to Leesona Corporation. Method and apparatus for positively removing weft from air insertion guidance tube. 4,407,334., Cl. 139-435.000.

Brown, Arthur K., to Bendix Corporation, The. Power fluid system embodying two-fluid pump. 4,407,643., Cl. 417-401.000.

Brown, David J., to Lucas Industries Limited. Secondary zinc electrode. 4,407,915., Cl. 429-217.000.

Brown, Harry E., to Buckeye Cellulose Corporation, The. Tree feller with gravitational buncher. 4,407,343., Cl. 144-34.00E.

Brown, Kenneth: *See—*
Bernot, Anthony J.; and Brown, Kenneth, 4,407,658., Cl. 445-25.000.

Brown, Richard S., Jr.: *See—*
MacDermott, Carl H.; and Brown, Richard S., Jr., 4,407,075., Cl. 33-348.200.

Brown, Robert J. S., to Chevron Research Company. Computer-controlled, portable spin echo NMR instrument and method of use. 4,408,161., Cl. 324-303.000.

Brown, Richard S., Jr.: *See—*
MacDermott, Carl H.; and Brown, Richard S., Jr., 4,407,075., Cl. 33-348.200.

Brozovich, Roy S.; and Moore, Prentice G., to Square D Company. Frequency transducer. 4,408,158., Cl. 324-78.00R.

Bruce, Richard H.; and Reinberg, Alan R., to Perkin-Elmer Corporation, The. Profile control photoresist. 4,407,850., Cl. 427-38.000.

Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, to Agfa-Gevaert Aktiengesellschaft. Apparatus and a method for the completely automatic lacquering of stripform materials. 4,407,867., Cl. 427-365.000.

Bruckner, Peter J. Gripping device. 4,407,626., Cl. 414-740.000.

Brune, Arlen G.; and Schmidt, Nelson, to Glasscock, Gus. Infield mobile syrup extractor. 4,407,111., Cl. 56-16.400.

Brunswick Corporation: *See—*
Wilhelm, Raymond L., 4,407,326., Cl. 137-553.000.

Bucheder, Erwin, to Koflach Sportgerate Gesellschaft m.b.H. Buckle for fastening together the parts of a shoe. 4,407,048., Cl. 24-69.0SK.

Buckeye Cellulose Corporation, The: *See—*
Brown, Harry E., 4,407,343., Cl. 144-34.00E.

Budinger, A. Bowman: *See—*
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,408,141., Cl. 315-56.000.

Budzowski, Ronald L., to General Tire & Rubber Company, The. Apparatus and method of applying an elongated strip to a tire component building drum. 4,407,684., Cl. 156-133.000.

Bullard, Harold L.: *See—*
Hilton, Carl W.; and Bullard, Harold L., 4,407,385., Cl. 180-175.000.

Bulley, Raymond M.; MacPherson, William F.; and Youhas, Robert F., to Bell Telephone Laboratories, Incorporated. Protection circuit. 4,408,248., Cl. 361-91.000.

Burdekin, Norman: *See—*
Bolton, Philip; and Burdekin, Norman, 4,407,481., Cl. 251-353.000.

Burkhardt, Gary L.: *See—*
King, James D.; Burkhardt, Gary L.; Barton, John R.; and Matzkanin, George A., 4,408,160., Cl. 324-209.000.

Burlington Industries, Inc.: *See—*
Imlah, Forbes, 4,407,164., Cl. 73-831.000.

Burmakin, Viktor I.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Burns, Orville M., Jr.: *See—*
Hardman, Charles A.; and Burns, Orville M., Jr., 4,407,154., Cl. 73-66.000.

Burr, Peter; Chase, Brian D.; Paton, Andrew; and Sowter, Brian R., to International Business Machines Corporation. Method and apparatus for determining beam dimensions at the screen of a shadow mask cathode-ray tube. 4,408,163., Cl. 324-404.000.

Burrage, Robert G., to Lucas Industries Limited. Gas turbine engine fuel control system. 4,407,118., Cl. 60-39.281.

Burroughs Corporation: *See—*
Kuchinsky, Saul; Bellman, Robert H.; and Ogle, James A., 4,407,934., Cl. 430-314.000.
Neill, Jimmie; Webb, Nathaniel; and Hartig, Norman F., 4,408,343., Cl. 382-52.000.
Shima, George T., 4,408,300., Cl. 364-900.000.

Burton, John H.; Staehle, Bradford G.; and Kuyava, Charles C., to American Medical Systems, Inc. Penile prosthesis with improved fluid control. 4,407,278., Cl. 128-79.000.

Busch, Josef: *See—*
Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, 4,407,867., Cl. 427-365.000.

Bush, Alvin A.: *See—*
Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, Jr., 4,408,270., Cl. 363-132.000.

Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., to International Business Machines Corporation. Method and apparatus for calibrating a linear array scanning system. 4,408,231., Cl. 358-280.000.

Buss, Albert, to G. O. Stumpf GmbH & Co. Apparatus for depositing a web of material on a table. 4,407,439., Cl. 226-20.000.

Butler, David S.: *See—*
Hines, Howard E.; Hardy, Rex F. G.; and Butler, David S., 4,407,337., Cl. 140-124.000.

Butler, Gordon K.; and Beeson, Don E., to Cummins Engine Company, Inc. Expandable hydraulic tappet with a variable exit valve. 4,407,241., Cl. 123-90.160.

Butler, James G. Apparatus for supplying high voltage pulses. 4,407,255., Cl. 123-595.000.

Butterwick, Gilbert N., to RCA Corporation. Method for processing a lithium-sodium-antimony photocathode. 4,407,857., Cl. 427-74.000.

Butterworth Systems Inc.: *See—*
Furness, John A.; and Haggerty, John, 4,407,678., Cl. 134-167.00R.

Buzgo, Alexander W., to RCA Corporation. Spacer for use in testing information recorded discs. 4,408,320., Cl. 369-290.000.

Buzzi, Gunter, to Hans Grohe GmbH & Co. KG. Rubber articles, particularly moulded rubber articles for use in sanitary fittings. 4,407,890., Cl. 428-408.000.

B.V. Neratoom: *See—*
Woudstra, Nico, 4,407,773., Cl. 376-299.000.

Byrne, Joseph B., to Dow Chemical Company, The. Flame retardant polycarbonates. 4,408,005., Cl. 524-421.000.

Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., to GTE Laboratories Incorporated. Dual cathode beam mode fluorescent lamp. 4,408,141., Cl. 315-56.000.

C. A. Weidmuller GmbH & Co.: *See—*
Schulze, Rainer, 4,407,174., Cl. 81-9.50A.

C-I-L Inc.: *See—*
Pollock, David C. I., 4,407,718., Cl. 210-626.000.

C & J Clark Limited: *See—*
Ralphs, George T., 4,407,034., Cl. 12-142.0RS.

C. K. Kelley & Sons, Inc.: *See—*
Jones, William W., 4,407,613., Cl. 406-84.000.

C. R. Bard, Inc.: *See—*
Streisinger, Erwin, 4,407,301., Cl. 128-774.000.

Caddell, John P. Valve stem cover apparatus. 4,407,324., Cl. 137-382.000.

Calabro, Anthony D. Heat dissipator for a dual in line integrated circuit package. 4,408,220., Cl. 357-81.000.

Camco, Incorporated: *See—*
Eatwell, William D.; and Garner, James K., Jr., 4,408,092., Cl. 174-88.00R.

Campbell, Carl M., to MasterCard International, Inc. Security system for electronic funds transfer system. 4,408,203., Cl. 340-825.340.

Campbell, Michael E.: *See—*
Ross, Robert E.; Fleckenstein, Lee J.; and Campbell, Michael E., 4,407,930., Cl. 430-223.000.

Campione, A. Peter. Book holder. 4,407,523., Cl. 281-46.000.

Campling, Nicholas J.: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

Canada, Her Majesty the Queen in right of: *See—*
East, Phillip C.; and McGowan, Malcolm S., 4,408,164., Cl. 328-117.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
MacGregor, Clive D. R.; and Forsyth, William G., 4,407,723., Cl. 252-192.000.

Cannon, Robert A.: *See—*
Cerutti, Henry P.; Cannon, Robert A.; and Lindbloom, George G., 4,407,609., Cl. 405-146.000.

Canon Kabushiki Kaisha: *See—*
Sato, Hiroshi; Takatsu, Kei; and Isohata, Junji, 4,407,627., Cl. 414-757.000.
Sugiura, Yutaka, 4,408,318., Cl. 369-261.000.
Ushiro, Tatsuzo, 4,408,239., Cl. 360-107.000.
Yokota, Hideo; and Tsuji, Sadahiko, 4,407,568., Cl. 350-467.000.

Canron Corporation: *See—*
Pearson, Eugene W.; and Short, Wilbur G., 4,407,628., Cl. 414-35.000.

Caretta, Renato: *See—*
Bandel, Paolo; and Caretta, Renato, 4,407,346., Cl. 152-209.00R.

Carlingswitch, Inc.: *See—*
Sorenson, Richard W., 4,408,106., Cl. 200-68.000.

Carlo, Dennis J.: *See—*
Kniskern, Peter J.; Hagopian, Arpi; and Carlo, Dennis J., 4,407,949., Cl. 435-101.000.

Carnation Company: *See—*
Lathrop, Patrick J.; and Rothrock, Phyllis C., 4,407,840., Cl. 426-629.000.

Carr Lane Mfg. Co.: *See—*
Okolischan, Raymond A., 4,407,493., Cl. 269-93.000.

Carr, Richard P.: *See—*
Mitchell, Mark L., III; and Carr, Richard P., 4,408,058., Cl. 549-33.000.

Carrier Corporation: *See—*
Hayes, Richmond S., Jr., 4,407,137., Cl. 62-80.000.

Caruso, Andrew: *See—*
Caruso, Vincent C.; and Caruso, Andrew, 4,407,507., Cl. 273-400.000.

Caruso, Peter J., to Bendix Corporation, The. Electromechanical decoder. 4,408,188., Cl. 340-345.000.

Caruso, Vincent C.; and Caruso, Andrew. Portable soccer goal. 4,407,507., Cl. 273-400.000.

Casciari, Raoul: *See—*
Raj, Kuldip; and Casciari, Raoul, 4,407,508., Cl. 277-1.000.

Casden, Martin S., to Soundcraft, Inc. Key card and method of manufacturing same. 4,408,122., Cl. 235-449.000.

Catanzarite, Vincent O. Anode neutralization. 4,407,910., Cl. 429-57.000.

Caterpillar Tractor Co.: *See—*
Suckow, David S., 4,407,348., Cl. 152-410.000.

Caunes, Pierre: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.

Celanese Corporation: *See—*
Cincotta, David E.; and Berardinelli, Frank M., 4,408,022., Cl. 525-444.000.

Celotex Corporation, The: *See—*
Betzner, William E.; Holtman, Richard K.; and Hill, Allen R., 4,407,771., Cl. 264-115.000.

Centre National de la Recherche Scientifique (CNRS): *See—*
Roques, Bernard; and Lecomte, Jeanne-Marie, 4,407,794., Cl. 424-177.000.

Ceramatec, Inc.: *See—*
Virkar, Anil V.; and Miller, Gerald R., 4,407,912., Cl. 429-104.000.

Cerutti, Henry P.; Cannon, Robert A.; and Lindbloom, George G., to White Consolidated Industries, Inc. Apparatus and method for providing negative buoyancy for tunnel forms. 4,407,609., Cl. 405-146.000.

Ceskoslovenska akademie ved: *See—*
Kahovec, Jaroslav; Matejka, Zdenek; and Tomasek, Josef, 4,407,978., Cl. 521-56.000.

Chadwick, Henry D.; and Matthews, David W., to Satellite Business Systems. Method and apparatus for measuring signal to noise ratio in a TDMA communications system. 4,408,322., Cl. 370-17.000.

Champion International Corporation: *See—*
Boyle, Daniel J., 4,407,417., Cl. 211-69.100.
Dutcher, Daniel P., 4,407,409., Cl. 206-45.310.
McLaren, Edwin C.; and Adamek, David J., 4,407,426., Cl. 220-306.000.

Chan, David C. K., to Chevron Research Company. Fungicidal 3-(N-acyl-N-arylamino)- and 3-(N-thionoacyl-N-arylamino)-gamma-butyrolactones and gamma-thiobutyrolactones. 4,407,817., Cl. 424-275.000.

Chase, Brian D.: *See—*
Burr, Peter; Chase, Brian D.; Paton, Andrew; and Sowter, Brian R., 4,408,163., Cl. 324-404.000.

Chatfield, David A.: *See—*
Manzonelli, Carmen C.; and Chatfield, David A., 4,407,679., Cl. 148-2.000.

Chatterjea, Probir K.: *See—*
Shore, Daniel B.; and Chatterjea, Probir K., 4,407,328., Cl. 137-625.600.

Cheatum, Leo G., to Deere & Company. Bale discharge gate latch assembly for cylindrical baler. 4,407,190., Cl. 100-88.000.

Chegolya, Alexandr S.; Malykh, Vladimir A.; Chizhov, Vladimir V.; Yankov, Viktor I.; and Pirog, Nikolai I. Method of aerodynamic production of liquid and solid disperse aerosols. 4,407,450., Cl. 239-8.000.

Chemie Linz Aktiengesellschaft: *See—*
Dobramysl, Wilhelm; Stern, Gerhard; and Raml, Walter, 4,408,045., Cl. 544-196.000.

Chemische Fabrik Stockhausen & Cie: *See—*
Goossens, Bernhard; Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,408,073., Cl. 564-204.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Flatau, Karsten, 4,408,015., Cl. 525-227.000.
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,407,977., Cl. 521-56.000.

Chen, Robert H. K.: *See—*
Kanojia, Ramesh M.; Wachter, Michael P.; and Chen, Robert H. K., 4,408,060., Cl. 549-332.000.

Chen, Wuu-Nan: *See—*
Bertram, James L.; Ham, George E.; and Chen, Wuu-Nan, 4,408,062., Cl. 549-517.000.

Cherniak, George S. Arcuate swing check valve. 4,407,325., Cl. 137-514.000.

Cherpeck, Richard E., to Chevron Research Company. Fungicidal, herbicidal and plant growth regulating pyridyl-containing ethers. 4,407,806., Cl. 424-263.000.

Chertov, Viktor A.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Chevrier, Claude: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.

Chevron Research Company: *See—*
Brown, Robert J. S., 4,408,161., Cl. 324-303.000.
Chan, David C. K., 4,407,817., Cl. 424-275.000.
Cherpeck, Richard E., 4,407,806., Cl. 424-263.000.
Hutchison, Stanley O.; and Anderson, Glenn W., 4,407,369., Cl. 166-291.000.

Chichibu Cement Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, 4,407,652., Cl. 432-58.000.

Chidester, James R.: *See—*
Trammell, W. Edgar; Young, James E.; Chidester, James R.; and Walker, Ralph S., 4,407,280., Cl. 128-205.260.

Children's Medical Center Corporation, The: *See—*
Culver, Norman D., 4,407,299., Cl. 128-731.000.

Chiovini, Jacky; Margolis, Geoffrey; and Blanc, Maurice, to Societe d'Assistance Technique pour Produits Nestle S.A. Recovery of xanthine stimulants from aqueous media. 4,407,834., Cl. 426-422.000.

Chirkin, Alexandr F.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Chiroff, Lee M. Golf aid device. 4,407,079., Cl. 36-127.000.

Chizhov, Vladimir V.: *See—*
Chegolya, Alexandr S.; Malykh, Vladimir A.; Chizhov, Vladimir V.; Yankov, Viktor I.; and Pirog, Nikolai I., 4,407,450., Cl. 239-8.000.

Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., to American Can Company. Retortable packaging structure. 4,407,873., Cl. 428-35.000.

Christiansen, Dieter, to U.S. Philips Corporation. X-Ray examination apparatus having a movable X-ray source. 4,408,341., Cl. 378-196.000.

Christidis, Yani: *See—*
Schouteeten, Alain; and Christidis, Yani, 4,408,070., Cl. 562-470.000.

Chu, Wei-Kan; and Howard, James K., to International Business Machines Corporation. Thin film capacitors. 4,408,254., Cl. 361-321.000.

Chubb & Son's Lock and Safe Company Limited: *See—*
Ward, Geoffrey M., 4,407,204., Cl. 109-59.00R.

Chung, Frank H. Y., to Stauffer Chemical Company. Leavening system in fructose containing baked goods. 4,407,835., Cl. 426-552.000.

Ciba-Geigy AG: *See—*
Fryberg, Mario; and Leppard, David G., 4,407,935., Cl. 430-487.000.

Ciba-Geigy Corporation: *See—*
Eckert, Theodor, 4,407,824., Cl. 424-329.000.
Hauser, Hanspeter; and Eckert, Peter, 4,407,882., Cl. 428-159.000.
Merz, Jurg; Wegmuller, Hans; and Wurster, Rudolf F., 4,407,976., Cl. 521-36.000.

Cicenas, Christopher W., to Perfection Corporation. Tab-type coupling and method. 4,407,526., Cl. 285-27.000.

Cieplik, Ronald J., to Wang Laboratories, Inc. Paper feed and fusing assembly for magnetographic printing apparatus. 4,408,210., Cl. 346-74.200.

Cincotta, David E.; and Berardinelli, Frank M., to Celanese Corporation. Blend of polyalkylene terephthalate and wholly aromatic polyester and process for producing the same. 4,408,022., Cl. 525-444.000.

Cirio, Marius: *See—*
Resneau, Jean C.; Cirio, Marius; and Doyen, Jean, 4,408,219., Cl. 357-80.000.

Citation-Walther Corporation, The: *See—*
Lyon, Lyndall W.; Reneau, Phillip G.; and Coppock, Paul G., 4,407,192., Cl. 101-7.000.

Citizen Watch Co., Ltd.: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.

Clagnaz, Mario W., Jr.: *See—*
Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, 4,407,393., Cl. 188-2.00F.

Clarion Co., Ltd.: *See—*
Ariga, Shoji; and Tomita, Tadashi, 4,408,095., Cl. 381-24.000.
Takahashi, Yuji; Hayashi, Hideki; Takagi, Satoshi; and Yukio, Ito, 4,408,237., Cl. 360-96.300.

Clark, David F.: *See—*
White, Douglass A.; Moore, Susan J.; and Clark, David F., 4,408,199., Cl. 340-731.000.

Clements, Shannon K. Portable boom support for vehicles. 4,407,419., Cl. 212-189.000.

Clerc, Jean F.; and Vinet, Francoise, to Commissariat a l'Energie Atomique. Process for positioning the liquid medium in a liquid medium cell and a corresponding cell. 4,407,870., Cl. 428-1.000.

Clore, Wayne G.; Norton, Charles T.; and Thompson, William P., to Recreation Equipment Corp. Lock for a flexible element. 4,407,498., Cl. 273-1.50R.

Clorox Company, The: *See—*
Colborn, David W.; Coyne, Thomas S.; Emrie, Carolyn P.; and Munk, Barbara H., 4,407,231., Cl. 119-1.000.

Clyde, Robert A. Fiber fermenter. 4,407,954., Cl. 435-161.000.

Coach and Car Equipment Corporation: *See—*
Kehl, Norman J.; and Unser, Richard D., 4,407,542., Cl. 297-103.000.

Coal Industry (Patents) Limited: *See—*
Robinson, Joseph G.; and Brain, Sally A., 4,408,003., Cl. 524-364.000.

Coates, Clarence A., Jr.: *See—*
Weaver, Max A.; Coates, Clarence A., Jr.; and Fisher, John G., 4,407,749., Cl. 260-155.000.

Colborn, David W.; Coyne, Thomas S.; Emrie, Carolyn P.; and Munk, Barbara H., to Clorox Company, The. Movement activated odor control animal litter. 4,407,231., Cl. 119-1.000.

Cole, Francis X.; and Van Voorhis, Deborah M., to Millipore Corporation. Immobilized antibody or antigen for immunoassay. 4,407,943., Cl. 435-7.000.

Colgate-Palmolive Company: *See—*
Denzler, Rudolph E., 4,407,647., Cl. 425-208.000.
Eigen, Edward; Brachman, Dina I.; and Friedman, Stuart D., 4,407,789., Cl. 424-69.000.
Feldt, Adolf; Jarnuszak, Ulrich; Kiessling, Rolf; and Kock, Juergen, 4,407,341., Cl. 141-97.000.
Kiozpeoplou, Diana, 4,407,788., Cl. 424-49.000.

Collet, Alain: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.

Collette, Wayne N.: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Collette, Wayne N., 4,407,651., Cl. 432-11.000.

Collins Industries, Inc.: *See—*
Hinze, William W., 4,407,616., Cl. 410-3.000.

Collins, Thomas W.; and Croskey, Charles L., to Optimizer Control Corporation. Self-optimizing voltage control of an induction motor. 4,408,149., Cl. 318-729.000.

Colon, George M., Jr. Pool-cover apparatus and method. 4,407,027., Cl. 4-502.000.

Com-Dor Supply Limited: *See—*
Huelsekopf, Alfred G., 4,407,100., Cl. 52-212.000.

Combe, Hubert. Pipe hanger. 4,407,479., Cl. 248-59.000.

Combs, Marvin. Container closure lid including drinking spout means. 4,407,425., Cl. 220-269.000.

Combustion Engineering, Inc.: *See—*
Schukei, Glen E.; and Formanek, Frank J., 4,407,236., Cl. 122-390.000.

Commissariat a l'Energie Atomique: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.
Clerc, Jean F.; and Vinet, Francoise, 4,407,870., Cl. 428-1.000.

Commonwealth Edison Co.: *See—*
Reeder, Gareld S., 4,407,601., Cl. 403-25.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Shepherd, Ian C.; Pearson, Ian G.; and Gibson, Donald C., 4,407,112., Cl. 56-13.400.

Communications Systems, Inc.: *See—*
Meyer, Daniel, 4,407,559., Cl. 339-126.00R.

Compagnie Generale d'Electricite: *See—*
Appleby, Anthony J.; and Crepy, Gilles, 4,407,908., Cl. 429-45.000.

Conard, Richard D.: *See—*
Cortellini, Conrad; Boone, Jeffrey S.; and Conard, Richard D., 4,408,277., Cl. 364-300.000.

Concool International Ltd.: *See—*
Garside, David, 4,407,144., Cl. 62-384.000.
Conners, John A., to Scott & Fetzer Company, The. Scissors with cushioned stop. 4,407,069., Cl. 30-254.000.
Conoco Inc.: *See—*
Davis, Richard L.; Graf, Harlan G.; Edwards, Don L.; and Macbeth, William B., Jr., 4,407,700., Cl. 202-85.000.
Yoon, Heeyoung, 4,407,238., Cl. 123-3.000.
Container Corporation of America: *See—*
Watson, William H.; and Straw, John E., 4,407,442., Cl. 229-28.00R.
Continental Disc Corporation: *See—*
Thompson, Leonard K., 4,408,194., Cl. 340-626.000.
Continental Group, Inc., The: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Collette, Wayne N., 4,407,651., Cl. 432-11.000.
Hekal, Ihab M., 4,407,429., Cl. 220-359.000.
Heyn, William M., 4,407,424., Cl. 220-269.000.
Walter, John, 4,407,423., Cl. 220-260.000.
Cook, Clarence E.; Smith, Glynn E.; and Monaghan, Richard C., to United States of America, National Aeronautics and Space Administration. Inflatable device for installing strain gage bridges. 4,407,686., Cl. 156-215.000.
Cooke, Claude E., Jr., to Exxon Production Research Co. Method for preventing annular fluid flow. 4,407,365., Cl. 166-249.000.
Cooper, Robert P.: *See—*
Lieber, Clement E.; Cooper, Robert P.; and Estes, Michael S., 4,407,304., Cl. 128-786.000.
Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., to General Electric Company. Stabilized polycarbonate compositions. 4,407,996., Cl. 524-167.000.
Cooperman, Michael; and Geller, William L., to GTE Laboratories Incorporated. Comparator circuit with improved reliability and/or speed. 4,408,133., Cl. 307-362.000.
Coppock, Paul G.: *See—*
Lyon, Lyndall W.; Reneau, Phillip G.; and Coppock, Paul G., 4,407,192., Cl. 101-7.000.
Coquelet, Claude: *See—*
Bonne, Claude; Coquelet, Claude; and Sincholle, Daniel, 4,407,812., Cl. 424-273.00R.
Corbeil, Roger; and Sadaranganey, Gobind, to Robin Hood Multifoods Inc. Dusting blend. 4,407,839., Cl. 426-622.000.
Core, Grant M. Method and means for wrapping round bales. 4,407,113., Cl. 56-341.000.
Corl, Paul D.: *See—*
Suarez, Joe R., Jr.; Schwartz, Henry L.; Rossetti, Anthony J.; and Corl, Paul D., 4,407,293., Cl. 128-660.000.
Cornelius, Jack M.; and Braunagel, Egon V., to Flo-Tech Dampers, Inc. Adjustable packing gland assembly for movable blade damper. 4,407,510., Cl. 277-12.000.
Corning Glass Works: *See—*
Kerko, David J.; and Morse, David L., 4,407,966., Cl. 501-13.000.
Cortellini, Conrad; Boone, Jeffrey S.; and Conard, Richard D., to Moorfeed Corporation. Holographic imager. 4,408,277., Cl. 364-300.000.
Costes, Didier: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.
Costruzioni Aeronautiche Giovanni Agusta S.p.A.: *See—*
Mussi, Fiorenzo; and Pariani, Emilio, 4,407,688., Cl. 156-242.000.
Cote, Paul T., to General Electric Company. Dual voltage power supply with input filter. 4,408,154., Cl. 323-340.000.
Cotrel, Claude; Farge, Daniel; and Taurand, Gerard, to Rhone-Poulenc Sante. 1,2-Dithiol-3-ylideneammonium derivatives, compositions and use. 4,407,797., Cl. 424-246.000.
Covington, Robert A., Jr.; and Ekiner, Okan M., to Du Pont de Nemours, E. I., and Company. In-line coagulation process for fluoroelastomer emulsions. 4,408,038., Cl. 528-485.000.
Cowell, David, to Sybron Corporation. High voltage protection circuit for x-ray systems. 4,408,247., Cl. 361-79.000.
Coyne, Thomas S.: *See—*
Colborn, David W.; Coyne, Thomas S.; Emrie, Carolyn P.; and Munk, Barbara H., 4,407,231., Cl. 119-1.000.
Crabb, Trevor A.; Jackson, Graham C.; and Jupp, Philip A., to National Research Development Corporation. Biocidal compounds and compositions. 4,407,670., Cl. 71-67.000.
Craig, Stephen R., to Du Pont de Nemours, E. I., and Company. Apparatus and method for powder bagging. 4,407,108., Cl. 53-451.000.
Crandall, Melvin. Umbrella reversal prevention structure. 4,407,317., Cl. 135-27.000.
Crawford, John O.: *See—*
Noiles, Douglas G.; and Crawford, John O., 4,407,286., Cl. 128-334.00R.
Crepy, Gilles: *See—*
Appleby, Anthony J.; and Crepy, Gilles, 4,407,908., Cl. 429-45.000.
Cretaz, Franco: *See—*
Adamoli, Contardo; Bernardis, Francesco; Cretaz, Franco; and Gaiardo, Mario, 4,407,591., Cl. 400-124.000.
Critikon: *See—*
Lentz, David J.; and Houghton, Richard B., 4,407,298., Cl. 128-713.000.
Crivelio, James V., to General Electric Company. Photoinitiators. 4,407,759., Cl. 260-440.000.
Crocker, Zenas; and Wise, David V., to Synergistics Chemicals Limited. Polymeric resins and blends with high packing densities. 4,407,987., Cl. 523-322.000.
Crofts, David, to Raychem Limited. Dimensionally recoverable article with adhesive portion. 4,407,888., Cl. 428-355.000.
Cromemco Inc.: *See—*
Kausch, Marvin L., 4,407,536., Cl. 292-29.000.
Croskey, Charles L.: *See—*
Collins, Thomas W.; and Croskey, Charles L., 4,408,149., Cl. 318-729.000.
Croslin, Michael E., to Medtek Corporation. Method and apparatus for performing non-invasive blood pressure and pulse rate measurements. 4,407,297., Cl. 128-681.000.
Crossley, Thomas J.; and Zinge, Thomas P., to Westinghouse Electric Corp. Method of separating molybdenum from uranium. 4,407,781., Cl. 423-15.000.
Crumb, Donald A., to Bendix Corporation, The. Master cylinder. 4,407,121., Cl. 60-562.000.
Culshaw, Brian; Ball, Peter R.; Kingsley, Stuart A.; and Davies, David E. N., to National Research Development Corporation. Signal transmission systems. 4,408,354., Cl. 455-610.000.
Culver, Norman D., to Children's Medical Center Corporation, The. Brain electrical activity mapping. 4,407,299., Cl. 128-731.000.
Cummins Engine Company, Inc.: *See—*
Butler, Gordon K.; and Beeson, Don E., 4,407,241., Cl. 123-90.160.
Cundall, Robert L.; and Walker, Derek, to Bristol-Myers Company. 6-Amino penam derivatives. 4,407,755., Cl. 260-245.20R.
Cushman Electronics, Inc.: *See—*
Bradley, Jack, 4,408,227., Cl. 358-139.000.
Cyr, Reno R. J. Unique fan-powered water vessel. 4,407,215., Cl. 114-289.000.
D. L. Auld Company, The: *See—*
Waugh, Robert E., 4,407,421., Cl. 215-12.00R.
Waugh, Robert E., 4,407,421., Cl. 215-12.00R.
Daghe, Joseph L.; and Sands, Robert E., to Mueller Co. Coupling joint for telescoping tubular members. 4,407,482., Cl. 251-148.000.
Dahmen, Kurt: *See—*
Goossens, Bernhard; Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,408,073., Cl. 564-204.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Shima, Mutsuo; Aoyama, Kensuke; and Naka, Michiro, 4,407,881., Cl. 428-156.000.
Daido Tokushuko Kabushiki Kaisha: *See—*
Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, 4,407,682., Cl. 148-128.000.
Daihatsu Motor Co., Ltd.: *See—*
Kawakatsu, Shiro; and Honda, Shoji, 4,407,132., Cl. 60-716.000.
Daimler-Benz Aktiengesellschaft: *See—*
Koukal, Heinz; and Grimm, Hermann, 4,407,167., Cl. 74-501.00R.
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., to Staar S. A. Method and apparatus for controlling tape transport apparatus for cassettes. 4,408,335., Cl. 377-18.000.
Damon Corporation: *See—*
Lim, Franklin, 4,407,957., Cl. 435-178.000.
Dana Corporation: *See—*
Patel, Hiralal V.; and Rudolph, Samuel A., 4,407,532., Cl. 285-256.000.
Daniel, Hugh O., deceased; and by Daniel, Lucille W., administratrix. Mixing nozzle. 4,407,456., Cl. 239-423.000.
Daniel, Lucille W., administratrix: *See—*
Daniel, Hugh O., deceased; and Daniel, Lucille W., administratrix, 4,407,456., Cl. 239-423.000.
Danielson, Robert L.: *See—*
Bosco, Peter M.; and Danielson, Robert L., 4,407,836., Cl. 426-576.000.
Danly Machine Corporation: *See—*
Tack, Carl E., Jr.; and Heiberger, Francis E., 4,408,281., Cl. 364-476.000.
Dapo, Roland F., to North American Philips Corporation. Aluminum electrode capacitor and glycol fill electrolyte therefor. 4,408,258., Cl. 361-433.000.
DasGupta, Sumit, to International Business Machines Corp. High speed binary counter. 4,408,336., Cl. 377-34.000.
Dashley, Federick J.: *See—*
Baker, Richard R.; and Dashley, Federick J., 4,407,308., Cl. 131-336.000.
Data Plus, Inc.: *See—*
Pritz, George E.; and Novakowski, Robert, 4,408,100., Cl. 179-27.00D.
Dataproducts Corporation: *See—*
Jezbera, Val K., 4,407,194., Cl. 101-93.340.
Davey-Loewy Limited: *See—*
Gronbech, Robert W., 4,407,151., Cl. 72-241.000.
Davidson, John R.; and Heyman, Joseph S. Error correction method and apparatus for electronic timepieces. 4,407,589., Cl. 368-201.000.
Davies, David E. N.: *See—*
Culshaw, Brian; Ball, Peter R.; Kingsley, Stuart A.; and Davies, David E. N., 4,408,354., Cl. 455-610.000.
Davies, James F.; and Tune, John B., to Lever Brothers Company. Fabric washing process and detergent composition for use therein. 4,407,722., Cl. 252-91.000.
Davila, Jose E.; and Gomez, Jim H., to General Railway Signal Company. Fare collection system and components thereof. 4,407,312., Cl. 133-8.00R.

Davis, Dean T.: *See—*
Sisson, Edwin D.; Morrow, Robert S.; Stoutenburg, Donn V.; and Davis, Dean T., 4,408,285., Cl. 364-508.000.
Davis, Richard L.; Graf, Harlan G.; Edwards, Don L.; and Macbeth, William B., Jr., to Conoco Inc. Injector for calciner. 4,407,700., Cl. 202-85.000.
Davis, Robert E. Potentiometric diagnosis of cancer in vivo. 4,407,300., Cl. 128-734.000.
Davydov, Anatoly B.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.
Dawson, John W.: *See—*
Theodosiou, George E.; and Dawson, John W., 4,408,297., Cl. 364-569.000.
Dean, Andrew; and Hutt, Peter R., to Independent Broadcasting Authority. Test apparatus for monitoring digital transmissions. 4,408,226., Cl. 358-139.000.
Deaner, Frederick R., to Eaton Industries, Inc. Tool for wood dowel striation. 4,407,342., Cl. 144-2.00R.
De Boer, Rudolf: *See—*
Lippe, Frank; Ottenhof, Henricus A. W. E. M.; and De Boer, Rudolf, 4,407,747., Cl. 260-120.000.
de Cachard, Maurice B.: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.
Decavele, Dominique, to Transac-Alcatel-Compagnie pour le Development des Transactions Automatiques. Individualized portable object such as a credit card. 4,408,119., Cl. 235-382.000.
Decker, Wilton K. Warning light housing. 4,408,264., Cl. 362-200.000.
Deckman, Harry W.; and Dunsmuir, John H., to Exxon Research and Engineering Co. Natural lithographic fabrication of microstructures over large areas. 4,407,695., Cl. 156-643.000.
Decuyper, Jean-Claude: *See—*
Nahon, Richard; and Decuyper, Jean-Claude, 4,408,233., Cl. 358-284.000.
Deepsea Ventures, Inc.: *See—*
Latimer, John P.; and Miller, Glenn E., 4,407,716., Cl. 210-155.000.
Deere & Company: *See—*
Cheatum, Leo G., 4,407,190., Cl. 100-88.000.
Fichtinger, Gary R., 4,407,400., Cl. 192-12.00C.
Degawa, Takashi: *See—*
Sasaya, Kazushi; Degawa, Takashi; Suginuma, Atsushi; and Sato, Noriharu, 4,407,638., Cl. 417-269.000.
DeGraff, Harold F., Jr., to Sybron Corporation. Slant culture tube rack. 4,407,958., Cl. 435-287.000.
de Jager, Arie, to IHC Holland N.V. Ship comprising one or more derricks such as a dredge with suction pipe derricks. 4,407,420., Cl. 212-199.000.
de Kanter, Scipio, to Halliburton Company. Downhole tool cooling system. 4,407,136., Cl. 62-64.000.
DeLau, Bruce E. Portable quick chilling and heating appliance. 4,407,356., Cl. 165-132.000.
Dellevoet, John C., to Schlegel Corporation. Pile brush for conditioning a moving surface. 4,407,219., Cl. 118-60.000.
Denet, Robert W.: *See—*
Haviv, Fortuna; and Denet, Robert W., 4,407,803., Cl. 424-258.000.
Deng, Shye-Yih. Safety boiler with high efficiency. 4,407,235., Cl. 122-161.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Yui, Tohru; Hirai, Hachiro; and Takamaru, Ken, 4,407,863., Cl. 427-213.000.
Denner, Peter; Ernst, Egon; and Jockel, Alfred, to Balcke-Durr Aktiengesellschaft. Apparatus for pulling transverse fins onto a plurality of pipes. 4,407,064., Cl. 29-726.000.
Dennison Manufacturing Company: *See—*
Fotland, Richard A.; and Beaudet, Leo A., 4,408,214., Cl. 346-159.000.
Pitts, Warren R., 4,407,856., Cl. 427-54.100.
Denton, Dean A.; and Feldwick, Raymond D., to W. R. Grace & Co. Spray dried vanadia catalyst and method of preparing it. 4,407,734., Cl. 502-9.000.
Denzler, Rudolph E., to Colgate-Palmolive Company. Soap plodder for elimination of wet cracking. 4,407,647., Cl. 425-208.000.
DePasquale, Ralph J.; and Schuman, Paul D., to PCR Incorporated. Process for making 5-fluorouracil. 4,408,048., Cl. 544-313.000.
Derkach, Galina M.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.
deRosset, Armand J.; Priegnitz, James W.; and Landis, Arthur M., to UOP Inc. Process for the separation of methylparaben from wintergreen oil. 4,408,065., Cl. 560-67.000.
Desmier, Pierre: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.
Deuschle, Roger A.; and Mueller, Charles P., to International Mill Service, Inc. Method for the recovery of iron units from flue dust generated in a steel making process. 4,407,672., Cl. 75-10.00R.
Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler: *See—*
Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, 4,408,064., Cl. 556-427.000.
Devissaguet, Michelle: *See—*
Arnaud, Jean-Claude; and Devissaguet, Michelle, 4,407,801., Cl. 424-250.000.
DeZeeuw, John R.; and Stasko, Irene, to Pfizer Inc. Fermentation process for production of alpha-isopropylmalic acid. 4,407,953., Cl. 435-145.000.
Dhein, Rolf: *See—*
Hocker, Jurgen; Wieder, Wolfgang; and Dhein, Rolf, 4,408,027., Cl. 526-185.000.
Diacont, George P., Jr.: *See—*
Jung, Wilhelm H.; and Diacont, George P., Jr., 4,407,210., Cl. 112-167.000.
Diamond Giken Co., Ltd.: *See—*
Murata, Yasunori, 4,407,263., Cl. 125-15.000.
Diasonics, Inc.: *See—*
Suarez, Joe R., Jr.; Schwartz, Henry L.; Rossetti, Anthony J.; and Corl, Paul D., 4,407,293., Cl. 128-660.000.
Dick, Heinz, to Ford Motor Company. Lamp, in particular for motor vehicles. 4,408,265., Cl. 362-238.000.
Dick, Kevin F., to Dow Chemical Company, The. Stabilized polycarbonate compositions containing cyclic carbonates and organophosphorous compounds. 4,407,995., Cl. 524-108.000.
Dicke, William C., to Singer Company, The. Dovetail fixture. 4,407,344., Cl. 144-87.000.
Didier Engineering GmbH: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.
Flockenhaus, Claus; Hackler, Erich; and Lommerzheim, Werner, 4,407,974., Cl. 518-711.000.
Wagener, Dietrich; Fach, Horst; Sauder, Peter; and Abel, Otto, 4,407,701., Cl. 202-99.000.
Diehl GmbH & Co.: *See—*
Bender, Richard; and Feuerstake, Eugen, 4,407,200., Cl. 102-202.500.
Diesel Kiki Company, Ltd.: *See—*
Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, 4,407,354., Cl. 165-42.000.
Diffracto Ltd.: *See—*
Pryor, Timothy R.; and Hageniers, Omer L., 4,407,379., Cl. 177-52.000.
Digital Equipment Corporation: *See—*
Gershnow, Abraham H., 4,407,595., Cl. 400-212.000.
DiGiulio, Adolph V., to Atlantic Richfield Company. Process for forming fast-cool vinyl aromatic expandable polymers. 4,407,979., Cl. 521-59.000.
Dilley, James E.: *See—*
Betts, Malcolm C.; Graves, Alan F.; Pascoe, Frederick M.; and Dilley, James E., 4,408,189., Cl. 340-347.0DD.
Dilliner, Monte M., to Jones, Oscar E.; Lowe, Ted; and Robinson, Robert H., a part interest. Fuel injection system. 4,407,252., Cl. 123-504.000.
Disque, Donny R.: *See—*
Sollner, George H.; Disque, Donny R.; and Knerr, Allan R., 4,408,032., Cl. 528-48.000.
DNA Medical, Inc.: *See—*
Steuer, Robert R.; Rogers, Robert K.; and Horne, Robert H., 4,407,295., Cl. 128-670.000.
Dobramysl, Wilhelm; Stern, Gerhard; and Raml, Walter, to Chemie Linz Aktiengesellschaft. Process for the preparation of partially etherified methylolmelamines. 4,408,045., Cl. 544-196.000.
Dr. C. Otto & Comp. G.m.b.H.: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,407,702., Cl. 202-263.000.
Dr. Franz & Rutenbeck: *See—*
Wilmsmann, Hans-Peter; and Koch, Fritz E., 4,407,471., Cl. 248-63.000.
Dr. Lo. Zambeletti S.p.A.: *See—*
Signorini, Massimo; Trebbi, Attilio; and Molteni, Luigi, 4,408,074., Cl. 564-361.000.
Dr. Ruhland Nachf. GmbH: *See—*
Stemberger, Axel, 4,407,787., Cl. 424-28.000.
Doi, Shunichi: *See—*
Nakamura, Tomio; and Doi, Shunichi, 4,408,067., Cl. 560-215.000.
Dolhyj, Serge R.; and Paparizos, Christos, to Standard Oil Company. Motor fuel additives derived from shale oil. 4,407,661., Cl. 44-78.000.
Dollinger Corporation: *See—*
Hawley, Clyde W., 4,407,663., Cl. 55-347.000.
Domhan, Gerold; Hartl, Franz; and Vogelgsang, Kurt, to International Standard Electric Corporation. Internal locking arrangement for a switch machine. 4,408,111., Cl. 200-318.000.
Donath, Erwin. Enhanced selectivity signal receiver. 4,408,350., Cl. 455-206.000.
Dorner, Stefan: *See—*
Schretzmann, Klaus; Dorner, Stefan; and Schumacher, Gustav, 4,407,774., Cl. 376-300.000.
Doughty, Dennis J.: *See—*
Seymour, Raymond K.; and Doughty, Dennis J., 4,408,174., Cl. 335-20.000.
Dow Chemical Company, The: *See—*
Bertram, James L.; Ham, George E.; and Chen, Wuu-Nan, 4,408,062., Cl. 549-517.000.
Byrne, Joseph B., 4,408,005., Cl. 524-421.000.

Dick, Kevin F., 4,407,995., Cl. 524-108.000.
Ginter, Sally P.; and Hamlin, Percy J., 4,408,001., Cl. 524-376.000.
Hefner, Robert E., Jr., 4,408,033., Cl. 528-72.000.
Messick, Virginia B., 4,407,991., Cl. 524-83.000.
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,408,025., Cl. 526-119.000.

Dow Corning Corporation: *See—*
Marko, Ollie W., 4,408,030., Cl. 528-10.000.

Doyen, Jean: *See—*
Resneau, Jean C.; Cirio, Marius; and Doyen, Jean, 4,408,219., Cl. 357-80.000.

Doyle, Gerald, to Exxon Research and Engineering Co. Conversion of methanol to methyl acetate using iron-cobalt catalyst. 4,408,069., Cl. 560-232.000.

Drake, Charles A.; and Turk, Stanley D., to Phillips Petroleum Company. Polyamide from cycloaliphatic substituted nonane diamine. 4,408,037., Cl. 528-346.000.

Drake, Cyril F.; and Tripp, Mary, to International Standard Electric Corporation. Glass composition. 4,407,786., Cl. 424-14.000.

Drall, Jerry E. Electrical plug safety device. 4,407,554., Cl. 339-37.000.

Dreikorn, Barry A.; and Kramer, Kenneth E., to Eli Lilly and Company. Diphenylamine compounds. 4,407,820., Cl. 424-304.000.

Dresow, Bernd: *See—*
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.

Dresser Industries, Inc.: *See—*
Hanson, Lloyd D.; and Purton, Robert M., 4,407,327., Cl. 137-625.300.
Lichtenberg, Heinz D., 4,407,157., Cl. 73-151.000.
Shore, Daniel B.; and Chatterjea, Probir K., 4,407,328., Cl. 137-625.600.

Dreyer, Heinz, to Amazonen Werke H. Dreyer. Drill having disk furrow openers. 4,407,207., Cl. 111-85.000.

Dril-Quip, Inc.: *See—*
Reimert, Larry E., 4,407,527., Cl. 285-27.000.

Du Pont Canada Inc.: *See—*
Boocock, John R. B.; and Murray, Ronald E., 4,407,841., Cl. 426-656.000.
Elgie, John M., 4,407,982., Cl. 521-122.000.
White, George, 4,407,690., Cl. 156-244.270.

Dudding, Charles H., to Rockwell International Corporation. High power level mixer apparatus. 4,408,352., Cl. 455-295.000.

Duke, Gary L.: *See—*
Garscadden, Alan; Bailey, William F.; and Duke, Gary L., 4,407,705., Cl. 204-157.10H.

Dumas, David H.: *See—*
Bankert, Ralph A.; and Dumas, David H., 4,407,994., Cl. 524-107.000.

Dumas, Theodore A., to Rockwell International Corporation. Dip brazed corrugated feed horn. 4,408,208., Cl. 343-786.000.

Dunsmuir, John H.: *See—*
Deckman, Harry W.; and Dunsmuir, John H., 4,407,695., Cl. 156-643.000.

Du Pont de Nemours, E. I., and Company: *See—*
Covington, Robert A., Jr.; and Ekiner, Okan M., 4,408,038., Cl. 528-485.000.
Craig, Stephen R., 4,407,108., Cl. 53-451.000.
Gintis, Daniel; and Most, Elmer E., Jr., 4,407,889., Cl. 428-398.000.
Schmidt, Alfred J.; and Shearon, Michael H., 4,407,177., Cl. 83-300.000.
Schmidt, William K., 4,407,804., Cl. 424-260.000.
Schmidt, William K., 4,407,805., Cl. 424-260.000.
Wills, Paul E., 4,408,002., Cl. 524-357.000.

Dupuy, Guy: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.

DuRoss, Robert M.: *See—*
Reiner, Barry C.; and DuRoss, Robert M., 4,407,596., Cl. 400-253.000.

Dutcher, Daniel P., to Champion International Corporation. Carton with suspension support and blank for forming same. 4,407,409., Cl. 206-45.310.

Duval, Eugene F.: *See—*
Backlund, Jonathan C.; and Duval, Eugene F., 4,407,477., Cl. 248-499.000.

Duvdevani, Ilan, to Exxon Research and Engineering Co. High impact polypropylene resin. 4,407,998., Cl. 524-229.000.

Dvorachek, Harold A.; and Klimek, Boleslaw M., to Echlin Inc. Electrical connector having threaded connection between receptacle parts. 4,407,553., Cl. 339-14.00P.

Dvoskin, Semen I.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Dziuba, Peter; and Goeft, Manfred, to Zahnradfabrik Friedrichshafen, Aktiengesellschaft. Wheel head for driving wheels of vehicles. 4,407,382., Cl. 180-10.000.

Eads, Carl W.; and Haynes, Ronald L., to PPG Industries, Inc. Monomeric composition of a diol bis(allyl carbonate), a dispersed polymer, and a multifunctional acrylate monomer, and polymers prepared therefrom. 4,408,016., Cl. 525-277.000.

East, Phillip C.; and McGowan, Malcolm S., to Canada, Her Majesty the Queen in right of. Compensation circuit for radiation detectors. 4,408,164., Cl. 328-117.000.

Eastman Kodak Company: *See—*
Evans, Steven, 4,407,931., Cl. 430-223.000.
Joseph, Brian J., 4,407,576., Cl. 354-135.000.
Ross, Robert E.; Fleckenstein, Lee J.; and Campbell, Michael E., 4,407,930., Cl. 430-223.000.
Stavinoha, Jerome L.; and McCollum, Anthony W., 4,408,029., Cl. 526-321.000.
Vanier, Noel R., 4,407,928., Cl. 430-214.000.
Weaver, Max A.; Coates, Clarence A., Jr.; and Fisher, John G., 4,407,749., Cl. 260-155.000.

Eaton Corporation: *See—*
Landau, Richard F., 4,407,708., Cl. 204-192.00R.
Nat, Gursharan P. S., 4,408,109., Cl. 200-153.00J.

Eaton Industries, Inc.: *See—*
Deaner, Frederick R., 4,407,342., Cl. 144-2.00R.

Eatwell, William D.; and Garner, James K., Jr., to Camco, Incorporated. Electrical feedthrough. 4,408,092., Cl. 174-88.00R.

Echlin Inc.: *See—*
Dvorachek, Harold A.; and Klimek, Bolesiaw M., 4,407,553., Cl. 339-14.00P.

Eckert, Peter: *See—*
Hauser, Hanspeter; and Eckert, Peter, 4,407,882., Cl. 428-159.000.

Eckert, Theodor, to Ciba-Geigy Corporation. Pharmaceutical preparations for topical application which contain salts of alkanecarboxylic acids, novel carboxylic acid salts and the production thereof. 4,407,824., Cl. 424-329.000.

Ecklin, Gaston, to BBC Brown, Boveri & Company, Ltd. Totally enclosed surge arrester. 4,408,249., Cl. 361-127.000.

Economics Laboratory, Inc.: *See—*
Oakes, Thomas R.; and Sadler, James L., 4,407,790., Cl. 424-78.000.

Edmonson, Glenn V. Self-contained portable temperature-controlled chamber for medications and the like. 4,407,133., Cl. 62-3.000.

Edrich, Jochen. Procedure and apparatus for noncontacting measurement of subcutaneous temperature distributions. 4,407,292., Cl. 128-653.000.

Edwards, Don L.: *See—*
Davis, Richard L.; Graf, Harlan G.; Edwards, Don L.; and Macbeth, William B., Jr., 4,407,700., Cl. 202-85.000.

Edwards, Roy E., to Lucas Industries Limited. Hydraulic braking systems for vehicles. 4,407,547., Cl. 303-6.00A.

Egger, Herman, to Varian Associates, Inc. Sensitivity NMR probe. 4,408,162., Cl. 324-318.000.

Eheim, Franz, to Robert Bosch GmbH. Shutoff apparatus for fuel injection pumps. 4,407,245., Cl. 123-359.000.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for self-igniting internal combustion engines. 4,407,249., Cl. 123-449.000.

Eheim, Franz; Hofer, Gerald; and Links, Heins, to Robert Bosch GmbH. Fuel injection system. 4,407,250., Cl. 123-450.000.

Ehrenreich Electronics, Inc.: *See—*
Smith, Blaine M.; and Taylor, James A., 4,408,308., Cl. 367-197.000.

Ehrreich, John E., to Ercon, Inc. Novel electroconductive compositions and powder for use therein. 4,407,674., Cl. 75-251.000.

Eibe, Werner W., to White Consolidated Industries, Inc. Method for rotating and conveying coils. 4,407,407., Cl. 198-777.000.

Eigen, Edward; Brachman, Dina I.; and Friedman, Stuart D., to Colgate-Palmolive Company. Ground rice hulls in body powders. 4,407,789., Cl. 424-69.000.

Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, to BASF Aktiengesellschaft. Thiazol-2-yl-oxamic acid derivatives, and therapeutic agents containing these compounds. 4,407,810., Cl. 424-270.000.

Eisai Co., Ltd.: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Eisenwerk-Gesellschaft Maximilianshutte mbH: *See—*
Brotzmann, Karl; and Fassbinder, Hans-Georg, 4,407,490., Cl. 266-266.000.

Eisfeller, Richard C., to Ex-Cell-O Corporation. Vacuum metallized dielectric substrates and method of making same. 4,407,871., Cl. 428-31.000.

Ekiner, Okan M.: *See—*
Covington, Robert A., Jr.; and Ekiner, Okan M., 4,408,038., Cl. 528-485.000.

Ekstrom, Lars A., to Raywall Kommanditbolag. Shielding windows. 4,407,349., Cl. 160-98.000.

Elder, David I. M. Weighing device for fluent material. 4,407,380., Cl. 177-145.000.

Elders, Gerald W. Stabilizer for an earth structure. 4,407,610., Cl. 405-259.000.

Electromark, division of Mohawk International Inc.: *See—*
Kitchen, William D., 4,408,215., Cl. 346-165.000.

Elgie, John M., to Du Pont Canada Inc. Process for the manufacture of foamed structures. 4,407,982., Cl. 521-122.000.

Elgue, Jean: *See—*
Blanc, Claude; Galy, Henry; and Elgue, Jean, 4,407,784., Cl. 423-228.000.

Eli Lilly and Company: *See—*
Dreikorn, Barry A.; and Kramer, Kenneth E., 4,407,820., Cl. 424-304.000.
Kukolja, Stjepan; and Pfeil, Janice L., 4,407,750., Cl. 260-239.00A.

Elings, Virgil B.; and Nicoli, David F., to University of California, The Regents of The. Homogeneous fluoroimmunoassay involving sensing radiation for forward and back directions. 4,407,964., Cl. 436-518.000.

Elliott Brothers (London) Limited: *See—*
Ellis, Stafford M., 4,407,564., Cl. 350-174.000.

Elliott, Franklin E., to Maxwell Products, Inc. Safety device for an adjustable bed. 4,407,030., Cl. 5-66.000.

Elliott, Kenneth L. Arrow lock. 4,407,261., Cl. 124-41.00A.

Ellis, Stafford M., to Elliott Brothers (London) Limited. Head-up displays. 4,407,564., Cl. 350-174.000.

Ellison, Arthur E. Surgical apparatus. 4,407,277., Cl. 128-82.000.

Elsmark A/S: *See—*
Rasmussen, Jorgen B., 4,408,185., Cl. 340-310.00A.

Emberger, Roland: *See—*
Kopsel, Manfred; and Emberger, Roland, 4,407,740., Cl. 252-522.00R.

Emerson Electric Co.: *See—*
Holston, Roger W.; and Hinesley, Carl P., 4,408,150., Cl. 318-779.000.

Emhart Industries, Inc.: *See—*
Walters, Charles W., 4,408,257., Cl. 361-433.000.

Emigh, Charles F.; and Goldin, Morris, to Hughes Helicopters, Inc. Tactical wire-cutter system for helicopters. 4,407,467., Cl. 244-17.110.

Emrie, Carolyn P.: *See—*
Colborn, David W.; Coyne, Thomas S.; Emrie, Carolyn P.; and Munk, Barbara H., 4,407,231., Cl. 119-1.000.

Endo, Shigeru: *See—*
Tanaka, Kenji; and Endo, Shigeru, 4,407,827., Cl. 426-19.000.

Endoh, Koichi: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,407,959., Cl. 435-288.000.

Energy Harvesters Corporation: *See—*
Brefka, Paul E., 4,407,265., Cl. 126-193.000.

Engel, John F., to FMC Corporation. 4-Heterocyclic-substituted-2-indanyl alcohols and insecticidal ester derivatives. 4,408,057., Cl. 548-562.000.

Engelhard Corporation: *See—*
Pfefferle, William C., 4,407,785., Cl. 423-659.000.

Engelhardt, Friedrich: *See—*
Wilski, Hans; Interthal, Werner; and Engelhardt, Friedrich, 4,407,321., Cl. 137-13.000.

Enjouji, Katsuhisa; Ikeizumi, Hiroshi; Murata, Kenji; and Nishikawa, Syozaburo, to Nippon Sheet Glass Co., Ltd. Method and apparatus for forming oxide coating by reactive sputtering technique. 4,407,709., Cl. 204-192.0SP.

Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, to Honda Giken Kogyo Kabushiki Kaisha. Motor vehicle. 4,407,383., Cl. 180-54.00E.

Ensinger, James W.; and Hendrickson, Melvin C., to Zenith Radio Corporation. Subscription television decoder. 4,408,225., Cl. 358-120.000.

Erbstoesser, Steven R., to Exxon Production Research Company. Polyurethane ball sealers for well treatment fluid diversion. 4,407,368., Cl. 166-284.000.

Ercon, Inc.: *See—*
Ehrreich, John E., 4,407,674., Cl. 75-251.000.

Erickson, Allen H.: *See—*
Teletzke, Gerald H.; and Erickson, Allen H., 4,407,717., Cl. 210-616.000.

Eriksson, Sten: *See—*
Andersson, Nils E.; Eriksson, Sten; and Sinner, Bengt, 4,407,698., Cl. 162-258.000.

Ernsberger, Fred M., to PPG Industries, Inc. Low temperature reduction process for large photomasks. 4,407,891., Cl. 428-410.000.

Ernst, Egon: *See—*
Denner, Peter; Ernst, Egon; and Jockel, Alfred, 4,407,064., Cl. 29-726.000.

ESAB Aktiebolag: *See—*
Hansen, Erik, 4,407,621., Cl. 414-433.000.

Eskinazi, Victoria; Kirner, John F.; and Wilson, Charles R., to Air Products and Chemicals, Inc. Process for preparing a platinum/-rhodium catalyst. 4,407,738., Cl. 502-334.000.

Essex Group Inc.: *See—*
Young, Glen C., 4,408,299., Cl. 364-900.000.

Estberg, Magnus F. O., to Kenogard AB. Process for treating wood. 4,407,076., Cl. 34-9.500.

Estes, John H., to Texaco Inc. Crystalline zeolite HP. 4,407,782., Cl. 423-328.000.

Estes, Michael E.: *See—*
Wessells, Forrest; Startari, Joseph; and Estes, Michael E., 4,407,862., Cl. 427-144.000.

Estes, Michael S.: *See—*
Lieber, Clement E.; Cooper, Robert P.; and Estes, Michael S., 4,407,304., Cl. 128-786.000.

Estreicher, Herbert: *See—*
Flint, Dennis H.; and Estreicher, Herbert, 4,407,671., Cl. 71-113.000.

Etsion, Izhak, to Technion Research & Development Foundation Ltd. Zero-leakage non-contacting mechanical face seal for rotary machines. 4,407,509., Cl. 277-3.000.

Eu, Victor K.; Feng, Milton; Zielinski, Timothy T.; and Whelan, James M., to Hughes Aircraft Company. Multi-range doping of epitaxial III-V layers from a single source. 4,407,694., Cl. 156-606.000.

Eue, Ludwig: *See—*
Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,408,055., Cl. 548-125.000.

Evans, Peter R. Cleaning implement for boats. 4,407,213., Cl. 114-222.000.

Evans, Steven, to Eastman Kodak Company. Photographic products and processes employing nondiffusible yellow azo metal complexed dye-releasing compounds and precursors thereof. 4,407,931., Cl. 430-223.000.

Ex-Cell-O Corporation: *See—*
Eisfeller, Richard C., 4,407,871., Cl. 428-31.000.

Excel Industries: *See—*
Spretnjak, Steve A.; and Anthony, Colin, 4,407,093., Cl. 49-391.000.

Exxon Production Research Co.: *See—*
Cooke, Claude E., Jr., 4,407,365., Cl. 166-249.000.
Erbstoesser, Steven R., 4,407,368., Cl. 166-284.000.

Exxon Research and Engineering Co.: *See—*
Bartok, William; and Freund, Howard, 4,407,206., Cl. 110-347.000.
Deckman, Harry W.; and Dunsmuir, John H., 4,407,695., Cl. 156-643.000.
Doyle, Gerald, 4,408,069., Cl. 560-232.000.
Duvdevani, Ilan, 4,407,998., Cl. 524-229.000.
King, Nigel D., 4,407,636., Cl. 417-118.000.
Merchant, Philip, Jr.; and Smith, Dean L., Jr., 4,407,706., Cl. 204-190.000.
Merchant, Philip, Jr.; and Smith, Dean L., Jr., 4,407,707., Cl. 204-190.000.
Moustakas, Theodore D.; Morel, Don L.; and Abeles, Benjamin, 4,407,710., Cl. 204-192.00S.

Fabriques de Tabac Reunies, S.A.: *See—*
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,407,307., Cl. 131-308.000.

Fach, Horst: *See—*
Wagener, Dietrich; Fach, Horst; Sauder, Peter; and Abel, Otto, 4,407,701., Cl. 202-99.000.

Fafco, Inc.: *See—*
Backlund, Jonathan C.; and Duval, Eugene F., 4,407,477., Cl. 248-499.000.

Fales, John D. Electrokinetic display system. 4,408,202., Cl. 340-785.000.

Farge, Daniel: *See—*
Cotrel, Claude; Farge, Daniel; and Taurand, Gerard, 4,407,797., Cl. 424-246.000.

Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., to American Can Company. Drying agent in multi-layer polymeric structure. 4,407,897., Cl. 428-516.000.

Fassbinder, Hans-Georg: *See—*
Brotzmann, Karl; and Fassbinder, Hans-Georg, 4,407,490., Cl. 266-266.000.

Fatula, Joseph J., Jr.; Garbarino, Paul L.; and Shepard, Joseph F., to International Business Machines Corporation. Method of making dense vertical FET's. 4,407,058., Cl. 29-571.000.

Featherstone, William, to Imperial Chemical Industries PLC. Amine separation process. 4,407,703., Cl. 203-43.000.

Feldt, Adolf; Jarnuszak, Ulrich; Kiessling, Rolf; and Kock, Juergen, to Colgate-Palmolive Company. Apparatus for removing contents of damaged aerosol containers. 4,407,341., Cl. 141-97.000.

Feldwick, Raymond D.: *See—*
Denton, Dean A.; and Feldwick, Raymond D., 4,407,734., Cl. 502-9.000.

Feng, Milton: *See—*
Eu, Victor K.; Feng, Milton; Zielinski, Timothy T.; and Whelan, James M., 4,407,694., Cl. 156-606.000.

Ferguson, Andrew M.; and Malick, Howard M., to Mushroom Associates. Processing of mushrooms with reduced weight loss. 4,407,832., Cl. 426-281.000.

Ferguson, Gerald D., to United States of America, Navy. Laser device with intraresonator harmonic generator. 4,408,329., Cl. 372-21.000.

Ferrar, Carl M., to United Technologies Corporation. Fluid jet displacement detector. 4,407,161., Cl. 73-505.000.

Ferrofluidics Corporation: *See—*
Moskowitz, Ronald; Raj, Kuldip; and Kern, James L., 4,407,518., Cl. 277-1.000.
Raj, Kuldip; and Casciari, Raoul, 4,407,508., Cl. 277-1.000.

Fesmire, Lloyd W. Cement spraying machine for tires. 4,407,220., Cl. 118-64.000.

Fessel, Rudolf; von Knorre, Karl-Friedrich; Tillich, Peter; and Herbermann, Gottfried, to Olympia Werke AG. Word processor with display device. 4,408,302., Cl. 364-900.000.

Feuerstake, Eugen: *See—*
Bender, Richard; and Feuerstake, Eugen, 4,407,200., Cl. 102-202.500.

Fiala, Ernst, to Volkswagenwerk Aktiengesellschaft. Drive unit. 4,407,398., Cl. 192-0.055.

Fichtinger, Gary R., to Deere & Company. Winch control valve. 4,407,400., Cl. 192-12.00C.

Figgie International Inc.: *See—*
Kralik, Douglas R.; and Mitchell, Hal D., 4,407,021., Cl. 2-416.000.

Firestone Tire & Rubber Company, The: *See—*
Gunesin, Binnur, 4,408,014., Cl. 525-218.000.
Maglio, Ralph A., 4,407,772., Cl. 264-294.000.

Fisher, John G.: *See—*
Weaver, Max A.; Coates, Clarence A., Jr.; and Fisher, John G., 4,407,749., Cl. 260-155.000.

Fisher & Paykel Limited: *See—*
Smith, Dennis E., 4,407,077., Cl. 34-108.000.

Fitch, John L.; and Spencer, Donald B., to Boeing Company, The. System for transmitting power from a solar satellite to earth and

subsequent conversion to a 60 Hertz three phase signal. 4,408,206., Cl. 343-352.000.

Flatau, Karsten, to Chemische Werke Huls Aktiengesellschaft. Production of polyvinyl chloride and acrylate copolymer modifier useful for high-speed calendar manufacture of sheet stock. 4,408,015., Cl. 525-227.000.

Fleckenstein, Lee J.: *See—*
Ross, Robert E.; Fleckenstein, Lee J.; and Campbell, Michael E., 4,407,930., Cl. 430-223.000.

Fleming, Rebecca P.; Lawhorne, Samuel, Jr.; Mele, John J.; and Prasad, Chandrika, to International Business Machines Corporation. Process for producing an improved quality electrolessly deposited nickel layer. 4,407,860., Cl. 427-98.000.

Flint, Dennis H.; and Estreicher, Herbert, to Shell Oil Company. Use of 3-aminocyclohexadienecarboxylic acids for controlling the growth of unwanted plants. 4,407,671., Cl. 71-113.000.

Flo-Tech Dampers, Inc.: *See—*
Cornelius, Jack M.; and Braunagel, Egon V., 4,407,510., Cl. 277-12.000.

Flock, John W.; and Matson, Stephen L., to General Electric Company. Slurry granulation-steam stripping process for solvent removal. 4,408,040., Cl. 528-500.000.

Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, to Didier Engineering GmbH. Process and apparatus for the dry cooling of coke. 4,407,699., Cl. 201-39.000.

Flockenhaus, Claus; Hackler, Erich; and Lommerzheim, Werner, to Thyssengas GmbH; and Didier Engineering GmbH. Method of and apparatus for catalytic conversion of gases. 4,407,974., Cl. 518-711.000.

FMC Corporation: *See—*
Engel, John F., 4,408,057., Cl. 548-562.000.
Kempf, Dennis D., 4,407,434., Cl. 222-214.000.
Milberger, Lionel J.; Horn, Charles E.; and Kluttz, Marvin H., 4,407,183., Cl. 91-1.000.
Tullis, Barclay J.; Tan, Randy J.; and McKeon, John F., 4,408,195., Cl. 340-685.000.

Foerster, Hans-Juergen: *See—*
Merger, Franz; and Foerster, Hans-Juergen, 4,408,079., Cl. 568-463.000.

Foltier, Pierre: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Fonderie et Ateliers des Sablons: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Foote, Danny R., to Berkley and Company, Inc. Aramid reinforced thermocouple cable. 4,408,088., Cl. 136-226.000.

Foraison, Dominique; and Leveque, Alain, to Rhone-Poulenc Industries. Reductive stripping of uranium values from wet-process phosphoric acid. 4,407,780., Cl. 423-10.000.

Ford Aerospace & Communication Corporation: *See—*
Hankland, Lawrence B., 4,407,685., Cl. 156-212.000.

Ford Motor Company: *See—*
Boaz, Premakaran T., 4,407,847., Cl. 427-35.000.
Dick, Heinz, 4,408,265., Cl. 362-238.000.
Kummer, Joseph T.; and Oei, Djong-Gie, 4,407,902., Cl. 429-15.000.

Forenade Fabriksverken: *See—*
Backlund, Erik L., 4,407,351., Cl. 165-1.000.

Formanek, Frank J.: *See—*
Schukei, Glen E.; and Formanek, Frank J., 4,407,236., Cl. 122-390.000.

Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Azolyloxy-carboxylic acid n-oxy-amide compounds. 4,408,055., Cl. 548-125.000.

Forsyth, William G.: *See—*
MacGregor, Clive D. R.; and Forsyth, William G., 4,407,723., Cl. 252-192.000.

Forward, Kevin E.: *See—*
Ward, Geoffrey A.; and Forward, Kevin E., 4,408,192., Cl. 340-407.000.

Fosse, Navarro T., to Hydrotile Machinery Company. Counter rotating packerhead assembly. 4,407,648., Cl. 425-457.000.

Foster, Elton G., to Shell Oil Company. Process for oxidation of isobutane. 4,408,081., Cl. 568-571.000.

Fotland, Richard A.; and Beaudet, Leo A., to Dennison Manufacturing Company. Thermally regulated ion generation. 4,408,214., Cl. 346-159.000.

Foundacon BV: *See—*
van Weele, Abraham F., 4,407,612., Cl. 405-285.000.

Fowkes, Robert A., to Uniroyal, Inc. Belting fabric. 4,407,333., Cl. 139-415.000.

Fowler, David M., III, to Sperry Corporation. Key cycle timer control providing a universal keyboard. 4,408,191., Cl. 340-365.00R.

Fowler, John H., to Smith International, Inc. Packoff apparatus. 4,407,530., Cl. 285-140.000.

Fox, David A., to Westinghouse Electric Corp. Optically isolated solid state relay. 4,408,131., Cl. 307-311.000.

Fox, David A., to Westinghouse Electric Corp. Break-before-make solid state relay. 4,408,137., Cl. 307-598.000.

Fox, Stephen M., to RCA Corporation. Attitude control system for spacecraft utilizing the thruster plume. 4,407,469., Cl. 244-169.000.

Francis, Gerald T. Brick panel insulation with load bearing clip. 4,407,104., Cl. 52-309.400.

Frank, Wilhelm. Multi-pane insulating glass and method for its production. 4,407,105., Cl. 52-397.000.

Fransen, Jan J. B., to U.S. Philips Corporation. Gettering device and method. 4,407,657., Cl. 445-17.000.

Fraser, Allan B., to John Hopkins University, The. Frequency encoding closed loop circuit with transducer. 4,408,169., Cl. 331-65.000.

Fraser, David B.; and Watts, Roderick K., to Bell Telephone Laboratories, Incorporated. Alignment marks for electron beam lithography. 4,407,933., Cl. 430-296.000.

Freeman, Albert J. Seismic alarm system. 4,408,196., Cl. 340-690.000.

Frenchtown American Corp.: *See—*
Luks, Daniel W., 4,407,967., Cl. 501-81.000.

Freund, Howard: *See—*
Bartok, William; and Freund, Howard, 4,407,206., Cl. 110-347.000.

Friedman, Stuart D.: *See—*
Eigen, Edward; Brachman, Dina I.; and Friedman, Stuart D., 4,407,789., Cl. 424-69.000.

Friedrich, Ludwig: *See—*
Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, 4,407,810., Cl. 424-270.000.

Friedrichsfeld GmbH, Steinzeug- und Kunststoffwerke: *See—*
Heimke, Gunther; and Griss, Peter, 4,407,022., Cl. 3-1.913.

Fromson, Bertram W. Opposed piston internal combustion engine with special scavenging means. 4,407,240., Cl. 123-56.0BC.

Fryberg, Mario; and Leppard, David G., to Ciba-Geigy AG. Photographic recording material. 4,407,935., Cl. 430-487.000.

Fuji Electric Co., Ltd.: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,407,959., Cl. 435-288.000.

Fuji Photo Film Co., Ltd.: *See—*
Ichijima, Seiji; Watanabe, Toshiyuki; Furutachi, Nobuo; and Seto, Nobuo, 4,407,936., Cl. 430-505.000.
Miyatsuka, Hajime; Kasuga, Akira; and Yamada, Yasuyuki, 4,407,901., Cl. 428-694.000.
Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, 4,407,939., Cl. 430-536.000.
Okita, Tsutomu; Naruo, Kyoichi; and Akashi, Goro, 4,407,853., Cl. 427-44.000.
Sugimoto, Naohiko; Maekawa, Yukio; and Ichikawa, Yasunori, 4,407,937., Cl. 430-527.000.

Fuji Xerox Co., Ltd.: *See—*
Itoh, Satoru, 4,408,232., Cl. 358-280.000.
Moriguchi, Fujio; and Kurata, Masami, 4,408,212., Cl. 346-76.0PH.

Fujii, Masanori: *See—*
Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, 4,407,923., Cl. 430-106.600.

Fujii, Yasuhiko, to Victor Company of Japan, Limited. Data acquisition circuit. 4,408,333., Cl. 375-95.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,407,798., Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,408,042., Cl. 544-22.000.

Fujita, Masanori, to Seikosha Co., Ltd. Electronic timer. 4,407,587., Cl. 368-108.000.

Fujita, Noriko: *See—*
Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, 4,407,941., Cl. 430-566.000.

Fujita, Toshio, to Kett Electric Laboratory. Electric resistance type wide range moisture meter. 4,408,128., Cl. 324-65.00R.

Fujitsu Limited: *See—*
Higuchi, Mitsuo, 4,408,168., Cl. 331-57.000.
Sakurai, Junji, 4,407,060., Cl. 29-576.00E.

Fujiwara, Haruyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Pressure pulse absorbing device. 4,407,330., Cl. 138-30.000.

Fujizoki Pharmaceutical Co., Ltd.: *See—*
Kasahara, Yasushi; and Ashihara, Yoshihiro, 4,407,944., Cl. 435-18.000.

Fukai, Tamotsu: *See—*
Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, 4,407,291., Cl. 128-635.000.

Fukasawa, Akira; Yoshimura, Masakatsu; Kaneoya, Tatsuo; and Takahashi, Kenji, to Sumitomo Chemical Company, Limited. Process for producing aminoanthraquinone. 4,407,756., Cl. 260-378.000.

Fukui, Kiyozumi, to Teijin Seiki Company, Limited. Speed change device. 4,407,170., Cl. 74-805.000.

Fukuoka Paper Manufacturing Co., Ltd.: *See—*
Kato, Hideo; and Wada, Hiroto, 4,407,898., Cl. 428-542.800.

Fukuoka, Tatsuhiko: *See—*
Takenaka, Akira; and Fukuoka, Tatsuhiko, 4,407,513., Cl. 277-96.100.

Fukushima, Naoto; Hidaka, Kunihiko; and Iwata, Kazuroh, to Nissan Motor Co., Ltd. Shock absorber with pressure-relief mechanism. 4,407,397., Cl. 188-282.000.

Fung, Steven: *See—*
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, 4,408,077., Cl. 568-441.000.

Furlong, Owen D.; and Moore, Leonard, to Normalair-Garrett (Holdings) Limited. Fluoric partial pressure sensors. 4,407,153., Cl. 73-23.000.

Furness, John A.; and Haggerty, John, to Butterworth Systems Inc. Sludge removal machine. 4,407,678., Cl. 134-167.00R.

Furuhashi, Kenshi: *See—*
Iwata, Masayosi; Furuhashi, Kenshi; and Ito, Hiroyasu, 4,408,104., Cl. 200-61.540.

Furukawa, Kenji: *See—*
Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, 4,407,354., Cl. 165-42.000.

Furuta, Kenji, to Olympus Optical Co., Ltd. Recording apparatus with automatic actuator. 4,408,234., Cl. 360-69.000.

Furutachi, Nobuo: *See—*
Ichijima, Seiji; Watanabe, Toshiyuki; Furutachi, Nobuo; and Seto, Nobuo, 4,407,936., Cl. 430-505.000.

Furuya, Setsuko; Ohnishi, Shunji; and Kato, Masao, to Agnency of Industrial Science and Technology; and Ministry of International Trade and Industry. Poly-2(-2'-thiazolyl containing azo)-5-maleimide benzoic acid chelate polymer. 4,408,012., Cl. 525-161.000.

Fushiki, Takeshi; Tagawa, Tohru; and Kawakami, Satoru, to Mitsubishi Chemical Industries Ltd. Water repellent adhesive composition for wooden material. 4,407,999., Cl. 524-276.000.

G. D. Searle & Co.: *See—*
Mazur, Robert H.; Tyner, David A.; and Hallinan, Eleanor A., 4,407,746., Cl. 260-112.50E.

G. O. Stumpf GmbH & Co.: *See—*
Buss, Albert, 4,407,439., Cl. 226-20.000.

Gabel, Jonathan. Method and apparatus for high efficiency operation of electromechanical energy conversion devices. 4,408,147., Cl. 318-493.000.

Gachot, Jean. Butterfly valve. 4,407,483., Cl. 251-287.000.

Gaffal, Karl: *See—*
Schneider, Wolfangang; Peters, Josef; and Gaffal, Karl, 4,407,631., Cl. 415-122.00R.

Gagliani, John; and Long, John V. Closed cell polyimide foams and methods of making same. 4,407,980., Cl. 521-99.000.

Gaiardo, Mario: *See—*
Adamoli, Contardo; Bernardis, Francesco; Cretaz, Franco; and Gaiardo, Mario, 4,407,591., Cl. 400-124.000.

Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, to Fabriques de Tabac Reunies, S.A. Process for the preparation of tobacco and tobacco prepared according to this process. 4,407,307., Cl. 131-308.000.

Galatha, Matthew J., to International Business Machines Corporation. Code format for bank check identification. 4,408,121., Cl. 235-494.000.

Gall, Martin, to Upjohn Company, The. Substituted piperazinyl-1,2,4-triazoles. 4,408,049., Cl. 544-360.000.

Gallagher Electronics Limited: *See—*
Standing, Colin A., 4,407,485., Cl. 256-10.000.

Galow, Manfred: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.

Galy, Henry: *See—*
Blanc, Claude; Galy, Henry; and Elgue, Jean, 4,407,784., Cl. 423-228.000.

GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Hoppe, Joachim, 4,407,525., Cl. 283-110.000.

Garbarino, Paul L.: *See—*
Fatula, Joseph J., Jr.; Garbarino, Paul L.; and Shepard, Joseph F., 4,407,058., Cl. 29-571.000.

Garcia, Rodrigo A.; Moreno, Roel; and Martinovich, Robert J., to Phillips Petroleum Company. Foamable polymeric composition comprising propylene polymer and hydrated alumina. 4,407,768., Cl. 264-54.000.

Gardner, Beth A.: *See—*
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,053., Cl. 546-226.000.
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,054., Cl. 546-226.000.

Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., to USM Corporation. Combination toe and side lasting machine. 4,407,033., Cl. 12-10.100.

Garner, James K., Jr.: *See—*
Eatwell, William D.; and Garner, James K., Jr., 4,408,092., Cl. 174-88.00R.

Garnsworthy, Russell K. Joining of yarns by splicing. 4,407,117., Cl. 57-22.000.

Garscadden, Alan; Bailey, William F.; and Duke, Gary L., to United States of America, Air Force. Production of negative ions of hydrogen. 4,407,705., Cl. 204-157.10H.

Garside, David, to Concool International Ltd. Storage chamber with expendable refrigeration system. 4,407,144., Cl. 62-384.000.

Gay, Michael J., to Motorola, Inc. Phase detector for television tuning systems and the like. 4,408,222., Cl. 358-24.000.

Gaymans, Reinoud J.; and Bour, Edmond H. J. P., to Stamicarbon BV. Preparation of polytetramethylene adipamide. 4,408,036., Cl. 528-335.000.

Gehrke, Russell P., to American Can Company. Sterilizable flexible packaging structure. 4,407,874., Cl. 428-35.000.

Geller, William L.: *See—*
Cooperman, Michael; and Geller, William L., 4,408,133., Cl. 307-362.000.

General Electric Company: *See—*
Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, Jr., 4,408,270., Cl. 363-132.000.
Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., 4,407,996., Cl. 524-167.000.
Cote, Paul T., 4,408,154., Cl. 323-340.000.
Crivello, James V., 4,407,759., Cl. 260-440.000.
Flock, John W.; and Matson, Stephen L., 4,408,040., Cl. 528-500.000.
Hooke, John W., 4,407,911., Cl. 429-94.000.
Howell, Edward K., 4,408,186., Cl. 340-310.00A.
Imam, Imdad, 4,408,294., Cl. 364-508.000.
Lee, Garland G., 4,408,000., Cl. 524-315.000.
Lee, Minyoung; and Szala, Lawrence E., 4,407,968., Cl. 501-87.000.
Li, Ming K., 4,408,087., Cl. 568-724.000.
Mahony, John E., 4,408,228., Cl. 358-167.000.
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,407,885., Cl. 428-246.000.
Peters, Philip H.; and Itani, Abdallah M., 4,408,268., Cl. 363-62.000.
Rampel, Guy, 4,407,913., Cl. 429-137.000.
Seymour, Raymond K.; and Doughty, Dennis J., 4,408,174., Cl. 335-20.000.
Terry, Vincent G., Jr., 4,407,602., Cl. 403-336.000.

General Foods Limited: *See—*
Holley, Edward J., 4,407,837., Cl. 426-578.000.

General Mining Union Corporation Limited: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,407,415., Cl. 209-556.000.

General Motors Corporation: *See—*
Benton, Robert L.; Martinsons, Dainis O.; and Stimpson, Flave F., 4,407,511., Cl. 277-24.000.
Landenberger, Ulric, 4,407,162., Cl. 73-527.000.
Lindbert, Brook A., 4,407,387., Cl. 180-247.000.
Schramme, Stephan H.; and Kelley, Mark A., 4,407,042., Cl. 16-2.000.
Sundeen, Arthur R., 4,407,155., Cl. 73-116.000.
Thompson, Ricky D., 4,408,140., Cl. 310-234.000.

General Railway Signal Company: *See—*
Davila, Jose E.; and Gomez, Jim H., 4,407,312., Cl. 133-8.00R.

General Tire & Rubber Company, The: *See—*
Budzowski, Ronald L., 4,407,684., Cl. 156-133.000.

Genske, Roger P.: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,407,873., Cl. 428-35.000.

George, Henry C.: *See—*
Greenway, Peter R.; Sulowski, Andrew C.; and George, Henry C., 4,407,391., Cl. 182-9.000.

Georgian Manufacturing Ltd.: *See—*
Millen, Theodore I., 4,408,193., Cl. 340-566.000.

Gerber, Donald J., to Koppers Company, Inc. High efficiency coke oven regenerator checker brick. 4,407,352., Cl..165-9.100.

Gerkin, Richard M., to Union Carbide Corporation. Polyoxamate polymer/polyols. 4,407,983., Cl. 521-128.000.

Gershnow, Abraham H., to Digital Equipment Corporation. Color printing apparatus. 4,407,595., Cl. 400-212.000.

Gesellschaft fur Biotechnologische Forschung mbH (GBF): *See—*
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.

Ghiste, Patrick D. L.: *See—*
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,407,307., Cl. 131-308.000.

Gibbs, Ronald L.: *See—*
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,408,025., Cl. 526-119.000.

Gibson, Donald C.: *See—*
Shepherd, Ian C.; Pearson, Ian G.; and Gibson, Donald C., 4,407,112., Cl. 56-13.400.

Giebeler, James F., to Arrowhead Continental. High pressure swivel joint. 4,407,533., Cl. 285-281.000.

Giertz, Franz: *See—*
Bonn, Berhard; Giertz, Franz; Holl, Lothar; and Schreckenberg, Heinz, 4,407,355., Cl. 165-104.160.

Gilcher, Heinz, to American Standard Inc. Code reset apparatus for railroad track circuits. 4,407,470., Cl. 246-34.00R.

Gillette Company, The: *See—*
Trotta, Robert A., 4,407,067., Cl. 30-50.000.

Gillingham, Ronald D.: *See—*
Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., 4,408,231., Cl. 358-280.000.

Gillis, Steven, to Immunex Corporation. Constitutive production of interleukin 2 by a T cell hybridoma. 4,407,945., Cl. 435-68.000.

Gilovich, Paul A.; and Toreson, James S., to Microcomputer Systems, Inc. Magnetic tape apparatus. 4,408,317., Cl. 360-74.300.

Ginder, William F., to Ad-Pro Industries, Inc. Method of removing water from ethanol. 4,407,662., Cl. 55-33.000.

Ginter, Sally P.; and Hamlin, Percy J., to Dow Chemical Company, The. Degeneration inhibited sanitizing complexes. 4,408,001., Cl. 524-376.000.

Gintis, Daniel; and Most, Elmer E., Jr., to Du Pont de Nemours, E. I., and Company. Splittable hollow polyester filament. 4,407,889., Cl. 428-398.000.

Giorgis, John, Jr.: *See—*
Anderson, Thomas E.; Bush, Alvin A.; and Giorgis, John, Jr., 4,408,270., Cl. 363-132.000.

Gladman, Terence; and Ballinger, Nicholas K., to British Steel Corporation. Dual-phase steels. 4,407,680., Cl. 148-12.00F.

Glasscock, Gus: *See—*
Brune, Arlen G.; and Schmidt, Nelson, 4,407,111., Cl. 56-16.400.

Global Integration Technologies, Inc.: *See—*
White, Douglass A.; Moore, Susan J.; and Clark, David F., 4,408,199., Cl. 340-731.000.

Godat, Jean: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Godtfredsen, Wagn O.; and von Daehne, Welf, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab). Processes for preparing β-lactams. 4,407,751., Cl. 260-239.100.

Goebel, Franz, to GTE Products Corporation. Method for internally discharging an electrochemical cell. 4,407,909., Cl. 429-50.000.

Goeft, Manfred: *See—*
Dziuba, Peter; and Goeft, Manfred, 4,407,382., Cl. 180-10.000.

Goldin, Morris: *See—*
Emigh, Charles F.; and Goldin, Morris, 4,407,467., Cl. 244-17.110.

Goldsmith, Aaron. Cleaning system having improved cleaning solution recovery. 4,407,041., Cl. 15-321.000.

Goletto, Jean: *See—*
Pusineri, Christian; and Goletto, Jean, 4,408,026., Cl. 525-128.000.

Gomez, Jim H.: *See—*
Davila, Jose E.; and Gomez, Jim H., 4,407,312., Cl. 133-8.00R.

Goodley, Paul H. Cervical traction device. 4,407,274., Cl. 128-69.000.

Goodman, Howard M.; Shine, John; and Seeburg, Peter H., to University of California, The Regents of the. Purification of nucleotide sequences suitable for expression in bacteria. 4,407,948., Cl. 435-91.000.

Goodman, Joseph J.: *See—*
Labeda, David P.; Martin, John H. E. J.; and Goodman, Joseph J., 4,407,946., Cl. 435-75.000.

Goodyear Tire & Rubber Company, The: *See—*
Pengilly, Brian W., 4,408,004., Cl. 524-398.000.

Goossens, Bernhard; Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, to Chemische Fabrik Stockhausen & Cie. Process for preparation of α, β-unsaturated N-substituted-carboxylic acid amides. 4,408,073., Cl. 564-204.000.

Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., to Tsentralny Nauchno-Issledovatelsky Institut. Azo dyestuffs possessing antimicrobial properties. 4,407,748., Cl. 260-153.000.

Gossage, John R. Recreational table. 4,407,475., Cl. 248-156.000.

Goto, Jiro: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,407,798., Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,408,042., Cl. 544-22.000.

Gottlieb, Klaus; and Graf, Wilfried, to VEBA OEL AG. Process for preparing sec-butyl alcohol and sec-butyl tert-butyl ether. 4,408,085., Cl. 568-697.000.

Gould, Francis E.; and Johnston, Christian W., to Tyndale Plains-Hunter, Ltd. Polyurethane diacrylate compositions useful for contact lenses and the like. 4,408,023., Cl. 525-454.000.

Gould, Herbert J., to International Rectifier Corporation. Schottky device and method of manufacture using palladium and platinum intermetallic alloys and titanium barrier for low reverse leakage over wide temperature range. 4,408,216., Cl. 357-15.000.

Gouzy, Andre: *See—*
Berger, Raymond; de Cachard, Maurice B.; Collet, Alain; Costes, Didier; Gouzy, Andre; Dupuy, Guy; Caunes, Pierre; and Chevrier, Claude, 4,407,359., Cl. 165-167.000.

Grabbe, Dimitry G., to AMP Incorporated. Ceramic chip carrier with lead frame having removable rim. 4,408,218., Cl. 357-70.000.

Grabowski, John S.; Shiau, Chin-Chih; and Latala, John R., to NCR Corporation. Method for recognizing a machine encoded character. 4,408,342., Cl. 382-9.000.

Gracie, Geysa. Weighted exercise suit. 4,407,497., Cl. 272-119.000.

Gradassi, Michael J.: *See—*
Pellet, Regis J.; Gradassi, Michael J.; and Bertolacini, Ralph J., 4,407,736., Cl. 502-230.000.

Graetz, Herbert; and Unterreiner, Ronald C., to Blair Industries, Inc. Book type cassette holder and method of making same. 4,407,410., Cl. 206-387.000.

Graf, Harlan G.: *See—*
Davis, Richard L.; Graf, Harlan G.; Edwards, Don L.; and Macbeth, William B., Jr., 4,407,700., Cl. 202-85.000.

Graf, Wilfried: *See—*
Gottlieb, Klaus; and Graf, Wilfried, 4,408,085., Cl. 568-697.000.

Graham, Donald W.; Rasmusson, Gary H.; and Tolman, Richard L., to Merck & Co., Inc. 6-Amidino-9-substituted benzyl purines. 4,407,802., Cl. 424-253.000.

Graham, Douglas I. Tool for rotating threaded fasteners. 4,407,175., Cl. 81-57.390.

Graham, John M. Air service brake exhaust control system. 4,407,548., Cl. 303-6.00M.

Gram S.A.: *See—*
Beck, Rene A., 4,407,106., Cl. 52-722.000.

Graves, Alan F.: *See—*
Betts, Malcolm C.; Graves, Alan F.; Pascoe, Frederick M.; and Dilley, James E., 4,408,189., Cl. 340-347.0DD.

Gray, Stanley J. Multiple sheath cable and method of manufacture. 4,407,065., Cl. 29-828.000.

Greenler, Robert J. Adjustable seal for glass sheet furnace. 4,407,650., Cl. 432-242.000.

Greenway, Peter R.; Sulowski, Andrew C.; and George, Henry C. Pole climber's safety device. 4,407,391., Cl. 182-9.000.

Grees, Lennart: *See—*
Adlerteg, Bo; and Grees, Lennart, 4,408,173., Cl. 335-16.000.

Grier, Dale C.: *See—*
Reynolds, Francis D., 4,407,283., Cl. 128-218.00F.

Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., to TRW Inc. Aircraft propeller assembly with composite blades. 4,407,635., Cl. 416-230.000.

Grimm, Hermann: *See—*
Koukal, Heinz; and Grimm, Hermann, 4,407,167., Cl. 74-501.00R.

Griss, Peter: *See—*
Heimke, Gunther; and Griss, Peter, 4,407,022., Cl. 3-1.913.

Grobman, Warren D., to International Business Machines Corporation. Pulsed electromagnetic radiation source having a barrier for discharged debris. 4,408,338., Cl. 378-034.000.

Grodkiewicz, William H.; Singh, Shobha; and Van Uitert, LeGrand G., to Bell Telephone Laboratories, Incorporated. Fabrication procedure using arsenate glasses. 4,407,061., Cl. 29-576.00B.

Groen, Marinus B., to Akzo N.V. 8α-Oestra-1,3,5(10)-triene derivatives, processes for their preparation and pharmaceutical compositions. 4,407,753., Cl. 260-239.55R.

Gronbech, Robert W., to Davey-Loewy Limited. Rolling mill. 4,407,151., Cl. 72-241.000.

Grover, Wayne D., to Northern Telecom Limited. Transmitting additional signals using violations of a redundant code used for transmitting digital signals. 4,408,325., Cl. 370-119.000.

Grozinger, Gerhard; Schindler, Hartmut; and Schmid, Franz, to Sipra Patententwicklungs Beteiligungsgesellschaft mbH. Control network for use in knitting machines and the like. 4,408,118., Cl. 377-2.000.

Grushkin, Bernard; and Bertrand, Jacques C., to Xerox Corporation. Pressure sensitive toner compositions. 4,407,922., Cl. 430-98.000.

GTE Laboratories Incorporated: *See—*
Briere, Alfred D., 4,407,666., Cl. 65-2.000.
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,408,141., Cl. 315-56.000.
Cooperman, Michael; and Geller, William L., 4,408,133., Cl. 307-362.000.

GTE Products Corporation: *See—*
Goebel, Franz, 4,407,909., Cl. 429-50.000.

Gubin, Petr V.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Gueret, Jean-Louis H., to L'Oreal. Make-up unit with an adjustable wiper device. 4,407,311., Cl. 132-88.500.

Gulf Research & Development Co.: *See—*
Kehl, William L., 4,407,730., Cl. 502-208.000.
Kehl, William L., 4,407,732., Cl. 502-208.000.

Gulf & Western Manufacturing Company: *See—*
Muzzell, Stephen E., 4,407,492., Cl. 267-103.000.

Gunesin, Binnur, to Firestone Tire & Rubber Company, The. Method for blending plastic and rubber phase latices and improving impact properties of plastics. 4,408,014., Cl. 525-218.000.

Gunter, James C., to Robertshaw Controls Company. Apparatus and method for forming an electrical switch assembly or the like. 4,407,066., Cl. 29-882.000.

Gunzberg, Guy W.; and Lippman, Lawrence G., to M. Wile & Company, Inc. Point-of-manufacture data acquisition system. 4,408,291., Cl. 364-900.000.

Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, to Siemens Aktiengesellschaft; and Ingenieurkontor Lubeck. Electric dc source. 4,407,903., Cl. 429-23.000.

Guterman, Daniel C.; and Kupec, James D., to Mostek Corporation. Directly-coupled and capacitively coupled nonvolatile static RAM cell. 4,408,303., Cl. 365-205.000.

Guth, Richard U. Breath test simulator and method. 4,407,152., Cl. 73-1.00G.

H-C Industries, Inc.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,407,422., Cl. 215-246.000.

Haardt, Henry; Magdon, John; and Noble, Eric, to National Patent Development Corporation. Molds and procedure for producing truncated contact lenses. 4,407,766., Cl. 264-2.200.

Haarmann & Reimer GmbH: *See—*
Kopsel, Manfred; and Emberger, Roland, 4,407,740., Cl. 252-522.00R.

Haas, Laird K. S.; Herring, Larry H.; and Nakada, Yoshinao, to Bell Telephone Laboratories, Incorporated. Process for improving electrode coatings. 4,407,849., Cl. 427-37.000.

Haase, Gerald A. Magnetic sweeper. 4,407,038., Cl. 15-105.000.

Haberer, Merle D. Apparatus for cleaning interior of a milk tank. 4,407,315., Cl. 134-58.00R.

Hackler, Erich: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.
Flockenhaus, Claus; Hackler, Erich; and Lommerzheim, Werner, 4,407,974., Cl. 518-711.000.

Haftmann, Johannes, to Nixdorf Computer AG. Arrangement for monitoring the operation of the ink ribbon of an ink-ribbon magazine. 4,407,593., Cl. 400-208.000.

Hageniers, Omer L.: *See—*
Pryor, Timothy R.; and Hageniers, Omer L., 4,407,379., Cl. 177-52.000.

Haggerty, John: *See—*
Furness, John A.; and Haggerty, John, 4,407,678., Cl. 134-167.00R.

Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, to Sumitomo Electric Industries Ltd.; and Hagihara, Bunji, part interest to each. Transcutaneous blood oxygen measuring device. 4,407,291., Cl. 128-635.000.

Hagopian, Arpi: *See—*
Kniskern, Peter J.; Hagopian, Arpi; and Carlo, Dennis J., 4,407,949., Cl. 435-101.000.

Haigh, Harry; and Sonmor, Rudy C., to R.C.S. Enterprises Limited. Gear pump having an isolator to protect its bearings. 4,407,645., Cl. 418-131.000.

Haines, Roger W.; and Purinton, Mark A., to Borg-Warner Corporation. Return air flow control for variable air volume system. 4,407,185., Cl. 98-1.500.

Hajime Industries Ltd.: *See—*
Yoshida, Hajime, 4,408,224., Cl. 358-108.000.

Halbach & Braun: *See—*
Braun, Ernst; and Braun, Gert, 4,407,546., Cl. 299-34.000.

Halcon SD Group, Inc., The: *See—*
Rizkalla, Nabil, 4,407,726., Cl. 502-161.000.

Hall, David A.; and Olson, George P., to International Business Machines Corporation. Solenoid impact print hammer with uniform free flight time. 4,407,193., Cl. 101-93.010.

Hall, Derrard M.; Kemp, Roy A.; and Such, Christopher H., to ICI Australia Limited. Acrylic coating compositions. 4,407,990., Cl. 524-38.000.

Hall & Kay Engineering Limited: *See—*
O'Reilly, Kevin G., 4,407,142., Cl. 62-238.600.

Halliburton Company: *See—*
de Kanter, Scipio, 4,407,136., Cl. 62-64.000.

Hallinan, Eleanor A.: *See—*
Mazur, Robert H.; Tyner, David A.; and Hallinan, Eleanor A., 4,407,746., Cl. 260-112.50E.

Halls, Lawrence M.: *See—*
McIlwain, Irwin D.; and Halls, Lawrence M., 4,407,110., Cl. 56-14.400.

Ham, George E.: *See—*
Bertram, James L.; Ham, George E.; and Chen, Wuu-Nan, 4,408,062., Cl. 549-517.000.

Hamada, Toshiyoshi: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,407,959., Cl. 435-288.000.

Hamlin, Percy J.: *See—*
Ginter, Sally P.; and Hamlin, Percy J., 4,408,001., Cl. 524-376.000.

Hammonds, James C.; and VanDyke, Ronald D., to ACF Industries, Incorporated. Combination manual and automatic unlocking mechanism for trailer hitch head. 4,407,617., Cl. 410-59.000.

Hamrick, Joseph T., to Well-Pack Systems, Inc. Borehole water pumping system with sandtrap. 4,407,360., Cl. 166-68.000.

Han, Yu-Pin; and Ma, Bing C., to Mostek Corporation. Fabrication of isolation oxidation for MOS circuit. 4,407,696., Cl. 156-653.000.

Haneda, Hideo: *See—*
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,407,448., Cl. 236-88.000.

Hanke, Leopold; Hellebrand, Hans; and Schmelz, Helmut, to Siemens Aktiengesellschaft. Method for producing films of sintered polycrystalline silicon. 4,407,858., Cl. 427-86.000.

Hankland, Lawrence B., to Ford Aerospace & Communication Corporation. Metallized film transfer process. 4,407,685., Cl. 156-212.000.

Hans Grohe GmbH & Co. KG: *See—*
Buzzi, Gunter, 4,407,890., Cl. 428-408.000.

Hansen, Erik, to ESAB Aktiebolag. Self-adjusting turning roll assembly. 4,407,621., Cl. 414-433.000.

Hanson, Charles B., to J. I. Case Company. Bucket tooth attachment means. 4,407,081., Cl. 37-141.00T.

Hanson, Lloyd D.; and Purton, Robert M., to Dresser Industries, Inc. Flow control valve. 4,407,327., Cl. 137-625.300.

Hanssen, Tore B.; and Zwirek, Chester S., to Singer Company, The. Thermostatic switch. 4,408,178., Cl. 337-320.000.

Hara, Koichi: *See—*
Nomura, Manabu; Sugi, Norio; Tanaka, Takayoshi; and Hara, Koichi, 4,407,986., Cl. 523-200.000.

Hara, Masahiro; Sakai, Toshiyasu; and Okamoto, Atsutoshi, to Nippondenso Co., Ltd. Bar code scanner. 4,408,120., Cl. 235-462.000.

Hara, Tomihiro; Ogawa, Masahiro; Yamashita, Masaaki; and Tajiri, Yasuhisa, to Nippon Kokan Kabushiki Kaisha. Surface treated steel sheets for paint coating. 4,407,899., Cl. 428-626.000.

Harada, Kunihiro: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,407,927., Cl. 430-197.000.

Harada, Shozo; Ito, Kazuo; Shirai, Takayuki; and Koide, Tetsuya, to Ina Seito Co., Ltd. Method of manufacturing cement products having superior mechanical strength. 4,407,769., Cl. 264-60.000.

Harada, Takamasa, to Kabushiki Kaisha Daini Seikosha. Electro-optic display device using phase transition mode liquid crystal. 4,408,201., Cl. 340-784.000.

Harbin, Wayne D.; Stark, Marvin; and Britt, Kenneth W., to Richmond Tank Car Company. Railroad tank car lift lug. 4,407,203., Cl. 105-462.000.

Hardman, Charles A.; and Burns, Orville M., Jr. Bowling ball weighing and balancing device. 4,407,154., Cl. 73-66.000.

Hardman, Harley F.: *See—*
Pedersen, S. Erik; Hardman, Harley F.; and Wagner, Louis F., 4,408,071., Cl. 562-536.000.

Hardy, Rex F. G.: *See—*
Hines, Howard E.; Hardy, Rex F. G.; and Butler, David S., 4,407,337., Cl. 140-124.000.

Hardy, Thomas A., to Stauffer Chemical Company. Synthesis of organic phosphate-phosphonates. 4,407,765., Cl. 260-970.000.

Harford, Jack R., to RCA Corporation. Noise sensitivity reduction apparatus for a TV receiver AGC system. 4,408,229., Cl. 358-177.000.

Harita, Yoshiyuki: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,407,927., Cl. 430-197.000.

Harlamert, W. Benjamin: *See—*
Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., 4,407,635., Cl. 416-230.000.

Harmon, James V. Dispenser for pouring measured quantities of a liquid from a container. 4,407,435., Cl. 222-481.000.

Harris, James J.; and Hostetler, Donald E., to Atlantic Richfield Company. Method of supporting a catalyst on polyolefins. 4,407,727., Cl. 502-115.000.

Harris, Ralph A., to Texas Instruments Incorporated. Optical transmission of digital seismic data. 4,408,307., Cl. 367-79.000.

Hartford, Louise D.; and Kavoussi, James P. Scent-awake clock. 4,407,585., Cl. 368-12.000.

Hartgrave, Jimmy D. Animated figure amusement device. 4,407,083., Cl. 40-414.000.

Hartig, Norman F.: *See—*
Neill, Jimmie; Webb, Nathaniel; and Hartig, Norman F., 4,408,343., Cl. 382-52.000.

Hartl, Franz: *See—*
Domhan, Gerold; Hartl, Franz; and Vogelgsang, Kurt, 4,408,111., Cl. 200-318.000.

Hartman, Robert L.; Koszi, Louis A.; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. V-Groove semiconductor light emitting devices. 4,408,331., Cl. 372-46.000.

Hartwimmer, Robert: *See—*
Kuhls, Jurgen; and Hartwimmer, Robert, 4,408,007., Cl. 524-546.000.

Hartzell Manufacturing, Inc.: *See—*
Lowry, Alan, 4,407,411., Cl. 206-387.000.

Hasegawa, Kaisuji, to Meinan Machinery Works, Inc. Veneer lathe with cord embedding knife. 4,407,345., Cl. 144-211.000.

Hasegawa, Shumpei: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,407,243., Cl. 123-179.00G.

Hasha, Brian B.: *See—*
Hasha, Malvern M.; and Hasha, Brian B., 4,407,171., Cl. 73-46.000.

Hasha, Malvern M.; and Hasha, Brian B. Apparatus and method for hydrostatically testing sealing face surfaces of tubular joints. 4,407,171., Cl. 73-46.000.

Hashimoto, Hitoshi: *See—*
Matsuyama, Kiyoshi; and Hashimoto, Hitoshi, 4,408,024., Cl. 526-67.000.

Hashimoto, Kazuo; and Konno, Mutsuo. Lighting and morse code signaling device. 4,408,182., Cl. 340-321.000.

Hashimoto, Nobuo: *See—*
Kondo, Takashi; and Hashimoto, Nobuo, 4,408,288., Cl. 364-525.000.

Hashimoto, Shinichi; Takano, Toshimasa; and Mukai, Hideo, to Tokyo Shibaura Denki Kabushiki Kaisha. Transfer device. 4,407,580., Cl. 355-3.0TR.

Hashizume, Hideyuki; and Tsuchiya, Tadashi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polyvinylidene fluoride film having superior dielectric strength and a process for producing the same. 4,407,887., Cl. 428-332.000.

Haskel Engineering & Supply Company: *See—*
Kelly, John W., 4,407,150., Cl. 72-61.000.

Hasselmann, William J. Weapon. 4,407,086., Cl. 42-90.000.

Hata, Kazuhiko: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Hata, Shuntaro: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.

Hatanaka, Masataka: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, 4,407,813., Cl. 424-273.00P.

Hatter, Marjorie M.: *See—*
Lieffers, William C.; and Hatter, Marjorie M., 4,407,366., Cl. 166-250.000.

Hauser, Hanspeter; and Eckert, Peter, to Ciba-Geigy Corporation. Printing ink compositions and use thereof for the production of textured foamed resin materials. 4,407,882., Cl. 428-159.000.

Hausler, Frederick A., to ACF Industries, Incorporated. Wellhead casing packing support. 4,407,514., Cl. 277-117.000.

Haviv, Fortuna; and Denet, Robert W., to Abbott Laboratories. Antiinflammatory 1-(quinolinyl)-2-pyrazoline derivatives. 4,407,803., Cl. 424-258.000.

Hawkins, James B.: *See—*
Van Doorn, Donald W.; Webb, Tommy W.; and Hawkins, James B., 4,407,047., Cl. 19-64.500.

Hawley, Clyde W., to Dollinger Corporation. Modular spin filters and housing therefor. 4,407,663., Cl. 55-347.000.

Hayasaka, Toshimi, to Olympus Optical Company Ltd. Specimen holding device for microscope stages. 4,407,570., Cl. 350-529.000.

Hayashi, Hideki: *See—*
Takahashi, Yuji; Hayashi, Hideki; Takagi, Satoshi; and Yukio, Ito, 4,408,237., Cl. 360-96.300.

Hayashi, Kazuya: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

Hayes, Derek. Electrical coupling device. 4,407,557., Cl. 339-97.00R.

Hayes, Richmond S., Jr., to Carrier Corporation. Fast defrost heat exchanger. 4,407,137., Cl. 62-80.000.

Haynes, Gardner: *See—*
Baboian, Robert; and Haynes, Gardner, 4,407,711., Cl. 204-196.000.

Haynes, Ronald L.: *See—*
Eads, Carl W.; and Haynes, Ronald L., 4,408,016., Cl. 525-277.000.

Hazard, Edwin A.: *See—*
Augusto, Peter; Hazard, Edwin A.; and Mohrman, Richard C., 4,407,571., Cl. 351-13.000.

Hearn, Anthony R., to International Business Machines Corporation. Magnetic head arm assembly. 4,408,238., Cl. 360-104.000.

Heath Company: *See—*
Perdue, Terry A., 4,408,172., Cl. 334-11.000.

Heden, Carl G. Method of regulating radiation through windows. 4,407,267., Cl. 126-419.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Polyurethanes prepared from polyisocyanate, polyol and phosphonopolyester oligomers. 4,408,033., Cl. 528-72.000.

Heiberger, Francis E.: *See—*
Tack, Carl E., Jr.; and Heiberger, Francis E., 4,408,281., Cl. 364-476.000.

Heidelberger Druckmaschinen AG: *See—*
Jeschke, Willi, 4,407,197., Cl. 101-148.000.

Heilman, Marlin S.: *See—*
Langer, Alois A.; Kolenik, Steve A.; Heilman, Marlin S.; Mirowski, Mieczyslaw; and Mower, Morton M., 4,407,288., Cl. 128-419.0PG.

Heimke, Gunther; and Griss, Peter, to Friedrichsfeld GmbH, Steinzeug- und Kunststoffwerke. Femur component for an artificial hip joint. 4,407,022., Cl. 3-1.913.

Hekal, Ihab M., to Continental Group, Inc., The. Cap for and in combination with a container. 4,407,429., Cl. 220-359.000.

Hellebrand, Hans: *See—*
Hanke, Leopold; Hellebrand, Hans; and Schmelz, Helmut, 4,407,858., Cl. 427-86.000.

Hendershot, Robert V., to Troika Corp. Timing hub. 4,407,598., Cl. 403-4.000.

Hendrickson, Melvin C.: *See—*
Ensinger, James W.; and Hendrickson, Melvin C., 4,408,225., Cl. 358-120.000.

Hendry, Robert B., to Reon Manufacturing Company. Device for removing insulation from an insulated conductor. 4,407,173., Cl. 81-9.50R.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Blum, Helmut; and Worms, Karl-Heinz, 4,407,761., Cl. 260-502.50C.

Hennessy, Arnold; and Inch, John D. Water-conserving toilet. 4,407,025., Cl. 4-321.000.

Henrich, Werner. Apparatus or stranding wire. 4,407,116., Cl. 57-13.000.

Henshaw, William F.; White, John R.; and Niiler, Andrus, to United States of America, Army. Hollow cathode discharge source of metal vapor. 4,407,712., Cl. 204-298.000.

Herbermann, Gottfried: *See—*
Fessel, Rudolf; von Knorre, Karl-Friedrich; Tillich, Peter; and Herbermann, Gottfried, 4,408,302., Cl. 364-900.000.

Hercules Incorporated: *See—*
Bankert, Ralph A.; and Dumas, David H., 4,407,994., Cl. 524-107.000.
Blunt, Harry W., 4,408,019., Cl. 525-323.000.

Hergeth, Incorporated: *See—*
Smith, George F., Jr., 4,407,107., Cl. 53-528.000.

Herpers, Lodewijk-Jozef, to Medtronic, Inc. Atrial and ventricular-only pacemaker responsive to premature ventricular contractions. 4,407,287., Cl. 28-419.0PG.

Herring, Larry H.: *See—*
Haas, Laird K. S.; Herring, Larry H.; and Nakada, Yoshinao, 4,407,849., Cl. 427-37.000.

Herzog, Rudolf, to Sulzer Brothers Limited. Controller for a lockable servo motor. 4,408,148., Cl. 318-610.000.

Hettinger, William P., Jr.: *See—*
Myers, George D., deceased; Hettinger, William P., Jr.; and Kovach, Stephen M., 4,407,714., Cl. 208-120.000.

Hettwer, Paul F.: *See—*
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarance R., 4,407,697., Cl. 162-137.000.

Heurtey Metallurgie: *See—*
Wang, Robert, 4,407,487., Cl. 266-114.000.

Hewlett, Erik L.: *See—*
Pearson, Richard D.; and Hewlett, Erik L., 4,407,800., Cl. 424-247.000.

Heyman, Joseph S.: *See—*
Davidson, John R.; and Heyman, Joseph S., 4,407,589., Cl. 368-201.000.

Heyn, William M., to Continental Group, Inc., The. Plastic plug type closure for beverage containers. 4,407,424., Cl. 220-269.000.

Heyser, Gregory L. Boat trailer tongue extender. 4,407,519., Cl. 280-482.000.

Hibbitts, Charles H., to American Brands, Inc. Method for expanding tobacco with steam at high temperature and velocity. 4,407,306., Cl. 131-296.000.

Hidaka, Kunihiko: *See—*
Fukushima, Naoto; Hidaka, Kunihiko; and Iwata, Kazuroh, 4,407,397., Cl. 188-282.000.

Hiestand, Peter; and Strasser, Michael, to Sandoz Ltd. Novel bis- and poly-disulfides having immunostimulant activity. 4,407,825., Cl. 424-336.000.

Higashiyama, Hirokichi: *See—*
Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, 4,407,681., Cl. 148-12.00F.

Higuchi, Mitsuo, to Fujitsu Limited. Delay circuit oscillator having unequal on and off times. 4,408,168., Cl. 331-57.000.

Hijikata, Toshio; and Kawasaki, Kazuhiro, to Neturen Company, Ltd. Steel for cold plastic working. 4,407,683., Cl. 148-144.000.

Hijiya, Hiromi: *See—*
Hirao, Mamoru; Hijiya, Hiromi; and Miyaka, Toshio, 4,408,041., Cl. 536-4.100.

Hill, Allen R.: *See—*
Betzner, William E.; Holtman, Richard K.; and Hill, Allen R., 4,407,771., Cl. 264-115.000.

Hillberg, Robert L.; and Stevens, Frederick F. Handgun firing mechanism. 4,407,085., Cl. 42-69.00R.

Hilton, Carl W.; and Bullard, Harold L., to Return on Investment Corporation. Cruise control modulator. 4,407,385., Cl. 180-175.000.

Hines, Howard E.; Hardy, Rex F. G.; and Butler, David S., to Post Office. Wire wrapping tool for wrapping insulated wire. 4,407,337., Cl. 140-124.000.

Hinesley, Carl P.: *See—*
Holston, Roger W.; and Hinesley, Carl P., 4,408,150., Cl. 318-779.000.

Hinrichs, Carl B.: *See—*
Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 4,407,101., Cl. 52-126.300.

Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. Hindered piperidine polymer stabilizers. 4,407,993., Cl. 524-96.000.

Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, to Sandoz Ltd. 1-Oxa-3,8-diazaspiro[4.5]decanes. 4,408,051., Cl. 546-19.000.

Hinze, William W., to Collins Industries, Inc. Wheelchair lock for reducing wheel spoke interference. 4,407,616., Cl. 410-3.000.

Hirahata, Shigeru: *See—*
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, 4,408,197., Cl. 340-720.000.

Hirai, Hachiro: *See—*
Yui, Tohru; Hirai, Hachiro; and Takamaru, Ken, 4,407,863., Cl. 427-213.000.

Hirao, Mamoru; Hijiya, Hiromi; and Miyaka, Toshio, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Anhydrous crystals of maltitol and the whole crystalline hydrogenated starch hydrolysate mixture solid containing the crystals, and process for the production and uses thereof. 4,408,041., Cl. 536-4.100.

Hirasawa, Kotaro: *See—*
Imai, Masumi; and Hirasawa, Kotaro, 4,408,279., Cl. 364-431.050.

Hirshorn, Michael S.; Holley, Loraine K.; and Skalsky, Michael, to Telectronics Pty., Ltd. Cardiac pacemaker electrode tip structure. 4,407,302., Cl. 128-784.000.

Hisatake, Yoshihiko: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Hitachi Chemical Company, Ltd.: *See—*
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.

Hitachi Koki Co., Ltd.: *See—*
Yamada, Takahiro, 4,408,211., Cl. 346-75.000.

Hitachi, Ltd.: *See—*
Akagi, Motoo; Uchino, Shoichi; and Nonogaki, Saburo, 4,407,916., Cl. 430-23.000.
Imai, Masumi; and Hirasawa, Kotaro, 4,408,279., Cl. 364-431.050.
Kikuchi, Hiroshi; and Sugimoto, Koichi, 4,408,286., Cl. 364-513.000.
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, 4,408,197., Cl. 340-720.000.
Kubo, Kanji; and Wada, Kenichi, 4,408,275., Cl. 364-200.000.
Sasaya, Kazushi; Degawa, Takashi; Suginuma, Atsushi; and Sato, Noriharu, 4,407,638., Cl. 417-269.000.
Tajima, Fujio; Ichikawa, Atsushi; and Shimizu, Isao, 4,407,462., Cl. 242-184.000.
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.
Takeuchi, Takashi; and Kobari, Harukuni, 4,408,326., Cl. 371-38.000.
Tamura, Katsuyoshi; and Kanai, Hiromi, 4,408,230., Cl. 358-213.000.
Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,407,880., Cl. 428-156.000.
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.
Yamada, Takahiro, 4,408,211., Cl. 346-75.000.

Hocker, Jurgen; Wieder, Wolfgang; and Dhein, Rolf, to Bayer Aktiengesellschaft. Foils of polyacetylene. 4,408,027., Cl. 526-185.000.

Hockham, George A., to International Telephone and Telegraph Corporation. Multiple beam antenna feed arrangement for generating an arbitrary number of independent steerable nulls. 4,408,205., Cl. 343-16.00R.

Hodges, Bonnie E. Pipe hanger. 4,407,478., Cl. 248-542.000.

Hodosh, Milton. Composition for preserving dental pulp. 4,407,675., Cl. 106-35.000.

Hoechst Aktiengesellschaft: *See—*
Koch, Manfred, 4,408,068., Cl. 560-226.000.
Kostner, Armin; Lenhart, Richard; and Bittner, Klaus-Jurgen, 4,407,339., Cl. 141-10.000.
Kuhls, Jurgen; and Hartwimmer, Robert, 4,408,007., Cl. 524-546.000.
Stahlhofen, Paul, 4,407,926., Cl. 430-165.000.
Wilski, Hans; Interthal, Werner; and Engelhardt, Friedrich, 4,407,321., Cl. 137-13.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,053., Cl. 546-226.000.
Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., 4,408,054., Cl. 546-226.000.

Hof, Peter J. AC Resistance measuring instrument. 4,408,282., Cl. 364-482.000.

Hofer, Franz, to U.S. Philips Corporation. Gettering device and method. 4,407,656., Cl. 445-10.000.

Hofer, Gerald: *See—*
Eheim, Franz; Hofer, Gerald; and Links, Heins, 4,407,250., Cl. 123-450.000.

Hoffacker, Franz: *See—*
Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, 4,407,867., Cl. 427-365.000.

Hoffman, Dietrich; and Schopke, Holger, to BASF Aktiengesellschaft. Pressure-sensitive and heat-sensitive recording material. 4,407,886., Cl. 428-320.800.

Hoffmann-La Roche Inc.: *See—*
Barner, Richard; and Hubscher, Josef, 4,407,754., Cl. 260-239.55D.
Bernauer, Karl; Link, Helmut; and Stohler, Harro, 4,407,814., Cl. 424-273.00R.
Hunkeler, Walter; and Kyburz, Emilio, 4,407,752., Cl. 260-239.30P.

Hoffmann, Michael: *See—*
Maurer, Robert; Blum, Alfons; and Hoffmann, Michael, 4,408,351., Cl. 455-260.000.

Hofmann, Hans: *See—*
Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, 4,407,867., Cl. 427-365.000.

Hofmann, Ulrich. Racket handle. 4,407,500., Cl. 273-75.000.

Hofmeister, Hagen: *See—*
Wahl, Helmut; and Hofmeister, Hagen, 4,408,327., Cl. 371-47.000.

Hohl, Gregory D. Coulter attachment for seed planting apparatus. 4,407,371., Cl. 172-253.000.

Hohmann, Walter; and Stawitz, Josef, to Bayer Aktiengesellschaft. Anthraquinone vat dyestuffs. 4,408,056., Cl. 548-416.000.

Holl, Lothar: *See—*
Bonn, Berhard; Giertz, Franz; Holl, Lothar; and Schreckenberg, Heinz, 4,407,355., Cl. 165-104.160.

Holley, Edward J., to General Foods Limited. Semolina dessert mix. 4,407,837., Cl. 426-578.000.

Holley, Loraine K.: *See—*
Hirshorn, Michael S.; Holley, Loraine K.; and Skalsky, Michael, 4,407,302., Cl. 128-784.000.

Holman, Howard E., to T. J. Electronics, Inc. Self-locking coupling nut for electrical connectors. 4,407,529., Cl. 285-82.000.

Holman, James L., Jr.; McIlwain, John F.; and Neumeier, L. A., to United States of America, Interior. Pressureless consolidation of metallic powders. 4,407,775., Cl. 419-36.000.

Holston, Roger W.; and Hinesley, Carl P., to Emerson Electric Co. Speed control system and method for electric motor. 4,408,150., Cl. 318-779.000.

Holtman, Richard K.: *See—*
Betzner, William E.; Holtman, Richard K.; and Hill, Allen R., 4,407,771., Cl. 264-115.000.

Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, to T. Goldschmidt AG. Process for the preparation of heat-curable silicone resins usable especially as electrical insulating resins. 4,408,031., Cl. 528-26.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,407,383., Cl. 180-54.00E.

Honda, Minoru: *See—*
Kubo, Jun; and Honda, Minoru, 4,408,290., Cl. 364-566.000.

Honda Motor Co., Ltd.: *See—*
Otsuka, Kazuo; Narasska, Shin; and Hasegawa, Shumpei, 4,407,243., Cl. 123-179.00G.

Honda, Shoji: *See—*
Kawakatsu, Shiro; and Honda, Shoji, 4,407,132., Cl. 60-716.000.

Honeywell Inc.: *See—*
Bonner, Clive E.; and Sanford, Herbert F., 4,408,243., Cl. 360-137.000.
Jensen, Norman E., 4,407,201., Cl. 102-248.000.
Mueller, Dale A., 4,407,138., Cl. 62-126.000.
Nelson, Marvin D.; and Pinckaers, B. Hubert, 4,408,175., Cl. 336-92.000.

Honeywell Information Systems Inc.: *See—*
Kindell, Jerry L., 4,408,271., Cl. 364-200.000.

Hoobler, Mary A.: *See—*
Sikorski, James A.; and Hoobler, Mary A., 4,407,763., Cl. 260-940.000.
Sikorski, James A.; and Hoobler, Mary A., 4,407,764., Cl. 260-940.000.

Hooke, John W., to General Electric Company. Rechargeable electrochemical cell pack having resistance to impact and vibration. 4,407,911., Cl. 429-94.000.

Hoppe, Joachim, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card with hallmark for authentication by incident and transmitted light. 4,407,525., Cl. 283-110.000.

Hopper, Thomas P., to Sunsearch, Inc. Solar energy collector system having balanced heat-exchange fluid flow. 4,407,269., Cl. 126-442.000.

Horbelt, Michael; Arnold, Herbert; and Winkelmann, Lothar, to Robert Bosch GmbH. Air flow rate measuring device in an internal combustion engine. 4,407,156., Cl. 73-118.000.

Horhn, Theresa R.: *See—*
Mallory, Glenn O.; and Horhn, Theresa R., 4,407,869., Cl. 427-443.100.

Horigome, Shinkichi: *See—*
Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,407,880., Cl. 428-156.000.

Horii, Shigeo, to Ricoh Co. Ltd. Sheet material and envelope for packaging electronic parts. 4,407,872., Cl. 428-35.000.

Horn, Charles E.: *See—*
Milberger, Lionel J.; Horn, Charles E.; and Kluttz, Marvin H., 4,407,183., Cl. 91-1.000.

Horne, Robert H.: *See—*
Steuer, Robert R.; Rogers, Robert K.; and Horne, Robert H., 4,407,295., Cl. 128-670.000.

Horney, Robert W. Air control device. 4,407,187., Cl. 98-41.0SV.

Hoschett, Albert M., to Teletype Corporation. Retaining clip for an electrical connector. 4,407,556., Cl. 339-91.00R.

Hoskins, Paul T., Jr., to Southern Railway Company. Thin flange and loose wheel detection system. 4,407,072., Cl. 33-203.110.

Hosokawa, Motoyuki: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,408,080., Cl. 568-484.000.

Hosoya, Masahiro: *See—*
Takano, Toshimasa; Mukai, Hideo; and Hosoya, Masahiro, 4,407,228., Cl. 118-651.000.

Hospal-Sodip, S.A.: *See—*
Pusineri, Christian; and Goletto, Jean, 4,408,026., Cl. 525-128.000.

Hostetler, Donald E.: *See—*
Harris, James J.; and Hostetler, Donald E., 4,407,727., Cl. 502-115.000.

Hota, Mikio: *See—*
Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, 4,407,691., Cl. 156-304.200.

Hotimsky, Eric R. Device for mounting and balancing the rotary knives of a cutter machine. 4,407,458., Cl. 241-282.100.

Houghton, Richard B.: *See—*
Lentz, David J.; and Houghton, Richard B., 4,407,298., Cl. 128-713.000.

Howard, James K.: *See—*
Chu, Wei-Kan; and Howard, James K., 4,408,254., Cl. 361-321.000.

Howe, Milton A., Jr., to W. R. Grace & Co. Bag dispenser. 4,407,473., Cl. 248-95.000.

Howell, Edward K., to General Electric Co. Power line communication over ground and neutral conductors of plural residential branch circuits. 4,408,186., Cl. 340-310.00A.

Howell, Stephen H., to University of California, The Regents of the. Cloned cauliflower mosaic virus DNA as a plant vehicle. 4,407,956., Cl. 435-172.000.

Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, to Takeda Chemical Industries, Ltd. Phospholipid carbamates. 4,408,052., Cl. 546-22.000.

HRI, Inc.: *See—*
Kydd, Paul H., 4,407,367., Cl. 166-267.000.

Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, to Nukem GmbH. Process for conditioning radioactive and toxic wastes. 4,407,742., Cl. 252-628.000.

Hubbard, Thom W. Method and apparatus for controlling fluid currents. 4,407,608., Cl. 405-31.000.

Hubscher, Josef: *See—*
Barner, Richard; and Hubscher, Josef, 4,407,754., Cl. 260-239.55D.

Huebsch, Donald L.; and Paulos, Louis B. Magnetically operated fail-safe cutoff valve with pressure equalizing means. 4,407,329., Cl. 137-629.000.

Huelsekopf, Alfred G., to Com-Dor Supply Limited. Window frame assembly with frame shaped locking member. 4,407,100., Cl. 52-212.000.

Huff, Joseph F., to Polaroid Corporation. Photographic film assemblage. 4,407,579., Cl. 354-275.000.

Hughes Aircraft Company: *See—*
Eu, Victor K.; Feng, Milton; Zielinski, Timothy T.; and Whelan, James M., 4,407,694., Cl. 156-606.000.
Wysocki, Joseph A., 4,407,561., Cl. 350-96.300.

Hughes Helicopters, Inc.: *See—*
Emigh, Charles F.; and Goldin, Morris, 4,407,467., Cl. 244-17.110.

Hugo, Franz: *See—*
Wanetzky, Erwin; Hugo, Franz; and Kuhlmann, Fernand, 4,407,488., Cl. 266-148.000.

Hultgren, Karl S. H. Thin sheet metal heat exchanger. 4,407,357., Cl. 165-165.000.

Hummel, David M. Toy aircraft. 4,407,494., Cl. 272-1.00D.

Humpherson, Donald: *See—*
Sutcliffe, Gordon R.; Warden, Stephen J.; and Humpherson, Donald, 4,407,062., Cl. 29-599.000.

Humphrey Instruments, Inc.: *See—*
Humphrey, William E., 4,407,572., Cl. 351-212.000.

Humphrey, William E., to Humphrey Instruments, Inc. Keratometer. 4,407,572., Cl. 351-212.000.

Hundt, Eckart; and Trautenberg, Elmar, to Siemens Aktiengesellschaft. Method for processing ultrasonic echo signals of both directionally reflecting as well as non-directionally scattering objects, particularly for ultrasonic image processing in the field of substance or tissue investigation. 4,407,163., Cl. 73-607.000.

Hunkeler, Walter; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Azeto-imidazo-diazepines. 4,407,752., Cl. 260-239.30P.

Hunter, Edwin J., to Toro Company, The. Water pressure controlled indexing means for irrigation sprinkler system. 4,407,451., Cl. 239-66.000.

Huret, Alain P. B., legal representative: *See—*
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,407,599., Cl. 403-11.000.

Huret et ses Fils: *See—*
Huret, Roger, deceased; and Huret, Alain P. B., legal representative, 4,407,599., Cl. 403-11.000.

Huret, Roger, deceased; and by Huret, Alain P. B., legal representative, to Huret et ses Fils. Device for fixing a derailleur on a frame lug. 4,407,599., Cl. 403-11.000.

Huschka, Hans: *See—*
Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, 4,407,742., Cl. 252-628.000.

Huse, Per, to O. Mustad & Son A/S. Method for attaching snells to a fishing line, and an apparatus for carrying out the method. 4,407,087., Cl. 43-4.000.

Hutchison, Stanley O.; and Anderson, Glenn W., to Chevron Research Company. Method and apparatus for placing a cement thermal packer. 4,407,369., Cl. 166-291.000.

Hutt, Peter R.: *See—*
Dean, Andrew; and Hutt, Peter R., 4,408,226., Cl. 358-139.000.

Hutter, Charles G., III. System for dispensing curable compositions. 4,407,431., Cl. 222-1.000.

Hydrotile Machinery Company: *See—*
Fosse, Navarro T., 4,407,648., Cl. 425-457.000.

Ichijima, Seiji; Watanabe, Toshiyuki; Furutachi, Nobuo; and Seto, Nobuo, to Fuji Photo Film Co., Ltd. Process and material for forming color photographic image. 4,407,936., Cl. 430-505.000.

Ichikawa, Atsushi: *See—*
Tajima, Fujio; Ichikawa, Atsushi; and Shimizu, Isao, 4,407,462., Cl. 242-184.000.

Ichikawa, Yasunori: *See—*
Sugimoto, Naohiko; Maekawa, Yukio; and Ichikawa, Yasunori, 4,407,937., Cl. 430-527.000.

Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Chichibu Cement Kabushiki Kaisha. Apparatus for calcining raw materials in the form of powder or particles. 4,407,652., Cl. 432-58.000.

ICI Australia Limited: *See—*
Hall, Derrard M.; Kemp, Roy A.; and Such, Christopher H., 4,407,990., Cl. 524-38.000.

Ide, Yuuichi; and Nukushina, Harunobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for controlling an air conditioning system. 4,407,139., Cl. 62-215.000.

Idemitsu Petrochemical Co., Ltd.: *See—*
Nomura, Manabu; Sugi, Norio; Tanaka, Takayoshi; and Hara, Koichi, 4,407,986., Cl. 523-200.000.

Ido, Tadashi: *See—*
Koike, Yoshiyasu; Kubo, Osamu; Ido, Tadashi; and Uwaha, Masanobu, 4,407,721., Cl. 252-62.590.

IG-Technical Research Inc.: *See—*
Iwase, Katsuhiko; and Saito, Minoru, 4,407,179., Cl. 83-865.000.

Iguchi, Nobuyoshi: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

IHC Holland N.V.: *See—*
de Jager, Arie, 4,407,420., Cl. 212-199.000.

Ihringer, Ernest. Cleaning installation. 4,407,316., Cl. 134-104.000.

Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Picture information filing system. 4,408,301., Cl. 364-900.000.

Iijima, Tetsuya; and Takahashi, Seiichi, to Nissan Motor Co., Ltd. Control for automobile air conditioning system. 4,407,446., Cl. 236-49.000.

Iizawa, Yoshihiro, to Ikebukuro Horo Kogyo Co., Ltd. Process for the preparation of inorganic fiber containing enamelware. 4,407,868., Cl. 427-376.200.

Ikebukuro Horo Kogyo Co., Ltd.: *See—*
Iizawa, Yoshihiro, 4,407,868., Cl. 427-376.200.

Ikeda, Masaki: *See—*
Nishino, Atsushi; Suzuki, Tadashi; Ikeda, Masaki; and Ohtani, Tadashi, 4,408,253., Cl. 361-293.000.

Ikeizumi, Hiroshi: *See—*
Enjouji, Katsuhisa; Ikeizumi, Hiroshi; Murata, Kenji; and Nishikawa, Syozaburo, 4,407,709., Cl. 204-192.0SP.

Ikeuchi, Satoru: *See—*
Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, 4,407,941., Cl. 430-566.000.

Imada, Isuke: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,407,757., Cl. 260-413.000.

Imahashi, Jinichi: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Imai, Masumi; and Hirasawa, Kotaro, to Hitachi, Ltd. Method and apparatus for adjusting the supply of fuel to an internal combustion engine for an acceleration condition. 4,408,279., Cl. 364-431.050.

Imai, Tamotsu, to UOP Inc. Preparation of metal oxide-supported boron fluoride catalysts. 4,407,731., Cl. 502-203.000.

Imam, Imdad, to General Electric Company. Method for on-line detection of incipient cracks in turbine-generator rotors. 4,408,294., Cl. 364-508.000.

Imi Kynoch Limited: *See—*
Sutcliffe, Gordon R.; Warden, Stephen J.; and Humpherson, Donald, 4,407,062., Cl. 29-599.000.

Imlah, Forbes, to Burlington Industries, Inc. Impart machine for determining heat setting conditions. 4,407,164., Cl. 73-831.000.

Immaru, Daisaku: *See—*
Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, 4,407,799., Cl. 424-246.000.

Immunex Corporation: *See—*
Gillis, Steven, 4,407,945., Cl. 435-68.000.

Imperial Chemical Industries PLC: *See—*
Featherstone, William, 4,407,703., Cl. 203-43.000.
Ratcliffe, Maurice J.; and Roberts, Thomas A., 4,407,984., Cl. 523-115.000.

Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, to Nippon Steel Corporation. High tensile steel and process for producing the same. 4,407,681., Cl. 148-12.00F.

Ina Seito Co., Ltd.: *See—*
Harada, Shozo; Ito, Kazuo; Shirai, Takayuki; and Koide, Tetsuya, 4,407,769., Cl. 264-60.000.

Inch, John D.: *See—*
Hennessy, Arnold; and Inch, John D., 4,407,025., Cl. 4-321.000.

Independent Broadcasting Authority: *See—*
Dean, Andrew; and Hutt, Peter R., 4,408,226., Cl. 358-139.000.

Index-Werke KG Hahn & Tessky: *See—*
Link, Helmut F., 4,407,176., Cl. 82-2.500.

Industrie Pirelli S.p.A.: *See—*
Bandel, Paolo; and Caretta, Renato, 4,407,346., Cl. 152-209.00R.

Ing. C. Olivetti & C., S.p.A.: *See—*
Adamoli, Contardo; Bernardis, Francesco; Cretaz, Franco; and Gaiardo, Mario, 4,407,591., Cl. 400-124.000.

Ingenieurkontor Lubeck: *See—*
Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, 4,407,903., Cl. 429-23.000.

Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Color image display apparatus. 4,408,143., Cl. 315-366.000.

Inoue, Hachiro. Under-reaming pile bore excavator. 4,407,376., Cl. 175-267.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,408,113., Cl. 219-69.00M.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Electrical machining apparatus. 4,408,113., Cl. 219-69.00M.

Inoue, Takao; Wakahata, Tamotsu; Momose, Keigo; and Maeda, Yukio, to Matsushita Electric Industrial Co., Ltd. Alkaline galvanic cell. 4,407,914., Cl. 429-174.000.

Inoue, Yoshio: *See—*
Takao, Hiroyoshi; and Inoue, Yoshio, 4,407,989., Cl. 523-340.000.

Institute Po Physikochimia pri Ban: *See—*
Sheludko, Alexey D.; Ivanov, Rumen V.; Nikolov, Dobrin V.; and Nishkov, Ivan M., 4,407,715., Cl. 209-164.000.

International Business Machines Corporation: *See—*
Arnold, Robert W.; and Skinner, Dean W., 4,408,129., Cl. 307-270.000.
Bradley, David J., 4,408,200., Cl. 340-747.000.
Burr, Peter; Chase, Brian D.; Paton, Andrew; and Sowter, Brian R., 4,408,163., Cl. 324-404.000.
Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., 4,408,231., Cl. 358-280.000.
Chu, Wei-Kan; and Howard, James K., 4,408,254., Cl. 361-321.000.
DasGupta, Sumit, 4,408,336., Cl. 377-34.000.
Fatula, Joseph J., Jr.; Garbarino, Paul L.; and Shepard, Joseph F., 4,407,058., Cl. 29-571.000.
Fleming, Rebecca P.; Lawhorne, Samuel, Jr.; Mele, John J.; and Prasad, Chandrika, 4,407,860., Cl. 427-98.000.
Galatha, Matthew J., 4,408,121., Cl. 235-494.000.
Grobman, Warren D., 4,408,338., Cl. 378-034.000.
Hall, David A.; and Olson, George P., 4,407,193., Cl. 101-93.010.
Hearn, Anthony R., 4,408,238., Cl. 360-104.000.
Plow, Gregory M., 4,408,273., Cl. 364-200.000.
Rogers, Dennis L.; and Widmer, Albert X., 4,408,167., Cl. 330-261.000.

International Harvester Co.: *See—*
Allori, Aldo; Wilger, John A.; and Voss, Julian D., 4,407,394., Cl. 188-71.400.
Rozeboom, Henry, 4,407,372., Cl. 172-572.000.
Swanson, William C.; Krukow, Eugene J.; and Stroup, Norman G., 4,407,109., Cl. 56-11.900.

International Mill Service, Inc.: *See—*
Deuschle, Roger A.; and Mueller, Charles P., 4,407,672., Cl. 75-10.00R.

International Minerals & Chemical Corp.: *See—*
Allen, Hanceford L.; Berry, William W.; and Leibfried, Robert W., 4,407,725., Cl. 502-25.000.

International Paint Company Limited, The: *See—*
Sghibartz, Cristian M., 4,407,997., Cl. 524-202.000.

International Paper Company: *See—*
Swenson, Rita, 4,407,474., Cl. 248-97.000.

International Rectifier Corporation: *See—*
Gould, Herbert J., 4,408,216., Cl. 357-15.000.

International Standard Electric Corporation: *See—*
Braun, Reinhold, 4,408,165., Cl. 328-134.000.
Domhan, Gerold; Hartl, Franz; and Vogelgsang, Kurt, 4,408,111., Cl. 200-318.000.
Drake, Cyril F.; and Tripp, Mary, 4,407,786., Cl. 424-14.000.

International Telephone and Telegraph Corporation: *See—*
Hockham, George A., 4,408,205., Cl. 343-16.00R.

Interthal, Werner: *See—*
Wilski, Hans; Interthal, Werner; and Engelhardt, Friedrich, 4,407,321., Cl. 137-13.000.

IRD Mechanalysis, Inc.: *See—*
Sisson, Edwin D.; Morrow, Robert S.; Stoutenburg, Donn V.; and Davis, Dean T., 4,408,285., Cl. 364-508.000.

Irvin, Howard B., to Phillips Petroleum Company. Separation of polymer of conjugated diene from a solution polymerization solvent using prestripping step. 4,408,039., Cl. 528-500.000.

Irwin, David M., to Potters Supply Company, The. Handling and support system for kiln fired ware. 4,407,654., Cl. 432-258.000.

Irwin, Maurice J.: *See—*
Murray, Richard; and Irwin, Maurice J., 4,407,611., Cl. 405-284.000.

Iseki, Kazuo, to Ohta Company Limited. Hinge. 4,407,044., Cl. 16-237.000.

Ishida, Keiichi: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,407,959., Cl. 435-288.000.

Ishida, Yukihiko: *See—*
Senshu, Hisashi; Ishikawa, Kazuhiro; Ishida, Yukihiko; and Kawagishi, Yoji, 4,407,924., Cl. 430-109.000.

Ishigaki, Isao: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Ishigaki, Masahiro: *See—*
Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, 4,407,491., Cl. 267-140.100.

Ishii, Daisuke, to Nippon Electric Co., Ltd. Radio paging system capable of accepting message with access of paging receiver. 4,408,099., Cl. 179-2.0EC.

Ishii, Jun, to Tokoy Shibaura Denki Kabushiki Kaisha. Keyboard switch circuit. 4,408,184., Cl. 340-365.00S.

Ishii, Kenzo: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, to Aisin Seiki Kabushiki Kaisha. Method and apparatus for performing hot air welding of thermoplastic resin parts. 4,407,691., Cl. 156-304.200.

Ishii, Shigeru: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, 4,407,813., Cl. 424-273.00P.

Ishikawa, Kazuhiro: *See—*
Senshu, Hisashi; Ishikawa, Kazuhiro; Ishida, Yukihiko; and Kawagishi, Yoji, 4,407,924., Cl. 430-109.000.

Ishikawa, Norio: *See—*
Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, 4,407,681., Cl. 148-12.00F.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, 4,407,652., Cl. 432-58.000.

Ishino, Hirokichi: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for producing acetaldehyde. 4,408,080., Cl. 568-484.000.

Isohata, Junji: *See—*
Sato, Hiroshi; Takatsu, Kei; and Isohata, Junji, 4,407,627., Cl. 414-757.000.

Isshiki, Isao: *See—*
Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, 4,407,291., Cl. 128-635.000.

Istituto Sieroteropico E. Vaccinogeno Toscano "Sclavo" S.p.A.: *See—*
Tabacco, Alessandro; and Tarli, Paolo, 4,407,962., Cl. 436-74.000.

Itani, Abdallah M.: *See—*
Peters, Philip H.; and Itani, Abdallah M., 4,408,268., Cl. 363-62.000.

Ito, Hiroyasu: *See—*
Iwata, Masayosi; Furuhashi, Kenshi; and Ito, Hiroyasu, 4,408,104., Cl. 200-61.540.

Ito, Kazuo: *See—*
Harada, Shozo; Ito, Kazuo; Shirai, Takayuki; and Koide, Tetsuya, 4,407,769., Cl. 264-60.000.

Ito, Takeo: *See—*
Kurachi, Hisao; Ito, Takeo; and Onoda, Hiroshi, 4,407,592., Cl. 400-54.000.

Ito, Toshihiko, to Okumura Corporation. Soil transporting vehicle for transporting soils excavated by shield machine. 4,407,622., Cl. 414-468.000.

Ito, Yukio, to Victor Company of Japan, Ltd. Recording mode locking system in a video signal magnetic recording apparatus. 4,408,235., Cl. 360-71.000.

Itoh, Satoru, to Fuji Xerox Co., Ltd. Image reading device. 4,408,232., Cl. 358-280.000.

ITT Industries, Inc.: *See—*
Place, Harry, 4,408,093., Cl. 178-22.190.

Ivanov, Rumen V.: *See—*
Sheludko, Alexey D.; Ivanov, Rumen V.; Nikolov, Dobrin V.; and Nishkov, Ivan M., 4,407,715., Cl. 209-164.000.

Ivlev, Anatoly D.: *See—*
Artemenko, Vladimir I.; Belikov, Viktor T.; Ivlev, Anatoly D.; and Mamzelev, Viktor A., 4,408,145., Cl. 318-135.000.

Iwaasa, Takashi: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

Iwai, Hiroshi: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,408,028., Cl. 526-200.000.

Iwai, Masatoshi: *See—*
Kirihara, Shigeki; and Iwai, Masatoshi, 4,407,900., Cl. 428-659.000.

Iwase, Katsuhiko; and Saito, Minoru, to IG-Technical Research Inc. Process and apparatus for cutting an elongate complex structure. 4,407,179., Cl. 83-865.000.

Iwata, Kazuroh: *See—*
Fukushima, Naoto; Hidaka, Kunihiko; and Iwata, Kazuroh, 4,407,397., Cl. 188-282.000.

Iwata, Masayosi; Furuhashi, Kenshi; and Ito, Hiroyasu, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Lever switch arrangement for motor vehicle. 4,408,104., Cl. 200-61.540.

Iwata, Yasuhiro: *See—*
Saito, Atsunori; Naganoma, Masanori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,408,278., Cl. 364-424.000.

Iyehara, Sadahiro: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,408,143., Cl. 315-366.000.

Izod, Thomas P. J.: *See—*
Abrahams, Louis; and Izod, Thomas P. J., 4,407,988., Cl. 523-334.000.

Izumi, Masao; Maruyama, Hideki; and Yoshida, Hiroshi, to Nissan Motor Company, Ltd. Flow outlet structure for automotive air conditioner. 4,407,186., Cl. 98-2.000.

J. I. Case Company: *See—*
Baylor, John M., 4,407,551., Cl. 305-57.000.
Hanson, Charles B., 4,407,081., Cl. 37-141.00T.

Jackson, Frederick D., to Jaybee Engineering Pty. Limited. Distribution and treatment means. 4,407,217., Cl. 118-24.000.

Jackson, Graham C.: *See—*
Crabb, Trevor A.; Jackson, Graham C.; and Jupp, Philip A., 4,407,670., Cl. 71-67.000.

Jackson, William R. Drive operated by receptacles alternately water filled and rendered buoyant. 4,407,130., Cl. 60-496.000.

Jadow, Henry C., to Kristy Wells, Inc. Sculptured artificial nail. 4,407,310., Cl. 132-73.000.

Jaffa, David, to Precision Screen Machines, Inc. Screen printing machine. 4,407,195., Cl. 101-123.000.

James River-Graphics, Inc.: *See—*
Bennett, Everett W.; and Suchy, Jan B., 4,407,921., Cl. 430-96.000.

Jansson, Erik C., to Aktiebolaget Bahco Verktyg. Display pack. 4,407,413., Cl. 206-493.000.

Japan Atomic Energy Research Institute: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,407,927., Cl. 430-197.000.

Jardin, Albert C. Solar furnace. 4,407,268., Cl. 126-430.000.

Jarnuszak, Ulrich: *See—*
Feldt, Adolf; Jarnuszak, Ulrich; Kiessling, Rolf; and Kock, Juergen, 4,407,341., Cl. 141-97.000.

Jaybee Engineering Pty. Limited: *See—*
Jackson, Frederick D., 4,407,217., Cl. 118-24.000.

Jensen, Eric L.; and Lee, Harry W., Jr., to Reynolds Metals Company. Container pressurization system. 4,407,340., Cl. 141-67.000.

Jensen, Norman E., to Honeywell Inc. Retard sensor and energy converter. 4,407,201., Cl. 102-248.000.

Jensen, Volker: *See—*
Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, 4,407,903., Cl. 429-23.000.

Jeschke, Willi, to Heidelberger Druckmaschinen AG. Device and method of monitoring dampening and inking equilibrium in offset printing units. 4,407,197., Cl. 101-148.000.

Jezbera, Val K., to Dataproducts Corporation. Print hammer. 4,407,194., Cl. 101-93.340.

Jockel, Alfred: *See—*
Denner, Peter; Ernst, Egon; and Jockel, Alfred, 4,407,064., Cl. 29-726.000.

John Crane-Houdaille, Inc.: *See—*
Trytek, Joseph J., 4,407,512., Cl. 277-96.100.

John Hopkins University, The: *See—*
Fraser, Allan B., 4,408,169., Cl. 331-65.000.

Johnson, David E. Limb exercise device. 4,407,496., Cl. 272-117.000.

Johnson & Johnson Baby Products Company: *See—*
Pieniak, Heinz A., 4,407,284., Cl. 604-385.000.

Johnson, Peter E. Method and apparatus for fabricating battery plate envelopes. 4,407,063., Cl. 29-623.200.

Johnson, Rubein V. Vented acoustic ear mold for hearing aids. 4,407,389., Cl. 181-135.000.

Johnston, Barry W. Closed loop solar collecting system operating a thermoelectric generator system. 4,407,129., Cl. 60-641.800.

Johnston, Christian W.: *See—*
Gould, Francis E.; and Johnston, Christian W., 4,408,023., Cl. 525-454.000.

Johnston, Russell A., to Otis Engineering Corporation; and Otis Engineering Corporation. Landing nipple for pumpdown well completion system. 4,407,364., Cl. 166-217.000.

Joll, David J.: *See—*
Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., 4,407,830., Cl. 426-272.000.

Jones, Addison B., to Rockwell International Corporation. Planar bubble memory circuit fabrication. 4,407,859., Cl. 427-89.000.

Jones, Jackie D.: *See—*
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,407,885., Cl. 428-246.000.

Jones, Oscar E.: *See—*
Dilliner, Monte M., 4,407,252., Cl. 123-504.000.

Jones, William W., to C. K. Kelley & Sons, Inc. Single line pressure-pressure pneumatic tube system. 4,407,613., Cl. 406-84.000.

Jorgenson, Gary W.: *See—*
Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., 4,408,231., Cl. 358-280.000.

Joseph, Brian J., to Eastman Kodak Company. Synchronizing mechanism for flash firing and shutter operation. 4,407,576., Cl. 354-135.000.

Joy Manufacturing Company: *See—*
Le Blanc, Louis H., Jr., 4,407,390., Cl. 181-230.000.

Jung, Alfred K., to Stauffer Chemical Company. Dialkylzinc compositions having improved thermal stability. 4,407,758., Cl. 260-429.900.

Jung, Wilhelm H.; and Diacont, George P., Jr., to AMF Incorporated. Twin needle with adjustable throat plate and feed plate. 4,407,210., Cl. 112-167.000.

Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, to Bayer Aktiengesellschaft. N-phenoxy(or thio)hydrocarbon 3,4,5-trihydroxypiperidine derivatives, their use in medicine and in animal nutrition. 4,407,809., Cl. 424-267.000.

Jupp, Philip A.: *See—*
Crabb, Trevor A.; Jackson, Graham C.; and Jupp, Philip A., 4,407,670., Cl. 71-67.000.

Justice, Donald S. Electric power apparatus. 4,408,151., Cl. 320-2.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Harada, Takamasa, 4,408,201., Cl. 340-784.000.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Hirao, Mamoru; Hijiya, Hiromi; and Miyaka, Toshio, 4,408,041., Cl. 536-4.100.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kirihara, Shigeki; and Iwai, Masatoshi, 4,407,900., Cl. 428-659.000.

Kabushiki Kaisha Medos Kenkyusho: *See—*
Ouchi, Teruo, 4,407,273., Cl. 128-6.000.

Kabushiki Kaisha Meidensha: *See—*
Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, 4,408,107., Cl. 200-144.00B.

Kabushiki Kaisha Suwa Seikosha: *See—*
Wakai, Yoichi, 4,408,328., Cl. 371-62.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Iwata, Masayosi; Furuhashi, Kenshi; and Ito, Hiroyasu, 4,408,104., Cl. 200-61.540.

Kabushiki Kaisha Towa Giken: *See—*
An, Seiji, 4,408,330., Cl. 372-45.000.

Kadokura, Sadao; Tomie, Takashi; and Naoe, Masahiko, to Teijin Limited. Method for producing a perpendicular magnetic recording medium. 4,407,894., Cl. 428-457.000.

Kadowaki, Takashi: *See—*
Nakamura, Shinichi; Kadowaki, Takashi; Okumura, Mitsuhiro; and Takada, Syun, 4,407,940., Cl. 430-546.000.

Kahara, Toshiki: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Kahovec, Jaroslav; Matejka, Zdenek; and Tomasek, Josef, to Ceskoslovenska akademie ved. Polymeric polydonor complexons and method for preparation thereof. 4,407,978., Cl. 521-56.000.

Kajino, Jirou: *See—*
Murata, Shigeki; Kajino, Jirou; and Minabe, Hitoshi, 4,408,236., Cl. 360-85.000.

Kamalski, Theodor I. E., to U.S. Philips Corporation. Receiver with field-strength dependent noise reduction control. 4,408,098., Cl. 381-11.000.

Kamio, Kunimasa: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,407,798., Cl. 424-246.000.

Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, to Japan Synthetic Rubber Co., Ltd. Photoresist composition. 4,407,927., Cl. 430-197.000.

Kanagawa, Shuichi: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Kanai, Hiromi: *See—*
Tamura, Katsuyoshi; and Kanai, Hiromi, 4,408,230., Cl. 358-213.000.

Kaneda, Isami: *See—*
Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, 4,408,312., Cl. 369-43.000.

Kaneoya, Tatsuo: *See—*
Fukasawa, Akira; Yoshimura, Masakatsu; Kaneoya, Tatsuo; and Takahashi, Kenji, 4,407,756., Cl. 260-378.000.

Kanojia, Ramesh M.; Wachter, Michael P.; and Chen, Robert H. K., to Ortho Pharmaceutical Corporation. Chemical compounds and processes. 4,408,060., Cl. 549-332.000.

Kanow, Willy: *See—*
Bahnsen, Bahne P.; and Kanow, Willy, 4,408,097., Cl. 381-15.000.

Kansai Paint Co., Ltd.: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,408,028., Cl. 526-200.000.

Kanzaka, Yoshihiro, to Yoshida Kogyo, K.K. Buckle for belts or the like. 4,407,049., Cl. 24-230.0AS.

Kaplan, Irwin M., to Spectrum Four-Syte Corporation. Tamper-resistant security system for and method of operating and installing same. 4,408,251., Cl. 361-172.000.

Kapp, Joachim-Friedrich: *See—*
Kirsch, Gerald; Kapp, Joachim-Friedrich; and Rufer, Clemens, 4,407,823., Cl. 424-317.000.

Kapp, Ludwig J., to Ziyad Incorporated. Paper feeding apparatus for printing apparatus. 4,407,597., Cl. 400-625.000.

Kasahara, Yasushi; and Ashihara, Yoshihiro, to Fujizoki Pharmaceutical Co., Ltd. Method for determining the activity of the angiotensin-converting enzyme. 4,407,944., Cl. 435-18.000.

Kasuga, Akira: *See—*
Miyatsuka, Hajime; Kasuga, Akira; and Yamada, Yasuyuki, 4,407,901., Cl. 428-694.000.

Kataishi, Takao; and Yokoi, Nobufumi, to Misawa Home Co., Ltd. Mortar treating apparatus. 4,407,225., Cl. 118-425.000.

Kato, Hideo; and Wada, Hiroto, to Fukuoka Paper Manufacturing Co., Ltd. Corner pad. 4,407,898., Cl. 428-542.800.

Kato, Keigo; and Kuroiwa, Yosio, to Toyota Jidosha Kabushiki Kaisha. Intake heating apparatus of an internal combustion engine. 4,407,254., Cl. 123-549.000.

Kato, Kichiro: *See—*
Akagi, Motonobu; Tanahashi, Toshio; and Kato, Kichiro, 4,407,244., Cl. 123-339.000.

Kato, Masao: *See—*
Furuya, Setsuko; Ohnishi, Shunji; and Kato, Masao, 4,408,012., Cl. 525-161.000.

Kato, Masatoshi: *See—*
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,407,448., Cl. 236-88.000.

Kato, Nobuharu: *See—*
Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, 4,407,691., Cl. 156-304.200.

Katsura, Masaki: *See—*
Shiratori, Masayuki; and Katsura, Masaki, 4,407,778., Cl. 422-90.000.

Kausch, Marvin L., to Cromemco Inc. Single throw multi-grip latching mechanism. 4,407,536., Cl. 292-29.000.

Kavage, William T.; and Monroe, Marvin E., to Optek, Inc. Optical inspector for slat-type container filling machine. 4,408,295., Cl. 364-552.000.

Kavoussi, James P.: *See—*
Hartford, Louise D.; and Kavoussi, James P., 4,407,585., Cl. 368-12.000.

Kawada, Mitsuru: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,407,757., Cl. 260-413.000.

Kawagishi, Yoji: *See—*
Senshu, Hisashi; Ishikawa, Kazuhiro; Ishida, Yukihiko; and Kawagishi, Yoji, 4,407,924., Cl. 430-109.000.

Kawaguchi, Hidemi: *See—*
Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, 4,408,107., Cl. 200-144.00B.

Kawaguchi, Yoshio: *See—*
Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, 4,408,114., Cl. 219-110.000.

Kawai, Taneichi: *See—*
Nishida, Koji; and Kawai, Taneichi, 4,408,242., Cl. 360-131.000.

Kawakami, Satoru: *See—*
Fushiki, Takeshi; Tagawa, Tohru; and Kawakami, Satoru, 4,407,999., Cl. 524-276.000.

Kawakatsu, Shiro; and Honda, Shoji, to Daihatsu Motor Co., Ltd. Control apparatus and method for engine/electric hybrid vehicle. 4,407,132., Cl. 60-716.000.

Kawamura, Tomihiko: *See—*
Nakauchi, Jun; and Kawamura, Tomihiko, 4,407,895., Cl. 428-463.000.

Kawasaki, Hiroshi: *See—*
Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, 4,407,939., Cl. 430-536.000.

Kawasaki, Kazuhiro: *See—*
Hijikata, Toshio; and Kawasaki, Kazuhiro, 4,407,683., Cl. 148-144.000.

Kawasaki, Masasuke. Non-roll tug-and-barge linkage. 4,407,214., Cl. 114-249.000.

Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. 2-Substituted-phenyl-1,3-perhydrothiazine-4-one. 4,407,799., Cl. 424-246.000.

Kazama, Seiji; and Tanaka, Michio, to Takeda Chemical Industries, Ltd. Method for curing urethane resins. 4,408,034., Cl. 528-54.000.

Kazami, Kazuyuki: *See—*
Wakabayashi, Hiroshi; Kazami, Kazuyuki; Ohtsubo, Yoshiaki; and Akasaka, Shigeo, 4,407,573., Cl. 354-33.000.

Kazlauskas, Gasparas. Welding insert ring and method of welding therefor. 4,408,112., Cl. 219-61.000.

Kehl, Norman J.; and Unser, Richard D., to Coach and Car Equipment Corporation. Walk-over seat with latch. 4,407,542., Cl. 297-103.000.

Kehl, William L., to Gulf Research & Development Co. Catalytic supports with controlled pore properties. 4,407,730., Cl. 502-208.000.

Kehl, William L., to Gulf Research & Development Company. Catalytic supports with controlled pore properties. 4,407,732., Cl. 502-208.000.

Keller, Teddy M., to United States of America, Navy. Phthalonitrile resin from diphthalonitrile monomer and amine. 4,408,035., Cl. 528-183.000.

Kelley, Mark A.: *See—*
Schramme, Stephan H.; and Kelley, Mark A., 4,407,042., Cl. 16-2.000.

Kelly, John W., to Haskel Engineering & Supply Company. Apparatus for supplying and controlling hydraulic swaging pressure. 4,407,150., Cl. 72-61.000.

Kemble, Mern S. Mold cleaning apparatus. 4,407,037., Cl. 15-93.00R.

Kemmner, Ulrich, to Robert Bosch GmbH. Fuel supply unit. 4,407,642., Cl. 417-366.000.

Kemp, Roy A.: *See—*
Hall, Derrard M.; Kemp, Roy A.; and Such, Christopher H., 4,407,990., Cl. 524-38.000.

Kempf, Dennis D., to FMC Corporation. Apparatus having an improved flow control pinch valve for dispensing flowable materials. 4,407,434., Cl. 222-214.000.

Kendziorski, Edward. Portable, collapsible practice golf flagstaff with stowable ground spike. 4,407,505., Cl. 273-177.00R.

Kenogard AB: *See—*
Estberg, Magnus F. O., 4,407,076., Cl. 34-9.500.

Keogh, Michael J., to Union Carbide Corporation. Flame retardant compositions based on alkylene-alkyl acrylate copolymers. 4,407,992., Cl. 524-94.000.

Kerko, David J.; and Morse, David L., to Corning Glass Works. Very fast fading photochromic glass. 4,407,966., Cl. 501-13.000.

Kern, James L.: *See—*
Moskowitz, Ronald; Raj, Kuldip; and Kern, James L., 4,407,518., Cl. 277-1.000.

Kernforschungsanlage Julich GmbH: *See—*
Barnert, Eike, 4,407,230., Cl. 118-716.000.

Kernforschungszentrum Karlsruhe G.m.b.H.: *See—*
Schretzmann, Klaus; Dorner, Stefan; and Schumacher, Gustav, 4,407,774., Cl. 376-300.000.

Kester, Dennis E.: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,407,873., Cl. 428-35.000.

Kett Electric Laboratory: *See—*
Fujita, Toshio, 4,408,128., Cl. 324-65.00R.

Khudaverdian, Vreij. Automatic tow rope rewinder. 4,407,460., Cl. 242-86.50A.

Kiernan, Jane A.; and Baker, Pamela K., to American Cyanamid Company. Phenylethanolamine derivatives and acid addition salts thereof for the depression of fat deposition in warm blooded animals. 4,407,819., Cl. 424-304.000.

Kiesling, Roy A.; and Kiesling, Roy A., III. Time delayed recording system. 4,408,309., Cl. 369-7.000.

Kiesling, Roy A., III: *See—*
Kiesling, Roy A.; and Kiesling, Roy A., III, 4,408,309., Cl. 369-7.000.

Kiessling, Rolf: *See—*
Feldt, Adolf; Jarnuszak, Ulrich; Kiessling, Rolf; and Kock, Juergen, 4,407,341., Cl. 141-97.000.

Kijesky, Michael M.; and Bogle, Charles T., to United States of America, Navy. Signal processing system. 4,408,284., Cl. 364-485.000.

Kikkoman Shoyu Co. Ltd.: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwassa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

Kikuchi, Hiroshi; and Sugimoto, Koichi, to Hitachi, Ltd. Method and apparatus of robot teaching. 4,408,286., Cl. 364-513.000.

Kimura, Shigeru, to Nifco Inc. Fastener. 4,407,618., Cl. 411-40.000.

Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, to Nissan Motor Company, Limited. Method of producing a flat thin film type oxygen sensor. 4,407,057., Cl. 29-570.000.

Kimura, Tadao; and Toriyama, Hideoki, to Sanyo-Kokusaku Pulp Co., Ltd. Coating system for semi-fluid coating composition comprising cement and aggregate. 4,407,222., Cl. 118-110.000.

Kimura, Toshihide: *See—*
Takeuchi, Yuzo; Kimura, Toshihide; and Takada, Shigetaka, 4,407,248., Cl. 123-439.000.

Kindell, Jerry L., to Honeywell Information Systems Inc. Circuit for implementing a digital computer instruction. 4,408,271., Cl. 364-200.000.

King, James D.; Burkhardt, Gary L.; Barton, John R.; and Matzkanin, George A., to Southwest Research Institute. Acoustic Barkhausen stress detector apparatus and method. 4,408,160., Cl. 324-209.000.

King, Nigel D., to Exxon Research and Engineering Co. Self-cleaning submersible pump. 4,407,636., Cl. 417-118.000.

Kingsley, Stuart A.: *See—*
Culshaw, Brian; Ball, Peter R.; Kingsley, Stuart A.; and Davies, David E. N., 4,408,354., Cl. 455-610.000.

Kingston, John C. Wheelchair loading device for passenger carrying vehicles. 4,407,624., Cl. 414-546.000.

Kiozpeoplou, Diana, to Colgate-Palmolive Company. Dentifrice. 4,407,788., Cl. 424-49.000.

Kirihara, Shigeki; and Iwai, Masatoshi, to Kabushiki Kaisha Kobe Seiko Sho. Electroplated corrosion resistant steels and method for manufacturing same. 4,407,900., Cl. 428-659.000.

Kirner, John F.: *See—*
Eskinazi, Victoria; Kirner, John F.; and Wilson, Charles R., 4,407,738., Cl. 502-334.000.

Kirsch, Gerald; Kapp, Joachim-Friedrich; and Rufer, Clemens, to Schering Aktiengesellschaft. Novel phenylacetic acid derivatives. 4,407,823., Cl. 424-317.000.

Kirsch, Howard C., to Mostek Corporation. MOS Bootstrapped buffer for voltage level conversion with fast output rise time. 4,408,136., Cl. 307-475.000.

Kitamura, Tadanori; and Takao, Nobuyuki, to Nitto Boseki Co., Ltd. Process for coating chopped strand of glass fiber with thermosetting resin. 4,407,866., Cl. 427-221.000.

Kitchen, William D., to Electromark, division of Mohawk International Inc. Electrochemical marking apparatus. 4,408,215., Cl. 346-165.000.

Kiyoshima, Hiroshi, to Singer Company, The. Convertible bed for overedge sewing machine. 4,407,211., Cl. 112-260.000.

Klein, George C. Anti-skid device for vehicles. 4,407,549., Cl. 303-6.00C.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Schneider, Wolfangang; Peters, Josef; and Gaffal, Karl, 4,407,631., Cl. 415-122.00R.

Kleinschmit, Peter: *See—*
Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, 4,408,064., Cl. 556-427.000.

Kleinsorgen, Klaus; and Munch, Erich, to Varta Batterie Aktiengesellschaft. Metering of paste onto a carrier tape. 4,407,338., Cl. 141-1.000.

Kleman, Joseph F. Portable and adjustable apparatus for cleaning, grooming, and otherwise treating dogs and other animals of similar size. 4,407,234., Cl. 119-158.000.

Klimek, Boleslaw M.: *See—*
Dvorachek, Harold A.; and Klimek, Boleslaw M., 4,407,553., Cl. 339-14.00P.

Klockner-Humboldt-Deutz AG: *See—*
Moser, Gottfried; Nau, Walter; and Neumann, Ernst D., 4,407,449., Cl. 237-12.30R.

Klockner-Humboldt-Deutz AG (Branch Establishment Fahr): *See—*
Wessel, Ulrich; and Scherer, Albrecht, 4,407,115., Cl. 56-370.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Rosendahl, Peter; and Renius, Karl T., 4,407,401., Cl. 192-61.000.

Klockner-Werke Aktiengesellschaft: *See—*
Wiechmann, Karl-Ernst, 4,407,438., Cl. 226-15.000.

Kluttz, Marvin H.: *See—*
Milberger, Lionel J.; Horn, Charles E.; and Kluttz, Marvin H., 4,407,183., Cl. 91-1.000.

Knebel & Rottger, Firma: *See—*
Knebel, Werner; Ronzon, Norbert; and Weidner, Eugen, 4,407,444., Cl. 236-12.100.

Knebel, Werner; Ronzon, Norbert; and Weidner, Eugen, to Knebel & Rottger, Firma. Thermostatically controlled mixer battery. 4,407,444., Cl. 236-12.100.

Knerr, Allan R.: *See—*
Sollner, George H.; Disque, Donny R.; and Knerr, Allan R., 4,408,032., Cl. 528-48.000.

Kniskern, Peter J.; Hagopian, Arpi; and Carlo, Dennis J., to Merck & Co., Inc. Meningitis vaccine. 4,407,949., Cl. 435-101.000.

Kobari, Harukuni: *See—*
Takeuchi, Takashi; and Kobari, Harukuni, 4,408,326., Cl. 371-38.000.

Kobari, Yukio: *See—*
Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, 4,408,107., Cl. 200-144.00B.

Kobayashi, Hiroyuki; Ohki, Yoshimasa; Toyoda, Yukio; and Akasaki, Isamu, to Matsushita Electric Industrial Company, Limited. GaN Electroluminescent semiconductor device and method for making the same. 4,408,217., Cl. 357-17.000.

Kobayashi, Masakazu, to Kyowa Vacuum Engineering, Ltd. Vacuum apparatus. 4,407,140., Cl. 62-268.000.

Kobayashi, Ryuichiro: *See—*
Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, 4,407,941., Cl. 430-566.000.

Kobayashi, Takashi: *See—*
Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, 4,407,354., Cl. 165-42.000.

Koch, Fritz E.: *See—*
Wilmsmann, Hans-Peter; and Koch, Fritz E., 4,407,471., Cl. 248-63.000.

Koch, Manfred, to Hoechst Aktiengesellschaft. Process for the preparation of optically active 2-chloropropionic acid esters. 4,408,068., Cl. 560-226.000.

Kochs Adler AG: *See—*
Meyer, Horst, 4,407,208., Cl. 112-121.120.

Kock, Juergen: *See—*
Feldt, Adolf; Jarnuszak, Ulrich; Kiessling, Rolf; and Kock, Juergen, 4,407,341., Cl. 141-97.000.

Koda, Yoshio, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Device for simulation of projected image. 4,407,655., Cl. 434-219.000.

Koerner, Gotz: *See—*
Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, 4,408,031., Cl. 528-26.000.

Koetz, Hans-Joachim: *See—*
Muellejans, Herbert; and Koetz, Hans-Joachim, 4,407,358., Cl. 165-166.000.

Koflach Sportgerate Gesellschaft m.b.H.: *See—*
Bucheder, Erwin, 4,407,048., Cl. 24-69.0SK.

Koh, Takuji: *See—*
Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, 4,407,588., Cl. 368-118.000.

Kohaut, John E., to Raceway Components, Inc. Trimless carpet base insert device. 4,408,090., Cl. 174-48.000.

Koide, Tetsuya: *See—*
Harada, Shozo; Ito, Kazuo; Shirai, Takayuki; and Koide, Tetsuya, 4,407,769., Cl. 264-60.000.

Koike, Yoshiyasu; Kubo, Osamu; Ido, Tadashi; and Uwaha, Masanobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Process for manufacturing powder for magnetic recording medium. 4,407,721., Cl. 252-62.590.

Koiwa, Atsushi: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Kojima, Tokumitsu: *See—*
Shiraki, Yoshihiro; and Kojima, Tokumitsu, 4,407,127., Cl. 60-641.500.

Kokusan Denki Co., Ltd.: *See—*
Boyama, Kimihiro, 4,407,246., Cl. 123-415.000.

Kolenik, Steve A.: *See—*
Langer, Alois A.; Kolenik, Steve A.; Heilman, Marlin S.; Mirowski, Mieczyslaw; and Mower, Morton M., 4,407,288., Cl. 128-419.0PG.

Kolycheck, Edmond G., to B. F. Goodrich Company, The. Curable polyurethanes. 4,408,020., Cl. 525-415.000.

Komatsu, Michiyasu; Tsuge, Akihiko; and Ota, Hiroyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Sintered body of ceramics and preparation thereof. 4,407,970., Cl. 501-97.000.

Komatsu, Michiyasu; Tsuge, Akihiko; and Ohta, Hiroyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Sintered body of silicon nitride-based ceramics. 4,407,971., Cl. 501-97.000.

Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, to Hitachi, Ltd. Pattern display apparatus. 4,408,197., Cl. 340-720.000.

Kondo, Takashi; and Hashimoto, Nobuo, to Minolta Camera Kabushiki Kaisha. Distance measuring arrangement. 4,408,288., Cl. 364-525.000.

Konishi, Masayuki: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Konishiroku Photo Ind. Co., Ltd.: *See—*
Mizukura, Noboru; and Koyama, Mikio, 4,407,938., Cl. 430-533.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Nakamura, Shinichi; Kadowaki, Takashi; Okumura, Mitsuhiro; and Takada, Syun, 4,407,940., Cl. 430-546.000.
Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, 4,407,941., Cl. 430-566.000.

Konno, Mutsuo: *See—*
Hashimoto, Kazuo; and Konno, Mutsuo, 4,408,182., Cl. 340-321.000.

Konz, Gerald J. Apparatus for immobilizing animals of randomly encountered sizes. 4,407,232., Cl. 119-103.000.

Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, to Gesellschaft fur Biotechnologische Forschung mbH (GBF). Process for obtaining metal-free corrinoids. 4,407,947., Cl. 435-85.000.

Koppers Company, Inc.: *See—*
Gerber, Donald J., 4,407,352., Cl. 165-9.100.

Kopsel, Manfred; and Emberger, Roland, to Haarmann & Reimer GmbH. Di- and Tetra-hydrobenzofuranones as scents and aroma substances. 4,407,740., Cl. 252-522.00R.

Korenko, Michael K. Solid solution strengthened duct and cladding alloy D9-B1. 4,407,673., Cl. 75-128.00A.

Korff, Walter H. Window construction for passenger vehicles. 4,407,540., Cl. 296-146.000.

Kostner, Armin; Lenhart, Richard; and Bittner, Klaus-Jurgen, to Hoechst Aktiengesellschaft. Double-walled hollow rod of flexible tubular material. 4,407,339., Cl. 141-10.000.

Koszi, Louis A.: *See—*
Hartman, Robert L.; Koszi, Louis A.; and Schwartz, Bertram, 4,408,331., Cl. 372-46.000.

Kotobuki Seiyaku Company Limited: *See—*
Tomiyama, Tsuyoshi; and Tomiyama, Akira, 4,407,816., Cl. 424-275.000.

Koukal, Heinz; and Grimm, Hermann, to Daimler-Benz Aktiengesellschaft. Sliding guide mechanism. 4,407,167., Cl. 74-501.00R.

Kovach, Stephen M.: *See—*
Myers, George D., deceased; Hettinger, William P., Jr.; and Kovach, Stephen M., 4,407,714., Cl. 208-120.000.

Kovalchik, Donald P.; and Battocletti, Frank E., to TransData, Inc. Time division multiplier transducer with digitally derived phase shift adjustment for reactive power and energy measurement. 4,408,283., Cl. 364-483.000.

Koyama, Haruo: *See—*
Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, 4,407,923., Cl. 430-106.600.

Koyama, Mikio: *See—*
Mizukura, Noboru; and Koyama, Mikio, 4,407,938., Cl. 430-533.000.

Koyama, Takuo: *See—*
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, 4,408,197., Cl. 340-720.000.

Kozima, Katuhiro: *See—*
Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, 4,407,682., Cl. 148-128.000.

Kozinda, Zinaida J.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Krabbe, Wilfried, to Philipp Holzman AG. Liquid storage tank with steel-reinforced concrete exterior. 4,407,098., Cl. 52-167.000.

Kralik, Douglas R.; and Mitchell, Hal D., to Figgie International Inc. Suspension system for headgear. 4,407,021., Cl. 2-416.000.

Kramer, Kenneth E.: *See—*
Dreikorn, Barry A.; and Kramer, Kenneth E., 4,407,820., Cl. 424-304.000.

Krause, Hans-Peter: *See—*
Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, 4,407,809., Cl. 424-267.000.

Krauss-Maffei AG: *See—*
Schwarzler, Peter, 4,408,139., Cl. 310-13.000.

Krief, Alain, to Roussel Uclaf. Methyl cyclopropane-1,3-dicarboxylate. 4,408,066., Cl. 560-124.000.

Krishnakumar, Suppayan M.: *See—*
Beck, Martin H.; Krishnakumar, Suppayan M.; and Collette, Wayne N., 4,407,651., Cl. 432-11.000.

Kristy Wells, Inc.: *See—*
Jadow, Henry C., 4,407,310., Cl. 132-73.000.

Krukow, Eugene J.: *See—*
Swanson, William C.; Krukow, Eugene J.; and Stroup, Norman G., 4,407,109., Cl. 56-11.900.

Krzywdziak, Alain: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Kubbota, Masashi; and Noda, Touru, to Mitsubishi Paper Mills, Ltd. Process for preparing a polyolefin resin-coated paper for photographic use. 4,407,896., Cl. 428-513.000.

Kubo, Jun; and Honda, Minoru, to Nissan Motor Company, Limited. Method and device for determining acceleration and/or deceleration of a moving object. 4,408,290., Cl. 364-566.000.

Kubo, Kanji; and Wada, Kenichi, to Hitachi, Ltd. Data processing system with data cross-block-detection feature. 4,408,275., Cl. 364-200.000.

Kubo, Osamu: *See—*
Koike, Yoshiyasu; Kubo, Osamu; Ido, Tadashi; and Uwaha, Masanobu, 4,407,721., Cl. 252-62.590.

Kuchinsky, Saul; Bellman, Robert H.; and Ogle, James A., to Burroughs Corporation. Method of making an assembly of electrodes. 4,407,934., Cl. 430-314.000.

Kudirka, Paul E., to Shintron Company, Inc. Video character generator. 4,408,198., Cl. 340-729.000.

Kuhl, Henry Y. Apparatus for removal of mold from the exterior of meat products. 4,407,036., Cl. 15-3.130.

Kuhlmann, Fernand: *See—*
Wanetzky, Erwin; Hugo, Franz; and Kuhlmann, Fernand, 4,407,488., Cl. 266-148.000.

Kuhlmann, Gerhard, to Robert Bosch GmbH. Tool-clamping device. 4,407,615., Cl. 408-239.00A.

Kuhls, Jurgen; and Hartwimmer, Robert, to Hoechst Aktiengesellschaft. Free-flowing sintering powders which have improved properties and are based on tetrafluoroethylene polymers and a process for their manufacture. 4,408,007., Cl. 524-546.000.

Kuhn, Klaus G. Stuffing attachment for a continuously operating crinkling unit. 4,407,052., Cl. 26-2.00R.

Kukolja, Stjepan; and Pfeil, Janice L., to Eli Lilly and Company. Unsymmetrical azetidinone aldehyde disulfides and process. 4,407,750., Cl. 260-239.00A.

Kume, Kazunari: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.

Kummer, Joseph T.; and Oei, Djong-Gie, to Ford Motor Company. Chemically regenerable redox fuel cell and method of operating the same. 4,407,902., Cl. 429-15.000.

Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, to Toyo Rubber Industry Co., Ltd., The; and Toyoto Jidosha Kogyo Kabushiki Kaisha. Rubber bearing device having air damping capacity. 4,407,491., Cl. 267-140.100.

Kuo, Clinton C. K., to Motorola, Inc. Memory with permanent array division capability. 4,408,305., Cl. 365-189.000.

Kuo, Clinton C. K., to Motorola, Inc. Column and row erasable EEPROM. 4,408,306., Cl. 365-218.000.

Kupec, James D.: *See—*
Guterman, Daniel C.; and Kupec, James D., 4,408,303., Cl. 365-205.000.

Kurachi, Hisao; Ito, Takeo; and Onoda, Hiroshi, to Brother Kogyo Kabushiki Kaisha. Power-operated typewriter. 4,407,592., Cl. 400-54.000.

Kurata, Masami: *See—*
Moriguchi, Fujio; and Kurata, Masami, 4,408,212., Cl. 346-76.0PH.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Hashizume, Hideyuki; and Tsuchiya, Tadashi, 4,407,887., Cl. 428-332.000.
Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, 4,407,799., Cl. 424-246.000.

Kurihara, Masao: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Kurohata, Hitoshi: *See—*
Watanabe, Masayuki; Yamaya, Hiroshi; and Kurohata, Hitoshi, 4,407,552., Cl. 339-143.00R.

Kuroiwa, Yosio: *See—*
Kato, Keigo; and Kuroiwa, Yosio, 4,407,254., Cl. 123-549.000.

Kurosawa, Kei; and Shibata, Tadashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing semiconductor device. 4,407,851., Cl. 427-39.000.

Kuse, Kazumasa: *See—*
Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, 4,407,491., Cl. 267-140.100.

Kusmer, Raymond J., to McGraw-Edison Company. Plaster frame for recessed lighting. 4,408,262., Cl. 362-147.000.

Kuster, Erich: *See—*
Goossens, Bernhard; Kuster, Erich; Dahmen, Kurt; and Barthell, Eduard, 4,408,073., Cl. 564-204.000.

Kuwahara, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. Hysteresis circuit. 4,408,132., Cl. 307-359.000.

Kuyava, Charles C.: *See—*
Burton, John H.; Staehle, Bradford G.; and Kuyava, Charles C., 4,407,278., Cl. 128-79.000.

Kwan, William C. T., to Rolls-Royce Limited. Fuel burners. 4,407,128., Cl. 60-737.000.

Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, to Dr. C. Otto & Comp. G.m.b.H. Apparatus to extract gases evolving during charging of a coke oven. 4,407,702., Cl. 202-263.000.

Kyburz, Emilio: *See—*
Hunkeler, Walter; and Kyburz, Emilio, 4,407,752., Cl. 260-239.30P.

Kydd, Paul H., to HRI, Inc. Method for in situ recovery of heavy crude oils and tars by hydrocarbon vapor injection. 4,407,367., Cl. 166-267.000.

Kyowa Vacuum Engineering, Ltd.: *See—*
Kobayashi, Masakazu, 4,407,140., Cl. 62-268.000.

Laar, Hans, to Siemens Aktiengeselischaft. Device at cable ends to serve as a preparation for splicing. 4,408,091., Cl. 174-74.00R.

Labeda, David P.; Martin, John H. E. J.; and Goodman, Joseph J., to American Cyanamid Company. Process for producing antibiotic X-14868A. 4,407,946., Cl. 435-75.000.

Laboratoire L. Lafon: *See—*
Lafon, Louis, 4,407,822., Cl. 424-315.000.

Laboratoires Chauvin-Blache: *See—*
Bonne, Claude; Coquelet, Claude; and Sincholle, Daniel, 4,407,812., Cl. 424-273.00R.

Ladet, Michel; Lefebvre, Jacques; and Patrie, Jos, to Societe de Vente de l'Aluminium Pechiney. Aluminum electrical contacts and method of making same. 4,408,110., Cl. 200-263.000.

Lafon, Louis, to Laboratoire L. Lafon. Benzamido-alkyl-hydroxamic acid derivatives. 4,407,822., Cl. 424-315.000.

Landau, Richard F., to Eaton Corporation. Method for operating a magnetron sputtering apparatus. 4,407,708., Cl. 204-192.00R.

Landenberger, Ulric, to General Motors Corporation. Chain motion measuring device. 4,407,162., Cl. 73-527.000.

Landis, Arthur M.: *See—*
deRosset, Armand J.; Priegnitz, James W.; and Landis, Arthur M., 4,408,065., Cl. 560-67.000.

Landry, Deborah N.: *See—*
Lee, Lieng-Huang; and Landry, Deborah N., 4,407,920., Cl. 430-59.000.

Langdon, William K., to BASF Wyandotte Corporation. Non-ionic surfactants containing acetal groups. 4,408,084., Cl. 568-601.000.

Langer, Alois A.; Kolenik, Steve A.; Heilman, Marlin S.; Mirowski, Mieczyslaw; and Mower, Morton M., to Mirowski, Mieczyslaw. Implantable heart stimulator and stimulation method. 4,407,288., Cl. 128-419.0PG.

LaPrade, Steve A.: *See—*
Widener, Joseph; Britt, James M.; and LaPrade, Steve A., 4,407,969., Cl. 501-95.000.

Lapsys, Algis L., to United States of America, Army. Resilient band structure having improved laminated core and drive shoes. 4,407,550., Cl. 305-35.0EB.

Larsen, Ole J. F. Method and apparatus for producing and laying a ballasted mat for ground stabilization. 4,407,606., Cl. 405-17.000.

Larson, Wayne F., to Supra Products, Inc. Peripheral key tumbler lock. 4,407,147., Cl. 70-365.000.

Lasater, Henry C. Liquid degasification device. 4,407,665., Cl. 55-55.000.

Latala, John R.: *See—*
Grabowski, John S.; Shiau, Chin-Chih; and Latala, John R., 4,408,342., Cl. 382-9.000.

Lathrop, Patrick J.; and Rothrock, Phyllis C., to Carnation Company. Instant refried bean powder and process for producing the same. 4,407,840., Cl. 426-629.000.

Latimer, John P.; and Miller, Glenn E., to Deepsea Ventures, Inc. Liquid flow system including multi-axial liquid flow screening means for excluding oversized slender objects carried by a liquid. 4,407,716., Cl. 210-155.000.

Lauro, Luciano: *See—*
Bedini, Raffaele; Lauro, Luciano; and Pinotti, Pier C., 4,408,280., Cl. 364-474.000.

Lawhorne, Samuel, Jr.: *See—*
Fleming, Rebecca P.; Lawhorne, Samuel, Jr.; Mele, John J.; and Prasad, Chandrika, 4,407,860., Cl. 427-98.000.

Lawrence, George J.: *See—*
Bowen, Terry P.; Lawrence, George J.; and Wiley, Lawrence G., 4,408,353., Cl. 455-608.000.

Lazerson, Max M.: *See—*
Bohme, Rolf C.; and Lazerson, Max M., 4,407,415., Cl. 209-556.000.

Lazrus, Julian: *See—*
Bauer, Peter; and Lazrus, Julian, 4,407,032., Cl. 8-158.000.

Lazzari, William B., to Western Electric Company, Inc. Safety scaffold for metal melting furnaces. 4,407,392., Cl. 182-128.000.

Le, Tri C.; and Noble, Bruce P., to ACF Industries, Incorporated. Pressure energized sealing connection with annular seal ring. 4,407,516., Cl. 277-206.00R.

Le Blanc, Louis H., Jr., to Joy Manufacturing Company. Pneumatic motor. 4,407,390., Cl. 181-230.000.

Lecomte, Jeanne-Marie: *See—*
Roques, Bernard; and Lecomte, Jeanne-Marie, 4,407,794., Cl. 424-177.000.

Ledbetter, Buford B. Apparatus for cutting and/or scribing circles and ovals. 4,407,074., Cl. 33-27.00H.

Ledermann GmbH & Co.: *See—*
Storzer, Josef, 4,407,178., Cl. 83-835.000.

Lee, Garland G., to General Electric Company. Compositions comprising thermoplastic resin, mold release agent and long chained fatty acid. 4,408,000., Cl. 524-315.000.

Lee, Harry W., Jr.: *See—*
Jensen, Eric L.; and Lee, Harry W., Jr., 4,407,340., Cl. 141-67.000.

Lee, Lieng-Huang; and Landry, Deborah N., to Xerox Corporation. Silicone ammonium salts and photoresponsive devices containing same. 4,407,920., Cl. 430-59.000.

Lee, Minyoung; and Szala, Lawrence E., to General Electric Company. Ceramic Al_2O_3 substoichiometric TiC body. 4,407,968., Cl. 501-87.000.

Lee, Shy-Fuh, to Zoecon Corporation. Phenoxy unsaturated carboxylic acid esters and derivatives. 4,408,076., Cl. 568-325.000.

Leesona Corporation: *See—*
Brouwer, Charles W., 4,407,334., Cl. 139-435.000.

Lefebvre, Jacques: *See—*
Ladet, Michel; Lefebvre, Jacques; and Patrie, Jos, 4,408,110., Cl. 200-263.000.

Lefrancois, Philip A.: *See—*
Ulmer, Harry E.; Pickens, Donald; Rahl, Forrest J.; and Lefrancois, Philip A., 4,407,783., Cl. 423-347.000.

Leibfried, Robert W.: *See—*
Allen, Hanceford L.; Berry, William W.; and Leibfried, Robert W., 4,407,725., Cl. 502-25.000.

Leithauser, Horst: *See—*
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,407,977., Cl. 521-56.000.

Le-Khac, Bi, to Atlantic Richfield Company. Polyblend of styrene copolymers and molded article produced therefrom. 4,408,010., Cl. 525-73.000.

Lem Products, Inc.: *See—*
Trautlein, Ray W., 4,407,524., Cl. 282-9.00R.

Lenard, Peter: *See—*
Beck, Ernst; and Lenard, Peter, 4,407,172., Cl. 76-112.000.

Lenhart, Richard: *See—*
Kostner, Armin; Lenhart, Richard; and Bittner, Klaus-Jurgen, 4,407,339., Cl. 141-10.000.

Lenke, Dieter: *See—*
Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, 4,407,810., Cl. 424-270.000.

Le Noane, Georges; and Boscher, Daniel. Method and apparatus for fabricating optical fibers. 4,407,667., Cl. 65-3.110.

Lentz, David J.; and Houghton, Richard B., to Critikon. Connector for thermodilution catheter. 4,407,298., Cl. 128-713.000.

Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske Fabrik Produktionsaktieselskab): *See—*
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,407,751., Cl. 260-239.100.

Leppard, David G.: *See—*
Fryberg, Mario; and Leppard, David G., 4,407,935., Cl. 430-487.000.

Leppavuori, Seppo: *See—*
Rapeli, Juha; and Leppavuori, Seppo, 4,408,170., Cl. 333-172.000.

Les Fabriques d'Assortiments Reunies S.A.: *See—*
Wirz, Gustav; and Pizzagalli, Franco, 4,407,262., Cl. 125-13.00R.

Leveque, Alain: *See—*
Foraison, Dominique; and Leveque, Alain, 4,407,780., Cl. 423-10.000.

Lever Brothers Company: *See—*
Davies, James F.; and Tune, John B., 4,407,722., Cl. 252-91.000.

Levine, Jules D., to Texas Instruments Incorporated. Large area, fault tolerant solar energy converter. 4,407,320., Cl. 136-250.000.

Lewis, Barry J.: *See—*
Smith, Graydon E.; and Lewis, Barry J., 4,407,878., Cl. 428-119.000.

Lewis, Jeffrey M.: *See—*
Morin, Robert W.; Lewis, Jeffrey M.; and Bobrycki, Richard, 4,407,223., Cl. 118-212.000.

Leybold-Heraeus GmbH: *See—*
Wanetzky, Erwin; Hugo, Franz; and Kuhlmann, Fernand, 4,407,488., Cl. 266-148.000.

Li, Ming K., to General Electric Company. Purification of bisphenol-A. 4,408,087., Cl. 568-724.000.

Liang, George P., to United Technologies Corporation. Airfoil pedestaled trailing edge region cooling configuration. 4,407,632., Cl. 416-97.00R.

Licentia Patent-Verwaltungs-GmbH: *See—*
Maurer, Robert; Blum, Alfons; and Hoffmann, Michael, 4,408,351., Cl. 455-260.000.
Meyerhoff, Klaus, 4,407,465., Cl. 244-3.160.
Wahl, Helmut; and Hofmeister, Hagen, 4,408,327., Cl. 371-47.000.

Lichtenberg, Heinz D., to Dresser Industries, Inc. Apparatus for measuring the diameter of a borehole. 4,407,157., Cl. 73-151.000.

Lieber, Clement E.; Cooper, Robert P.; and Estes, Michael S., to American Hospital Supply Corporation. Method of mounting an electrical lead in a catheter body. 4,407,304., Cl. 128-786.000.

Liebman, Alan J., to Xerox Corporation. Process for developing electrostatic images with magnetic toner. 4,407,925., Cl. 430-122.000.

Liedtke, Christa: *See—*
Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, 4,408,064., Cl. 556-427.000.

Lieffers, William C.; and Hatter, Marjorie M., to Union Oil Company of California. Method for gas capping of idle geothermal steam wells. 4,407,366., Cl. 166-250.000.

Life Industries Corporation: *See—*
Maggi, Richard D., 4,407,741., Cl. 252-542.000.

Lim, Franklin, to Damon Corporation. Reversible microencapsulation of a core material. 4,407,957., Cl. 435-178.000.

Lima Electric Co., Inc., The: *See—*
Szippl, Andrew F.; and Walker, Robert B., 4,408,152., Cl. 322-29.000.

Limberg, Elmar: *See—*
Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, 4,407,903., Cl. 429-23.000.

Lindbert, Brook A., to General Motors Corporation. Control system for split axle drive mechanism. 4,407,387., Cl. 180-247.000.

Lindbloom, George G.: *See—*
Cerutti, Henry P.; Cannon, Robert A.; and Lindbloom, George G., 4,407,609., Cl. 405-146.000.

Linden, Hans W.: *See—*
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,407,762., Cl. 260-508.000.

Lindqvist, Albert. Modularized pneumatic tractor with debris liquefier. 4,407,035., Cl. 15-3.000.

Lingafelter, Jerry K.: *See—*
Willis, Clyde A.; and Lingafelter, Jerry K., 4,407,373., Cl. 173-141.000.

Linguenheld, Louis: *See—*
Soula, Gerard; and Linguenheld, Louis, 4,408,075., Cl. 564-474.000.

Linick, James. Steering mechanism for a thermal imaging system and rangefinder therefor. 4,407,464., Cl. 244-3.130.

Link, Helmut: *See—*
Bernauer, Karl; Link, Helmut; and Stohler, Harro, 4,407,814., Cl. 424-273.00R.

Link, Helmut F., to Index-Werke KG Hahn & Tessky. Feeding device for barstock on turning machines and the like. 4,407,176., Cl. 82-2.500.

Link, Manfred, to Triumph-Adler A.G. fur Buround Informationstechnik. Error correcting typewriter ribbon system. 4,407,594., Cl. 400-212.000.

Links, Heins: *See—*
Eheim, Franz; Hofer, Gerald; and Links, Heins, 4,407,250., Cl. 123-450.000.

Lionelle, Joseph E.; and Staffa, Jeffrey A., to Bio-Systems Research, Inc. Anti viral, anti bacterial and/or anti fungal composition containing metal oxyalkylate. 4,407,818., Cl. 424-289.000.

Lipkin, Semen I.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Lippe, Frank; Ottenhof, Henricus A. W. E. M.; and De Boer, Rudolf, to Stichting Nederlands Instituut Voor Zuivelonderzoek (NIZO). Continuous method for dissolving milk proteins containing casein and an apparatus for performing the method as well as water soluble milk protein products of a novel type. 4,407,747., Cl. 260-120.000.

Lippman, Lawrence G.: *See—*
Gunzberg, Guy W.; and Lippman, Lawrence G., 4,408,291., Cl. 364-900.000.

Liu, Hon. Stereoscopic photography. 4,407,575., Cl. 354-115.000.

Lockard, Joseph L., to AMP Incorporated. Cam actuated DIP test socket. 4,407,555., Cl. 339-75.00M.

Lockey, David J.: *See—*
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,408,335., Cl. 377-18.000.

Lockheed Missiles & Space Co., Inc.: *See—*
Rosenberg, William J.; and Title, Alan M., 4,407,566., Cl. 350-404.000.

Loder, Harry A.; and Mathna, Charles A., to Minnesota Mining & Manufacturing Co. Fade-resistant and abrasion resistant photographic reproduction, method of preparing, and photographic product therefor. 4,407,932., Cl. 430-256.000.

Lofling, Tommy: *See—*
Nilsson, Lars-Erik; and Lofling, Tommy, 4,407,073., Cl. 33-203.180.

Lommerzheim, Werner: *See—*
Flockenhaus, Claus; Hackler, Erich; and Lommerzheim, Werner, 4,407,974., Cl. 518-711.000.

Lonati, Francesco, to Lonati S.p.A. Knitwork drawing device in a double cylinder circular knitting machine. 4,407,145., Cl. 66-14.000.

Lonati S.p.A.: *See—*
Lonati, Francesco, 4,407,145., Cl. 66-14.000.

Long, Jacques, to Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel. Electrically-driven rotary vane pump. 4,407,641., Cl. 417-356.000.

Long, John V.: *See—*
Gaghani, John; and Long, John V., 4,407,980., Cl. 521-99.000.

L'Oreal: *See—*
Gueret, Jean-Louis H., 4,407,311., Cl. 132-88.500.

Louie, Henry: *See—*
Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry, 4,407,393., Cl. 188-2.00F.

Lovelace, Alan M.; and Wood, Kenneth E., to United States of America, National Aeronautics and Space Administration. Apparatus for accurately preloading auger attachment means for frangible protective material. 4,407,165., Cl. 73-862.540.

Lowe, Henry E. Animal measuring apparatus. 4,407,070., Cl. 33-169.00R.

Lowe, Ted: *See—*
Dilliner, Monte M., 4,407,252., Cl. 123-504.000.

Lowery, Kirby, Jr.: *See—*
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., 4,408,025., Cl. 526-119.000.

Lowry, Alan, to Hartzell Manufacturing, Inc. Storage box. 4,407,411., Cl. 206-387.000.

Lucas Industries Limited: *See—*
Brotherston, Colin P.; and Adey, Anthony J., 4,407,644., Cl. 417-462.000.
Brown, David J., 4,407,915., Cl. 429-217.000.
Burrage, Robert G., 4,407,118., Cl. 60-39.281.
Edwards, Roy E., 4,407,547., Cl. 303-6.00A.

Ludlow Corporation: *See—*
McCorkle, James, 4,407,443., Cl. 383-5.000.

Lukes, Henry J., to Sundstrand Data Control, Inc. Tape tension control for a tape transducer. 4,408,144., Cl. 318-7.000.

Luks, Daniel W., to Frenchtown American Corp. Method for producing spheroidal ceramics. 4,407,967., Cl. 501-81.000.

Lukyanov, Anatoly A.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Lumma, William C., Jr.: *See—*
Baldwin, John J.; and Lumma, William C., Jr., 4,408,047., Cl. 544-250.000.

Lummus Industries, Inc.: *See—*
Van Doorn, Donald W.; Webb, Tommy W.; and Hawkins, James B., 4,407,047., Cl. 19-64.500.

Lumpkin, Steven B. Two-wire exchange telephone system. 4,408,102., Cl. 179-99.00H.

Lundgren, Bengt, to SKF Nova AB. Friction joint. 4,407,603., Cl. 403-370.000.

Lundstrom, Eric A., to United States of America, Navy. Waveplate for correcting thermally induced stress birefringence in solid state lasers. 4,408,334., Cl. 372-98.000.

Lyon, Lyndall W.; Reneau, Phillip G.; and Coppock, Paul G., to Citation-Walther Corporation, The. Marking means for hose coupling expansion attachment machine. 4,407,192., Cl. 101-7.000.

Lyons, Leon W. Archery bowstring release device. 4,407,260., Cl. 124-35.00A.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Simeth, Claus, 4,407,198., Cl. 101-248.000.

M. W. Kellogg Company, The: *See—*
van Dijk, Christiaan P.; Solbakken, Aage; and Rovner, Jerry M., 4,407,973., Cl. 518-703.000.

M. Wile & Company, Inc.: *See—*
Gunzberg, Guy W.; and Lippman, Lawrence G., 4,408,291., Cl. 364-900.000.

Ma, Bing C.: *See—*
Han, Yu-Pin; and Ma, Bing C., 4,407,696., Cl. 156-653.000.

MAC Valves, Inc.: *See—*
Neff, James A., 4,407,323., Cl. 137-454.200.

Macbeth, William B., Jr.: *See—*
Davis, Richard L.; Graf, Harlan G.; Edwards, Don L.; and Macbeth, William B., Jr., 4,407,700., Cl. 202-85.000.

MacDermott, Carl H.; and Brown, Richard S., Jr., to Rains, Louis; and Smith, Arthur Albert, Jr. Illuminated spirit vial and level. 4,407,075., Cl. 33-348.200.

MacGregor, Clive D. R.; and Forsyth, William G., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Absorption of carbon dioxide. 4,407,723., Cl. 252-192.000.

Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, to Japan Atomic Energy Research Institute; and Yuasa Battery Co., Ltd. Method of producing a hydrophilic membrane from a polyethylene base film. 4,407,846., Cl. 427-35.000.

MacPherson, William F.: *See—*
Bulley, Raymond M.; MacPherson, William F.; and Youhas, Robert F., 4,408,248., Cl. 361-91.000.

Maeda, Yukio: *See—*
Inoue, Takao; Wakahata, Tamotsu; Momose, Keigo; and Maeda, Yukio, 4,407,914., Cl. 429-174.000.

Maekawa, Kouzi: *See—*
Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, 4,407,923., Cl. 430-106.600.

Maekawa, Yukio: *See—*
Sugimoto, Naohiko; Maekawa, Yukio; and Ichikawa, Yasunori, 4,407,937., Cl. 430-527.000.

Magdon, John: *See—*
Haardt, Henry; Magdon, John; and Noble, Eric, 4,407,766., Cl. 264-2.200.

Maggi, Richard D., to Life Industries Corporation. Hydrotropic cleaner. 4,407,741., Cl. 252-542.000.

Maglio, Murrill: *See—*
Moore, Stephen D.; and Maglio, Murrill, 4,407,322., Cl. 137-268.000.

Maglio, Ralph A., to Firestone Tire & Rubber Company, The. Method of producing a contoured disk wheel. 4,407,772., Cl. 264-294.000.

Mahony, John E., to General Electric Company. Method and means for reducing noise in television display system. 4,408,228., Cl. 358-167.000.

Maier, Bruce R.: *See—*
Ogawa, Kenji, 4,408,241., Cl. 360-128.000.

Malick, Howard M.: *See—*
Ferguson, Andrew M.; and Malick, Howard M., 4,407,832., Cl. 426-281.000.

Malizio, Andrew B., to United States Pipe and Foundry Company. Polyolefin coating containing an ionomer for metal substrates. 4,407,893., Cl. 428-454.000.

Mallon, Charles B., to Union Carbide Corporation. Co-condensates of alkyl silicates and alkoxy silanes. 4,408,009., Cl. 524-858.000.

Mallory, Glenn O.; and Horhn, Theresa R., to Richardson Chemical Company. Controlling boron content of electroless nickel-boron deposits. 4,407,869., Cl. 427-443.100.

Malykh, Vladimir A.: *See—*
Chegolya, Alexandr S.; Malykh, Vladimir A.; Chizhov, Vladimir V.; Yankov, Viktor I.; and Pirog, Nikolai I., 4,407,450., Cl. 239-8.000.

Mamzelev, Viktor A.: *See—*
Artemenko, Vladimir I.; Belikov, Viktor T.; Ivlev, Anatoly D.; and Mamzelev, Viktor A., 4,408,145., Cl. 318-135.000.

Mankey, Harry S.: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,407,381., Cl. 180-6.480.

Mann, Donald B. Pivotally mounted ripping teeth assembly on dozer blade. 4,407,080., Cl. 37-117.500.

Manning, Clyde L.: *See—*
Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., 4,408,231., Cl. 358-280.000.

Manning, John J., to Mesa Technology. Semiconductor die bonding machine. 4,407,440., Cl. 228-6.00A.

Manzonelli, Carmen C.; and Chatfield, David A., to National Steel Corporation. Method of producing high tensile aluminum-magnesium alloy sheet and the products so obtained. 4,407,679., Cl. 148-2.000.

Marcamor, Inc.: *See—*
Brodbeck, Robert M., 4,408,101., Cl. 179-90.0BD.

Marchenkov, Nikolai B.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Margolis, Geoffrey: *See—*
Chiovini, Jacky; Margolis, Geoffrey; and Blanc, Maurice, 4,407,834., Cl. 426-422.000.

Mariaulle, Dominique: *See—*
Parisot, Daniel; and Mariaulle, Dominique, 4,408,287., Cl. 364-518.000.

Marko, Ollie W., to Dow Corning Corporation. Waste chlorosilane treatment. 4,408,030., Cl. 528-10.000.

Markusch, Peter, to Mobay Chemical Corporation. Stable, colloidal, aqueous dispersions of cross-linked urea-urethane polymers and their method of production. 4,408,008., Cl. 524-591.000.

Martin, John H. E. J.: *See—*
Labeda, David P.; Martin, John H. E. J.; and Goodman, Joseph J., 4,407,946., Cl. 435-75.000.

Martin Marietta Corporation: *See—*
Wills, Milton H., Jr., 4,407,677., Cl. 106-97.000.

Martin, Michael K., to Shell Oil Company. Coupling process. 4,408,017., Cl. 525-288.000.

Martinovich, Robert J.: *See—*
Garcia, Rodrigo A.; Moreno, Roel; and Martinovich, Robert J., 4,407,768., Cl. 264-54.000.

Martinsons, Dainis O.: *See—*
Benton, Robert L.; Martinsons, Dainis O.; and Stimpson, Flave F., 4,407,511., Cl. 277-24.000.

Maruyama, Hideki: *See—*
Izumi, Masao; Maruyama, Hideki; and Yoshida, Hiroshi, 4,407,186., Cl. 98-2.000.

Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Compressor. 4,407,639., Cl. 417-292.000.

Marzolph, Gerhard: *See—*
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, 4,408,044., Cl. 544-182.000.

Masaki, Kenji, to Nissan Motor Co., Ltd. Closed loop type air-fuel ratio control system of an internal combustion engine. 4,407,247., Cl. 123-438.000.

Mase, Syunzo; and Soejima, Shigeo, to NGK Insulators, Ltd. Oxygen concentration detector and a method of detecting oxygen concentration. 4,407,704., Cl. 204-1.00T.

Mashita, Kentaro: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Mashuda, David. Mechanized wheelchair. 4,407,543., Cl. 297-330.000.

Maslov, Gennady N.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Masserang, Gregory J.: *See—*
Rise, William E.; and Masserang, Gregory J., 4,407,404., Cl. 198-774.000.

Massey, Billy G., to Whitmire Research Laboratories, Inc. Spray system. 4,407,454., Cl. 239-154.000.

Massey-Ferguson-Perkins Limited: *See—*
Blum, Alfred E. G., 4,407,242., Cl. 123-188.00S.

MasterCard International, Inc.: *See—*
Campbell, Carl M., 4,408,203., Cl. 340-825.340.

Masters, William E. Frame system for kayak. 4,407,216., Cl. 114-347.000.

Masuda, Mitsuya: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,408,143., Cl. 315-366.000.

Masuda, Tatsuo: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,407,383., Cl. 180-54.00E.

Masuda, Toshiyuki, to Matsushita Denko Kabushiki Kaisha. Circuit for remotely operating an electromagnetic relay. 4,408,250., Cl. 361-160.000.

Matalia, Harshad D.; and Navi, Menashe, to American Newspaper Publishers Association. Method of enhancing inking in offset presses. 4,407,196., Cl. 101-142.000.

Matejka, Zdenek: *See—*
Kahovec, Jaroslav; Matejka, Zdenek; and Tomasek, Josef, 4,407,978., Cl. 521-56.000.

Mathna, Charles A.: *See—*
Loder, Harry A.; and Mathna, Charles A., 4,407,932., Cl. 430-256.000.

Matner, Martin: *See—*
Perrey, Hermann; Matner, Martin; Schwinum, Ernst; and Rudolph, Hans, 4,407,724., Cl. 252-312.000.

Matson, Stephen L.: *See—*
Flock, John W.; and Matson, Stephen L., 4,408,040., Cl. 528-500.000.

Matsuda, Shimpei: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Matsumura, Akira, to Nissan Motor Company, Limited. Communications system for automotive vehicles. 4,408,179., Cl. 340-32.000.

Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, to Sumitomo Chemical Company, Limited. Oligomerization of m-isopropenylphenol. 4,408,086., Cl. 568-719.000.

Matsushita Denko Kabushiki Kaisha: *See—*
Masuda, Toshiyuki, 4,408,250., Cl. 361-160.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,408,143., Cl. 315-366.000.
Inoue, Takao; Wakahata, Tamotsu; Momose, Keigo; and Maeda, Yukio, 4,407,914., Cl. 429-174.000.

Kobayashi, Hiroyuki; Ohki, Yoshimasa; Toyoda, Yukio; and Akasaki, Isamu, 4,408,217., Cl. 357-17.000.
Maruyama, Teruo, 4,407,639., Cl. 417-292.000.
Muranaka, Takayoshi; and Mori, Hajime, 4,408,259., Cl. 361-434.000.
Murata, Shigeki; Kajino, Jirou; and Minabe, Hitoshi, 4,408,236., Cl. 360-85.000.
Nishino, Atsushi; Suzuki, Tadashi; Ikeda, Masaki; and Ohtani, Tadashi, 4,408,253., Cl. 361-293.000.
Takeyama, Kojiro; and Shimotake, Toru, 4,407,078., Cl. 34-133.000.
Watanabe, Masayuki; Yamaya, Hiroshi; and Kurohata, Hitoshi, 4,407,552., Cl. 339-143.00R.

Matsuyama, Kiyoshi; and Hashimoto, Hitoshi, to Sumitomo Chemical Co., Ltd. Method for the heat removal from polymerization reactor. 4,408,024., Cl. 526-67.000.

Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., to Bernard Matthews Limited. Method of making a fat coated meat product. 4,407,830., Cl. 426-272.000.

Matthews, David W.: *See—*
Chadwick, Henry D.; and Matthews, David W., 4,408,322., Cl. 370-17.000.

Matzkanin, George A.: *See—*
King, James D.; Burkhardt, Gary L.; Barton, John R.; and Matzkanin, George A., 4,408,160., Cl. 324-209.000.

Mauranen, Pekka, to Valmet Oy. Surface sizing and coating apparatus for a paper web of a paper machine. 4,407,227., Cl. 118-642.000.

Maurer, Fritz: *See—*
Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,408,055., Cl. 548-125.000.

Maurer, Robert; Blum, Alfons; and Hoffmann, Michael, to Licentia Patent-Verwaltungs-GmbH. Directly mixing receiving system. 4,408,351., Cl. 455-260.000.

Maxwell Products, Inc.: *See—*
Elliott, Franklin E., 4,407,030., Cl. 5-66.000.

Mayer, Rolf: *See—*
Schlegel, Hans; Nowotny, Theodor; and Mayer, Rolf, 4,407,875., Cl. 428-43.000.

Mazur, Robert H.; Tyner, David A.; and Hallinan, Eleanor A., to G. D. Searle & Co. Cyclohexyl and phenyl substituted enkephalins. 4,407,746., Cl. 260-112.50E.

McBride, Joseph R., to Bridges Electric, Inc. Fault detector with improved response time for electrical transmission system. 4,408,155., Cl. 324-51.000.

McCambridge, Joseph. Fluid dynamic erosion control unit. 4,407,607., Cl. 405-26.000.

McCandless, Thomas J.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,407,422., Cl. 215-246.000.

McCarthy, Edward F.: *See—*
Weisrock, William P.; and McCarthy, Edward F., 4,407,950., Cl. 435-104.000.
Weisrock, William P.; and McCarthy, Edward F., 4,407,951., Cl. 435-104.000.

McClellan, Gary C. Diffusion apparatus for gated irrigation pipes. 4,407,453., Cl. 239-145.000.

McClure, David E.: *See—*
Baldwin, John J.; and McClure, David E., 4,408,063., Cl. 549-518.000.

McCollum, Anthony W.: *See—*
Stavinoha, Jerome L.; and McCollum, Anthony W., 4,408,029., Cl. 526-321.000.

McCorkle, James, to Ludlow Corporation. Tamper-indicating sheet. 4,407,443., Cl. 383-5.000.

McCormick, Dennis L. Hydraulically actuated railway car dumping system. 4,407,202., Cl. 105-271.000.

McCoy, Reginald F. H. Television chroma-key systems. 4,408,221., Cl. 358-22.000.

McFarland, James G. Hair styling method. 4,407,309., Cl. 132-45.00R.

McGowan, Malcolm S.: *See—*
East, Phillip C.; and McGowan, Malcolm S., 4,408,164., Cl. 328-117.000.

McGraw-Edison Company: *See—*
Kusmer, Raymond J., 4,408,262., Cl. 362-147.000.
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarance R., 4,407,697., Cl. 162-137.000.

McIlwain, Irwin D.; and Halls, Lawrence M., to Sperry Corporation. Frame for crop harvesting header. 4,407,110., Cl. 56-14.400.

McIlwain, John F.: *See—*
Holman, James L., Jr.; McIlwain, John F.; and Neumeier, L. A., 4,407,775., Cl. 419-36.000.

McKeon, John F.: *See—*
Tullis, Barclay J.; Tan, Randy J.; and McKeon, John F., 4,408,195., Cl. 340-685.000.

McLaren, Edwin C.; and Adamek, David J., to Champion International Corporation. Round ice cream carton lid. 4,407,426., Cl. 220-306.000.

McLaughlin, James A., to Titanseal Corporation. Window. 4,407,099., Cl. 52-202.000.

McWaters, Lynn D.; and Sanner, Medford D., to Recognition Equipment Incorporated. OCR and Bar code reader using multi port matrix array. 4,408,344., Cl. 382-62.000.

Meckel, Joachim: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.

Medical Designs, Inc.: *See—*
Bledsoe, Gary R., 4,407,276., Cl. 128-80.00C.

Medtek Corporation: *See—*
Croslin, Michael E., 4,407,297., Cl. 128-681.000.

Medtronic, Inc.: *See—*
Anderson, Kenneth M., 4,407,296., Cl. 128-675.000.
Herpers, Lodewijk-Jozef, 4,407,287., Cl. 28-419.0PG.

Mehrotra, Gopi N.; and Van Arsdall, Gerald, to RCA Corporation. Video disc player having stylus cleaning apparatus. 4,408,315., Cl. 369-71.000.

Meinan Machinery Works, Inc.: *See—*
Hasegawa, Kaisuji, 4,407,345., Cl. 144-211.000.

Meinco Mfg. Co.: *See—*
Meinzer, Jan N., 4,407,484., Cl. 256-13.100.

Meinzer, Jan N., to Meinco Mfg. Co. Impact energy absorber. 4,407,484., Cl. 256-13.100.

Mele, John J.: *See—*
Fleming, Rebecca P.; Lawhorne, Samuel, Jr.; Mele, John J.; and Prasad, Chandrika, 4,407,860., Cl. 427-98.000.

Melliger, Guido W., to Melliger, Guido W. Coating process. 4,407,844., Cl. 427-3.000.

Mendy, Francois, to Roussel UCLAF. Lipidic compositions for use in dietetics, reanimation and therapeutics. 4,407,821., Cl. 424-312.000.

Menen, Balan R. Counterweight system for positive displacement piston type device. 4,407,169., Cl. 74-604.000.

Mentzel, Werner: *See—*
Blank, Heinz U.; Behre, Horst; Linden, Hans W.; and Mentzel, Werner, 4,407,762., Cl. 260-508.000.

Merchant, Philip, Jr.; and Smith, Dean L., Jr., to Exxon Research and Engineering Co. Process for dedusting solids-containing hydrocarbon oils. 4,407,706., Cl. 204-190.000.

Merchant, Philip, Jr.; and Smith, Dean L., Jr., to Exxon Research and Engineering Co. Process for dedusting solids-containing hydrocarbon oils. 4,407,707., Cl. 204-190.000.

Merck & Co., Inc.: *See—*
Baldwin, John J.; and Lumma, William C., Jr., 4,408,047., Cl. 544-250.000.
Baldwin, John J.; and McClure, David E., 4,408,063., Cl. 549-518.000.
Graham, Donald W.; Rasmusson, Gary H.; and Tolman, Richard L., 4,407,802., Cl. 424-253.000.
Kniskern, Peter J.; Hagopian, Arpi; and Carlo, Dennis J., 4,407,949., Cl. 435-101.000.

Merger, Franz; and Foerster, Hans-Juergen, to BASF Aktiengesellschaft. Preparation of alpha-alkylacroleins. 4,408,079., Cl. 568-463.000.

Merritt, John H., Jr., to Applied Engineering Co., Inc. Economizer with soot blower. 4,407,237., Cl. 122-390.000.

Merz, Jurg; Wegmuller, Hans; and Wurster, Rudolf F., to Ciba-Geigy Corporation. Anionic adsorbent. 4,407,976., Cl. 521-36.000.

Mesa Technology: *See—*
Manning, John J., 4,407,440., Cl. 228-6.00A.

Messerschmitt Boelkow Blohm Gesellschaft mit Beschraenkter Haftung: *See—*
Born, Gunthard; and Altmann, Konrad, 4,407,452., Cl. 239-132.500.
Regnat, Karl, 4,407,180., Cl. 89-1.50B.

Messick, Virginia B., to Dow Chemical Company, The. Oxalic acid stabilized thermosettable vinyl ester resins. 4,407,991., Cl. 524-83.000.

Metatech Corporation: *See—*
Perlin, Afred R., 4,407,285., Cl. 128-325.000.

Metz, Ramey B. Traffic signal light intensity control. 4,408,180., Cl. 340-40.000.

Meuzelaar, Hendrik L. C., to University of Utah. Modular pyrolysis inlet and method for pyrolyzing compounds for analysis by mass spectrometer. 4,408,125., Cl. 250-288.000.

Meyborg, Holger: *See—*
Salzburg, Herbert; Meyborg, Holger; and Ziemann, Heinz, 4,408,061., Cl. 549-464.000.

Meyer, Daniel, to Communications Systems, Inc. Connector device with flush mounting receptacle, cover plate and terminal board. 4,407,559., Cl. 339-126.00R.

Meyer, Horst, to Kochs Adler AG. Template for topstitching joined workpiece parts. 4,407,208., Cl. 112-121.120.

Meyerhoff, Klaus, to Licentia Patent-Verwaltungs-GmbH. Method for guiding missiles. 4,407,465., Cl. 244-3.160.

Michelet, Guy A.; and Bret, Georges G., to Quantel S.A. Objective having a variable focal length. 4,407,567., Cl. 350-423.000.

Michiels, August. Elastomer mattress with stiffener elements. 4,407,031., Cl. 5-462.000.

Microcomputer Systems, Inc.: *See—*
Gilovich, Paul A.; and Toreson, James S., 4,408,317., Cl. 360-74.300.

Microlife Technics, Inc.: *See—*
Raccach, Moshe, 4,407,828., Cl. 426-56.000.

Midland, Richard W., to Zenith Radio Corporation. Beam index color display system. 4,408,223., Cl. 358-67.000.

Midwest Computer Register Corp.: *See—*
Salvesen, Richard S., 4,408,204., Cl. 340-870.240.

Miedel, Roland E. Tent construction having illuminating means. 4,408,260., Cl. 362-32.000.

Milberger, Lionel J.; Horn, Charles E.; and Kluttz, Marvin H., to FMC Corporation. Method and apparatus for hydraulically controlling subsea equipment. 4,407,183., Cl. 91-1.000.

Milkovich, Ralph; and Warfel, David R., to Atlantic Richfield Company. Star elastomers in footwear compounds. 4,408,006., Cl. 524-534.000.

Millen, Theodore I., to Georgian Manufacturing Ltd. Wave responsive swimming pool alarm. 4,408,193., Cl. 340-566.000.

Miller, Donald E.: *See—*
Rule, Charles E.; and Miller, Donald E., 4,407,838., Cl. 426-602.000.

Miller, Franklyn D.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,407,955., Cl. 435-161.000.

Miller, Gerald R.: *See—*
Virkar, Anil V.; and Miller, Gerald R., 4,407,912., Cl. 429-104.000.

Miller, Glenn E.: *See—*
Latimer, John P.; and Miller, Glenn E., 4,407,716., Cl. 210-155.000.

Miller, Joseph A. Fishing rod holder. 4,407,089., Cl. 43-21.200.

Miller, Robert R. Mobile unit support. 4,407,103., Cl. 52-292.000.

Millipore Corporation: *See—*
Abrahams, Louis; and Izod, Thomas P. J., 4,407,988., Cl. 523-334.000.
Cole, Francis X.; and Van Voorhis, Deborah M., 4,407,943., Cl. 435-7.000.

Mills, Gary L.; and Bowen, B. Dean, to Teledyne Industries, Inc. Method and apparatus of hot working metal with induction reheating. 4,407,486., Cl. 266-87.000.

Minabe, Hitoshi: *See—*
Murata, Shigeki; Kajino, Jirou; and Minabe, Hitoshi, 4,408,236., Cl. 360-85.000.

Minemura, Norihiro: *See—*
Yamaguchi, Taturo; and Minemura, Norihiro, 4,407,848., Cl. 427-36.000.

Miner, Thomas G.; and Bernstein, Seymour, to American Cyanamid Company. Modulators of the complement system. 4,407,796., Cl. 424-180.000.

Mining Supplies Limited: *See—*
Stoppani, Brian R., 4,407,545., Cl. 299-30.000.

Ministry of International Trade and Industry: *See—*
Furuya, Setsuko; Ohnishi, Shunji; and Kato, Masao, 4,408,012., Cl. 525-161.000.
Koda, Yoshio, 4,407,655., Cl. 434-219.000.

Minnesota Mining & Manufacturing Co.: *See—*
Loder, Harry A.; and Mathna, Charles A., 4,407,932., Cl. 430-256.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kondo, Takashi; and Hashimoto, Nobuo, 4,408,288., Cl. 364-525.000.
Nakamura, Ikushi, 4,407,577., Cl. 354-173.000.

Minott, Peter O., to United States of America, National Aeronautics and Space Administration. High speed multi focal plane optical system. 4,407,563., Cl. 350-173.000.

Mirowski, Mieczyslaw: *See—*
Langer, Alois A.; Kolenik, Steve A.; Heilman, Marlin S.; Mirowski, Mieczyslaw; and Mower, Morton M., 4,407,288., Cl. 128-419.0PG.

Mirtain, Henri J., to Pneu Uniroyal Englebert. Pneumatic tire. 4,407,347., Cl. 152-361.0FP.

Misawa Home Co., Ltd.: *See—*
Kataishi, Takao; and Yokoi, Nobufumi, 4,407,225., Cl. 118-425.000.

Mita Industrial Co., Ltd.: *See—*
Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, 4,407,923., Cl. 430-106.600.

Mitchell, Hal D.: *See—*
Kralik, Douglas R.; and Mitchell, Hal D., 4,407,021., Cl. 2-416.000.

Mitchell, Mark L., III; and Carr, Richard P., to Sherwin-Williams Company, The. Preparation of ortho-sulfobenzoic acid anhydride by catalyzed thermolysis. 4,408,058., Cl. 549-33.000.

Mitchell, Winalee G. Method of manufacturing cover for stirrup of physician's examination table. 4,407,687., Cl. 156-227.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Fushiki, Takeshi; Tagawa, Tohru; and Kawakami, Satoru, 4,407,999., Cl. 524-276.000.
Murayama, Tetsuo; Otsuka, Shigenori; Tajima, Tsunemitsu; and Sato, Yukihiro, 4,407,919., Cl. 430-58.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Yoshikawa, Yoshihiko, 4,408,207., Cl. 343-362.000.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,408,080., Cl. 568-484.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fujiwara, Haruyoshi, 4,407,330., Cl. 138-30.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Kubbota, Masashi; and Noda, Touru, 4,407,896., Cl. 428-513.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Nakauchi, Jun; and Kawamura, Tomihiko, 4,407,895., Cl. 428-463.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Toyoura, Masakazu; Shomura, Koichi; Tsuchida, Hirotoshi; and Murakami, Tadateru, 4,408,083., Cl. 568-576.000.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,407,892., Cl. 428-411.000.

Miyaka, Toshio: *See—*
Hirao, Mamoru; Hijiya, Hiromi; and Miyaka, Toshio, 4,408,041., Cl. 536-4.100.

Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, to Mita Industrial Co., Ltd. One component magnetic developer. 4,407,923., Cl. 430-106.600.

Miyamura, Yoshinori: *See—*
Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,407,880., Cl. 428-156.000.

Miyatsuka, Hajime; Kasuga, Akira; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,407,901., Cl. 428-694.000.

Miyoshi, Hiroshi: *See—*
Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, 4,407,681., Cl. 148-12.00F.

Mizukura, Noboru; and Koyama, Mikio, to Konishiroku Photo Ind. Co., Ltd. Photographic element with lactone polymer. 4,407,938., Cl. 430-533.000.

Mizukura, Noboru: *See—*
Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, 4,407,941., Cl. 430-566.000.

Mizuno, Masashi: *See—*
Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, 4,407,682., Cl. 148-128.000.

Mobay Chemical Corporation: *See—*
Markusch, Peter, 4,408,008., Cl. 524-591.000.

Moeller, Roy P., to Altex Scientific, Inc. Pulse width modulation decoder. 4,408,166., Cl. 329-106.000.

Moessinger, Albert. Process and device for the insertion of a weft thread into the space between two lines of warp thread. 4,407,335., Cl. 139-452.000.

Mogi, Keitaro: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

Mohrman, Richard C.: *See—*
Augusto, Peter; Hazard, Edwin A.; and Mohrman, Richard C., 4,407,571., Cl. 351-13.000.

Molitor Industries, Inc.: *See—*
Molitor, Victor D., 4,407,266., Cl. 126-299.00D.

Molitor, Victor D., to Molitor Industries, Inc. Method of and apparatus for exhaust control and supplying tempered makeup air for a grease extraction ventilator. 4,407,266., Cl. 126-299.00D.

Mollmann, Erwin. Under carriages for sliding doors having symmetrical weight distribution. 4,407,043., Cl. 16-100.000.

Molteni, Luigi: *See—*
Signorini, Massimo; Trebbi, Attilio; and Molteni, Luigi, 4,408,074., Cl. 564-361.000.

Momose, Keigo: *See—*
Inoue, Takao; Wakahata, Tamotsu; Momose, Keigo; and Maeda, Yukio, 4,407,914., Cl. 429-174.000.

Monaghan, Richard C.: *See—*
Cook, Clarence E.; Smith, Glynn E.; and Monaghan, Richard C., 4,407,686., Cl. 156-215.000.

Monarch Marking Systems, Inc.: *See—*
Torbeck, Daniel J., 4,407,692., Cl. 156-350.000.

Monroe, Marvin E.: *See—*
Kavage, William T.; and Monroe, Marvin E., 4,408,295., Cl. 364-552.000.

Monsanto Company: *See—*
Schumacher, Ignatius; and Wang, Kang-Bo, 4,407,729., Cl. 502-200.000.
Seaborn, Douglas K., 4,407,767., Cl. 264-40.100.
Sikorski, James A.; and Hoobler, Mary A., 4,407,763., Cl. 260-940.000.
Sikorski, James A.; and Hoobler, Mary A., 4,407,764., Cl. 260-940.000.

Montgomery, Warren A., to Bell Telephone Laboratories, Incorporated. Processor facilities for integrated packet and voice switching. 4,408,323., Cl. 370-60.000.

Moody, Gary W. Wrist attached rattle and educational device for infants. 4,407,091., Cl. 46-193.000.

Moore, Leonard: *See—*
Furlong, Owen D.; and Moore, Leonard, 4,407,153., Cl. 73-23.000.

Moore, Prentice G.: *See—*
Brozovich, Roy S.; and Moore, Prentice G., 4,408,158., Cl. 324-78.00R.

Moore, Stephen D.; and Maglio, Murrill. Chemical feeder. 4,407,322., Cl. 137-268.000.

Moore, Susan J.: *See—*
White, Douglass A.; Moore, Susan J.; and Clark, David F., 4,408,199., Cl. 340-731.000.

Moorfeed Corporation: *See—*
Cortellini, Conrad; Boone, Jeffrey S.; and Conard, Richard D., 4,408,277., Cl. 364-300.000.

Morel, Don L.: *See—*
Moustakas, Theodore D.; Morel, Don L.; and Abeles, Benjamin, 4,407,710., Cl. 204-192.00S.

Moreno, Roel: *See—*
Garcia, Rodrigo A.; Moreno, Roel; and Martinovich, Robert J., 4,407,768., Cl. 264-54.000.

Morgan, George R. Hot gas Stirling cycle piston engine. 4,407,123., Cl. 60-525.000.

Mori, Hajime: *See—*
Muranaka, Takayoshi; and Mori, Hajime, 4,408,259., Cl. 361-434.000.

Moriguchi, Fujio; and Kurata, Masami, to Fuji Xerox Co., Ltd. Multicolor recording device. 4,408,212., Cl. 346-76.0PH.

Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, to Takeda Chemical Industries, Ltd. Aralkyl carboxylic acid compounds. 4,407,757., Cl. 260-413.000.

Morin, Robert W.; Lewis, Jeffrey M.; and Bobrycki, Richard, to Boston Machine Works Company. Contour cementing machine. 4,407,223., Cl. 118-212.000.

Morrow, Robert S.: *See—*
Sisson, Edwin D.; Morrow, Robert S.; Stoutenburg, Donn V.; and Davis, Dean T., 4,408,285., Cl. 364-508.000.

Morse, David L.: *See—*
Kerko, David J.; and Morse, David L., 4,407,966., Cl. 501-13.000.

Morton Thiokol, Inc.: *See—*
Penn, Howard I., 4,408,021., Cl. 525-440.000.

Moser, Gottfried; Nau, Walter; and Neumann, Ernst D., to Klockner-Humboldt-Deutz AG. System for heating the service cabin of a machine operated by an internal cumbustion engine. 4,407,449., Cl. 237-12.30R.

Moskowitz, Ronald; Raj, Kuldip; and Kern, James L., to Ferrofluidics Corporation. Nonbursting multiple-stage ferrofluid seal and system. 4,407,518., Cl. 277-1.000.

Moss, Lester I., to Mosstype Corporation. Mandrel assembly for demountable printing cylinders of different lengths. 4,407,199., Cl. 101-375.000.

Moss, Theron V., to SECO Industries, Inc. Dust mop handle attachment device. 4,407,039., Cl. 15-144.00A.

Mosstype Corporation: *See—*
Moss, Lester I., 4,407,199., Cl. 101-375.000.

Most, Elmer E., Jr.: *See—*
Gintis, Daniel; and Most, Elmer E., Jr., 4,407,889., Cl. 428-398.000.

Mostek Corporation: *See—*
Guterman, Daniel C.; and Kupec, James D., 4,408,303., Cl. 365-205.000.
Han, Yu-Pin; and Ma, Bing C., 4,407,696., Cl. 156-653.000.
Kirsch, Howard C., 4,408,136., Cl. 307-475.000.
Terry, Michael B., 4,408,153., Cl. 323-224.000.

Motorola, Inc.: *See—*
Gay, Michael J., 4,408,222., Cl. 358-24.000.
Kuo, Clinton C. K., 4,408,305., Cl. 365-189.000.
Kuo, Clinton C. K., 4,408,306., Cl. 365-218.000.

Mouille, Rene L., to Societe Nationale Industrielle Aero. Helicopter rotor. 4,407,633., Cl. 416-140.000.

Moustakas, Theodore D.; Morel, Don L.; and Abeles, Benjamin, to Exxon Research and Engineering Co. Hybrid method of making an amorphous silicon P-I-N semiconductor device. 4,407,710., Cl. 204-192.00S.

Mower, Morton M.: *See—*
Langer, Alois A.; Kolenik, Steve A.; Heilman, Marlin S.; Mirowski, Mieczyslaw; and Mower, Morton M., 4,407,288., Cl. 128-419.0PG.

Muellejans, Herbert; and Koetz, Hans-Joachim, to Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG. Light-weight cross-flow heat exchanger unit. 4,407,358., Cl. 165-166.000.

Mueller, Charles P.: *See—*
Deuschle, Roger A.; and Mueller, Charles P., 4,407,672., Cl. 75-10.00R.

Mueller Co.: *See—*
Daghe, Joseph L.; and Sands, Robert E., 4,407,482., Cl. 251-148.000.

Mueller, Dale A., to Honeywell Inc. Heat pump system defrost control system with override. 4,407,138., Cl. 62-126.000.

Mueller, Wolfgang: *See—*
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,407,993., Cl. 524-96.000.
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,408,051., Cl. 546-19.000.

Mues, Volker: *See—*
Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,408,055., Cl. 548-125.000.

Muhr, Richard; and Schink, Karl, to Muhr und Bender. Apparatus for perforating a workpiece. 4,407,614., Cl. 408-13.000.

Muhr und Bender: *See—*
Muhr, Richard; and Schink, Karl, 4,407,614., Cl. 408-13.000.

Mukai, Hideo: *See—*
Hashimoto, Shinichi; Takano, Toshimasa; and Mukai, Hideo, 4,407,580., Cl. 355-3.0TR.
Takano, Toshimasa; Mukai, Hideo; and Hosoya, Masahiro, 4,407,228., Cl. 118-651.000.

Mukooyama, Haruhisa: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.

Muller, Frank A., to Scripto, Inc. Method of making and improved compositions for an initially erasable ink for a ball point writing instrument. 4,407,985., Cl. 523-161.000.

Muller, Lutz: *See—*
Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, 4,407,809., Cl. 424-267.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corporation. Fermentable sugar from the hydrolysis of starch derived from dry milled cereal grains. 4,407,955., Cl. 435-161.000.

Mullins, Barry W.: *See—*
Voge, Andrew; Sparks, Daniel R.; and Mullins, Barry W., 4,408,252., Cl. 361-288.000.

Munch, Erich: *See—*
Kleinsorgen, Klaus; and Munch, Erich, 4,407,338., Cl. 141-1.000.

Munk, Barbara H.: *See—*
Colborn, David W.; Coyne, Thomas S.; Emrie, Carolyn P.; and Munk, Barbara H., 4,407,231., Cl. 119-1.000.

Murakami, Hisamichi: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,407,892., Cl. 428-411.000.

Murakami, Tadateru: *See—*
Toyoura, Masakazu; Shomura, Koichi; Tsuchida, Hirotoshi; and Murakami, Tadateru, 4,408,083., Cl. 568-576.000.

Muranaka, Takayoshi; and Mori, Hajime, to Matsushita Electric Industrial Company, Limited. Electrochemical double-layer capacitor. 4,408,259., Cl. 361-434.000.

Murata, Kazuo: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Murata, Kenji: *See—*
Enjouji, Katsuhisa; Ikeizumi, Hiroshi; Murata, Kenji; and Nishikawa, Syozaburo, 4,407,709., Cl. 204-192.0SP.

Murata, Shigeki; Kajino, Jirou; and Minabe, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Magnetic tape recording and/or reproducing apparatus. 4,408,236., Cl. 360-85.000.

Murata, Yasunori, to Diamond Giken Co., Ltd. Cutting blade. 4,407,263., Cl. 125-15.000.

Murayama, Tetsuo; Otsuka, Shigenori; Tajima, Tsunemitsu; and Sato, Yukihiro, to Mitsubishi Chemical Industries Limited. Electrophotographic plate. 4,407,919., Cl. 430-58.000.

Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., to General Electric Company. Composite article. 4,407,885., Cl. 428-246.000.

Murray, Richard; and Irwin, Maurice J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Transport in Her Britannic Majesty's Government of the. Anchored earth structure. 4,407,611., Cl. 405-284.000.

Murray, Ronald E.: *See—*
Boocock, John R. B.; and Murray, Ronald E., 4,407,841., Cl. 426-656.000.

Musha, Toru, to Olympus Optical Company Limited. Objective lens driving device for tracking and focus corrections. 4,408,313., Cl. 369-45.000.

Mushroom Associates: *See—*
Ferguson, Andrew M.; and Malick, Howard M., 4,407,832., Cl. 426-281.000.

Mussi, Fiorenzo; and Pariani, Emilio, to Costruzioni Aeronautiche Giovanni Agusta S.p.A. Method of making helicopter blade spars. 4,407,688., Cl. 156-242.000.

Musy, Jean-Pierre, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Thin wrist-watch. 4,407,586., Cl. 368-77.000.

Musyanovich, Vladimir M.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Mutsubishi Denki Kabushiki Kaisha: *See—*
Takatsuka, Keizo; Yamamoto, Hiroshi; and Baba, Toshihiro, 4,408,108., Cl. 200-148.00A.

Muzzell, Stephen E., to Gulf & Western Manufacturing Company. Integrated spring mat assembly for seating. 4,407,492., Cl. 267-103.000.

Myers, George D., deceased (by Myers, Virginia K., administrator); Hettinger, William P., Jr.; and Kovach, Stephen M., to Ashland Oil, Inc. Process for cracking high-boiling hydrocarbons using high pore volume, low density catalyst. 4,407,714., Cl. 208-120.000.

Myers, Robert E. Flush control mechanism for toilet tank. 4,407,026., Cl. 4-365.000.

Myers, Virginia K., administrator: *See—*
Myers, George D., deceased; Hettinger, William P., Jr.; and Kovach, Stephen M., 4,407,714., Cl. 208-120.000.

N. V. Bekaert S.A.: *See—*
Veys, Pierre, 4,408,156., Cl. 324-58.50R.

Naarmann, Herbert; Penzien, Klaus; and Schlag, Johannes, to BASF Aktiengesellschaft. Preparation of electrically conductive polymers. 4,407,739., Cl. 252-512.000.

Nabisco Brands, Inc.: *See—*
Bosco, Peter M.; and Danielson, Robert L., 4,407,836., Cl. 426-576.000.

Nagai, Kunihiko: *See—*
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, 4,408,197., Cl. 340-720.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Resistorless digital-to-analog converter using cascaded current mirror circuits. 4,408,190., Cl. 340-347.0DA.

Naganoma, Masanori: *See—*
Saito, Atsunori; Naganoma, Masanori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,408,278., Cl. 364-424.000.

Nagasaka, Hiroyasu: *See—*
Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, 4,407,682., Cl. 148-128.000.

Nagel, Rudolf: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; and Rubrecht, Jens-Detlef, 4,408,289., Cl. 364-551.000.

Nahon, Richard; and Decuyper, Jean-Claude, to Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel. Method and apparatus for accentuating the features of a monochrome image reproduced by means of a digital transcription. 4,408,233., Cl. 358-284.000.

Naito, Yoshio, to Nippon Piston Ring Co., Ltd.,. Combined oil ring. 4,407,515., Cl. 277-139.000.

Naka, Michiro: *See—*
Shima, Mutsuo; Aoyama, Kensuke; and Naka, Michiro, 4,407,881., Cl. 428-156.000.

Nakada, Yoshinao: *See—*
Haas, Laird K. S.; Herring, Larry H.; and Nakada, Yoshinao, 4,407,849., Cl. 427-37.000.

Nakai, Kiyoshi: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Nakai, Yoshiharu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,407,798., Cl. 424-246.000.

Nakajima, Fumito: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Nakajima, Koe: *See—*
Watanabe, Kazuo; Tokita, Hideki; and Nakajima, Koe, 4,407,056., Cl. 29-527.700.

Nakajima, Yasuyuki: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, 4,407,813., Cl. 424-273.00P.

Nakamatsu, Yoshiro. Device for manufacturing a magnetic recording medium. 4,407,226., Cl. 118-623.000.

Nakamoto, Takashi: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Nakamura, Akira: *See—*
Akino, Tadaharu; Nakamura, Akira; and Uemura, Hiroyuki, 4,408,171., Cl. 333-177.000.

Nakamura, Ikushi, to Minolta Camera Kabushiki Kaisha. Autoloading apparatus for photographic film. 4,407,577., Cl. 354-173.000.

Nakamura, Keijiroh: *See—*
Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, 4,407,959., Cl. 435-288.000.

Nakamura, Kengi, to Sanyo Electric Co., Ltd. Flyback transformer. 4,408,176., Cl. 336-107.000.

Nakamura, Osamu, to Tsukamoto Seiki Co., Ltd. Pressure compensator for rotary earth boring tool. 4,407,375., Cl. 175-228.000.

Nakamura, Shinichi; Kadowaki, Takashi; Okumura, Mitsuhiro; and Takada, Syun, to Konishiroku Photo Industry Co., Ltd. Silver halide color photographic material. 4,407,940., Cl. 430-546.000.

Nakamura, Tomio; and Doi, Shunichi, to Nitto Chemical Industries, Ltd. Process for producing carboxylic acid esters from nitriles. 4,408,067., Cl. 560-215.000.

Nakamura, Toshiaki: *See—*
Takamura, Tsutomu; Sato, Yuichi; Nakamura, Toshiaki; and Suzuki, Nobukazu, 4,407,907., Cl. 429-42.000.

Nakamura, Toshihiro, to Toso Kabushiki Kaisha. Apparatus for stretching and linking a vertical blind slat-cloth. 4,407,350., Cl. 160-178.00R.

Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, to Snow Brand Milk Products Co., Ltd.; and Suzuki Metal Industry Co., Ltd. Waste heat recovery device for preventing corrosion by sulfur oxides. 4,407,353., Cl. 165-39.000.

Nakanishi, Keiichi, to Nissan Motor Company, Ltd. Fuel-supply control system. 4,407,251., Cl. 123-472.000.

Nakao, Shinji: *See—*
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.

Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, to Nissan Motor Company, Limited, by said Yoshio Kawaguchi. Resistance welding with pressure control in response to deviation between welding voltage and time varying reference values therefor. 4,408,114., Cl. 219-110.000.

Nakatani, Hiroshi; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Data print control in an electronic cash register. 4,408,292., Cl. 364-405.000.

Nakauchi, Jun; and Kawamura, Tomihiko, to Mitsubishi Rayon Co., Ltd. Sensitive resins comprising 2-alkylglycidyl methacrylate homopolymer or copolymer. 4,407,895., Cl. 428-463.000.

Nakayama, Naoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Document data filing/retrieval system. 4,408,181., Cl. 82-61.000.

Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, to Kansai Paint Co., Ltd. Oxidation-curable emulsion composition containing a cellulose derivative. 4,408,028., Cl. 526-200.000.

Nalco Chemical Company: *See—*
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., 4,408,043., Cl. 544-87.000.

Namekata, Yoriaki, to Arimitsu Industry Co., Ltd. Reciprocating pump having unique pressure control valve construction. 4,407,640., Cl. 417-296.000.

Nanda, Vinod K., to Vickers, Incorporated. Power transmission. 4,407,122., Cl. 60-452.000.

Naoe, Masahiko: *See—*
Kadokura, Sadao; Tomie, Takashi; and Naoe, Masahiko, 4,407,894., Cl. 428-457.000.

Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, to Fuji Photo Film Co., Ltd. Photographic light-sensitive material with subbing layers. 4,407,939., Cl. 430-536.000.

Nappholz, Tibor A.; and Swift, Stephen J., to Telectronics Pty. Ltd. Externally-reset tachycardia control pacer. 4,407,289., Cl. 128-419.0PG.

Narasaka, Shin: *See—*
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, 4,407,243., Cl. 123-179.00G.

Naruo, Kyoichi: *See—*
Okita, Tsutomu; Naruo, Kyoichi; and Akashi, Goro, 4,407,853., Cl. 427-44.000.

Nat, Gursharan P. S., to Eaton Corporation. Latch down device for push-button switches. 4,408,109., Cl. 200-153.00J.

National Distillers and Chemical Corporation: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,407,955., Cl. 435-161.000.

National Patent Development Corporation: *See—*
Haardt, Henry; Magdon, John; and Noble, Eric, 4,407,766., Cl. 264-2.200.

National Research Development Corporation: *See—*
Crabb, Trevor A.; Jackson, Graham C.; and Jupp, Philip A., 4,407,670., Cl. 71-67.000.
Culshaw, Brian; Ball, Peter R.; Kingsley, Stuart A.; and Davies, David E. N., 4,408,354., Cl. 455-610.000.

National Steel Corporation: *See—*
Manzonelli, Carmen C.; and Chatfield, David A., 4,407,679., Cl. 148-2.000.
Smith, John R.; Bingle, William D.; and Austin, Lowell W., 4,407,149., Cl. 72-47.000.

Nau, Walter: *See—*
Moser, Gottfried; Nau, Walter; and Neumann, Ernst D., 4,407,449., Cl. 237-12.30R.

Navi, Menashe: *See—*
Matalia, Harshad D.; and Navi, Menashe, 4,407,196., Cl. 101-142.000.

NCR Corporation: *See—*
Grabowski, John S.; Shiau, Chin-Chih; and Latala, John R., 4,408,342., Cl. 382-9.000.

Neff, James A., to MAC Valves, Inc. Cartridge type pilot valve. 4,407,323., Cl. 137-454.200.

Nehrkorn, Rolf. Apparatus for delivering merchandise from a vending machine. 4,407,430., Cl. 221-122.000.

Neill, Jimmie; Webb, Nathaniel; and Hartig, Norman F., to Burroughs Corporation. Image enhancement for optical character readers. 4,408,343., Cl. 382-52.000.

Nelson, Frederick J., to Owens-Illinois, Inc. Waste heat recovery from regenerative furnaces. 4,407,669., Cl. 65-134.000.

Nelson, Marvin D.; and Pinckaers, B. Hubert, to Honeywell Inc. Self centering current responsive pickup means. 4,408,175., Cl. 336-92.000.

Neotechnic Engineering Limited: *See—*
Bolton, Philip; and Burdekin, Norman, 4,407,481., Cl. 251-353.000.

Neturen Company, Ltd.: *See—*
Hijikata, Toshio; and Kawasaki, Kazuhiro, 4,407,683., Cl. 148-144.000.

Neumann, Ernst D.: *See—*
Moser, Gottfried; Nau, Walter; and Neumann, Ernst D., 4,407,449., Cl. 237-12.30R.

Neumann, Peter: *See—*
Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, 4,407,810., Cl. 424-270.000.

Neumeier, L. A.: *See—*
Holman, James L., Jr.; McIlwain, John F.; and Neumeier, L. A., 4,407,775., Cl. 419-36.000.

Nevens, Charles; and Williams, Ronald A., to Baxter Travenol Laboratories, Inc. Plasmapheresis assembly and associated fluid manifold. 4,407,660., Cl. 604-6.000.

New Zealand Wire Industries Limited: *See—*
Peel, Colin D., 4,407,221., Cl. 118-109.000.

Newby, John C. Solar powered liquid metering device. 4,407,637., Cl. 417-138.000.

Newton, Jimmy D., to Taylor, Thomas L. Bowling aid. 4,407,499., Cl. 273-54.00B.

Newton, Thomas D., to UOP Inc. Laminates for printed circuit boards. 4,407,883., Cl. 428-215.000.

Neyer, James U., to Synchro-Start Products, Inc. Protective boot for solenoid. 4,407,517., Cl. 277-212.0FB.

NGK Insulators, Ltd.: *See—*
Mase, Syunzo; and Soejima, Shigeo, 4,407,704., Cl. 204-1.00T.

Nice, Ralph A., to Atlantic Richfield Company. Process for coating a sterilizing filter material with silver and product formed thereby. 4,407,865., Cl. 427-217.000.

Nicolau, Gabriela; and Tonelli, Alfred P., to American Cyanamid Company. Inclusion compound of p-hexadecylamino benzoic acid in cyclodextrin and method of use. 4,407,795., Cl. 424-180.000.

Nicoli, David F.: *See—*
Elings, Virgil B.; and Nicoli, David F., 4,407,964., Cl. 436-518.000.

Nielsen, Anker J., Jr., to Omco, Inc. Gas meter lock assembly. 4,407,146., Cl. 70-232.000.

Nifco Inc.: *See—*
Kimura, Shigeru, 4,407,618., Cl. 411-40.000.

Niiler, Andrus: *See—*
Henshaw, William F.; White, John R.; and Niiler, Andrus, 4,407,712., Cl. 204-298.000.

Nikolov, Dobrin V.: *See—*
Sheludko, Alexey D.; Ivanov, Rumen V.; Nikolov, Dobrin V.; and Nishkov, Ivan M., 4,407,715., Cl. 209-164.000.
Nilsson, Lars-Erik; and Lofling, Tommy, to Aktiebolaget Samefa. Measuring apparatus for checking a spring strut appertaining to the front wheel suspension of a vehicle. 4,407,073., Cl. 33-203.180.
Nippon Electric Co., Ltd.: *See—*
Ishii, Daisuke, 4,408,099., Cl. 179-2.0EC.
Ohnuki, Katsutoshi; and Suzuki, Yasuo, 4,407,535., Cl. 292-27.000.
Oura, Toshio, 4,408,094., Cl. 381-120.000.
Yukawa, Tatsuo, 4,408,349., Cl. 455-182.000.
Nippon Kogaku K.K.: *See—*
Tomino, Naoki; and Tsukamoto, Masaaki, 4,407,574., Cl. 354-50.000.
Wakabayashi, Hiroshi; Kazami, Kazuyuki; Ohtsubo, Yoshiaki; and Akasaka, Shigeo, 4,407,573., Cl. 354-33.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Yamashita, Masaaki; and Tajiri, Yasuhisa, 4,407,899., Cl. 428-626.000.
Nippon Piston Ring Co., Ltd.,: *See—*
Naito, Yoshio, 4,407,515., Cl. 277-139.000.
Nippon Sheet Glass Co., Ltd.: *See—*
Enjouji, Katsuhisa; Ikeizumi, Hiroshi; Murata, Kenji; and Nishikawa, Syozaburo, 4,407,709., Cl. 204-192.0SP.
Nippon Steel Corporation: *See—*
Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, 4,407,681., Cl. 148-12.00F.
Watanabe, Kazuo; Tokita, Hideki; and Nakajima, Koe, 4,407,056., Cl. 29-527.700.
Nippondenso Co., Ltd.: *See—*
Hara, Masahiro; Sakai, Toshiyasu; and Okamoto, Atsutoshi, 4,408,120., Cl. 235-462.000.
Saito, Atsunori; Naganoma, Masanori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,408,278., Cl. 364-424.000.
Nishibe, Shinji, to Tokyo Shibaura Denki Kabushiki Kaisha. Read-out control system for a control storage device. 4,408,276., Cl. 364-200.000.
Nishida, Koji; and Kawai, Taneichi, to Aisin Seiki Kabushiki Kaisha. Magnetic recording member for automatic embroidering machine. 4,408,242., Cl. 360-131.000.
Nishikawa, Masahiro: *See—*
Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio, 4,408,114., Cl. 219-110.000.
Nishikawa, Syozaburo: *See—*
Enjouji, Katsuhisa; Ikeizumi, Hiroshi; Murata, Kenji; and Nishikawa, Syozaburo, 4,407,709., Cl. 204-192.0SP.
Nishimura, Katsuo: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.
Nishimura, Masaru; Shikata, Osamu; and Ohtsuka, Yoshikuni, to Nitto Seiko Co., Ltd. Fastener feeding apparatus. 4,407,402., Cl. 198-389.000.
Nishino, Atsushi; Suzuki, Tadashi; Ikeda, Masaki; and Ohtani, Tadashi, to Matsushita Electric Industrial Co., Ltd. Variable capacitor. 4,408,253., Cl. 361-293.000.
Nishio, Takashi: *See—*
Tsunoda, Taiji; Nishio, Takashi; and Tanikawa, Eiki, 4,408,319., Cl. 369-275.000.
Nishizawa, Hideyuki. Golf practice device. 4,407,503., Cl. 273-197.00R.
Nishizawa, Jun-ichi; Tadahiro, Ohmi; and Tamamushi, Takashige, to Semiconductor Research Foundation. Semiconductor memory. 4,408,304., Cl. 365-174.000.
Nishkov, Ivan M.: *See—*
Sheludko, Alexey D.; Ivanov, Rumen V.; Nikolov, Dobrin V.; and Nishkov, Ivan M., 4,407,715., Cl. 209-164.000.
Nissan Chemical Industries Ltd.: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, 4,407,813., Cl. 424-273.00P.
Nissan Motor Company, Limited: *See—*
Abo, Toshimi, 4,407,259., Cl. 123-620.000.
Fukushima, Naoto; Hidaka, Kunihiko; and Iwata, Kazuroh, 4,407,397., Cl. 188-282.000.
Iijima, Tetsuya; and Takahashi, Seiichi, 4,407,446., Cl. 236-49.000.
Izumi, Masao; Maruyama, Hideki; and Yoshida, Hiroshi, 4,407,186., Cl. 98-2.000.
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,407,057., Cl. 29-570.000.
Kubo, Jun; and Honda, Minoru, 4,408,290., Cl. 364-566.000.
Masaki, Kenji, 4,407,247., Cl. 123-438.000.
Matsumura, Akira, 4,408,179., Cl. 340-32.000.
Nakanishi, Keiichi, 4,407,251., Cl. 123-472.000.
Nakata, Shuji; Nishikawa, Masahiro; and Kawaguchi, Yoshio (said Yoshio Kawaguchi assors. to), 4,408,114., Cl. 219-110.000.
Sawamura, Keiichi, 4,407,735., Cl. 502-10.000.
Nisshin Flour Milling Co., Ltd.: *See—*
Tanaka, Kenji; and Endo, Shigeru, 4,407,827., Cl. 426-19.000.
Nitto Boseki Co., Ltd.: *See—*
Kitamura, Tadanori; and Takao, Nobuyuki, 4,407,866., Cl. 427-221.000.
Nitto Chemical Industries, Ltd.: *See—*
Nakamura, Tomio; and Doi, Shunichi, 4,408,067., Cl. 560-215.000.
Nitto Seiko Co., Ltd.: *See—*
Nishimura, Masaru; Shikata, Osamu; and Ohtsuka, Yoshikuni, 4,407,402., Cl. 198-389.000.
Nixdorf Computer AG: *See—*
Haftmann, Johannes, 4,407,593., Cl. 400-208.000.
Nixon, Charles E. Extremely low-attenuation, extremely low radiation loss flexible coaxial cable for microwave energy in the gigaHertz frequency range. 4,408,089., Cl. 174-34.000.
Noble, Bruce P.: *See—*
Le, Tri C.; and Noble, Bruce P., 4,407,516., Cl. 277-206.00R.
Noble, Eric: *See—*
Haardt, Henry; Magdon, John; and Noble, Eric, 4,407,766., Cl. 264-2.200.
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, to Kikkoman Shoyu Co. Ltd. Method of producing Koji products. 4,407,826., Cl. 426-7.000.
Noda, Touru: *See—*
Kubbota, Masashi; and Noda, Touru, 4,407,896., Cl. 428-513.000.
Noiles, Douglas G.; and Crawford, John O., to United States Surgical Corporation. Surgical staples. 4,407,286., Cl. 128-334.00R.
Nolan, William D. Energy water-saver home shampooer. 4,407,028., Cl. 4-516.000.
Nomura, Hiroaki: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,408,052., Cl. 546-22.000.
Nomura, Kikuo: *See—*
Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, 4,407,291., Cl. 128-635.000.
Nomura, Manabu; Sugi, Norio; Tanaka, Takayoshi; and Hara, Koichi, to Idemitsu Petrochemical Co., Ltd. Polypropylene composition. 4,407,986., Cl. 523-200.000.
Nonogaki, Saburo: *See—*
Akagi, Motoo; Uchino, Shoichi; and Nonogaki, Saburo, 4,407,916., Cl. 430-23.000.
Normalair-Garrett (Holdings) Limited: *See—*
Furlong, Owen D.; and Moore, Leonard, 4,407,153., Cl. 73-23.000.
Norris, Dallas G., to Western Electric Company, Incorporated. Walking beam mechanism. 4,407,406., Cl. 198-774.000.
North American Philips Corporation: *See—*
Dapo, Roland F., 4,408,258., Cl. 361-433.000.
Northern Engineering Industries plc: *See—*
Tones, John, 4,407,634., Cl. 416-196.00R.
Northern Petrochemical Company: *See—*
Smart, John A., 4,407,879., Cl. 428-141.000.
Northern Telecom Limited: *See—*
Betts, Malcolm C.; Graves, Alan F.; Pascoe, Frederick M.; and Dilley, James E., 4,408,189., Cl. 340-347.0DD.
Grover, Wayne D., 4,408,325., Cl. 370-119.000.
Pan, Ali, 4,407,854., Cl. 427-49.000.
Norton, C. W. Two-piece snap-together floor and ceiling plate. 4,407,023., Cl. 4-191.000.
Norton, Charles T.: *See—*
Clore, Wayne G.; Norton, Charles T.; and Thompson, William P., 4,407,498., Cl. 273-1.50R.
Novakowski, Robert: *See—*
Pritz, George E.; and Novakowski, Robert, 4,408,100., Cl. 179-27.00D.
Nowaczyk, Philip J., to Zenith Radio Corporation. Balanced power supply with polarized capacitors. 4,408,269., Cl. 363-126.000.
Nowotny, Theodor: *See—*
Schlegel, Hans; Nowotny, Theodor; and Mayer, Rolf, 4,407,875., Cl. 428-43.000.
Nukem GmbH: *See—*
Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, 4,407,742., Cl. 252-628.000.
Nukushina, Harunobu: *See—*
Ide, Yuuichi; and Nukushina, Harunobu, 4,407,139., Cl. 62-215.000.
Numaga, Hirooki: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.
Nutrisearch Company: *See—*
Swartz, William E., 4,407,831., Cl. 426-281.000.
Swartz, William E., 4,407,833., Cl. 426-281.000.
Nutter, John F., to Tosco Corporation. Apparatus for heating solid heat-carrying bodies. 4,407,653., Cl. 432-215.000.
O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Wolff, Friedrich, 4,407,399., Cl. 192-4.00A.
O. Mustad & Son A/S: *See—*
Huse, Per, 4,407,087., Cl. 43-4.000.
Oakes, Thomas R.; and Sadler, James L., to Economics Laboratory, Inc. Method of controlling bloat using nonionic surfactants. 4,407,790., Cl. 424-78.000.
Oberndorfer, Ernst, to Voest Alpine Aktiengesellschaft. Apparatus for discharging hot flowable solids from an upright container, particularly for discharging sponge iron from a shaft furnace. 4,407,489., Cl. 266-191.000.
O'Brien, John P. Golf training device. 4,407,506., Cl. 273-187.00B.
Ode, Sadao: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.
Odessky Politekhnichesky Institut: *See—*
Artemenko, Vladimir I.; Belikov, Viktor T.; Ivlev, Anatoly D.; and Mamzelev, Viktor A., 4,408,145., Cl. 318-135.000.
Oei, Djong-Gie: *See—*
Kummer, Joseph T.; and Oei, Djong-Gie, 4,407,902., Cl. 429-15.000.
Offterdinger, Hermann F. Clamps. 4,407,050., Cl. 24-277.000.

Ogawa, Keisuke: *See—*
Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, 4,407,652., Cl. 432-58.000.
Ogawa, Kenji, to Maier, Bruce R. Cleaning device. 4,408,241., Cl. 360-128.000.
Ogawa, Masahiro: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Yamashita, Masaaki; and Tajiri, Yasuhisa, 4,407,899., Cl. 428-626.000.
Ogden Electronics, Ltd.: *See—*
Steel, James, 4,407,388., Cl. 180-271.000.
Ogle, James A.: *See—*
Kuchinsky, Saul; Bellman, Robert H.; and Ogle, James A., 4,407,934., Cl. 430-314.000.
Ohki, Yoshimasa: *See—*
Kobayashi, Hiroyuki; Ohki, Yoshimasa; Toyoda, Yukio; and Akasaki, Isamu, 4,408,217., Cl. 357-17.000.
Ohnishi, Shunji: *See—*
Furuya, Setsuko; Ohnishi, Shunji; and Kato, Masao, 4,408,012., Cl. 525-161.000.
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, to Citizen Watch Co., Ltd. Battery for an electric timepiece. 4,407,590., Cl. 368-204.000.
Ohnuki, Katsutoshi; and Suzuki, Yasuo, to Nippon Electric Co., Ltd. Container-locking mechanism. 4,407,535., Cl. 292-27.000.
Ohta Company Limited: *See—*
Iseki, Kazuo, 4,407,044., Cl. 16-237.000.
Ohta, Hiroyasu: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; and Ohta, Hiroyasu, 4,407,971., Cl. 501-97.000.
Ohtani, Tadashi: *See—*
Nishino, Atsushi; Suzuki, Tadashi; Ikeda, Masaki; and Ohtani, Tadashi, 4,408,253., Cl. 361-293.000.
Ohtsubo, Yoshiaki: *See—*
Wakabayashi, Hiroshi; Kazami, Kazuyuki; Ohtsubo, Yoshiaki; and Akasaka, Shigeo, 4,407,573., Cl. 354-33.000.
Ohtsuka, Yoshikuni: *See—*
Nishimura, Masaru; Shikata, Osamu; and Ohtsuka, Yoshikuni, 4,407,402., Cl. 198-389.000.
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, to Toyo Ink Manufacturing Co., Ltd. Process for production of laminated member. 4,407,689., Cl. 156-243.000.
Ohtsuki, Masataka: *See—*
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,407,448., Cl. 236-88.000.
Okabe, Sigeru: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.
Okada, Hideo: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.
Okamoto, Atsutoshi: *See—*
Hara, Masahiro; Sakai, Toshiyasu; and Okamoto, Atsutoshi, 4,408,120., Cl. 235-462.000.
Okamoto, Takachiyo, to Brother Kogyo Kabushiki Kaisha. Linear stepper motor. 4,408,138., Cl. 310-12.000.
Okawa, Takashi: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,408,080., Cl. 568-484.000.
Okita, Tsutomu; Naruo, Kyoichi; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Process for producing a magnetic recording medium. 4,407,853., Cl. 427-44.000.
Okolischan, Raymond A., to Carr Lane Mfg. Co. Self-adjusting toggle clamps for factory fixtures and the like. 4,407,493., Cl. 269-93.000.
Okumura Corporation: *See—*
Ito, Toshihiko, 4,407,622., Cl. 414-468.000.
Okumura, Mitsuhiro: *See—*
Nakamura, Shinichi; Kadowaki, Takashi; Okumura, Mitsuhiro; and Takada, Syun, 4,407,940., Cl. 430-546.000.
Olivetti Controllo Numerico S.p.A.: *See—*
Bedini, Raffaele; Lauro, Luciano; and Pinotti, Pier C., 4,408,280., Cl. 364-474.000.
Olson, David A. Feed conveyor. 4,407,408., Cl. 198-621.000.
Olson, George P.: *See—*
Hall, David A.; and Olson, George P., 4,407,193., Cl. 101-93.010.
Olympia Werke AG: *See—*
Fessel, Rudolf; von Knorre, Karl-Friedrich; Tillich, Peter; and Herbermann, Gottfried, 4,408,302., Cl. 364-900.000.
Olympic Fastening Systems: *See—*
Siebol, George, 4,407,619., Cl. 411-43.000.
Olympus Optical Co., Ltd.: *See—*
Furuta, Kenji, 4,408,234., Cl. 360-69.000.
Hayasaka, Toshimi, 4,407,570., Cl. 350-529.000.
Musha, Toru, 4,408,313., Cl. 369-45.000.
Sato, Eiichi, 4,407,918., Cl. 430-54.000.
Watanabe, Seizo, 4,407,861., Cl. 427-130.000.
Yamaguchi, Tatuya, 4,407,272., Cl. 128-6.000.
Omco, Inc.: *See—*
Nielsen, Anker J., Jr., 4,407,146., Cl. 70-232.000.
Omron Tateisi Electronics Co.: *See—*
Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, 4,407,588., Cl. 368-118.000.
Ong, Helen H.; and Profitt, James A., to American Hoechst Corporation. Spiro(indoline-3,4'-piperidine) and related compounds. 4,408,050., Cl. 546-17.000.
Ono, Saichi: *See—*
Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, 4,407,799., Cl. 424-246.000.
Ono, Seiichiro: *See—*
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.
Onoda, Hiroshi: *See—*
Kurachi, Hisao; Ito, Takeo; and Onoda, Hiroshi, 4,407,592., Cl. 400-54.000.
Optek, Inc.: *See—*
Kavage, William T.; and Monroe, Marvin E., 4,408,295., Cl. 364-552.000.
Optimizer Control Corporation: *See—*
Collins, Thomas W.; and Croskey, Charles L., 4,408,149., Cl. 318-729.000.
Ordas, Dale. Apparatus and method for applying hot wax to skis. 4,407,218., Cl. 118-59.000.
O'Reilly, Kevin G., to Hall & Kay Engineering Limited. Heat recovery. 4,407,142., Cl. 62-238.600.
Orient Chemical Industries, Ltd.: *See—*
Senshu, Hisashi; Ishikawa, Kazuhiro; Ishida, Yukihiko; and Kawagishi, Yoji, 4,407,924., Cl. 430-109.000.
Ortho Pharmaceutical Corporation: *See—*
Kanojia, Ramesh M.; Wachter, Michael P.; and Chen, Robert H. K., 4,408,060., Cl. 549-332.000.
Osaka, Takatoshi: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.
Osaka, Yoshiaki: *See—*
Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, 4,407,799., Cl. 424-246.000.
Oshiro, Mitsuo: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.
Ossian, William F.: *See—*
Christensen, Ronald C.; Genske, Roger P.; Kester, Dennis E.; and Ossian, William F., 4,407,873., Cl. 428-35.000.
Oswald, Norman D.; and Mankey, Harry S., to Standard Manufacturing Company, Inc. Undercarriage for adverse terrain vehicles. 4,407,381., Cl. 180-6.480.
Ota, Hiroyasu: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; and Ota, Hiroyasu, 4,407,970., Cl. 501-97.000.
Otis Engineering Corporation: *See—*
Bechthold, Howard D., 4,407,362., Cl. 166-117.500.
Johnston, Russell A., 4,407,364., Cl. 166-217.000.
Johnston, Russell A., 4,407,364., Cl. 166-217.000.
Otsuka, Kazuo; Narasaka, Shin; and Hasegawa, Shumpei, to Honda Motor Co., Ltd. Air/fuel ratio control system having function of controlling supply of secondary air into intake pipe of internal combustion engine. 4,407,243., Cl. 123-179.00G.
Otsuka Pharmaceutical Co., Ltd.: *See—*
Yanaihara, Noboru, 4,407,965., Cl. 436-547.000.
Otsuka, Shigenori: *See—*
Murayama, Tetsuo; Otsuka, Shigenori; Tajima, Tsunemitsu; and Sato, Yukihiro, 4,407,919., Cl. 430-58.000.
Ottenhof, Henricus A. W. E. M.: *See—*
Lippe, Frank; Ottenhof, Henricus A. W. E. M.; and De Boer, Rudolf, 4,407,747., Cl. 260-120.000.
Otty, Malcolm. Electrical insulating stitch bonded material. 4,407,876., Cl. 428-102.000.
Ouchi, Teruo, to Kabushiki Kaisha Medos Kenkyusho. Raising means for guiding an implement of an endoscope. 4,407,273., Cl. 128-6.000.
Oura, Toshio, to Nippon Electric Co., Ltd. Output circuit. 4,408,094., Cl. 381-120.000.
Overseas International Distributors Company B.V.: *See—*
Thompson, Darrow; and Thompson, Daniel L., 4,407,466., Cl. 244-17.110.
Owens-Illinois, Inc.: *See—*
Nelson, Frederick J., 4,407,669., Cl. 65-134.000.
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, to Nissan Chemical Industries Ltd. Insecticidal pyrazoline derivatives and composition. 4,407,813., Cl. 424-273.00P.
Ozen Corporation: *See—*
Watanabe, Katsumi, 4,408,310., Cl. 369-41.000.
Paddock, Stephen W., to Whirlpool Corporation. Temperature sensing means for refrigerator. 4,407,141., Cl. 62-130.000.
Pahade, Ravindra F., to Union Carbide Corporation. Air separation process with turbine exhaust desuperheat. 4,407,135., Cl. 62-13.000.
Palmer, Keith W.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,407,728., Cl. 502-60.000.
Pan, Ali, to Northern Telecom Limited. Manufacture of cable cores. 4,407,854., Cl. 427-49.000.
Panelographic Corporation: *See—*
Russell, Raymond J., 4,407,855., Cl. 427-54.100.
Paparizos, Christos: *See—*
Dolhyj, Serge R.; and Paparizos, Christos, 4,407,661., Cl. 44-78.000.
Paquin, Patrick J., to Allied Corporation. Apparatus for making low crosstalk ribbon cable. 4,407,693., Cl. 156-436.000.

Paras, Peter, to United States of America, Health and Human Services. BRH Test pattern for gamma camera performance (an evaluator). 4,408,124., Cl. 250-252.100.

Pariani, Emilio: *See—*
Mussi, Fiorenzo; and Pariani, Emilio, 4,407,688., Cl. 156-242.000.

Parisot, Daniel; and Mariaulle, Dominique. Automatic-search microfiche reader involving the use of a microcomputer. 4,408,287., Cl. 364-518.000.

Park, Moon-sung: *See—*
Pyo, Kwan-sung; and Park, Moon-sung, 4,407,090., Cl. 46-118.000.

Parks, William W., to Vapor Corporation. Lift assembly including a reaction switch. 4,407,623., Cl. 414-540.000.

Parmenon, Daniel: *See—*
Boudin, Daniel; Brachet, Claude; Desmier, Pierre; Foltier, Pierre; Godat, Jean; Krzywdziak, Alain; and Parmenon, Daniel, 4,407,584., Cl. 366-279.000.

Parsons, David, to Automotive Products Limited. Liquid pressure apparatus. 4,407,125., Cl. 60-584.000.

Pascoe, Frederick M.: *See—*
Betts, Malcolm C.; Graves, Alan F.; Pascoe, Frederick M.; and Dilley, James E., 4,408,189., Cl. 340-347.0DD.

Passariello, Attilio, to Ammonia Casale S.A. Catalysts for heterogeneous synthesis. 4,407,737., Cl. 502-243.000.

Pastore, David C., to RCA Corporation. Multichannel magnetic head for a recorder-reproducer system. 4,408,240., Cl. 360-121.000.

Patel, Hiralal V.; and Rudolph, Samuel A., to Dana Corporation. Hose end fitting. 4,407,532., Cl. 285-256.000.

Paton, Andrew: *See—*
Burr, Peter; Chase, Brian D.; Paton, Andrew; and Sowter, Brian R., 4,408,163., Cl. 324-404.000.

Patrie, Jos: *See—*
Ladet, Michel; Lefebvre, Jacques; and Patrie, Jos, 4,408,110., Cl. 200-263.000.

Patterson, Calvin D. Tobacco leaf-stripping machine. 4,407,305., Cl. 130-31.00R.

Paulos, John A. Matrix puzzle game. 4,407,502., Cl. 273-153.00S.

Paulos, Louis B.: *See—*
Huebsch, Donald L.; and Paulos, Louis B., 4,407,329., Cl. 137-629.000.

Pax Electro Products AB: *See—*
Thorn, Olov, 4,407,188., Cl. 98-116.000.

PCR Incorporated: *See—*
DePasquale, Ralph J.; and Schuman, Paul D., 4,408,048., Cl. 544-313.000.

Pearson, Eugene W.; and Short, Wilbur G., to Canron Corporation. Apparatus for handling cuttings from a shear. 4,407,628., Cl. 414-35.000.

Pearson, Ian G.: *See—*
Shepherd, Ian C.; Pearson, Ian G.; and Gibson, Donald C., 4,407,112., Cl. 56-13.400.

Pearson, Michael J.; and Branch, Clive L., to Beecham Group Limited. β-Lactam antibacterial compounds, their preparation and pharmaceutical compositions containing them. 4,407,815., Cl. 424-274.000.

Pearson, Richard D.; and Hewlett, Erik L., to University of Virginia Alumni Patents Foundation. Protozoacidal activity of phenothiazines. 4,407,800., Cl. 424-247.000.

Pedersen, S. Erik; Hardman, Harley F.; and Wagner, Louis F., to Standard Oil Company. Process for the production of carboxylic acids. 4,408,071., Cl. 562-536.000.

Peel, Colin D., to New Zealand Wire Industries Limited. Coating of wire. 4,407,221., Cl. 118-109.000.

Peerless Manufacturing Company: *See—*
Sillers, Donald A., Jr., 4,407,664., Cl. 55-357.000.

Pellet, Regis J.; Gradassi, Michael J.; and Bertolacini, Ralph J., to Standard Oil Company, (Indiana). Catalyst and process of preparing. 4,407,736., Cl. 502-230.000.

Pelletier, Georges H.: *See—*
Black, David H. A.; and Pelletier, Georges H., 4,408,324., Cl. 370-81.000.

Pelley, Ronald L. Memory power engine. 4,407,124., Cl. 60-527.000.

Pengilly, Brian W., to Goodyear Tire & Rubber Company, The. High clarity, low haze polyesters having reduced infrared heat-up times. 4,408,004., Cl. 524-398.000.

Penkert, Rosemarie: *See—*
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.

Penn, Howard I., to Morton Thiokol, Inc. Adhesive comprising reaction product of gamma-isocyanatopropyltriethoxy silane and a thermoplastic polyester. 4,408,021., Cl. 525-440.000.

Penny, Glenn S.: *See—*
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., 4,408,043., Cl. 544-87.000.

Penzien, Klaus: *See—*
Naarmann, Herbert; Penzien, Klaus; and Schlag, Johannes, 4,407,739., Cl. 252-512.000.

Perdue, Terry A., to Heath Company. Variable speed tuning selector. 4,408,172., Cl. 334-11.000.

Perfection Corporation: *See—*
Cicenas, Christopher W., 4,407,526., Cl. 285-27.000.

Perkin-Elmer Corporation, The: *See—*
Bruce, Richard H.; and Reinberg, Alan R., 4,407,850., Cl. 427-38.000.

Perlin, Afred R., to Metatech Corporation. Microsurgical clip for brain surgery or the like. 4,407,285., Cl. 128-325.000.

PermaGrain Products, Inc.: *See—*
Witt, Alvin E., 4,407,884., Cl. 428-220.000.

Perrey, Hermann; Matner, Martin; Schwinum, Ernst; and Rudolph, Hans, to Bayer Aktiengesellschaft. Process for producing emulsion. 4,407,724., Cl. 252-312.000.

Peruzzi, Federigo: *See—*
Andrione, Norbert; and Peruzzi, Federigo, 4,407,168., Cl. 74-579.00E.

Peters, Josef: *See—*
Schneider, Wolfangang; Peters, Josef; and Gaffal, Karl, 4,407,631., Cl. 415-122.00R.

Peters, Philip H.; and Itani, Abdallah M., to General Electric Company. Pulse modulated electronic voltage controller with smooth voltage output. 4,408,268., Cl. 363-62.000.

Petersen, Christian C., to Polaroid Corporation. Efficient electromagnetic actuator usable as photographic shutter. 4,407,578., Cl. 354-235.000.

Petroff, Peter D. Flow analyzer. 4,407,158., Cl. 73-196.000.

Pettorino, Arthur J. Adjustable fresh air damper for combustion. 4,407,264., Cl. 126-120.000.

Petz, Gunter. Arrangement for connecting edge areas of thin-walled bodies. 4,407,534., Cl. 285-305.000.

Pfefferle, William C., to Engelhard Corporation. Method of conducting catalytically promoted gas-phase reactions. 4,407,785., Cl. 423-659.000.

Pfeil, Janice L.: *See—*
Kukolja, Stjepan; and Pfeil, Janice L., 4,407,750., Cl. 260-239.00A.

Pfizer Inc.: *See—*
DeZeeuw, John R.; and Stasko, Irene, 4,407,953., Cl. 435-145.000.
Schnur, Rodney C., 4,407,811., Cl. 424-272.000.

Pham Van Cang, Luc, to Thomson-CSF. Television base signal and test signal generator. 4,408,337., Cl. 377-44.000.

Phelps Dodge Industries, Inc.: *See—*
Sollner, George H.; Disque, Donny R.; and Knerr, Allan R., 4,408,032., Cl. 528-48.000.

Philipp Holzman AG: *See—*
Krabbe, Wilfried, 4,407,098., Cl. 52-167.000.

Phillips Petroleum Company: *See—*
Drake, Charles A.; and Turk, Stanley D., 4,408,037., Cl. 528-346.000.
Garcia, Rodrigo A.; Moreno, Roel; and Martinovich, Robert J., 4,407,768., Cl. 264-54.000.
Irvin, Howard B., 4,408,039., Cl. 528-500.000.

Pickens, Donald: *See—*
Ulmer, Harry E.; Pickens, Donald; Rahl, Forrest J.; and Lefrancois, Philip A., 4,407,783., Cl. 423-347.000.

Piduch, Hans-Gunter: *See—*
Kwasnik, Hans-Jurgen; and Piduch, Hans-Gunter, 4,407,702., Cl. 202-263.000.

Pieniak, Heinz A., to Johnson & Johnson Baby Products Company. Laminated structures having gathered and ungathered marginal portions and method of manufacturing the same. 4,407,284., Cl. 604-385.000.

Piller, Horst; and Weber, Klaus, to Zeiss-Stiftung, Carl. Device for selectively available phase-contrast and relief observation in microscopes. 4,407,569., Cl. 350-509.000.

Pinckaers, B. Hubert: *See—*
Nelson, Marvin D.; and Pinckaers, B. Hubert, 4,408,175., Cl. 336-92.000.

Pinotti, Pier C.: *See—*
Bedini, Raffaele; Lauro, Luciano; and Pinotti, Pier C., 4,408,280., Cl. 364-474.000.

Pioneer Electronic Corporation: *See—*
Tsunoda, Taiji; Nishio, Takashi; and Tanikawa, Eiki, 4,408,319., Cl. 369-275.000.
Yashiro, Kenji; and Tabata, Toshio, 4,408,345., Cl. 455-3.000.

Pirog, Nikolai I.: *See—*
Chegolya, Alexandr S.; Malykh, Vladimir A.; Chizhov, Vladimir V.; Yankov, Viktor I.; and Pirog, Nikolai I., 4,407,450., Cl. 239-8.000.

Pitts, Warren R., to Dennison Manufacturing Company. Anaerobic process for curing radiation curable compositions. 4,407,856., Cl. 427-54.100.

Pizzagalli, Franco: *See—*
Wirz, Gustav; and Pizzagalli, Franco, 4,407,262., Cl. 125-13.00R.

Place, Harry, to ITT Industries, Inc. Cryptographic encoder-decoder. 4,408,093., Cl. 178-22.190.

Platonova, Evdokia V.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Plessey Overseas Limited: *See—*
Wheatley, Nigel J.; and Andrews, Martyn P., 4,408,274., Cl. 364-200.000.

Plow, Gregory M., to International Business Machines Corporation. Method and means for cataloging data sets using dual keyed data sets and direct pointers. 4,408,273., Cl. 364-200.000.

Pneu Uniroyal Englebert: *See—*
Mirtain, Henri J., 4,407,347., Cl. 152-361.0FP.

Podgaevskaya, Tatyana A.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Pokar, Hellmut: *See—*
Brandt, Ludwig; and Pokar, Hellmut, 4,407,281., Cl. 128-207.150.

Polakoff, Frank. Battery operated charm light. 4,408,261., Cl. 362-104.000.

Polaroid Corporation: *See—*
Huff, Joseph F., 4,407,579., Cl. 354-275.000.
Petersen, Christian C., 4,407,578., Cl. 354-235.000.

Pollock, David C. I., to C-I-L Inc. Long vertical shaft bioreactor with pressurized head tanks. 4,407,718., Cl. 210-626.000.

Popov, Richard. Amusement device. 4,407,504., Cl. 273-153.00R.

Posch, Rainer: *See—*
Thiele, Hartmut; Schmelter, Dieter; and Posch, Rainer, 4,407,412., Cl. 206-404.000.

Post Office: *See—*
Hines, Howard E.; Hardy, Rex F. G.; and Butler, David S., 4,407,337., Cl. 140-124.000.

Potters Supply Company, The: *See—*
Irwin, David M., 4,407,654., Cl. 432-258.000.

PPG Industries, Inc.: *See—*
Eads, Carl W.; and Haynes, Ronald L., 4,408,016., Cl. 525-277.000.
Ernsberger, Fred M., 4,407,891., Cl. 428-410.000.

Prasad, Chandrika: *See—*
Fleming, Rebecca P.; Lawhorne, Samuel, Jr.; Mele, John J.; and Prasad, Chandrika, 4,407,860., Cl. 427-98.000.

Precise Forms, Inc.: *See—*
Trimmer, James E.; and Worley, Ross W., 4,407,480., Cl. 249-189.000.

Precision Automation Co., Inc.: *See—*
Wright, Stanley, 4,407,046., Cl. 17-11.000.

Precision Screen Machines, Inc.: *See—*
Jaffa, David, 4,407,195., Cl. 101-123.000.

Preh Elektrofeinmechanische Werke Jakob Preh: *See—*
Bauer, Karl-Heinz, 4,408,346., Cl. 455-175.000.

Price, Frank C.: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

Priegnitz, James W.: *See—*
deRosset, Armand J.; Priegnitz, James W.; and Landis, Arthur M., 4,408,065., Cl. 560-67.000.

Priesch, Manfred: *See—*
Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, 4,408,031., Cl. 528-26.000.

Pritz, George E.; and Novakowski, Robert, to Data Plus, Inc. Position load distribution and management system for key telephone systems. 4,408,100., Cl. 179-27.00D.

Privates Institut fur Physikalisch Technische Auftragsforschung GmbH: *See—*
Bahring, Horst, 4,407,544., Cl. 297-362.000.

Profitt, James A.: *See—*
Ong, Helen H.; and Profitt, James A., 4,408,050., Cl. 546-17.000.

Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., to Stow/Davis Furniture Company. Base construction for panel. 4,407,101., Cl. 52-126.300.

Protronix, Inc.: *See—*
Anderson, Dale L., 4,407,416., Cl. 211-41.000.

Protze, Dieter; and Voigt, Udo, to Volkswagenwerk AG. Longitudinally and angularly adjustable steering column. 4,407,166., Cl. 74-493.000.

Proud, Joseph M.: *See—*
Byszewski, Wojciech W.; Budinger, A. Bowman; and Proud, Joseph M., 4,408,141., Cl. 315-56.000.

Prox, Rolf, to Abex Corporation. Proximity sensing head. 4,408,159., Cl. 324-207.000.

Pruitt, Duard L., to RCA Corporation. DC-to-DC Switching converters. 4,408,267., Cl. 363-17.000.

Pryanishnikov, Igor S.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Pryor, Richard L., to RCA Corporation. Protection and anti-floating network for insulated-gate field-effect circuitry. 4,408,245., Cl. 361-56.000.

Pryor, Timothy R.; and Hageniers, Omer L., to Diffracto Ltd. High accuracy filling machines. 4,407,379., Cl. 177-52.000.

Purinton, Mark A.: *See—*
Haines, Roger W.; and Purinton, Mark A., 4,407,185., Cl. 98-1.500.

Purton, Robert M.: *See—*
Hanson, Lloyd D.; and Purton, Robert M., 4,407,327., Cl. 137-625.300.

Pusineri, Christian; and Goletto, Jean, to Hospal-Sodip, S.A. Mixtures of polymers for medical use. 4,408,026., Cl. 525-128.000.

Pyatibrat, Alexandr L.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Pyo, Kwan-sung; and Park, Moon-sung. Needlework toy. 4,407,090., Cl. 46-118.000.

Quantel S.A.: *See—*
Michelet, Guy A.; and Bret, Georges G., 4,407,567., Cl. 350-423.000.

R.C.S. Enterprises Limited: *See—*
Haigh, Harry; and Sonmor, Rudy C., 4,407,645., Cl. 418-131.000.

Raccach, Moshe, to Microlife Technics, Inc. Fermentation method using a selected lactobacillus. 4,407,828., Cl. 426-56.000.

Raceway Components, Inc.: *See—*
Kohaut, John E., 4,408,090., Cl. 174-48.000.

Rachor, Lothar: *See—*
Hrovat, Milan; Huschka, Hans; and Rachor, Lothar, 4,407,742., Cl. 252-628.000.

Raghu, Sivaraman, to American Cyanamid Company. Amido methoxyethylamines. 4,408,072., Cl. 564-185.000.

Rahl, Forrest J.: *See—*
Ulmer, Harry E.; Pickens, Donald; Rahl, Forrest J.; and Lefrancois, Philip A., 4,407,783., Cl. 423-347.000.

Rains, Louis: *See—*
MacDermott, Carl H.; and Brown, Richard S., Jr., 4,407,075., Cl. 33-348.200.

Raj, Kuldip; and Casciari, Raoul, to Ferrofluidics Corporation. Single-pole-piece ferrofluid seal apparatus and exclusion seal system. 4,407,508., Cl. 277-1.000.

Raj, Kuldip: *See—*
Moskowitz, Ronald; Raj, Kuldip; and Kern, James L., 4,407,518., Cl. 277-1.000.

Ralphs, George T., to C & J Clark Limited. Manufacture of shoes. 4,407,034., Cl. 12-142.0RS.

Ramco Steel, Inc.: *See—*
Rossberg, Shelton R., 4,407,055., Cl. 29-157.00R.

Raml, Walter: *See—*
Dobramysl, Wilhelm; Stern, Gerhard; and Raml, Walter, 4,408,045., Cl. 544-196.000.

Rampel, Guy, to General Electric Company. Electrode coating composed of copolymers derived from diacetone acrylamide. 4,407,913., Cl. 429-137.000.

Rapeli, Juha; and Leppavuori, Seppo. Component with trimmable electric impedance. 4,408,170., Cl. 333-172.000.

Rasmussen, Jorgen B., to Elsmark A/S. Process for transferring information and system for carrying out the process. 4,408,185., Cl. 340-310.00A.

Rasmussen, Ole-Bendt. High-strength laminate. 4,407,877., Cl. 428-105.000.

Rasmusson, Gary H.: *See—*
Graham, Donald W.; Rasmusson, Gary H.; and Tolman, Richard L., 4,407,802., Cl. 424-253.000.

Ratcliffe, Maurice J.; and Roberts, Thomas A., to Imperial Chemical Industries PLC. Dental compositions. 4,407,984., Cl. 523-115.000.

Rau, Harald: *See—*
Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, 4,408,031., Cl. 528-26.000.

Raush, Russell G.; and Alleman, Raymond A., to RCA Corporation. Externally adjustable seal and bearing structure. 4,407,531., Cl. 285-158.000.

Ray, Roger E., to Westinghouse Electric Corp. Protective relay apparatus. 4,408,246., Cl. 361-64.000.

Raychem Limited: *See—*
Crofts, David, 4,407,888., Cl. 428-355.000.

Raywall Kommanditbolag: *See—*
Ekstrom, Lars A., 4,407,349., Cl. 160-98.000.

RCA Corporation: *See—*
Bell, Alan E., 4,408,213., Cl. 346-135.100.
Butterwick, Gilbert N., 4,407,857., Cl. 427-74.000.
Buzgo, Alexander W., 4,408,320., Cl. 369-290.000.
Fox, Stephen M., 4,407,469., Cl. 244-169.000.
Harford, Jack R., 4,408,229., Cl. 358-177.000.
Mehrotra, Gopi N.; and Van Arsdall, Gerald, 4,408,315., Cl. 369-71.000.
Pastore, David C., 4,408,240., Cl. 360-121.000.
Pruitt, Duard L., 4,408,267., Cl. 363-17.000.
Pryor, Richard L., 4,408,245., Cl. 361-56.000.
Raush, Russell G.; and Alleman, Raymond A., 4,407,531., Cl. 285-158.000.
Robbi, Anthony D.; and Sinniger, Joseph O., 4,408,296., Cl. 364-569.000.
Ruhland, Kim, 4,408,298., Cl. 364-717.000.
Theriault, Gerald E., 4,408,348., Cl. 455-180.000.

Reader, Philip: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

Recognition Equipment Incorporated: *See—*
McWaters, Lynn D.; and Sanner, Medford D., 4,408,344., Cl. 382-62.000.

Recreation Equipment Corp.: *See—*
Clore, Wayne G.; Norton, Charles T.; and Thompson, William P., 4,407,498., Cl. 273-1.50R.

Reeder, Gareld S., to Commonwealth Edison Co. Cross-arm brace. 4,407,601., Cl. 403-25.000.

Regnat, Karl, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Aircraft load lock, especially bomb lock including central operating means. 4,407,180., Cl. 89-1.50B.

Rehling, Walter; and Rossell, Jaime. Speed regulator for the warp beam of a weaving machine. 4,407,331., Cl. 139-110.000.

Reimert, Larry E., to Dril-Quip, Inc. Self-aligning connector assembly. 4,407,527., Cl. 285-27.000.

Reinberg, Alan R.: *See—*
Bruce, Richard H.; and Reinberg, Alan R., 4,407,850., Cl. 427-38.000.

Reiner, Barry C.; and DuRoss, Robert M., to SCM Corporation. Case shift and lock input mechanism including a shift control switch. 4,407,596., Cl. 400-253.000.

Reneau, Phillip G.: *See—*
Lyon, Lyndall W.; Reneau, Phillip G.; and Coppock, Paul G., 4,407,192., Cl. 101-7.000.

Renius, Karl T.: *See—*
Rosendahl, Peter; and Renius, Karl T., 4,407,401., Cl. 192-61.000.

Reon Manufacturing Company: *See—*
Hendry, Robert B., 4,407,173., Cl. 81-9.50R.

Research and Development Institute, Inc. at Montana State University, The: *See—*
Woodriff, Ray A., 4,407,582., Cl. 356-312.000.

Research Frontiers Incorporated: *See—*
Saxe, Robert L., 4,407,565., Cl. 350-374.000.

Resneau, Jean C.; Cirio, Marius; and Doyen, Jean, to Thomson-CSF. Device for connecting in parallel power transistors in very high frequency. 4,408,219., Cl. 357-80.000.

Restrepo, Jose M. Fiber-reinforced cement and process. 4,407,676., Cl. 106-88.000.

Return on Investment Corporation: *See—*
Hilton, Carl W.; and Bullard, Harold L., 4,407,385., Cl. 180-175.000.

Reuter, Edward J. Integral hinge covers for waste container. 4,407,427., Cl. 220-339.000.

Rey, Pierre; and Bonnet, Emile, to SEB S.A. Wrapper for kitchen utensils. 4,407,414., Cl. 206-553.000.

Reynolds, Francis D., to Grier, Dale C. Self-injecting syringe. 4,407,283., Cl. 128-218.00F.

Reynolds Metals Company: *See—*
Jensen, Eric L.; and Lee, Harry W., Jr., 4,407,340., Cl. 141-67.000.

Rheinmetall GmbH: *See—*
Boeder, Dieter; and Wiemers, Karl-Josef, 4,407,071., Cl. 33-178.00E.

Rhone-Poulenc Industries: *See—*
Foraison, Dominique; and Leveque, Alain, 4,407,780., Cl. 423-10.000.
Soula, Gerard; and Linguenheld, Louis, 4,408,075., Cl. 564-474.000.

Rhone-Poulenc Sante: *See—*
Cotrel, Claude; Farge, Daniel; and Taurand, Gerard, 4,407,797., Cl. 424-246.000.

Richard Ryan & Associates, Inc.: *See—*
Ryan, Richard B., 4,407,051., Cl. 24-369.000.

Richardson Chemical Company: *See—*
Mallory, Glenn O.; and Horhn, Theresa R., 4,407,869., Cl. 427-443.100.

Richardson, Donald A.: *See—*
Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 4,407,101., Cl. 52-126.300.

Richmond Tank Car Company: *See—*
Harbin, Wayne D.; Stark, Marvin; and Britt, Kenneth W., 4,407,203., Cl. 105-462.000.

Ricoh Co. Ltd.: *See—*
Horii, Shigeo, 4,407,872., Cl. 428-35.000.
Sakai, Katsuo, 4,407,917., Cl. 430-42.000.

Riedel, Kenneth A. Solar collector. 4,407,270., Cl. 126-450.000.

Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, to Chemische Werke Huls Aktiengesellschaft. Fire retardant particulate expandable styrene polymers. 4,407,977., Cl. 521-56.000.

Ripoll, Luis, to Stronghold International AG. Cable anchorage. 4,407,770., Cl. 264-69.000.

RIS Irrigation Systems: *See—*
Sargent, Ronald J., 4,407,455., Cl. 239-222.170.

Rise, William E.; and Masserang, Gregory J., to Android Corporation. Work transfer device. 4,407,404., Cl. 198-774.000.

Rise, William E., to Android Corporation. Work transfer device. 4,407,405., Cl. 198-774.000.

Rizkalla, Nabil, to Halcon SD Group, Inc., The. Preparation of carboxylic acids. 4,407,726., Cl. 502-161.000.

Roantree, Michael L.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 2-Heterocyclic alkylamino-3-nitropyrroles. 4,407,808., Cl. 424-263.000.

Robbi, Anthony D.; and Sinniger, Joseph O., to RCA Corporation. Digital timing system for spark advance. 4,408,296., Cl. 364-569.000.

Robert Bosch GmbH: *See—*
Bauer, Manfred, 4,407,253., Cl. 123-506.000.
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; and Rubrecht, Jens-Detlef, 4,408,289., Cl. 364-551.000.
Eheim, Franz, 4,407,245., Cl. 123-359.000.
Eheim, Franz, 4,407,249., Cl. 123-449.000.
Eheim, Franz; Hofer, Gerald; and Links, Heins, 4,407,250., Cl. 123-450.000.
Horbelt, Michael; Arnold, Herbert; and Winkelmann, Lothar, 4,407,156., Cl. 73-118.000.
Kemmner, Ulrich, 4,407,642., Cl. 417-366.000.
Kuhlmann, Gerhard, 4,407,615., Cl. 408-239.00A.
Ruf, Walter, 4,407,258., Cl. 123-617.000.
Seifert, Kurt, 4,407,457., Cl. 239-533.120.

Roberts, Thomas A.: *See—*
Ratcliffe, Maurice J.; and Roberts, Thomas A., 4,407,984., Cl. 523-115.000.

Robertshaw Controls Company: *See—*
Gunter, James C., 4,407,066., Cl. 29-882.000.

Robertson, Thomas A. Method and apparatus for supplying trawl. 4,407,088., Cl. 43-4.500.

Robin, Gerard: *See—*
Bricot, Claude; and Robin, Gerard, 4,407,646., Cl. 425-174.400.

Robin Hood Multifoods Inc.: *See—*
Corbeil, Roger; and Sadaranganey, Gobind, 4,407,839., Cl. 426-622.000.

Robinson, Joseph G.; and Brain, Sally A., to Coal Industry (Patents) Limited. Varnishes for glasscloth laminates, methods of their production and laminates made therefrom. 4,408,003., Cl. 524-364.000.

Robinson, Robert H.: *See—*
Dilliner, Monte M., 4,407,252., Cl. 123-504.000.

Rockwell International Corporation: *See—*
Dudding, Charles H., 4,408,352., Cl. 455-295.000.
Dumas, Theodore A., 4,408,208., Cl. 343-786.000.
Jones, Addison B., 4,407,859., Cl. 427-89.000.
Saetti, Giuseppe, 4,407,209., Cl. 112-147.000.
Thornton, Jack C.; and Russell, Randy G., 4,408,177., Cl. 336-139.000.

Roder, Thomas: *See—*
Wallussek, Heinz; Wiebe, Martin; and Roder, Thomas, 4,407,374., Cl. 175-24.000.

Roehrs, Robert E.: *See—*
Schoenwald, Ronald D.; and Roehrs, Robert E., 4,407,792., Cl. 424-81.000.

Rogers, Dennis L.; and Widmer, Albert X., to International Business Machines Corporation. Current amplifier stage with diode interstage connection. 4,408,167., Cl. 330-261.000.

Rogers, Robert K.: *See—*
Steuer, Robert R.; Rogers, Robert K.; and Horne, Robert H., 4,407,295., Cl. 128-670.000.

Rohm and Haas Company: *See—*
Bartman, Benjamin; and Swift, Graham, 4,408,018., Cl. 525-300.000.

Rohr Industries, Inc.: *See—*
Timms, Richard H., 4,407,120., Cl. 60-226.200.

Rollins, Edward J. Cueing device. 4,408,187., Cl. 340-332.000.

Rolls-Royce Limited: *See—*
Kwan, William C. T., 4,407,128., Cl. 60-737.000.

Ronzon, Norbert: *See—*
Knebel, Werner; Ronzon, Norbert; and Weidner, Eugen, 4,407,444., Cl. 236-12.100.

Roobeek, Cornelis F.: *See—*
Van Leeuwen, Petrus W. N. M.; and Roobeek, Cornelis F., 4,408,078., Cl. 568-454.000.

Roques, Bernard; and Lecomte, Jeanne-Marie, to Centre National de la Recherche Scientifique (CNRS). Peptides and therapeutic applications thereof. 4,407,794., Cl. 424-177.000.

Rosenberg, William J.; and Title, Alan M., to Lockheed Missiles & Space Co., Inc. Optical filter. 4,407,566., Cl. 350-404.000.

Rosendahl, Peter; and Renius, Karl T., to Klockner-Humboldt-Deutz Aktiengesellschaft. Hydrostatic coupling. 4,407,401., Cl. 192-61.000.

Ross, Robert E.; Fleckenstein, Lee J.; and Campbell, Michael E., to Eastman Kodak Company. Photographic products and processes employing substituted sulfonamidophenol or sulfonamidonaphthol dye-releasers. 4,407,930., Cl. 430-223.000.

Rossberg, Shelton R., to Ramco Steel, Inc. Method of making surface drainage culvert. 4,407,055., Cl. 29-157.00R.

Rossell, Jaime: *See—*
Rehling, Walter; and Rossell, Jaime, 4,407,331., Cl. 139-110.000.

Rossetti, Anthony J.: *See—*
Suarez, Joe R., Jr.; Schwartz, Henry L.; Rossetti, Anthony J.; and Corl, Paul D., 4,407,293., Cl. 128-660.000.

Rothrock, Phyllis C.: *See—*
Lathrop, Patrick J.; and Rothrock, Phyllis C., 4,407,840., Cl. 426-629.000.

Rousseau, Jean P. Key holder. 4,407,148., Cl. 70-456.00R.

Roussel Uclaf: *See—*
Krief, Alain, 4,408,066., Cl. 560-124.000.
Mendy, Francois, 4,407,821., Cl. 424-312.000.

Rovner, Jerry M.: *See—*
van Dijk, Christiaan P.; Solbakken, Aage; and Rovner, Jerry M., 4,407,973., Cl. 518-703.000.

Rozeboom, Henry, to International Harvester Co. Disk harrow with cushion gang. 4,407,372., Cl. 172-572.000.

Rubrecht, Jens-Detlef: *See—*
Boning, Bernward; Bone, Rainer; Nagel, Rudolf; and Rubrecht, Jens-Detlef, 4,408,289., Cl. 364-551.000.

Rudolph, Hans: *See—*
Perrey, Hermann; Matner, Martin; Schwinum, Ernst; and Rudolph, Hans, 4,407,724., Cl. 252-312.000.

Rudolph, Samuel A.: *See—*
Patel, Hiralal V.; and Rudolph, Samuel A., 4,407,532., Cl. 285-256.000.

Ruf, Walter, to Robert Bosch GmbH. Ignition and fuel injection pulse generating system for odd-numbered multi-cylinder internal combustion engine. 4,407,258., Cl. 123-617.000.

Rufer, Clemens: *See—*
Kirsch, Gerald; Kapp, Joachim-Friedrich; and Rufer, Clemens, 4,407,823., Cl. 424-317.000.

Ruhland, Kim, to RCA Corporation. Pseudo random number generator apparatus. 4,408,298., Cl. 364-717.000.

Rule, Charles E.; and Miller, Donald E., to SCM Corporation. Fluid non-dairy coffee whitener. 4,407,838., Cl. 426-602.000.

Russell, Larry R. Surface controlled blade stabilizer. 4,407,377., Cl. 175-325.000.

Russell, Randy G.: *See—*
Thornton, Jack C.; and Russell, Randy G., 4,408,177., Cl. 336-139.000.

Russell, Raymond J., to Panelographic Corporation. Method for forming an abrasion resistant coating from cellulose ester and pentaerythritol acrylates. 4,407,855., Cl. 427-54.100.

Ruti Machinery Works Ltd.: *See—*
Steiner, Alois, 4,407,336., Cl. 139-452.000.

Rutsky, Vladimir V.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Ryan, Richard B., to Richard Ryan & Associates, Inc. Slip-in drapery hook. 4,407,051., Cl. 24-369.000.

Sadaranganey, Gobind: *See—*
Corbeil, Roger; and Sadaranganey, Gobind, 4,407,839., Cl. 426-622.000.

Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarance R., to McGraw-Edison Company. Process for making electrical insulating paper and the product thereof. 4,407,697., Cl. 162-137.000.

Sadler, James L.: *See—*
Oakes, Thomas R.; and Sadler, James L., 4,407,790., Cl. 424-78.000.

Saetti, Giuseppe, to Rockwell International Corporation. Workpiece folding guide for cutting and sewing machines. 4,407,209., Cl. 112-147.000.

Saiger, Gunther: *See—*
Stark, Kurt; Sulzbacher, Horst; and Saiger, Gunther, 4,407,864., Cl. 427-216.000.

Saiji, Mitsuhiro: *See—*
Washizuka, Isamu; and Saiji, Mitsuhiro, 4,408,096., Cl. 381-107.000.

Saito, Atsunori; Naganoma, Masanori; Iwata, Yasuhiro; and Usami, Kiyoshi, to Nippondenso Co., Ltd. Electric control method for automobile air conditioner. 4,408,278., Cl. 364-424.000.

Saito, Hiroji, to Toshiba Kikai Kabushiki Kaisha. Injection molding machine. 4,407,649., Cl. 425-145.000.

Saito, Makoto: *See—*
Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, 4,407,682., Cl. 148-128.000.

Saito, Minoru: *See—*
Iwase, Katsuhiko; and Saito, Minoru, 4,407,179., Cl. 83-865.000.

Saito, Takashi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus having a jacket opening enlarging device. 4,408,316., Cl. 369-77.200.

Sakai, Hiromu: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Sakai, Katsuo, to Ricoh Company, Ltd. Information image synthesizing and copying method. 4,407,917., Cl. 430-42.000.

Sakai, Toshiyasu: *See—*
Hara, Masahiro; Sakai, Toshiyasu; and Okamoto, Atsutoshi, 4,408,120., Cl. 235-462.000.

Sakaki, Tomohiko: *See—*
Sasaki, Susumu; and Sakaki, Tomohiko, 4,407,843., Cl. 427-2.000.

Sakakibara, Susumu: *See—*
Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, 4,408,312., Cl. 369-43.000.

Sakane, Kazuo: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,407,798., Cl. 424-246.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,408,042., Cl. 544-22.000.

Sakasai, Toshio: *See—*
Noda, Fumio; Hayashi, Kazuya; Mogi, Keitaro; Iwaasa, Takashi; Sakasai, Toshio; and Iguchi, Nobuyoshi, 4,407,826., Cl. 426-7.000.

Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, to Kabushiki Kaisha Meidensha. Vacuum interrupter. 4,408,107., Cl. 200-144.00B.

Sakurai, Junji, to Fujitsu Limited. Method of manufacturing a semiconductor device. 4,407,060., Cl. 29-576.00E.

Salemme, Charles T.: *See—*
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,407,885., Cl. 428-246.000.

Salvesen, Richard S., to Midwest Computer Register Corp. Digital counter/transmitter with remote receiver/display. 4,408,204., Cl. 340-870.240.

Salzburg, Herbert; Meyborg, Holger; and Ziemann, Heinz, to Bayer Aktiengesellschaft. Process for the preparation of 1,4-3,6-dianhydrohexitols. 4,408,061., Cl. 549-464.000.

Sanborn, Dale. Dip tank hoist. 4,407,229., Cl. 118-702.000.

Sanders, James L. Ion-exchange system and method for isolation and determination of glycosylated hemoglobin in human blood. 4,407,961., Cl. 436-67.000.

Sandoz Ltd.: *See—*
Hiestand, Peter; and Strasser, Michael, 4,407,825., Cl. 424-336.000.
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,407,993., Cl. 524-96.000.
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,408,051., Cl. 546-19.000.

Sands, Robert E.: *See—*
Daghe, Joseph L.; and Sands, Robert E., 4,407,482., Cl. 251-148.000.

Sanford, Herbert F.: *See—*
Bonner, Clive E.; and Sanford, Herbert F., 4,408,243., Cl. 360-137.000.

Sanner, Medford D.: *See—*
McWaters, Lynn D.; and Sanner, Medford D., 4,408,344., Cl. 382-62.000.

Sano, Konosuke: *See—*
Tsuchida, Takayasu; and Sano, Konosuke, 4,407,952., Cl. 435-108.000.

Sano, Yasushi: *See—*
Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, 4,408,312., Cl. 369-43.000.

Santos, Astrogildo, Sr. Power generating apparatus. 4,408,127., Cl. 290-54.000.

Sanyo Electric Co., Ltd.: *See—*
Nakamura, Kengi, 4,408,176., Cl. 336-107.000.

Sanyo-Kokusaku Pulp Co., Ltd.: *See—*
Kimura, Tadao; and Toriyama, Hideoki, 4,407,222., Cl. 118-110.000.

Sapieha, Slawomir W.; and Wertheimer, Michael R. Electrets from plasma polymerized material. 4,407,852., Cl. 427-41.000.

Sargent, Ronald J., to RIS Irrigation Systems. Snap-in rotatable sprinkler. 4,407,455., Cl. 239-222.170.

Sari, Hikmet, to U.S. Philips Corporation. Adaptive system in a digital data receiver providing compensation for amplitude and phase distortions introduced by a data transmission channels. 4,408,332., Cl. 375-14.000.

Sasaki, Susumu; and Sakaki, Tomohiko. Smear sample preparing method. 4,407,843., Cl. 427-2.000.

Sasaki, Yoshitaka, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of producing semiconductor device. 4,407,059., Cl. 29-571.000.

Sasaya, Kazushi; Degawa, Takashi; Suginuma, Atsushi; and Sato, Noriharu, to Hitachi, Ltd. Swash plate type compressor with silencer structure. 4,407,638., Cl. 417-269.000.

Satellite Business Systems: *See—*
Chadwick, Henry D.; and Matthews, David W., 4,408,322., Cl. 370-17.000.

Sato, Eiichi, to Olympus Optical Company Limited. Electrophotographic process and apparatus for making plural copies from a single image. 4,407,918., Cl. 430-54.000.

Sato, Hiroshi; Takatsu, Kei; and Isohata, Junji, to Canon Kabushiki Kaisha. Automatic wafer orienting apparatus. 4,407,627., Cl. 414-757.000.

Sato, Noriharu: *See—*
Sasaya, Kazushi; Degawa, Takashi; Suginuma, Atsushi; and Sato, Noriharu, 4,407,638., Cl. 417-269.000.

Sato, Takashi: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Sato, Yuichi: *See—*
Takamura, Tsutomu; Sato, Yuichi; Nakamura, Toshiaki; and Suzuki, Nobukazu, 4,407,907., Cl. 429-42.000.

Sato, Yukihiro: *See—*
Murayama, Tetsuo; Otsuka, Shigenori; Tajima, Tsunemitsu; and Sato, Yukihiro, 4,407,919., Cl. 430-58.000.

Sauder, Peter: *See—*
Wagener, Dietrich; Fach, Horst; Sauder, Peter; and Abel, Otto, 4,407,701., Cl. 202-99.000.

Sauerland, Franz L.: *See—*
Bennett, Emeric S.; and Sauerland, Franz L., 4,407,094., Cl. 51-165.00R.

Saunders, Robert M.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,407,422., Cl. 215-246.000.

Sawa, Shigeki; Nagasaka, Hiroyasu; Saito, Makoto; Mizuno, Masashi; and Kozima, Katuhiro, to Daido Tokushuko Kabushiki Kaisha. Method of plastic working of metal materials. 4,407,682., Cl. 148-128.000.

Sawamura, Keiichi, to Nissan Motor Company, Limited. Method of impregnating spheres of activated alumina for use in catalyst support with cerium. 4,407,735., Cl. 502-10.000.

Saxe, Robert L., to Research Frontiers Incorporated. Light valve suspension containing fluorocarbon liquid. 4,407,565., Cl. 350-374.000.

Sayegh, Marshall, to STA-TECH International, Inc. Energy control system. 4,407,447., Cl. 236-49.000.

Schaming, Edward J. Ionic strip coating method. 4,407,845., Cl. 427-13.000.

Scharf, Stephen, to Universal Brush Company Ltd. Pad drive for rotary scrubber. 4,407,040., Cl. 15-230.170.

Scherer, Albrecht: *See—*
Wessel, Ulrich; and Scherer, Albrecht, 4,407,115., Cl. 56-370.000.

Schering Aktiengesellschaft: *See—*
Kirsch, Gerald; Kapp, Joachim-Friedrich; and Rufer, Clemens, 4,407,823., Cl. 424-317.000.

Schiff, Peter. Apparatus for left heart assist. 4,407,271., Cl. 128-1.00D.

Schindler, Hartmut: *See—*
Grozinger, Gerhard; Schindler, Hartmut; and Schmid, Franz, 4,408,118., Cl. 377-2.000.

Schink, Karl: *See—*
Muhr, Richard; and Schink, Karl, 4,407,614., Cl. 408-13.000.

Schlag, Johannes: *See—*
Naarmann, Herbert; Penzien, Klaus; and Schlag, Johannes, 4,407,739., Cl. 252-512.000.

Schlegel Corporation: *See*—
Dellevoet, John C., 4,407,219., Cl. 118-60.000.
Schlegel, Hans; Nowotny, Theodor; and Mayer, Rolf, to Wurttembergische Metallwarenfabrik AG. Tableware and decorative articles with a surface of silver. 4,407,875., Cl. 428-43.000.
Schlingmann, Gerhard: *See*—
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.
Schmelter, Dieter: *See*—
Thiele, Hartmut; Schmelter, Dieter; and Posch, Rainer, 4,407,412., Cl. 206-404.000.
Schmelz, Helmut: *See*—
Hanke, Leopold; Hellebrand, Hans; and Schmelz, Helmut, 4,407,858., Cl. 427-86.000.
Schmid, Franz: *See*—
Grozinger, Gerhard; Schindler, Hartmut; and Schmid, Franz, 4,408,118., Cl. 377-2.000.
Schmidt, Alfred J.; and Shearon, Michael H., to Du Pont de Nemours, E. I., and Company. On-line corner rounder. 4,407,177., Cl. 83-300.000.
Schmidt, Gunter, to Xonics, Inc. Compact X-ray unit. 4,408,339., Cl. 378-173.000.
Schmidt, Herbert: *See*—
Birkenstock, Udo; and Schmidt, Herbert, 4,407,733., Cl. 502-174.000.
Schmidt, Nelson: *See*—
Brune, Arlen G.; and Schmidt, Nelson, 4,407,111., Cl. 56-16.400.
Schmidt, Peter. Reclining platform for bathtub units. 4,407,029., Cl. 4-564.000.
Schmidt, Robert R.: *See*—
Forster, Heinz; Maurer, Fritz; Mues, Volker; Eue, Ludwig; and Schmidt, Robert R., 4,408,055., Cl. 548-125.000.
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, to Bayer Aktiengesellschaft. Preparation of 3,6-disubstituted 4-amino-1,2,4-triazin-5-ones. 4,408,044., Cl. 544-182.000.
Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and indomethacin. 4,407,804., Cl. 424-260.000.
Schmidt, William K., to Du Pont de Nemours, E. I., and Company. Analgesic mixture of nalbuphine and zomepirac. 4,407,805., Cl. 424-260.000.
Schneider, Helga. Toilet seat lid cover. 4,407,024., Cl. 4-242.000.
Schneider, Hermann: *See*—
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,407,993., Cl. 524-96.000.
Hinsken, Hans; Mueller, Wolfgang; and Schneider, Hermann, 4,408,051., Cl. 546-19.000.
Schneider, Wolfangang; Peters, Josef; and Gaffal, Karl, to Klein, Schanzlin & Becker Aktiengesellschaft. Motor-pump aggregate. 4,407,631., Cl. 415-122.00R.
Schnur, Rodney C., to Pfizer Inc. Hypoglycemic 5-substituted oxazolidine-2,4-diones. 4,407,811., Cl. 424-272.000.
Schoenwald, Ronald D.; and Roehrs, Robert E., to Alcon Laboratories, Inc. Sustained release ophthalmic drug dosage. 4,407,792., Cl. 424-81.000.
Schopke, Holger: *See*—
Hoffman, Dietrich; and Schopke, Holger, 4,407,886., Cl. 428-320.800.
Schouteeten, Alain; and Christidis, Yani. Pure crystalline racemic sodium parahydroxymandelate, process for its preparation and uses thereof. 4,408,070., Cl. 562-470.000.
Schow, Steven R.: *See*—
Smith, Amos B., III; and Schow, Steven R., 4,408,059., Cl. 549-214.000.
Schramme, Stephan H.; and Kelley, Mark A., to General Motors Corporation. Grommet assembly with panel attaching means. 4,407,042., Cl. 16-2.000.
Schreckenberg, Heinz: *See*—
Bonn, Berhard; Giertz, Franz; Holl, Lothar; and Schreckenberg, Heinz, 4,407,355., Cl. 165-104.160.
Schretzmann, Klaus; Dorner, Stefan; and Schumacher, Gustav, to Kernforschungszentrum Karlsruhe G.m.b.H. Method for preventing dangerous hydrogen accumulation in nuclear reactor containments. 4,407,774., Cl. 376-300.000.
Schroeder, James D., to Accu-Feed Corp. Conveyor with telescopic feed tube. 4,407,433., Cl. 222-63.000.
Schroeder, William S. Artificial erection device. 4,407,275., Cl. 128-79.000.
Schukei, Glen E.; and Formanek, Frank J., to Combustion Engineering, Inc. Sludge lance for nuclear steam generator. 4,407,236., Cl. 122-390.000.
Schulthess, Dieter: *See*—
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,407,307., Cl. 131-308.000.
Schulze, Rainer, to C. A. Weidmuller GmbH & Co. Tool for stripping electrical conductors. 4,407,174., Cl. 81-9.50A.
Schumacher, Gustav: *See*—
Schretzmann, Klaus; Dorner, Stefan; and Schumacher, Gustav, 4,407,774., Cl. 376-300.000.
Schumacher, Ignatius; and Wang, Kang-Bo, to Monsanto Company. Catalysts. 4,407,729., Cl. 502-200.000.
Schuman, Paul D.: *See*—
DePasquale, Ralph J.; and Schuman, Paul D., 4,408,048., Cl. 544-313.000.
Schwab, Bernard: *See*—
Sichling, Georg H.; Schwab, Helmut; and Schwab, Bernard, 4,408,123., Cl. 250-226.000.
Schwab, Helmut: *See*—
Sichling, Georg H.; Schwab, Helmut; and Schwab, Bernard, 4,408,123., Cl. 250-226.000.
Schwartz, Bertram: *See*—
Hartman, Robert L.; Koszi, Louis A.; and Schwartz, Bertram, 4,408,331., Cl. 372-46.000.
Schwartz, Henry L.: *See*—
Suarez, Joe R., Jr.; Schwartz, Henry L.; Rossetti, Anthony J.; and Corl, Paul D., 4,407,293., Cl. 128-660.000.
Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, to Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler. Bis-(silylethyl)-oligosulphides and process for their production. 4,408,064., Cl. 556-427.000.
Schwarzler, Peter, to Krauss-Maffei AG. Asynchronous linear electric motor. 4,408,139., Cl. 310-13.000.
Schwinum, Ernst: *See*—
Perrey, Hermann; Matner, Martin; Schwinum, Ernst; and Rudolph, Hans, 4,407,724., Cl. 252-312.000.
Science Union Et Cie: *See*—
Arnaud, Jean-Claude; and Devissaguet, Michelle, 4,407,801., Cl. 424-250.000.
Sclippa, Ermes. Optical system for airport semi-flush approach lights. 4,408,266., Cl. 362-297.000.
SCM Corporation: *See*—
Reiner, Barry C.; and DuRoss, Robert M., 4,407,596., Cl. 400-253.000.
Rule, Charles E.; and Miller, Donald E., 4,407,838., Cl. 426-602.000.
Scott & Fetzer Company, The: *See*—
Conners, John A., 4,407,069., Cl. 30-254.000.
Scripto, Inc.: *See*—
Muller, Frank A., 4,407,985., Cl. 523-161.000.
Seaborn, Douglas K., to Monsanto Company. Drawing and beaming a weftless warp of yarns. 4,407,767., Cl. 264-40.100.
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., to Nalco Chemical Company. Fluorocarbon surfactants. 4,408,043., Cl. 544-87.000.
SEB S.A.: *See*—
Rey, Pierre; and Bonnet, Emile, 4,407,414., Cl. 206-553.000.
SECO Industries, Inc.: *See*—
Moss, Theron V., 4,407,039., Cl. 15-144.00A.
Seeburg, Peter H.: *See*—
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,407,948., Cl. 435-91.000.
Seifert, Kurt, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,407,457., Cl. 239-533.120.
Seikosha Co., Ltd.: *See*—
Fujita, Masanori, 4,407,587., Cl. 368-108.000.
Semiconductor Research Foundation: *See*—
Nishizawa, Jun-ichi; Tadahiro, Ohmi; and Tamamushi, Takashige, 4,408,304., Cl. 365-174.000.
Senoo, Keizi: *See*—
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.
Senshu, Hisashi; Ishikawa, Kazuhiro; Ishida, Yukihiko; and Kawagishi, Yoji, to Orient Chemical Industries, Ltd. Toner complexes for developing electrostatic images. 4,407,924., Cl. 430-109.000.
Sera, Hidefumi: *See*—
Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, 4,407,939., Cl. 430-536.000.
Sestanj, Kazimir; Fung, Steven; Abraham, Nedumparambil A.; and Bellini, Francesco, to Ayerst, McKeena & Harrison, Inc. 6-(Lower alkoxy)-5-(trifluoromethyl)-1-naphthalenecarboxaldehydes. 4,408,077., Cl. 568-441.000.
Seto, Nobuo: *See*—
Ichijima, Seiji; Watanabe, Toshiyuki; Furutachi, Nobuo; and Seto, Nobuo, 4,407,936., Cl. 430-505.000.
Severson, Walter C.: *See*—
Uihlein, Robert E.; and Severson, Walter C., 4,407,084., Cl. 40-475.000.
Seybold, Guenther: *See*—
Eilingsfeld, Heinz; Neumann, Peter; Seybold, Guenther; Lenke, Dieter; and Friedrich, Ludwig, 4,407,810., Cl. 424-270.000.
Seymour, Raymond K.; and Doughty, Dennis J., to General Electric Co. Accessory mounting module for J and K frame breakers. 4,408,174., Cl. 335-20.000.
Sghibartz, Cristian M., to International Paint Company Limited, The. Marine paint. 4,407,997., Cl. 524-202.000.
Shafer, Sheldon J.: *See*—
Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., 4,407,996., Cl. 524-167.000.
Sharp Kabushiki Kaisha: *See*—
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,408,292., Cl. 364-405.000.
Washizuka, Isamu; and Saiji, Mitsuhiro, 4,408,096., Cl. 381-107.000.
Shearon, Michael H.: *See*—
Schmidt, Alfred J.; and Shearon, Michael H., 4,407,177., Cl. 83-300.000.
Shell Oil Company: *See*—
Baumgartner, Herman J., 4,408,082., Cl. 568-571.000.
Flint, Dennis H.; and Estreicher, Herbert, 4,407,671., Cl. 71-113.000.
Foster, Elton G., 4,408,081., Cl. 568-571.000.

Martin, Michael K., 4,408,017., Cl. 525-288.000.
Van Leeuwen, Petrus W. N. M.; and Roobeek, Cornelis F., 4,408,078., Cl. 568-454.000.
Sheludko, Alexey D.; Ivanov, Rumen V.; Nikolov, Dobrin V.; and Nishkov, Ivan M., to Institute Po Physikochimia pri Ban. Method of and apparatus for the flotation processing of minerals. 4,407,715., Cl. 209-164.000.
Shepard, Billy H. Method and composition for rapidly developing latent fingerprints. 4,407,842., Cl. 427-1.000.
Shepard, Joseph F.: *See*—
Fatula, Joseph J., Jr.; Garbarino, Paul L.; and Shepard, Joseph F., 4,407,058., Cl. 29-571.000.
Shepeleva, Irina S.: *See*—
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.
Shepherd, Ian C.; Pearson, Ian G.; and Gibson, Donald C., to Commonwealth Scientific and Industrial Research Organization. Grass mower. 4,407,112., Cl. 56-13.400.
Sherwin-Williams Company, The: *See*—
Mitchell, Mark L., III; and Carr, Richard P., 4,408,058., Cl. 549-33.000.
Shiau, Chin-Chih: *See*—
Grabowski, John S.; Shiau, Chin-Chih; and Latala, John R., 4,408,342., Cl. 382-9.000.
Shibata, Tadashi: *See*—
Kurosawa, Kei; and Shibata, Tadashi, 4,407,851., Cl. 427-39.000.
Shichman, Daniel, to United States Surgical Corporation. Pressure relief system for pressurized gas containers. 4,407,432., Cl. 222-54.000.
Shigematsu, Kazuo: *See*—
Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,407,880., Cl. 428-156.000.
Shikata, Osamu: *See*—
Nishimura, Masaru; Shikata, Osamu; and Ohtsuka, Yoshikuni, 4,407,402., Cl. 198-389.000.
Shima, George T., to Burroughs Corporation. Single transmission bus data network employing an expandable daisy-chained bus assignment control line. 4,408,300., Cl. 364-900.000.
Shima, Mutsuo; Aoyama, Kensuke; and Naka, Michiro, to Dai Nippon Insatsu Kabushiki Kaisha. Decorative sheets and processes for producing decorative articles by using the same. 4,407,881., Cl. 428-156.000.
Shimizu, Isao: *See*—
Tajima, Fujio; Ichikawa, Atsushi; and Shimizu, Isao, 4,407,462., Cl. 242-184.000.
Shimotake, Toru: *See*—
Takeyama, Kojiro; and Shimotake, Toru, 4,407,078., Cl. 34-133.000.
Shine, John: *See*—
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,407,948., Cl. 435-91.000.
Shinjo, Katsumi, to Yugen Kaisha Shinjoseisakusho. Drill screw. 4,407,620., Cl. 411-387.000.
Shintani, Kenji: *See*—
Suzuki, Junichi; and Shintani, Kenji, 4,408,311., Cl. 369-43.000.
Shintron Company, Inc.: *See*—
Kudirka, Paul E., 4,408,198., Cl. 340-729.000.
Shipley, Randall S.; Lowery, Kirby, Jr.; and Gibbs, Ronald L., to Dow Chemical Company, The. Process for polymerizing olefins. 4,408,025., Cl. 526-119.000.
Shirai, Takayuki: *See*—
Harada, Shozo; Ito, Kazuo; Shirai, Takayuki; and Koide, Tetsuya, 4,407,769., Cl. 264-60.000.
Shiraki, Ryuzo: *See*—
Yuyama, Toshio; Shiraki, Ryuzo; and Watanabe, Seizi, 4,408,135., Cl. 307-474.000.
Shiraki, Yoshihiro; and Kojima, Tokumitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Flashing apparatus of geothermal power plants. 4,407,127., Cl. 60-641.500.
Shiratori, Masayuki; and Katsura, Masaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Freon gas detecting element. 4,407,778., Cl. 422-90.000.
Shiryaev, Alexandr V.: *See*—
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.
Shogren, David K.; and Zambelli, Robert G., to Xerox Corporation. Compact optical scanning system. 4,407,581., Cl. 355-8.000.
Shomura, Koichi: *See*—
Toyoura, Masakazu; Shomura, Koichi; Tsuchida, Hirotoshi; and Murakami, Tadateru, 4,408,083., Cl. 568-576.000.
Shore, Daniel B.; and Chatterjea, Probir K., to Dresser Industries, Inc. Clutch-brake steering mechanism for tractors. 4,407,328., Cl. 137-625.600.
Short, Wilbur G.: *See*—
Pearson, Eugene W.; and Short, Wilbur G., 4,407,628., Cl. 414-35.000.
Shultz, George W.; and Shultz, Nouelle A. Wind shelter. 4,407,319., Cl. 135-87.000.
Shultz, Nouelle A.: *See*—
Shultz, George W.; and Shultz, Nouelle A., 4,407,319., Cl. 135-87.000.
Shum, Lanson Y., to Westinghouse Electric Corp. Multi-arm robot. 4,407,625., Cl. 414-728.000.
Shutt, Joseph A.: *See*—
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.
Sichling, Georg H.; Schwab, Helmut; and Schwab, Bernard, to Siemens Corporation. Fiber optical sensor device for measuring a physical parameter. 4,408,123., Cl. 250-226.000.
Siddens, Jack K., to American Cyanamid Company. Method for the preparation of difluoromethoxyaromatic compounds. 4,407,760., Cl. 260-465.00F.
Siebol, George, to Olympic Fastening Systems. Blind fastener with deformable clamping means. 4,407,619., Cl. 411-43.000.
Siefert, Eicke: *See*—
Koppenhagen, Volker; Schlingmann, Gerhard; Dresow, Bernd; Bischoff, Ludwig; Penkert, Rosemarie; and Siefert, Eicke, 4,407,947., Cl. 435-85.000.
Siemens Aktiengesellschaft: *See*—
Akerstrom, Bengt, 4,407,303., Cl. 128-785.000.
Aulich, Hubert; and Auracher, Franz, 4,407,668., Cl. 65-3.110.
Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, 4,407,903., Cl. 429-23.000.
Hanke, Leopold; Hellebrand, Hans; and Schmelz, Helmut, 4,407,858., Cl. 427-86.000.
Hundt, Eckart; and Trautenberg, Elmar, 4,407,163., Cl. 73-607.000.
Laar, Hans, 4,408,091., Cl. 174-74.00R.
Siemens Corporation: *See*—
Sichling, Georg H.; Schwab, Helmut; and Schwab, Bernard, 4,408,123., Cl. 250-226.000.
Sierra Survival Company, Inc.: *See*—
Stuever, Joseph H., 4,407,318., Cl. 135-66.000.
Signorini, Massimo; Trebbi, Attilio; and Molteni, Luigi, to Dr. Lo. Zambeletti S.p.A. Process for preparing 1-(3,5-dimethoxy-4-hydroxy phenyl)-2-(N-methylamino) ethanol hydrochloride. 4,408,074., Cl. 564-361.000.
Signs by Severson Rent A Sign, Inc.: *See*—
Uihlein, Robert E.; and Severson, Walter C., 4,407,084., Cl. 40-475.000.
Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. Thiosulfenamide derivatives of N-phosphonomethylglycinonitriles. 4,407,763., Cl. 260-940.000.
Sikorski, James A.; and Hoobler, Mary A., to Monsanto Company. N-Arylsulfinyl N-phosphonomethylglycinonitriles. 4,407,764., Cl. 260-940.000.
Sillers, Donald A., Jr., to Peerless Manufacturing Company. Multiple filter vessel. 4,407,664., Cl. 55-357.000.
Simeth, Claus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for securing pure skew adjustment of a plate cylinder in a sheet-fed rotary printing press. 4,407,198., Cl. 101-248.000.
Simms, Graham J., to British Aerospace Public Limited Company. Ring laser gyroscopes. 4,407,583., Cl. 356-350.000.
Sincholle, Daniel: *See*—
Bonne, Claude; Coquelet, Claude; and Sincholle, Daniel, 4,407,812., Cl. 424-273.00R.
Singer Company, The: *See*—
Dicke, William C., 4,407,344., Cl. 144-87.000.
Hanssen, Tore B.; and Zwirek, Chester S., 4,408,178., Cl. 337-320.000.
Kiyoshima, Hiroshi, 4,407,211., Cl. 112-260.000.
Singh, Shobha: *See*—
Grodkiewicz, William H.; Singh, Shobha; and Van Uitert, LeGrand G., 4,407,061., Cl. 29-576.00B.
Sinner, Bengt: *See*—
Andersson, Nils E.; Eriksson, Sten; and Sinner, Bengt, 4,407,698., Cl. 162-258.000.
Sinniger, Joseph O.: *See*—
Robbi, Anthony D.; and Sinniger, Joseph O., 4,408,296., Cl. 364-569.000.
Sipra Patententwicklungs Beteiligungsgesellschaft mbH: *See*—
Grozinger, Gerhard; Schindler, Hartmut; and Schmid, Franz, 4,408,118., Cl. 377-2.000.
Sirven, Jacques M. M. Hydraulic shock absorber having piston-mounted valve biased by gaseous pressure. 4,407,396., Cl. 188-282.000.
Sisson, Edwin D.; Morrow, Robert S.; Stoutenburg, Donn V.; and Davis, Dean T., to IRD Mechanalysis, Inc. Vibration analyzing apparatus and method. 4,408,285., Cl. 364-508.000.
Sitt, Rudiger: *See*—
Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, 4,407,809., Cl. 424-267.000.
Sjolander, Einar. Method of manufacturing collagen products. 4,407,829., Cl. 426-59.000.
Skalsky, Michael: *See*—
Hirshorn, Michael S.; Holley, Loraine K.; and Skalsky, Michael, 4,407,302., Cl. 128-784.000.
SKF Nova AB: *See*—
Lundgren, Bengt, 4,407,603., Cl. 403-370.000.
Skinner, Dean W.: *See*—
Arnold, Robert W.; and Skinner, Dean W., 4,408,129., Cl. 307-270.000.

Skvirenko, Andrei B.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Small, Peter S.; and Small, Peter W., to Tonparo Limited. Separator device. 4,407,370., Cl. 171-124.000.

Small, Peter W.: *See—*
Small, Peter S.; and Small, Peter W., 4,407,370., Cl. 171-124.000.

Smart, John A., to Northern Petrochemical Company. Method of producing a textured film. 4,407,879., Cl. 428-141.000.

Smieskol, Stefan: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.

Smith, Amos B., III; and Schow, Steven R., to University Patents, Inc. Spiroketals useful as intermediates in the synthesis of milbemycin and avermectin macrolides. 4,408,059., Cl. 549-214.000.

Smith, Arthur Albert, Jr.: *See—*
MacDermott, Carl H.; and Brown, Richard S., Jr., 4,407,075., Cl. 33-348.200.

Smith, Blaine M.; and Taylor, James A., to Ehrenreich Electronics, Inc. Sound actuated light switch. 4,408,308., Cl. 367-197.000.

Smith, Dean L., Jr.: *See—*
Merchant, Philip, Jr.; and Smith, Dean L., Jr., 4,407,706., Cl. 204-190.000.
Merchant, Philip, Jr.; and Smith, Dean L., Jr., 4,407,707., Cl. 204-190.000.

Smith, Dennis E., to Fisher & Paykel Limited. Belt drive system. 4,407,077., Cl. 34-108.000.

Smith Engineering: *See—*
Smith, Jay, III, 4,408,103., Cl. 200-6.00A.

Smith, George F., Jr., to Hergeth, Incorporated. Horizontal baling apparatus and method. 4,407,107., Cl. 53-528.000.

Smith, Glynn E.: *See—*
Cook, Clarence E.; Smith, Glynn E.; and Monaghan, Richard C., 4,407,686., Cl. 156-215.000.

Smith, Graydon E.; and Lewis, Barry J. Load-bearing hollow core base panel. 4,407,878., Cl. 428-119.000.

Smith International, Inc.: *See—*
Fowler, John H., 4,407,530., Cl. 285-140.000.
Thomas, Robert D., 4,407,378., Cl. 175-340.000.

Smith, Jay, III, to Smith Engineering. Joystick operated multiple position switch. 4,408,103., Cl. 200-6.00A.

Smith, John R.; Bingle, William D.; and Austin, Lowell W., to National Steel Corporation. Process for forming a drawn and ironed container. 4,407,149., Cl. 72-47.000.

Smith Kline & French Laboratories Limited: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,407,808., Cl. 424-263.000.

Smiths Industries Public Limited Company: *See—*
Thrift, Peter R., 4,407,558., Cl. 339-121.000.

Snaper, Alvin A. Air conditioning system. 4,407,134., Cl. 62-5.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Societe Anonyme dite: Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Long, Jacques, 4,407,641., Cl. 417-356.000.

Societe Anonyme dite Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Nahon, Richard; and Decuyper, Jean-Claude, 4,408,233., Cl. 358-284.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Chiovini, Jacky; Margolis, Geoffrey; and Blanc, Maurice, 4,407,834., Cl. 426-422.000.

Societe de Vente de l'Aluminium Pechiney: *See—*
Ladet, Michel; Lefebvre, Jacques; and Patrie, Jos, 4,408,110., Cl. 200-263.000.

Societe Nationale Elf Aquitaine (Production): *See—*
Blanc, Claude; Galy, Henry; and Elgue, Jean, 4,407,784., Cl. 423-228.000.

Societe Nationale Industrielle Aero.: *See—*
Mouille, Rene L., 4,407,633., Cl. 416-140.000.

Societe Suisse pour l'Industrie Horlogere Management Services S.A.: *See—*
Musy, Jean-Pierre, 4,407,586., Cl. 368-77.000.

Soejima, Shigeo: *See—*
Mase, Syunzo; and Soejima, Shigeo, 4,407,704., Cl. 204-1.00T.

Solbakken, Aage: *See—*
van Dijk, Christiaan P.; Solbakken, Aage; and Rovner, Jerry M., 4,407,973., Cl. 518-703.000.

Sollner, George H.; Disque, Donny R.; and Knerr, Allan R., to Phelps Dodge Industries, Inc. Modified polyamide-imide resins and method for making the same. 4,408,032., Cl. 528-48.000.

Sonmor, Rudy C.: *See—*
Haigh, Harry; and Sonmor, Rudy C., 4,407,645., Cl. 418-131.000.

Sony Corporation: *See—*
Suzuki, Junichi; and Shintani, Kenji, 4,408,311., Cl. 369-43.000.

Sorensen, Ansgar C. H. Method for determining the concentration of an absorbable component in a gaseous mixture. 4,407,963., Cl. 436-147.000.

Sorenson, Richard W., to Carlingswitch, Inc. Pushbutton switch. 4,408,106., Cl. 200-68.000.

Soula, Gerard; and Linguenheld, Louis, to Rhone-Poulenc Industries. Process for the preparation of tris-(ether-amines) and the tris-(ether-amines) produced. 4,408,075., Cl. 564-474.000.

Soundcraft, Inc.: *See—*
Casden, Martin S., 4,408,122., Cl. 235-449.000.

Southern Railway Company: *See—*
Hoskins, Paul T., Jr., 4,407,072., Cl. 33-203.110.

Southwest Research Institute: *See—*
King, James D.; Burkhardt, Gary L.; Barton, John R.; and Matzkanin, George A., 4,408,160., Cl. 324-209.000.

Sowter, Brian R.: *See—*
Burr, Peter; Chase, Brian D.; Paton, Andrew; and Sowter, Brian R., 4,408,163., Cl. 324-404.000.

Spademan, Richard G. Ski boot locating apparatus. 4,407,520., Cl. 280-624.000.

Sparks, Daniel R.: *See—*
Voge, Andrew; Sparks, Daniel R.; and Mullins, Barry W., 4,408,252., Cl. 361-288.000.

Spectrum Four-Syte Corporation: *See—*
Kaplan, Irwin M., 4,408,251., Cl. 361-172.000.

Spencer, Donald B.: *See—*
Fitch, John L.; and Spencer, Donald B., 4,408,206., Cl. 343-352.000.

Sperry Corporation: *See—*
Aplenc, Andrej M. R., 4,407,126., Cl. 60-641.400.
Fowler, David M., III, 4,408,191., Cl. 340-365.00R.
McIlwain, Irwin D.; and Halls, Lawrence M., 4,407,110., Cl. 56-14.400.

Spiritini, Massimo; and Stiehler, Christoph, to Stiehler, Christoph. Method and device for laying roadmaking material in a roadway. 4,407,604., Cl. 404-75.000.

Spretnjak, Steve A.; and Anthony, Colin, to Excel Industries. Ventilating window. 4,407,093., Cl. 49-391.000.

Square D Company: *See—*
Brozovich, Roy S.; and Moore, Prentice G., 4,408,158., Cl. 324-78.00R.

STA-TECH International, Inc.: *See—*
Sayegh, Marshall, 4,407,447., Cl. 236-49.000.

Staar S. A.: *See—*
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,408,335., Cl. 377-18.000.

Staehle, Bradford G.: *See—*
Burton, John H.; Staehle, Bradford G.; and Kuyava, Charles C., 4,407,278., Cl. 128-79.000.

Staffa, Jeffrey A.: *See—*
Lionelle, Joseph E.; and Staffa, Jeffrey A., 4,407,818., Cl. 424-289.000.

Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive mixture comprising O-naphthoquinone-diazides and light sensitive copying material prepared therefrom. 4,407,926., Cl. 430-165.000.

Stamicarbon BV: *See—*
Gaymans, Reinoud J.; and Bour, Edmond H. J. P., 4,408,036., Cl. 528-335.000.
Van Hardeveld, Rudolf, 4,408,046., Cl. 544-201.000.

Standard Manufacturing Company, Inc.: *See—*
Oswald, Norman D.; and Mankey, Harry S., 4,407,381., Cl. 180-6.480.

Standard Oil Company: *See—*
Dolhyj, Serge R.; and Paparizos, Christos, 4,407,661., Cl. 44-78.000.
Pedersen, S. Erik; Hardman, Harley F.; and Wagner, Louis F., 4,408,071., Cl. 562-536.000.
Weisrock, William P.; and McCarthy, Edward F., 4,407,950., Cl. 435-104.000.

Standard Oil Company, (Indiana): *See—*
Pellet, Regis J.; Gradassi, Michael J.; and Bertolacini, Ralph J., 4,407,736., Cl. 502-230.000.
Weisrock, William P.; and McCarthy, Edward F., 4,407,951., Cl. 435-104.000.

Standing, Colin A., to Gallagher Electronics Limited. Electric fence standard. 4,407,485., Cl. 256-10.000.

Stanford, James R.: *See—*
Seale, Virgil L.; Stanford, James R.; Briscoe, James E.; and Penny, Glenn S., 4,408,043., Cl. 544-87.000.

Stark, Marvin: *See—*
Harbin, Wayne D.; Stark, Marvin; and Britt, Kenneth W., 4,407,203., Cl. 105-462.000.

Stark, Raymond L., to Alcon Laboratories, Inc. Ophthalmic solutions. 4,407,791., Cl. 424-80.000.

Startari, Joseph: *See—*
Wessells, Forrest; Startari, Joseph; and Estes, Michael E., 4,407,862., Cl. 427-144.000.

Stasko, Irene: *See—*
DeZeeuw, John R.; and Stasko, Irene, 4,407,953., Cl. 435-145.000.

Stauffer Chemical Company: *See—*
Aaronson, Alan M., 4,407,981., Cl. 521-107.000.
Chung, Frank H. Y., 4,407,835., Cl. 426-552.000.
Hardy, Thomas A., 4,407,765., Cl. 260-970.000.
Jung, Alfred K., 4,407,758., Cl. 260-429.900.
Wong, Rayman Y., 4,407,807., Cl. 424-263.000.

Stavinoha, Jerome L.; and McCollum, Anthony W., to Eastman Kodak Company. Polymer prepared from octadienol and unsaturated dicarboxylic acid, process of preparing the same, and coating composition prepared therefrom. 4,408,029., Cl. 526-321.000.

Stawitz, Josef: *See—*
Hohmann, Walter; and Stawitz, Josef, 4,408,056., Cl. 548-416.000.

Steel, James, to Ogden Electronics, Ltd. Collision prevention system. 4,407,388., Cl. 180-271.000.

Steffes, Michael A.: *See—*
Bushaw, Kenneth A.; Gillingham, Ronald D.; Jorgenson, Gary W.; Manning, Clyde L.; and Steffes, Michael A., 4,408,231., Cl. 358-280.000.

Stehouwer, William J., to A. J. Sparks. Tag. 4,407,082., Cl. 40-10.00C.

Steinback, Clarence I., to Acrometal Products, Inc. Method and apparatus for surface grinding. 4,407,096., Cl. 51-328.000.

Steinbuchel, Gunter H.: *See—*
Bruck, Herbert; Steinbuchel, Gunter H.; Hofmann, Hans; Busch, Josef; and Hoffacker, Franz, 4,407,867., Cl. 427-365.000.

Steiner, Alois, to Ruti Machinery Works Ltd. Thread-feed device for textile machines and method of operation. 4,407,336., Cl. 139-452.000.

Stemberger, Axel, to Dr. Ruhland Nachf. GmbH. Collagenous dressing. 4,407,787., Cl. 424-28.000.

Sterling Drug Inc.: *See—*
Teletzke, Gerald H.; and Erickson, Allen H., 4,407,717., Cl. 210-616.000.
Thompson, Joseph, 4,407,779., Cl. 422-266.000.

Stern, Gerhard: *See—*
Dobramysl, Wilhelm; Stern, Gerhard; and Raml, Walter, 4,408,045., Cl. 544-196.000.

Sternlicht, Mark, to Wonder Corporation of America. Disposable flashlight. 4,408,263., Cl. 362-189.000.

Steuer, Robert R.; Rogers, Robert K.; and Horne, Robert H., to DNA Medical, Inc. Miniature physiological monitor with interchangeable sensors. 4,407,295., Cl. 128-670.000.

Stevens, Frederick F.: *See—*
Hillberg, Robert L.; and Stevens, Frederick F., 4,407,085., Cl. 42-69.00R.

Stewart, David G.: *See—*
Ball, William J.; Palmer, Keith W.; and Stewart, David G., 4,407,728., Cl. 502-60.000.

Stichting Nederlands Instituut Voor Zuivelonderzoek (NIZO): *See—*
Lippe, Frank; Ottenhof, Henricus A. W. E. M.; and De Boer, Rudolf, 4,407,747., Cl. 260-120.000.

Stiehler, Christoph: *See—*
Spiritini, Massimo; and Stiehler, Christoph, 4,407,604., Cl. 404-75.000.

Stift, Kurt; Sulzbacher, Horst; and Saiger, Gunther, to Voest-Alpine Aktiengesellschaft. Process for treating iron sponge. 4,407,864., Cl. 427-216.000.

Stimpson, Flave F.: *See—*
Benton, Robert L.; Martinsons, Dainis O.; and Stimpson, Flave F., 4,407,511., Cl. 277-24.000.

Stohler, Harro: *See—*
Bernauer, Karl; Link, Helmut; and Stohler, Harro, 4,407,814., Cl. 424-273.00R.

Stoltefuss, Jurgen: *See—*
Junge, Bodo; Stoltefuss, Jurgen; Muller, Lutz; Krause, Hans-Peter; and Sitt, Rudiger, 4,407,809., Cl. 424-267.000.

Stone, Harris E. Cap for a paper core. 4,407,428., Cl. 220-356.000.

Stonehart, Paul. Fuel cell with Pt/Pd electrocatalyst electrode. 4,407,906., Cl. 429-42.000.

Stoppani, Brian R., to Mining Supplies Limited. Mine system. 4,407,545., Cl. 299-30.000.

Storzer, Josef, to Ledermann GmbH & Co. Circular saw blades. 4,407,178., Cl. 83-835.000.

Stoutenburg, Donn V.: *See—*
Sisson, Edwin D.; Morrow, Robert S.; Stoutenburg, Donn V.; and Davis, Dean T., 4,408,285., Cl. 364-508.000.

Stow/Davis Furniture Company: *See—*
Propst, Paul L.; Richardson, Donald A.; and Hinrichs, Carl B., 4,407,101., Cl. 52-126.300.

Strasser, Karl: *See—*
Gutbier, Heinrich; Strasser, Karl; Limberg, Elmar; and Jensen, Volker, 4,407,903., Cl. 429-23.000.

Strasser, Michael: *See—*
Hiestand, Peter; and Strasser, Michael, 4,407,825., Cl. 424-336.000.

Straw, John E.: *See—*
Watson, William H.; and Straw, John E., 4,407,442., Cl. 229-28.00R.

Streisinger, Erwin, to C. R. Bard, Inc. Disc membrane catheter for performing cystometrograms and urethral profiles. 4,407,301., Cl. 128-774.000.

Stronghold International AG: *See—*
Ripoll, Luis, 4,407,770., Cl. 264-69.000.

Stroup, Norman G.: *See—*
Swanson, William C.; Krukow, Eugene J.; and Stroup, Norman G., 4,407,109., Cl. 56-11.900.

Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. (4-Piperidyl)-substituted phenyl ketones. 4,408,053., Cl. 546-226.000.

Strupczewski, Joseph T.; Gardner, Beth A.; and Allen, Richard C., to Hoechst-Roussel Pharmaceuticals Inc. Oximes of 4-benzoyl-piperidines. 4,408,054., Cl. 546-226.000.

Stuever, Joseph H., to Sierra Survival Company, Inc. Stick. 4,407,318., Cl. 135-66.000.

Suarez, Joe R., Jr.; Schwartz, Henry L.; Rossetti, Anthony J.; and Corl, Paul D., to Diasonics, Inc. Ultrasound imaging apparatus for providing simultaneous B-scan and Doppler data. 4,407,293., Cl. 128-660.000.

Such, Christopher H.: *See—*
Hall, Derrard M.; Kemp, Roy A.; and Such, Christopher H., 4,407,990., Cl. 524-38.000.

Suchy, Jan B.: *See—*
Bennett, Everett W.; and Suchy, Jan B., 4,407,921., Cl. 430-96.000.

Suckow, David S., to Caterpillar Tractor Co. Multi-piece wheel structure. 4,407,348., Cl. 152-410.000.

Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Weible, Reinhold, 4,408,244., Cl. 361-24.000.

Sudoh, Kanzaburo: *See—*
Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, 4,407,652., Cl. 432-58.000.

Sueddeutsche Kuehlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Muellejans, Herbert; and Koetz, Hans-Joachim, 4,407,358., Cl. 165-166.000.

Sugi, Norio: *See—*
Nomura, Manabu; Sugi, Norio; Tanaka, Takayoshi; and Hara, Koichi, 4,407,986., Cl. 523-200.000.

Sugihara, Kazuyoshi: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.

Sugimoto, Koichi: *See—*
Kikuchi, Hiroshi; and Sugimoto, Koichi, 4,408,286., Cl. 364-513.000.

Sugimoto, Naohiko; Maekawa, Yukio; and Ichikawa, Yasunori, to Fuji Photo Film Co., Ltd. Silver halide photographic sensitive element containing a fluorine containing compound as an antistatic agent. 4,407,937., Cl. 430-527.000.

Suginaka, Shunji; Kobayashi, Ryuichiro; Ikeuchi, Satoru; Mizukura, Noboru; and Fujita, Noriko, to Konishiroku Photo Industry Co., Ltd. Photographic element with pyrazole electron donors. 4,407,941., Cl. 430-566.000.

Suginuma, Atsushi: *See—*
Sasaya, Kazushi; Degawa, Takashi; Suginuma, Atsushi; and Sato, Noriharu, 4,407,638., Cl. 417-269.000.

Sugiura, Yutaka, to Canon Kabushiki Kaisha. Magnetic sheet mounting device. 4,408,318., Cl. 369-261.000.

Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus with a tracking control defeating circuit for rapid track access. 4,408,312., Cl. 369-43.000.

Sugo, Takanobu: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Sukejima, Hajime: *See—*
Nakayama, Yasuharu; Iwai, Hiroshi; and Sukejima, Hajime, 4,408,028., Cl. 526-200.000.

Sulowski, Andrew C.: *See—*
Greenway, Peter R.; Sulowski, Andrew C.; and George, Henry C., 4,407,391., Cl. 182-9.000.

Sulzbacher, Horst: *See—*
Stift, Kurt; Sulzbacher, Horst; and Saiger, Gunther, 4,407,864., Cl. 427-216.000.

Sulzer Brothers Limited: *See—*
Herzog, Rudolf, 4,408,148., Cl. 318-610.000.

Sumitomo Chemical Company, Limited: *See—*
Fukasawa, Akira; Yoshimura, Masakatsu; Kaneoya, Tatsuo; and Takahashi, Kenji, 4,407,756., Cl. 260-378.000.
Matsushima, Shunsuke; Hata, Kazuhiko; Mashita, Kentaro; Kanagawa, Shuichi; Nakao, Shinji; Nakai, Kiyoshi; and Kamio, Kunimasa, 4,408,086., Cl. 568-719.000.
Matsuyama, Kiyoshi; and Hashimoto, Hitoshi, 4,408,024., Cl. 526-67.000.
Takao, Hiroyoshi; and Inoue, Yoshio, 4,407,989., Cl. 523-340.000.

Sumitomo Electric Industries Ltd.: *See—*
Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, 4,407,291., Cl. 128-635.000.

Sumitomo Special Metals, Ltd.: *See—*
Suzuki, Kikuo, 4,407,776., Cl. 420-477.000.

Sundeen, Arthur R., to General Motors Corporation. Engine operation related event timing system. 4,407,155., Cl. 73-116.000.

Sundstrand Data Control, Inc.: *See—*
Lukes, Henry J., 4,408,144., Cl. 318-7.000.

Sunsearch, Inc.: *See—*
Hopper, Thomas P., 4,407,269., Cl. 126-442.000.

Suozzo, Leonard S. Mechanical shock and sway arrestor. 4,407,395., Cl. 188-134.000.

Superthermal, Inc.: *See—*
Turner, Jesse R., 4,408,116., Cl. 219-273.000.

Supra Products, Inc.: *See—*
Larson, Wayne F., 4,407,147., Cl. 70-365.000.

Suroff, Hyman. Energy saving ice skate attachment device. 4,407,522., Cl. 280-809.000.

Sutcliffe, Gordon R.; Warden, Stephen J.; and Humpherson, Donald, to Imi Kynoch Limited. Methods of producing superconductors. 4,407,062., Cl. 29-599.000.

Sutoh, Shinji: *See—*
Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, 4,407,354., Cl. 165-42.000.

Sutton, Ernest S.: *See—*
Biddle, Richard A.; Vriesen, Calvin W.; and Sutton, Ernest S., 4,407,119., Cl. 60-219.000.

Suvorova, Elena G.: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Suzuki, Junichi; and Shintani, Kenji, to Sony Corporation. Optical tracking apparatus. 4,408,311., Cl. 369-43.000.

Suzuki, Kikuo, to Sumitomo Special Metals, Ltd. Shape memory alloys. 4,407,776., Cl. 420-477.000.

Suzuki Metal Industry Co., Ltd.: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Suzuki, Mitsuyuki: *See—*
Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, 4,407,448., Cl. 236-88.000.

Suzuki, Nobukazu: *See—*
Takamura, Tsutomu; Sato, Yuichi; Nakamura, Toshiaki; and Suzuki, Nobukazu, 4,407,907., Cl. 429-42.000.

Suzuki, Tadashi: *See—*
Nishino, Atsushi; Suzuki, Tadashi; Ikeda, Masaki; and Ohtani, Tadashi, 4,408,253., Cl. 361-293.000.

Suzuki, Yasuo: *See—*
Ohnuki, Katsutoshi; and Suzuki, Yasuo, 4,407,535., Cl. 292-27.000.

Suzuki, Yoshio: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.

Swanson, William C.; Krukow, Eugene J.; and Stroup, Norman G., to International Harvester Co. Hydraulic circuit for lifting the reel of an agricultural harvester. 4,407,109., Cl. 56-11.900.

Swartz, Mitchell R. Method and apparatus for generating superoxide and hydroxyl ions in solution. 4,407,282., Cl. 128-207.210.

Swartz, William E., to Nutrisearch Company. Whey protein fortified fish and process for preparation. 4,407,831., Cl. 426-281.000.

Swartz, William E., to Nutrisearch Company. Whey protein fortified red meat and process for preparation. 4,407,833., Cl. 426-281.000.

Swenson, Rita, to International Paper Company. Plastic sack holder. 4,407,474., Cl. 248-97.000.

Swift, Graham: *See—*
Bartman, Benjamin; and Swift, Graham, 4,408,018., Cl. 525-300.000.

Swift, Stephen J.: *See—*
Nappholz, Tibor A.; and Swift, Stephen J., 4,407,289., Cl. 128-419.0PG.

Sybron Corporation: *See—*
Cowell, David, 4,408,247., Cl. 361-79.000.
DeGraff, Harold F., Jr., 4,407,958., Cl. 435-287.000.

Synchro-Start Products, Inc.: *See—*
Neyer, James U., 4,407,517., Cl. 277-212.0FB.

Synergistics Chemicals Limited: *See—*
Crocker, Zenas; and Wise, David V., 4,407,987., Cl. 523-322.000.

Szala, Lawrence E.: *See—*
Lee, Minyoung; and Szala, Lawrence E., 4,407,968., Cl. 501-87.000.

Szippl, Andrew F.; and Walker, Robert B., to Lima Electric Co., Inc., The. Single phase, self-regulated alternator. 4,408,152., Cl. 322-29.000.

T. Goldschmidt AG: *See—*
Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, 4,408,031., Cl. 528-26.000.

T. J. Electronics, Inc.: *See—*
Holman, Howard E., 4,407,529., Cl. 285-82.000.

Tabacco, Alessandro; and Tarli, Paolo, to Istituto Sieroteropico E. Vaccinogeno Toscano "Sclavo" S.p.A. Composition for the colorimetric determination of metals. 4,407,962., Cl. 436-74.000.

Tabata, Toshio: *See—*
Yashiro, Kenji; and Tabata, Toshio, 4,408,345., Cl. 455-3.000.

Tachiuchi, Tsuguji: *See—*
Komatsu, Shigeru; Nagai, Kunihiko; Koyama, Takuo; Tachiuchi, Tsuguji; and Hirahata, Shigeru, 4,408,197., Cl. 340-720.000.

Tack, Carl E., Jr.; and Heiberger, Francis E., to Danly Machine Corporation. Control system for synchronizing multiple presses in a line. 4,408,281., Cl. 364-476.000.

Tadahiro, Ohmi: *See—*
Nishizawa, Jun-ichi; Tadahiro, Ohmi; and Tamamushi, Takashige, 4,408,304., Cl. 365-174.000.

Taft, Darwin O.; and Van Siclen, Howard E., Jr., to Bendix Corporation, The. Method and apparatus for controlling an ignition system. 4,407,257., Cl. 123-612.000.

Tagawa, Tohru: *See—*
Fushiki, Takeshi; Tagawa, Tohru; and Kawakami, Satoru, 4,407,999., Cl. 524-276.000.

Taiho Kogyo Co., Ltd.: *See—*
Takenaka, Akira; and Fukuoka, Tatsuhiko, 4,407,513., Cl. 277-96.100.

Tajima, Fujio; Ichikawa, Atsushi; and Shimizu, Isao, to Hitachi, Ltd. Web drive apparatus. 4,407,462., Cl. 242-184.000.

Tajima, Tsunemitsu: *See—*
Murayama, Tetsuo; Otsuka, Shigenori; Tajima, Tsunemitsu; and Sato, Yukihiro, 4,407,919., Cl. 430-58.000.

Tajiri, Yasuhisa: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Yamashita, Masaaki; and Tajiri, Yasuhisa, 4,407,899., Cl. 428-626.000.

Takada, Shigetaka: *See—*
Takeuchi, Yuzo; Kimura, Toshihide; and Takada, Shigetaka, 4,407,248., Cl. 123-439.000.

Takada, Syun: *See—*
Nakamura, Shinichi; Kadowaki, Takashi; Okumura, Mitsuhiro; and Takada, Syun, 4,407,940., Cl. 430-546.000.

Takagi, Satoshi: *See—*
Takahashi, Yuji; Hayashi, Hideki; Takagi, Satoshi; and Yukio, Ito, 4,408,237., Cl. 360-96.300.

Takahashi, Kenji: *See—*
Fukasawa, Akira; Yoshimura, Masakatsu; Kaneoya, Tatsuo; and Takahashi, Kenji, 4,407,756., Cl. 260-378.000.

Takahashi, Seiichi: *See—*
Iijima, Tetsuya; and Takahashi, Seiichi, 4,407,446., Cl. 236-49.000.

Takahashi, Yuji; Hayashi, Hideki; Takagi, Satoshi; and Yukio, Ito, to Clarion Co., Ltd. Magnetic record/playback apparatus. 4,408,237., Cl. 360-96.300.

Takamaru, Ken: *See—*
Yui, Tohru; Hirai, Hachiro; and Takamaru, Ken, 4,407,863., Cl. 427-213.000.

Takamura, Tsutomu; Sato, Yuichi; Nakamura, Toshiaki; and Suzuki, Nobukazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Air electrode. 4,407,907., Cl. 429-42.000.

Takano, Suwaji: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,407,383., Cl. 180-54.00E.

Takano, Toshimasa; Mukai, Hideo; and Hosoya, Masahiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing apparatus. 4,407,228., Cl. 118-651.000.

Takano, Toshimasa: *See—*
Hashimoto, Shinichi; Takano, Toshimasa; and Mukai, Hideo, 4,407,580., Cl. 355-3.0TR.

Takao, Hiroshi: *See—*
Kimura, Shinji; Takao, Hiroshi; Ambe, Satoshi; and Akimune, Yoshio, 4,407,057., Cl. 29-570.000.

Takao, Hiroyoshi; and Inoue, Yoshio, to Sumitomo Chemical Company, Limited. Process for the separation treatment of polymer from polymer solution. 4,407,989., Cl. 523-340.000.

Takao, Nobuyuki: *See—*
Kitamura, Tadanori; and Takao, Nobuyuki, 4,407,866., Cl. 427-221.000.

Takasu, Shigetoshi: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Takatsu, Kei: *See—*
Sato, Hiroshi; Takatsu, Kei; and Isohata, Junji, 4,407,627., Cl. 414-757.000.

Takatsuka, Keizo; Yamamoto, Hiroshi; and Baba, Toshihiro, to Mutsubishi Denki Kabushiki Kaisha. Puffer type gas interrupter. 4,408,108., Cl. 200-148.00A.

Takeda Chemical Industries, Ltd.: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,408,052., Cl. 546-22.000.
Kazama, Seiji; and Tanaka, Michio, 4,408,034., Cl. 528-54.000.
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,407,757., Cl. 260-413.000.

Takenaka, Akira; and Fukuoka, Tatsuhiko, to Taiho Kogyo Co., Ltd. Mechanical seal. 4,407,513., Cl. 277-96.100.

Takeuchi, Masato: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, to Hitachi, Ltd. Fuel cell. 4,407,905., Cl. 429-42.000.

Takeuchi, Takashi; and Kobari, Harukuni, to Hitachi, Ltd.; and Victor Company of Japan, Ltd. Circuit for correcting error in digital information signal. 4,408,326., Cl. 371-38.000.

Takeuchi, Yuzo; Kimura, Toshihide; and Takada, Shigetaka, to Aisan Kogyo Kabushiki Kaisha. Electronically controlled carburetor. 4,407,248., Cl. 123-439.000.

Takeyama, Kojiro; and Shimotake, Toru, to Matsushita Electric Industrial Co., Ltd. Drive system for rotary drum type dehydrating apparatus. 4,407,078., Cl. 34-133.000.

Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, to Diesel Kiki Company, Ltd. Vehicle temperature control apparatus. 4,407,354., Cl. 165-42.000.

Takubo, Takayuki, to Victor Company of Japan, Limited. Shouldering aid for a portable television camera. 4,407,437., Cl. 224-270.000.

Tamamushi, Takashige: *See—*
Nishizawa, Jun-ichi; Tadahiro, Ohmi; and Tamamushi, Takashige, 4,408,304., Cl. 365-174.000.

Tamaru, Munetaka: *See—*
Ohno, Hideshi; Kume, Kazunari; Osaka, Takatoshi; Nishimura, Katsuo; Tamaru, Munetaka; and Ode, Sadao, 4,407,590., Cl. 368-204.000.

Tamura, Katsuyoshi; and Kanai, Hiromi, to Hitachi, Ltd. Photosensor array device. 4,408,230., Cl. 358-213.000.

Tamura, Kohki: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Tan, Randy J.: *See—*
Tullis, Barclay J.; Tan, Randy J.; and McKeon, John F., 4,408,195., Cl. 340-685.000.

Tanahashi, Toshio: *See—*
Akagi, Motonobu; Tanahashi, Toshio; and Kato, Kichiro, 4,407,244., Cl. 123-339.000.

Tanaka, Kenji; and Endo, Shigeru, to Nisshin Flour Milling Co., Ltd. Method for the production of bread. 4,407,827., Cl. 426-19.000.

Tanaka, Michio: *See—*
Kazama, Seiji; and Tanaka, Michio, 4,408,034., Cl. 528-54.000.

Tanaka, Noriyuki: *See—*
Takishita, Takashi; Sutoh, Shinji; Tanaka, Noriyuki; Kobayashi, Takashi; and Furukawa, Kenji, 4,407,354., Cl. 165-42.000.

Tanaka, Takayoshi: *See—*
Nomura, Manabu; Sugi, Norio; Tanaka, Takayoshi; and Hara, Koichi, 4,407,986., Cl. 523-200.000.

Tanaka, Toshio, to Alps Electric Co., Ltd. Seesaw switch. 4,408,105., Cl. 200-68.000.

Taneda, Kozo: *See—*
Nakamura, Tstomu; Nakamoto, Takashi; Asada, Tatuo; Taneda, Kozo; Oshiro, Mitsuo; Takasu, Shigetoshi; and Kurihara, Masao, 4,407,353., Cl. 165-39.000.

Tanenbaum, Joseph M. Electrical resistance welding method and apparatus for same; and improved apparatus for testing welds. 4,408,115., Cl. 219-119.000.

Tanikawa, Eiki: *See—*
Tsunoda, Taiji; Nishio, Takashi; and Tanikawa, Eiki, 4,408,319., Cl. 369-275.000.

Tanso, Shiro: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Tarli, Paolo: *See—*
Tabacco, Alessandro; and Tarli, Paolo, 4,407,962., Cl. 436-74.000.

Tateoka, Kiyoshi: *See—*
Ando, Hiromi; and Tateoka, Kiyoshi, 4,407,184., Cl. 91-376.00R.

Tatsuta, Sumitaka: *See—*
Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, 4,407,939., Cl. 430-536.000.

Taurand, Gerard: *See—*
Cotrel, Claude; Farge, Daniel; and Taurand, Gerard, 4,407,797., Cl. 424-246.000.

Tawara, Kazuo: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Taylor, James A.: *See—*
Smith, Blaine M.; and Taylor, James A., 4,408,308., Cl. 367-197.000.

Taylor, Thomas L.: *See—*
Newton, Jimmy D., 4,407,499., Cl. 273-54.00B.

TDK Electronics Co., Ltd.: *See—*
Akino, Tadaharu; Nakamura, Akira; and Uemura, Hiroyuki, 4,408,171., Cl. 333-177.000.

Technicare Corporation: *See—*
Vilkomerson, David H. R., 4,407,294., Cl. 128-660.000.

Technion Research & Development Foundation Ltd.: *See—*
Etsion, Izhak, 4,407,509., Cl. 277-3.000.

Teijin Limited: *See—*
Kadokura, Sadao; Tomie, Takashi; and Naoe, Masahiko, 4,407,894., Cl. 428-457.000.
Yamaguchi, Taturo; and Minemura, Norihiro, 4,407,848., Cl. 427-36.000.

Teijin Seiki Company, Limited: *See—*
Fukui, Kiyozumi, 4,407,170., Cl. 74-805.000.

Telectronics Pty., Ltd.: *See—*
Hirshorn, Michael S.; Holley, Loraine K.; and Skalsky, Michael, 4,407,302., Cl. 128-784.000.
Nappholz, Tibor A.; and Swift, Stephen J., 4,407,289., Cl. 128-419.0PG.

Teledyne Industries, Inc.: *See—*
Mills, Gary L.; and Bowen, B. Dean, 4,407,486., Cl. 266-87.000.

Teletype Corporation: *See—*
Hoschett, Albert M., 4,407,556., Cl. 339-91.00R.

Teletzke, Gerald H.; and Erickson, Allen H., to Sterling Drug Inc. Wastewater treatment process. 4,407,717., Cl. 210-616.000.

Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,408,042., Cl. 544-22.000.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Teraji, Tsutomu; Nakai, Yoshiharu; Sakane, Kazuo; and Goto, Jiro, 4,407,798., Cl. 424-246.000.

Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, to Hitachi, Ltd. Substrate of member for recording information with light and method of manufacturing the same. 4,407,880., Cl. 428-156.000.

Terry, Michael B., to Mostek Corporation. Current supplementation circuit for power supply. 4,408,153., Cl. 323-224.000.

Terry, Vincent G., Jr., to General Electric Company. Insulated coupling. 4,407,602., Cl. 403-336.000.

Teshima, Takashi: *See—*
Miyakawa, Nobuhiro; Fujii, Masanori; Maekawa, Kouzi; Koyama, Haruo; and Teshima, Takashi, 4,407,923., Cl. 430-106.600.

Texaco Inc.: *See—*
Estes, John H., 4,407,782., Cl. 423-328.000.

Texas Instruments Incorporated: *See—*
Ash, Darrell L., 4,408,347., Cl. 455-179.000.
Baboian, Robert; and Haynes, Gardner, 4,407,711., Cl. 204-196.000.
Harris, Ralph A., 4,408,307., Cl. 367-79.000.
Levine, Jules D., 4,407,320., Cl. 136-250.000.

Theodosiou, George E.; and Dawson, John W. Reduction in maximum time uncertainty of paired time signals. 4,408,297., Cl. 364-569.000.

Theriault, Gerald E., to RCA Corporation. Multiband tuning system for a television receiver. 4,408,348., Cl. 455-180.000.

Thiele, Hartmut; Schmelter, Dieter; and Posch, Rainer, to Agfa-Gevaert Aktiengesellschaft. Plastics spool container for magnetic tapes. 4,407,412., Cl. 206-404.000.

Thiokol Corporation: *See—*
Biddle, Richard A.; Vriesen, Calvin W.; and Sutton, Ernest S., 4,407,119., Cl. 60-219.000.

Thomas, Robert D., to Smith International, Inc. Nozzle retention method for rock bits. 4,407,378., Cl. 175-340.000.

Thomas, Thomas H. Process for improving the tonal quality of stringed instruments. 4,407,181., Cl. 84-275.000.

Thompson, Daniel L.: *See—*
Thompson, Darrow; and Thompson, Daniel L., 4,407,466., Cl. 244-17.110.

Thompson, Darrow; and Thompson, Daniel L., to Overseas International Distributors Company B.V. Jet nozzle rotary wing aircraft. 4,407,466., Cl. 244-17.110.

Thompson, David F.: *See—*
Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., 4,407,635., Cl. 416-230.000.

Thompson, David M. Turnbuckle boot cover. 4,407,600., Cl. 403-23.000.

Thompson, Joseph, to Sterling Drug Inc. Dispersion control device. 4,407,779., Cl. 422-266.000.

Thompson, Leonard K., to Continental Disc Corporation. Capacitive pressure relief rupture disc monitor. 4,408,194., Cl. 340-626.000.

Thompson, Ricky D., to General Motors Corporation. Commutator assembly with hook members. 4,408,140., Cl. 310-234.000.

Thompson, William P.: *See—*
Clore, Wayne G.; Norton, Charles T.; and Thompson, William P., 4,407,498., Cl. 273-1.50R.

Thomson-Brandt: *See—*
Bricot, Claude; and Robin, Gerard, 4,407,646., Cl. 425-174.400.

Thomson-CSF: *See—*
Pham Van Cang, Luc, 4,408,337., Cl. 377-44.000.
Resneau, Jean C.; Cirio, Marius; and Doyen, Jean, 4,408,219., Cl. 357-80.000.
Urien, Jacques; and Vidal Sainte Andre, Bruno, 4,408,209., Cl. 343-861.000.
Val, Christian, 4,408,256., Cl. 361-403.000.

Thorn, Olov, to Pax Electro Products AB. Settable shutter device. 4,407,188., Cl. 98-116.000.

Thornton, Jack C.; and Russell, Randy G., to Rockwell International Corporation. Variable inductor having extended useable frequency range. 4,408,177., Cl. 336-139.000.

Thorp, Sidney: *See—*
Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., 4,407,830., Cl. 426-272.000.

Thrift, Peter R., to Smiths Industries Public Limited Company. Electrical connector assemblies for capacitive fluid-gauging probes. 4,407,558., Cl. 339-121.000.

Thyssengas GmbH: *See—*
Flockenhaus, Claus; Hackler, Erich; and Lommerzheim, Werner, 4,407,974., Cl. 518-711.000.

Tillich, Peter: *See—*
Fessel, Rudolf; von Knorre, Karl-Friedrich; Tillich, Peter; and Herbermann, Gottfried, 4,408,302., Cl. 364-900.000.

Timmler, Helmut: *See—*
Schmidt, Thomas; Timmler, Helmut; Bonse, Gerhard; Blank, Heinz U.; and Marzolph, Gerhard, 4,408,044., Cl. 544-182.000.

Timms, Richard H., to Rohr Industries, Inc. Thrust reverser geared linkage. 4,407,120., Cl. 60-226.200.

Timokhina, Valeria I.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Titanseal Corporation: *See—*
McLaughlin, James A., 4,407,099., Cl. 52-202.000.

Title, Alan M.: *See—*
Rosenberg, William J.; and Title, Alan M., 4,407,566., Cl. 350-404.000.

Tkachenko, Sergei S.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Tobita, Hirosi: *See—*
Takeuchi, Seizi; Ishii, Kenzo; Kahara, Toshiki; Imahashi, Jinichi; Takeuchi, Masato; Okada, Hideo; Okabe, Sigeru; Matsuda, Shimpei; Nakajima, Fumito; Tobita, Hirosi; and Tamura, Kohki, 4,407,905., Cl. 429-42.000.

Toda, Setsuo. Work feed method in a press. 4,407,630., Cl. 414-786.000.

Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, to Toshiba Machine Co., Ltd.; and Tokyo Shibaura Denki Kabushiki Kaisha. Cassette retaining device of electron beam apparatus. 4,408,126., Cl. 250-442.100.

Tokico Ltd.: *See—*
Ando, Hiromi; and Tateoka, Kiyoshi, 4,407,184., Cl. 91-376.00R.

Tokita, Hideki: *See—*
Watanabe, Kazuo; Tokita, Hideki; and Nakajima, Koe, 4,407,056., Cl. 29-527.700.

Tokoy Shibaura Denki Kabushiki Kaisha: *See—*
Ishii, Jun, 4,408,184., Cl. 340-365.00S.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Hashimoto, Shinichi; Takano, Toshimasa; and Mukai, Hideo, 4,407,580., Cl. 355-3.0TR.
Ide, Yuuichi; and Nukushina, Harunobu, 4,407,139., Cl. 62-215.000.

Iida, Kazuhiko, 4,408,301., Cl. 364-900.000.
Koike, Yoshiyasu; Kubo, Osamu; Ido, Tadashi; and Uwaha, Masanobu, 4,407,721., Cl. 252-62.590.
Komatsu, Michiyasu; Tsuge, Akihiko; and Ota, Hiroyasu, 4,407,970., Cl. 501-97.000.
Komatsu, Michiyasu; Tsuge, Akihiko; and Ohta, Hiroyasu, 4,407,971., Cl. 501-97.000.
Kurosawa, Kei; and Shibata, Tadashi, 4,407,851., Cl. 427-39.000.
Kuwahara, Hisao, 4,408,132., Cl. 307-359.000.
Nagano, Katsumi, 4,408,190., Cl. 340-347.0DA.
Nakayama, Naoto, 4,408,181., Cl. 82-61.000.
Nishibe, Shinji, 4,408,276., Cl. 364-200.000.
Sasaki, Yoshitaka, 4,407,059., Cl. 29-571.000.
Shiraki, Yoshihiro; and Kojima, Tokumitsu, 4,407,127., Cl. 60-641.500.
Shiratori, Masayuki; and Katsura, Masaki, 4,407,778., Cl. 422-90.000.
Takamura, Tsutomu; Sato, Yuichi; Nakamura, Toshiaki; and Suzuki, Nobukazu, 4,407,907., Cl. 429-42.000.
Takano, Toshimasa; Mukai, Hideo; and Hosoya, Masahiro, 4,407,228., Cl. 118-651.000.
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.
Yokota, Tsuneshi, 4,408,314., Cl. 369-46.000.
Yuyama, Toshio; Shiraki, Ryuzo; and Watanabe, Seizi, 4,408,135., Cl. 307-474.000.

Tolman, Richard L.: *See—*
Graham, Donald W.; Rasmusson, Gary H.; and Tolman, Richard L., 4,407,802., Cl. 424-253.000.

Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L. Device for abrasive cleaning of blanks shaped as bodies of revolution. 4,407,095., Cl. 51-112.000.

Tomasek, Josef: *See—*
Kahovec, Jaroslav; Matejka, Zdenek; and Tomasek, Josef, 4,407,978., Cl. 521-56.000.

Tomie, Takashi: *See—*
Kadokura, Sadao; Tomie, Takashi; and Naoe, Masahiko, 4,407,894., Cl. 428-457.000.

Tomino, Naoki; and Tsukamoto, Masaaki, to Nippon Kogaku K.K. Camera with focal plane shutter. 4,407,574., Cl. 354-50.000.

Tomisawa, Susumu. Spool holding device. 4,407,461., Cl. 242-134.000.

Tomita, Tadashi: *See—*
Ariga, Shoji; and Tomita, Tadashi, 4,408,095., Cl. 381-24.000.

Tomiyama, Akira: *See—*
Tomiyama, Tsuyoshi; and Tomiyama, Akira, 4,407,816., Cl. 424-275.000.

Tomiyama, Tsuyoshi; and Tomiyama, Akira, to Kotobuki Seiyaku Company Limited. 3-Substituted-2-propenimidamides and method of manufacturing the same. 4,407,816., Cl. 424-275.000.

Tonaevsky, Ernst L.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Tonelli, Alfred P.: *See—*
Nicolau, Gabriela; and Tonelli, Alfred P., 4,407,795., Cl. 424-180.000.

Tones, John, to Northern Engineering Industries plc. Axial-flow steam turbine wheel. 4,407,634., Cl. 416-196.00R.

Tonparo Limited: *See—*
Small, Peter S.; and Small, Peter W., 4,407,370., Cl. 171-124.000.

Torbeck, Daniel J., to Monarch Marking Systems, Inc. Hand-held electrically selectable labeler. 4,407,692., Cl. 156-350.000.

Toreson, James S.: *See—*
Gilovich, Paul A.; and Toreson, James S., 4,408,317., Cl. 360-74.300.

Toriyama, Hideoki: *See—*
Kimura, Tadao; and Toriyama, Hideoki, 4,407,222., Cl. 118-110.000.

Toro Company, The: *See—*
Hunter, Edwin J., 4,407,451., Cl. 239-66.000.

Tosco Corporation: *See—*
Nutter, John F., 4,407,653., Cl. 432-215.000.

Toshiba Kikai Kabushiki Kaisha: *See—*
Saito, Hiroji, 4,407,649., Cl. 425-145.000.

Toshiba Machine Co., Ltd.: *See—*
Tojo, Toru; Sugihara, Kazuyoshi; Hata, Shuntaro; Numaga, Hirooki; Mukooyama, Haruhisa; and Suzuki, Yoshio, 4,408,126., Cl. 250-442.100.

Toshiba Pharmaceutical Co., Ltd.: *See—*
Yui, Tohru; Hirai, Hachiro; and Takamaru, Ken, 4,407,863., Cl. 427-213.000.

Toso Kabushiki Kaisha: *See—*
Nakamura, Toshihiro, 4,407,350., Cl. 160-178.00R.

Toyo Ink Manufacturing Co., Ltd.: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Toyo Rubber Industry Co., Ltd., The: *See—*
Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, 4,407,491., Cl. 267-140.100.

Toyoda, Yukio: *See—*
Kobayashi, Hiroyuki; Ohki, Yoshimasa; Toyoda, Yukio; and Akasaki, Isamu, 4,408,217., Cl. 357-17.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Akagi, Motonobu; Tanahashi, Toshio; and Kato, Kichiro, 4,407,244., Cl. 123-339.000.
Kato, Keigo; and Kuroiwa, Yosio, 4,407,254., Cl. 123-549.000.

Toyoto Jidosha Kogyo Kabushiki Kaisha: *See—*
Kunihiro, Motoo; Atsumi, Tomiaki; Kuse, Kazumasa; and Ishigaki, Masahiro, 4,407,491., Cl. 267-140.100.

Toyoura, Masakazu; Shomura, Koichi; Tsuchida, Hirotoshi; and Murakami, Tadateru, to Mitsui Petrochemical Industries, Ltd. Method of treating hydroperoxide mixtures. 4,408,083., Cl. 568-576.000.

Trammell, W. Edgar; Young, James E.; Chidester, James R.; and Walker, Ralph S. Disposable hood. 4,407,280., Cl. 128-205.260.

Transac-Alcatel-Compagnie pour le Development des Transactions Automatiques: *See—*
Decavele, Dominique, 4,408,119., Cl. 235-382.000.

Transat Corp.: *See—*
Bennett, Emeric S.; and Sauerland, Franz L., 4,407,094., Cl. 51-165.00R.

TransData, Inc.: *See—*
Kovalchik, Donald P.; and Battocletti, Frank E., 4,408,283., Cl. 364-483.000.

Tratnyek, Joseph P., to American Sterilizer Company. Visual chemical indicating composition for monitoring sterilization. 4,407,960., Cl. 436-1.000.

Trautenberg, Elmar: *See—*
Hundt, Eckart; and Trautenberg, Elmar, 4,407,163., Cl. 73-607.000.

Trautlein, Ray W., to Lem Products, Inc. Durable data-tag with record duplication. 4,407,524., Cl. 282-9.00R.

Trebbi, Attilio: *See—*
Signorini, Massimo; Trebbi, Attilio; and Molteni, Luigi, 4,408,074., Cl. 564-361.000.

Trimmer, James E.; and Worley, Ross W., to Precise Forms, Inc. Textured brick form. 4,407,480., Cl. 249-189.000.

Tripp, Mary: *See—*
Drake, Cyril F.; and Tripp, Mary, 4,407,786., Cl. 424-14.000.

Triumph-Adler A.G. fur Buround Informationstechnik: *See—*
Link, Manfred, 4,407,594., Cl. 400-212.000.

Troika Corp.: *See—*
Hendershot, Robert V., 4,407,598., Cl. 403-4.000.

Trotta, Robert A., to Gillette Company, The. Shaving implement. 4,407,067., Cl. 30-50.000.

Trukenbrod, Karl: *See—*
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,407,977., Cl. 521-56.000.

TRW Inc.: *See—*
Grimes, Richard V.; Harlamert, W. Benjamin; and Thompson, David F., 4,407,635., Cl. 416-230.000.

Trytek, Joseph J., to John Crane-Houdaille, Inc. High pressure rotary mechanical seal. 4,407,512., Cl. 277-96.100.

Tsai, Boh C.: *See—*
Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., 4,407,897., Cl. 428-516.000.

Tschernezky, Wladimir. Apparatus for inhalation. 4,407,279., Cl. 128-200.110.

Tseng, Shin-Shyong, to American Cyanamid Company. Novel N,N'-bis(trifluoromethylsulfonyl)oxamides and chemiluminescent compositions containing the same. 4,407,743., Cl. 252-700.000.

Tsentralny Nauchno-Issledovatelsky Institut: *See—*
Gorbacheva, Irina N.; Kozinda, Zinaida J.; Suvorova, Elena G.; Chertov, Viktor A.; Dvoskin, Semen I.; Platonova, Evdokia V.; Podgaevskaya, Tatyana A.; and Skvirenko, Andrei B., 4,407,748., Cl. 260-153.000.

Tsuchida, Hirotoshi: *See—*
Toyoura, Masakazu; Shomura, Koichi; Tsuchida, Hirotoshi; and Murakami, Tadateru, 4,408,083., Cl. 568-576.000.

Tsuchida, Takayasu; and Sano, Konosuke, to Ajinomoto Company Incorporated. Method for producing L-phenylalanine by fermentation. 4,407,952., Cl. 435-108.000.

Tsuchiko, Susumu: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Tsuchiya, Tadashi: *See—*
Hashizume, Hideyuki; and Tsuchiya, Tadashi, 4,407,887., Cl. 428-332.000.
Kawasaki, Takao; Immaru, Daisaku; Osaka, Yoshiaki; Tsuchiya, Tadashi; and Ono, Saichi, 4,407,799., Cl. 424-246.000.

Tsuchiya, Toshio: *See—*
Enokimoto, Akito; Tsuchiya, Toshio; Masuda, Tatsuo; and Takano, Suwaji, 4,407,383., Cl. 180-54.00E.

Tsuchiya, Yutaka: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Tsuge, Akihiko: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; and Ota, Hiroyasu, 4,407,970., Cl. 501-97.000.
Komatsu, Michiyasu; Tsuge, Akihiko; and Ohta, Hiroyasu, 4,407,971., Cl. 501-97.000.

Tsugeno, Makoto: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; Tsugeno, Makoto; Ishii, Shigeru; and Hatanaka, Masataka, 4,407,813., Cl. 424-273.00P.

Tsuji, Nobuhiko; Nakamura, Keijiroh; Endoh, Koichi; Hamada, Toshiyoshi; and Ishida, Keiichi, to Fuji Electric Co., Ltd. Blood sugar analyzing apparatus. 4,407,959., Cl. 435-288.000.

Tsuji, Sadahiko: *See—*
Yokota, Hideo; and Tsuji, Sadahiko, 4,407,568., Cl. 350-467.000.

Tsujii, Masahiko: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Tsukamoto, Masaaki: *See—*
Tomino, Naoki; and Tsukamoto, Masaaki, 4,407,574., Cl. 354-50.000.

Tsukamoto Seiki Co., Ltd.: *See—*
Nakamura, Osamu, 4,407,375., Cl. 175-228.000.

Tsunoda, Taiji; Nishio, Takashi; and Tanikawa, Eiki, to Pioneer Electronic Corporation. Optical information recording mother disc and method of producing the same. 4,408,319., Cl. 369-275.000.

Tsutsumi, Yasuyuki: *See—*
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.

Tullis, Barclay J.; Tan, Randy J.; and McKeon, John F., to FMC Corporation. Boundary plane warning system. 4,408,195., Cl. 340-685.000.

Tune, John B.: *See—*
Davies, James F.; and Tune, John B., 4,407,722., Cl. 252-91.000.

Turk, Stanley D.: *See—*
Drake, Charles A.; and Turk, Stanley D., 4,408,037., Cl. 528-346.000.

Turner, Jesse R., to Superthermal, Inc. Superheated steam generator. 4,408,116., Cl. 219-273.000.

Tyndale Plains-Hunter, Ltd.: *See—*
Gould, Francis E.; and Johnston, Christian W., 4,408,023., Cl. 525-454.000.

Tyner, David A.: *See—*
Mazur, Robert H.; Tyner, David A.; and Hallinan, Eleanor A., 4,407,746., Cl. 260-112.50E.

Tyrell, John A.: *See—*
Cooper, Stephen M.; Shafer, Sheldon J.; and Tyrell, John A., 4,407,996., Cl. 524-167.000.

Uchino, Shoichi: *See—*
Akagi, Motoo; Uchino, Shoichi; and Nonogaki, Saburo, 4,407,916., Cl. 430-23.000.

Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, to Eisai Co., Ltd. Heptacosapeptide. 4,407,745., Cl. 260-112.50R.

Ueda, Minoru: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,408,143., Cl. 315-366.000.

Uemura, Hiroyuki: *See—*
Akino, Tadaharu; Nakamura, Akira; and Uemura, Hiroyuki, 4,408,171., Cl. 333-177.000.

Uihlein, Robert E.; and Severson, Walter C., to Signs by Severson Rent A Sign, Inc. Apparatus for storing a plurality of signs and automatically displaying said signs at predetermined timed intervals. 4,407,084., Cl. 40-475.000.

Ulmer, Harry E.; Pickens, Donald; Rahl, Forrest J.; and Lefrancois, Philip A., to Allied Corporation. Producing silane from silicon tetrafluoride. 4,407,783., Cl. 423-347.000.

Umeya, Eiji: *See—*
Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, 4,408,107., Cl. 200-144.00B.

Union Carbide Corporation: *See—*
Barnabeo, Austin E., 4,408,011., Cl. 525-100.000.
Gerkin, Richard M., 4,407,983., Cl. 521-128.000.
Keogh, Michael J., 4,407,992., Cl. 524-94.000.
Mallon, Charles B., 4,408,009., Cl. 524-858.000.
Pahade, Ravindra F., 4,407,135., Cl. 62-13.000.

Union Oil Company of California: *See—*
Lieffers, William C.; and Hatter, Marjorie M., 4,407,366., Cl. 166-250.000.

Uniroyal, Inc.: *See—*
Fowkes, Robert A., 4,407,333., Cl. 139-415.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Transport in Her Britannic Majesty's Government of the: *See—*
Murray, Richard; and Irwin, Maurice J., 4,407,611., Cl. 405-284.000.

United States of America
Air Force: *See—*
Garscadden, Alan; Bailey, William F.; and Duke, Gary L., 4,407,705., Cl. 204-157.10H.
Army: *See—*
Henshaw, William F.; White, John R.; and Niiler, Andrus, 4,407,712., Cl. 204-298.000.
Lapsys, Algis L., 4,407,550., Cl. 305-35.0EB.
Health and Human Services: *See—*
Paras, Peter, 4,408,124., Cl. 250-252.100.
Interior: *See—*
Holman, James L., Jr.; McIlwain, John F.; and Neumeier, L. A., 4,407,775., Cl. 419-36.000.
National Aeronautics and Space Administration: *See—*
Bement, Laurence J.; and Bailey, James W., 4,407,468., Cl. 244-137.00P.
Cook, Clarence E.; Smith, Glynn E.; and Monaghan, Richard C., 4,407,686., Cl. 156-215.000.
Lovelace, Alan M.; and Wood, Kenneth E., 4,407,165., Cl. 73-862.540.
Minott, Peter O., 4,407,563., Cl. 350-173.000.
Navy: *See—*
Ferguson, Gerald D., 4,408,329., Cl. 372-21.000.
Keller, Teddy M., 4,408,035., Cl. 528-183.000.
Kijesky, Michael M.; and Bogle, Charles T., 4,408,284., Cl. 364-485.000.
Lundstrom, Eric A., 4,408,334., Cl. 372-98.000.

U.S. Philips Corporation: *See—*
Bahnsen, Bahne P.; and Kanow, Willy, 4,408,097., Cl. 381-15.000.
Christiansen, Dieter, 4,408,341., Cl. 378-196.000.
Fransen, Jan J. B., 4,407,657., Cl. 445-17.000.
Hofer, Franz, 4,407,656., Cl. 445-10.000.
Kamalski, Theodor I. E., 4,408,098., Cl. 381-11.000.
Sari, Hikmet, 4,408,332., Cl. 375-14.000.

United States Pipe and Foundry Company: *See—*
Malizio, Andrew B., 4,407,893., Cl. 428-454.000.

United States Surgical Corporation: *See—*
Noiles, Douglas G.; and Crawford, John O., 4,407,286., Cl. 128-334.00R.
Shichman, Daniel, 4,407,432., Cl. 222-54.000.

United Technologies Corporation: *See—*
Ferrar, Carl M., 4,407,161., Cl. 73-505.000.
Liang, George P., 4,407,632., Cl. 416-97.00R.

Universal Brush Company Ltd.: *See—*
Scharf, Stephen, 4,407,040., Cl. 15-230.170.

University of California, The Regents of The: *See—*
Elings, Virgil B.; and Nicoli, David F., 4,407,964., Cl. 436-518.000.
Goodman, Howard M.; Shine, John; and Seeburg, Peter H., 4,407,948., Cl. 435-91.000.
Howell, Stephen H., 4,407,956., Cl. 435-172.000.

University of Utah: *See—*
Meuzelaar, Hendrik L. C., 4,408,125., Cl. 250-288.000.
Virkar, Anil V.; and Miller, Gerald R., 4,407,912., Cl. 429-104.000.

University of Virginia Alumni Patents Foundation: *See—*
Pearson, Richard D.; and Hewlett, Erik L., 4,407,800., Cl. 424-247.000.

University Patents, Inc.: *See—*
Smith, Amos B., III; and Schow, Steven R., 4,408,059., Cl. 549-214.000.

Unser, Richard D.: *See—*
Kehl, Norman J.; and Unser, Richard D., 4,407,542., Cl. 297-103.000.

Unterreiner, Ronald C.: *See—*
Graetz, Herbert; and Unterreiner, Ronald C., 4,407,410., Cl. 206-387.000.

UOP Inc.: *See—*
deRosset, Armand J.; Priegnitz, James W.; and Landis, Arthur M., 4,408,065., Cl. 560-67.000.
Imai, Tamotsu, 4,407,731., Cl. 502-203.000.
Newton, Thomas D., 4,407,883., Cl. 428-215.000.

Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Fuel cell. 4,407,904., Cl. 429-26.000.

Upjohn Company, The: *See—*
Gall, Martin, 4,408,049., Cl. 544-360.000.

Urien, Jacques; and Vidal Sainte Andre, Bruno, to Thomson-CSF. Orientable beam antenna for telecommunications satellite. 4,408,209., Cl. 343-861.000.

Usami, Kiyoshi: *See—*
Saito, Atsunori; Naganoma, Masanori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,408,278., Cl. 364-424.000.

Ushiro, Tatsuzo, to Canon Kabushiki Kaisha. Rotary magnetic head drum assembly for magnetically recording and/or reproducing device. 4,408,239., Cl. 360-107.000.

USM Corporation: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

Uwaha, Masanobu: *See—*
Koike, Yoshiyasu; Kubo, Osamu; Ido, Tadashi; and Uwaha, Masanobu, 4,407,721., Cl. 252-62.590.

Val, Christian, to Thomson-CSF. Microbox for electronic circuit and hybrid circuit having such a microbox. 4,408,256., Cl. 361-403.000.

Valmet Oy: *See—*
Mauranen, Pekka, 4,407,227., Cl. 118-642.000.

Van Arsdall, Gerald: *See—*
Mehrotra, Gopi N.; and Van Arsdall, Gerald, 4,408,315., Cl. 369-71.000.

van de Velde, Reindert, to Bavaria B.V. Device for determining the quantity of the contents of a tank mounted in a frame which rests on a base with four points of support disposed in the corners of a rectangle. 4,407,160., Cl. 73-296.000.

van Dijk, Christiaan P.; Solbakken, Aage; and Rovner, Jerry M., to M. W. Kellogg Company, The. Methanol from coal and natural gas. 4,407,973., Cl. 518-703.000.

Van Doorn, Donald W.; Webb, Tommy W.; and Hawkins, James B., to Lummus Industries, Inc. Cotton ginning system embodying a lint cleaner and process of operating the same. 4,407,047., Cl. 19-64.500.

VanDyke, Ronald D.: *See—*
Hammonds, James C.; and VanDyke, Ronald D., 4,407,617., Cl. 410-59.000.

Van Gorp, Donald J. Magnetic water treatment apparatus and method of treating water. 4,407,719., Cl. 210-695.000.

Van Hardeveld, Rudolf, to Stamicarbon, B.V. Process of preparing melamine. 4,408,046., Cl. 544-201.000.

Vanier, Noel R., to Eastman Kodak Company. Use of ketal blocked quinones to reduce post-process D_{min} increase in positive redox dye-releasing image transfer systems. 4,407,928., Cl. 430-214.000.

Van Leeuwen, Petrus W. N. M.; and Roobeek, Cornelis F., to Shell Oil Company. Process for the hydroformylation of olefins. 4,408,078., Cl. 568-454.000.

Van Siclen, Howard E., Jr.: *See—*
Taft, Darwin O.; and Van Siclen, Howard E., Jr., 4,407,257., Cl. 123-612.000.

Van Uitert, LeGrand G.: *See—*
Grodkiewicz, William H.; Singh, Shobha; and Van Uitert, LeGrand G., 4,407,061., Cl. 29-576.00B.

Van Voorhis, Deborah M.: *See—*
Cole, Francis X.; and Van Voorhis, Deborah M., 4,407,943., Cl. 435-7.000.

van Weele, Abraham F., to Foundacon BV. Soil and/or water-retaining wall; method for forming this soil and/or water-retaining wall; and forming mould suitable for use with this method. 4,407,612., Cl. 405-285.000.

Van Winkle, D. Wayne. Tool trap. 4,407,361., Cl. 166-85.000.

Vapor Corporation: *See—*
Parks, William W., 4,407,623., Cl. 414-540.000.

Varian Associates, Inc.: *See—*
Adam, Leslie E. S., 4,407,659., Cl. 604-155.000.
Egger, Herman, 4,408,162., Cl. 324-318.000.

Varta Batterie Aktiengesellschaft: *See—*
Kleinsorgen, Klaus; and Munch, Erich, 4,407,338., Cl. 141-1.000.

VEBA OEL AG: *See—*
Gottlieb, Klaus; and Graf, Wilfried, 4,408,085., Cl. 568-697.000.

Ventura, Gerard V. Combined coin saver, counter and wrapper. 4,407,313., Cl. 133-8.00A.

Ventura, Gerard V. Combined coin saver, counter and wrapper. 4,407,314., Cl. 133-8.00A.

Vermeulen-Hollandia Octrooien B.V.: *See—*
Boots, Robert T., 4,407,541., Cl. 296-216.000.

Veys, Pierre, to N. V. Bekaert S.A. Sheet articles of non-conductive material marked for identification purposes, and method and apparatus for identifying such articles. 4,408,156., Cl. 324-58.50R.

Vickers, Incorporated: *See—*
Nanda, Vinod K., 4,407,122., Cl. 60-452.000.

Victor Company of Japan, Limited: *See—*
Ashida, Kazutaka, 4,407,463., Cl. 242-201.000.
Fujii, Yasuhiko, 4,408,333., Cl. 375-95.000.
Ito, Yukio, 4,408,235., Cl. 360-71.000.
Saito, Takashi, 4,408,316., Cl. 369-77.200.
Sugiyama, Hiroyuki; Kaneda, Isami; Abe, Ryozo; Sakakibara, Susumu; and Sano, Yasushi, 4,408,312., Cl. 369-43.000.
Takeuchi, Takashi; and Kobari, Harukuni, 4,408,326., Cl. 371-38.000.
Takubo, Takayuki, 4,407,437., Cl. 224-270.000.
Yamamura, Takashi, 4,408,321., Cl. 369-77.200.

Vidal Sainte Andre, Bruno: *See—*
Urien, Jacques; and Vidal Sainte Andre, Bruno, 4,408,209., Cl. 343-861.000.

Viet, Vu H.: *See—*
Sadler, Fred S.; Hettwer, Paul F.; Viet, Vu H.; and Acker, Clarance R., 4,407,697., Cl. 162-137.000.

Vilkomerson, David H. R., to Technicare Corporation. Ultrasound tissue probe localization system. 4,407,294., Cl. 128-660.000.

Vinet, Francoise: *See—*
Clerc, Jean F.; and Vinet, Francoise, 4,407,870., Cl. 428-1.000.

Virkar, Anil V.; and Miller, Gerald R., to Ceramatec, Inc.; and University of Utah. Electrochemical cell utilizing molten alkali metal electrode-reactant. 4,407,912., Cl. 429-104.000.

Vivian, Constantine. Ceiling construction for a heating, ventilation and air conditioning system. 4,407,445., Cl. 236-49.000.

Voest Alpine Aktiengesellschaft: *See—*
Oberndorfer, Ernst, 4,407,489., Cl. 266-191.000.
Stift, Kurt; Sulzbacher, Horst; and Saiger, Gunther, 4,407,864., Cl. 427-216.000.

Voge, Andrew; Sparks, Daniel R.; and Mullins, Barry W., to Becton Dickinson and Company. Low profile keyboard switch. 4,408,252., Cl. 361-288.000.

Vogelgsang, Kurt: *See—*
Domhan, Gerold; Hartl, Franz; and Vogelgsang, Kurt, 4,408,111., Cl. 200-318.000.

Voigt, Udo: *See—*
Protze, Dieter; and Voigt, Udo, 4,407,166., Cl. 74-493.000.

Volkov, Mstislav V.: *See—*
Akimova, Alla Y.; Davydov, Anatoly B.; Derkach, Galina M.; Timokhina, Valeria I.; Tkachenko, Sergei S.; Rutsky, Vladimir V.; Volkov, Mstislav V.; Shepeleva, Irina S.; Shiryaev, Alexandr V.; Lipkin, Semen I.; and Musyanovich, Vladimir M., 4,407,793., Cl. 424-81.000.

Volkswagenwerk AG: *See—*
Protze, Dieter; and Voigt, Udo, 4,407,166., Cl. 74-493.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Fiala, Ernst, 4,407,398., Cl. 192-0.055.

Vollmer Werke Maschinenfabrik GmbH: *See—*
Beck, Ernst; and Lenard, Peter, 4,407,172., Cl. 76-112.000.

von Daehne, Welf: *See—*
Godtfredsen, Wagn O.; and von Daehne, Welf, 4,407,751., Cl. 260-239.100.

von Knorre, Karl-Friedrich: *See—*
Fessel, Rudolf; von Knorre, Karl-Friedrich; Tillich, Peter; and Herbermann, Gottfried, 4,408,302., Cl. 364-900.000.

Voss, Julian D.: *See—*
Allori, Aldo; Wilger, John A.; and Voss, Julian D., 4,407,394., Cl. 188-71.400.

Vriesen, Calvin W.: *See—*
Biddle, Richard A.; Vriesen, Calvin W.; and Sutton, Ernest S., 4,407,119., Cl. 60-219.000.

W. R. Grace & Co.: *See—*
Denton, Dean A.; and Feldwick, Raymond D., 4,407,734., Cl. 502-9.000.
Howe, Milton A., Jr., 4,407,473., Cl. 248-95.000.
Wessells, Forrest; Startari, Joseph; and Estes, Michael E., 4,407,862., Cl. 427-144.000.

Wabash, Inc.: *See—*
Wolf, Ronald J., 4,407,256., Cl. 123-599.000.

Wachtel, James A.: *See—*
Farrell, Christopher J.; Tsai, Boh C.; and Wachtel, James A., 4,407,897., Cl. 428-516.000.

Wachter, Michael P.: *See—*
Kanojia, Ramesh M.; Wachter, Michael P.; and Chen, Robert H. K., 4,408,060., Cl. 549-332.000.

Wada, Hiroto: *See—*
Kato, Hideo; and Wada, Hiroto, 4,407,898., Cl. 428-542.800.

Wada, Kenichi: *See—*
Kubo, Kanji; and Wada, Kenichi, 4,408,275., Cl. 364-200.000.

Wadensten, Theodore S. Vibratory belt cleaning apparatus for an endless conveyor. 4,407,403., Cl. 198-494.000.

Wagener, Dietrich; Fach, Horst; Sauder, Peter; and Abel, Otto, to Didier Engineering GmbH. Apparatus for treating gases produced from coal. 4,407,701., Cl. 202-99.000.

Wagener, Dietrich: *See—*
Flockenhaus, Claus; Wagener, Dietrich; Hackler, Erich; Smieskol, Stefan; Galow, Manfred; Meckel, Joachim; and Breidenbach, Dieter, 4,407,699., Cl. 201-39.000.

Wagner, Louis F.: *See—*
Pedersen, S. Erik; Hardman, Harley F.; and Wagner, Louis F., 4,408,071., Cl. 562-536.000.

Wahl, Helmut; and Hofmeister, Hagen, to Licentia Patent-Verwaltungs-GmbH. Method and circuit for synchronization. 4,408,327., Cl. 371-47.000.

Wakabayashi, Hiroshi; Kazami, Kazuyuki; Ohtsubo, Yoshiaki; and Akasaka, Shigeo, to Nippon Kogaku K.K. Pop up flash device control for a camera. 4,407,573., Cl. 354-33.000.

Wakahata, Tamotsu: *See—*
Inoue, Takao; Wakahata, Tamotsu; Momose, Keigo; and Maeda, Yukio, 4,407,914., Cl. 429-174.000.

Wakai, Yoichi, to Kabushiki Kaisha Suwa Seikosha. Microprogram control circuit. 4,408,328., Cl. 371-62.000.

Wakui, Natsuko: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,408,080., Cl. 568-484.000.

Walker, Derek: *See—*
Cundall, Robert L.; and Walker, Derek, 4,407,755., Cl. 260-245.20R.

Walker-Neer Mfg. Co., Inc.: *See—*
Willis, Clyde A.; and Lingafelter, Jerry K., 4,407,373., Cl. 173-141.000.
Willis, Clyde A., 4,407,629., Cl. 414-745.000.

Walker, Ralph S.: *See—*
Trammell, W. Edgar; Young, James E.; Chidester, James R.; and Walker, Ralph S., 4,407,280., Cl. 128-205.260.

Walker, Robert B.: *See—*
Szippl, Andrew F.; and Walker, Robert B., 4,408,152., Cl. 322-29.000.

Wallussek, Heinz; Wiebe, Martin; and Roder, Thomas, to Bergwerksverband GmbH. Device for controlling the orientation of bore holes. 4,407,374., Cl. 175-24.000.

Walter, John, to Continental Group, Inc., The. Detachable resealable closure. 4,407,423., Cl. 220-260.000.

Walters, Charles W., to Emhart Industries, Inc. Cathode electrode for an electrical device. 4,408,257., Cl. 361-433.000.

Walters, Stephen M., to Bell Telephone Laboratories, Incorporated. Data control circuit. 4,408,272., Cl. 364-200.000.

Wanetzky, Erwin; Hugo, Franz; and Kuhlmann, Fernand, to Leybold-Heraeus GmbH. Distillation and sublimation apparatus comprising a condenser. 4,407,488., Cl. 266-148.000.

Wang, Kang-Bo: *See—*
Schumacher, Ignatius; and Wang, Kang-Bo, 4,407,729., Cl. 502-200.000.

Wang Laboratories, Inc.: *See—*
Cieplik, Ronald J., 4,408,210., Cl. 346-74.200.

Wang, Robert, to Heurtey Metallurgie. Device for cooling metal articles. 4,407,487., Cl. 266-114.000.

Waniisi, Tetuya: *See—*
Arichi, Isao; Waniisi, Tetuya; and Koh, Takuji, 4,407,588., Cl. 368-118.000.

Warabi, Junichi: *See—*
Sakuma, Shinzo; Umeya, Eiji; Warabi, Junichi; Kobari, Yukio; and Kawaguchi, Hidemi, 4,408,107., Cl. 200-144.00B.

Ward, Geoffrey A.; and Forward, Kevin E. Method and device for use by disabled persons in communicating. 4,408,192., Cl. 340-407.000.

Ward, Geoffrey M., to Chubb & Son's Lock and Safe Company Limited. Door-locking mechanisms for security enclosures. 4,407,204., Cl. 109-59.00R.

Warden, Stephen J.: *See—*
Sutcliffe, Gordon R.; Warden, Stephen J.; and Humpherson, Donald, 4,407,062., Cl. 29-599.000.

Ware, R. Louis. Hydroponic assembly and wafer for use therein. 4,407,092., Cl. 47-64.000.

Warfel, David R.: *See—*
Milkovich, Ralph; and Warfel, David R., 4,408,006., Cl. 524-534.000.

Warnke, Wayne L.: *See—*
Yasui, Toshihiro; and Warnke, Wayne L., 4,407,386., Cl. 180-193.000.

Washizuka, Isamu; and Saiji, Mitsuhiro, to Sharp Kabushiki Kaisha. Sound or voice responsive timepiece. 4,408,096., Cl. 381-107.000.

Wass, Richard G. Rotary engine. 4,407,239., Cl. 123-44.00C.

Watanabe, Katsumi, to Ozen Corporation. Simplified sound reproducing device driven by a spring motor. 4,408,310., Cl. 369-41.000.

Watanabe, Kazuo; Tokita, Hideki; and Nakajima, Koe, to Nippon Steel Corporation. Method and apparatus for manufacturing metal sections. 4,407,056., Cl. 29-527.700.

Watanabe, Masayuki; Yamaya, Hiroshi; and Kurohata, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Connector unit. 4,407,552., Cl. 339-143.00R.

Watanabe, Masazumi: *See—*
Morimoto, Hiroshi; Imada, Isuke; Watanabe, Masazumi; and Kawada, Mitsuru, 4,407,757., Cl. 260-413.000.

Watanabe, Seizi: *See—*
Yuyama, Toshio; Shiraki, Ryuzo; and Watanabe, Seizi, 4,408,135., Cl. 307-474.000.

Watanabe, Seizo, to Olympus Optical Co., Ltd. Method of manufacturing a magnetic recording medium of thin metallic film type. 4,407,861., Cl. 427-130.000.

Watanabe, Toshiyasu: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,408,080., Cl. 568-484.000.

Watanabe, Toshiyuki: *See—*
Ichijima, Seiji; Watanabe, Toshiyuki; Furutachi, Nobuo; and Seto, Nobuo, 4,407,936., Cl. 430-505.000.

Watson, William H.; and Straw, John E., to Container Corporation of America. Bi-level dual cell carton. 4,407,442., Cl. 229-28.00R.

Watts, Roderick K.: *See—*
Fraser, David B.; and Watts, Roderick K., 4,407,933., Cl. 430-296.000.

Waugh, Robert E., to D. L. Auld Company, The; and D. L. Auld Company, The. Glass container having means for reducing breakage and shattering. 4,407,421., Cl. 215-12.00R.

Weaver, Max A.; Coates, Clarence A., Jr.; and Fisher, John G., to Eastman Kodak Company. AZO Dyes from 2-sulfonated, sulfated or thiosulfated organothiothiadiazole and aniline, tetrahydroquinoline, or benzomorpholine couplers. 4,407,749., Cl. 260-155.000.

Webb, Nathaniel: *See—*
Neill, Jimmie; Webb, Nathaniel; and Hartig, Norman F., 4,408,343., Cl. 382-52.000.

Webb, Tommy W.: *See—*
Van Doorn, Donald W.; Webb, Tommy W.; and Hawkins, James B., 4,407,047., Cl. 19-64.500.

Weber, Klaus: *See—*
Piller, Horst; and Weber, Klaus, 4,407,569., Cl. 350-509.000.

Wegmuller, Hans: *See—*
Merz, Jurg; Wegmuller, Hans; and Wurster, Rudolf F., 4,407,976., Cl. 521-36.000.

Weible, Reinhold, to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Circuit safe against overload for varying the amount of power to an electric blower motor. 4,408,244., Cl. 361-24.000.

Weidner, Eugen: *See—*
Knebel, Werner; Ronzon, Norbert; and Weidner, Eugen, 4,407,444., Cl. 236-12.100.

Weisrock, William P.; and McCarthy, Edward F., to Standard Oil Company. *Xanthomonas campestris* ATCC 31602 and process for use. 4,407,950., Cl. 435-104.000.

Weisrock, William P.; and McCarthy, Edward F., to Standard Oil Company (Indiana). *Xanthomonas campestris* ATCC 31600 and process for use. 4,407,951., Cl. 435-104.000.

Weitemeyer, Christian: *See—*
Holtschmidt, Ulrich; Koerner, Gotz; Priesch, Manfred; Rau, Harald; and Weitemeyer, Christian, 4,408,031., Cl. 528-26.000.

Well-Pack Systems, Inc.: *See—*
Hamrick, Joseph T., 4,407,360., Cl. 166-68.000.

Wertheimer, Michael R.: *See—*
Sapieha, Slawomir W.; and Wertheimer, Michael R., 4,407,852., Cl. 427-41.000.

Wessel, Ulrich; and Scherer, Albrecht, to Klockner-Humboldt-Deutz AG (Branch Establishment Fahr). Haymaking machine. 4,407,115., Cl. 56-370.000.

Wessells, Forrest; Startari, Joseph; and Estes, Michael E., to W. R. Grace & Co. Method of making letterpress printing plates. 4,407,862., Cl. 427-144.000.

Western Electric Company, Inc.: *See—*
Lazzari, William B., 4,407,392., Cl. 182-128.000.
Norris, Dallas G., 4,407,406., Cl. 198-774.000.

Westinghouse Electric Corp.: *See—*
Crossley, Thomas J.; and Zinge, Thomas P., 4,407,781., Cl. 423-15.000.
Fox, David A., 4,408,131., Cl. 307-311.000.
Fox, David A., 4,408,137., Cl. 307-598.000.
Ray, Roger E., 4,408,246., Cl. 361-64.000.
Shum, Lanson Y., 4,407,625., Cl. 414-728.000.

Wheatley, Nigel J.; and Andrews, Martyn P., to Plessey Overseas Limited. Memory protection system using capability registers. 4,408,274., Cl. 364-200.000.

Whelan, James M.: *See—*
Eu, Victor K.; Feng, Milton; Zielinski, Timothy T.; and Whelan, James M., 4,407,694., Cl. 156-606.000.

Whirlpool Corporation: *See—*
Brenner, Robert A., 4,407,191., Cl. 100-99.000.
Paddock, Stephen W., 4,407,141., Cl. 62-130.000.

White, Anthony M.: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

White Consolidated Industries, Inc.: *See—*
Cerutti, Henry P.; Cannon, Robert A.; and Lindbloom, George G., 4,407,609., Cl. 405-146.000.
Eibe, Werner W., 4,407,407., Cl. 198-777.000.

White, Douglass A.; Moore, Susan J.; and Clark, David F., to Global Integration Technologies, Inc. Ideogram generator. 4,408,199., Cl. 340-731.000.

White, George, to Du Pont Canada Inc. Process for coating webs with polyethylene. 4,407,690., Cl. 156-244.270.

White, John R.: *See—*
Henshaw, William F.; White, John R.; and Niiler, Andrus, 4,407,712., Cl. 204-298.000.

Whitmire Research Laboratories, Inc.: *See—*
Massey, Billy G., 4,407,454., Cl. 239-154.000.

Whittingham, David W.: *See—*
Garner, Derek H.; Price, Frank C.; Reader, Philip; Whittingham, David W.; White, Anthony M.; Shutt, Joseph A.; and Campling, Nicholas J., 4,407,033., Cl. 12-10.100.

Widener, Joseph; Britt, James M.; and LaPrade, Steve A., to Babcock & Wilcox Company, The. Flexible refractory composition. 4,407,969., Cl. 501-95.000.

Widmer, Albert X.: *See—*
Rogers, Dennis L.; and Widmer, Albert X., 4,408,167., Cl. 330-261.000.

Wiebe, Martin: *See—*
Wallussek, Heinz; Wiebe, Martin; and Roder, Thomas, 4,407,374., Cl. 175-24.000.

Wiechmann, Karl-Ernst, to Klockner-Werke Aktiengesellschaft. Transport system for flat metallic materials in strip mills. 4,407,438., Cl. 226-15.000.

Wieder, Wolfgang: *See—*
Hocker, Jurgen; Wieder, Wolfgang; and Dhein, Rolf, 4,408,027., Cl. 526-185.000.

Wiemers, Karl-Josef: *See—*
Boeder, Dieter; and Wiemers, Karl-Josef, 4,407,071., Cl. 33-178.00E.

Wienhofer, Ekkehard: *See—*
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,407,977., Cl. 521-56.000.

Wilber, Scott A., to Biox Technology, Inc. Blood constituent measuring device and method. 4,407,290., Cl. 128-633.000.

Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., to H-C Industries, Inc. Composite closure. 4,407,422., Cl. 215-246.000.

Wiley, Lawrence G.: *See—*
Bowen, Terry P.; Lawrence, George J.; and Wiley, Lawrence G., 4,408,353., Cl. 455-608.000.

Wilger, John A.: *See—*
Allori, Aldo; Wilger, John A.; and Voss, Julian D., 4,407,394., Cl. 188-71.400.

Wilhelm, Raymond L., to Brunswick Corporation. Valve actuating mechanism. 4,407,326., Cl. 137-553.000.

Wilje, Sven O. E. Device for the control of the luminous flux from a main beam bulb in a motor vehicle. 4,408,142., Cl. 315-82.000.

Wilkinson, Richard F., Sr.: *See—*
Wilkinson, William R.; and Wilkinson, Richard F., Sr., 4,407,777., Cl. 422-46.000.

Wilkinson, William H., to Battelle Development Corporation. Cogeneration energy balancing system. 4,407,131., Cl. 60-648.000.

Wilkinson, William R.; and Wilkinson, Richard F., Sr. Blood oxygenator. 4,407,777., Cl. 422-46.000.

Williams, Michael. Electrical adapter. 4,407,560., Cl. 339-154.00L.

Williams, Ronald A.: *See—*
Nevens, Charles; and Williams, Ronald A., 4,407,660., Cl. 604-6.000.

Willis, Clyde A.; and Lingafelter, Jerry K., to Walker-Neer Mfg. Co., Inc. Collapsible pedestal for drilling apparatus. 4,407,373., Cl. 173-141.000.

Willis, Clyde A., to Walker-Neer Manufacturing Co., Inc. Lifting apparatus for down-hole tubulars. 4,407,629., Cl. 414-745.000.

Wills, Milton H., Jr., to Martin Marietta Corporation. Concrete masonry units incorporating cement kiln dust. 4,407,677., Cl. 106-97.000.

Wills, Paul E., to Du Pont de Nemours, E. I., and Company. Stabilization of zinc-containing coating compositions. 4,408,002., Cl. 524-357.000.

Wills, Thomas A. Exercise monitoring device. 4,408,183., Cl. 340-323.00R.

Wilmsmann, Hans-Peter; and Koch, Fritz E., to Dr. Franz & Rutenbeck. Clamping device for self-supporting electric cables. 4,407,471., Cl. 248-63.000.

Wilski, Hans; Interthal, Werner; and Engelhardt, Friedrich, to Hoechst Aktiengesellschaft. Drag reducing agents. 4,407,321., Cl. 137-13.000.

Wilson, Charles R.: *See—*
Eskinazi, Victoria; Kirner, John F.; and Wilson, Charles R., 4,407,738., Cl. 502-334.000.

Wilson, David N.: *See—*
Matthews, Bernard T.; Benstead, Alan J.; Joll, David J.; Thorp, Sidney; and Wilson, David N., 4,407,830., Cl. 426-272.000.

Wilson, Ronald A. Multi-purpose exercise apparatus. 4,407,495., Cl. 272-117.000.

Wilson, Timothy W. Hair cutter with vacuum. 4,407,068., Cl. 30-133.000.

Wingender, Kaspar: *See—*
Boie, Immo; and Wingender, Kaspar, 4,407,929., Cl. 430-220.000.

Winkelmann, Lothar: *See—*
Horbelt, Michael; Arnold, Herbert; and Winkelmann, Lothar, 4,407,156., Cl. 73-118.000.

Wirtgen, Reinhard. Method and apparatus for repairing longitudinal seams or cracks in road surfaces. 4,407,605., Cl. 404-77.000.

Wirz, Gustav; and Pizzagalli, Franco, to Les Fabriques d'Assortiments Reunies S.A. Wafer dicing apparatus. 4,407,262., Cl. 125-13.00R.

Wise, David V.: *See—*
Crocker, Zenas; and Wise, David V., 4,407,987., Cl. 523-322.000.

Witt, Alvin E., to PermaGrain Products, Inc. Stain-resistant earthen articles. 4,407,884., Cl. 428-220.000.

Wolf, Ronald J., to Wabash, Inc. Capacitor discharge ignition system and method of manufacture thereof. 4,407,256., Cl. 123-599.000.

Wolfe, John J. Frosted condiment holder. 4,407,143., Cl. 62-303.000.

Wolff, Friedrich, to O&K Orenstein & Koppel Aktiengesellschaft. Two-speed transmission with hydraulic actuation of the shifting operations under load. 4,407,399., Cl. 192-4.00A.

Wolff, Siegfried: *See—*
Schwarz, Rudolf; Kleinschmit, Peter; Liedtke, Christa; and Wolff, Siegfried, 4,408,064., Cl. 556-427.000.

Wonder Corporation of America: *See—*
Sternlicht, Mark, 4,408,263., Cl. 362-189.000.

Wong, Rayman Y., to Stauffer Chemical Company. Pyridylpropyl cycloalkanecarboxylates: insect repellents. 4,407,807., Cl. 424-263.000.

Wood, Kenneth E.: *See—*
Lovelace, Alan M.; and Wood, Kenneth E., 4,407,165., Cl. 73-862.540.

Woodriff, Ray A., to Research and Development Institute, Inc. at Montana State University, The. Method and apparatus for reduction of matric interference in electrothermal atomizer for atomic absorption spectroscopy. 4,407,582., Cl. 356-312.000.

Worley, Ross W.: *See—*
Trimmer, James E.; and Worley, Ross W., 4,407,480., Cl. 249-189.000.

Wormly, Thaddaues H. Toilet paper storage dispenser. 4,407,459., Cl. 242-55.530.

Worms, Karl-Heinz: *See—*
Blum, Helmut; and Worms, Karl-Heinz, 4,407,761., Cl. 260-502.50C.

Woudstra, Nico, to B.V. Neratoom. Nuclear reactor installation. 4,407,773., Cl. 376-299.000.

Wright, Stanley, to Precision Automation Co., Inc. Poultry cutting apparatus. 4,407,046., Cl. 17-11.000.

Wurster, Rudolf F.: *See—*
Merz, Jurg; Wegmuller, Hans; and Wurster, Rudolf F., 4,407,976., Cl. 521-36.000.

Wurttembergische Metallwarenfabrik AG: *See—*
Schlegel, Hans; Nowotny, Theodor; and Mayer, Rolf, 4,407,875., Cl. 428-43.000.

Wysocki, Joseph A., to Hughes Aircraft Company. Metallic clad fiber optical waveguide. 4,407,561., Cl. 350-96.300.

Wytaniec, Casimir S. Apparatus and method for detecting an interface from a remote location. 4,407,159., Cl. 73-290.00R.

Xerox Corporation: *See—*
Grushkin, Bernard; and Bertrand, Jacques C., 4,407,922., Cl. 430-98.000.
Lee, Lieng-Huang; and Landry, Deborah N., 4,407,920., Cl. 430-59.000.
Liebman, Alan J., 4,407,925., Cl. 430-122.000.
Shogren, David K.; and Zambelli, Robert G., 4,407,581., Cl. 355-8.000.

Xonics, Inc.: *See—*
Schmidt, Gunter, 4,408,339., Cl. 378-173.000.

Yamada, Takahiro, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Ink-jet recording device featuring separating of large and small droplets. 4,408,211., Cl. 346-75.000.

Yamada, Yasuyuki: *See—*
Miyatsuka, Hajime; Kasuga, Akira; and Yamada, Yasuyuki, 4,407,901., Cl. 428-694.000.

Yamagata, Takeo: *See—*
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.

Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Murakami, Hisamichi, to Mitsui Toatsu Chemicals, Incorporated. Heat sensitive recording sheet. 4,407,892., Cl. 428-411.000.

Yamaguchi, Jun: *See—*
Naoi, Takashi; Kawasaki, Hiroshi; Yamaguchi, Jun; Tatsuta, Sumitaka; and Sera, Hidefumi, 4,407,939., Cl. 430-536.000.

Yamaguchi, Keizaburo: *See—*
Yamaguchi, Akihiro; Yamaguchi, Keizaburo; and Murakami, Hisamichi, 4,407,892., Cl. 428-411.000.

Yamaguchi, Taturo; and Minemura, Norihiro, to Teijin Limited. Process for durably modifying a shaped synthetic polymer article. 4,407,848., Cl. 427-36.000.

Yamaguchi, Tatuya, to Olympus Optical Co., Ltd. Endoscope system with means for detecting auxiliary apparatuses. 4,407,272., Cl. 128-6.000.

Yamaguchi, Tomohiko, to Agency of Industrial Science and Technology. Polymeric membrane having maleic anhydride residues. 4,407,975., Cl. 521-27.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Yasui, Toshihiro; and Warnke, Wayne L., 4,407,386., Cl. 180-193.000.

Yamamoto, Hachizou: *See—*
Nakatani, Hiroshi; and Yamamoto, Hachizou, 4,408,292., Cl. 364-405.000.

Yamamoto, Hiroshi: *See—*
Takatsuka, Keizo; Yamamoto, Hiroshi; and Baba, Toshihiro, 4,408,108., Cl. 200-148.00A.

Yamamoto, Kazuo: *See—*
Ina, Katutoshi; Yamamoto, Kazuo; Higashiyama, Hirokichi; Ishikawa, Norio; and Miyoshi, Hiroshi, 4,407,681., Cl. 148-12.00F.

Yamamoto, Keisuke: *See—*
Inohara, Shizuo; Masuda, Mitsuya; Iyehara, Sadahiro; Ueda, Minoru; and Yamamoto, Keisuke, 4,408,143., Cl. 315-366.000.

Yamamura, Takashi, to Victor Company of Japan, Ltd. Disc-shaped recording medium reproducing apparatus. 4,408,321., Cl. 369-77.200.

Yamanaka, Minoru; Suzuki, Mitsuyuki; Haneda, Hideo; Kato, Masatoshi; and Ohtsuki, Masataka, to Aisin Seiki Kabushiki Kaisha. Temperature sensing valve. 4,407,448., Cl. 236-88.000.

Yamashita, Masaaki: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Yamashita, Masaaki; and Tajiri, Yasuhisa, 4,407,899., Cl. 428-626.000.

Yamasoba, Takahiko: *See—*
Ohtsuki, Akira; Ishino, Hirokichi; Sakai, Hiromu; Tsuchiko, Susumu; Tawara, Kazuo; and Yamasoba, Takahiko, 4,407,689., Cl. 156-243.000.

Yamaya, Hiroshi: *See—*
Watanabe, Masayuki; Yamaya, Hiroshi; and Kurohata, Hitoshi, 4,407,552., Cl. 339-143.00R.

Yamazaki, Nobuhiro: *See—*
Ichiyanagi, Toshikazu; Sudoh, Kanzaburo; Ogawa, Keisuke; and Yamazaki, Nobuhiro, 4,407,652., Cl. 432-58.000.

Yanaihara, Noboru, to Otsuka Pharmaceutical Co., Ltd. Process for preparing antibody. 4,407,965., Cl. 436-547.000.

Yankov, Viktor I.: *See—*
Chegolya, Alexandr S.; Malykh, Vladimir A.; Chizhov, Vladimir V.; Yankov, Viktor I.; and Pirog, Nikolai I., 4,407,450., Cl. 239-8.000.

Yashiro, Kenji; and Tabata, Toshio, to Pioneer Electronic Corporation. Remote line monitoring method and device for CATV system. 4,408,345., Cl. 455-3.000.

Yasui, Toshihiro; and Warnke, Wayne L., to Yamaha Hatsudoki Kabushiki Kaisha. Snowmobile suspension unit. 4,407,386., Cl. 180-193.000.

Yasukawa, Saburo: *See—*
Uozumi, Norihira; Yamagata, Takeo; Yasukawa, Saburo; Tsutsumi, Yasuyuki; and Ono, Seiichiro, 4,407,904., Cl. 429-26.000.

Yokoi, Nobufumi: *See—*
Kataishi, Takao; and Yokoi, Nobufumi, 4,407,225., Cl. 118-425.000.

Yokota, Hideo; and Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Large aperture objective with behind the lens diaphragm. 4,407,568., Cl. 350-467.000.

Yokota, Tsuneshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Record/playback track tracking servo. 4,408,314., Cl. 369-46.000.

Yonezawa, Seiji: *See—*
Terao, Motoyasu; Horigome, Shinkichi; Shigematsu, Kazuo; Miyamura, Yoshinori; and Yonezawa, Seiji, 4,407,880., Cl. 428-156.000.

Yoon, Heeyoung, to Conoco Inc. Methanol dissociation using a copper-chromium-manganese catalyst. 4,407,238., Cl. 123-3.000.

Yoshida, Hajime, to Hajime Industries Ltd. Surveillance method and apparatus. 4,408,224., Cl. 358-108.000.

Yoshida, Hiroshi: *See—*
Izumi, Masao; Maruyama, Hideki; and Yoshida, Hiroshi, 4,407,186., Cl. 98-2.000.

Yoshida, Kenichi: *See—*
Hagihara, Bunji; Fukai, Tamotsu; Nomura, Kikuo; Yoshida, Kenichi; and Isshiki, Isao, 4,407,291., Cl. 128-635.000.

Yoshida Kogyo, K.K.: *See—*
Kanzaka, Yoshihiro, 4,407,049., Cl. 24-230.0AS.

Yoshihara, Toshiaki: *See—*
Kamoshida, Yoichi; Yoshihara, Toshiaki; Harita, Yoshiyuki; and Harada, Kunihiro, 4,407,927., Cl. 430-197.000.

Yoshikawa, Yoshihiko, to Mitsubishi Denki Kabushiki Kaisha. Angular error detecting device. 4,408,207., Cl. 343-362.000.

Yoshimura, Masakatsu: *See—*
Fukasawa, Akira; Yoshimura, Masakatsu; Kaneoya, Tatsuo; and Takahashi, Kenji, 4,407,756., Cl. 260-378.000.

Yoshino, Hiroshi: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,407,745., Cl. 260-112.50R.

Yoshioka, Yoshio: *See—*
Hozumi, Motoo; Nomura, Hiroaki; and Yoshioka, Yoshio, 4,408,052., Cl. 546-22.000.

Youdin, Myron; Clagnaz, Mario W., Jr.; and Louie, Henry. Proportional brake for powered wheelchairs. 4,407,393., Cl. 188-2.00F.

Youhas, Robert F.: *See—*
Bulley, Raymond M.; MacPherson, William F.; and Youhas, Robert F., 4,408,248., Cl. 361-91.000.

Young, David M. Process for obtaining nerve growth factor. 4,407,744., Cl. 260-112.00R.

Young, Glen C., to Essex Group Inc. Automatic resetting of control system for loss of functionality. 4,408,299., Cl. 364-900.000.

Young, James E.: *See—*
Trammell, W. Edgar; Young, James E.; Chidester, James R.; and Walker, Ralph S., 4,407,280., Cl. 128-205.260.

Young, Rodney C.: *See—*
Roantree, Michael L.; and Young, Rodney C., 4,407,808., Cl. 424-263.000.

Young, William C., to Bell Telephone Laboratories, Incorporated. Optical fiber switch. 4,407,562., Cl. 350-96.200.

Yuasa Battery Co., Ltd.: *See—*
Machi, Sueo; Ishigaki, Isao; Sugo, Takanobu; Murata, Kazuo; Tanso, Shiro; and Senoo, Keizi, 4,407,846., Cl. 427-35.000.

Yugen Kaisha Shinjoseisakusho: *See—*
Shinjo, Katsumi, 4,407,620., Cl. 411-387.000.

Yui, Tohru; Hirai, Hachiro; and Takamaru, Ken, to Denki Kagaku Kogyo Kabushiki Kaisha; and Toshiba Pharmaceutical Co., Ltd. Process for producing granule coated with tannic acid metal chelate compound. 4,407,863., Cl. 427-213.000.

Yukawa, Tatsuo, to Nippon Electric Co., Ltd. Receiver provided with a frequency synthesizer capable of storing fine tuning information. 4,408,349., Cl. 455-182.000.

Yukio, Ito: *See—*
Takahashi, Yuji; Hayashi, Hideki; Takagi, Satoshi; and Yukio, Ito, 4,408,237., Cl. 360-96.300.

Yurkanin, Robert M. Impedance heating system with skin effect particularly for railroad tank cars. 4,408,117., Cl. 219-320.000.

Yuyama, Toshio; Shiraki, Ryuzo; and Watanabe, Seizi, to Tokyo Shibaura Denki Kabushiki Kaisha. Multi-level signal generating circuit. 4,408,135., Cl. 307-474.000.

Zahnradfabrik Friedrichshafen, Aktiengesellschaft: *See—*
Dziuba, Peter; and Goeft, Manfred, 4,407,382., Cl. 180-10.000.

Zambelli, Robert G.: *See—*
Shogren, David K.; and Zambelli, Robert G., 4,407,581., Cl. 355-8.000.

Zega, Bogdan, to Battelle Development Corporation. Cylindrical magnetron sputtering cathode and apparatus. 4,407,713., Cl. 204-298.000.

Zeiss-Stiftung, Carl: *See—*
Piller, Horst; and Weber, Klaus, 4,407,569., Cl. 350-509.000.

Zeitlin, Wolf. Foldable hand cart. 4,407,521., Cl. 280-655.000.

Zemtsov, Mikhail U.: *See—*
Tolstopyatov, Konstantin S.; Lukyanov, Anatoly A.; Pyatibrat, Alexandr L.; Pryanishnikov, Igor S.; Maslov, Gennady N.; Bobovnikov, Nikolai G.; Gubin, Petr V.; Burmakin, Viktor I.; Marchenkov, Nikolai B.; Chirkin, Alexandr F.; Zemtsov, Mikhail U.; and Tonaevsky, Ernst L., 4,407,095., Cl. 51-112.000.

Zenith Radio Corporation: *See—*
Ensinger, James W.; and Hendrickson, Melvin C., 4,408,225., Cl. 358-120.000.
Midland, Richard W., 4,408,223., Cl. 358-67.000.
Nowaczyk, Philip J., 4,408,269., Cl. 363-126.000.

Zielinski, Timothy T.: *See—*
Eu, Victor K.; Feng, Milton; Zielinski, Timothy T.; and Whelan, James M., 4,407,694., Cl. 156-606.000.

Ziemann, Heinz: *See—*
Salzburg, Herbert; Meyborg, Holger; and Ziemann, Heinz, 4,408,061., Cl. 549-464.000.

Zinge, Thomas P.: *See—*
Crossley, Thomas J.; and Zinge, Thomas P., 4,407,781., Cl. 423-15.000.

Zipfel, George G., Jr., to Bell Telephone Laboratories, Incorporated. Method of making electromechanical transducers using improved flexible composite piezoelectric material. 4,407,054., Cl. 29-25.350.

Ziyad Incorporated: *See—*
Kapp, Ludwig J., 4,407,597., Cl. 400-625.000.

Zoecon Corporation: *See—*
Lee, Shy-Fuh, 4,408,076., Cl. 568-325.000.

Zweegers, Petrus W. Agricultural implement. 4,407,114., Cl. 56-344.000.

Zwirek, Chester S.: *See—*
Hanssen, Tore B.; and Zwirek, Chester S., 4,408,178., Cl. 337-320.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anger, Anton, to Osterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg. Method of producing undercut tubular plastic articles. Re. 31,404., Cl. 264-573.000.

Ashby, Richard D.: *See—*
Furtman, Eugene L.; Ross, Charles B.; Ashby, Richard D.; and Berliner, Steven D., Re. 31,407., Cl. 364-200.000.

Berliner, Steven D.: *See—*
Furtman, Eugene L.; Ross, Charles B.; Ashby, Richard D.; and Berliner, Steven D., Re. 31,407., Cl. 364-200.000.

Burrous, Allen J., to Schlegel Corporation. Weatherstrip and method for sealing a gap. Re. 31,403., Cl. 156-60.000.

Citizen Watch Co., Ltd.: *See—*
Hashimoto, Yukio; and Morokawa, Shigeru, Re. 31,402., Cl. 368-159.000.

Corning Glass Works: *See—*
Paisley, Robert J., Re. 31,405., Cl. 501-84.000.

Cullity, Richard E.: *See—*
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., Re. 31,400., Cl. 182-2.000.

Furtman, Eugene L.; Ross, Charles B.; Ashby, Richard D.; and Berliner, Steven D., to Tesdata Systems Corporation. Computer monitoring system. Re. 31,407., Cl. 364-200.000.

Gaylord, Norman G., to Syntex (U.S.A.) Inc. Oxygen permeable contact lens composition, methods and article of manufacture. Re. 31,406., Cl. 526-279.000.

Hashimoto, Yukio; and Morokawa, Shigeru, to Citizen Watch Co., Ltd. Electronic timepiece. Re. 31,402., Cl. 368-159.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Kusumoto, Yasuo, Re. 31,401., Cl. 368-69.000.

Kusumoto, Yasuo, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. Re. 31,401., Cl. 368-69.000.

Mark Industries: *See—*
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., Re. 31,400., Cl. 182-2.000.

Morokawa, Shigeru: *See—*
Hashimoto, Yukio; and Morokawa, Shigeru, Re. 31,402., Cl. 368-159.000.

Osterreichische Schiffswerften Aktiengesellschaft Linz-Korneuburg: *See—*
Anger, Anton, Re. 31,404., Cl. 264-573.000.

Paisley, Robert J., to Corning Glass Works. Ceramic foam cement. Re. 31,405., Cl. 501-84.000.

Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., to Mark Industries. Self propelled and extensible boom. Re. 31,400., Cl. 182-2.000.

Ross, Charles B.: *See—*
Furtman, Eugene L.; Ross, Charles B.; Ashby, Richard D.; and Berliner, Steven D., Re. 31,407., Cl. 364-200.000.

Schlegel Corporation: *See—*
Burrous, Allen J., Re. 31,403., Cl. 156-60.000.

Syntex (U.S.A.) Inc.: *See—*
Gaylord, Norman G., Re. 31,406., Cl. 526-279.000.

Tamplin, Lyle R.: *See—*
Rallis, Rallie P.; Cullity, Richard E.; and Tamplin, Lyle R., Re. 31,400., Cl. 182-2.000.

Tesdata Systems Corporation: *See—*
Furtman, Eugene L.; Ross, Charles B.; Ashby, Richard D.; and Berliner, Steven D., Re. 31,407., Cl. 364-200.000.

LIST OF REEXAM PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Battles, Donald D., to Cadre Corporation, The. Ladle heating system. B1 4,229,211., 10-4-83, Cl. 266-44.000.

Bio-Energy system, Inc.: *See—*
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,270,596., Cl. 165-1.000.

Cadre Corporation, The: *See—*
Battles, Donald D., B1 4,229,211., Cl. 266-44.000.

Frigstad, Robert A., to Minnesota Mining and Manufacturing Company. Adhesive composition containing high molecular weight polyamides, epoxy resins and curing agents. B1 3,449,280., 10-4-83, Cl. 523-402.000.

Krulick, Steven E.: *See—*
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,270,596., Cl. 165-1.000.

Leonard, Ronald W.: *See—*
Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., B1 4,270,596., Cl. 165-1.000.

Minnesota Mining and Manufacturing Company: *See—*
Frigstad, Robert A., B1 3,449,280., Cl. 523-402.000.

Zinn, Michael F.; Krulick, Steven E.; and Leonard, Ronald W., to Bio-Energy system, Inc. Tube mat heat exchanger. B1 4,270,596., 10-4-83, Cl. 165-1.000.

LIST OF DESIGN PATENTEES

Ahi Paka, Limited: *See—*
McDiarmid, Donald P., III, 270,798., Cl. D6-189.000.

Airwick Industries, Inc.: *See—*
Joyaux, Yves; and Mandon, Jean-Pierre, 270,861., Cl. D28-77.000.
Joyaux, Yves; and Mandon, Jean-Pierre, 270,862., Cl. D28-77.000.

Alden, Steven. Boat platform. 270,828., 10-4-83, Cl. D12-318.000.

American Stemware Corporation: *See—*
Gicking, William D.; and Frisch, Heinz, 270,803., Cl. D7-39.000.

Anchor Hocking Corporation: *See—*
Thrush, James L., 270,802., Cl. D7-17.000.

Balderston, Peter W. Combined toy sewing machine and case therefor. 270,849., 10-4-83, Cl. D21-122.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 270,825., Cl. D12-192.000.

Bell Telephone Laboratories, Incorporated: *See—*
Genaro, Donald M.; Sylvester, Gordon E.; and Varadarajan, G., 270,834., Cl. D14-57.000.

Bender, Allan W.: *See—*
Mahaffey, Steven J.; and Bender, Allan W., 270,852., Cl. D21-217.000.

Bennato, Andre, to Sanistyl Creations - S.A.R.L. Soap dish. 270,795., 10-4-83, Cl. D6-90.000.

Bernat Fontlladosa, Enrique. Combined display container and packaging insert. 270,812., 10-4-83, Cl. D9-318.000.

Bird, Larry C. Combined dispensing unit for squeezing toothpaste tubes and holder for toothbrushes. 270,794., 10-4-83, Cl. D6-87.000.

Blanco, Russell; and Bouchever, Jeannie. Display stand or similar article. 270,789., 10-4-83, Cl. D6-28.000.

Bouchever, Jeannie: *See—*
Blanco, Russell; and Bouchever, Jeannie, 270,789., Cl. D6-28.000.

Braun, Hans: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 270,825., Cl. D12-192.000.

Breger, Carl-Arne, to Telefonaktiebolaget L M Ericsson. Telephone instrument. 270,836., 10-4-83, Cl. D14-53.000.

Casetta, Gino, to Simod Patents N.A. N.V. Tennis shoe. 270,778., 10-4-83, Cl. D2-310.000.

Cassina S.p.A.: *See—*
Rodriquez, Rodrigo, 270,790., Cl. D6-37.000.

Caves, Thomas F., to Swann, John C. Ice chest. 270,804., 10-4-83, Cl. D7-77.000.

Chase, David O.: *See—*
Handy, Binns; and Chase, David O., 270,786., Cl. D3-75.000.

Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 270,783., Cl. D3-28.000.

Common Sense Products Pty. Ltd.: *See—*
Jensen, Henning, 270,831., Cl. D13-40.000.

CPG Products Corp.: *See—*
Stolarz, Edward M., 270,810., Cl. D8-317.000.

Creske, Edward J. Table top. 270,799., 10-4-83, Cl. D6-192.000.

Curatolo, Frank. Mat. 270,801., 10-4-83, Cl. D6-209.000.

Dawson, Chris R. Upper torso protector for motorcyclists and the like. 270,776., 10-4-83, Cl. D2-27.000.

Dilliner, Monte M. Combined bottle cap and pull tab opener. 270,807., 10-4-83, Cl. D8-18.000.

Dorfman, Jan W. Multi-purpose boat. 270,827., 10-4-83, Cl. D12-302.000.

Dorina Nahmaschinen GmbH: *See—*
Meier, Willi, 270,793., Cl. D15-70.000.

Drag Specialties, Inc.: *See—*
Rudd, Thomas H., 270,782., Cl. D2-431.000.

Echterling, Eugene J. Riding toy. 270,848., 10-4-83, Cl. D21-74.000.

Edwards, Bryant, to Illinois Tool Works Inc. Packaging cup or the like. 270,814., 10-4-83, Cl. D9-388.000.

Eldon Industries, Inc.: *See—*
Koturov, Daniel, 270,838., Cl. D15-144.000.

Feger, James W. Game ball. 270,851., 10-4-83, Cl. D21-204.000.

Fera, Victor, Sr., to Sage Manufacturing Company, Inc. Jewelry chain clasp. 270,821., 10-4-83, Cl. D11-87.000.

Ferguson, Frederick D. Airship. 270,829., 10-4-83, Cl. D12-323.000.

Filmer, George A., Jr. Jewelry tie. 270,781., 10-4-83, Cl. D2-353.000.

Forrester, John E. Tee pouch for golfers. 270,784., 10-4-83, Cl. D3-37.000.

Fortuna, Vincent E.; and Peterson, Bertel R., to Vercon Inc. Combined packaging cup and base therefor. 270,813., 10-4-83, Cl. D9-388.000.

Frisch, Heinz: *See—*
Gicking, William D.; and Frisch, Heinz, 270,803., Cl. D7-39.000.

Fuller, Joseph T. Nesting play cushions. 270,800., 10-4-83, Cl. D6-201.000.

Genaro, Donald M.; Sylvester, Gordon E.; and Varadarajan, G., to Bell Telephone Laboratories, Incorporated. Acoustic coupler adapter. 270,834., 10-4-83, Cl. D14-57.000.

Gicking, William D.; and Frisch, Heinz, to American Stemware Corporation. Stem for a goblet or similar article. 270,803., 10-4-83, Cl. D7-39.000.

Gladden, Robert A.: *See—*
Hays, William A., Jr.; Gladden, Robert A.; and Shipp, John I., 270,816., Cl. D10-70.000.

Goldsworthy, Malcolm A., to Schott Industrial Glass Limited. Electric heating plate for a food warmer. 270,805., 10-4-83, Cl. D7-363.000.

Greif, T. Jane. Camera. 270,839., 10-4-83, Cl. D16-1.000.

Handy, Binns; and Chase, David O., to Lenox, Incorporated. Pouch for carrying jewelry or similar articles. 270,786., 10-4-83, Cl. D3-75.000.

Hansen, Robert S. Pencil holder. 270,845., 10-4-83, Cl. D19-85.000.

Hashimoto, Minoru; Nomura, Yoshiyuki; and Kubo, Masayoshi, to Matsushita Electric Industries Co., Ltd. Video disc player. 270,832., 10-4-83, Cl. D14-1.000.

Hays, William A., Jr.; Gladden, Robert A.; and Shipp, John I. Housing for optical electronic distance measuring instrument. 270,816., 10-4-83, Cl. D10-70.000.

Hlustik, John F., to United States Shoe Corporation, The. Unitary sole. 270,780., 10-4-83, Cl. D2-319.000.

Hon Industries Inc.: *See—*
Umanoff, Arthur H.; and Huin, Alain, 270,787., Cl. D6-23.000.
Umanoff, Arthur H.; and Huin, Alain, 270,788., Cl. D6-23.000.

Honeywell Inc.: *See—*
Odom, James A., 270,815., Cl. D10-50.000.

Hoover Company, The: *See—*
Moine, David W., 270,865., Cl. D32-21.000.

Huin, Alain: *See—*
Umanoff, Arthur H.; and Huin, Alain, 270,787., Cl. D6-23.000.
Umanoff, Arthur H.; and Huin, Alain, 270,788., Cl. D6-23.000.

Ikeda, Seiji; and Ono, Katsuyuki, to Maeda Metal Industries, Ltd. Power wrench. 270,809., 10-4-83, Cl. D8-68.000.

Illinois Tool Works Inc.: *See—*
Edwards, Bryant, 270,814., Cl. D9-388.000.

International Playtex, Inc.: *See—*
Stern, Harold; and Suleiman, Elisabeth, 270,774., Cl. D2-24.000.
Stern, Harold; and Suleiman, Elisabeth, 270,775., Cl. D2-24.000.

Itoh, Kunio, to Pentel Kabushiki Kaisha. Liquid ink ball pen. 270,843., 10-4-83, Cl. D19-51.000.

Jacobs, Stewart N. Theft-prevention ignition-disabling unit for vehicles. 270,830., 10-4-83, Cl. D13-32.000.

Jensen, Henning, to Common Sense Products Pty. Ltd. Multiple service unit. 270,831., 10-4-83, Cl. D13-40.000.

Joyaux, Yves; and Mandon, Jean-Pierre, to Airwick Industries, Inc. Dispenser for liquid soap or gelatinous material. 270,861., 10-4-83, Cl. D28-77.000.

Joyaux, Yves; and Mandon, Jean-Pierre, to Airwick Industries, Inc. Dispenser for liquid soap or gelatinous material. 270,862., 10-4-83, Cl. D28-77.000.

Juutilainen, Holger, to Tamfelt OY AB. Sector element for disk filter. 270,857., 10-4-83, Cl. D23-4.000.

Kelsey-Hayes Co.: *See—*
Reid, Donald J., 270,826., Cl. D12-211.000.
Robinette, Richard T., 270,824., Cl. D12-180.000.

Keohan, Richard J., to Victor Equipment Company. Carrying case for plumbing tools and equipment. 270,867., 10-4-83, Cl. D34-44.000.

Kolibas, James A., to Nordson Corporation. Electrostatic voltage measuring instrument. 270,817., 10-4-83, Cl. D10-78.000.

Koturov, Daniel, to Eldon Industries, Inc. Housing for desoldering system mechanism. 270,838., 10-4-83, Cl. D15-144.000.

Kubo, Masayoshi: *See—*
Hashimoto, Minoru; Nomura, Yoshiyuki; and Kubo, Masayoshi, 270,832., Cl. D14-1.000.

Lange, Gerd. Chair. 270,791., 10-4-83, Cl. D6-56.000.

Lange, Gerd, to Schlapp-Mobel GmbH & Co. KG. Chair. 270,792., 10-4-83, Cl. D6-69.000.

Legerius, Bengt E.; and Siebert, Hans W., to Telefonaktiebolaget L M Ericsson. Hand-cutter. 270,837., 10-4-83, Cl. D15-139.000.

Lenox, Incorporated: *See—*
Handy, Binns; and Chase, David O., 270,786., Cl. D3-75.000.

Levy, Richard D. Pharmaceutical rack. 270,859., 10-4-83, Cl. D24-31.000.

Luthe, Claus; Rennen, Manfred; and Braun, Hans, to Bayerische Motoren Werke Aktiengesellschaft. Combined vehicle dashboard and console unit. 270,825., 10-4-83, Cl. D12-192.000.

Maeda Metal Industries, Ltd.: *See—*
Ikeda, Seiji; and Ono, Katsuyuki, 270,809., Cl. D8-68.000.

Mahaffey, Steven J.; and Bender, Allan W., to Questor Corporation. Golf putter head. 270,852., 10-4-83, Cl. D21-217.000.

Mandon, Jean-Pierre: *See—*
Joyaux, Yves; and Mandon, Jean-Pierre, 270,861., Cl. D28-77.000.
Joyaux, Yves; and Mandon, Jean-Pierre, 270,862., Cl. D28-77.000.

Mansfield Sanitary Inc.: *See—*
Peets, Robert; Preston, Burton L.; and Sigler, James A., 270,856., Cl. D23-2.000.

Marleau, Gilles. Hanger for elongate articles. 270,797., 10-4-83, Cl. D6-125.000.

Martinez, Carlos M., to Monturas Y Fornituras, S.A. Spray. 270,863., 10-4-83, Cl. D28-91.100.

Martinez, Carlos M., to Monturas Y Fornituras, S.A. Spray. 270,864., 10-4-83, Cl. D28-91.100.

Matsushita Electric Industries Co., Ltd.: *See—*
Hashimoto, Minoru; Nomura, Yoshiyuki; and Kubo, Masayoshi, 270,832., Cl. D14-1.000.

McDiarmid, Donald P., III, to Ahi Paka, Limited. Display holder. 270,798., 10-4-83, Cl. D6-189.000.

McInnes, Malcolm B., to Pyrox Limited. Heater. 270,858., 10-4-83, Cl. D23-94.000.

McIntyre, Janette K. Circular slide chart. 270,844., 10-4-83, Cl. D19-64.000.

McSweeney, William J. Game board. 270,846., 10-4-83, Cl. D21-34.000.

Meier, Willi, to Dorina Nahmaschinen GmbH. Sewing machine. 270,793., 10-4-83, Cl. D15-70.000.

Moine, David W., to Hoover Company, The. Suction cleaner or the like. 270,865., 10-4-83, Cl. D32-21.000.

Monturas Y Fornituras, S.A.: *See—*
Martinez, Carlos M., 270,863., Cl. D28-91.100.
Martinez, Carlos M., 270,864., Cl. D28-91.100.

Motorola, Inc.: *See—*
Taylor, Terrance N., 270,835., Cl. D14-64.000.

Mounts, Andrew J., to Murray-Black Company. Combined foot rest and toe and heel shifter mechanism for a motorcycle. 270,823., 10-4-83, Cl. D12-114.000.

Murray-Black Company: *See—*
Mounts, Andrew J., 270,823., Cl. D12-114.000.

Nakagawa, N. Nancy. Thong-type shoe. 270,777., 10-4-83, Cl. D2-270.000.

Neese, John R. Fishing lure. 270,854., 10-4-83, Cl. D22-27.000.

Nomura, Yoshiyuki: *See—*
Hashimoto, Minoru; Nomura, Yoshiyuki; and Kubo, Masayoshi, 270,832., Cl. D14-1.000.

Nordson Corporation: *See—*
Kolibas, James A., 270,817., Cl. D10-78.000.

Notbohm, Rex, to Toastmaster Inc. Control panel for a cooking device. 270,806., 10-4-83, Cl. D7-406.000.

Nottingham, John R.: *See—*
Spirk, John W., Jr.; and Nottingham, John R., 270,868., Cl. D99-35.000.

Odom, James A., to Honeywell Inc. Clock thermostat. 270,815., 10-4-83, Cl. D10-50.000.

Okada, Hidekazu, to Clover Mfg. Co., Ltd. Crochet hook. 270,783., 10-4-83, Cl. D3-28.000.

Olsson, Rolf S. Golf club head. 270,853., 10-4-83, Cl. D21-218.000.

Ono, Katsuyuki: *See—*
Ikeda, Seiji; and Ono, Katsuyuki, 270,809., Cl. D8-68.000.

Ortega, Armando. Pinata shell. 270,850., 10-4-83, Cl. D21-165.000.

Peavey Electronics Corp.: *See—*
Peavey, Hartley D., 270,841., Cl. D17-20.000.
Peavey, Hartley D., 270,842., Cl. D17-20.000.

Peavey, Hartley D., to Peavey Electronics Corp. Guitar body. 270,841., 10-4-83, Cl. D17-20.000.
Peavey, Hartley D., to Peavey Electronics Corp. Guitar body. 270,842., 10-4-83, Cl. D17-20.000.
Peets, Robert; Preston, Burton L.; and Sigler, James A., to Mansfield Sanitary Inc. Holding tank for a boat or the like. 270,856., 10-4-83, Cl. D23-2.000.
Pentel Kabushiki Kaisha: *See—*
Itoh, Kunio, 270,843., Cl. D19-51.000.
Peterson, Bertel R.: *See—*
Fortuna, Vincent E.; and Peterson, Bertel R., 270,813., Cl. D9-388.000.
Pfaff, Wayne K. Cart or similar article. 270,866., 10-4-83, Cl. D34-22.000.
Preston, Burton L.: *See—*
Peets, Robert; Preston, Burton L.; and Sigler, James A., 270,856., Cl. D23-2.000.
Pyrox Limited: *See—*
McInnes, Malcolm B., 270,858., Cl. D23-94.000.
Questor Corporation: *See—*
Mahaffey, Steven J.; and Bender, Allan W., 270,852., Cl. D21-217.000.
Quirico, Jeanne M. Retractable plant hanger. 270,796., 10-4-83, Cl. D6-113.000.
Reid, Donald J., to Kelsey-Hayes Co. Vehicle wheel. 270,826., 10-4-83, Cl. D12-211.000.
Rennen, Manfred: *See—*
Luthe, Claus; Rennen, Manfred; and Braun, Hans, 270,825., Cl. D12-192.000.
Ricoh Company, Ltd.: *See—*
Soda, Koichi, 270,840., Cl. D16-6.000.
Robinette, Richard T., to Kelsey-Hayes Co. Vehicle disc brake shoe. 270,824., 10-4-83, Cl. D12-180.000.
Rodriquez, Rodrigo, to Cassina S.p.A. Adjustable lounge chair. 270,790., 10-4-83, Cl. D6-37.000.
Rudd, Thomas H., to Drag Specialties, Inc. Belt buckle. 270,782., 10-4-83, Cl. D2-431.000.
Sage Manufacturing Company, Inc.: *See—*
Fera, Victor, Sr., 270,821., Cl. D11-87.000.
Sanistyl Creations - S.A.R.L.: *See—*
Bennato, Andre, 270,795., Cl. D6-90.000.
Schlapp-Mobel GmbH & Co. KG: *See—*
Lange, Gerd, 270,792., Cl. D6-69.000.
Schott Industrial Glass Limited: *See—*
Goldsworthy, Malcolm A., 270,805., Cl. D7-363.000.
Schulze, Herbert C. Visual marker. 270,820., 10-4-83, Cl. D10-109.000.
Shipp, John I.: *See—*
Hays, William A., Jr.; Gladden, Robert A.; and Shipp, John I., 270,816., Cl. D10-70.000.
Siebert, Hans W.: *See—*
Legerius, Bengt E.; and Siebert, Hans W., 270,837., Cl. D15-139.000.
Sigler, James A.: *See—*
Peets, Robert; Preston, Burton L.; and Sigler, James A., 270,856., Cl. D23-2.000.
Simod Patents N.A. N.V.: *See—*
Casetta, Gino, 270,778., Cl. D2-310.000.
Simons, Sanford L. Vibrating viscometer probe. 270,818., 10-4-83, Cl. D10-84.000.
Simons, Sanford L. Sample holder for a vibrating viscometer. 270,819., 10-4-83, Cl. D10-84.000.
Skovgaard, Leif O. Insulated carry bag. 270,811., 10-4-83, Cl. D9-305.000.
Soda, Koichi, to Ricoh Company, Ltd. Camera. 270,840., 10-4-83, Cl. D16-6.000.
Spicer, Barry K., to Technicolor, Inc. Extended play cassette. 270,833., 10-4-83, Cl. D14-11.000.
Spirk, John W., Jr.; and Nottingham, John R. Coin bank. 270,868., 10-4-83, Cl. D99-35.000.
Steinberg, John E. Shoelace bow knot retainer. 270,779., 10-4-83, Cl. D2-314.000.
Stern, Harold; and Suleiman, Elisabeth, to International Playtex, Inc. Brassiere or the like. 270,774., 10-4-83, Cl. D2-24.000.
Stern, Harold; and Suleiman, Elisabeth, to International Playtex, Inc. Brassiere or the like. 270,775., 10-4-83, Cl. D2-24.000.
Stolarz, Edward M., to CPG Products Corp. Handle unit for a luggage case. 270,810., 10-4-83, Cl. D8-317.000.
Suleiman, Elisabeth: *See—*
Stern, Harold; and Suleiman, Elisabeth, 270,774., Cl. D2-24.000.
Stern, Harold; and Suleiman, Elisabeth, 270,775., Cl. D2-24.000.
Swann, John C.: *See—*
Caves, Thomas F., 270,804., Cl. D7-77.000.
Sylvester, Gordon E.: *See—*
Genaro, Donald M.; Sylvester, Gordon E.; and Varadarajan, G., 270,834., Cl. D14-57.000.
Tamfelt OY AB: *See—*
Juutilainen, Holger, 270,857., Cl. D23-4.000.
Taylor, Terrance N., to Motorola, Inc. Housing for a vehicular telephone control unit or similar article. 270,835., 10-4-83, Cl. D14-64.000.
Technicolor, Inc.: *See—*
Spicer, Barry K., 270,833., Cl. D14-11.000.
Telefonaktiebolaget L M Ericsson: *See—*
Breger, Carl-Arne, 270,836., Cl. D14-53.000.
Legerius, Bengt E.; and Siebert, Hans W., 270,837., Cl. D15-139.000.
Thrush, James L., to Anchor Hocking Corporation. Covered jar or similar article. 270,802., 10-4-83, Cl. D7-17.000.
Toastmaster Inc.: *See—*
Notbohm, Rex, 270,806., Cl. D7-406.000.
Triggs, Clarence, to Triggs Manufacturing Company. Trailer. 270,822., 10-4-83, Cl. D12-102.000.
Triggs Manufacturing Company: *See—*
Triggs, Clarence, 270,822., Cl. D12-102.000.
Turner, M. Wayne, to Walker Industrial Plastics, Inc. Control booth. 270,860., 10-4-83, Cl. D25-16.000.
Umanoff, Arthur H.; and Huin, Alain, to Hon Industries Inc. Combined table and side extension unit for supporting electronic equipment. 270,787., 10-4-83, Cl. D6-23.000.
Umanoff, Arthur H.; and Huin, Alain, to Hon Industries Inc. Support table for electronic equipment. 270,788., 10-4-83, Cl. D6-23.000.
United States Shoe Corporation, The: *See—*
Hlustik, John F., 270,780., Cl. D2-319.000.
V&H Enterprises: *See—*
Vit, Joe, 270,855., Cl. D22-31.000.
Varadarajan, G.: *See—*
Genaro, Donald M.; Sylvester, Gordon E.; and Varadarajan, G., 270,834., Cl. D14-57.000.
Vercon Inc.: *See—*
Fortuna, Vincent E.; and Peterson, Bertel R., 270,813., Cl. D9-388.000.
Victor Equipment Company: *See—*
Keohan, Richard J., 270,867., Cl. D34-44.000.
Vit, Joe, to V&H Enterprises. Device for baiting fish hooks. 270,855., 10-4-83, Cl. D22-31.000.
Walker Industrial Plastics, Inc.: *See—*
Turner, M. Wayne, 270,860., Cl. D25-16.000.
White, Robert W. Automobile serving tray. 270,785., 10-4-83, Cl. D3-40.000.
Wolcott, Glenn R., to Wolcott Tool Company. Tubing cutter. 270,808., 10-4-83, Cl. D8-60.000.
Wolcott Tool Company: *See—*
Wolcott, Glenn R., 270,808., Cl. D8-60.000.
Wood, Robert. Wheeled trundle toy. 270,847., 10-4-83, Cl. D21-71.000.

LIST OF PLANT PATENTEES

Erickson, William K., to Stark Brothers Nurseries and Orchards Company. Butternut tree—Loumis cultivar. 5,116., 10-4-83, Cl. 30.000.
Moore, Ralph S., to Sequoia Nursery. Rose plant. 5,114., 10-4-83, Cl. 10.000.
Sequoia Nursery: *See—*
Moore, Ralph S., 5,114., Cl. 10.000.
Stark Brothers Nurseries and Orchards Company: *See—*
Erickson, William K., 5,116., Cl. 30.000.
Williams, Ernest D. Miniature rose plant. 5,113., 10-4-83, Cl. 7.000.
Williams, Ernest D. Miniature rose plant. 5,115., 10-4-83, Cl. 10.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF OCTOBER, 1983

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Garrison, Forrest C.; and Wells, William L. Dewatering of flue gas desulfurization sulfite solids. T103,501, 10-4-83, Cl. 423-242.000.
Wells, William L.: *See—*
Garrison, Forrest C.; and Wells, William L., T103,501, Cl. 423-242.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 4, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

416 4,407,021

CLASS 3

1.913 4,407,022

CLASS 4

191 4,407,023
242 4,407,024
321 4,407,025
365 4,407,026
502 4,407,027
516 4,407,028
564 4,407,029

CLASS 5

66 4,407,030
462 4,407,031

CLASS 8

158 4,407,032

CLASS 12

10.1 4,407,033
142 RS 4,407,034

CLASS 15

3 4,407,035
3.13 4,407,036
93 R 4,407,037
105 4,407,038
144 A 4,407,039
230.17 4,407,040
321 4,407,041

CLASS 16

2 4,407,042
100 4,407,043
237 4,407,044
327 4,407,045

CLASS 17

11 4,407,046

CLASS 19

64.5 4,407,047

CLASS 24

69 SK 4,407,048
230 AS 4,407,049
277 4,407,050
369 4,407,051

CLASS 26

2 R 4,407,052

CLASS 27

14 4,407,053

CLASS 28

419 PG 4,407,287

CLASS 29

25.35 4,407,054
157 R 4,407,055
527.7 4,407,056
570 4,407,057
571 4,407,058
4,407,059
576 B 4,407,061
576 E 4,407,060
599 4,407,062
623.2 4,407,063
726 4,407,064
828 4,407,065
882 4,407,066

CLASS 30

50 4,407,067
133 4,407,068
254 4,407,069

CLASS 33

27 H 4,407,074
169 R 4,407,070
178 E 4,407,071
203.11 4,407,072
203.18 4,407,073
348.2 4,407,075

CLASS 34

9.5 4,407,076
108 4,407,077
133 4,407,078

CLASS 36

127 4,407,079

CLASS 37

117.5 4,407,080
141 T 4,407,081

CLASS 40

10 C 4,407,082
414 4,407,083
475 4,407,084

CLASS 42

69 R 4,407,085
90 4,407,086

CLASS 43

4 4,407,087
4.5 4,407,088
21.2 4,407,089

CLASS 44

78 4,407,661

CLASS 46

118 4,407,090
193 4,407,091

CLASS 47

64 4,407,092

CLASS 49

391 4,407,093

CLASS 51

112 4,407,095
165 R 4,407,094
328 4,407,096

CLASS 52

11 4,407,097
126.3 4,407,101
167 4,407,098
169.7 4,407,102
202 4,407,099
212 4,407,100
292 4,407,103
309.4 4,407,104
397 4,407,105
722 4,407,106

CLASS 53

451 4,407,108
528 4,407,107

CLASS 55

33 4,407,662
55 4,407,665
347 4,407,663
357 4,407,664

CLASS 56

11.9 4,407,109
13.4 4,407,112
14.4 4,407,110
16.4 4,407,111
341 4,407,113
344 4,407,114
370 4,407,115

CLASS 57

13 4,407,116
22 4,407,117

CLASS 60

39.281 4,407,118
219 4,407,119
226.2 4,407,120
452 4,407,122
496 4,407,130
525 4,407,123
527 4,407,124
562 4,407,121
584 4,407,125
641.4 4,407,126
641.5 4,407,127
641.8 4,407,129
648 4,407,131
716 4,407,132
737 4,407,128

CLASS 62

3 4,407,133
5 4,407,134
13 4,407,135
64 4,407,136
80 4,407,137
126 4,407,138
130 4,407,141
215 4,407,139
238.6 4,407,142
268 4,407,140
303 4,407,143
314 4,407,144

CLASS 65

2 4,407,666
3.11 4,407,667
4,407,668
134 4,407,669

CLASS 66

14 4,407,145

CLASS 70

232 4,407,146
365 4,407,147
456 R 4,407,148

CLASS 71

67 4,407,670
113 4,407,671

CLASS 72

47 4,407,149
61 4,407,150
241 4,407,151

CLASS 73

1 G 4,407,152
23 4,407,153
46 4,407,171
66 4,407,154
116 4,407,155
118 4,407,156
151 4,407,157
196 4,407,158
290 R 4,407,159
296 4,407,160
505 4,407,161
527 4,407,162
607 4,407,163
831 4,407,164
862.54 4,407,165

CLASS 74

493 4,407,166
501 R 4,407,167
579 E 4,407,168
604 4,407,169
805 4,407,170

CLASS 75

10 R 4,407,672
128 A 4,407,673
251 4,407,674

CLASS 76

112 4,407,172

CLASS 81

9.5 A 4,407,174
9.5 R 4,407,173
57.39 4,407,175

CLASS 82

2.5 4,407,176
61 4,408,181

CLASS 83

300 4,407,177
835 4,407,178
865 4,407,179

CLASS 84

275 4,407,181
453 4,407,182

CLASS 89

1.5 B 4,407,180

CLASS 91

1 4,407,183
376 R 4,407,184

CLASS 98

1.5 4,407,185
2 4,407,186
41 SV 4,407,187
116 4,407,188

CLASS 99

421 HH 4,407,189

CLASS 100

88 4,407,190
99 4,407,191

CLASS 101

7 4,407,192
93.01 4,407,193
93.34 4,407,194
123 4,407,195
142 4,407,196
148 4,407,197
248 4,407,198
375 4,407,199

CLASS 102

202.5 4,407,200
248 4,407,201

CLASS 105

271 4,407,202
462 4,407,203

CLASS 106

35 4,407,675
88 4,407,676
97 4,407,677

CLASS 109

59 R 4,407,204

CLASS 110

264 4,407,205
347 4,407,206

CLASS 111

85 4,407,207

CLASS 112

121.12 4,407,208
147 4,407,209
167 4,407,210
260 4,407,211

CLASS 114

108 4,407,212
222 4,407,213
249 4,407,214
289 4,407,215
347 4,407,216

CLASS 118

24 4,407,217
59 4,407,218
60 4,407,219
64 4,407,220
109 4,407,221
110 4,407,222
212 4,407,223
405 4,407,224
425 4,407,225
623 4,407,226
642 4,407,227
651 4,407,228
702 4,407,229
716 4,407,230

CLASS 119

1 4,407,231
103 4,407,232
106 4,407,233
158 4,407,234

CLASS 122

161 4,407,235
390 4,407,236
4,407,237

CLASS 123

3 4,407,238
44 C 4,407,239
56 BC 4,407,240
90.16 4,407,241
179 G 4,407,243
188 S 4,407,242
339 4,407,244
359 4,407,245
415 4,407,246
438 4,407,247
439 4,407,248
449 4,407,249
450 4,407,250
472 4,407,251
504 4,407,252
506 4,407,253
549 4,407,254
595 4,407,255
599 4,407,256
612 4,407,257
617 4,407,258
620 4,407,259

CLASS 124

35 A 4,407,260
41 A 4,407,261

CLASS 125

13 R 4,407,262
15 4,407,263

CLASS 126

120 4,407,264
193 4,407,265
299 D 4,407,266
419 4,407,267
430 4,407,268
442 4,407,269
450 4,407,270

CLASS 128

1 D 4,407,271
6 4,407,272
4,407,273
69 4,407,274
79 4,407,275
4,407,278
80 C 4,407,276
82 4,407,277
200.11 4,407,279
205.26 4,407,280
207.15 4,407,281
207.21 4,407,282
218 F 4,407,283
325 4,407,285
334 R 4,407,286
419 PG 4,407,288
4,407,289
633 4,407,290
635 4,407,291
653 4,407,292
660 4,407,293
4,407,294
670 4,407,295
675 4,407,296
681 4,407,297
713 4,407,298
731 4,407,299
734 4,407,300
774 4,407,301
784 4,407,302
785 4,407,303
786 4,407,304

CLASS 130

31 R 4,407,305

CLASS 131

296 4,407,306
308 4,407,307
336 4,407,308

CLASS 132

45 R 4,407,309
73 4,407,310
88.5 4,407,311

CLASS 133

8 A 4,407,313
4,407,314
8 R 4,407,312

CLASS 134

58 R 4,407,315
104 4,407,316
167 R 4,407,678

CLASS 135

27 4,407,317
66 4,407,318
87 4,407,319

CLASS 136

226 4,408,088
250 4,407,320

CLASS 137

13 4,407,321
268 4,407,322
382 4,407,324
454.2 4,407,323
514 4,407,325
553 4,407,326
625.3 4,407,327
625.6 4,407,328
629 4,407,329

CLASS 138

30 4,407,330

CLASS 139

110 4,407,331
304 4,407,332
415 4,407,333
435 4,407,334
452 4,407,335
4,407,336

CLASS 140

124 4,407,337

CLASS 141

1 4,407,338
10 4,407,339
67 4,407,340
97 4,407,341

CLASS 144

2 R 4,407,342
34 E 4,407,343
87 4,407,344
211 4,407,345

CLASS 148

2 4,407,679
12 F 4,407,680
4,407,681
128 4,407,682
144 4,407,683

CLASS 152

209 R 4,407,346
361 FP 4,407,347
410 4,407,348

CLASS 156

60 Re.31,403
133 4,407,684
212 4,407,685
215 4,407,686
227 4,407,687
242 4,407,688
243 4,407,689
244.27 4,407,690
304.2 4,407,691
350 4,407,692
436 4,407,693
606 4,407,694
643 4,407,695
653 4,407,696

CLASS 160

98 4,407,349
178 R 4,407,350

CLASS 162

137 4,407,697
258 4,407,698

CLASS 165

1 4,407,351
1 B1 14,270,596
9.1 4,407,352
39 4,407,353
42 4,407,354
104.16 4,407,355
132 4,407,356
165 4,407,357
166 4,407,358
167 4,407,359

CLASS 166

68 4,407,360
85 4,407,361
117.5 4,407,362
183 4,407,363
217 4,407,364
249 4,407,365
250 4,407,366
267 4,407,367
284 4,407,368

291 4,407,369

CLASS 171

124 4,407,370

CLASS 172

253 4,407,371
572 4,407,372

CLASS 173

141 4,407,373

CLASS 174

34 4,408,089
48 4,408,090
74 R 4,408,091
88 R 4,408,092

CLASS 175

24 4,407,374
228 4,407,375
267 4,407,376
325 4,407,377
340 4,407,378

CLASS 177

52 4,407,379
145 4,407,380

CLASS 178

22.19 4,408,093

CLASS 179

2 EC 4,408,099
27 D 4,408,100
90 BD 4,408,101
99 H 4,408,102

CLASS 180

6.48 4,407,381
10 4,407,382
54 E 4,407,383
146 4,407,384
175 4,407,385
193 4,407,386
247 4,407,387
271 4,407,388

CLASS 181

135 4,407,389
230 4,407,390

CLASS 182

2 Re.31,400
9 4,407,391
128 4,407,392

CLASS 188

2 F 4,407,393
71.4 4,407,394
134 4,407,395
282 4,407,396
4,407,397

CLASS 192

0.055 4,407,398
4 A 4,407,399
12 C 4,407,400
61 4,407,401

CLASS 198

389 4,407,402
494 4,407,403
621 4,407,408
774 4,407,404
4,407,405
4,407,406
777 4,407,407

CLASS 200

6 A 4,408,103
61.54 4,408,104
68 4,408,105
4,408,106
144 B 4,408,107
148 A 4,408,108
153 J 4,408,109
263 4,408,110
318 4,408,111

CLASS 201

39 4,407,699

CLASS 202

85 4,407,700
99 4,407,701
263 4,407,702

CLASS 203

43 4,407,703

CLASS 204

1 T 4,407,704
157.1 H 4,407,705
190 4,407,706
4,407,707
192 R 4,407,708
192 S 4,407,710
192 SP 4,407,709
196 4,407,711
298 4,407,712
4,407,713

CLASS 206

45.31 4,407,409
387 4,407,410
4,407,411
404 4,407,412
493 4,407,413
553 4,407,414

CLASS 208

120 4,407,714

CLASS 209

164 4,407,715
556 4,407,415

CLASS 210

155 4,407,716
616 4,407,717
626 4,407,718
695 4,407,719
777 4,407,720

CLASS 211

41 4,407,416
69.1 4,407,417
87 4,407,418

CLASS 212

189 4,407,419
199 4,407,420

CLASS 215

12 R 4,407,421
246 4,407,422

CLASS 219

61 4,408,112
69 M 4,408,113
110 4,408,114
119 4,408,115
273 4,408,116
320 4,408,117

CLASS 220

260 4,407,423
269 4,407,424
4,407,425
306 4,407,426
339 4,407,427
356 4,407,428
359 4,407,429

CLASS 221

122 4,407,430

CLASS 222

1 4,407,431
54 4,407,432
63 4,407,433
214 4,407,434
481 4,407,435
636 4,407,436

CLASS 224

270 4,407,437

CLASS 226

15 4,407,438
20 4,407,439

CLASS 228

6 A 4,407,440
176 4,407,441

CLASS 229

28 R 4,407,442

CLASS 235

382 4,408,119
449 4,408,122
462 4,408,120
494 4,408,121

CLASS 236

12.1 4,407,444
49 4,407,445
4,407,446
4,407,447
88 4,407,448

CLASS 237

12.3 R 4,407,449

CLASS 239

8 4,407,450
66 4,407,451
132.5 4,407,452
145 4,407,453
154 4,407,454
222.17 4,407,455
423 4,407,456
533.12 4,407,457

CLASS 241

282.1 4,407,458

CLASS 242

55.53 4,407,459
86.5 A 4,407,460
134 4,407,461
184 4,407,462
201 4,407,463

CLASS 244

3.13 4,407,464
3.16 4,407,465
17.11 4,407,466
4,407,467
137 P 4,407,468
169 4,407,469

CLASS 246

34 R 4,407,470

CLASS 248

59 4,407,479
63 4,407,471
89 4,407,472
95 4,407,473
97 4,407,474
156 4,407,475
235 4,407,476
499 4,407,477
542 4,407,478

CLASS 249

189 4,407,480

CLASS 250

226 4,408,123
252.1 4,408,124
288 4,408,125
442.1 4,408,126

CLASS 251

148 4,407,482
287 4,407,483
353 4,407,481

CLASS 252

62.59 4,407,721
91 4,407,722
192 4,407,723
312 4,407,724
512 4,407,739
522 R 4,407,740
542 4,407,741
628 4,407,742
700 4,407,743

CLASS 256

10 4,407,485
13.1 4,407,484

CLASS 260

112 R 4,407,744
112.5 E 4,407,746
112.5 R 4,407,745
120 4,407,747
153 4,407,748
155 4,407,749
239 A 4,407,750
239.1 4,407,751
239.3 P 4,407,752
239.55 D 4,407,754
239.55 R 4,407,753
245.2 R 4,407,755
378 4,407,756
413 4,407,757
429.9 4,407,758
440 4,407,759
465 F 4,407,760
502.5 C 4,407,761
508 4,407,762
940 4,407,763
4,407,764
970 4,407,765

CLASS 264

2.2 4,407,766
40.1 4,407,767
54 4,407,768
60 4,407,769
69 4,407,770
115 4,407,771
294 4,407,772
573 Re.31,404

CLASS 266

44 B1 4,229,211
87 4,407,486
114 4,407,487
148 4,407,488
191 4,407,489
266 4,407,490

CLASS 267

103 4,407,492
140.1 4,407,491

CLASS 269

93 4,407,493

CLASS 272

1 D 4,407,494
117 4,407,495
4,407,496
119 4,407,497

CLASS 273

1.5 R 4,407,498
54 B 4,407,499
75 4,407,500
118 R 4,407,501
153 R 4,407,504
153 S 4,407,502
177 R 4,407,505
187 B 4,407,506
197 R 4,407,503
400 4,407,507

CLASS 277

1 4,407,508
4,407,518
3 4,407,509
12 4,407,510
24 4,407,511
96.1 4,407,512
4,407,513
117 4,407,514
139 4,407,515
206 R 4,407,516
212 FB 4,407,517

CLASS 280

482 4,407,519
624 4,407,520
655 4,407,521
809 4,407,522

CLASS 281

46 4,407,523

CLASS 282

9 R 4,407,524

CLASS 283

110 4,407,525

CLASS 285

27 4,407,526
4,407,527
50 4,407,528
82 4,407,529
140 4,407,530
158 4,407,531
256 4,407,532
281 4,407,533
305 4,407,534

CLASS 290

54 4,408,127

CLASS 292

27 4,407,535
29 4,407,536
87 4,407,538
337 4,407,537
338 4,407,539

CLASS 296

146 4,407,540
216 4,407,541

CLASS 297

103 4,407,542
330 4,407,543
362 4,407,544

CLASS 299

30 4,407,545
34 4,407,546

CLASS 303

6 A 4,407,547
6 C 4,407,549
6 M 4,407,548

CLASS 305

35 EB 4,407,550
57 4,407,551

CLASS 307

270 4,408,129
296 R 4,408,130
311 4,408,131
359 4,408,132
362 4,408,133
471 4,408,134
474 4,408,135
475 4,408,136
598 4,408,137

CLASS 310

12 4,408,138
13 4,408,139
234 4,408,140

CLASS 315

56 4,408,141
82 4,408,142
366 4,408,143

CLASS 318

7 4,408,144
135 4,408,145
264 4,408,146
493 4,408,147
610 4,408,148
729 4,408,149
779 4,408,150

CLASS 320

2 4,408,151

CLASS 322

29 4,408,152

CLASS 323

224 4,408,153
340 4,408,154

CLASS 324

51 4,408,155
58.5 R 4,408,156
62 4,408,157
65 R 4,408,128
78 R 4,408,158
207 4,408,159
209 4,408,160
303 4,408,161
318 4,408,162
404 4,408,163

CLASS 328

117 4,408,164
134 4,408,165

CLASS 329

106 4,408,166

CLASS 330

261 4,408,167

CLASS 331

57 4,408,168
65 4,408,169

CLASS 333

172 4,408,170
177 4,408,171

CLASS 334

11 4,408,172

CLASS 335

16 4,408,173
20 4,408,174

CLASS 336

92 4,408,175
107 4,408,176
139 4,408,177

CLASS 337

320 4,408,178

CLASS 339

14 P 4,407,553
37 4,407,554
75 M 4,407,555
91 R 4,407,556
97 R 4,407,557
121 4,407,558
126 R 4,407,559
143 R 4,407,552
154 L 4,407,560

CLASS 340

32 4,408,179
40 4,408,180
310 A 4,408,185
4,408,186
321 4,408,182
323 R 4,408,183
332 4,408,187
345 4,408,188
347 DA 4,408,190
347 DD 4,408,189
365 R 4,408,191
365 S 4,408,184
407 4,408,192
566 4,408,193
626 4,408,194
685 4,408,195
690 4,408,196
720 4,408,197
729 4,408,198
731 4,408,199
747 4,408,200
784 4,408,201
785 4,408,202
825.34 4,408,203
870.24 4,408,204

CLASS 343

16 R 4,408,205
352 4,408,206
362 4,408,207
786 4,408,208
861 4,408,209

CLASS 346

74.2 4,408,210
75 4,408,211
76 PH 4,408,212
135.1 4,408,213
159 4,408,214
165 4,408,215

CLASS 350

96.20 4,407,562
96.3 4,407,561
173 4,407,563
174 4,407,564
374 4,407,565
404 4,407,566
423 4,407,567
467 4,407,568
509 4,407,569
529 4,407,570

CLASS 351

13 4,407,571
212 4,407,572

CLASS 354

33 4,407,573
50 4,407,574
115 4,407,575
135 4,407,576
173 4,407,577
235 4,407,578
275 4,407,579

CLASS 355

3 TR 4,407,580
8 4,407,581

CLASS 356

312 4,407,582
350 4,407,583

CLASS 357

15 4,408,216
17 4,408,217
70 4,408,218
80 4,408,219
81 4,408,220

CLASS 358

22 4,408,221
24 4,408,222
67 4,408,223
108 4,408,224
120 4,408,225
139 4,408,226
4,408,227
167 4,408,228
177 4,408,229
213 4,408,230
280 4,408,231
4,408,232
284 4,408,233

CLASS 360

69 4,408,234
71 4,408,235
74.3 4,408,317
85 4,408,236
96.3 4,408,237
104 4,408,238
107 4,408,239
121 4,408,240
128 4,408,241
131 4,408,242
137 4,408,243

CLASS 361

24 4,408,244
56 4,408,245
64 4,408,246
79 4,408,247
91 4,408,248
127 4,408,249
160 4,408,250
172 4,408,251
288 4,408,252
293 4,408,253
321 4,408,254
382 4,408,255
403 4,408,256
433 4,408,257
4,408,258
434 4,408,259

CLASS 362

32 4,408,260
104 4,408,261
147 4,408,262
189 4,408,263
200 4,408,264
238 4,408,265
297 4,408,266

CLASS 363

17 4,408,267
62 4,408,268
126 4,408,269
132 4,408,270

CLASS 364

200 Re.31,407
4,408,271
4,408,272
4,408,273
4,408,274
4,408,275
4,408,276
300 4,408,277
405 4,408,292
424 4,408,278
426 4,408,293
431.05 4,408,279
474 4,408,280
476 4,408,281
482 4,408,282
483 4,408,283
485 4,408,284
508 4,408,285
4,408,294
513 4,408,286
518 4,408,287
525 4,408,288
551 4,408,289
552 4,408,295
566 4,408,290
569 4,408,296
4,408,297
717 4,408,298
900 4,408,291
4,408,299
4,408,300
4,408,301
4,408,302

CLASS 365

174 4,408,304
189 4,408,305
205 4,408,303
218 4,408,306

CLASS 366

279 4,407,584

CLASS 367

79 4,408,307
197 4,408,308

CLASS 368

12 4,407,585
69 Re.31,401
77 4,407,586
108 4,407,587
118 4,407,588
159 Re.31,402
201 4,407,589
204 4,407,590

CLASS 369

7 4,408,309
41 4,408,310
43 4,408,311
4,408,312
45 4,408,313
46 4,408,314
71 4,408,315
77.2 4,408,316
4,408,321
261 4,408,318
275 4,408,319
290 4,408,320

CLASS 370

17 4,408,322
60 4,408,323
81 4,408,324
119 4,408,325

CLASS 371

38 4,408,326
47 4,408,327
62 4,408,328

CLASS 372

21 4,408,329
45 4,408,330
46 4,408,331
98 4,408,334

CLASS 375

14 4,408,332
95 4,408,333

CLASS 376

299 4,407,773
300 4,407,774

CLASS 377

2 4,408,118
18 4,408,335
34 4,408,336
44 4,408,337

CLASS 378

034 4,408,338
173 4,408,339
187 4,408,340
196 4,408,341

CLASS 381

11 4,408,098
15 4,408,097
24 4,408,095
107 4,408,096
120 4,408,094

CLASS 382

9 4,408,342
52 4,408,343
62 4,408,344

CLASS 383

5 4,407,443

CLASS 400

54 4,407,592
124 4,407,591
208 4,407,593
212 4,407,594
4,407,595
253 4,407,596
625 4,407,597

CLASS 403

4 4,407,598
11 4,407,599
23 4,407,600
25 4,407,601
336 4,407,602
370 4,407,603

CLASS 404

75 4,407,604
77 4,407,605

CLASS 405

17 4,407,606
26 4,407,607
31 4,407,608
146 4,407,609
259 4,407,610
284 4,407,611
285 4,407,612

CLASS 406

84 4,407,613

CLASS 408

13 4,407,614
239 A 4,407,615

CLASS 410

3 4,407,616
59 4,407,617

CLASS 411

40 4,407,618
43 4,407,619
387 4,407,620

CLASS 414

35 4,407,628
433 4,407,621
468 4,407,622
540 4,407,623
546 4,407,624
728 4,407,625
740 4,407,626
745 4,407,629
757 4,407,627
786 4,407,630

CLASS 415

122 R 4,407,631

CLASS 416

97 R 4,407,632
140 4,407,633
196 R 4,407,634
230 4,407,635

CLASS 417

118 4,407,636
138 4,407,637
269 4,407,638
292 4,407,639
296 4,407,640
356 4,407,641
366 4,407,642
401 4,407,643
462 4,407,644

CLASS 418

131 4,407,645

CLASS 419

36 4,407,775

CLASS 420

477 4,407,776

CLASS 422

46 4,407,777
90 4,407,778
266 4,407,779

CLASS 423

10 4,407,780
15 4,407,781
228 4,407,784
328 4,407,782
347 4,407,783
659 4,407,785

CLASS 424

14 4,407,786
28 4,407,787
49 4,407,788
69 4,407,789
78 4,407,790
80 4,407,791
81 4,407,792
4,407,793
177 4,407,794
180 4,407,795
4,407,796
246 4,407,797
4,407,798
4,407,799
247 4,407,800
250 4,407,801
253 4,407,802
258 4,407,803
260 4,407,804
4,407,805
263 4,407,806
4,407,807
4,407,808
267 4,407,809
270 4,407,810
272 4,407,811
273 P 4,407,813
273 R 4,407,812
4,407,814
274 4,407,815
275 4,407,816
4,407,817
289 4,407,818
304 4,407,819
4,407,820
312 4,407,821
315 4,407,822
317 4,407,823
329 4,407,824
336 4,407,825

CLASS 425

145 4,407,649
174.4 4,407,646
208 4,407,647
457 4,407,648

CLASS 426

7 4,407,826
19 4,407,827
56 4,407,828
59 4,407,829
272 4,407,830
281 4,407,831
4,407,832
4,407,833
422 4,407,834
552 4,407,835
576 4,407,836
578 4,407,837
602 4,407,838
622 4,407,839
629 4,407,840
656 4,407,841

CLASS 427

1 4,407,842
2 4,407,843
3 4,407,844
13 4,407,845
35 4,407,846
4,407,847
36 4,407,848
37 4,407,849
38 4,407,850
39 4,407,851
41 4,407,852
44 4,407,853
49 4,407,854
54.1 4,407,855
4,407,856
74 4,407,857
86 4,407,858
89 4,407,859
98 4,407,860
130 4,407,861
144 4,407,862
213 4,407,863
216 4,407,864
217 4,407,865
221 4,407,866
365 4,407,867
376.2 4,407,868
443.1 4,407,869

CLASS 428

1 4,407,870
31 4,407,871
35 4,407,872
4,407,873
4,407,874
43 4,407,875
102 4,407,876
105 4,407,877
119 4,407,878
141 4,407,879
156 4,407,880
4,407,881
159 4,407,882
215 4,407,883
220 4,407,884
246 4,407,885
320.8 4,407,886
332 4,407,887
355 4,407,888
398 4,407,889
408 4,407,890
410 4,407,891
411 4,407,892
454 4,407,893
457 4,407,894
463 4,407,895
513 4,407,896
516 4,407,897
542.8 4,407,898
626 4,407,899
659 4,407,900
694 4,407,901

CLASS 429

15 4,407,902
23 4,407,903
26 4,407,904
42 4,407,905
4,407,906
4,407,907
45 4,407,908
50 4,407,909
57 4,407,910
94 4,407,911
104 4,407,912
137 4,407,913
174 4,407,914
217 4,407,915

CLASS 430

23 4,407,916
42 4,407,917
54 4,407,918
58 4,407,919
59 4,407,920
96 4,407,921
98 4,407,922
106.6 4,407,923
109 4,407,924
122 4,407,925
165 4,407,926
197 4,407,927
214 4,407,928
220 4,407,929
223 4,407,930
4,407,931
256 4,407,932
296 4,407,933
314 4,407,934
487 4,407,935
505 4,407,936
527 4,407,937
533 4,407,938
536 4,407,939
546 4,407,940
566 4,407,941

CLASS 432

11 4,407,651
58 4,407,652
215 4,407,653
242 4,407,650
258 4,407,654

CLASS 434

219 4,407,655

CLASS 435

6 4,407,942
7 4,407,943
18 4,407,944
68 4,407,945
75 4,407,946
85 4,407,947
91 4,407,948
101 4,407,949
104 4,407,950
4,407,951
108 4,407,952
145 4,407,953
161 4,407,954
4,407,955
172 4,407,956
178 4,407,957
287 4,407,958
288 4,407,959

CLASS 436

1 4,407,960
67 4,407,961
74 4,407,962
147 4,407,963
518 4,407,964
547 4,407,965

CLASS 445

10 4,407,656
17 4,407,657
25 4,407,658

CLASS 455

3 4,408,345
175 4,408,346
179 4,408,347
180 4,408,348
182 4,408,349
206 4,408,350
260 4,408,351
295 4,408,352
608 4,408,353
610 4,408,354

CLASS 501

13 4,407,966
81 4,407,967
84 Re.31,405
87 4,407,968
95 4,407,969
97 4,407,970
4,407,971
99 4,407,972

CLASS 502

9 4,407,734
10 4,407,735
25 4,407,725
60 4,407,728
115 4,407,727
161 4,407,726
174 4,407,733
200 4,407,729
203 4,407,731
208 4,407,730
4,407,732
230 4,407,736
243 4,407,737
334 4,407,738

CLASS 518

703 4,407,973
711 4,407,974

CLASS 521

27 4,407,975
36 4,407,976
56 4,407,977
4,407,978
59 4,407,979
99 4,407,980
107 4,407,981
122 4,407,982
128 4,407,983

CLASS 523

115 4,407,984
161 4,407,985
200 4,407,986
322 4,407,987
334 4,407,988
340 4,407,989
402 B1 3,449,280

CLASS 524

38 4,407,990
83 4,407,991
94 4,407,992
96 4,407,993
107 4,407,994
108 4,407,995
167 4,407,996
202 4,407,997
229 4,407,998
276 4,407,999
315 4,408,000
357 4,408,002
364 4,408,003
376 4,408,001
398 4,408,004
421 4,408,005
534 4,408,006
546 4,408,007
591 4,408,008
858 4,408,009

CLASS 525

73 4,408,010
100 4,408,011
128 4,408,026
161 4,408,012
187 4,408,013
218 4,408,014
227 4,408,015
277 4,408,016
288 4,408,017
300 4,408,018
323 4,408,019
415 4,408,020
440 4,408,021
444 4,408,022
454 4,408,023

CLASS 526

67 4,408,024
119 4,408,025
185 4,408,027
200 4,408,028
279 Re.31,406
321 4,408,029

CLASS 528

10 4,408,030
26 4,408,031
48 4,408,032
54 4,408,034
72 4,408,033
183 4,408,035
335 4,408,036
346 4,408,037
485 4,408,038
500 4,408,039
4,408,040

CLASS 536

4.1 4,408,041

CLASS 544

22 4,408,042
87 4,408,043
182 4,408,044
196 4,408,045
201 4,408,046
250 4,408,047
313 4,408,048
360 4,408,049

CLASS 546

17 4,408,050
19 4,408,051
22 4,408,052
226 4,408,053
4,408,054

CLASS 548

125 4,408,055
416 4,408,056
562 4,408,057

CLASS 549

33 4,408,058
214 4,408,059
332 4,408,060
464 4,408,061
517 4,408,062
518 4,408,063

CLASS 556

427 4,408,064

CLASS 560

67 4,408,065
124 4,408,066
215 4,408,067
226 4,408,068
232 4,408,069

CLASS 562

470 4,408,070
536 4,408,071

CLASS 564

185 4,408,072
204 4,408,073
361 4,408,074
474 4,408,075

CLASS 568

325 4,408,076
441 4,408,077
454 4,408,078
463 4,408,079
484 4,408,080
571 4,408,081
4,408,082
576 4,408,083
601 4,408,084
697 4,408,085
719 4,408,086
724 4,408,087

CLASS 604

6 4,407,660
155 4,407,659
385 4,407,284

CLASSIFICATION OF DESIGNS

D2—	24	270,774		37	270,790	D8—	18	270,807		114	270,823		144	270,838	D22—	27	270,854
		270,775		56	270,791		60	270,808		180	270,824	D16—	1	270,839		31	270,855
	27	270,776		69	270,792		68	270,809		192	270,825		6	270,840	D23—	2	270,856
	270	270,777		87	270,794		317	270,810		211	270,826	D17—	20	270,841		4	270,857
	310	270,778		90	270,795	D9—	305	270,811		302	270,827			270,842		94	270,858
	314	270,779		113	270,796		318	270,812		318	270,828	D19—	51	270,843	D24—	31	270,859
	319	270,780		125	270,797		388	270,813		323	270,829		64	270,844	D25—	16	270,860
	353	270,781		189	270,798			270,814	D13—	32	270,830		85	270,845	D28—	77	270,861
	431	270,782		192	270,799	D10—	50	270,815		40	270,831	D21—	34	270,846			270,862
D3—	28	270,783		201	270,800		70	270,816	D14—	1	270,832		71	270,847		91.1	270,863
	37	270,784		209	270,801		78	270,817		11	270,833		74	270,848			270,864
	40	270,785	D7—	17	270,802		84	270,818		53	270,836		122	270,849	D32—	21	270,865
	75	270,786		39	270,803			270,819		57	270,834		165	270,850	D34—	22	270,866
D6—	23	270,787		77	270,804		109	270,820		64	270,835		204	270,851		44	270,867
		270,788		363	270,805	D11—	87	270,821	D15—	70	270,793		217	270,852	D99—	35	270,868
	28	270,789		406	270,806	D12—	102	270,822		139	270,837		218	270,853			

CLASSIFICATION OF PLANTS

P.—	7	5,113	10	5,114	5,115	30	5,116		

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

423—	242	T103,501							

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,407,658	4,407,304		4,408,261		4,408,158		4,407,121		4,407,538
	4,408,271	4,407,319		4,408,273		4,408,177		4,407,141		4,407,563
5 :	4,408,116	4,407,325		4,408,309		4,408,200		4,407,241		4,407,673
6 :	4,407,023	4,407,326		4,408,317		4,408,221		4,407,256		4,407,677
	4,407,030	4,407,327		4,408,334		4,408,246		4,407,356		4,407,712
	4,407,189	4,407,366		4,408,339	13 :	4,407,047		4,407,406		4,407,734
	4,407,194	4,407,369	08 :	4,407,266		4,407,237		4,407,419		4,408,124
	4,407,231	4,407,434		4,407,290		4,229,211		4,407,422		4,408,169
	4,407,239	4,407,447		4,407,781	17 :	4,407,051		4,407,425	25 :	4,407,067
	4,407,293	4,407,455		4,407,818		4,407,092		4,407,498		4,407,075
	4,407,329	4,407,456		4,408,231		4,407,109		4,407,643		4,407,099
	4,407,440	4,407,466		4,408,243		4,407,159		4,407,750		4,407,146
	4,407,451	4,407,472	09 :	4,407,069		4,407,284		4,407,763		4,407,223
	4,407,467	4,407,476		4,407,161		4,407,285		4,407,764		4,407,265
	4,407,628	4,407,477		4,407,286		4,407,300		4,407,820		4,407,277
	4,407,637	4,407,484		4,407,313		4,407,312		4,408,000		4,407,282
	4,407,686	4,407,519		4,407,314		4,407,317		4,408,032		4,407,411
	4,407,708	4,407,533		4,407,432		4,407,328		4,408,257		4,407,428
	4,407,956	4,407,536		4,407,693		4,407,348		4,408,277		4,407,443
	4,408,166	4,407,540		4,407,765		4,407,372		4,408,299		4,407,578
	4,408,180	4,407,548		4,407,811		4,407,392		4,408,315		4,407,579
	4,408,187	4,407,561		4,407,836		4,407,394	19 :	4,407,081		4,407,602
	4,408,216	4,407,566		4,407,850		4,407,410		4,407,113		4,407,666
	4,408,252	4,407,572		4,407,953		4,407,423		4,407,190		4,407,674
8 :	4,408,101	4,407,653		4,408,072		4,407,482		4,407,232		4,407,744
	4,408,136	4,407,671		4,408,106		4,407,506		4,407,252		4,407,856
9 :	4,407,085	4,407,685		4,408,174		4,407,512		4,407,270		4,407,909
	4,407,236	4,407,694		4,408,186		4,407,517		4,407,371		4,407,921
	4,407,269	4,407,806		4,408,263		4,407,521		4,407,496		4,407,943
	4,407,333	4,407,807	10 :	4,407,108		4,407,542		4,407,551		4,407,960
	4,407,424	4,407,817		4,407,119		4,407,556		4,407,648		4,407,988
	4,407,429	4,407,840		4,407,804		4,407,598		4,407,719		4,407,996
	4,407,835	4,407,859		4,407,805		4,407,601		4,408,088		4,408,133
	4,407,906	4,407,865		4,407,994		4,407,623		4,408,199		4,408,141
01 :	4,407,510	4,407,869		4,408,019		4,407,660		4,408,204		4,408,198
	4,407,893	4,407,948		4,408,038		4,407,731		4,408,352		4,408,214
04 :	4,407,123	4,407,964	11 :	4,407,129		4,407,736	20 :	4,407,154	26 :	4,407,024
	4,407,261	4,407,980		4,407,165		4,407,746		4,407,553		4,407,070
	4,407,610	4,407,985	12 :	4,407,322		4,407,803		4,407,616		4,407,082
	4,407,828	4,408,005		4,407,343		4,407,897	21 :	4,407,305		4,407,101
06 :	Re.31,400	4,408,076		4,407,464		4,407,925		4,407,714		4,407,104
	4,407,027	4,408,103		4,407,549		4,408,021		4,408,030		4,407,122
	4,407,041	4,408,112		4,407,608		4,408,157	22 :	4,407,214		4,407,133
	4,407,103	4,408,122		4,407,632		4,408,178		4,407,324		4,407,155
	4,407,120	4,408,127		4,407,725		4,408,223		4,407,514		4,407,162
	4,407,124	4,408,134		4,407,767		4,408,225		4,408,102		4,407,191
	4,407,150	4,408,147		4,407,771		4,408,262	23 :	4,407,130		4,407,192
	4,407,169	4,408,161		4,407,842		4,408,269		4,407,181		4,407,260
	4,407,173	4,408,162		4,407,862		4,408,281		4,407,229		4,407,323
	4,407,185	4,408,195		4,407,911		4,408,297		4,408,218		4,407,385
	4,407,218	4,408,196		4,407,913		4,408,323	24 :	4,407,032		4,407,387
	4,407,274	4,408,227		4,408,048	18 :	4,407,089		4,407,053		4,407,404
	4,407,298	4,408,228		4,408,065		4,407,093		4,407,475		4,407,405

4,407,418
4,407,469
4,407,445
4,407,705
4,407,884
4,407,707
4,407,478
4,407,474
4,407,504
4,407,772
4,407,891
4,407,768
4,407,492
4,407,562
4,407,507
4,407,838
4,407,979
4,407,777
4,407,511
4,407,597
4,407,522
4,407,879
4,408,002
4,407,791
4,407,539
4,407,600
4,407,523
4,407,885
4,408,006
4,407,792
4,407,550
4,407,647
4,407,565
4,407,972
4,408,008
4,407,961
4,407,554
4,407,695
4,407,571
4,408,004
4,408,010
4,407,973
4,407,720
4,407,710
4,407,576
4,408,013
4,408,018
4,407,991
4,407,847
4,407,726
4,407,581
4,408,016
4,408,047
4,407,995
4,407,902
4,407,743
4,407,585
4,408,020
4,408,059
4,408,017
4,408,001
4,407,760
4,407,596
4,408,058
4,408,063
4,408,025
4,408,049
4,407,779
4,407,607
4,408,071
4,408,149
4,408,029
4,408,084
4,407,783
4,407,663
4,408,131
4,408,156
4,408,033
4,408,172
4,407,785
4,407,741
4,408,137
4,408,183
4,408,043
4,408,343
4,407,788
4,407,755
4,408,140
4,408,203
4,408,062
27 : 4,407,068
4,407,789
4,407,758
4,408,152
4,408,220
4,408,081
4,407,096
4,407,795
4,407,759
4,408,154
4,408,260
4,408,082
4,407,138
4,407,802
4,407,782
4,408,270
4,408,298
4,408,092
4,407,201
4,407,819
4,407,796
4,408,283
4,408,329
4,408,153
4,407,202
4,407,844
4,407,920
4,408,285
4,408,353
4,408,160
4,407,278
4,407,855
4,407,922
4,408,295
43 : 4,407,158
4,408,208
4,407,296
4,407,933
4,407,928
40 : 4,407,065
44 : 4,407,215
4,408,303
4,407,386
4,407,934
4,407,930
4,407,083
4,407,268
4,408,305
4,407,408
4,407,949
4,407,931
4,407,318
4,407,334
4,408,306
4,407,409
4,407,967
4,407,946
4,407,378
4,407,403
4,408,307
4,407,416
4,407,992
4,407,955
4,407,389
4,407,675
4,408,344
4,407,426
4,407,998
4,407,958
4,407,950
4,407,711
4,408,347
4,407,427
4,408,009
4,407,966
4,407,951
45 : 4,407,107
49 : 4,407,045
4,407,433
4,408,011
4,407,968
4,408,037
4,407,216
4,407,280
4,407,435
4,408,014
4,407,981
4,408,039
4,407,332
4,407,295
4,407,559
4,408,022
4,408,040
41 : 4,407,038
4,407,344
4,407,912
4,407,790
4,408,023
4,408,057
4,407,063
4,407,473
4,408,125
4,407,932
4,408,050
4,408,087
4,407,097
4,407,969
4,408,191
4,408,175
4,408,053
4,408,089
4,407,147
4,408,155
51 : Re.31,407
3,449,280
4,408,054
4,408,129
4,407,275
4,408,258
4,407,164
28 : 4,407,126
4,408,060
4,408,167
4,407,453
46 : 4,407,315
4,407,210
4,407,187
4,408,069
4,408,202
4,407,495
47 : 4,407,039
4,407,306
29 : 4,407,021
4,408,090
4,408,215
4,408,123
4,407,074
4,407,340
4,407,442
4,408,093
4,408,247
4,408,308
4,407,143
4,407,360
4,407,454
4,408,117
4,408,251
42 : 4,407,026
4,407,220
4,407,468
4,407,480
4,408,130
4,408,254
4,407,037
4,407,271
4,407,589
4,407,493
4,408,146
4,408,255
4,407,066
4,407,749
4,407,716
4,407,617
4,408,188
4,408,268
4,407,086
48 : 4,407,028
4,407,800
4,407,729
4,408,210
4,408,291
4,407,110
4,407,055
4,407,832
4,407,775
4,408,213
4,408,294
4,407,152
4,407,111
4,407,860
4,408,150
4,408,229
4,408,336
4,407,177
4,407,136
4,407,957
4,408,194
4,408,240
4,408,338
4,407,196
4,407,157
4,408,035
30 : 4,407,582
4,408,245
4,270,596
4,407,234
4,407,171
4,408,100
4,407,700
4,408,248
37 : 4,407,072
4,407,238
4,407,183
4,408,151
32 : 4,407,134
4,408,267
4,407,486
4,407,288
4,407,193
4,408,284
4,407,431
4,408,272
4,407,889
4,407,352
4,407,203
4,408,322
4,407,520
4,408,293
4,407,954
4,407,407
4,407,276
52 : 4,407,035
4,407,910
4,408,296
4,408,109
4,407,470
4,407,320
53 : 4,407,080
33 : 4,407,390
4,408,320
4,408,121
4,407,502
4,407,361
4,407,182
4,407,508
4,408,331
39 : 4,407,042
4,407,524
4,407,362
4,407,283
4,407,518
4,408,348
4,407,091
4,407,531
4,407,363
4,407,436
4,407,595
4,408,350
4,407,094
4,407,543
4,407,364
4,407,619
4,407,651
35 : 4,407,665
4,407,131
4,407,555
4,407,365
4,407,878
4,407,871
36 : Re.31,403
4,407,149
4,407,560
4,407,368
4,407,945
34 : Re.31,406
Re.31,405
4,407,309
4,407,609
4,407,373
4,408,144
4,407,036
4,407,040
4,407,421
4,407,625
4,407,377
4,408,206
4,407,046
4,407,058
4,407,494
4,407,672
4,407,381
4,408,282
4,407,054
4,407,084
4,407,505
4,407,679
4,407,499
54 : 4,407,497
4,407,061
4,407,102
4,407,526
4,407,697
4,407,516
4,407,983
4,407,195
4,407,135
4,407,532
4,407,727
4,407,527
55 : 4,407,079
4,407,199
4,407,137
4,407,537
4,407,730
4,407,528
4,407,224
4,407,205
4,407,635
4,407,732
4,407,529
4,407,400
4,407,233
4,407,212
4,407,650
4,407,738
4,407,530
4,407,417
4,407,294
4,407,257
4,407,654
4,407,766
4,407,613
4,407,717
4,407,299
4,407,264
4,407,661
4,407,831
4,407,629
4,407,873
4,407,301
4,407,297
4,407,669
4,407,833
4,407,662
4,407,874
4,407,367
4,407,310
4,407,684
4,407,845
4,407,664
4,407,883
4,407,395
4,407,342
4,407,687
4,407,849
4,407,696
4,408,264
4,407,459
4,407,393
4,407,692
4,407,857
4,407,706

DESIGN PATENTS

01 : 270,860
270,848
15 : 270,798
270,826
270,834
270,868
06 : 270,776
270,850
17 : 270,814
27 : 270,782
36 : 270,786
40 : 270,785
270,777
270,859
270,835
270,815
270,787
42 : 270,803
270,779
08 : 270,781
19 : 270,794
270,842
270,788
270,845
270,796
270,816
270,807
28 : 270,841
270,810
44 : 270,789
270,800
270,818
270,822
29 : 270,806
39 : 270,802
270,821
270,804
270,819
23 : 270,827
32 : 270,820
270,817
48 : 270,828
270,813
12 : 270,784
24 : 270,847
34 : 270,774
270,823
270,866
270,833
270,839
25 : 270,852
270,775
270,856
49 : 270,855
270,838
13 : 270,808
270,867
270,801
270,865
55 : 270,799
270,844
270,854
26 : 270,824

PLANT PATENTS

06 : 5,114
29 : 5,116
48 : 5,113
5,115

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

47 : T103,501

U.S. GOVERNMENT PRINTING OFFICE : O—1983

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

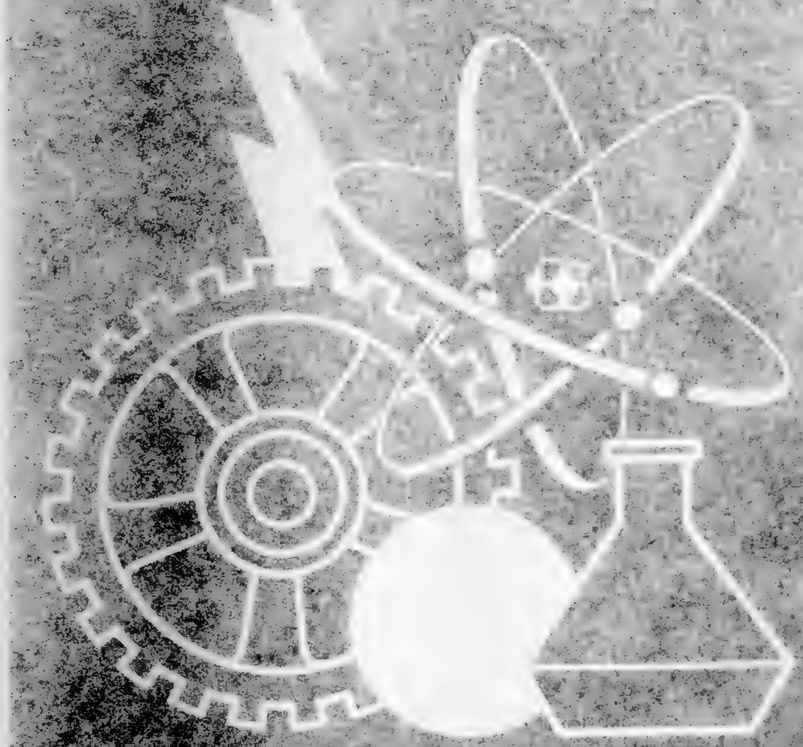
U.S. DEPARTMENT OF COMMERCE
Maurice H. Stans, Secretary
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, Commissioner

OFFICIAL GAZETTE

OF THE
UNITED STATES PATENT [illegible]

PATENTS

October 11, 1983



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

October 11, 1983 Volume 1035 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1035 OG 10
Reissue Applications Filed	1035 OG 10
Request for Reexamination Filed	1035 OG 10
Patent Terms Extended Under 35 U.S.C. 155	1035 OG 11
Patent Certificates of Correction	1035 OG 12
Disclaimers	1035 OG 12
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1035 OG 13
Condition of Patent Applications	1035 OG 14
Reexaminations	459
Reissue Patents Granted (31,408)	461
Plant Patents Granted (5,117)	465
Patents Granted	
General and Mechanical (4,408,355)	467
Chemical (4,408,995)	683
Electrical (4,409,422)	799
Design Patents Granted (270,869)	893
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees	PI 50
Classification of	
Patents (Including Reissues and Reexaminations)	PI 55
Designs and Plants	PI 58
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 59
Designs and Plants	PI 60
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,642,930, Re. S.N. 528,860, Filed Sept. 2, 1983, Cl. 585/608, PROCESS FOR THE MANUFACTURE OF ISOPRENE FROM ISOAMYLENSES AND METHYL BUTANOLS AND CATALYSTS THEREFOR, Robert K. Grosselli, et al., Owner of Record: *Standard Oil Co., Cleveland, Ohio,* Attorney or Agent: Ford F. Farabow, Jr., Ex. Gp.: 110

3,897,596, Re. S.N. 515,217, Filed July 20, 1983, Cl. 2/003R, PROTECTIVE HELMET, Jackson A. Aileo, et al., Owner of Record: *Gertex Corp., Carbondale, Pa.,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 353

3,915,693, Re. S.N. 517,670, Filed July 26, 1983, Cl. 75/53, PROCESS, STRUCTURE AND COMPOSITION RELATING TO MASTER ALLOYS IN WIRE OR ROD FORM, Robert T. C. Rasmussen, Owner of Record: *Inventor,* Attorney or Agent: Paul N. Kokulis, et al., Ex. Gp.: 111

4,094,801, Re. S.N. 484,007, Filed Apr. 18, 1983, Cl. 252/33, MAGNESIUM-CONTAINING COMPLEXES, METHOD FOR THEIR PREPARATION, AND COMPOSITIONS CONTAINING THE SAME, John W. Forsberg, Owner of Record: *Lubrizol Corp., Wickliffe, Ohio,* Attorney or Agent: Armand P. Boisselle, Ex. Gp.: 116

4,260,106, Re. S.N. 489,674, Filed Apr. 28, 1983, Cl. 239/11, FLUIDIC OSCILLATOR WITH RESONANT INERTANCE AND DYNAMIC COMPLIANCE CIRCUIT, Peter Bauer, Owner of Record: *Inventor,* Attorney or Agent: B. Franklin Griffin, Jr., et al., Ex. Gp.: 313

4,265,766, Re. S.N. 466,206, Filed Feb. 14, 1983, Cl. 210/455, CHICKEN MARINADE DRAINING SYSTEM, Leonard S. Crossley, Owner of Record: *Inventor,* Attorney or Agent: None, Ex. Gp.: 176

4,276,729, Re. S.N. 510,980, Filed July 5, 1983, Cl. 52/209, FLASHING CONSTRUCTION FOR A CURTAIN WALL, Yoshinobu Shiga, et al., Owner of Record: *Nippon Light Metal Co., Ltd., Tokyo, Japan,* Attorney or Agent: J. Harold Nissen, Ex. Gp.: 354

4,288,571, Re. S.N. 529,737, Filed Sept. 8, 1983, Cl. 525/170, POLYESTER COMPOSITIONS, Lowell R. Comstock, et al., Owner of Record: *Union Carbide Corp., New York, N.Y.,* Attorney or Agent: Joseph M. Fitzpatrick, Ex. Gp.: 142

4,310,584, Re. S.N. 521,127, Filed Aug. 8, 1983, Cl. 428/212, MULTILAYER LIGHT-REFLECTING FILM, Scott A. Cooper, et al., Owner of Record: *Mearl Corp., Ossining, N.Y.,* Attorney or Agent: Sidney G. Faber, Ex. Gp.: 164

4,321,330, Re. S.N. 514,525, Filed July 18, 1983, Cl. 435/301, TISSUE CULTURE DEVICE, Fraser L. Baker, et al., Owner of Record: *Inventors,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 172

4,323,312, Re. S.N. 492,832, Filed May 9, 1983, Cl. 366/102, FLUIDIZED BED APPARATUS, Werner Glatt, Owner of Record: *Inventor,* Attorney or Agent: Martin Fleit, Ex. Gp.: 242

4,357,382, Re. S.N. 518,452, Filed July 29, 1983, Cl. 428/212, COATED CEMENTED CARBIDE BODIES, John B. Lambert, et al., Owner of Record: *Fansteel, Inc., North Chicago, Ill.,* Attorney or Agent: Arthur Raisch, et al., Ex. Gp.: 164

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,750,257, Reexam. No. 90/000,438, Requested: Aug. 29, 1983, Cl. 29/813, SYSTEMATIZED APPARATUS FOR DRIVING FASTENERS, Imre Berecz, Owner of Record: *Kaynar Manufacturing Co., Inc., Fullerton, Calif.,* Attorney or Agent: Maurice J. Beck, Ex. Gp.: 326, Requester: Frank A. Klaus, Brea, Calif.

4,265,533, Reexam. No. 90/000,444, Requested: Sept. 15, 1983, Cl. 355/110, APPARATUS FOR THE PRODUCTION OF DUPLICATE AND OTHER FILMS FROM ORIGINAL FILMS, Robert W. Gasse, Owner of Record: *Inventor,* Attorney or Agent: John Remon Wenzel, Ex. Gp.: 211, Requester: John Remon Wenzel, Arlington, Va.

Patent Terms Extended Under 35 U.S.C. 155

Certificates extending the terms with respect to the following patents were issued under the provisions of 35 U.S.C. 155 on Sept. 16, 1983.

Patent No. 3,492,131, granted Jan. 27, 1970, to James M. Schlatter, owner of record G. D. Searle & Co. Term extended 5 years, 10 months and 17 days.

Patent No. 3,780,189, granted Dec. 18, 1973, to Don Scott, owner of record G. D. Searle & Co. Term extended 5 years 10 months and 17 days.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 11, 1983

D. 265,431	4,366,838	4,386,259	4,392,880
4,176,294	4,367,387	4,386,297	4,393,363
4,230,839	4,368,352	4,386,358	4,393,444
4,247,987	4,370,615	4,386,404	4,393,540
4,271,481	4,372,167	4,387,622	4,393,563
4,293,214	4,374,832	4,388,372	4,394,286
4,300,439	4,375,369	4,388,428	4,394,374
4,302,785	4,376,251	4,388,710	4,394,401
4,330,327	4,377,407	4,389,199	4,395,014
4,336,245	4,377,576	4,389,322	4,395,081
4,339,811	4,377,602	4,389,330	4,395,100
4,339,889	4,378,118	4,389,373	4,395,101
4,343,882	4,378,512	4,389,480	4,395,392
4,347,235	4,378,657	4,390,284	4,395,606
4,350,600	4,380,018	4,390,483	4,396,737
4,350,614	4,380,180	4,390,632	4,396,789
4,351,926	4,380,237	4,390,714	4,396,958
4,355,089	4,380,253	4,390,778	4,397,183
4,355,441	4,380,728	4,390,889	4,397,509
4,355,848	4,381,383	4,391,115	4,397,658
4,356,975	4,382,019	4,391,194	4,397,793
4,358,580	4,383,246	4,391,638	4,398,155
4,358,714	4,383,610	4,391,855	4,399,433
4,361,045	4,384,530	4,392,111	
4,361,875	4,384,887	4,392,207	
4,366,579	4,384,959	4,392,461	

Disclaimers

3,291,947.—*Roswell C. van Sickle,* Wilkinsburg, Pa. INTERRUPTING STRUCTURES FOR COMPRESSED-GAS CIRCUIT INTERRUPTERS HAVING DOUBLE-BREAK HOLLOW ROTATIVE MOVING CONTACT-ARM ASSEMBLY. Patent dated Dec. 13, 1966. Disclaimer filed Mar. 26, 1979, by the assignee, *Westinghouse Electric Corp.*

Hereby enters this disclaimer to claims 8, 11 and 12 of said patent.

3,301,159.—*Ira B. Current,* Binghamton, N.Y. PROCESSING DEVICE FOR MOTION PICTURE FILMS. Patent dated Jan 31, 1967. Disclaimer filed Sept. 30, 1982, by the assignee, *Eastman Kodak Co.*

Hereby enters this disclaimer to all claims of said patent.

3,486,495.—*Holless W. Allen,* Kansas City, Mo. ARCHERY BOW WITH DRAW FORCE MULTIPLYING ATTACHMENTS. Patent dated Dec. 30, 1969 Disclaimer filed June 3, 1983, by the assignee, *Allen Archery, Inc.*

Hereby enters this disclaimer to claims 3, 4, 5, 6, 12 and 13 of said patent.

3,593,209.—*Norman C. Gittinger,* Schenectady, N.Y. HYBRID FILTER FOR TWO-WAY TRANSMISSION OVER A SINGLE LINE. Patent dated July 13, 1971. Disclaimer filed May 11, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,613,797.—*Carroll J. Whitfield* and *Jack C. Whitesides,* Columbus, Ga. PEANUT DIGGER, SHAKER AND INVERTER. Patent dated Oct. 19, 1971. Disclaimer filed Dec. 5, 1980, by the assignee, *Kelley Manufacturing Co.*

Hereby enters this disclaimer to claims 3, 4, 5, 6, 8, 9 and 10 of said patent.

3,802,607.—*Keith C. Mead,* Midland, Mich. CHILD RESISTANT OVERCAP FOR AEROSOL OR LIKE CONTAINERS. Patent dated Apr. 9, 1974. Disclaimer filed June 4, 1979, by the assignee, *The Dow Chemical Co.*

Hereby enters this disclaimer to claim 3 of said patent.

4,003,865.—*Milton Nowak,* South Orange and *William Singer,* Teaneck, N.J. ENZYME INHIBITORS, USES AND COMPOSITIONS CONTAINING SAME. Patent dated Jan. 18, 1977. Disclaimer filed July 6, 1982, by the assignee, *Troy Chemical Corp., Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16 and 17 of said patent.

4,189,718.—*William H. Carson; Gerald D. Smith* and *Frank R. Owens,* Indianapolis, Ind. ELECTRONIC SIREN. Patent dated Feb. 19, 1980. Disclaimer filed July 18, 1983, by the assignee, *Carson Manufacturing Co., Inc.*

Hereby enters this disclaimer to claims 21 to 29 of said patent.

4,340,538.—*Kenneth P. Shepard,* Portage, Mich. PROCESS FOR PRODUCING 6 ALPHA-FLUORO-DELTA 1, 4-3-KETO STEROIDS. Patent dated July 20, 1982. Disclaimer filed June 8, 1983, by the assignee, *The Upjohn Co.*

Hereby enters this disclaimer to claim 29 of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

OCTOBER 11, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,266,236 (127th)

TRANSISTOR HAVING EMITTER RESISTORS FOR STABILIZATION AT HIGH POWER OPERATION

Kazuyoshi Ueda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Reexamination Request No. 90/000,285, Nov. 8, 1982.

Reexamination Certificate for Patent No. 4,266,236, issued May 5, 1981, Ser. No. 32,821, Apr. 24, 1979.

Claims priority, application Japan, Apr. 24, 1978, 53-48950

Int. Cl.³ H01L *29/72*

U.S. Cl. 357—34

AS A RESULT OF REEXAMINATION, IT AS BEEN DETERMINED THAT:

Claims **1-5** having been finally determined to be unpatentable, are cancelled.

[**1**. A semiconductor device comprising a collector region of one conductivity type, a base region of the other conductivity type making contact with said collector region, an emitter region of said one conductivity type making contact with said base region and separated from said collector region, an additional region of said other conductivity type having its pheriphery surrounded by said emitter region, an emitter electrode electrically connected to said additional region, and at least one additional electrode separated from said emitter electrode and electrically short-circuiting said emitter region and said additional region.]

B1 4,287,216 (128th)

CHOCOLATE CONFECTION CONTAINING CARBONATED HARD CANDY CRYSTALS DISPERSED THEREIN

Santi F. Mangano, Perugia, Italy, assignor to I.B.P. Industrie Buitoni Perugina S.p.A., Perugia, Italy

Reexamination Request No. 90/000,183, Apr. 1, 1982.

Reexamination Certificate for Patent No. 4,287,216, issued Sep. 1, 1981, Ser. No. 108,703, Dec. 31, 1979.

Claims priority, application Italy, Nov. 16, 1979, 50844 A/79

Int. Cl.³ A23G *3/00*

U.S. Cl. 426—96

AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

Claims **1-7** having been finally determined to be unpatentable, are cancelled.

[**1**. A confectionery product, which comprises at least two components, the first component being chocolate, and the second component being a certain number of popping candied crystals, said chocolate and said popping candied crystals having a moisture content between about 0.1 and about 5.0%, said crystals being sugar crystals such as saccharose, glucose, lactose, maltose, and fructose, and containing a gas such as carbon dioxide, hydrogen, air or inert gas, at a pressure of about 1 to about 80 atmospheres and in a quantity between about 0.1 and about 1% in weight, the ratio between the first and second component being between 10:1 and 1:10 by weight.]

B1 4,215,431 (129th)

WIRELESS TRANSMISSION SYSTEM

John Nady, 1250 Rose St., Berkeley, Calif. 94702

Reexamination Request No. 90/000,228, Jul. 20, 1982.

Reexamination Certificate for Patent No. 4,215,431, issued Jul. 29, 1980, Ser. No. 950,574, Oct. 12, 1978.

Continuation-in-part of Ser. No. 842,152, Oct. 14. 1977, abandoned.

Int. Cl.³ H04B *1/62*

U.S. Cl. 455—43

AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

Claims **1-8** having been finally determined to be unpatentable, are cancelled.

[**1**. A wireless, portable, self-contained transmission system for use with at least one of microphone transducers and musical instrument transducers receiving an audio input and providing a transduced audio signal, said transmission system comprising a portable, battery powered, self-contained transmitter means for transmitting compressed signals to a remote receiver means, said transmitter means including noise reduction compression means responsive only to the transduced audio signal for compressing the transduced audio signal and providing a compressed output signal to a transmission means for transmission to said remote receiver means, said remote receiver means receiving the transmitted compressed signals and supplying a compressed transduced audio signal to noise reduction expansion means corresponding to said noise reduction compression means of said transmitter means, said noise reduction expansion means expanding the transmitted compressed signals for providing an audio output signal with an improved signal to noise ratio to a utilization means whereby substantially noise-free transmission is effected, said noise reduction compression means including amplifier means responsive to the transduced audio signal, variable gain means connected in a feedback path of said amplifier means, said variable gain means having the gain thereof controlled by average value detector means, wherein said average value detector means being driven by an output from a preemphasis means receiving an output of said amplifier means.]

REISSUES

OCTOBER 11, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

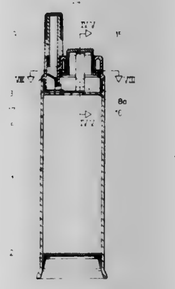
Re. 31,408
DISPENSER FOR PASTE-LIKE PRODUCTS WITH A MANUALLY ACTUATABLE PISTON

Joachim Czech, Jahnstrasse 19, D-8405 Donaustauf, and Hans D. Sieghart, Moosburg, both of Fed. Rep. of Germany, assignors to Joachim Czech, Donaustauf, Fed. Rep. of Germany

Original No. 4,301,948, dated Nov. 24, 1981, Ser. No. 102,893, Dec. 12, 1979. Application for reissue Feb. 1, 1982, Ser. No. 344,695

Int. Cl.[3] **B67D** *5/42*

U.S. Cl. 222—341 **16 Claims**



1. A dispenser for paste-like products comprising a container having opposite ends which are spaced apart in a longitudinal direction and one of which is substantially closed by a wall wherein there is a hole, a head member on said one end of the container having a portion that is manually inwardly displaceable against a bias, said head member cooperating with said wall to define a pump chamber into which product can flow from the container through said hole and which has an outlet spaced from said hole, a slidable piston sealingly engaging the inner surface of the container to close its other end, and a pair of check valve elements, one arranged to prevent flow of product through said hole from the pump chamber into the container and the other arranged to prevent inward flow through said outlet towards the pump chamber, said dispenser being characterized by:

A. said outlet being defined by a portion of said head member that is formed as a duct which is in laterally spaced relation to said hole and extends away from said wall in said longitudinal direction; and

B. said dispenser further comprising an insert member of resilient material confined in said head member and having

(1) a first flap portion which provides said one check valve element and which normally flatwise overlies said wall to close said hole therein but is flatwise flexible away from said wall,

(2) a second flap portion providing said other check valve element, said second flap portion being spaced from said wall and normally extending across said duct to prevent inward flow therethrough but being resiliently flatwise flexible away from said wall, and

(3) a medial portion to which said flap portions have flexing connections for flatwise movement, said connections being substantially parallel to one another, spaced apart in said longitudinal direction, and substantially contained in a plane that extends in said longitudinal direction, and said medial portion being formed to define a channel between said connections which extends transversely through said plane and through which product flows in passing from said hole to the space between said wall and said second-flap portion.

Re. 31,409
UNIVERSAL RECESSED WALL CABINET

Norman B. Crist, 12927 NE. 151st, Kirkland, Wash. 98033

Original No. 4,076,350, dated Feb. 28, 1978, Ser. No. 644,431, Dec. 29, 1975. Application for reissue Feb. 25, 1980, Ser. No. 124,336

Int. Cl.[3] **A47B** *67/00;* **A47F** *5/08;* **G12B** *9/00*

U.S. Cl. 312—242 **2 Claims**



2. A device for installation in a wall structure recess comprising:

a case having a substantially rectangular cross section of substantially constant area from front to back of said case, the outer periphery of said case being formed by flat sidewalls including top, bottom and sides for blocking access between the interior of said case and the wall recess, and said case top, bottom and sides having forward coplanar edges defining a planar front opening;

a rectangular mounting frame separate from said case, including four border members arranged orthoginally, each border member being of angle cross section forming an outer flange portion and an inner flange portion, said inner flange portions of said four border members being parallel to and snugly encircling said case sidewalls and said outer flange portions of said four border members projecting outward from said border member inner flange portions transversely thereof and away from the case sidewalls respectively adjacent thereto for engagement with the outer face of the wall structure encircling the recess, said inner flange portion of each border member being substantially narrower than the width of said case sidewalls and projecting from the outer flange portion joined thereto away from said case frame opening for insertion into the wall structure recess, and said mounting frame and case being fitted for relative sliding for adjustment of said mounting frame toward and away from said case front opening between a position of said mounting frame in which its outer flange portions are closer than the width of said frame inner flange portions to the case front opening, a position of said mounting frame in which its outer flange portions are substantially even with the case front opening when the case front opening is substantially flush with the outer margin of the wall recess, and positions of said mounting frame in which its outer flange portions are farther than the width of said frame inner flange portions from the case front opening with said mounting frame border member outer flange portions in engagement with the outer margin of the wall structure recess when said inner flange portions project rearward into the wall structure recess and when said case is installed in such recess with its sidewalls extending inwardly beyond the inner edges of said mounting frame border member inner flange portions; and

headed securing pins of a length much greater than the combined thicknesses of said case sidewalls and said mounting frame border member inner flange portions for extending from inside said case through said case sidewalls and through said mounting frame border member inner flange portions and penetrating into the wall structure forming the recess for forcing walls of said case and adjacent inner flange portions of mounting frame border members conjointly to-

ward the wall structure within the wall structure recess whereby said case and said mounting frame are positively secured conjointly in the wall structure recess by said securing pins.

Re. 31,410

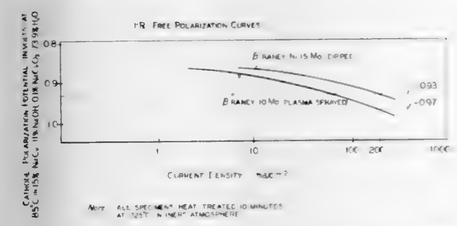
RANEY ALLOY COATED CATHODE FOR CHLOR-ALKALI CELLS

Thomas J. Gray, Guilford, Conn., assignor to Olin Corporation, New Haven, Conn.

Original No. 4,240,895, dated Dec. 23, 1980, Ser. No. 25,153, Mar. 29, 1979. Application for reissue Oct. 7, 1981, Ser. No. 309,358

Int. Cl.³ C25B *11/06*

U.S. Cl. 204—290 R **3 Claims**



1. An improved low overvoltage electrode for use as a hydrogen evolution cathode in an electrolytic cell, the electrode being of the type that has a Raney metal surface layer in electrical contact with a conductive metal core, wherein the improvement comprises: said Raney metal surface layer is predominantly derived from *an* adherent *predominantly beta phase* $Ni_xMo_{1-x}Al_3$ crystalline precursory surface layer structure, where x is no more than 0.95.

Re. 31,411

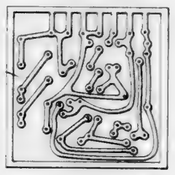
RADIATION CURABLE INKS

Donald A. Bolon, Scotia; Gary M. Lucas, Schenectady, both of N.Y., and Ralph L. Bartholomew, Painesville, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Original No. 3,968,056, dated Jul. 6, 1976, Ser. No. 509,822, Sep. 27, 1974. Application for reissue Jun. 7, 1978, Ser. No. 913,433

Int. Cl.³ H01C *13/00*

U.S. Cl. 252—501.1 **17 Claims**



16. A screen printable radiation curable ink convertible to an abrasion resistant conductive coating exhibiting a specific resistivity of less than 10 ohm-cm when cured into a non-tacky condition by ultraviolet radiation on a thermoplastic substrate, said ink consisting essentially of by weight

A. from about 10 to 60 percent of a radiation curable organic resin binder having a viscosity of from about 50 to 10,000 centipoises at 25° C., and

B. from about 90 to 40 percent of an electrically conductive filler consisting essentially of a particulated electrically conductive material selected from the group consisting of a particulated electrically conductive metal and a particulated electrically conductive metal containing material, including mixtures thereof, with no more than about 15% by weight of said particulated electrically conductive material having an aspect ratio of diameter to thickness of a value greater than 20.

Re. 31,412

PRESSURE-AND-HEAT-SENSITIVE COPYING PAPER

Yoshihiro Hatano, Oosaka, and Kenji Yamamoto, Yao, both of Japan, assignors to Yamamoto Kagaku Gosei Kabushiki Kaisha, Osaka, Japan

Original No. 3,920,510, dated Nov. 18, 1975, Ser. No. 384,304, Jul. 31, 1973. Application for reissue May 27, 1980, Ser. No. 153,660

Claims priority, application Japan, Aug. 1, 1972, 47-77081

Int. Cl.³ B32B *29/00;* **B41C** *1/06;* **B41M** *5/16, 5/18*

U.S. Cl. 428—537 **3 Claims**

20. A heat or pressure sensitive copying paper containing a fluoran compound as a color former, said color being developed in said heat or pressure sensitive copying paper through the application of heat or pressure, said fluoran compound being selected from the group consisting of 2-m-chloroanilino-6-diethylaminofluoran; 2-o-chloroanilino-6-diethylaminofluoran; 2-(3',5'-dichloroanilino)-6-diethylaminofluoran; 2-(3',4'-dichloroanilino)-6-diethylaminofluoran; 2-p-chloroanilino-3-methyl-6-diethylaminofluoran; 2-m-chloroanilino-3-methyl-6-diethylaminofluoran; 2-o-chloroanilino-3-methyl-6-diethylaminofluoran; 2-p-bromoanilino-3-methyl-6-diethylaminofluoran; 2-(4'-chloro-3'-methylanilino)-3-methyl-6-diethylaminofluoran; 2-(3',5'-dichloroanilino)-3-methyl-6-diethylaminofluoran; 2-(3',4'-dichloroanilino)-3-methyl-6-diethylaminofluoran; 2-(2',5'-dichloroanilino)-6-diethylaminofluoran; 2-(4'-chloro-N-methylanilino)-6-diethylaminofluoran; 2-(4'-chloro-N-ethylanilino)-6-diethylaminofluoran and 2-(4'-chloro-3'-methylanilino)3-methyl-6-dimethylaminofluoran.

Re. 31,413

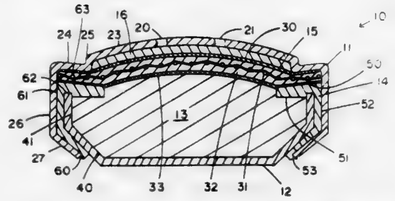
GAS DEPOLARIZED ELECTROCHEMICAL CELLS AND METHOD OF ASSEMBLY

Arthur M. Jaggard, Chilicothe, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Original No. 3,897,265, dated Jul. 29, 1975, Ser. No. 437,924, Jan. 30, 1974. Application for reissue Feb. 22, 1980, Ser. No. 123,600

Int. Cl.³ H01M *2/00*

U.S. Cl. 429—27 **58 Claims**



25. A sealed and sized gas depolarized electrochemical cell comprising:

a first metal housing having a closed end and an open end, said closed end having an opening therein to allow gas to enter said first metal housing, said closed end of said first metal housing forming a first external electrical contact for said gas depolarized electrochemical cell, said first metal housing having means for fastening said first metal housing to a second metal housing;

a second metal housing having a closed end and an open end, said second metal housing having a region therein for receiving an anode material, said closed end of said second metal housing forming a second external electrical contact for said gas depolarized electrochemical cell; said second metal housing having means for fastening to said first metal housing;

a cathode assembly including an electrically conductive current collecting member, said current collecting member forming electrical contact with said first metal housing; a hydrophobic layer on one side of said cathode assembly and a separator on the opposite side of said cathode assembly;

a single insulating and sealing member having an L-shaped cross section shape, said insulating and sealing member having a first surface for forming sealing contact with said first metal housing, said insulating and sealing member having a second surface for forming sealing contact with said second metal housing; said insulating member having a third surface for abutting against and extending partially along said cathode assembly to thereby firmly hold said cathode assembly against said metal housing; anode material located in said second metal housing to form electrical contact with said second metal housing, said anode material located adjacent said separator; and an electrolyte in said gas depolarized electrochemical cell so that said second metal housing, said first metal housing, and said insulating and sealing member coact to simultaneously seal and maintain said first metal housing and said second metal housing in a leakproof electrolyte seal; and said first metal housing is further characterized by the closed end thereof consisting of an annular flat outer portion and a continuous, arcuate convexo-concave crown center portion with the concave side of said crown center portion facing in the direction of said cathode assembly.

Re. 31,414

ELECTROLYTE SALTS FOR NON AQUEOUS ELECTROCHEMICAL CELLS

Arabinda N. Dey, Needham; John S. Miller, Charlestown, both of Mass., and William L. Bowden, Nashua, N.H., assignors to Duracell Inc., Bethel, Conn.

Original No. 4,177,329, dated Dec. 4, 1979, Ser. No. 956,833, Nov. 2, 1978. Application for reissue Oct. 21, 1980, Ser. No. 199,160

Int. Cl.³ H01M *10/36*

U.S. Cl. 429—101 **9 Claims**

10. A non-aqueous electrochemical cell comprising a lithium anode, a fluid cathode depolarizer and an electrolyte salt dissolved in said fluid cathode depolarizer characterized in that said electrolyte salt consists of $LiGaCl_4$.

Re. 31,415

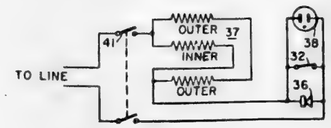
CONVENIENCE FOOD TOASTER OPERABLE AT DIFFERENT WATTAGE LEVELS

David B. Price, Mansfield, Ohio, and Wathena L. Shine, Royal Oaks, Pa., assignors to Scovill Inc., Waterbury, Conn.

Original No. 3,585,363, dated Jun. 15, 1971, Ser. No. 814,722, Apr. 9, 1969. Application for reissue May 29, 1974, Ser. No. 473,991

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—494 **6 Claims**



6. In an automatic toaster having a circuit including a heater means operatively connected to a source of power through a timing means to establish a heating cycle of operation, said timing means including a heat responsive means to initiate termination of said cycle upon reaching a predetermined heated condition, and means for varying the duration of the cycle over a predetermined range with said heater means energized at a relatively constant wattage level throughout said range and wherein the improvement comprises:

manually actuable switch means in said circuit movable between opened and closed positions;

means operatively connected to said heater means by placing said switch means in one of said positions for reducing the wattage of said heater to a relatively constant predetermined lower level, said heater means operatively connected through said timing means when said switch means is in said reduced wattage position, whereby a greater length of time is required to heat said heat responsive means to said predetermined termination condition thus extending the cycle of operation of said toaster at reduced wattage; and

a manually movable actuator associated with said switch means, said actuator having an abutment surface movable from a noninterfering position to a position interfering with said duration varying means when said actuator is moved from said switch closed to said switch open position.

PLANT PATENTS

GRANTED OCTOBER 11, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,117

ROSE PLANT

Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.

Filed Jan. 29, 1982, Ser. No. 344,031

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded, much branched habit, substantially as illustrated and described, characterized by buds and flowers variegated or striped (in differing degrees and patterns) with pink and white, the bud being pointed in the early opening stage, resembling in form Beauty Secret (miniature — not patented), with the open flower being rounded and full with many (35 or more) petals; and further characterized by a plant of compact, vigorous, well rounded shape; with main stems and shoots of less than average thorniness, the said plant being easy to propagate from softwood cuttings, with an abundance of small semi-glossy to matt foliage, the flowers being born singly or several to the stem in clusters.

5,118

ROSE PLANT JACMAT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,022

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its compact habit of growth, stiff flowers of orange-red.

5,119

ROSE PLANT 71-1172

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,522

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright, branched, stiff plant bearing large yellow-orange blooms, of little fragrance, and having glossy foliage.

5,120

ROSE PLANT 72-12551

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,523

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its upright plant, orange-red flowers of little fragrance and excellent form and substance and numerous small prickles on the canes.

PATENTS

GRANTED OCT. 11, 1983

ERRATA

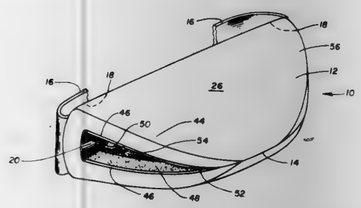
For CLASS	See PATENT NO.
150–023	4,408,618
383–070	4,408,643
420–584	4,409,025
419–010	4,409,029
106–020	4,409,039
106–020	4,409,040
525–280	4,409,120
502–020	4,409,122
502–038	4,409,123
502–022	4,409,124
502–180	4,409,125
502–169	4,409,126
502–205	4,409,127
502–211	4,409,128
502–185	4,409,129
502–221	4,409,130
502–263	4,409,131
502–062	4,409,132
502–354	4,409,133
564–438	4,409,386
381–071	4,409,435
381–015	4,409,436

PATENTS

GRANTED OCTOBER 11, 1983

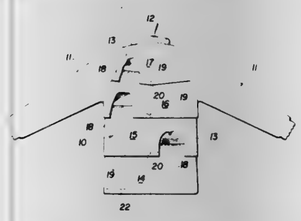
GENERAL AND MECHANICAL

4,408,355
HAND WARMER
Kenneth Brock, R.R. #2, Albion, Ind. 46701
Filed Nov. 19, 1982, Ser. No. 443,061
Int. Cl.³ D04B *7/04*
U.S. Cl. 2—66 **6 Claims**



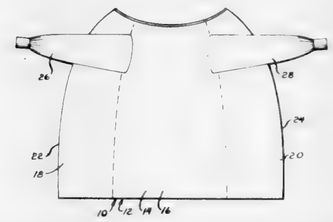
1. A hand warming device for cold environments, comprising:
a muff having end openings and being made of a plurality of layers of material, the outer layer thereof being a water repellent material, and an inner layer thereof being an insulating material,
an elastic band member disposed in the interior of said muff and adapted to removably hold therein a heat source for warming the hands of the user,
closing means at each said end opening for selectively varying the size thereof between fully open and fully closed, and
an adjustable belt attached to said muff to secure said muff against a body portion of the user.

4,408,356
VENTILATED RAIN GARMENT
Simon Abrams, 100 Taft St., Hazleton, Pa. 18201
Filed Dec. 14, 1981, Ser. No. 330,173
Int. Cl.³ A41D *3/04*
U.S. Cl. 2—87 **1 Claim**



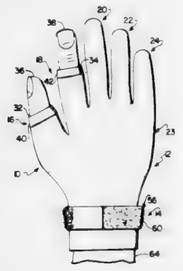
1. A ventilated rain garment including a body portion, the body portion comprising a lightweight foraminous textile lining, an outer shell for the body portion comprising a plurality of relatively wide parallel horizontal sections of moisture-impermeable flexible sheet material disposed in shingled relationship on the exterior of the lining, said shingled sections being attached to the lining adjacent to the top edges of the sections by continuous horizontal lines of stitching through the sections and lining, the bottom horizontal edges of the shingled sections being substantially freely disposed one relative to another and relative to the lining, short tacking stitches at the rear center of the body portion only attaching the lower free edge portion of each shingled section to the top portion of the adjacent underlying shingled section therebeneath, whereby the shingled sections cannot be elevated at the rear of the garment by the force of wind or the like, and the lower edges of the shingled sections being folded inwardly and upwardly to produce concealed hems extending horizontally on the body portion and being secured by additional continuous horizontal lines of stitching.

4,408,357
DISPOSABLE GARMENT
Michael R. Toth, Andover, Mass., assignor to The Kendall Company, Boston, Mass.
Filed Feb. 1, 1982, Ser. No. 344,428
Int. Cl.³ A41B *9/00*
U.S. Cl. 2—114 **22 Claims**



1. A disposable garment comprising, a gown having a front panel, a pair of back panels extending from opposed sides of the front panel, and a pair of sleeves, said sleeves being constructed of a water repellent material having nonentangled fibers, and said back panels being constructed of a porous material having entangled fibers.

4,408,358
COLD-WEATHER SPORTS GLOVE
Richard L. Swan, 1260 Monroe St., Reno, Nev. 89509
Filed Aug. 16, 1982, Ser. No. 408,695
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A **21 Claims**



1. A cold weather glove comprising:
a tubular hand portion;
a tubular wrist portion extending from said hand portion;
thumb, index finger, middle finger, ring finger and pinky tubular portions extending from said hand portion,
said middle finger, ring finger and pinky tubular portions being closed at their distal ends,
said thumb and index finger tubular portions being shortened and being open at their distal ends to expose the wearer's thumb and index fingers; and
first and second sealing means, coupled to each of said thumb and index finger portions adjacent said distal ends, for sealing said thumb and index finger portions to the wearer's thumb and index finger to limit cold air or water

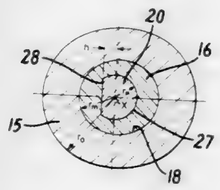
intrusion into the glove at said open distal ends of said thumb and index finger tubular portions.

4,408,359

HIP JOINT PROSTHESIS

Albert H. Burstein, Greenwich, Conn., and Donald L. Bartel, Freeville, N.Y., assignors to New York Society for the Relief of the Ruptured and Crippled, Maintaining the Hospital for Special Surgery, New York, N.Y.

Filed Apr. 7, 1981, Ser. No. 251,883
Int. Cl.³ A61F 1/04
U.S. Cl. 3—1.912 **6 Claims**



1. In a femoral component for a hip joint prosthesis adapted to be implanted in a femur and including a ball adapted to replace the head of the femur and a stem adapted to be received in the medullary cavity of the femur and to be affixed therein by a cement, said stem having a proximal portion, an intermediate portion and a distal portion, the improvements wherein each transverse cross section along the intermediate portion of the stem that is subject to the greatest stress is bounded by a generally circular surface of a radius r_p throughout the major portion of the periphery and wherein said circular surface is truncated to provide a flat surface on the lateral side of the stem, as viewed in the lateral-medial plane, thus providing an increased cross-sectional dimension when the stem alone carries the load and affording location of the neutral axis of bending proximate the lateral flat surface in the intact composite structure of stem, cement and bone, wherein the lateral flat surface is spaced apart from the geometric center of the circular surface by a distance h, h being such that

$$0.3 \leqq h/r_p \leqq 0.7,$$

so that the maximum stress within said intermediate portion is less than the fatigue strength of the material of the stem, and wherein the stem is adapted to be received in the medullary cavity such that the flat surface is in close proximity to the neutral axis of bending of the composite bone-cement-prosthesis where tensile stresses due to bending movements are small so that the bone at the lateral side carries a substantial part of the tensile stress of the composite structure and hence bone resorption is inhibited.

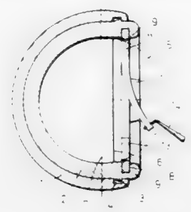
4,408,360

VARIO-HEAD ENDOPROSTHESIS

Arnold Keller, Kaihude, Fed. Rep. of Germany, assignor to Waldemar Link GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Oct. 8, 1981, Ser. No. 309,722
Claims priority, application European Pat. Off., Nov. 6, 1980, 80106835.4
Int. Cl.³ A61F 1/24
U.S. Cl. 3—1.913 **6 Claims**

1. A vario-head endoprosthesis comprising a ball-shaft prosthesis, for example a femur prosthesis, and a vario-head prosthesis having an outer shell and an inner insert which provides a socket for the prosthesis ball having an aperture forming a constriction providing a positive safeguard against removal of the prosthesis ball from the socket, characterized in that the insert has a collar with an inwardly facing annular groove (8) surrounding and opening into the aperture region of the socket (1,2), and the constriction is formed by a split ring (11) mounted within the annular groove and retained therein against expansion to engage and positively retain the prosthesis ball within the socket, the split ring being flexible so as to be



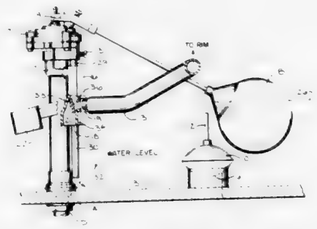
adapted to be inserted circumferentially into the annular groove (8) and the opening side of the socket collar having cut-out means (10) to enable the split ring (11) to be inserted into or withdrawn from the annular groove in the circumferential direction.

4,408,361

DIVERTER VALVE

Roy J. Rozek, Plymouth, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jul. 6, 1982, Ser. No. 395,790
Int. Cl.³ E03D 1/24, 1/30
U.S. Cl. 4—331 **5 Claims**



1. In a water closet of the type in which there is a bowl, a storage tank, an inlet in the tank for connection to a supply of water, an outlet leading from the tank to the bowl, an inlet valve which controls the flow of water to the tank in response to changes in the water level of the tank, a flush valve controlling the discharge of water through the outlet to the bowl, the flush valve being manually operable so as to initiate a flushing cycle of the water closet and automatically closing in response to the emptying of the storage tank, and a diversion conduit for directing water from the inlet directly to the bowl, the improvement comprising:

a diverter valve having a housing with an inlet passage for receiving a supply of water from the inlet valve, a first outlet passage communicating with said inlet passage for delivering water exiting from the diverter valve to the storage tank, and a second outlet passage communicating with said inlet passage for delivering water exiting from the diverter valve to the diversion conduit;

a flap mounted in a diverter valve passage for proportioning the flow of water between the two outlet passages;

water level sensing means connected to the flap to activate the flap in response to changes in the water level of the tank;

said flap being positioned by the water level sensing means to direct water to the first outlet passage when the flush cycle of the water closet is first initiated;

said flap being positioned by the water level sensing means to direct water to the second outlet passage when the water level in the storage tank has dropped below a predetermined diversion level;

said water level sensing means acting to allow continued flow to the second outlet passage after the flush valve has closed in response to the emptying of the tank; and

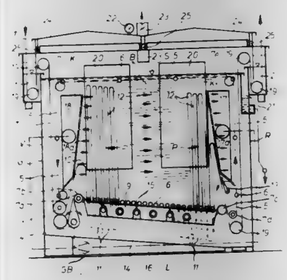
bleed means in communication with the water supply for allowing a portion of the water supply to flow into the storage tank when the water level is below the diversion level so as to raise the water level above the diversion level.

4,408,362

METHOD FOR CONTINUOUSLY TREATING STRAND-LIKE TEXTILE MATERIAL IN VERTICAL LOOPS

Wolfgang Tschirner, Tönisvorst, Fed. Rep. of Germany, assignor to Kleinewefers, Jaeggli AG, Rümikon, Switzerland

Division of Ser. No. 198,051, Oct. 17, 1980, Pat. No. 4,370,872.
This application Jul. 2, 1982, Ser. No. 394,705
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941900
Int. Cl.³ D06B 3/28
U.S. Cl. 8—151 **4 Claims**



1. A method of continuously treating strand-like textile material in a container of treatment liquid, said method including the steps of:

passing said textile material through said treatment liquid;

generating vertical flow in said container to form vertical loops in said textile material;

transporting said looped textile material substantially horizontally through said treatment liquid with transverse bars;

respectively arranging said bars in the lower bends of said loops in the vicinity of the bottom of said container;

utilizing said transverse bars to effect said loop formation and to maintain the formed loops and their form stability;

moving said transverse bars from the textile strand inlet side to the textile strand outlet side of said container;

directing said vertical flow upwardly between said transverse bars; and

generating horizontal transverse flow of said treatment liquid to aid said horizontal transport of said looped textile material.

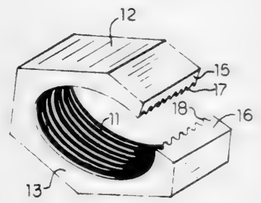
4,408,363

THREAD CONDITIONING DEVICE

Donald A. Doree, 1768 Blair St., Saint Paul, Minn. 55104

Filed Apr. 20, 1981, Ser. No. 255,458
Int. Cl.³ B23G 1/26, 5/10, 9/00
U.S. Cl. 10—1 B **16 Claims**

1. A device for rotational movement about a threaded bolt to condition the threads of the bolt, said device comprising a unitary body essentially having an opened, generally C-shaped cross section to its axis of rotation, said unitary body having an interior threaded surface to engage the threads of the bolt to be conditioned, an exterior surface for direct mechanical engagement to grasp, squeeze and rotate said device, two generally C-shaped end surfaces, and two opposing lateral surfaces which extend between said end surfaces from said interior surface to said exterior surface, one each said opposing lateral surface essentially having an acute angular disposition being in a range of 70 degrees to 90 degrees as measured tangentially from said interior surface to said exterior surface of said C-shaped body, said body further having two spacially opposing plowing edges at the intersections of said interior surface and said two opposing lateral surfaces, said C-shaped body essentially being of a deformable and resilient construction to allow



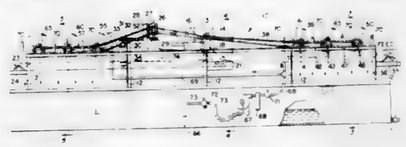
said opposing plowing edges to be moved in closer spacial proximity to each other by the application of squeezing mechanical forces to said exterior surface of said device C-shaped body, whereby, the rotational movement of said device about a threaded bolt allows said plowing edges to condition the threads of the bolt, allows resultant debris to egress thru the opened portion of said C-shaped body between said opposing lateral surfaces, and allows the user of said device to directly control plowing action forces effective at said plowing edges by predetermined squeezing mechanical engagement to said exterior surface of said C-shaped body of said device due to the deformable and resilient construction thereof as said device is rotated onto and from the threads of a bolt to be conditioned.

4,408,364

APPARATUS FOR WASHING AN ALOE VERA LEAF

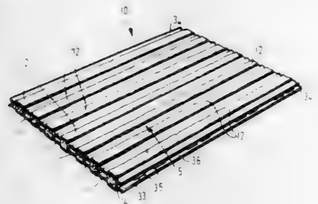
Donnie Thompson, Rte. #2 Combes Rio Hondo Rd., Harlingen, Tex. 78550

Filed Mar. 19, 1982, Ser. No. 359,942
Int. Cl.³ B08B 11/00, 1/02
U.S. Cl. 15—21 D **4 Claims**



1. An apparatus for cleaning both sides of an aloe vera leaf comprising a pair of endless conveyors for supporting the leaf thereon while travelling from the entrance to the exit end of the apparatus, one of said pair of conveyors travelling in a horizontal line of travel between a horizontally disposed roller and a vertically disposed roller so as to cause said conveyor to twist in it's travel between said rollers to thereby extend in a vertical position causing said leaf to be inverted and deposited on a second endless conveyor, said leaf travelling on said pair of endless conveyors subjected to a scrubbing action by roller brushes extending over the said pair of conveyors and simultaneously applying a cleaning solution to the said leaf through suitable sprayheads mounted on said apparatus.

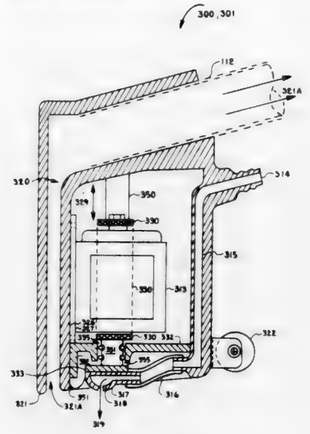
4,408,365
MATS
Deryk J. Palmer, Wolverhampton, England, assignor to Nuway Manufacturing Company Limited, England
Filed Dec. 4, 1981, Ser. No. 327,394
Claims priority, application United Kingdom, Dec. 6, 1980, 8039198
Int. Cl.³ A47L *23/26*
U.S. Cl. 15—112 **6 Claims**



1. A mat comprising a plurality of first strips of rigid material each of channel section comprising an upper wall and a base wall, means connecting the base wall to the upper wall, a lower wall, and means connecting the base wall to the lower wall, whereby the channel, in use, opens horizontally, a plurality of second strips of material more flexible than the first strips, interposed alternately between the first strips, a connecting element securing the first and second strips together in side by side relationship, aligned apertures in the first and second strips, the apertures in the first strips being provided in said base wall, the connecting element passing through the aligned apertures and in use, restraining the upper walls of the first strips from deforming downwardly to any substantial extent when a load is imposed on the mat, at least in the region of the connecting element.

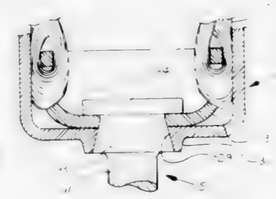
4,408,366
CLEANING SYSTEM HAVING IMPROVED AGITATION
Aaron Goldsmith, 21821 Burbank Blvd., Woodland Hills, Calif. 91367
Continuation of Ser. No. 162,577, Jun. 24, 1980. This application Jul. 31, 1980, Ser. No. 173,974
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.³ A47L *11/00*
U.S. Cl. 15—321 **25 Claims**

17. A carpet cleaning system comprising:
means for supplying cleaning fluid;
means for supplying a vacuum;
a cleaning head for cleaning a carpet, said cleaning head including
(a) motive means for providing motive force;
(b) cleaning means for cleaning a carpet in response to the motive force from said motive means and in response to the cleaning fluid being supplied from said cleaning fluid supplying means, wherein said cleaning means includes
(1) means for agitating a carpet to be cleaned in response to the motive force from said motive means, said agitating means including a piston,
(2) means for agitating cleaning fluid in response to the motive force from said motive means, and
(3) means for dispensing the agitated cleaning fluid into an agitated carpet to be cleaned,
(c) recovering means for recovering cleaning fluid dispensed by said dispensing means in response to vacuum supplied by said vacuum supplying means;
(d) support means for said motive means, said cleaning means and said recovering means, and



(e) an O-ring resiliently and compliantly disposed within said support means about said piston for supporting said agitating and said dispensing means.

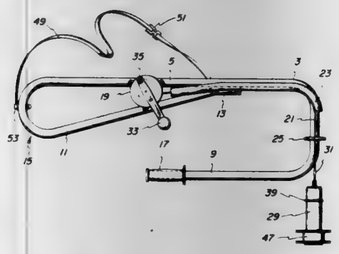
4,408,367
END BRUSH
Ronald J. Pusterhofer, Chesterland, Ohio, assignor to Advance Brushes, Inc., Cleveland, Ohio
Filed Apr. 20, 1981, Ser. No. 255,367
Int. Cl.³ A46B *7/08*
U.S. Cl. 15—180 **14 Claims**



8. A rotary end brush assembly comprising a stamped sheet metal cup holder, said cup holder having an open face at one end and a generally radially extending end wall at its opposite end, said cup holder including a cylindrical sidewall integral with said end wall and extending from said end wall axially forwardly to said open end, said end wall having a central aperture formed at least in part by an axially extending flange integrally formed on the end wall, bristle material anchored in said cup holder, a unitary arbor extending through said aperture and being permanently affixed to the cup holder, said arbor being a generally circular body of stepped diameter, a head section of said arbor forming its major diameter and being larger in diameter than said aperture, said head section being disposed in said cup holder adjacent said end wall, a hub section of said arbor seated in said aperture, and a cylindrical stem section of said arbor extending rearwardly of said hub section, said arbor being affixed to said cup holder by a high degree of radial interference between said hub section and said aperture as a result of free radial upsetting of said hub section in said aperture while said head and stem sections are substantially devoid of distortion.

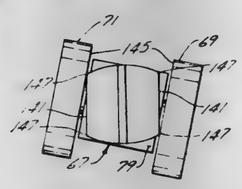
10. A method of manufacturing an end brush comprising the steps of providing a cup-shaped metal holder having a central aperture in the end wall thereof with the aperture having an axial length substantially greater than the thickness of the sidewall, providing a metal arbor having head, hub, and stem sections, with the head section having a diameter larger than the aperture, inserting the arbor hub section into the cup holder aperture so that the stem section extends rearwardly away from said cup holder, axially compressing the head and hub sections with opposed tool elements in a manner wherein said hub section is caused to upset by plastic deformation into a diameter greater than at least a portion of said aperture to thereby permanently lock said arbor onto said cup holder, and positioning and securing bristle material in said cup holder.

4,408,368
CHIMNEY CLEANING DEVICE
Donald P. Vickery, Gloversville, N.Y., assignor to Nelson A. Taylor Co., Inc., Gloversville, N.Y.
Filed Jul. 13, 1981, Ser. No. 282,968
Int. Cl.³ F23J *3/00*
U.S. Cl. 15—243 **11 Claims**



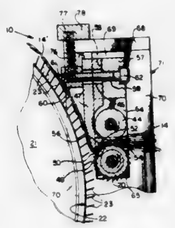
1. A chimney device for removing creosote deposits and soot from a chimney flue while the chimney is in operation, or during a chimney fire, and without said device causing damage to the chimney flue, its tile liner or chimney bottom, said device having a head for removing said creosote deposits and soot comprising an impacting weight, an upper ring and a bottom ring, an upper cutter and a lower cutter for engaging and removing creosote deposits and soot, and a spacer ring between said cutters, wherein said impacting weight carries said upper and bottom rings and said cutters and spacer ring and wherein said upper and bottom rings act as limit stops to limit movement of said cutters therebetween and to transmit ramming impact to said cutters upon up and down movements of said impacting weight.

4,408,369
MOUNTING ASSEMBLY FOR A FOLDING CLOSURE
Henri M. R. Labelle, 50 Westmooreland Ave., Cornwall, Ontario, Canada K6J 2G4
Filed Aug. 21, 1981, Ser. No. 295,230
Int. Cl.³ A47H *15/00*; E05D *13/02*
U.S. Cl. 16—102 **3 Claims**



1. A mounting assembly for use in movably suspending a member from a curved track comprising: a wheel assembly, the wheel assembly comprising a mounting member with a pair of wheels rotatably mounted on the mounting member, the wheel assembly adapted to run on the curved track; means connecting the wheel assembly to the member to be suspended from the curved track, the wheel assembly rotatable relative to the connecting means about a vertical axis which is perpendicular to the axis of rotation of the wheels; and means on the connecting means for interfering directly with at least one of the wheels on the mounting member, after the wheel assembly has rotated a limited amount relative to the connecting means, to limit further rotation of the wheel assembly.

4,408,370
SHORT FIBER FEED SYSTEM FOR SLIVER HIGH PILE FABRIC KNITTING MACHINES
Earl R. Quay, Orangeburg, S.C., assignor to Mayer, Rothkopf Industries, Inc., Orangeburg, S.C.
Continuation-in-part of Ser. No. 338,251, Jan. 15, 1982, abandoned, which is a continuation-in-part of Ser. No. 295,731, Aug. 24, 1981. This application May 21, 1982, Ser. No. 380,532
Int. Cl.³ D01G *15/40, 15/84*; D04B *9/12*
U.S. Cl. 19—105 **11 Claims**



1. In a feeding system for feeding relatively short fibers to a sliver high pile fabric knitting machine, said feeding system including a pair of rotatable feed rolls, a feed plate disposed in close proximity to the peripheries of the feed rolls and a rotatable doffer for delivering fibers to the needles of the knitting machine, the improvement comprising
(a) a wire-covered feed roll rotatable about the fixed axis,
(b) a smooth peripheried feed roll located operatively relative to the wire-covered feed roll to provide a nip,
(c) a gap interposed between the periphery of the wire-covered feed roll and the feed plate to provide a passage for the fibers, said gap commencing at the nip and terminating in a fiber pinch point, whereby the nip provides a fiber entrance to the gap and the pinch point provides a fiber exit from the gap,
(d) assembly means joining together the smooth peripheried feed roll and the feed plate to provide a unitary assembly with capacity for movement as a unit relative to the wire-covered feed roll and
(e) resilient means urging the unitary assembly which includes the smooth peripheried feed roll and the feed plate yieldingly toward the wire-covered feed roll,
(f) said resilient means being operative to permit the smooth peripheried feed roll and the feed plate to be retracted away from the wire-covered feed roll to enlarge clearance at the nip and at the fiber pinch point to accommodate an increase in the volume of fibers fed by the fiber feeding system to the knitting machine.

4,408,371
SELF-CLEANING DOFFER WIRE
Earl R. Quay, Orangeburg, S.C., assignor to Mayer, Rothkopf Industries, Inc., Orangeburg, S.C.
Filed Aug. 24, 1981, Ser. No. 295,731
Int. Cl.³ D01G *15/84*
U.S. Cl. 19—114 **3 Claims**

1. Self-cleaning doffer wire for use in card clothing covering the periphery of a rotatable doffer for feeding relatively short fibers to the needles of a sliver high pile fabric knitting ma-

chine, said wire having shank portions embedded in a backing layer and extending outwardly of the doffer at an acute angle to the backing layer, said wires further having distal portions connected to the shank portions by knee portions, characterized by knee portions formed of an angle in the range of about



145° to about 170°, whereby fibers on the card clothing tend to migrate outwardly of the doffer toward the distal portions of the doffer wire to facilitate removal of substantially all fibers from the doffer by the needles as the needles rake the doffer wire.

4,408,372

COUPLER

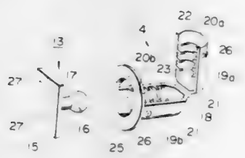
Teiji Kimura, Uriyasu, and Shigeru Kimura, Kamakura, both of Japan, assignors to Sony Corporation, Tokyo and Nifco Inc., Yokohama, both of, Japan

Filed Oct. 20, 1980, Ser. No. 198,726

Claims priority, application Japan, Oct. 24, 1979, 54-146229[U]

Int. Cl.³ A44B *21/00*

U.S. Cl. 24—217 R **2 Claims**



1. A coupler for joining two objects, comprising a unitary insertion member adapted to be attached fast to one of said two objects and a reception member adapted to be attached fast to the other object and used for admitting said insertion member into fast engagement therewith, said insertion member being provided with a setting portion for fast attachment to said one object in fixed relation thereto and an integral shaft extended from said setting portion and possessed of a radially expanded engaging portion at the leading and thereof, and said reception member being provided with two generally semicylindrical shells integrally connected to each other freely openably and closably through the medium of a thin-walled integral hinge portion and adapted to form one cylindrical shape upon being closed onto each other along the matched edges thereof and a plurality of like integral resilient engaging pieces regularly spaced in the longitudinal direction on the inner wall of each of the shells, the engaging pieces on one wall being in mirror image with the pieces on the other wall, whereby said reception member is inserted into a fitting hole bored in advance in said other object, with said two shells held in a closed state and consequently said resilient engaging pieces on the inner walls of the shells opposed to each other to enclose therein an engaging hole for admitting said shaft into fast engagement therewith, said engaging hole having a diameter smaller than the outside diameter of the engaging portion to be detachably brought into resilient frictional engagement therewith, at least one opposed pair of engaging pieces being maintained in deformed position by said engaging position of said insertion member.

4,408,373

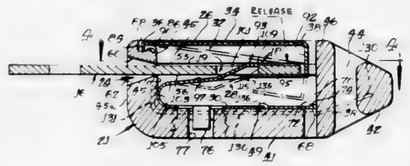
BUCKLE WITH INTEGRAL PUSH BUTTON SPRING AND REACTION PORTIONS

John S. Miskowicz, La Porte, Ind., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Sep. 2, 1980, Ser. No. 183,384

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **15 Claims**



14. A seat buckle for latching engagement with a tongue plate, said buckle comprising:

a substantially one-piece plastic body having a downwardly opening cavity;

a one-piece latch means of spring metal having an integral pushbutton portion, an integral latch portion, and integral spring portion and an integral reaction portion positioned in said cavity;

a front wall on said plastic body having a slot extending into said cavity for receiving a tongue plate for sliding entry into said cavity;

an integral latch dog on said latch portion movable between a latching position for latching engagement with said tongue plate and a release position for releasing the tongue plate for withdrawal from said slot, said latch portion being flexed by said integral spring portion with depression of said pushbutton portion relative to said reaction portion to shift said latch dog from said latching position to said release position, said latch means being a substantially Z-shaped member having a substantially upper flat horizontal pushbutton portion covering the top of said cavity and a substantially flat reaction portion at the bottom of said cavity.

4,408,374

BELT LOCK FOR A SAFETY BELT

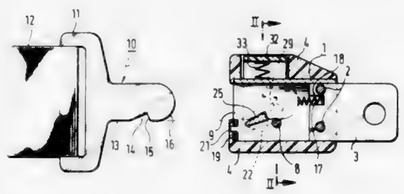
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Apr. 1, 1981, Ser. No. 250,040

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012937

Int. Cl.³ A44B *11/26*

U.S. Cl. 24—230 A **1 Claim**



1. Lock for a safety belt comprising a belt lock having a lock-housing with two spaced plates defining an insertion path, a plug-in tongue with a detent for insertion in the insertion path of the lock-housing, a latch mechanism having a latch of wedge-shaped cross section which can swing into the detent of the plug-in tongue when inserted in the insertion path to thereby engage said tongue, said wedge-shaped latch being swingeably supported in a corresponding wedge-shaped opening with a greater wedge angle, said latch bearing with its smaller wedge end in a curved bearing surface of said opening, said latch having at its wide end a convexly curved surface to provide a larger area for contact with said tongue to distribute a force applied to the latch over said larger area, and a pressure organ mounted on the lock-housing movable against the force of a spring to move said latch out of engagement with said tongue to permit withdrawal of the tongue from the belt lock, and wherein at both ends of said latch are fastened lever elements, which are provided with lever pins onto which said pressure organ can be pressed.

4,408,375

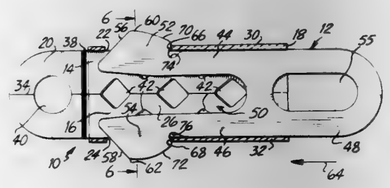
RELEASABLE CONNECTOR

Max Skobel, 10 Lynwood Rd., Edison, N.J. 08817

Filed Sep. 21, 1981, Ser. No. 303,790

Int. Cl.³ A47G *29/10*; A44B *11/25, 15/00*

U.S. Cl. 24—230 R **4 Claims**



1. A releasable connector comprising:

a receiving member having an elongated internal passageway extending from one end thereof, and a pair of diametrically opposing retaining solts spacedly positioned along said passageway, said retaining slots being openings extending through opposing longitudinal edges of said receiving member, said passageway including a mouth at said one end;

a substantially flat elongated insert member having a pair of bifurcated springy legs insertable into said passageway upon compression of said legs together into an abutting position, an outwardly extending foot at a distal end of each leg for releasably locking into a respective one of said retaining slots when said legs spread apart with each foot extending through its associated opening to securely retain said insert member in said receiving member in a locked position;

said insert member feet having a combined transverse width in said abutting position substantially equal to a transverse width of said receiving member passageway to limit said compression of said legs and to provide alignment between said legs and said passageway during insertion of said legs through said passageway;

an outwardly flaring, rearwardly directed first cam surface at a forward end of each foot for engaging said mouth of said passageway to direct said legs together into said abutting position to facilitate entry of said insert member into said passageway;

an arcuate second cam surface on each foot rearward of said forward first cam surface for riding along inner edge walls of said passageway to facilitate passage of said insert member through said passageway;

an inwardly curved, rearwardly directed rear third cam surface on each foot being rearward of said arcuate second cam surface for engaging an edge of a respective retaining slot to facilitate entry of said feet into said retaining slots and to also facilitate exit of said feet from said retaining slots;

a notched junction between each foot and its respective leg, each notched junction having an inwardly directed edge rearward of its associated rear third cam surface, each notched junction edge being disposed in substantially the same direction as its associated first cam surface so that an acute angle is formed between the longitudinal axis of the junction and the insert member longitudinal axis to provide a hook-like portion on its associated foot for locking onto said edge of said respective retaining slot; and

each notched junction including an undercut portion extending inwardly from its notched junction edge to insure that said notched junction edge engages against said edge of said respective retaining slot in said locked position.

4,408,376

APPARATUS FOR DRAWING YARN

Charles S. Hatcher, Greenville, S.C., and Kenneth E. Smith, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 412,656, Nov. 5, 1973, abandoned. This application Apr. 28, 1978, Ser. No. 900,941

Int. Cl.³ D02J *1/22*; B29C *17/02*

U.S. Cl. 28—245 **7 Claims**



1. Apparatus for cold drawing a plurality of yarns comprising:

(a) a plurality of spaced supply means adapted to supply an equal number of individual yarns;

(b) driven feed roll means adapted to draw said yarns from said supply means in a single, first plane with said yarns arranged in spaced parallel relationship to one another and in a predetermined order relative to one another in said first plane;

(c) heated, driven draw roll means spaced from said feed roll means in the direction of travel of said yarns and adapted to draw said yarns from said feed roll means at a speed greater than the speed of said feed roll means and in a normal, second plane parallel to said first plane with said yarns in said predetermined order relative to one another in said second plane; and

(d) elongated guide means having a concave surface positioned between said feed roll means and said draw roll means with the concavity thereof toward said yarns and the tangent at the midpoint of said concave surface at an angle approximately 45° relative to said second plane and adapted to urge said yarns into contiguous side-by-side relation and in said predetermined order along said concave surface and on said draw roll means.

4,408,377

STUFFING CHAMBER TEXTURIZING PROCESS

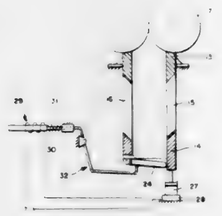
Heinz Schippers, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik AG, Remschied-Lennep, Fed. Rep. of Germany

Continuation of Ser. No. 927,014, Jul. 24, 1978, abandoned. This application Jan. 5, 1981, Ser. No. 222,600

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1977, 2733455

Int. Cl.³ D02G *1/12*

U.S. Cl. 28—250 **7 Claims**



1. In a stuffer box crimping process for texturizing a yarn of synthetic thermoplastic filaments wherein the yarn is continuously fed with crimping into an elongated stuffing chamber having an interior cross section defined by its inner walls to form an accumulated yarn plug of looped and compressed filaments, said yarn plug exerting irregular frictional forces on said inner walls while being advanced from an upstream stationary entry section to a downstream axially movable outlet section of said stuffing chamber by the force of the fed yarn entering the chamber, and braking the advancing movement of said yarn plug by exerting a discharge resistance thereagainst in said movable outlet section of the chamber, the steps which comprise:

applying the frictional force of the yarn plug as an advancing pressure exerted on a contact surface which forms at least part of the inner walls of said movable outlet section and which is axially movable relative to the inner walls of said stationary entry section;

applying an opposing force to said axially slidable contact surface of said outlet section in an axial direction against the advancing pressure of the yarn plug to counteract the advancing movement of said outlet section relative to said entry section;

continuously measuring and comparing the actual value of the advancing pressure of the yarn plug with a predetermined value, said measurement being effected by measuring said opposing force applied to said axially slidable contact surface; and

adjusting the discharge resistance on said yarn plug in response to the difference between said actual value and said predetermined value, thereby compensating for the irregular frictional forces between said inner walls and said yarn plug.

4,408,378

APPARATUS FOR FORMING A FILAMENT COIL OF FIGURE OF EIGHT CONFORMATION

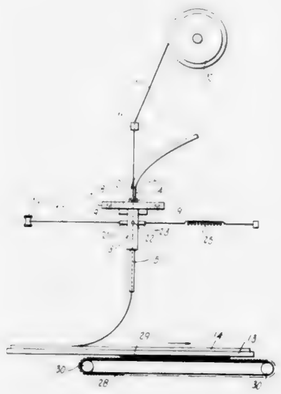
Terence A. Ketteringham, Middlesex; Dennis L. Lewis, Hertfordshire, and David E. Mayley, London, all of England, assignors to Associated Electrical Industries Limited, London, England

Filed May 21, 1981, Ser. No. 265,813

Claims priority, application United Kingdom, Nov. 21, 1980, 8037420

Int. Cl.³ B65H *54/00*

U.S. Cl. 28—289 **7 Claims**



1. An apparatus for forming a filament coil of substantially figure of eight conformation, said apparatus comprising:

(A) a filament guide member consisting of a guide member plate mounted on a vertical shaft;

(B) means providing a central channel through said guide member plate and shaft for the passage of the filament downwards therethrough;

(C) a flat filament receiving carrier disposed below said guide member plate;

(D) said guide member plate being horizontally disposed;

(E) a gimbal mounting arrangement for said guide member, said gimbal mounting arrangement consisting of

(i) a fixed horizontally disposed outer ring and

(ii) an inner ring pivoted on the outer ring for rotation about a first horizontal axis,

(iii) the said guide member plate being pivoted on the said inner ring for rotation about a second horizontal axis at right angles to the first horizontal axis;

(F) two sets of reciprocating means connected to the guide member shaft for imparting to the guide member oscillatory motion about the first and second horizontal axes, respectively, means for controlling the relative rates of reciprocation of the said reciprocating means, to produce the required relative frequencies and relative phases of oscillations of the guide member about the respective horizontal axes;

(G) means for guiding the filament path vertically downwards, from a source at a level above that of said guide member plate and gimbal mounting arrangement into the said channel through the guide member; and

(H) means for controlling the speed of downward travel of the filament from said source to the carrier.

4,408,379

METHOD OF PRODUCING AN ALUMINUM WHEEL RIM

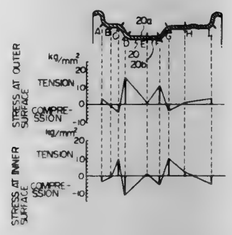
Takuo Kusano, Mishima; Kouichi Masuda, Fuji, and Masatoshi Namba, Tokyo, all of Japan, assignors to Nippon Light Metal Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,639

Claims priority, application Japan, Mar. 19, 1980, 55-034013; Dec. 5, 1980, 55-170866

Int. Cl.³ B21K *1/38*; B21B *15/00*

U.S. Cl. 29—159.1 **3 Claims**



1. A method for producing an aluminum wheel rim from a thin walled cylindrical element of an aluminum or aluminum alloy material comprising axially pressing the element under the action of compressive stress acting thereon through tapered portions of a die and a punch cooperating therewith in a press machine so that the diameter of the element is enlarged so as to form the required configuration of the rim, while the wall thickness of the element is increased at positions where compressive stress is applied through the tapered portions of the die and the punch thereby increasing the mechanical strength of the element at positions where otherwise weakening tends to occur due to thinning of the wall thickness of the material during roll working thereof, the ratio H/D of the height H of the element with respect to the inner diameter D thereof being set to be equal to or less than 1.5 and the ratio t/D of the wall thickness t of the element with respect to the inner diameter D being set to be in the range of 0.006 to 0.06, while the mean deformation resistance of the material is set to be in the range of 10 to 25 kg/mm² and the inclination angle of the tapered portions of the die and the punch is set to be in the range of 10° to 65°.

4,408,380

METHOD FOR MAKING CONNECTING RODS FOR INTERNAL COMBUSTION ENGINES

Siegfried Schaper; Anton Wimmer, both of Gaimersheim, and Werner Dommes, Ingolstadt, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Apr. 30, 1980, Ser. No. 145,770

Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918028

Int. Cl.³ B23P *15/00*; F02B *75/32*; G05G *1/00*

U.S. Cl. 29—156.5 A **6 Claims**

1. A method of making a crankshaft-connecting rod construction for an internal combustion engine having a single-piece crankshaft comprising:

positioning a first crankpin bushing segment, having a connecting rod shank consisting of a reinforced resinous material mounted thereon on a crankpin of said crankshaft;

positioning a second crankpin bushing segment in opposed relationship to said first crankpin bushing segment about said crankpin;

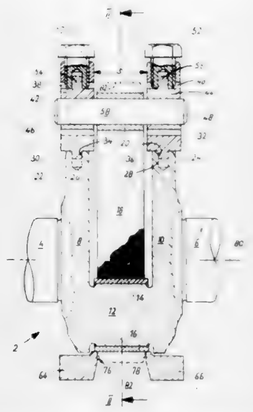
positioning a piston pin bushing on said connecting rod shank at an end distal from said first crankpin bushing;

positioning a rigid member in said piston pin bushing with a portion of said member exposed for a clamping operation;

securing a clamping mechanism to said crankpin and arranging said clamping mechanism to engage said rigid member and edge portions of said second crankpin bushing segment;

operating said clamping mechanism to press said rigid member while in said piston pin bushing toward said crankpin and to clamp said first bushing segment against said crankpin, and to press said second bushing segment against said crankpin, to clamp said second bushing segment thereto, while leaving a substantial portion of said bushings and connecting rod shank exposed for application of reinforcing material about the periphery of the bushings; and

applying a reinforcing material about the periphery of said second bushing segment and said piston pin bushing and said connecting rod shank exposed for that purpose to form an integral unit attached to said crankpin.



4,408,381

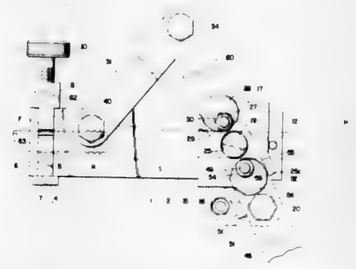
DEVICE FOR ASSEMBLING A HOSE AND FITTING

Arthur S. Kish, Lyndhurst, Ohio, assignor to Murray Corporation, Cockeysville, Md.

Continuation-in-part of Ser. No. 186,330, Sep. 11, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 284,967

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—237 **8 Claims**



1. In a device of the character described for assembling a fitting and a hose, means for supporting a fitting and means for moving a hose in axial alignment with said fitting, whereby to cause a portion of said fitting to enter an end portion of said hose and be frictionally secured to said hose, said supporting means comprising an elongated frame having a socket at one end thereof and a block mounted in said socket, said block having a recess for accommodating said fitting, said hose moving means comprising a slide mounted for reciprocal movement along said frame, a link pivotally secured to said slide, a

second link pivotally secured to said first link and to said frame, a handle pivotally secured to said first link, a roll mounted on said first link, and a second roll mounted on said handle, said rolls adapted to be moved into engagement with diametrically-opposite sides of said hose.

4,408,382

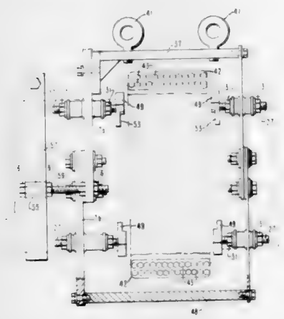
METHOD FOR REMOVING AND REPLACING SHRUNK-ON SLEEVES ON A SHAFT

Ira J. Campbell, East Bradford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1981, Ser. No. 332,563

Int. Cl.³ B23P *19/00, 11/02*

U.S. Cl. 29—426.1 **7 Claims**



1. A method for removing a sleeve shrunk on a shaft comprising the steps of:

placing an induction coil so that it encircles the sleeve;

attaching a fixture to the sleeve in such a manner that the sleeve and induction coil can be supported by the fixture;

applying alternating current to the induction coil until the temperature of the sleeve rises to a level wherein there is clearance between the sleeve and the shaft;

removing the fixture induction coil and sleeve from the shaft; and

placing insulation around the removed sleeve so that it cools slowly and evenly to minimize distortion of the sleeve.

4,408,383

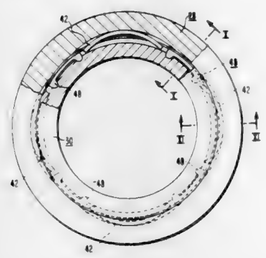
REMOVABLE SLEEVE-TO-SHAFT INTERLOCK FOR DYNAMOELECTRIC MACHINE

Lawrence D. Nottingham, Hempfield Township, Westmoreland County, and Michael R. Jugan, Duquesne, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 130,491, Mar. 13, 1980, Pat. No. 4,358,700. This application Mar. 30, 1982, Ser. No. 363,730

Int. Cl.³ H02K *15/14*

U.S. Cl. 29—453 **5 Claims**



1. A method of preventing relative axial movement between a tubular sleeve having a central bore and a shaft mountable within said bore, said method comprising:

(A) positioning at least one detent within a groove in the outer circumferential surface of said shaft, said detent being an arcuate member having a radius being less than the radius of the shaft groove, and a height being greater than the depth of said shaft groove, and a material thickness being less than the depth of the shaft groove;

(B) maintaining the detent in a depressed configuration such that its height is no more than the depth of the shaft groove in which it is positioned, and continuing this step until the shaft is mounted in said sleeve;

(C) mounting the shaft within the sleeve with an axial sliding motion so as to radially juxtapose an eccentric groove and said detent, said eccentric groove being located in the inner circumferential surface of said sleeve; and

(D) radially juxtaposing a maxima location of said eccentric groove and said detent, permitting said detent to spring into said eccentric groove so that said detent occupies said eccentric groove and said shaft groove simultaneously, and thereby preventing relative axial movement between the sleeve and the shaft.

4,408,384

METHOD OF MANUFACTURING AN INSULATED-GATE FIELD-EFFECT TRANSISTOR

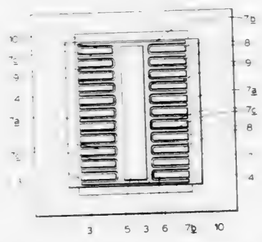
Royce Lowis, Southampton, and Peter M. Tunbridge, Winchester, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 141,518, Apr. 18, 1980, abandoned. This application Aug. 12, 1982, Ser. No. 407,673

Claims priority, application United Kingdom, May 2, 1979, 7915232

Int. Cl.³ H01L *21/265, 21/28*

U.S. Cl. 29—571 **8 Claims**



1. A method of manufacturing an insulated-gate field-effect transistor in which interdigitated source and drain fingers of one conductivity type are provided in part of an epitaxial layer of the opposite conductivity type on a more highly conductive substrate, the source fingers are short-circuited to the substrate, a gate on an insulating layer on the epitaxial layer is provided between the source and drain fingers, and a drain electrode which is interdigitated with the gate is provided to contact said drain fingers, comprising the steps of:

(a) forming on said insulating layer a gate layer having a plurality of separate, mutually parallel apertures; then

(b) introducing dopant determining said one conductivity type into said epitaxial layer via said apertures to form mutually parallel islands of said one conductivity type from which at least a portion of the source fingers is to be provided; then

(c) providing on the epitaxial layer an etch-resistant mask having mutually-parallel apertures, each of which overlies an area of an island and is smaller than the gate layer aperture associated with the island; then

(d) etching away said areas of said islands and underlying parts of the epitaxial layer to form mutually parallel grooves which extend through the epitaxial layer to said substrate, have a V-shaped cross-section, extend longitudinally along said islands and are adjoined along opposite sides by remaining parts of said islands; and then

(e) providing within said apertures of the gate layer and over the walls of said grooves parallel metal fingers which extend longitudinally along said islands to short-circuit the remaining parts of said islands to the epitaxial layer and to the substrate, said remaining parts forming said source fingers of the transistor.

4,408,385

SEMICONDUCTOR INTEGRATED CIRCUIT WITH IMPLANTED RESISTOR ELEMENT IN POLYCRYSTALLINE SILICON LAYER

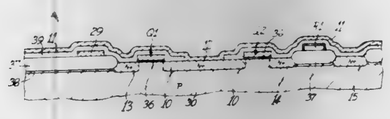
G. R. Mohan Rao; John S. Stanczak; Jih-chang Lien, and Shyam Bhatia, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 916,037, Jun. 15, 1978, Pat. No. 4,208,781, which is a division of Ser. No. 727,116, Sep. 27, 1976, Pat. No. 4,110,776. This application Jun. 23, 1980, Ser. No. 162,217

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ H01L *21/00, 21/263*

U.S. Cl. 29—576 B **3 Claims**



1. A method of making resistor elements in an N-channel, silicon-gate MOS integrated circuit of the static RAM type with field oxide formed surrounding a pair of driver transistor areas having gate oxide formed much thinner than the field oxide, comprising the steps of:

a. applying an elongated strip of polycrystalline silicon to said face extending across the field oxide and contacting a drain area of one of the transistor areas,

b. forming a resistor region in the elongated strip by implanting conductivity-determining impurity to provide a selected resistivity less than that of undoped polycrystalline silicon,

c. forming conductive regions in the elongated strip on both ends of the resistor regions, the conductive regions being doped at a level much higher than the resistor region, forming conductors electrically connecting said one end to the gate of the opposite one of the driver transistor, and electrically connecting the conductive regions at the other end of the resistor regions in common to a voltage supply.

4,408,386

METHOD OF MANUFACTURING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Tetsuya Takayashiki; Taiji Usui, both of Tokyo, and Tetsuma Sakurai, Hachioji, all of Japan, assignors to Oki Electric Industry Co., Ltd. and Nippon Telegraph and Telephone Public Corporation, both of Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,751

Claims priority, application Japan, Dec. 12, 1980, 55-174691; Feb. 19, 1981, 56-222238

Int. Cl.³ H01L *21/76, 21/20*

U.S. Cl. 29—576 E **14 Claims**

1. A method of manufacturing a semiconductor integrated circuit device comprising the steps of:

forming spaced recesses having a predetermined depth and an opening size in a surface of a single-crystal silicon substrate of a first conductivity type;

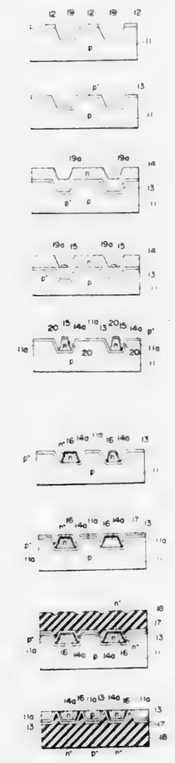
forming a first conductivity type diffused layer of a high impurity concentration on surfaces of said single-crystal silicon substrate and said recesses;

forming a second conductivity type epitaxially grown layer on a surface of said first conductivity type diffused layer;

forming mask layers on selected surface portions of said epitaxially grown layer above said recesses;

removing said epitaxially grown layer at portions other than those immediately beneath and near said mask layers to form second conductivity type island regions in said recesses;

removing said mask layers to expose surfaces of said island regions;



forming second conductivity type diffused layers in said exposed surfaces of said island regions;

forming an oxide film on the surfaces of said first conductivity type diffused layer and said second conductivity type diffused layer;

forming a polycrystalline silicon layer on a surface of said oxide film; and removing a rear surface of said single-crystal silicon substrate until said oxide film is exposed.

4,408,387

METHOD FOR PRODUCING A BIPOLAR TRANSISTOR UTILIZING AN OXIDIZED SEMICONDUCTOR MASKING LAYER IN CONJUNCTION WITH AN ANTI-OXIDATION MASK

Tadashi Kiriseko, Kanagawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 28, 1982, Ser. No. 425,648

Claims priority, application Japan, Sep. 28, 1981, 56-151986

Int. Cl.³ H01L *21/20, 21/318*

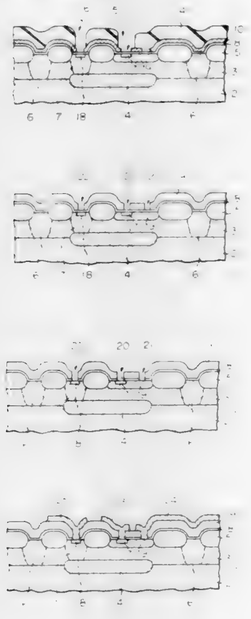
U.S. Cl. 29—576 E **16 Claims**

9. A method for producing a bipolar transistor having a semiconductor substrate, a base region formed in the semicon-

ductor substrate and an anti-oxidation masking layer formed on the base region, comprising the steps of:

a. forming a semiconductor layer on the anti-oxidation masking layer;

b. selectively etching the semiconductor layer to form a first opening for defining an emitter region and a second opening for defining a base electrode;



c. introducing impurities into the base region through the first opening to form the emitter region;

d. converting the semiconductor layer into an oxide layer;

e. selectively etching the anti-oxidation masking layer by using the oxide layer as a mask to expose portions of the emitter region and the base region; and

f. forming electrodes and conductor lines on the exposed emitter and base regions.

4,408,388

METHOD FOR MANUFACTURING A BIPOLAR INTEGRATED CIRCUIT DEVICE WITH A SELF-ALIGNMENT BASE CONTACT

Shuichi Kameyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kasasaki, Japan

Filed Apr. 8, 1981, Ser. No. 252,119

Claims priority, application Japan, Apr. 14, 1980, 55-49020

Int. Cl.³ H01L *21/308*

U.S. Cl. 29—578 **4 Claims**

1. A method for manufacturing a semiconductor integrated circuit device having a plurality of bipolar transistors at least one of which includes a base region, comprising the steps of:

forming a conductive layer directly on the base region;

forming an antioxidant insulation film of high insulation characteristic on said conductive layer;

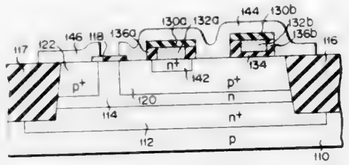
patterning said antioxidant insulation film to form an antioxidant insulation film pattern;

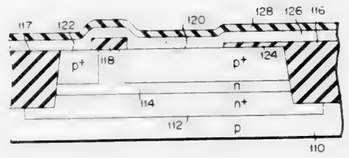
overetching said underlying conductive layer using said antioxidant insulation film pattern as a mask to form a conductive layer pattern such that said antioxidant insulation film pattern overhangs said conductive layer pattern;

thermally oxidizing the circumferential surface of said conductive layer pattern and an exposed part of said base region to grow a first thermally oxidized film on the circumferential surface of said conductive layer pattern and a second thermally oxidized film on the exposed part of said base region;

said first thermally oxidized film being thicker than said second thermally oxidized film;

removing said second thermally oxidized film on said base





region by anisotropic etching with gaseous ions substantially vertically incident on the surface of said base region with said antioxidant insulation film pattern as a mask, thereby exposing a portion of said base region; and

forming a base electrode wiring connected to said base region, said base electrode wiring covering said antioxidant insulation film pattern and said first thermally oxidized film.

4,408,389

ARRANGEMENT FOR ASSEMBLING A WORKING CYLINDER

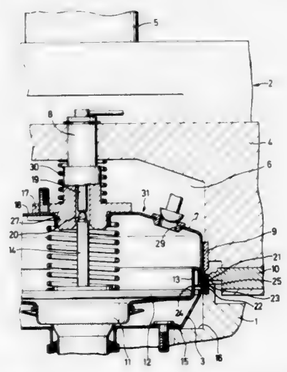
Nabil Henein, Muenster, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,796

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1980, 3015111

Int. Cl.³ B23P *21/00*; B23Q *15/00*

U.S. Cl. 29—715 **9 Claims**



1. An arrangement for assembling a working cylinder including a first casing shell having a mounting surface for a member to be actuated and a second casing shell supporting a working piston acting on a push rod in the direction of said member to be actuated comprising:

first means to move said first and second shells into each other to compress an elastic seal disposed therebetween;

measuring means supported from and controlling first means to ensure the actual distance between said mounting surface and a force-transmitting end of said push rod is equal to a predetermined distance; and

second means supported by said first means to connect said first and second shells together in a positive engagement to maintain said predetermined distance;

said mounting surface having a bore therein coaxial of a longitudinal axis of said working cylinder,

said measuring means including an annular collar adjacent one end thereof and a probe disposed concentrically within said measuring means, and

said first means including a plunger piston supporting said measuring means axially with respect to said push rod, to introduce said measuring means into said bore, to move said measuring means to cause said collar to abut said mounting surface to close said bore air-tight and to cause said probe to abut said force-transmitting end of said push rod, said probe opening an electrical contact when said predetermined distance is attained.

4,408,390

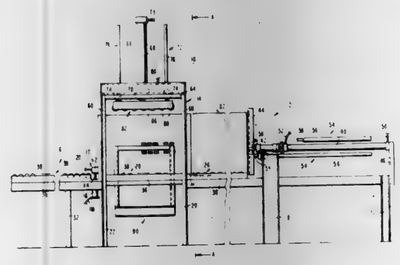
APPARATUS AND PROCESS FOR NESTING DRUM BODIES

Norman L. Fischell, 8 Foothill Dr., Kinnelon, N.J. 07405

Filed Jan. 28, 1981, Ser. No. 229,133

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—822 **9 Claims**



1. An apparatus for nesting drum bodies which comprises:

a drum body deformation assembly including means for positioning a drum body therein;

a linear deformation assembly;

means for moving said linear deformation assemblies through said drum body substantially towards an axis of said drum body to effect deformation of said drum body;

drum body feeding assembly including means for moving another drum body about said deformed drum body to a point coextensive with the said deformed drum body; and

means for withdrawing nested drum bodies from said assembly.

4,408,391

CONDUCTOR INSERTION TOOL AND METHOD

Karl-Heinz Pohl, Woodbury, Conn., assignor to The Siemon Company, Watertown, Conn.

Filed Feb. 12, 1981, Ser. No. 233,983

Int. Cl.³ H01R *43/04*; B23P *19/00*

U.S. Cl. 29—861 **21 Claims**

1. In a wire installing tool of the type having a handle and a stem, the stem having first and second ends and being reversibly mounted on and extending from the handle, an improved stem comprising:

a body portion, said body portion being apertured to permit installation thereof in the handle;

a pair of blade means, said blade means being integral with said body portion and each comprising:

a pair of parallel spatially displaced flange members; and

a web member interconnecting said flange members, said web member being generally transverse to said flange members and being positioned therebetween so as to cooperate with said flange members to define a generally U-shaped channel at either side of said web member; and

a cutting blade extension of at least one of said blade means flange members.

20. A method of installing a wire in an electrical connector, the connector having at least a pair of cooperating contact portions which are resiliently loaded in opposite directions so



as to exert a capture force on the wire and to exert a stripping force for the removal of insulation from the wire during movement of the wire relative to the cooperating contact portions, said method comprising the steps of:

positioning a wire to be installed at the top of the connector and in registration with the junction of a pair of cooperating contact portions;

supporting the wire from one side along the portion thereof which is to be inserted between the contact portions;

engaging the sides of the contact portions which are to act on the wire; and

forcing the wire downwardly between the contact portions without restraining movement of the contact portions whereby the contact portions are caused to spread apart by the wire while guiding the movement of the supported wire.

4,408,392

ELECTRIC SHAVER

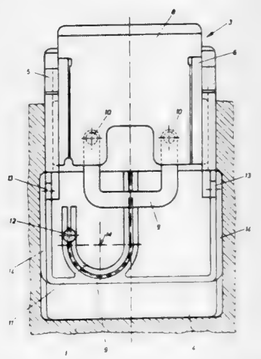
Gundolf Naimer, Graz, Austria, assignor to Payer-Lux Elektroprodukte Gesellschaft m.b.H., Graz, Austria

Filed Apr. 1, 1981, Ser. No. 249,970

Claims priority, application Austria, Apr. 3, 1980, 1839/80

Int. Cl.³ B26B *19/10*

U.S. Cl. 30—34.1 **7 Claims**



1. An electric shaver having a casing, a shear head and a long-hair cutting unit, characterized in that the long-hair cutting unit is slidably supported by the casing for movement from

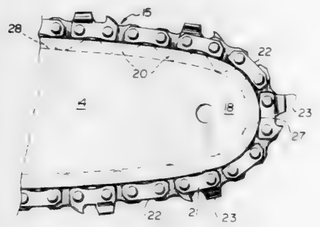
a retracted position in which the long-hair cutting unit lies within the confines of the casing to an extended position in which the cutting unit projects outwardly from the casing, a manually actuatable pusher for moving said long-hair cutting unit from one position to the other, guide means sidably mounting said pusher for movement relative to said casing, and motion multiplying coupling means comprising at least one flexible strip interconnecting said long-hair cutting unit and said pusher, and a semicircular guide in said pusher position to engage said strip and reverse its direction, whereby said long-hair cutting unit moves at least twice the distance through which the pusher travels when actuated.

4,408,393

CHAIN SAW

Bohumil Jerabek, Jerabek & Associates Ltd., Research & Testing Laboratories, POB 8566, Ottawa, Ontario, Canada K1G 3H9

Continuation-in-part of Ser. No. 69,211, Aug. 23, 1979, abandoned. This application Mar. 23, 1981, Ser. No. 246,433
Claims priority, application Canada, Jun. 8, 1979, 329343
Int. Cl.³ B27B *17/02, 17/12*
U.S. Cl. 30—123.4 **8 Claims**



1. In a chain saw:
a saw chain guide bar;
a saw chain;
a drive sprocket; and
lubrication means;
said guide bar being elongate and being symmetrically convexly curved about its longitudinal central axis and having a rounded nose and a pair of unitary peripheral rails;
said saw chain comprising a plurality of chain links in an endless repeating sequence of drive link, tie link, and a couple comprising cutter and balance link, with alternate cutter links being left- and right-hand;
each of said couple of cutter and balance links and each of said tie links having lower edges adapted to maintain continuous contact with the rails of said guide bar, the lower edges of said couple of cutter and balance links each having three curved surfaces, two of said curved surfaces lying on a first arc corresponding to the convex curve along the length of said guide bar, the other one of said three surfaces being centered between two said surfaces and lying on a second arc corresponding to the curve of the rounded nose of said guide bar; the lower edge of each of said tie links having a central curved surface lying on the second arc corresponding to the curve of the rounded nose of said guide bar;
the cutter links of each couple having a height to length ratio no greater than 1:2;
said drive sprocket having teeth the ends of which each have a radius of curvature equal to the radius of curvature of said rounded nose of said guide bar;
said radius of curvature of said guide bar nose being proportional to said chain links such that no more than one cutter link is at any time within an arc of 70° of the longitudinal central axis of the guide bar;
said guide bar having a groove between said rails equal in depth of the portion of the drive link in said groove;
said lubricating means including a passageway in said guide bar communicating at one end with an oil supply and entering at its other end in said guide bar groove, said passageway being angled in the direction of chain movement within said groove.

4,408,394

DISASSEMBLABLE JACK KNIFE

Paul S. Phelps, 1306 Woodlawn Dr., Maryville, Tenn. 37018

Filed Feb. 8, 1982, Ser. No. 346,725
Int. Cl.³ B26B *5/00*
U.S. Cl. 30—157 **10 Claims**



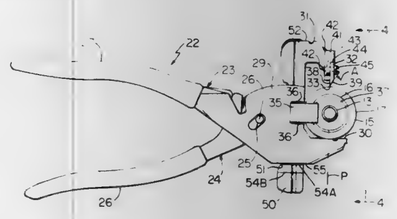
1. A jack knife adapted for disassembly with a pointed rod-like tool, which comprises:
a pair of spaced apart symmetrical liner plates having a blade end and a head end, each of said liner plates being provided with a blade pivot pin receiving aperture at said blade end, a slot of nonuniform width having a maximum width portion and a minimum width portion at said head end, and an aperture intermediate said pivot aperture and said slot to receive a backspring pivot;
at least one head backspring interposed between said liner plates along one edge thereof, said backspring having a blade walk portion and a head portion and being provided with a pivot pin aperture corresponding to said backspring pivot pin apertures of said liner plates, and with an aperture in said head portion corresponding to said maximum width portion of said slots in said liner plates;
at least one knife blade having a tang thereof interposed between said liner plates, said tang being provided with a blade pivot pin aperture, said tang bearing against said blade walk portion of said backspring;
a removable blade pivot pin passing through corresponding blade pivot pin apertures of said liner plates and said pivot pin aperture of said tang;
a backspring pivot pin passing through said backspring pivot pin apertures in said backspring and said liner plates;
a cylindrical locking pin penetrating said aperture of said head portion of said backspring and said nonuniform slot of said liner plates, said pins being provided with annular grooves with releasable engagement with said minimum width portions of said slots; and
wherein said liner plates are further provided with aligned tool-receiving apertures to permit passage of said tool through said liner plates, said tool-receiving apertures positioned such that said blade walk of said backspring intercepts said tool-receiving apertures.

4,408,395

TEXTILE COT REMOVER AND METHOD OF MAKING AND USING SAME

James S. Bryan, Clyde; Ivan Gaster, Hazelwood; Mayo B. Tell, Asheville, all of N.C., and Claude Dunn, Greenville, S.C., assignors to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 125,716, Feb. 28, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 333,084
Int. Cl.³ B26B *17/02*
U.S. Cl. 30—179 **2 Claims**



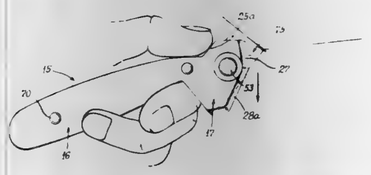
1. In a hand tool comprising a pliers-like instrument having a pair of members pivotally mounted for movement substantially in one plane and about a pivot having an axis disposed perpendicular to said plane, each of said members having a grasping handle on one side of said pivot and an associated jaw on the opposite side of said pivot, the improvement in said tool adapting same for cutting a textile cot from an associated mandrel and comprising a cutting blade, means detachably fastening said blade to one jaw with a cutting edge thereof disposed parallel to said axis, said tool being adapted to receive a mandrel having a cot supported thereon between its jaws with the axis of said cot disposed parallel to said cutting edge, a positioner provided on one of said members for axially positioning said mandrel and its cot relative to said blade, said tool being adapted to be operated by manually moving said handles toward each other causing said cutting blade to cut said cot along its axial length parallel to the cot axis and thus enable removal of said cot from its mandrel, and a stop carried by said one jaw adjacent said blade on the side thereof opposite the side thereof where said positioner is located, said stop being adapted to engage said mandrel outboard of its cot to stop said cutting edge before it engages said mandrel when said blade is cutting said cot whereby said cot is positioned by said positioner intermediate said positioner and said stop.

4,408,396

TRIM KNIFE

Albert S. Scholl, 2706 S. Kedvale, Chicago, Ill. 60623

Filed Mar. 15, 1982, Ser. No. 358,198
Int. Cl.³ B26B *3/08*
U.S. Cl. 30—294 **8 Claims**



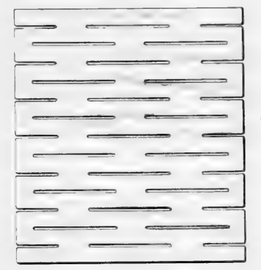
1. A hand tool for trimming wall covering materials, carpet and the like, comprising: a combined manually-engageable handle and integral blade holder, said blade holder being disposed transversely across one end of said handle and comprising an internal, open-ended blade holding socket aligned in angular intersecting relation to the lengthwise axis of the handle; and locking means for holding a cutting blade in said socket in position to engage materials to be trimmed comprising spring loaded pin means movable transversely through and between opposing walls of said socket and an opening in an intervening cutting blade mounted therein.

4,408,397

LATTICE PIE TOP CUTTER GUIDE PLATE

Ralph M. Bartos, 6297 Trafalgar Rd., Memphis, Tenn. 38134

Filed Aug. 7, 1981, Ser. No. 291,111
Int. Cl.³ G01B *3/00;* **B26C** *29/00*
U.S. Cl. 33—174 T **1 Claim**



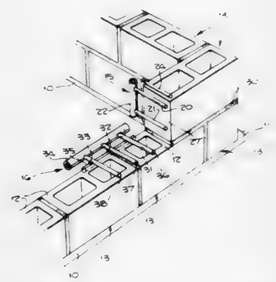
1. A cutting guide plate for cutting dough to form a lattice pie top crust, said guide plate comprising:
a flat plate made from any suitable material and of adequate thickness with sufficient length and width to cover the piecrust dough a plurality of rows of elongated slots disposed in said plate, the slots in each of said rows being separated at their end or ends by predetermined equally spaced intervals so aligned alternately and equidistant apart such that no spaced interval is aligned directly above or below like spaced intervals in the immediately preceeding and succeeding rows, whereby the dough can be cut in such a manner that when subsequently stretched and applied to a pie will constitute a continuing series of obtuse and acute angles forming said lattice pie top crust.

4,408,398

GAGE FOR LAYING BLOCKS

John R. Glaze, 8250 Lankershim Blvd., Space 7, North Hollywood, Calif. 91605

Filed Sep. 16, 1981, Ser. No. 302,496
Int. Cl.³ G01B *3/30, 5/25*
U.S. Cl. 33—180 R **6 Claims**



1. A gage member for the laying of multiple courses of individual blocks wherein the blocks have vertical and horizontal transverse faces for application of mortar and exposed faces and wherein the individual blocks in the wall are spaced by both vertical and horizontal mortar joints, said gage member comprising a positioning guide for engagement with ex-

posed faces of the blocks, spacer means comprising a plurality of parallel horizontally spaced spacer rods anchored to said positioning guide and adapted to overlie the transverse faces when mortar is applied, said rods having portions of substantially equal length extending outwardly of said positioning guide, and a handle rod anchored to certain of said portions at a location spaced from said positioning guide.

4,408,399

WHEEL ALIGNMENT GAUGE

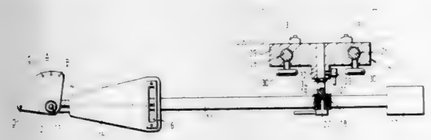
Phillip I. Darwood; Ernest Holland, both of Daventry; Peter M. Taylor, Flore, and Christopher Marley, Hardingstone, all of England, assignors to V. L. Churchill Limited, Daventry, England

Filed Nov. 20, 1981, Ser. No. 323,286

Claims priority, application United Kingdom, Nov. 22, 1980, 8037526

Int. Cl.³ G01B *5/255*

U.S. Cl. 33—203.18 **6 Claims**



1. A wheel alignment gauge comprising a pair of beams; means for mounting said beams on or against a different one of a pair of vehicle wheels or axles for such wheels, such that one end of each beam extends beyond the outer circumference of the wheel; each beam has an arm which is pivotally mounted at the end thereof which extends beyond the circumference of the wheel, each of said arms having a pointer which sweeps a scale calibrated to give an indication of the angular position of the arm with respect to the beam; each arm is provided with means by which it may be connected to the other arm with an elastic link, said means being adjustable between: a central position in which the line of action of the elastic link through the pivot point of each arm will be parallel to the axis of rotation of the vehicle wheels, when the pointer is on the zero point of the scale; and a position displaced to one side of said central position, such that the line of action of the elastic link through the pivot point subtends a pre-determined angle θ to the line of action to the elastic link when in its central position, the angle θ corresponding to the steering angle at which "toe out on turns" of the vehicle wheels may be measured.

4,408,400

METHOD OF AND APPARATUS FOR DRYING FRESHLY PRINTED SHEETS AND OTHER SUBSTRATES BY INFRARED OR ULTRAVIOLET RADIATION

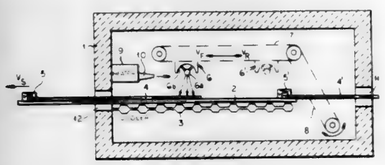
Fabio Colapinto, Milan, Italy, assignor to Argon Industrie Meccaniche s.r.l., Milan, Italy

Filed Oct. 2, 1981, Ser. No. 307,960

Claims priority, application Italy, Oct. 16, 1980, 25378 A/80

Int. Cl.³ F26B *3/30*

U.S. Cl. 34—4 **10 Claims**



1. A method of drying freshly printed substrates of sheet material successivly advancing along a predetermined path through a heating chamber,

comprising the step of irradiating a printed surface of a substrate traversing said chamber by a source of radiant energy tracking the advancing substrate along said path, with a substantially constant relative velocity consistent with the rate of irradiation required for drying the print on said surface during the time available for a traverse of said chamber.

4,408,401

ONE-PIECE, WASHABLE AND STERILIZABLE PLASTIC SHOE

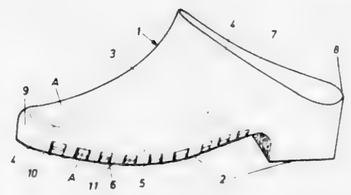
Hartmut Seidel, Hamburg, and Winrich B. Hammerschmidt, Schenefeld, both of Fed. Rep. of Germany, assignors to NATEC Institut, Fed. Rep. of Germany

Filed Jul. 24, 1980, Ser. No. 171,666

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930807

Int. Cl.³ A43B *7/06*

U.S. Cl. 36—3 B **14 Claims**



1. A one-piece, washable and sterilizable plastic shoe made from an elastic, robust plastic material, comprising:

a lower part with a top on which bears the foot and a bottom enveloping an outsole and a heel, as well as an upper part extending onto the lower part forming a cavity for receiving the toes, ball and metatarsus; and

ventilating openings (**6**) located in a substantially vertical lateral area (**5**) of the upper part of the shoe spaced from one another over the outsole edge (**10**), said ventilating openings having upper and lower outer boundary edges (**12, 13**) that are lower respectively than the corresponding upper and lower inner boundary edges (**14, 15**) thereof.

4,408,402

SUPPORTIVE SHOE AND INSERT

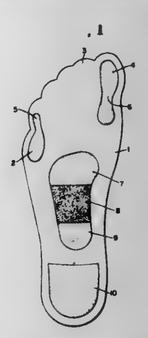
Judy A. Looney, 10112 Watkins Mill Pl., Gaithersburg, Md. 20879

Filed Aug. 5, 1982, Ser. No. 405,364

Int. Cl.³ A43B *13/38, 13/42*

U.S. Cl. 36—43 **8 Claims**

1. A shoe insert to provide increased support during the first and second trimesters of pregnancy comprising a flexible pad adapted to extend substantially beneath the entire foot from heel to toe, said pad having integrated therewith foot support means comprising areas of greater rigidity than the rest of said flexible pad, said foot support means comprising a substantial inflexible area of maximum support in the arch and individual areas of moderate flexibility and support (1) in the heel, (2) extending from the arch area of maximum support toward the



heel and toes, and (3) extending from the big and little toes under their respective ball areas.

4,408,403

SPORTS SHOE OR BOOT

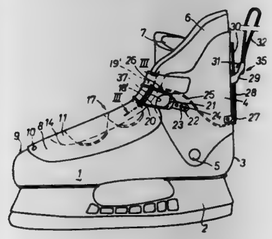
Hans Martin, Chasernweg 7, Kloten, Switzerland

Filed Aug. 3, 1981, Ser. No. 289,171

Claims priority, application Switzerland, Aug. 11, 1980, 6069/80; Feb. 27, 1981, 1351/81

Int. Cl.³ A43B *5/04, 11/00, 5/16*

U.S. Cl. 36—115 **14 Claims**



1. An improved sports shoe or boot particularly for ice hockey having an upper with openable instep flaps for putting on and taking off the boot, a leg plate at least partially encompassing the calf side of the upper, tightening means including at least one pull cord and a tightening member, the pull cord passing alternately from one instep flap to the other and being guided by guide pieces attached to the flaps and attached to the tightening member, the improvement comprising:

a covering tongue coupled to the upper at the cap portion thereof, said covering tongue extending over the openable instep flaps;

mounting means on said covering tongue for receiving at least one turn of said pull cord; and

means spaced from said covering tongue for receiving and guiding an end of said pull cord.

4,408,404

PIVOTABLE ARTICULATED SUPPORT SHOE FOR HYDRAULIC NOZZLE

John P. Latimer, Newport News, Va., assignor to Deepsea Ventures, Inc., Gloucester Point, Va.

Filed Sep. 8, 1980, Ser. No. 185,309

Int. Cl.³ E02F *3/92*

U.S. Cl. 37—58 **16 Claims**

1. A dredge vehicle capable of moving along the floor of a body of water, the dredge vehicle comprising:

(a) a chassis;

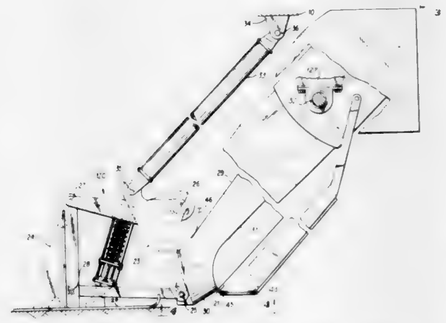
(b) a nozzle pivotally supported from its top by the chassis;

(c) a support surface adjacent the nozzle bottom;

(d) support surface connecting means for pivotally connecting the support surface to the nozzle, the connecting means comprising four pivotally interconnected rigid connecting members, the pivotal connections of which define a first parallelogram linkage assembly;

(e) a first rigid supporting member pivotally connected at one portion to the chassis and at a second portion to the support surface connecting means;

(f) a second rigid supporting member pivotally connected at one portion to the nozzle and at a second portion to the



first supporting member at a second portion thereof, in a manner such that the pivotal connections between the chassis and the nozzle, the nozzle and the second supporting member, the second and first supporting members, and the first supporting member and the chassis, define a second linkage assembly, wherein straight lines connecting the pivotal connections define a parallelogram;

(g) assembly connecting means for maintaining one side of the first parallelogram linkage assembly at a constant angle in relation to one side of the second linkage assembly such that the support surface is maintained at a fixed angle in relation to the horizontal.

4,408,405

UNDERWATER EXCAVATOR

Harry S. Williams, West Jefferson; Jan B. Yates, Reynoldsburg; John J. Reidy, Orient, all of Ohio; Ernest Faccini, Marbury, Md.; Terry E. Hill, Thornville, and William K. Shafley, Columbus, both of Ohio, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1981, Ser. No. 250,471

Int. Cl.³ E02F *5/00*

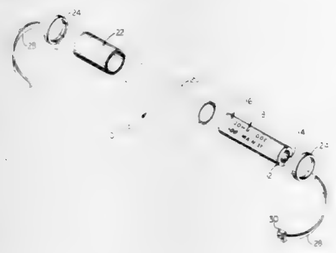
U.S. Cl. 37—62 **12 Claims**



1. An underwater excavator for excavating a sensitive ordnance device comprising plural contiguous barrier wall members, wherein each of said members consists of a covered rectangular framework of hollow conduit with upper and lower horizontal members, where, each horizontal member comprises a part of the exterior barrier wall, with means to

pump pressurized fluid through selected portions of the said horizontal members and where selected horizontal members are fitted with multiple nozzle means located along the underside of one or more said horizontal members, means to pump pressurized fluid through the said horizontal members and into the barrier nozzle means combined with a fluid driven jet pump eductor that produces differential pressure within the confines of the excavator, and means to pump pressurized fluid through the said eductor in order to remove suspended solids from the confines of the excavator so that the suspended solids are removed from the confines of the four barrier walls of the excavator by the differential pressure produced by pressurized fluid being pumped through said hollow conduit and into the jet pump eductor.

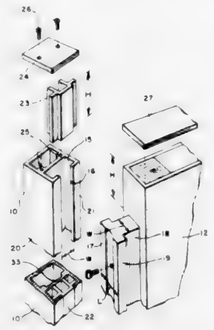
4,408,406
LUGGAGE IDENTIFICATION TAG
C. D. Barton, 815 W. 53rd Ter., Kansas City, Mo. 64112
Continuation-in-part of Ser. No. 268,583, May 29, 1981, abandoned. This application Sep. 21, 1981, Ser. No. 303,919
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—19 **8 Claims**



1. An An identification tag for a luggage item, comprising:
a substantially tubular member having open opposite ends and presenting a continuous passage extending longitudinally therethrough between the opposite ends of said tubular member;
a label connected with said tubular member, said label being adapted to have identification information entered thereon;
an elongate flexible strap extending loosely through said passage of the tubular member and said opposite open ends, said strap having portions externally of said passage and adapted for attachment to the luggage item to attach said tubular member and label thereof with both ends of the tubular member supported by the strap while permitting said tubular member to move longitudinally on said strap and to rotate about the axis thereof; and
a tubular band sleeved on said tubular member for movement thereon, said band being arranged to cover at least part of the identification information on said label at all positions of the band and to expose the identification information part by part as the band is moved on the tubular member.

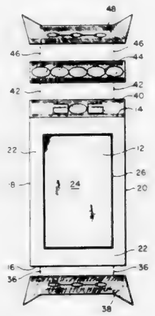
4,408,407
PANEL SIGN
Hanley D. Bloom, Los Angeles; Stanley Bloom, Beverly Hills; Fred E. Perry, Pomona, and Sam Leone, Canoga Park, all of Calif., assignors to Architectural Signing, Inc., Marina Del Rey, Calif.
Filed Jun. 4, 1982, Ser. No. 385,281
Int. Cl.³ G09F *15/00*
U.S. Cl. 40—607 **6 Claims**

1. A panel sign including, in combination:
(a) at least one extruded post having a hollow interior with one side having an elongated slot communicating with said interior;
(b) a panel having an edge flange of general T-shape in cross section, the width of the stem of said T-shape corresponding to the width of said slot and the length of the cross of the T corresponding to the interior distance between the opposite post side walls connecting to the wall containing said slot so that said edge flange can be received in said slot to provide lateral support for said panel; and
(c) an elongated extruded filler element receivable in the hollow interior of said post, said element having a cross section comprised of a forward portion of width corresponding to said slot, an intermediate portion defining



oppositely extending arms for engaging the interior of said opposite post side walls and a rear portion defining a pair of legs extending rearwardly to engage an interior rear wall of the post opposite the wall containing said slot, said forward portioon filling said slot to provide an exterior finshed appearance to said post along the length of the post within which the extruded element is received, said extruded element having a length less than the length of the post so that after being received in the post, there remains room for the post to receive said edge flange of said panel, the lower end of said edge flange seating on said extruded element to provide vertical support for one end of said panel.

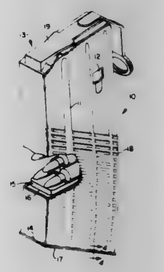
4,408,408
DECORATIVE MOUNTING SYSTEM
Fe C. Eng, 405 E. Seqium Bay Rd., Sequim, Wash. 98382
Filed Jul. 10, 1981, Ser. No. 282,095
Int. Cl.³ G09F *17/00*
U.S. Cl. 40—617 **3 Claims**



1. Decorative hanging and mounting system for art work, graphics and the like, comprising:

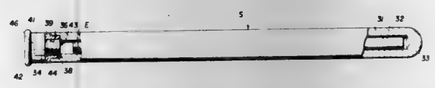
a generally rectangular, flexible base fabric material having front and back surfaces and upper, side and lower ends,
cloth border material adhered to the four borders of said base material over predetermined portions of the front surface of said base fabric material and folded around the edges of said base fabric material and also adhered to the back surface thereof, said fabric border material defining an art and graphic area on the front surface of and of lesser size than said base fabric material,
decorative edge stripping overlying and adhered to the edges of said fabric border material and said rectangular art and graphics area,
wooden securing members at each of the upper and lower ends of said base fabric material such that said wooden securing members are at least partially wrapped at least by said base fabric material at said upper and lower ends, and
solid decorative weight members at the upper and lower ends detachably secured to said wooden securing members.

4,408,409
AMMUNITION MAGAZINE PACKAGE COMBINATION
Adolfo Arias L., Box 741, Panama, Panama
Filed Feb. 24, 1981, Ser. No. 237,712
Int. Cl.³ F41C *25/02*
U.S. Cl. 42—50 **15 Claims**



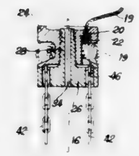
1. An ammunition magazine-package unit for use in firearms, including a hollow magazine body to receive ammunition for subsequent feeding at one end of the magazine body into a chamber of a firearm, means in the hollow body for biasing ammunition toward the dispensing end of the magazine, and a tamper-proof removable seal sealingly joined with the magazine body in the area of the dispensing end, the seal having a pull tab for removing the seal from the magazine body such that said seal breaks contact with the body in a progressive manner to expose an area designed to serve as an opening for feeding of the ammunition after removal of said seal.

4,408,410
HAND GUN AND KIT THEREFOR
Anthony A'Costa, 2216 - 7th Ave., Apartment C 301, Pueblo, Colo. 81003
Division of Ser. No. 70,466, Aug. 28, 1979, Pat. No. 4,368,589. This application Sep. 29, 1982, Ser. No. 426,344
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—90 **2 Claims**



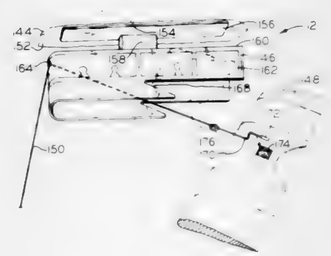
1. A nightstick for carrying a barrel extension for a weapon comprising a cylindrical member having a central bore defined by an inner wall closed at one end and open at the other end, said central bore having a length and an inner diameter for loosely accommodating said barrel extension therein in a concealed position, said cylindrical member inner wall having an internally threaded portion adjacent said open end and a closure member having an externally threaded portion of reduced diameter forming a shoulder, said closure member threaded portion arranged for threaded engagement with said internally threaded portion on said cylindrical member with said shoulder in abutting engagement with said cylindrical member other end for concealed storage of said barrel extension in said cylindrical member.

4,408,411
FISHING LURE RETRIEVER
David B. Skarnells, 5925 Samuel St., La Mesa, Calif. 92041
Filed May 21, 1981, Ser. No. 265,727
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—17.2 **4 Claims**



1. A lure retriever comprising:
a body;
means on said body to engage a fishing line in sliding relation;
an attachment point for a cord;
a plurality of chains depending from said body to ensnare the hooks of a lure on the end of said fishing line, said chains being releasably mounted to said body to permit cleaning and replacement of same; wherein said body comprises a base with coaxial threads and a spool engageable on said threads and being axially advanceable thereon toward said base; and
said base has therethrough passageway pairs for passing chain loops and defines a link seat between each passageway pair such that tightening said spool down captures any link seated in said link seat to define a pair of depending chains passing through said passageways.

4,408,412
TOY AIRCRAFT AND METHOD OF OPERATION
Richard O. Forker, 104 Oak Tree Ct., Logansport, Ind. 46947
Filed Jul. 20, 1981, Ser. No. 284,608
Int. Cl.³ A63H *3/06*
U.S. Cl. 46—89 **4 Claims**



1. A toy aircraft, comprising:
a blimp adapted for containing a lighter-than-air gas, and

including a base attached to an undersurface thereof and a flange member connected to said base in a generally perpendicular manner,
a gondola being attached to said flange member and having a top surface and a wall downwardly disposed therefrom, said gondola having a guide means, and a wedge slot in the bottom surface of said wall,
an airfoil releasably attached to said gondola wedge slot,
a line securely attached slidably to said gondola through said guide means, a first end of said line being releasably attached to said airfoil and a second end of said line held by an operator of said aircraft,
an object attached to said airfoil, and
a retaining means attached to said line for maintaining control of said blimp, whereby when said blimp becomes airborne said object may be released by pulling on said line and descended slowly to the ground.

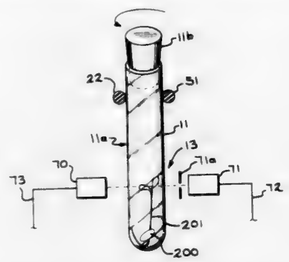
4,408,413
DYNAMIC TOY APPARATUS
Joseph Hyland, 344 E. 63 St., New York, N.Y. 10021, and Joseph J. Wetherell, 20 Woodsbridge Rd., Katonah, N.Y. 10536
Filed Oct. 19, 1981, Ser. No. 312,738
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—241 **14 Claims**



1. A dynamic toy apparatus utilizing kinetic rotary energy of a spinning top for conversion to translatory motion comprising a top having a stem and a body portion, stationary guidance means having a runway for supporting the spinning top on one end of the stem in a substantially vertical orientation, the guidance means further having acceleration means including an elongated member mounted within said runway, said member being adapted for providing a contact surface for said end of the stem and for magnetically interacting therewith to impart a linear velocity to the top.

4,408,414
DETECTION APPARATUS AND METHOD OF USE
Fredric R. Lehle, Lansing; James W. Maine, Mason; David Grossman; Richard A. Leavitt, both of Lansing, and Alan R. Putnam, Haslett, all of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.
Filed Apr. 19, 1982, Ser. No. 369,633
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—1 R **17 Claims**

1. An apparatus useful for determining the presence of a small object at a station (13) which comprises:
(a) indexing means (10) for providing the object at the station, wherein the object is supported by a holder (11) rotatable around an axis at the station and provided on a carrier (12, 81) for movement by the indexing means into and out of the station and wherein the indexing means stops the holder on the carrier at the station for a predetermined period of time;
(b) drive means (14) at the station to cause rotation of the holder (11) around the axis while the carrier is stopped at the station;
(c) photoelectric detection means including a coherent light beam emitter (70) and a light beam detector (71) responsive thereto such that when the holder is stopped at the



station and rotated on the axis the light beam is interrupted by the object at the station; and
(d) electrical means (102, 114) responsive to the detector determining the presence of the object at the station when the light beam is interrupted by the object as the holder is rotated.

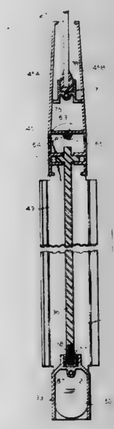
4,408,415
CHRISTMAS TREE STAND
Billy R. Davis, 1486 Francis Ave., Upland, Calif. 91786, and Bob G. Davis, 150 S. Beach Blvd., La Habra, Calif. 90631
Filed Sep. 13, 1982, Ser. No. 419,452
Int. Cl.³ A01G *29/00*
U.S. Cl. 47—40.5 **13 Claims**



1. A Christmas tree stand which is readily adjustable to straighten the Christmas tree, said stand comprising:
a ball member having means for attachment to the base of a Christmas tree;
a ball holding assembly having clamp means moveable between a first position and a second position, said first position being such that the ball member may move readily about in said clamp means and said second position being such that said ball member is held securely therein in a fixed position;
remote control means affixed to said clamp means to move the same from said first position to said second position said remote control means being operable by a shaft; and

a water container surrounding said ball holding assembly and extending sufficiently upwardly to hold water above the uppermost portion of said ball member when said ball member is held in said clamp means and wherein the shaft of the remote control means extends through the side of said water container.

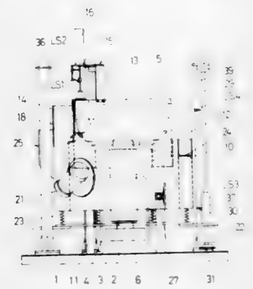
4,408,416
PET ACCESS DOOR PANEL
George N. Davlantes, 18307 Burbank Blvd. #54, Tarzana, Calif. 91356
Continuation-in-part of Ser. No. 811,949, Jun. 30, 1977, which is a division of Ser. No. 622,067, Oct. 14, 1975, Pat. No. 4,047,331.
This application Dec. 21, 1978, Ser. No. 971,674
Int. Cl.³ E0B6 *7/28*
U.S. Cl. 49—168 **2 Claims**



1. A door frame comprising:
a pair of upright stiles;
first rail means extending between said stiles;
second rail means positioned beneath said first rail means and extending between said stiles;
weather pane means having a laterally extending edge portion;
telescoping mounting means carried by at least one of said first and second rail means and telescopingly receiving at least an upper or lower end of said weather pane means, said telescoping mounting means including
a transverse stiffener means,
mutually converging non-parallel resilient wall means converging from said transverse stiffener means on said laterally extending edge portion only, sealably and yieldable engaging in continuous compressive contact said pane means and operable to accommodate vertical adjustment of said weather pane means while remaining telescopingly compressively and sealingly engaged therewith to prevent air transfer through said mounting means.

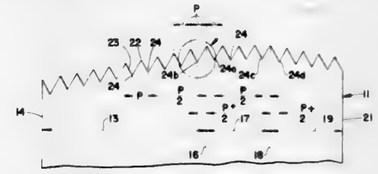
4,408,417
FULLY AUTOMATIC BARREL FINISHING MACHINE
Hisamine Kobayashi, and Mutsumi Miyashiro, both of Nagoya, Japan, assignors to Shikishima Tipton Mfg. Co., Ltd., Nagoya, Japan
Filed Oct. 21, 1981, Ser. No. 313,996
Claims priority, application Japan, Oct. 31, 1980, 55-154498; May 6, 1981, 56-65536[U]; Sep. 17, 1981, 56-146620
Int. Cl.³ B24B *19/00*
U.S. Cl. 51—163.2 **13 Claims**

1. A workpiece finishing machine for the surface finishing, radiusing, gloss polishing, deburring, milling and the like, which comprises:
a dual-barrel structure for containing a mass of a lot of workpieces to be processed and an abrasive media and consisting of an upper stationary container and a lower rotary container either of which is movable away from the other; and



an annular mass receptacle trough structure surrounding close to said dual-barrel structure and including means for causing said mass receptacle trough structure to be moved up and down, vibration generating means for causing said mass receptacle trough to be vibrated, means for separating the mass into workpieces and abrasive media, and means for returning the abrasive media for reuse.

4,408,418
METHOD OF FORMING THROUGH-FEED CYLINDRICAL THREAD ROLLING DIES
Richard H. Corrette, Cleveland, Ohio, assignor to Colt Industries Operating Corp., Cleveland, Ohio
Division of Ser. No. 113,719, Jan. 21, 1980, abandoned. This application Oct. 26, 1981, Ser. No. 314,688
Int. Cl.³ B23G *1/36*
U.S. Cl. 51—288 **6 Claims**



1. A method of forming cylindrical throughfeed thread rolling dies with substantially flat flanks, a leadin taper portion, and a dwell portion comprising forming a grinding wheel with at least one female thread form having substantially straight flanks, and with said grinding wheel grinding both flanks of a thread form on said die with uniform spacing between the crests thereof along the entire length of said die and uniform root spacing except at the junction between said portions wherein the root spacing between adjacent roots is increased, said grinding wheel being formed with a taper section and a uniform diameter section both of which are formed with a plurality of annular tooth forms, and forming said tooth forms on said grinding wheel with uniform spacing between the roots along the entire length of said wheel and forming the spacing between crests on said wheel uniform except at the junction between said sections wherein a greater spacing is provided between adjacent crests, and with said grinding wheel grinding said lead-in taper with said taper section of said grinding wheel

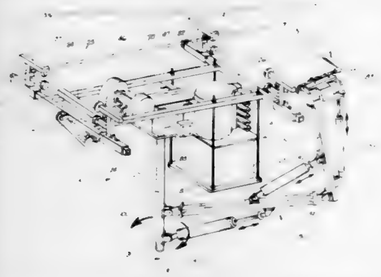
and grinding said dwell portion with said uniform diameter section of said grinding wheel.

4,408,419

APPARATUS AND METHOD FOR SANDBLASTING FLANGED BEAMS

Tom J. Appling, 5706 Shoalwood St., Austin, Tex. 78756

Filed Dec. 3, 1980, Ser. No. 212,509
Int. Cl.³ B24C *3/06*; B24B *1/00*
U.S. Cl. 51—429 **9 Claims**



1. A remotely controlled apparatus for sandblasting flanged beams having at least a web and an attached flange, said apparatus comprising:

a. a carriage mountable on the underside of a flange of the beam to be sandblasted and having at least a pair of longitudinal members and a pair of transverse members;

b. a pair of left and a pair of right leg support means for attaching said carriage respectively to the left and right lateral edge portions of the beam flange, each of said leg support means comprising:

i. an upper support roller for riding on the upper surface of said beam flange;

ii. a lower support roller for engaging the underside surface of said beam flange;

iii. a lateral support roller for engaging the latermost edge of said beam flange and preventing lateral movement of said carriage with respect to the beam;

c. at least one powered wheel rotatably mounted on said carriage and frictionally engaging the underside of the beam flange;

d. articulated means movably attached to said carriage for varying an angle of attack of a nozzle means during sandblasting operation and permitting a 360 degree rotation of said nozzle means around the beam to be sandblasted.

4,408,420

DOUBLE WALLED UNDERGROUND STORAGE CONTAINERS FOR FLUIDS SUCH AS HEATING OIL WHICH ENDANGER THE GROUND WATER AND A METHOD FOR THEIR MANUFACTURE

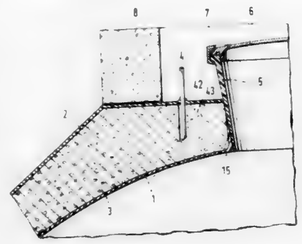
Harry Haase, Gadelander Str. 172, 2350 Neumünster 1, Fed. Rep. of Germany

Filed Dec. 21, 1976, Ser. No. 752,842
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1975, 25587375
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—1 **13 Claims**

1. Double-walled underground storage container for fluids, such as heating oil, which upon leaking are capable of endangering the purity of the ground water, comprising

an inner and a surrounding outer wall of synthetic plastic material which define with one another a gap forming a continuous leak monitoring space;

a body of open-pore material continuously permeable to air and liquid filling said gap and bracing the inner wall against the outer wall and forming with said walls a homogeneous unit capable of withstanding and absorbing tensile, compressive and torsional forces, said material being synthetic concrete with a compression-resistant structure of filling material having no small components and forming the static load bearing layer of the container, the ratio of synthetic resin present in said synthetic concrete relative to the amount of filling material being such that a



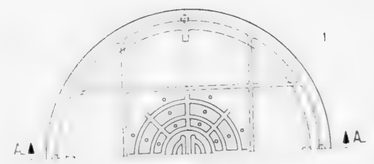
sufficient wetting of the particles of said filling material is achieved to assure bonding of said particles to one another but without impairing the permeability of said body; and means for monitoring said space and for detecting pressure variations in the same.

4,408,421

MANHOLE STRUCTURE

Yang-Kuang Pai, 2 Floor, No. 27, Lane 305, Wo-Lung St., Taipei, Taiwan

Filed Apr. 30, 1981, Ser. No. 259,483
Int. Cl.³ E02D *29/14*
U.S. Cl. 52—20 **5 Claims**



1. An improved manhole structure, which comprises;

(a) a circular cover having a rim inclined at 45° inwardly of the periphery of said cover to define a continuous conical contact surface, a plurality of lug protrusions extending from said contact surface;

(b) a ring having an axial inner wall and an axial outer wall and an upper face and a lower face, both said upper and lower faces being inclined inwardly at 45° to define continuous conical surfaces, on the said upper face there are a plurality of holes so shaped and located to engage with the protrusions on the cover contact surface, and on the said lower face there are a plurality of lug protrusions, and

(c) an annular base having an upper surface inclined inwardly at 45° and a flat lower face, on the said upper surface there are a plurality of holes so shaped and located to engage with the protrusions formed on the lower face of the said ring.

4,408,422

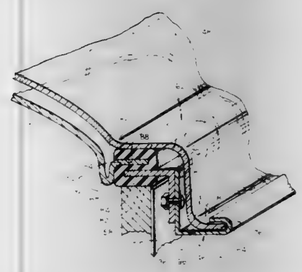
SKYLIGHT DOME ASSEMBLY

Stephen K. Bechtold, 28 Soundview Ave., East Northport, N.Y. 11731

Filed Jun. 10, 1982, Ser. No. 387,215
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—72 **8 Claims**

1. A skylight assembly adapted to be mounted to cover an opening in a roof structure comprising: a liner adapted to be

mounted adjacent the edge of the opening in the roof structure around the periphery to surround the opening and to form a wall extending upward from the roof structure, an outer dome and an inner dome spaced from one another and with the outer dome overlying the inner dome, both of said domes engaging sealing means positioned on the liner wall, a supporting frame coupled to said dome and sealing means arrangement and the frame and arrangement being hinged to said liner to permit shifting thereof with respect to the liner between a closed position overlying the opening in the roof structure and an open position permitting access to the opening from the exte-



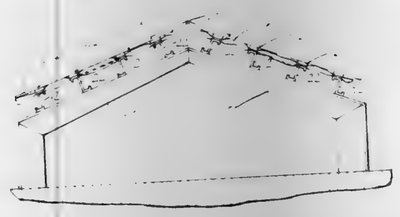
rior of the roof structure, the supporting frame having a U-shaped end portion to receive the peripheral edge portion of the outer dome therein and thereby support the outer dome, the sealing means being a gasket positioned around the upper peripheral surface of the wall of the liner, the inner side of the gasket having a slot therein adapted to receive and seal the peripheral edge of the inner dome, the outer side of the gasket having a slot therein to sealingly engage the supporting frame attached to the outer dome, and a portion of the outer dome inwardly spaced from its outer peripheral edge resting on the upper side of the gasket.

4,408,423

ROOF CONSTRUCTION WITH STABILIZED Z-PURLINS

Richard W. Lautensleger; George R. Bingham, both of Middletown, Ohio, and Peter J. Trepanier, Houston, Tex., assignors to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 844,609, Oct. 25, 1977. This application Apr. 2, 1979, Ser. No. 26,187
Int. Cl.³ E04B *7/00*; E04D *13/00*
U.S. Cl. 52—90 **23 Claims**



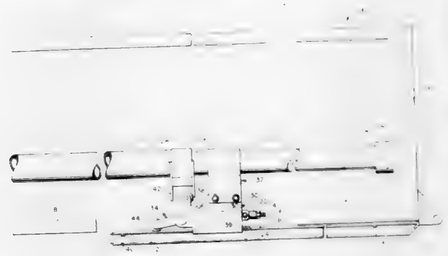
1. In a roof construction having a least one roof slope with an upper and lower end, said at least one roof slope having at least four Z-purlins secured to a plurality of rafters transversely thereof, each said Z-purlin having upper and lower flanges, the upper flanges of adjacent purlins being substantially spaced from each other, and a roof deck secured on top of said Z-purlins, at least two of said Z-purlins on said at least one roof slope being oriented to face downwardly of said roof slope and at least two Z-purlins on said at least one roof slope being oriented to face upwardly of said roof slope, whereby to counterbalance tendencies toward Z-purlin roll over failure.

4,408,424

TELESCOPING CYLINDER STABILIZER

Gerald Sutter, El Dorado, Kans., assignor to Richard K. Teichgraeber, El Dorado, Kans.

Filed Mar. 20, 1981, Ser. No. 245,814
Int. Cl.³ E04H *12/34*; B66C *23/06*
U.S. Cl. 52—115 **20 Claims**



1. A telescoping cylinder stabilizer for stabilizing a cylinder and rod which telescopingly extend and contract a mast assembly, said cylinder stabilizer comprising:

a support body moveably carried on a lower mast portion of the mast assembly;

a rod encircling clamp carried by said support body and engaging said rod;

means to move said support body along said lower mast portion during extension and contraction of said cylinder and rod; and

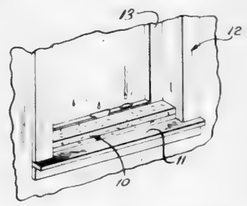
means for securing said stabilizer in place to stabilize said rod when said rod and cylinder are extended.

4,408,425

WINDOW MOISTURE AND AIR FLOW CONTROL DEVICE

Helen M. Torme, 3450 N. Lake Shore Dr., Chicago, Ill. 60657

Filed Aug. 10, 1981, Ser. No. 291,792
Int. Cl.³ E06B *7/12*
U.S. Cl. 52—171 **8 Claims**



1. In a window structure having a sash and a sill, said sash and sill having moisture liquid produced thereon as a result of climatic conditions, and said sash and sill cooperatively defining at times a crack therebetween, the improvement comprising:

a moisture and air flow control device comprising a block of liquid absorbing material; and

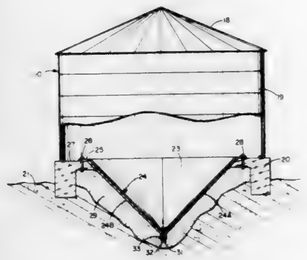
wicking means enclosing said block defining outwardly exposed means for conducting moisture liquid from said sash and sill by wicking action to said block through a portion of the wicking means engaging the sash and sill, and from said block through a portion of the wicking means spaced from said sash and sill, effectively over the entire outer surface of the block, said wicking means being flexible and further defining means for blocking air flow through said crack as a result of the crack being covered by said device.

4,408,426

STORAGE BIN FLOOR STRUCTURE

Stuart Ystebo, 2421 - 16th Ave. South, Moorehead, Minn. 56560

Filed Aug. 3, 1981, Ser. No. 289,277
Int. Cl.³ E04H *7/00*
U.S. Cl. 52—245 **10 Claims**



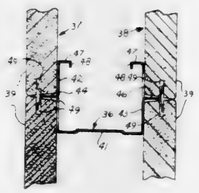
1. A bulk material storage facility comprising:
generally upright side walls defining a closed perimeter for containing a bulk material;
floor means conical in shape disposed within the perimeter defined by the side walls, said floor means including a modular conical member with downwardly convergent wall means converging toward an apex at an angle of at least 30° below a horizontal plane;
said floor means including a generally horizontal portion disposed adjacent the side walls in surrounding relationship to the modular member and of a width sufficient to permit passage by a person;
said modular conical member having an outwardly directed peripheral flange located at its upper edge and extending over the horizontal portion and including means assembling said peripheral flange to the horizontal portion.

4,408,427

FRAMING SYSTEM FOR DEMOUNTABLE WALLS OR THE LIKE

Gregory W. Zilch, Amherst, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Oct. 3, 1980, Ser. No. 193,803
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—481 **19 Claims**



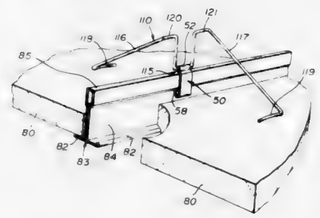
1. A frame member for supporting the abutting edges of kerfed edge wall panels at a location spaced from an adjacent wall structure, comprising a sheet metal member providing a backup surface means engageable with the inner side of said wall panels along the joints therebetween and at least one lateral leg joined to said backup surface means and extending at a substantial angle relative thereto to support said backup surface means and maintain it substantially straight, and a plurality of panel locking means at spaced locations along the length of said backup surface means, each locking means including a separate lateral portion extending substantially perpendicular to said backup surface means and a panel edge locking portion extending substantially parallel to said backup surface means, said locking portions being adapted to extend into the kerfs of panels along abutting edges thereof to secure said panels against said backup surface means, said locking portions extending from said lateral portion along an inner part substantially along a first plane spaced from and substantially parallel to said backup surface means to an outwardly extending step and from said step along an outer part, said outer part extending along a second plane substantially parallel to said backup surface means and spaced therefrom a distance greater than said first plane, whereby assembly of a panel kerf on said locking portion causes the panel to be cammed into proper engagement with said backup surface means as it moves past said step.

4,408,428

SUSPENDED PANEL CEILING HAVING IMPACT ABSORBENT PANEL RETAINING CLIP ASSEMBLIES

Michael E. Brooke, Sharon, Wis., and Alan C. Wendt, Barrington, Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Sep. 28, 1982, Ser. No. 425,751
Int. Cl.³ E04B *5/52;* **E06B** *3/54*
U.S. Cl. 52—489 **13 Claims**



1. A ceiling comprising:
a suspended grid of main runners and cross runners, said runners having a vertical web and horizontal flanges forming an inverted T in cross section, the webs of at least the cross runners having a lateral abutment;
a plurality of ceiling panels resting on said horizontal flanges;
a clinch fastener mounted on said web by resilient frictional engagement with said lateral abutment, said clinch fastener having two spaced-apart, upright straps, a channel continuous with and connecting said straps at the apex of said fastener, each strap having a keeper distal from said apex and extending inwardly and upwardly into the space therebetween, said channel and straps straddling the web and said keeper biting into said abutment, and
a spring having a central U-shaped segment having two upright arms and a cross member between said arms, said cross member being interposed co-axially within said channel, and divergent legs extending downward from the arms of the U at an acute angle to the vertical plane passing through both arms, said legs resting on the inner faces of adjacent panels.

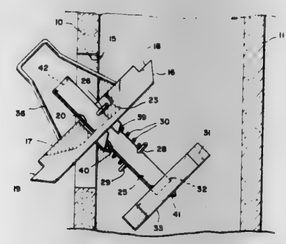
4,408,429

PLUG FOR HOLES IN WALLS

Larry V. Neal, 1352 Burnside Ave., Apt. 6, Los Angeles, Calif. 90019

Filed Oct. 13, 1981, Ser. No. 310,434
Int. Cl.³ E04G *23/02*
U.S. Cl. 52—514 **4 Claims**

1. A plug for holes in walls made up of first and second wall panels on opposite sides of vertical studs including, in combination:
(a) a first body having a flat front surface with opposite stepped sides for engaging opposite inside marginal edges of a cut-out about a hole in the first wall panel so that the first body extends within the cut-out, said first body further having a central opening with upper and lower slots at its rear exit end and arcuate cut-outs extending partially into its front entrance end communicating with said slots and defining diametrically opposite internal ledges;
(b) a shaft having a first pair of diametrically oppositely extending pins at a given spacing from one end such that said one end and pins can be received in said central opening and slots from the rear to protrude out the front of said first body and rotated to seat said first pair of pins on said internal ledges said shaft having a second pair of diametrically oppositely extending pins at a given spacing from its other end;
(c) a compression spring surrounding said shaft between the first and second pairs of pins such that when the first pair of pins enters the slots, the spring bears against the rear periphery of the central opening and is compressed as the



one end of the shaft is received in the opening, the spring thereby exerting a biasing force on the shaft tending to urge the shaft out of the central opening, the first pair of pins when seated on the ledges holding the shaft in the opening; and
(d) a second body having a front central circular cavity receiving said other end of said shaft and a flat rear surface in a spaced position juxtaposed the inside surface of the second wall panel when said first body is in said cut-out of the first wall panel and the pins seated on the ledges whereby rotation of the protruding one end of the shaft to unseat the pins results in the spring urging the shaft toward the second wall panel to seat the second member against the second wall and thereby hold the first member in place so that the cut-out is plugged, further rotation of the shaft positioning the first pins cross-wise of the slots to lock the relative positions of the first and second bodies in place.

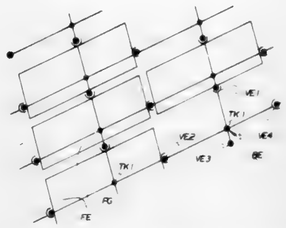
4,408,430

CONSTRUCTION ELEMENTS AND JOINT CONNECTIONS FOR A DEFORMABLE STRUCTURE AS WELL AS DEFORMABLE LINE, PLANE AND THREE-DIMENSIONAL STRUCTURES

Alfred Wangler, Lettenweg 3, 7889 Grenzach-Wyhlen, and Otto K. Fiedler, Rheinhohe 9, 7891 Kussaberg 1, both of Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,654
Int. Cl.³ E04D *1/00*
U.S. Cl. 52—585 **13 Claims**

1. An apparatus comprising a plurality of construction elements of a deformable line, surface or a three-dimensional structure, a connection element joining two of said construction elements and connected with said construction elements and providing for relative motion between said construction elements, each of said construction elements having an opening therein for removably receiving said connection element, a spring element located within said opening for detachably retaining said connection element within said opening, said spring element including a first surface section and at least one flexible spring section engaging said connection element, and



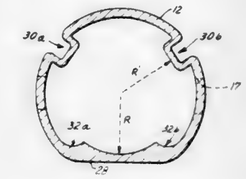
means for joining said first surface section of said spring element to its respective construction element.

4,408,431

SHORING EQUIPMENT

Michael S. D'Alessio, Flushing, and Stanley A. Sandler, New York, both of N.Y., assignors to Harsco Corporation, Camp Hill, Pa.

Filed Jan. 15, 1981, Ser. No. 225,204
Int. Cl.³ E04G *1/06, 1/22;* **E04H** *12/08*
U.S. Cl. 52—690 **18 Claims**



1. An improved shoring, scaffolding, or similar support frame made of relatively thin-walled extruded light weight metal tubing comprising at least a pair of parallel legs, fixed bracing means between said legs, each said leg being substantially circular in cross section with a longitudinally-extending planar-surfaced wall portion of a width to accommodate said bracing means and at least two longitudinally-extending internal ribs, the minimum inside radius of said leg to said planar wall portion and to each of said ribs being substantially the same and defining a circle which accommodates cylindrical accessories of a predetermined size, said ribs being substantially symmetrically spaced about the circumference of said leg relative to said wall portion sufficiently to contain each said accessory against lateral displacement and maintain it in longitudinal alignment, and said fixed bracing means being fixed to and between the respective planar-surfaced wall portions of said pair of legs.

4,408,432

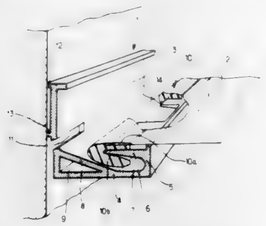
TRIM STRIP ASSEMBLY

Gordon V. Carter, and Ralph D. Tromble, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 16, 1982, Ser. No. 408,385
Int. Cl.³ E04C *2/38*
U.S. Cl. 52—718 **6 Claims**

1. A trim strip assembly attached to a substrate body comprising:
an elongated, rigid member fastened to the substrate body, said rigid member having a terminal end with spaced upturned tabs;
a trim strip secured to the rigid member, said trim strip having two parallel longitudinal downwardly curved elongated areas and a terminal end; and

an end cap secured to the rigid member and trim strip having a forward terminal end, a top wall, and a rear wall, the bottom edge of which abuts the end of the rigid member, said end cap having two spaced flat resilient legs projecting from the rear wall and their forward ends extending beyond the forward terminal end and each leg in contact



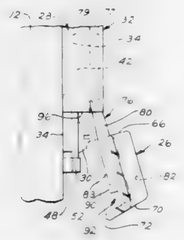
with a respective longitudinal downwardly curved elongated area of the trim strip, each leg being spaced from the top wall to allow insertion under the terminal end of the trim strip and each leg lies in a plane that bisects the other and at the same acute angle relative to the horizontal plane, said legs each having a cutout portion at the rear to receive the respective upturned tabs of the rigid member.

4,408,433

SECTION CONSTITUTING AN OUTER LONGITUDINAL ELEMENT OR MOULDING OF A FALSE CEILING OR A FALSE WALL

Fernand Scherrer, 2, rue Georges Bizet, 68170 Rixheim, France

Filed Feb. 3, 1981, Ser. No. 231,101
Claims priority, application France, Feb. 5, 1980, 80 02438
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—738 **8 Claims**



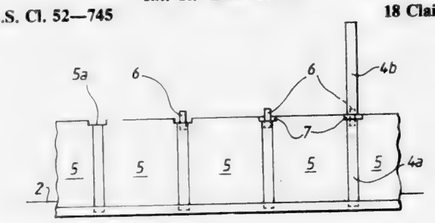
1. A frame for a false ceiling or false wall, comprising
a first flange adapted to be attached to the edges of a wall;
a second flange angularly related to said first flange;
said second flange terminating in a shoulder extending towards said first flange;
said shoulder defining with said second flange a generally U-shaped groove open towards said first flange and adapted to receive therein a hook-shaped portion of the rigid edge of a sheet;
said second flange including a prismatic tubular part having a triangular cross-section;
said part having a sloping surface leading from said first flange to said groove and defining with said shoulder a passage having a width slightly greater than the thickness of said hook-shaped portion of said edge to hold said portion and prevent deformation thereof;
said first flange having openings above said sloping surface; and
spaced longitudinal ribs outwardly extending from said first flange, one of said ribs forming the end of said first flange and having an inwardly extending portion parallel to said second flange.

4,408,434

MULTI-STOREY BUILDING AND A PREFABRICATED PANEL FOR SUCH A BUILDING

Leonard D. Collins, 28 Wychelm Rd., Hornchurch, Essex, England

Filed Jan. 7, 1981, Ser. No. 223,061
Claims priority, application United Kingdom, Jun. 19, 1979, 7921241; Jun. 19, 1979, 7921242; Dec. 6, 1979, 7942216
Int. Cl.³ E04G *21/14*
U.S. Cl. 52—745 **18 Claims**



1. A method of constructing a multi-storey building comprising the steps of laying a foundation for the external walls of the building, erecting a plurality of ground floor columns around the foundation, the ground floor columns being supported by the foundation and extending over substantially the height of the ground floor of the building, placing panels between the adjacent pairs of ground floor columns to form the external walls of the ground floor storey of the building, and constructing the higher storeys of the building successively one upon another, wherein each of the higher storeys is contructed by erecting a plurality of columns around the building, each of said columns being supported by a respective column of the storey immediately below and extending over substantially the height of that storey, by firmly clamping the wall panels of the storey immediately below in position, by then supporting a floor on the upper edges of the wall panels of the storey immediately below, and then by placing panels between the adjacent pairs of said columns to form the external walls of that storey, the uppermost storey of the building being covered by a roof which is supported on the upper edges of the wall panels of that storey.

4,408,435

WRAPPING MACHINES

Leonard Sutton, Gainsborough, England, assignor to Baker Perkins Holdings Limited, Peterborough, England

Filed Dec. 29, 1980, Ser. No. 220,439
Claims priority, application United Kingdom, Feb. 14, 1980, 8004912
Int. Cl.³ B65B *11/32*
U.S. Cl. 53—225 **6 Claims**



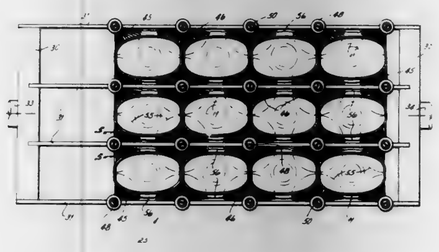
1. A sweet wrapping machine, which comprises a horizontally continuously moving infeed conveyor for supplying a continuous procession of regularly pitched sweets, a vertically moving continuously operating elevator mechanism for lifting the sweets individually and in succession from the infeed conveyor, a continuously rotating wrapping wheel having pairs of sweet receiving jaws which are equally spaced at a pitch greater than that of the sweets on the infeed conveyor, a continuously rotating transfer wheel disposed above the infeed conveyor between the infeed conveyor and the wrapping wheel and including a number of radially extending arms, each of which carries a pair of sweet receiving jaws and a trapper plunger which cooperates with the elevator mechanism to trap each sweet lifted thereby into said pair of sweet-receiving jaws, the arms moving in a path between a first transfer station at which the jaws receive successive sweets from the elevator mechanism and a second transfer station at which the sweets are transferred in succession to the jaws of the wrapping wheel, means for periodically opening and closing the pairs of jaws on the transfer wheel, each of said pair of jaws opening to receive at the first transfer station a sweet lifted into said jaws by the elevator mechanism in cooperation with a transfer plunger, then closing to embrace the sweet and opening again on arrival of said pair of jaws at the second transfer station, means for imparting opening and closing movement to the jaws on the wrapping wheel in a direction perpendicular to the opening and closing movement of the jaws on the transfer wheel, each pair of jaws on the wrapping wheel closing at the second transfer station to seize a sweet from a pair of jaws on the transfer wheel at the moment of opening of said jaws on the transfer wheel, gripper means arranged to advance a wrapper into position to be partially folded around each sweet as it is transferred to a pair of jaws on the wrapping wheel, means for releasing the wrapper from said gripper means at the moment of transfer of said sweet, and means for shifting the arms during rotation of the transfer wheel so that they approach the first transfer station pitched circumferentially at the same spacing as the sweets on the infeed conveyor and approach the second transfer station at the same circumferential spacing as the pairs of jaws on the wrapping wheel.

4,408,436

CASE PACKER FOR INVERTING BOTTLES AND DEPOSITING THEM IN A CASE

Charles G. Glover, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Filed May 22, 1981, Ser. No. 266,511
Int. Cl.³ B65B *39/00, 5/08*
U.S. Cl. 53—247 **3 Claims**



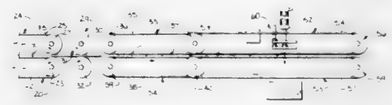
1. In a case packer apparatus for loading bottles upside down in a case comprising,
a grid,
means for marshalling a pattern of bottles on said grid,
means for positioning a case below said grid,
a bottle rotator located below said grid for receiving a pattern of bottles and rotating said pattern of bottles through 180° to turn them upside down,
bottle gripping means normally located above said grid and adapted to grasp bottles marshalled on said grid and lower them through said grid into said rotator,
dividers creating a plurality of pockets in said rotator,
bristles lining at least a portion of said dividers and creating a space within said pockets substantially smaller than the outside dimension of each bottle, whereby bottles positioned in said rotator will be frictionally retained after being released by said bottle-gripping means,
said bottle gripping means forcing earlier positioned bottles through said rotator and into said case while positioning a fresh pattern of bottles in said rotator.

4,408,437

METHOD AND APPARATUS FOR PRODUCING LIQUID IMPREGNATED FABRIC WIPES

Bill W. Crouch, Brown Deer; William F. Sauer, Sussex, and Kenneth R. Zylka, Grafton, all of Wis., assignors to Meridian Industries, Inc., Milwaukee, Wis.

Filed Sep. 28, 1981, Ser. No. 306,169
Int. Cl.³ B65B *63/00*
U.S. Cl. 53—431 **19 Claims**



18. A method of producing liquid impregnated wipes, comprising the steps of continuously passing a sheet of absorbent material over a liquid impregnating tube having a liquid dispensing slot extending longitudingally of said tube, discharging a liquid impregnant through said slot into contact with said sheet to thereby impregnate said sheet with the liquid, cutting the impregnated sheet into desired lengths to form a plurality of wipes, transporting the wipes by engaging the side edges of each wipe between two cooperating pairs of spaced moving endless belts while maintaining the central portion of each wipe unsupported, and moving a plunger downwardly within the space between said pairs of cooperating belts to thereby eject the wipes from engagement with said belts and deposit said wipes into a container.

4,408,438

PROCESS AND APPARATUS FOR PRESSING, PACKING AND HOOPING FIBROUS MATERIAL IN BALE FORM

Siegfried Rewitzer, Ihrlerstein, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

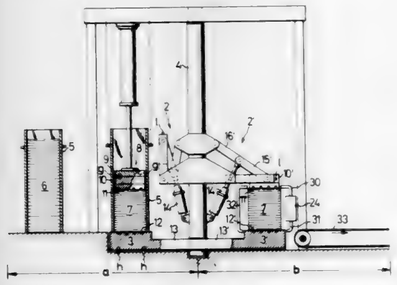
Filed Nov. 26, 1980, Ser. No. 210,372
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948237
Int. Cl.³ B65B *63/02*
U.S. Cl. 53—438 **11 Claims**

1. Process for pressing fibrous material in bale form in a final press and for subsequently packing and hooping these bales, comprising the steps of
(a) covering pressing faces of a press-ram and of a bottom plate of the final press with blanks of flexible sheet-like packing material which project beyond the pressing faces and are held in this position, and thereafter introducing

already prepressed fibrous material into the final press between said blanks and pressing the material;

(b) after the pressing operation, removing side walls of a press box of the press from the fibrous material, while the press maintains the bale of material under applied pressure, far enough to enable a holding device to receive the pressed bale including the end piece of the press-ram and the bottom plate;

(c) receiving the pressed bale including the press-ram end piece and bottom plate by means of the holding device and moving the same on a predetermined path out of the pressing region to further working positions, with the pressed height of the bale being allowed to increase at most slightly;



(d) subsequently automatically bending projecting areas of the blanks of packing material onto the side faces of the bale by means of holding-down or turning-in devices and holding the bent-down areas in this position;

(e) then reinforcing the bale with hooping means;

(f) subsequently, by opening the holding device, increasing the distance between the press-ram end piece and bottom plate so that the bale is released to be transported away; and

(g) returning the press-ram end piece and bottom plate thereafter into the pressing region by means of the holding device.

4,408,439

METHOD AND APPARATUS FOR WRAPPING AN ARTICLE

Andrew W. Anderson, West Caldwell, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Feb. 19, 1981, Ser. No. 235,367

Int. Cl.³ B65B *11/42, 53/02*

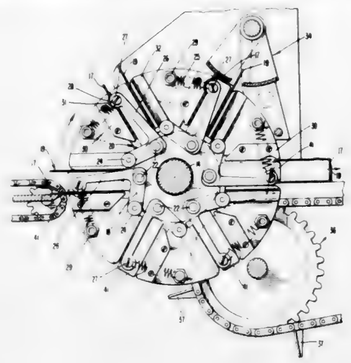
U.S. Cl. 53—461 **22 Claims**

1. A method of wrapping an article, said method comprising the steps of:

(a) wrapping a sheet of thin, flexible wrapping material around said article to form at least one end portion including a free edge of the sheet and at least one side portion, said end and side portions projecting outwardly from said article,

(b) providing a shaped backing means having a shaped supporting surface adjacent one surface of said projecting side portion and a pushing member adjacent the other surface of said projecting side portion,

(c) pushing against said other surface with said pushing member to form a projecting, flexible excess portion in said projecting side portion against the shaped supporting surface while positioned around the article, and then



(d) folding said end and side portions onto the article while maintaining the excess portion in the wrapping material thereby forming a loosely wrapped article.

4,408,440

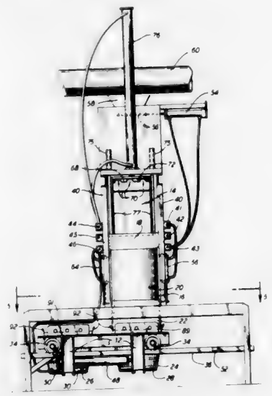
APPARATUS FOR PACKING AND COMPRESSING FRESH SPINACH, OR THE LIKE

John Van Kesteren, Jr., P.O. Box 487, Onancock, Va. 23417

Filed Aug. 6, 1981, Ser. No. 290,541

Int. Cl.³ B65B *1/24*

U.S. Cl. 53—527 **14 Claims**



1. Apparatus for assisting in packing compressible, leafy vegetables, or the like, into covered containers, said apparatus comprising:

(a) means for supporting an open-topped container with its upper end at a first location;

(b) hollow guide means having a cross section substantially corresponding to that of said container upper end and extending upwardly from a position immediately above said first location to guide said vegetables deposited into said guide means to said container;

(c) plunger means movable through said guide means between a first position above said guide means and a second position immediately above the open top of said container at said first location, whereby downward travel of said plunger means serves to compress said vegetables within said container and guide means into the volume of said container;

(d) retainer means movable between a first position laterally adjacent said open top of said container at said first location and a second position in contacting and partial covering relation to said compressed vegetables in said container with said plunger means in its second position, said retainer means being effective to retain said compressed vegetables within said container to allow placing a cover thereon after movement of said plunger means back to said first position thereof and prior to movement of said retainer means back to its first position;

said guide means including a movable portion forming the lower end thereof, said portion being movable between a lower position immediately adjacent the upper end of a container at said first location, wherein said portion is in the path of movement of said retainer means, and an upper position out of the path of movement of said retainer means; and

(f) means operable to move said plunger means and said retainer means between said first and second positions of each.

4,408,441

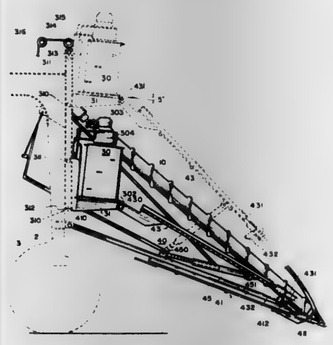
INTERCONNECTED, ADJUSTABLE HEIGHT TOPPER AND GATHERING ARM SYSTEM FOR SUGAR CANE HARVESTERS, ETC.

Harold A. Willett, Thibodaux, La., assignor to Cameco Industries, Inc., Thibodaux, La.

Filed Jan. 27, 1982, Ser. No. 343,212

Int. Cl.³ A01D *45/10*

U.S. Cl. 56—14.3 **6 Claims**



1. A cane harvester, having a topper section and cane gathering arms at its front end, comprising

a main frame;

topper section means having a rotatable cutter for cutting the tops of the cane;

a set of vertical tracks fixedly mounted on said frame;

a vertically moveable base carrying said topper section means mounted on said vertical tracks for vertical movement up and down said tracks, varying the cutter height of said topper section means; and

topper cane gathering arm means extending out and down from the front of said main frame for gathering up the cane being harvested and bringing it to said topper section for topping, the harvester end of said cane gathering arm means being pivotally connected to said base and topper section means for combined vertical movement with said base and topper section means, said topper section means and said cane gathering arm means being vertically moveable together for height adjustment of said topper section without significantly varying the angle of cut of said rotatable cutter.

4,408,442

METHOD AND DEVICE FOR JOINING AN UPPER THREAD TO A LOWER THREAD

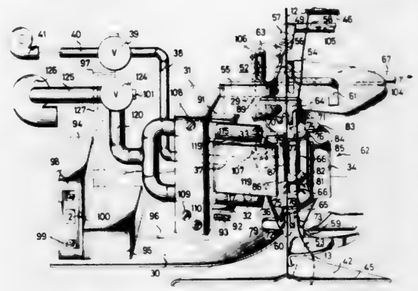
Joachim Rohner, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,280

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1979, 2945504

Int. Cl.³ D01H *15/00*

U.S. Cl. 57—22 **10 Claims**



1. Method for joining an upper thread with a lower thread, which comprises moving at least one thread regulator from a thread receiving position to a thread delivery position, inserting the threads with the at least one thread regulator into a longitudinal groove formed in a splicing chamber, automatically admitting compressed air laterally into the splicing chamber for splicing the threads, automatically separating the ends of the upper and lower threads and blowing compressed air into the splicing chamber in dependence on the position of the at least one thread regulator, separating the threads to form new shorter thread ends, sucking up and securing the newly-formed shorter thread ends with an air stream above and below said splicing chamber, interchanging twisting nozzles above and below the splicing chamber for directing the air stream along the newly-formed shorter thread ends in the form of a twisting flow above and below the splicing chamber against the direction of twist of the particular threads being joined, and coordinating the strength and duration of the air stream with the strength, type and condition of the threads to be joined together.

4,408,443

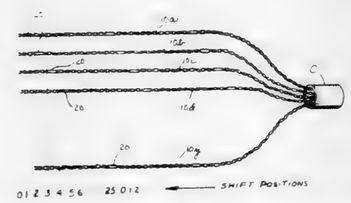
TELECOMMUNICATIONS CABLE AND METHOD OF MAKING SAME

Robert J. Brown, Lawrenceville, and Clyde J. Lever, Jr., Norcross, both of Ga., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,524

Int. Cl.³ H01B *13/04;* D07B *3/00*

U.S. Cl. 57—204 **7 Claims**



1. A telecommunications cable comprised of more than five S-Z twisted wire pairs having their twist reversals longitudi-

nally staggered in a repetitive sequence of 1 to N, where N is an integer, longitudinally spaced positions, and with said wires bundled together with any adjacent wire pairs having their twist reversals non-overlapped and staggered by no more than N/2 positions to limit S to Z coupling.

4,408,444

STEEL CORD FOR REINFORCEMENT OF ELASTOMER MATERIAL

Freddy Baillievier, Zwevegem, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium

Filed Apr. 26, 1982, Ser. No. 371,722

Claims priority, application Netherlands, May 8, 1981, 8102273

Int. Cl.³ D07B *1/00*; D02G *3/48*

U.S. Cl. 57—237 **4 Claims**



1. A steel cord adapted for the reinforcement of elastomer material, comprising two equivalent wire groups of at least two wires each, the wire groups being twisted around each other and forming helicoids of a same pitch and substantially same form, the wires of the first group having a twist pitch that differs from the pitch of said helicoids, and has a value of more than 300 mm, characterized by the fact that the twist pitch of the second group is in the same sense and has the same value as the pitch of said helicoids.

4,408,445

TWISTED SINGLES APPAREL YARN

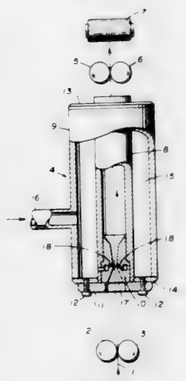
Arnold E. Wilkie, Pensacola Beach, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 71,460, Aug. 3, 1979, Pat. No. 4,290,378. This application Sep. 14, 1981, Ser. No. 301,717

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ D02J *1/08*; D02G *3/26*

U.S. Cl. 57—246 **15 Claims**



1. A tangled yarn, said yarn being a bulky, loopy twisted apparel singles yarn and being characterized in having a bundle twist of 2 to 15 turns per inch and a lateral coherency of 0.5 to 15 cm.

4,408,446

SINGLES CARPET YARN

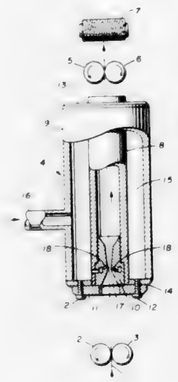
Arnold E. Wilkie, Pensacola Beach, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 71,460, Aug. 3, 1979, Pat. No. 4,290,378. This application Sep. 18, 1981, Ser. No. 303,655

The portion of the term of this patent subsequent to Sep. 22, 1998, has been disclaimed.

Int. Cl.³ D02J *1/08*; D02G *3/26*

U.S. Cl. 57—246 **26 Claims**



1. A bulky, heatset, singles carpet yarn, said yarn having a bundle twist of 0.5 to 8.0 turns per inch (19.7 to 236.2 turns per meter) and sufficient tangle to provide a lateral coherency ranging from 0.25 to less than 1.0 cm, wherein said tangle has been imparted to the yarn after said bundle twist.

4,408,447

METHOD OF AND SYSTEM FOR CONTROLLING THE OPERATION OF OPEN-END SPINNING MACHINES

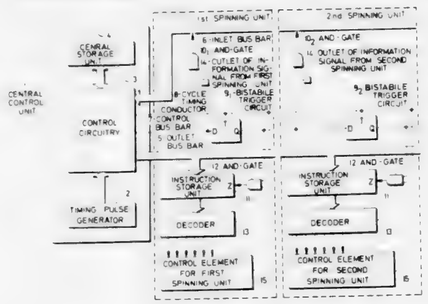
Jiri Sloupensky, and Miloslav Tyl, both of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Continuation-in-part of Ser. No. 72,893, Sep. 6, 1979. This application Apr. 16, 1981, Ser. No. 254,756

Claims priority, application Czechoslovakia, Sep. 6, 1978, 5765-78

Int. Cl.³ G06F *3/04*

U.S. Cl. 57—263 **5 Claims**



1. In a method of controlling open-end spinning machines having a plurality of spinning units, each comprising a sliver supply device, a spinning rotor, a yarn take-off device, a spooling device and a device for remedying thread breakages, the last-mentioned comprising rotor cleaning and yarn spinning-in means, the operation of the individual spinning units being controlled by a central control unit, the improvement wherein the operation of all the spinning units, in both a normal spinning process and a process of remedying thread breakages, is entirely controlled by the central control unit within successive control cycles the time of duration of which is shorter than the minimum response time of executive members of the spinning unit, by control signals generated on the basis of evaluation of at least one of the information signals from the just controlled spinning unit and on the basis of sequence of programmed thread breakage remedying steps from a central storage unit of the central control unit, said control signals controlling the operation of the executive members of the spinning unit within a time interval between two subsequent control cycles while within the period of communication between the central control unit and the respective spinning unit, the other spinning units performing the operation determined by the last received instruction the validity of which lasts for the time of the control cycle, irrespective of any change in the information signal within the time interval between the two subsequent control cycles.

4,408,448

YARN FALSE TWISTING METHOD AND APPARATUS

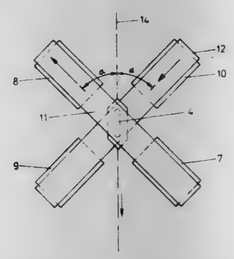
Karl Bauer; Peter Dammann, both of Remscheid; Hermann Kubler, Remscheid-Lüttringhausen, and Hellmut Lorenz, Remscheid, all of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 273,217

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033683

Int. Cl.³ D02G *1/04*; D01H *7/92*

U.S. Cl. 57—336 **8 Claims**



1. A method of false twisting a yarn characterized by the ability to impart a desired twist to a running yarn under optimal tension conditions, and comprising the steps of

rotating a pair of endless belts mounted in crossing relation with the opposing surfaces disposed in opposing, substantially non-contacting relationship so as to define a twisting zone between the opposing surfaces thereof, while

advancing a yarn at a speed (Y) along a path of travel through said twisting zone,

locally biasing at least one of said belts toward the other belt at said twisting zone so as to have twist imparted to the advancing yarn by the frictional contact between the yarn and opposed surfaces, and with the biasing force being substantially limited to an area which is coincident to the path of the running yarn,

adjusting the relative orientation of the belts such that the acute angle (alpha) formed between each belt and the yarn path of travel substantially corresponds to the desired twist angle of the yarn in the twisted condition, and

adjusting the speed of each belt (B) according to the formula

$$B = \frac{Y}{\text{Cosine alpha}} \times (1 \pm 20\%).$$

4,408,449

FRICTION FALSE TWISTING APPARATUS

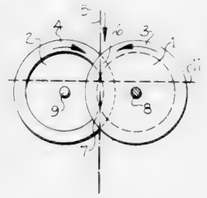
Karl Bauer; Heinz Schippers, and Peter Dammann, all of Remscheid, Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 168,734, Jul. 14, 1980, Pat. No. 4,339,915. This application Jun. 12, 1981, Ser. No. 272,936

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023887

Int. Cl.³ D02G *1/08*; D01H *7/92*

U.S. Cl. 57—340 **10 Claims**



1. A yarn false twisting apparatus comprising

a pair of twist imparting members, with each member including a yarn engaging friction surface, and at least one of said members comprising a readily flexible circular disc mounted on a supporting shaft,

means rotatably mounting said twist imparting members such that portions of the respective yarn engaging friction surfaces are disposed in opposing, face to face relationship and define a twisting zone therebetween, and with at least that portion of said flexible disc which includes said friction surface being resiliently deflected from its normal plane of rotation at said twisting zone by its engagement with the friction surface of the other member or a yarn passing therebetween, and

drive means for operatively rotating each of said twist imparting members about their respective axes,

whereby a yarn may be continuously advanced through said twisting zone while having twist imparted thereto by frictional contact between the yarn and the respective opposed friction surfaces.

4,408,450

REPAIR OR REPLACEMENT LINK

Jorgen O. Bernt, 1357 Amber Crescent, Oakville, Ontario, Canada

Filed Aug. 31, 1981, Ser. No. 297,742

Int. Cl.³ F16G *13/06*

U.S. Cl. 59—88 **14 Claims**

1. Chain link comprising:

two link portions desinged to interfit to provide a complete link,

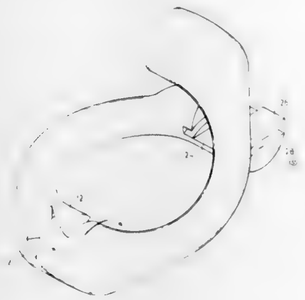
each link portion comprising a general U-shape terminating in two free ends extending in substantially the same direction,

one free end of one link being provided with grooves helical with respect to the centre line of the link,

a free end of the other link being provided with helical spline members substantially complementary to said helical grooves and designed to be inserted therein on the twisting and advancement of one of said portions relative to the other,

the other free ends of the respective links being designed to overlap, in a complementary manner on said twisting and advancement of the other ends,

said other free ends proving, on overlapping in response to said advancement and twisting, a pair of mutually facing



surfaces on said respective members preventing movement of one of said ends away from the other, and,

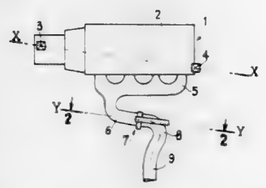
means used on cooperation with said other free ends in their interfitted position for preventing such other free ends from rotating to allow separation of said other free ends.

4,408,451

ROTATING JOINT FOR AN EXHAUST PIPE OF AN AUTOMOBILE VEHICLE

Jacques Sigwald, Frepillon, and Claude Lesueur, Argenteuil, both of France, assignors to Automobiles Peugeot and Automobiles Citroen, both of, France

Filed Jul. 15, 1982, Ser. No. 398,342
Claims priority, application France, Jul. 29, 1981, 81 14729
Int. Cl.³ F01N *7/00*
U.S. Cl. 60—322 **7 Claims**



1. A rotating joint in combination with two pipe elements of an exhaust pipe, and an internal combustion engine of an automobile vehicle connected to the exhaust pipe, said engine being mounted on suspension means to be pivotable about an axis, said joint comprising two coaxial rings, each ring being rigid with a respective one of the two pipe elements, each ring defining a rubbing surface contained in a plane perpendicular to said axis, and means for biasing said two surfaces toward each other.

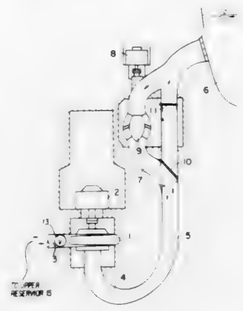
4,408,452

PUMPING-UP HYDROELECTRIC POWER PLANTS

Sachio Tsunoda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Dec. 2, 1980, Ser. No. 212,145
Claims priority, application Japan, Dec. 28, 1979, 54-173295
Int. Cl.³ F16D *31/02*
U.S. Cl. 60—398 **3 Claims**

1. In a pumping-up hydroelectric power plant comprising a single speed reversible pump/turbine operable as a pump at a constant speed between an upper reservoir and a lower reservoir, and a booster pump provided in a water passage of the single speed reversible pump/turbine to be operable in series therewith only when the pump/turbine is operated as a pump, the improvement comprising a driving device directly coupled with said booster pump for driving the same at a variable speed, means for detecting water levels in said two reservoirs, means for providing a control signal corresponding to a difference between the water levels thus detected, and a control



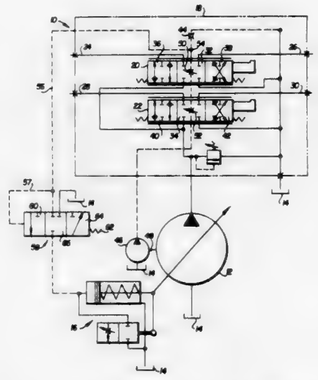
device for controlling the rotating speed of said driving device in response to said control signal so that said pump/turbine is operated at its maximum pumping efficiency regardless of variations in the water levels in said two reservoirs.

4,408,453

HYDRAULIC CONTROL SYSTEM

Robert C. Westveer, Kalamazoo, Mich., assignor to General Signal Corporation, Stamford, Conn.

Filed Jan. 16, 1981, Ser. No. 225,815
The portion of the term of this patent subsequent to Apr. 15, 1997, has been disclaimed.
Int. Cl.³ F16H *39/46*
U.S. Cl. 60—445 **7 Claims**



1. An improved hydraulic system, comprising:

a fluid reservoir;

a variable displacement pump having a fluid input in communication with said reservoir and having a fluid output;

fluid pressure actuated displacement control means for controlling the displacement of said pump;

a fluid actuated device;

control valve means in fluid communication with said fluid output and with said reservoir, for controlling a flow of fluid from said pump to said fluid actuated device;

means for producing a flow of signal fluid which is substantially isolated from pressure surges caused by said fluid actuated device;

means including said control valve for regulating said flow of signal fluid in response to movement of said control valve means as it controls said flow of fluid from said pump to said fluid actuated device;

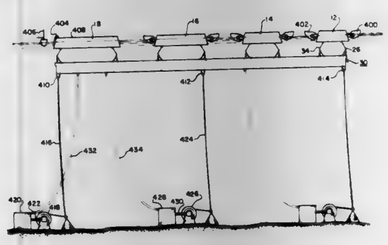
sensor valve means in fluid communication with an output of said regulating means, with said displacement control means and with said reservoir, for directing to said control means a portion of said signal fluid which is isolated from pressure surges caused by said fluid actuated device in response to variations in the pressure of said signal fluid at said output, whereby flow of said signal fluid and displacement of said pump are controlled in accordance with the flow rate selected for said fluid actuated device at said control valve means but are substantially unaffected by pressure surges caused by said fluid actuated device.

4,408,454

FLUID COUPLED WAVE GENERATOR ARRAY WITH SUBSEA STRUCTURE

Glenn E. Hagen, and Carroll K. Gordon, both of New Orleans, La., assignors to Sea Energy Corporation, New Orleans, La.

Filed Jul. 21, 1980, Ser. No. 169,510
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—500 **5 Claims**



1. A wave power extraction system for operation on the ocean comprising:

a plurality of floats, each said float being sized and positioned to form a Hagen array when they are on the ocean's surface, said Hagen array being an arrangement of differing sized floats adapted to allow relative motion between adjacent floats so as to be responsive to both the amplitude spectrum and the wavelength spectrum of wave motion;

subsea structure means for supporting said Hagen array;

power extraction means connected to said floats in said Hagen array and to said subsea structure and responsive to the relative motion therebetween; and

anchoring means connected to said structure and to the sea floor for connecting said structure to the sea floor, said anchoring means includes an anchoring cable connected to said structure, and said anchoring means includes a subsea winch driven by a prime mover, said winch being capable of controllably reeling and unreeling said anchoring cable.

4,408,455

WAVE ACTION ENERGY GENERATING SYSTEM

Melville G. Montgomery, 2 Evergreen Rd., Severna Park, Md. 21146

Filed May 18, 1981, Ser. No. 264,682
Int. Cl.³ F03B *13/12*
U.S. Cl. 60—505 **8 Claims**

1. An energy generating system using the forces of wave action of a body of water to generate energy, comprising:

a base means, said base means having a first side, a second side, and a top side, said base means being located at a body of water, said body of water being subject to wave action;

a first float means, said first float means being located in said body of water on said first side of said base means, said first float means being subject to said wave action of said body of water, said first float means being in close vicinity of said base means;

a shaft means;

a gear means, said gear means having a plurality of ratchet-like teeth thereon around the periphery of said gear means, said gear means being suitably affixed to said shaft means;

a first connecting means, said first connecting means consisting of a first member and a second member, said first and second members of said first connecting means being spaced apart, said first connecting means having a first end and a second end, said first end of said first connecting means being pivotably connected to said first float means, said second end of said connecting means being pivotably connected to said shaft means;

a first housing means, said first housing means being hollow, said first housing means having an aperture in one end thereof said first housing means being located between and affixed to said spaced apart first and second members of said first connecting means;



a first spring means, said first spring means being a compression-type spring, said first spring means located and confined within said hollow housing means;

a first pawl means, said first pawl means having a first end and a second end, said first pawl means being located within said hollow housing means, said first end of said first pawl means protruding through and from said aperture in said hollow housing means, said second end of said first pawl means being in contact with said first spring means, said first pawl means thereby being spring loaded within said first hollow housing means, said fist hollow housing means being suitably located and affixed to said first connecting means so as to orient and position said first end of said pawl means protruding from said aperture in said holding means for proper meshing and operation with said ratchet-like teeth; and

a support means, said support means being located upon said top side of and affixed to said base means, said support means supporting said shaft means.

4,408,456

FREE-PISTON STIRLING ENGINE POWER CONTROL

Jeffrey S. Rauch, Latham, N.Y., assignor to Mechanical Technolgy Incorporated, Latham, N.Y.

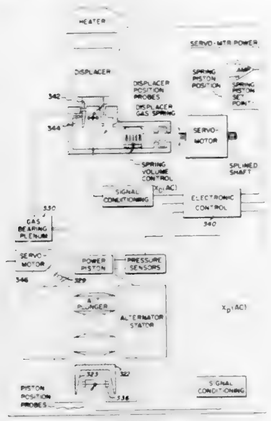
Filed Jul. 14, 1980, Ser. No. 168,716
Int. Cl.³ F02G *1/06*
U.S. Cl. 60—518 **31 Claims**

1. In a Stirling engine having a vessel enclosing a charge of working gas in a working space heated by a heater at one end and cooled by a cooler at the other end, and containing a displacer piston which reciprocates axially in the working space to shuttle the working gas between the heater and cooler to generate a periodic pressure wave in the working gas which drives a power piston for axial reciprocation in the vessel, the improvement comprising:

a tapered surface on one of said pistons, said surface forming a small angle with the direction of movement of said one piston;

a proximity sensor closely spaced from said tapered surface

and having a sensing surface facing said tapered surface for sensing the width of the gap between said sensing surface and said tapered surface;



whereby each axial position of said one piston has a corresponding unique gap between said sensing surface and said tapered surface which gap can be measured by said proximity sensor and related to the axial position of said one piston.

4,408,457

MECHANICALLY CONTROLLABLE BRAKE BOOSTER

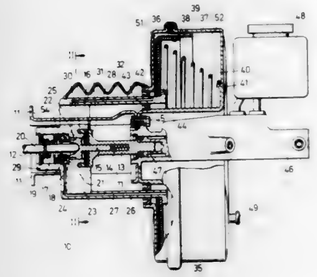
Hans-Henning Luepertz, Darmstadt, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,541

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012455

Int. Cl.³ B60T *13/00;* **F15B** *9/10;* **F01B** *31/00*

U.S. Cl. 60—547.1 **45 Claims**



1. A mechanically controlled brake booster for automotive vehicles comprising:

a pressure casing including at least one boosting piston disposed therein to subdivide said casing into a low-pressure chamber and a working chamber, said piston acting via a connecting member and a reaction device on a push rod operatively associated with a master cylinder, said casing being in the form of a ring having an outer periphery and an inner periphery encircling said master cylinder, said casing having said inner periphery fastened to said master cylinder;

a control rod operatively connected to said reaction device to actuate a valve controlling pressure in said working chamber;

webs connected to and extending axially from said inner periphery of said casing beyond one lateral wall thereof, said webs securing said casing to a vehicle splashboard; and

said connecting member includes

at least one transmission member disposed parallel to said webs, and

a yoke attached to said transmission member, said yoke extending radially through said webs.

4,408,458

ELECTRIC POWER GENERATING SYSTEM

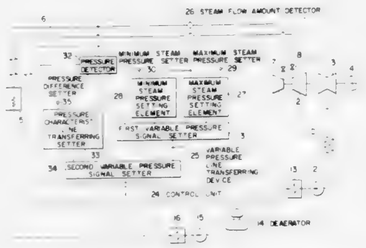
Akiomi Torii, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Jul. 15, 1981, Ser. No. 283,619

Claims priority, application Japan, Jul. 29, 1980, 55-104083

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—660 **3 Claims**



1. In an electric power generating system capable of absorbing a variable load of the type comprising a boiler, a steam turbine, an electric generator driven by said turbine, said boiler and said turbine being interconnected through a steam conduit including a control valve which adjusts the flow amount of the steam in said steam conduit, and a variable pressure operation control device which maintains a constant degree of opening of said control valve at a time when a steam pressure in said steam conduit lies in a range between predetermined pressure values, the improvement in which said variable pressure operation control device comprises means for comparing an actual steam pressure in said steam conduit with a pressure predetermined in accordance with variation of a load of said generator for generating a signal to determine a variable pressure operation characteristic line for changing the degree of opening of said control valve in response to a difference between said compared pressures.

4,408,459

HEAT STORAGE POND AND POWER PLANT USING SAME

Amnon Yogev, c/o Hoffman & Sandler, 2361 Jeff Davis Hwy., Arlington, Va. 22202

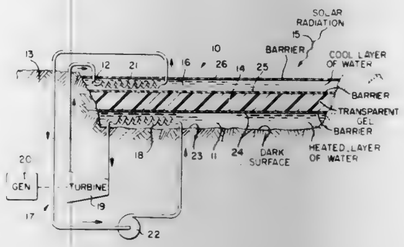
Continuation of Ser. No. 899,815, Apr. 25, 1978, abandoned. This application Jan. 23, 1981, Ser. No. 227,743

Claims priority, application United Kingdom, May 9, 1977, 19401/77

Int. Cl.³ F03G *7/02*

U.S. Cl. 60—641.8 **22 Claims**

1. A heat storage pond comprising a heat storage liquid which receives heat and is raised to a temperature higher than that of an ambient medium, an insulating layer of gel that floats on the liquid and is thick engough to thermally insulate the latter against significant conductive heat loss to the ambient



medium above the insulating layer, wherein the gel is non-aqueous and is produced from a hydrocarbon liquid.

4,408,460

HEATING SYSTEM FOR A STEAM TURBINE ENERGY PRODUCING PLANT

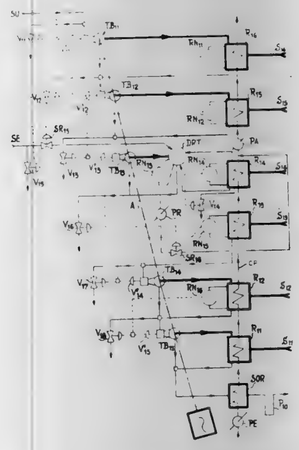
Andre J. Paquet, Brussels, Belgium, assignor to Hamon-Sobelco, S.A., Brussels, Belgium

Filed Oct. 21, 1980, Ser. No. 199,193

Claims priority, application European Pat. Off., Jan. 18, 1980, 80400077.6

Int. Cl.³ F01K *7/34*

U.S. Cl. 60—678 **8 Claims**



1. A system for utilizing condensates of a steam turbine of an energy producing plant, comprising at least one condensation heat exchanger whose condensates are expanded toward a lower pressure exchanger, wherein said system comprises at least one biphase turbine disposed between said condensation heat exchanger and the lower pressure exchanger and fed with the condensates of said condensation heat exchanger.

4,408,461

COMBUSTION CHAMBER OF A GAS TURBINE WITH PRE-MIXING AND PRE-EVAPORATION ELEMENTS

Eduard Brühwiler, Nussbaumen, and Hans Koch, Zurich, both of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Oct. 20, 1980, Ser. No. 198,929

Claims priority, application Switzerland, Nov. 23, 1979, 10444/79

Int. Cl.³ E02C *7/22*

U.S. Cl. 60—737 **15 Claims**



1. A combustion compartment for a gas turbine comprising:

(a) a combustion compartment casing containing therein an air distributor chamber and a combustion chamber spatially separated from one another;

(b) a number of substantially tubular-shaped elements arranged between the air distribution chamber and the combustion chamber;

(c) nozzle means for infeeding a combustible medium to an end of said tubular-shaped elements located at the side of the air distributor chamber;

(d) the admixing and pre-evaporation of said combustible medium occurring within said plurality of tubular-shaped elements;

(e) each said tubular-shaped element having an end located at the side of the combustion chamber;

(f) at least one flame baffle for closing the end of the tubular-shaped elements located at the side of the combustion chamber, said flame baffle being provided with openings;

(g) at least one pilot element located between said tubular-shaped elements; and

(h) said combustible medium comprises fuel oil which is infed by said nozzle means and which is premixed and pre-evaporated within said tubular-shaped elements and admixed with compressed air with a large excess-air coefficient.

4,408,462

PRESSURE REGULATING DEVICE FOR USE IN AN AUTOMATIC TRANSMISSION

Shiro Sakakibara, Toyokawa; Shinobu Maseki, Anjo; Kazuaki Watanabe, and Isamu Minemoto, both of Toyota, all of Japan, assignors to Aisin Warner Kabushiki Kaisha and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Aichi, Japan

Filed Sep. 8, 1980, Ser. No. 184,833

Claims priority, application Japan, Sep. 13, 1979, 54-118184

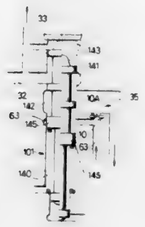
Int. Cl.³ F16H *41/04*

U.S. Cl. 60—330 **6 Claims**

1. A pressure regulating device for use in a hydraulic control system for an automatic transmission, said hydraulic control system having a fluid pump and a reservoir for fluid supplied to the inlet of said pump, comprising:

a first pressure regulating valve for regulating the discharge pressure of fluid from said pump, said pump supplying a controlled line pressure to an hydraulic control circuit;

a second pressure regulating valve for regulating the fluid pressure of an excess portion of said fluid supplied to said hydraulic control system, said excess fluid being supplied at regulated pressure to a torque convertor, said second pressure regulating valve including means in circuit between said torque convertor and said reservoir for regulating the quantity of fluid returning from said torque convertor to said reservoir in accordance with the pressure of said excess fluid, said quantity of fluid returning from said torque convertor increasing and decreasing in accordance with variations in said pressure of said excess fluid;



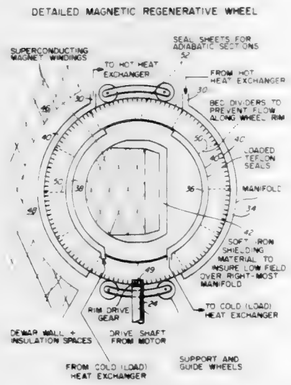
passage means for by-passing at least a portion of said fluid, returning from said torque convertor to said means for regulating quantity of fluid returning to said reservoir, from the regulating device and toward said reservoir, circulation to and from said reservoir of a minimum quantity of fluid for use in said torque convertor being maintained.

4,408,463

WHEEL-TYPE MAGNETIC REFRIGERATOR

John A. Barclay, Los Alamos, N. Mex., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jan. 20, 1982, Ser. No. 340,904
Int. Cl.³ F25B 21/02
U.S. Cl. 62—3 **19 Claims**



1. A magnetic regenerative wheel refrigerator comprising:

a substantially circular wheel comprising an axis of rotation and concentric inner and outer rims;

ferromagnetic or paramagnetic porous material disposed within said wheel between said inner and outer rims, said material comprising at least one substance, said material having a Curie temperature near a cold temperature T_C near said inner rim and a Curie temperature near a hot temperature T_H near said outer rim;

an approximately solenoidal-shaped magnet disposed to produce a magnetic field essentially perpendicular to said axis of said wheel and parallel to its direction of rotation;

means for driving said wheel about its axis of rotation and through said magnetic field;

means for maintaining said wheel in proper orientation;

first and second inner fluid manifolds adjacent said inner rim of said wheel;

first and second outer fluid manifolds adjacent said outer rim of said wheel;

thermal load exchange means;

heat rejection exchange means; and

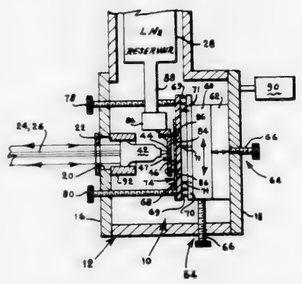
means for pumping and conducting a fluid from said heat rejection exchange means through said first outer manifold, through a first portion of said material in said wheel adjacent said first outer manifold, from outer rim to inner rim, into and through said first inner manifold to said thermal load exchange means, from there through said second inner manifold, through a second portion of said material in said wheel adjacent said second inner manifold into and through said second manifold and back to said heat rejection means.

4,408,464

DEWAR COOLING CHAMBER FOR SEMICONDUCTOR PLATELETS

Michael M. Salour, Cambridge, Mass., and Charles B. Roxlo, Fanwood, N.J., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 361,020
Int. Cl.³ F25B 19/00
U.S. Cl. 62—514 R **11 Claims**



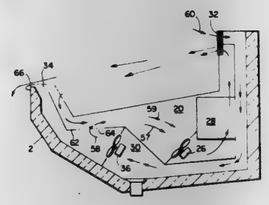
1. A Dewar cooling chamber comprising a housing, said housing forming a chamber therein; means located within said chamber for securely supporting an object and moving said object in three dimensions; and means operably connected to said object supporting and moving means for providing a cooling environment for said object, said cooling means being capable of moving in conjunction with said object in said three dimensions.

4,408,465

MULTIBAND REFRIGERATED DISPLAY CASE HAVING A TOP ACCESS OPENING

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 11,804, Feb. 14, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,542
The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.
Int. Cl.³ F25D 21/12
U.S. Cl. 62—82 **21 Claims**



18. A method of operating an open top refrigerated display case where the display case includes:

a cabinet having top, bottom and opposing side walls and an opening within the top wall for enabling access to products displayed within the display case; an inner air conduit passing around the side and bottom walls of the cabinet and having a first air outlet opening adjacent one end of the opening in the top wall of said cabinet and a first air inlet opening adjacent the other end of said opening in said top wall of the cabinet with the first air outlet and the first air inlet being aligned so that air leaving the first outlet is directed towards and received by the first air inlet; and, an outer air conduit passing along the bottom and side walls of the cabinet and being arranged adjacent to the inner air conduit but outwardly therefrom and having a second air outlet opening adjacent one end of the opening in the top wall of the cabinet and a second air inlet located adjacent the other end of the opening in the top wall of the cabinet with the second air outlet and the second air inlet being aligned so that air leaving said second air outlet is directed towards and received by the second air inlet; said method comprising the steps of:

circulating air through the inner air conduit so as to establish an inner air band and an inner air curtain across the opening in the top wall of the cabinet;

cooling air passing through the inner air conduit only during a refrigeration cycle of operation of the display case;

circulating air through the outer air conduit so as to establish an outer air band with an outer air curtain across the opening in the top wall of the cabinet;

causing ambient air to pass through the inner air conduit during a defrost cycle and ceasing the cooling of the air during such defrost cycle;

reversing the direction of air flow through the inner and outer air conduits during a defrost cycle of operation so that ambient air from outside of the display case is drawn into both conduits during a defrost cycle of operation.

4,408,466

ELECTRICAL CIRCUIT AND METHOD OF OPERATING SUCH

Thomas W. Brown, Sterling, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Feb. 16, 1982, Ser. No. 349,378
Int. Cl.³ F25B 27/00
U.S. Cl. 62—208 **19 Claims**

1. An electrical circuit adapted for controlling the operation of a refrigerant compressor in an automotive type air conditioning system, the circuit comprising:

a battery;

a clutch device for coupling in driving relation with the compressor to effect the operation thereof in the system and including first coil means adapted for energization across said battery to effect the coupling of said clutch device in the driving relation thereof with the compressor;

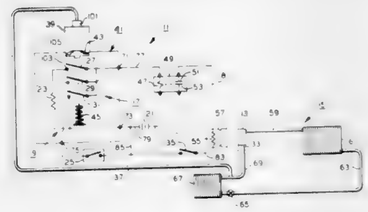
a relay device including at least a set of contact means operable generally between an open position and a closed position for controlling the energization of said first coil means across said battery, and second coil means adapted for energization in series with said battery to effect the operation of said at least contact means set;

temperature responsive means operable generally in the event of the occurrence of an atmospheric temperature less than a preselected value for switching from one of the conductivity modes of a pair thereof to the other of the conductivity modes into circuit relation with said battery;

resistor means for selective connection in circuit relation with said second coil means and said battery and having a preselected resistance value;

means operable from an open position to a closed position for switching said resistor means and said battery into series circuit relation with said second coil means when said temperature responsive means is in the one conductivity mode thereof and with the preselected resistance value being effective to obviate the energization of said second coil means in the circuit relation thereof with said battery;

means operable from an open position to a closed position generally sequentially subsequent to said first named switching means for switching said second coil means into circuit relation with said battery and said temperature



responsive means when in the other conductivity mode thereof to effect the energization of said second coil means and the operation in response thereto of said at least contact means set to the closed position thereof so as to energize said first coil means across said battery and effect the coupling of said clutch device in its driving relation with the compressor;

means operable from an open position to a closed position generally sequentially subsequent to the operation of said last named switching means for shunting said resistor means and said last named switching means in the series circuit relation thereof with said battery and for switching said second coil means directly into circuit relation with said battery when said temperature responsive means is in the one conductivity mode thereof to effect the energization of said second coil means and the operation in response thereto of said at least one contact means set to the closed position thereof so as to energize said first coil means across said battery and effect the coupling of said clutch device in its driving relation with the compressor;

diaphragm means subjected to a monitored fluid pressure in the system and movable in response to first, second and third increasing preselected values of the monitored fluid pressure for effecting the sequential operation of said first named switching means, said last named switching means, and said shunting and switching means, respectively; and

resilient means operable generally for opposing the movement of said diaphragm means and for effecting the sequential return from the closed position to the open posi-

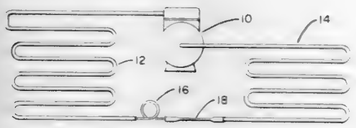
tion of said shunting and switching means, said last named switching means, and said first named switching means upon successive decreases in the monitored fluid pressure acting on said diaphragm means to values less than the third, second and first preselected values of the monitored fluid pressure, respectively.

4,408,467

NOISE SUPPRESSING FEEDER TUBE FOR A REFRIGERANT CIRCUIT

Raymond J. Murnane; Stephen C. Gomore, both of Minoa, and Myron Mathewson, Syracuse, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Nov. 23, 1981, Ser. No. 323,798
Int. Cl.³ F25D *19/00*
U.S. Cl. 62—296 **4 Claims**



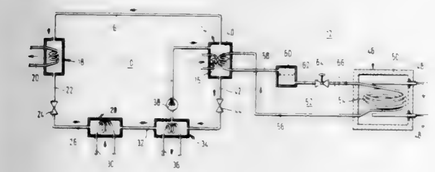
1. A vapor compression refrigerant circuit including a compressor, condenser, evaporator and expansion device all connected to form a refrigeration circuit which comprises a feeder tube joining the expansion device to the evaporator, said feeder tube having a first cylindrical end for joining to the expansion device, a flattened portion of reduced cross-sectional area and a discharge end cylindrical in configuration for joining to the evaporator, said flattened portion acting to suppress noise caused by the flow of refrigerant from the expansion device to the evaporator.

4,408,468

SYSTEM COMPRISING AT LEAST ONE ABSORPTION HEAT PUMP

Georg Alefeld, Josef-Raps-Strasse 3, Munich 40, and Peter Maier-Laxhuber, Munich, both of Fed. Rep. of Germany, assignors to Georg Alefeld, Munich, Fed. Rep. of Germany

Filed Sep. 17, 1980, Ser. No. 188,120
Claims priority, application European Pat. Off., May 16, 1980, 80 102725; Fed. Rep. of Germany, Sep. 17, 1979, 2939423
Int. Cl.³ F25B *15/00*
U.S. Cl. 82—476 **18 Claims**



1. A heat pump system including an absorption heat pump, comprising:

a generator-absorber for generating a vaporized working medium from an absorption material and subsequently re-absorbing the working medium in the absorption material;

heating means for heating the absorber-generator;

a condenser for condensing the generated working medium;

a storage vessel for storing the condensed working medium;

expansion means for decreasing pressure and fixing the flow rate of the condensed working medium; and

an evaporator for evaporation of the working medium, characterized in that:

(a) the generator-absorber includes a zeolite as absorption material;

(b) a heat output circuit is coupled to the generator-absorber for output, as useful heat, of the absorption heat given up on absorbing the working medium in the absorption material; and

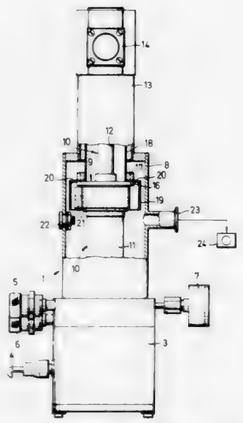
(c) the heating means in combination with the generator-absorber is so constructed that the condensation temperature in the condenser is of the order of 80° C. or higher.

4,408,469

REFRIGERATOR CRYOSTAT

Hans-Joachim Forth, Cologne, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 328,152
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1980, 3046458
Int. Cl.³ F25B *19/00*
U.S. Cl. 62—514 R **6 Claims**



1. In a refrigerator cryostat system for providing high vacuums at controlled temperatures in a sample chamber thereof, the system comprising a cryostat having a casing, an opening into the casing only for preliminarily evacuating the casing, first and second refrigerator stages in the casing for producing progressively lower temperatures, a sample chamber in thermal communication with the second refrigerator stage and vacuum communication with the casing, and heating means independent of the second refrigerator stage for variably heating the sample chamber, whereby, between the second refrigerator stage and the heating means, the temperature of the sample chamber may be controlled in a range of, for example, from about 10° K. to about 350° K., the temperature of the first refrigerator stage being substantially constant and independent thereof, the improvement comprising:

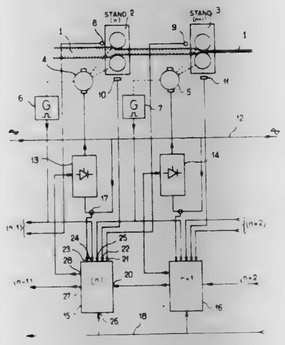
a pumping surface (19) inside the casing and in thermal communication with the first refrigerator stage for cryogenically augmenting the preliminary evacuation of the casing during operation of the first refrigerator stage.

4,408,470

PROCEDURE AND DEVICE FOR ROLLING METALS WITHOUT STRESS

Jacques Fromont, Vanves, and Marcel Plancon, Le Chesnay, both of France, assignors to Jeumont-Schneider Corporation, Puteaux, France

Filed May 26, 1981, Ser. No. 266,916
Claims priority, application France, May 28, 1980, 80 11796
Int. Cl.³ B21B *37/00*
U.S. Cl. 72—8 **9 Claims**



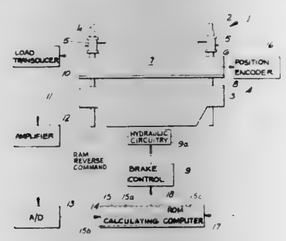
1. A method of rolling metal without stress in a continuous rolling mill that has a plurality of successive non-reversible stands, and has, for each stand, a torque regulator and a speed regulator, each acting upon a circuit that controls a drive motor for the stand, the method comprising determining and recording the value of the rolling torque of a preceding stand (n) just prior to the introduction of the metal into a succeeding stand (n+1); controlling the speed regulator of the preceding stand to hold the value of the rolling torque constant, said controlling beginning upon the introduction of metal into the succeeding stand and continuing up to an instant just prior to the introduction of the metal into a next succeeding stand (n+2) following said succeeding stand; and maintaining constant the voluminal flow of metal from each stand until rolling in the preceding stand is complete, said maintaining comprising controlling the speed regulator of the preceding stand.

4,408,471

PRESS BRAKE HAVING SPRING-BACK COMPENSATING ADAPTIVE CONTROL

David C. Gossard, Watertown, Mass.; John West, Washington, D.C.; Kim A. Stelson, Cambridge, Mass.; Blair Allison, Melrose, Mass.; R. Davis Webb, Jr., Marion, Mass., and David Hardt, Weston, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 29, 1980, Ser. No. 201,999
Int. Cl.³ B21D *5/02*
U.S. Cl. 72—21 **16 Claims**



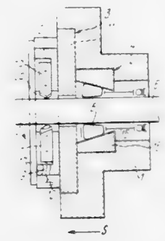
1. In a press brake for bending metal sheet and the like of the type having a frame supporting a bed, a die member mounted on the bed, a ram displaceable with respect to said bed, a punch member mounted on the ram and configured to engage the die member, means for moving said ram toward said bed and reversing means for moving said ram away from said bed, the improvement in combination therewith comprising adaptive control means for compensating for material springback to accurately produce a desired bend angle in the sheet with a single ram stroke, said control means comprising means for sensing the position of the ram to produce a ram position signal, means for sensing the force supplied to the ram to produce a load signal, and digital data processing means responsive to said position and load signals for determining the precise point of punch penetration at which to activate said reversing means to cause ram reversal to produce the desired bend angle.

4,408,472

APPARATUS FOR THE MACHINING ON CYLINDRICAL SURFACES ON METAL-CUTTING LATHES

Gennady M. Azarevich, ulitsa akademika Yangelya, 14, korpus 2, kv. 257; Jury V. Maximov, ulitsa Lesteva 18, kv. 36; Boris I. Akimov, Simonovsky val, 7, korpus 1, kv. 249, and Iosif A. Gusyatsky, ulitsa Malaya Bronnaya, 10, kv. 35, all of Moscow, U.S.S.R.

Filed Mar. 9, 1981, Ser. No. 242,113
Int. Cl.³ B23B *11/00*
U.S. Cl. 72—71 **8 Claims**



1. An apparatus for the machining of cylindrical surfaces on metal-cutting lathes, comprising: a housing, a toolholder having an opening passing therethrough for passage of work being mechined, two tools clamped in said toolholder so that points of the tools are arranged opposite each other, guides located in a plane at right angles to the axis of the work being machined and attached to said housing with provision for rotation during setting-up, said toolholder with said tools being fitted to said guides with provision for floating at right angles to the axis of the work in the course of machining, and a head with deforming rollers contained in said housing.

4,408,473

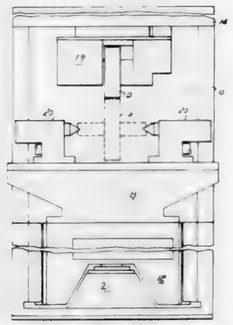
GEAR-ROLLER

Arthur B. Bassoff, Oak Park, Mich., assignor to Lear Siegler, Inc., Mt. Clemens, Mich.

Filed Nov. 9, 1981, Ser. No. 319,684
Int. Cl.³ B21D *53/28;* **B21H** *5/00;* **B21K** *1/30;* **B23P** *15/00*
U.S. Cl. 72—108 **17 Claims**

1. A gear rolling machine for finish rolling gears comprising a rigid frame, a rotary work support on said frame for supporting a work gear thereon, a rotary tool support on said frame for supporting a gear-like die thereon in position to mesh with a work gear on said work support, means for driving one of said rotary supports in rotation, and feed means for mounting one of said supports on said frame for movement in a direction such that a work gear and a gear-like die in mesh with each other develop pressure of metal deforming intensity between the teeth thereof, said feed means comprising feed screw and nut members connected between the movable support and said

frame, and means for effecting relative rotation between the feed screw and nut members comprising a worm gear fixed to one of said members, a worm in meshed engagement with said worm gear, means mounting said worm for rotation and for limited axial displacement, drive means connected to said worm for rotating said worm, blocking means to terminate rotation of said worm and to maintain said worm positively



against further rotation, and pressure relaxing means to displace said worm axially without rotation thereof to effect predetermined rotation of said worm gear to in turn effect a relative rotation between said nut and screw members and controlled separation between said work gear and die to substantially reduce the pressure between the meshed teeth thereof.

4,408,474

METAL STRIP STRETCHING MILL

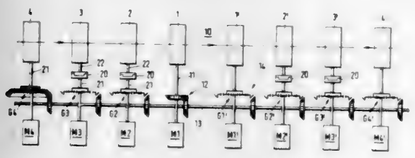
Armin S. P. Hutzenlaub, Wiehl, and Willi Schmidt, Nümbrecht-Elsenroth, both of Fed. Rep. of Germany, assignors to Fa. Erwin Kampf GmbH & Co., Wiehl, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,275

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026129

Int. Cl.³ B21B *39/08, 35/14*

U.S. Cl. 72—205 **5 Claims**



1. A metal strip stretching mill comprising in combination:

a central stretching station;

a group of at least two pulling rolls adjoining the stretching station on one side, including a proximate pulling roll which is located in the immediate vicinity of the stretching station;

a similar group of at least two braking rolls adjoining the stretching station on the opposite side and including a proximate braking roll which is located in the immediate vicinity of the stretching station;

drive shafts connecting said two proximate rolls to a speed-adjustable drive means imparting to said proximate rolls an adjustable circumferential speed;

drive shafts connecting the non-proximate rolls of both groups of rolls to torque-adjustable drive means imparting to each of said non-proximate rolls an ajustable drive torque, or braking torque, respectively, the power input to the non-proximate rolls in each group being stepped down as a function of the distance of the particular roll from the stretching station; and

a disconnectable clutch on the drive shafts of at least one non-proximate pulling roll and at least one non-proximate braking roll, said clutches being operable to switch said pulling and braking rolls to an idling mode, for a downward expansion of the effective power range of the metal strip stretching mill, through the selective idling of non-proximate rolls in both groups of rolls.

4,408,475

ROLLING MILL ROLLS

Gabriel B. Mennel, Nilvange, France, assignor to Sacilor Acieries et Laminoirs de Lorraine, Hayange, France

Filed Feb. 2, 1981, Ser. No. 230,335

Claims priority, application France, Feb. 4, 1980, 80 02383

Int. Cl.³ B21B *1/08*

U.S. Cl. 72—221 **3 Claims**



1. A rolling mill stand serving particularly for the edging of shapes such as rails, beams, channels, squares, diamonds, rounds, tie plates, joint bars or other similar shapes, characterized in that it comprises a set of rolls having a plurality of grooves for shapes with different web heights, nested in such a way that the whole of the part of a groove serving as a surround to the shortest web is common to all the nested grooves in such a way that the vertical plane of symmetry of at least one nested groove is merged with the transversal median plane of the rolls.

4,408,476

ROLLING LINES

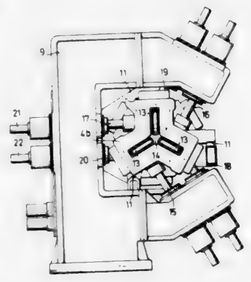
Hans Brauer, Leichlingen, and Werner Demny, Düsseldorf, both of Fed. Rep. of Germany, assignors to Kocks Technik GmbH & Co., Hilden, Fed. Rep. of Germany

Continuation of Ser. No. 18,897, Mar. 9, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 285,342

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811931; Dec. 23, 1978, 2855892

Int. Cl.³ B21B *13/00*

U.S. Cl. 72—229 **42 Claims**



1. A rolling line for the rolling of billets, bars or wire to provide a substantial reduction in cross section by repeated incremental reductions, comprising at least one rolling stand whose rolling direction is reversible and which has only one

sizing pass formed by at least three rolls which are arranged in a star-like manner around the central longitudinal axis of a pass line for work material to be rolled through which said billets, bars and wires are repeatedly passed back and forth for reduction in cross section, said rolls having a substantially larger diameter than axial width and a substantially cylindrical working surface and being adjustable radially of the roll axis a distance at least equal to the total radial reduction in cross section of said billets, bars or wire, means for simultaneously adjusting said rolls radially uniformly before each successive pass of the work material while maintaining the central longitudinal axis of the sizing pass and of the work material fixed.

4,408,477

ADJUSTABLE PRESS TOOL

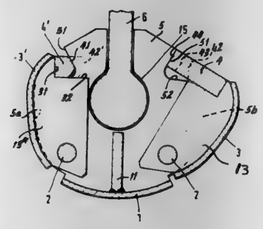
Rolf Kümmerling, Essen; Robert Poos, Grevenbroich; Thomas Pentzien, Duisburg, and Karl-Heinz Papierok, Essen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 9, 1982, Ser. No. 406,529

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3133178

Int. Cl.³ B21D *37/02*

U.S. Cl. 72—478 **3 Claims**



1. A press-working tool with a generally U-shaped contour for making tubes or pipes of a relatively large diameter, such as 600 millimeters and larger, at a diameter-to-wall-thickness ratio of approximately 13 and larger, comprising:

an arcuate centerpiece having an outwardly oriented convex working surface and a radially inwardly arranged mounting structures;

a pair of symmetrically contoured side pieces with generally convex working surfaces, being hinged to the mounting structure; and

a pair of spacer bars having different cam positions and being interposed between the side pieces and the mounting structure to establish a particular angular position for the side pieces.

4,408,478

HEATABLE CELL FOR PHOTOACOUSTIC TESTS

Paul Bechthold, Pulheim-Dansweiler; Franz Joswig, Jülich, and Josef Lingenbach, Düren, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 246,034

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 8008158[U]

Int. Cl.³ G01N *21/00*

U.S. Cl. 73—24 **9 Claims**

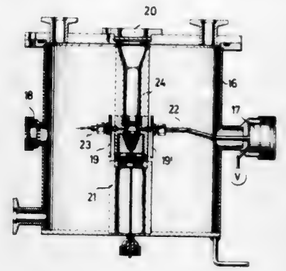
1. A heatable cell arrangement for photoacoustic tests comprising:

a sample holding chamber including:

a chamber body forming the side wall of said chamber and having at one end a sealing surface and at its opposite end a light admission window which closes said chamber body;

a chamber closure having a sealing surface engaging said sealing surface of said chamber body, said chamber closure delimiting that side of said chamber opposite said light admission window, and being provided with a recess for receiving test samples; and

at least one heating winding provided on at least one of said chamber closure and said chamber body; and



a detector microphone having a microphone chamber which is arranged lower than said sample holding chamber to preclude convection and which is connected to said sample holding chamber by a thin-walled connecting tube having poor heat-conducting properties.

4,408,479

KNOCKING DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINES

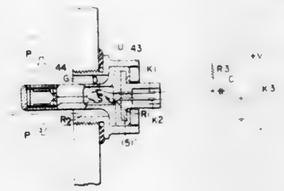
Kiyokazu Asai; Yujiro Oshima; Akihiro Takeuchi, all of Nagoya, and Hiroharu Tokoro, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Feb. 3, 1982, Ser. No. 345,537

Claims priority, application Japan, Feb. 9, 1981, 56-17880

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **11 Claims**



1. A knocking detecting device for an internal combustion engine including an engine block having combustion and water chambers defined by a partition and a coolant water passage connected to the water chamber, said knocking detecting device comprising:

a casing in the form of an annular member fastened substantially perpendicularly to an outer sidewall of said engine block;

a support member made of a vibration-isolating material of any one of rubber and synthetic resin, and having one end fastened in a liquidtight manner to said casing and the other end projecting a predetermined distance from the outer sidewall of said engine block to a position within said water chamber;

a pressure-sensitive member including pressure-sensitive surfaces mounted on the projecting end of said support member and facing away from each other, said pressure-sensitive surfaces extending perpendicularly to the outer sidewall of said engine block, for detecting, as a change in an electrical signal, pressure vibrations transmitted as a knocking sound to said pressure-sensitive surfaces through coolant water from said partition when knocking is produced in said combustion chamber; and

lead wires extending through said support member and connected to said pressure-sensitive member for delivering the electrical signal change responsive to the knocking as detected by said pressure-sensitive member exteriorly of the engine block, whereby only the knocking produced in the combustion chamber can effectively be detected as the pressure vibrations in the coolant water.

4,408,480

GAS LEAK DETECTOR VIEWER

Eugene J. Christie, P.O. Box 5372, Mission Hills, Calif. 91345

Filed Sep. 25, 1981, Ser. No. 305,485
Int. Cl.³ G01M *3/04*; G01N *31/12*
U.S. Cl. 73—40.7 **3 Claims**



1. A viewer for enabling flame visability of Halide gas leak detector in the presence of sunlight, and including; an elongated tubular body closed at one end and open at the other end for closure by means of close proximity to the face of the person aligning an eye for observation through said tubular body toward said one closed end thereof, a receiver opening at a lower side of the tubular body at said one closed end thereof, the Halide gas leak detector having a shield holder for a burner body producing the said flame and inserted through the receiver opening and held positioned within said one closed end of the tubular body, a light restricting exhaust ventilator at the upper side of the tubular body and venting the flame of the gas leak detector positioned within the tubular body through said receiver opening, and a light restricting induction ventilator at the lower side of the tubular body at said open end thereof for convection inlet flow of air and thermal protection of the person's face and eye, whereby outside sunlight is obscurbed from the interior of the tubular body and the flame is discriminately viewed in darkness.

4,408,481

PORE PRESSURE PROBE ASSEMBLY AND TWO-STAGE EMPLACEMENT THEREOF

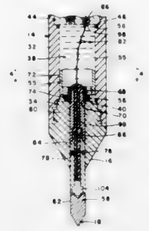
Roger Sidey, Richmond, England, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 12, 1982, Ser. No. 357,444
Int. Cl.³ G01L *11/00*; G01N *33/24*
U.S. Cl. 73—73 **9 Claims**

6. In a system for measuring transient pore water pressure in the ground, a two-stage method for emplacement of a probe assembly at a desired location in the ground, said emplacement method comprising the steps of:

(a) in an initial stage, emplacing into the ground to a desired location therein a primary probe member of said probe assembly in said measuring system; and

(b) in a final stage, ejecting into the ground at the desired location a secondary probe member of said probe assembly which is contained within said primary probe member



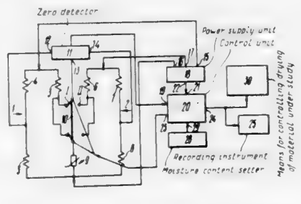
and, in turn, contains a pressure sensor capable of responsive coupling with pore water pressure at the desired location.

4,408,482

METHOD AND APPARATUS FOR THE DETERMINATION OF MOISTURE CONTENT OF FIBROUS AND GRANULAR MATERIALS

Vadim F. Zhuravlev, Moscow, and Alexei G. Belov, Pushkino, both of U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Institut Kozhevenno-Obuvnoi Promyshlennosti, Moscow, U.S.S.R.

Filed Dec. 18, 1981, Ser. No. 332,150
Int. Cl.³ G01N *5/00, 25/56*; H05B *1/02*
U.S. Cl. 73—75 **4 Claims**



1. A method for the determination of moisture content of fibrous and granular materials, comprising the following steps:

bringing a sensitive element in contact with a fibrous or granular material under study;

preliminarily applying a pulse heating to said sensitive element at the moment when it is brought in contact with said studied material, to between 40° and 90° C.;

obtaining information from said sensitive element on said preliminary pulse heating;

applying a main pulse heating to said sensitive element, to between 90° and 140° C.;

obtaining an information from said sensitive element on said main pulse heating from said sensitive element; and

evaluating the moisture content of the studied material upon receiving said information, namely based on the time for the main heating of said sensitive element.

4,408,483

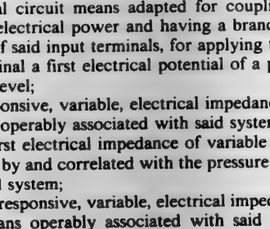
ENGINE MONITORING SYSTEM

John G. Bollinger, Madison, Wis.; Richard E. Nichols, and Dale H. Delaruelle, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Aug. 21, 1981, Ser. No. 294,990
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—115 **47 Claims**

1. For use with an internal combustion engine, an arrangement for analyzing the operation of said engine comprising:

first means, adapted to be coupled to said engine, for producing an output signal representative of at least one prescribed characteristic of a plurality of cylinders of said engine; and



second means, coupled to said first means, for selectively analyzing said output signal and producing therefrom an output representative of the operation of a selected one of said plurality of cylinders.

4,408,484

TEMPERATURE COMPENSATED GAUGE FOR PRESSURIZED GAS SUCH AS NATURAL GAS FUEL FOR VEHICLES

Roman R. Erickson, Kansas City, Kans., assignor to Gas Service Energy Corporation, Kansas City, Mo.

Filed Jun. 4, 1981, Ser. No. 270,628
Int. Cl.³ G01F *17/00*
U.S. Cl. 73—149 **18 Claims**

1. In apparatus for gauging the quantity of a gas within a system presenting a predetermined volume in which said gas is confined under pressure;

electrically responsive means having a pair of input terminals for measuring the magnitude of an electrical input applied to said input terminals and providing an indication corresponding thereto;

first electrical circuit means adapted for coupling with a source of electrical power and having a branch coupled with one of said input terminals, for applying to said one input terminal a first electrical potential of a preselected reference level;

pressure responsive, variable, electrical impedance presenting means operably associated with said system for presenting a first electrical impedance of variable magnitude influenced by and correlated with the pressure of said gas within said system;

temperature responsive, variable, electrical impedance presenting means operably associated with said system for presenting a second electrical impedance of variable magnitude influenced by and correlated with the temperature of said gas within said system; and

second electrical circuit means adapted for coupling with a source of electrical power, having said first and second impedances coupled in series therewith, and having a branch electrically coupling the other of said input terminals with a point of said second circuit means electrically intermediate said first and second impedances for applying to said other input terminal a second electrical potential of variable level influenced by and correlated with combined effects of the respective magnitudes of said first and second impedances.

4,408,485

ROTARY STRADDLE TESTER APPARATUS WITH SAFETY JOINT BACK-OFF CLUTCH

Howard L. McGill, Lufkin, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 22, 1981, Ser. No. 276,042
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—155 **8 Claims**



1. Apparatus adapted for use in drill stem testing a well interval that is isolated by inflatable packer means, comprising: relatively rotatable mandrel and housing assemblies, one of said assemblies being connected to said packer means and the other of said assemblies being connected to a pipe string extending upwardly to the surface; pump means responsive to rotation of said other assembly relative to said one assembly in the right-hand direction for supplying fluid under pressure to said packer means to inflate the same; a safety joint located in said apparatus between said one assembly and said packer means; and prevention means for enabling only right-hand rotation of said other assembly relative to said one assembly so that left-hand rotation of the pipe string can be employed to release said safety joint.

4,408,486

BELL NIPPLE DENSITOMETER METHOD AND APPARATUS

Robert W. Rochon, and Joe W. Sneed, Jr., both of San Antonio, Tex., assignors to Monarch Logging Company, Inc., San Antonio, Tex.

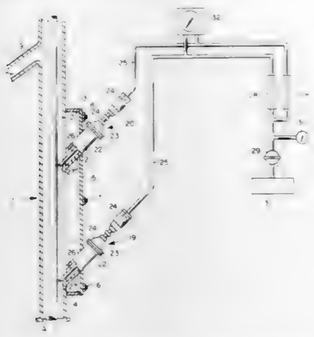
Continuation of Ser. No. 186,496, Sep. 12, 1980, abandoned. This application Sep. 30, 1982, Ser. No. 431,718
Int. Cl.³ E21B *47/06*
U.S. Cl. 73—155 **5 Claims**

1. A method for continuously determining the amount of entrained gas in drilling fluid before the entrained gas is released to the atmosphere comprising the steps of:

flowing drilling fluid through the borehole;

continuously monitoring changes in the pressure of the drilling fluid at vertically spaced locations in a bell nipple

connected with the borehole before any entrained gases are released to the atmosphere; and



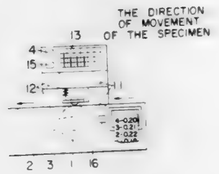
displaying changes in the differential pressures at the vertically spaced locations to determine changes in the weight of the drilling fluid due to entrained gases.

4,408,487

CARTON'S DEPRESSED LINE HEIGHT MEASURING DEVICE

Mikio Tano, Tokyo, Japan, assignor to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00283, § 371 Date Jul. 21, 1981, § 102(e) Date May 29, 1981, PCT Pub. No. WO81/01460, PCT Pub. Date May 28, 1981
PCT Filed Nov. 19, 1980, Ser. No. 270,514
Claims priority, application Japan, Nov. 21, 1979, 54-160399
Int. Cl.³ G01B *7/34, 11/30*
U.S. Cl. 13—159 **15 Claims**



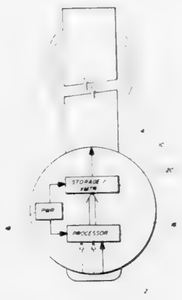
1. A carton's depressed line height measuring device comprising:
- means for conveying in one direction a specimen which is formed into a carton by being folded and bonded together at predetermined ends;
- means provided in said conveying means, for contacting the surface of said specimen to provide action according to the unevenness of said surface;
- a means for forming an electrical signal according to the action of said action providing means;
- zero setting means for detecting the rise of a signal from said signal forming means, which is caused according to the thickness of said specimen, to form a zero reference signal;
- peak holding means for detecting and holding the peak value of said signal from said signal forming means; and
- outputting means for substracting an output of said zero setting means from an output of said peak holding means and outputting the result of substraction.

4,408,488

GENERALIZED DRIFTING OCEANOGRAPHIC SENSOR

Samuel W. Marshall, Box 526M, Torregano Rd., Slidell, La. 70458

Filed Apr. 5, 1982, Ser. No. 365,845
Int. Cl.³ G01D *11/24*
U.S. Cl. 73—170 A **2 Claims**



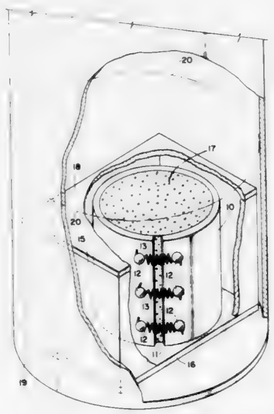
1. A drifting oceanographic sensor system comprising:
- a variable buoyancy housing;
- an oceanographic sensor connected externally to said housing;
- means contained internal to said housing for processing and multiplexing the electrical signal from said sensor;
- means for acoustically transmitting the data output from said processing and multiplexing means; and
- means for adjusting the buoyancy of said housing such that said sensor system drifts along a pre-programmed depth schedule.

4,408,489

APPARATUS AND METHOD FOR MEASURING THE EXPANSION PROPERTIES OF A CEMENT COMPOSITION

Lloyd B. Spangle, Claremore, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 134,716, Mar. 27, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,779
Int. Cl.³ G01N *33/38, 33/44*
U.S. Cl. 73—432 R **10 Claims**



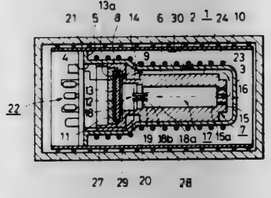
1. An apparatus for measuring the expansion properties of a cement slurry composition, which sets up to form a solid phase, and which is expandable during the setting-up period, the apparatus comprising:
- a sleeve having at least one vertical slit therein;
- the sleeve includes at least one set of pins, consisting of two pins, the pins are mounted in horizontal alignment on the sleeve, and the pins are located on opposite sides of the verical slit;
- at least one spring member, the spring member connects the two pins together;
- the sleeve has a closed position, in which it can receive and contain the cement slurry composition, and the sleeve has an open position, in which it expands outwardly, such that it can contain the cement composition as it expands during the setting-up period;
- a retainer vessel in which the sleeve is placed during the setting-up period of the cement slurry composition, and the retainer vessel completely encloses the sleeve and cement slurry composition during said setting-up period; and
- a pressure vessel which contains a liquid medium, and the retainer vessel, sleeve and cement slurry composition are placed in the pressure vessel, such that they are submerged in said liquid medium during the setting-up period of the cement slurry composition.

4,408,490

ANGULAR VELOCITY SENSOR

Fumitaka Takahashi, Houya, and Hiroshi Gotoh, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1981, Ser. No. 230,039
Claims priority, application Japan, Mar. 27, 1980, 55-39492
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—497 **4 Claims**



1. An angular velocity sensor comprising: a casing, a sensor body placed within said casing, said sensor body having at least part of an outer peripheral surface thereof disposed in direct contact with said casing, said sensor body being formed with a nozzle hole, a gas flow sensor mounted within said sensor body and disposed to detect the temperature of a gas flow delivered thereto through said nozzle hole, said gas flow sensor being disposed to produce an output varying with deflection of said gas flow which is caused by angular velocity applied to said angular velocity sensor, a heating wire helically wound around said casing along substantially the whole length thereof and disposed in direct contact with said casing, thermo-sensitive switch means connected to said heating wire and arranged to detect the temperature within said casing and control the supply of electric current to said heating wire, said thermo-sensitive switch means being operable to control the rate at which electric current is supplied to said heating wire in response to the temperature within said casing so as to keep said temperature at a constant value, an airtight housing formed of an insulating material, said casing positioned within said housing, a second heating wire helically wound on an inner wall of said housing, a second thermo-sensitive switch means arranged to detect the temperature within said housing and control the supply of electric current to said second heating wire, said second thermo-sensitive switch means being operable to control the rate of electric current being supplied to said second heating wire in response to the temperature within said housing so as to keep said temperature at a constant value, and said two thermo-sensitive switch means being operable to control the respective temperatures within said casing and said housing so that the temperature within said casing is higher than the temperature with said housing.

4,408,491

Patent Not Issued For This Number

4,408,492

SIGNAL PROCESSING EQUIPMENT FOR ULTRASONIC VISUALIZATION

George Kossoff, Northbridge, and David E. Robinson, Bilgola Plateau, both of Australia, assignors to The Commonwealth of Australia, Phillip, Australia

PCT No. PCT/AU80/00070, § 371 Date May 13, 1981, § 102(e) Date May 13, 1981, PCT Pub. No. WO81/00807, PCT Pub. Date Apr. 2, 1981
PCT Filed Sep. 19, 1980, Ser. No. 269,057
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—631 **9 Claims**

3. A method of ultrasonic examination of an object comprising subjecting the object to ultrasonic examination by an echoscpe having a time gain compensation facility, characterized by the steps of:
- (a) directing a first pulse of ultrasonic energy into the object;
- (b) monitoring the intensity of a first reflected ultrasonic signal from a first predetermined contour within the object, and the intensity of a second reflected ultrasonic signal from a second predetermined contour within the object;
- (c) determining the sensitivity of the time gain compensation value that is necessary to ensure that the first reflected signal has a predetermined intensity;
- (d) determining the attenuation exhibited between the first and second contours;
- (e) storing the determined value of the attenuation of step (d) in a memory;
- (f) repeating steps (a) to (e) for each pulse of the sequence of ultrasonic energy pulses required to effect a complete echogram of the object;
- (g) deriving, from the entire stored values of atenuation in said memory, an average value of attenuation between the first and second contours and an average value of the slope of the time gain compensation required to compensate therefor; and

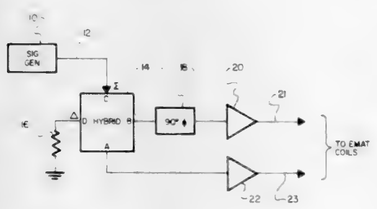
(h) directing a second sequence of pulses to effect a complete echogram into the object, and using the determined time gain compensation for each pulse of step (c) and the average slope of the time gain compensation, obtaining a complete echogram of the object.

4,408,493

DIRECTIONAL ULTRASONIC TRANSDUCERS

William E. Peterson, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 24, 1982, Ser. No. 361,319
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—643 **16 Claims**



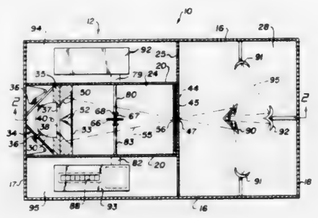
1. An apparatus for interacting with acoustic wave energy of wavelength λ in an electrically conductive object, comprising:
an electromagnetic acoustic transducer, including a source of magnetic flux for producing a magnetic field extending into the object, a first periodic coil within said field, and a second periodic coil offset from said first coil within said field;
a four port hybrid, with a first port connected to said first coil and a second port connected to said second coil; and
a phase delay element interposed between said first port and said first coil.

4,408,494

ULTRASOUND MEASURING INSTRUMENT

John N. Koblanski, Burnaby, Canada, assignor to Ocean Ecology Ltd., Canada

Filed Jul. 30, 1981, Ser. No. 288,435
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—646 **15 Claims**



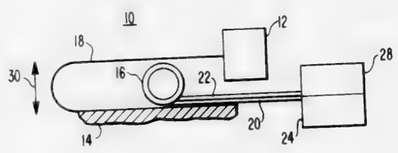
1. An ultrasonic measuring instrument comprising a chamber, mounting means for supporting a sound generator at one end of the chamber, focusing means near said one end of the chamber for concentrating sound waves emanating from sound generator at a focal point near an opposite end of the chamber, and measuring means for determining the intensity of the sound waves including a movable member supported within the chamber to project into the energy beam, said movable member being moved by the sound waves to an extent related to the intensity of said waves, and an indicating system actuated by movement of the movable member to provide an indication of the intensity of the sound waves, said indicating system comprising a spindle rotatably supporting the movable member within the chamber, a pointer carried by the spindle, and a scale on the housing adapted to be swept by the pointer.

4,408,495

FIBER OPTIC SYSTEM FOR MEASURING MECHANICAL MOTION OR VIBRATION OF A BODY

Robert D. Couch, New Freedom, Pa., and Bruce N. Lenderking, Glen Burnie, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1981, Ser. No. 308,317
Int. Cl.³ G01H *9/00*; G02B *5/14*
U.S. Cl. 73—655 **4 Claims**



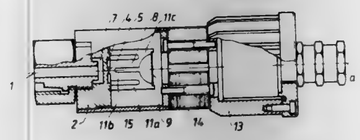
3. A method of measuring mechanical motion or vibration of a body relative to a fixed mechanical reference point, with an elongated fiber optic waveguide mechanically coupled to the body and the fixed mechanical reference point, which fiber optic waveguide is bent beyond the critical angle at which light directed through the waveguide is substantially totally internally reflected along the waveguide, which method comprises;
amplifying the force acting on the body,
directing light through the bent waveguide,
detecting the reduction in light intensity transmitted through the bent waveguide as the waveguide bend radius changes due to the mechanical force imparted to the waveguide by the mechanical motion of the body, and generating an electrical signal which is a function of this reduced light intensity and of the mechanical motion or vibration of the body.

4,408,496

PRESSURE-SENSING TRANSDUCER

Orvar Dahle, Västeras; Bertil Hoffman, Kolbäck; Jan Nordvall, Västeras; Sture Siby, Västeras, and Ake Widehn, Västeras, all of Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Mar. 13, 1981, Ser. No. 243,450
Claims priority, application Sweden, Mar. 19, 1980, 8002137
Int. Cl.³ G01L *9/10*
U.S. Cl. 73—728 **7 Claims**



1. A pressure-sensing transducer which can be used to continuously measure the cylinder pressure in an internal combustion engine, said pressure-sensing transducer comprising
a pressure-transmitting element which includes a generally tubular seat having a bottom end and a top end and defining a longitudinal axis therethrough, and a metallic plate which closes off the top end of said seat so as to form a cavity within said seat into which hot gases from an internal combustion engine can flow, said metallic plate including a centrally located projection portion extending away from its side opposite the cavity in said seat,
a generally M-shaped force transmitting member having two outer legs and two inner legs, the bottom ends of the two inner legs being connected together and the top ends of the two inner legs being respectively connected to the top ends of the two outer legs, the bottom ends of the two outer legs being connected to opposite portions of the top end of said seat and the bottom ends of the two inner legs being connected to the projection portion of said metallic plate, and
a force-sensing member connected between the top ends of the two outer legs of said generally M-shaped force-transmitting member so as to be oriented generally perpendicularly with respect to said longitudinal axis, said force-sensing member comprising a plate having four apertures therein, two of the apertures supporting an excitation winding and two of the apertures supporting a measuring winding, such that pressure forces acting along said longitudinal axis on said metallic plate from within said cavity will be transmitted by said force-transmitting member so as to create tensile forces in said force-sensing member measurable by said measuring winding.

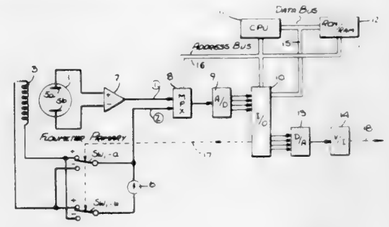
4,408,497

ELECTROMAGNETIC FLOWMETER FOR MEASURING FERROMAGNETIC SLURRIES

Kazuie Suzuki, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,327
Int. Cl.³ G01F *1/60*
U.S. Cl. 73—861.17 **5 Claims**

1. An electromagnetic flowmeter for measuring the flow rate of a slurry containing ferromagnetic particles or a like magnetic substance which raises the specific permeability of the slurry above unity, said flowmeter comprising:
A. a flow tube through which the slurry is conducted, said tube having a pair of diametrically-opposed electrodes mounted thereon;
B. means to establish an electromagnetic field in the flow tube which is intercepted by the slurry to induce a signal in the electrodes which depends on flow rate, said means including an electromagnetic circuit whose core is provided with a gap defined by said tube and whose excitation coil is wound about the core, the magnetic resistance of the circuit changing as a function of the ferromagnetic concentration of the slurry, this change affecting the inductance value of the coil;
C. means to measure the changing value of said inductance;
D. means coupled to said electrodes to provide an output signal; and
E. correction means responsive to said changing inductance value to modify said output signal as a function of said value to produce a corrected output signal which accurately reflects flow rate regardless of changes in ferromagnetic concentration.

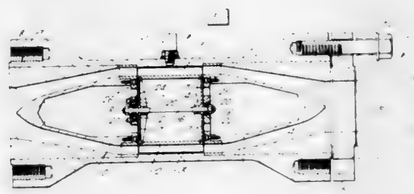


4,408,498

TURBINE FLOW METERS

James H. Heath, Wareham, England, assignor to United Kingdom Atomic Energy Authority, London, England

PCT No. PCT/GB80/00123, § 371 Date Mar. 25, 1981, § 102(e) Date Mar. 25, 1981, PCT Pub. No. WO81/00453, PCT Pub. Date Feb. 19, 1981
PCT Filed Aug. 1, 1980, Ser. No. 247,400
Claims priority, application United Kingdom, Aug. 6, 1979, 7927310; Dec. 13, 1979, 7943051
Int. Cl.³ G01F *1/10*
U.S. Cl. 73—861.79 **10 Claims**



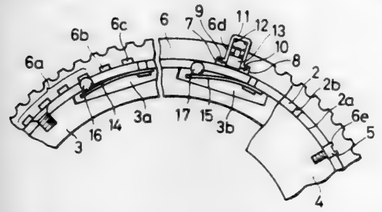
1. A turbine flowmeter for two-phase fluid flow, comprising a rotatably-mounted multi-bladed single rotor insertable in a flow conduit, the rotor being mounted in a housing and comprising a boss and a number of blades attached to the boss, the ratio of boss diameter to blade outside diameter being not less than seven to ten, the rotor blades being disposed in respect of the rotational axis at an angle proportional to blade radius and not greater than 15° at the tip.

4,408,499

CLICK STOP DEVICE

Yasuyuki Haneishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,099
Claims priority, application Japan, Jun. 5, 1980, 55/78502
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—527 **4 Claims**



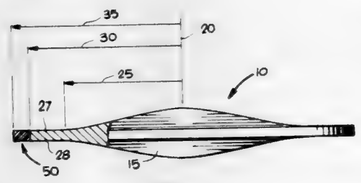
1. A click stop device for an interchangeable lens comprising: an aperture preset ring, a stationary ring and a mount ring, said preset ring being rotatably provided on an outer wall of said stationary ring and said stationary ring being integral with said mount ring, click grooves being formed in an inner wall of said aperture preset ring, said click grooves corresponding to manual aperture preset marks and an automatic aperture preset mark provided on an outer wall of said aperture prest ring; a first click spring and a first click ball biased by said first click spring toward said outer wall of said stationary ring, said first click ball engaging with an one of said click grooves to click stop said aperture preset ring; a hollow switch button provided for said aperture preset ring, a head of said switch button protruding outwardly from said aperture preset ring through a hole in said aperture preset ring, a switch pin slidably disposed in said hollow switch button; a coil spring interposed between said switch pin and said switch button in such a manner that elastic force of said spring depresses said switch button against an inner surface of said aperture preset ring and said switch pin against an outer surface of said stationary ring, two click grooves corresponding to a minimum manual aperture preset mark and said automatic aperture preset mark being formed between side walls of cuts formed on opposite sides of a base portion of said switch button and side walls of said switch pin; and a second click spring and a second click ball, said second click ball being biased by said second click spring through a hole in said stationary ring at a position so as to engage with either of said two click grooves formed on opposite sides of base portion of said switch button.

4,408,500

RIMMED AND EDGE THICKENED STODOLA SHAPED FLYWHEEL

Satish V. Kulkarni, San Ramon, and Richard G. Stone, Oakland, both of Calif., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Sep. 24, 1980, Ser. No. 190,306
Int. Cl.³ F16C *15/00*
U.S. Cl. 74—572 **4 Claims**



1. A flywheel, which comprises:
(a) a body shaped symmetrically about both an axis of rotation and a midplane perpendicular to the axis of rotation; and
(b) said body having a thickness defined by the formula:

$$t = t_o \exp - Cr^2 \text{ where } 0 \leqq r \leqq \left[\frac{1}{C}\ln(t_o/T)\right]^{\frac{1}{2}}$$

$$t = T \qquad \text{where } \left[\frac{1}{C}\ln(t_o/T)\right]^{\frac{1}{2}} < r \leqq R$$

$$t = 0 \qquad \text{where } r > R$$

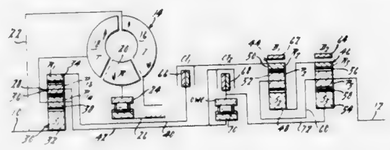
wherein:
r=the perpendicular distance from the axis of rotation,
t=the thickness of said body at a distance r from, and measured parallel to, the axis of rotation,
t_o=the thickness of said body at and along the axis of rotation,
T=the thickness of said body where said body is edge thickened,
R=the maximum radial dimension of said body, and
C=an arbitrary positive constant of dimensionality reciprocal length squared which relates to an infinite Stodola flywheel corresponding to said flywheel by equaling the expression $\rho\omega^2/2s_o$, wherein:
ρ=the material density of said flywheel and said corresponding infinite Stodola flywheel,
s_o=the material rupture stress of said flywheel and said corresponding infinite Stodola flywheel, and
ω=the angular speed at rupture of said corresponding infinite Stodola flywheel.

4,408,501

MULTIPLE RATIO TORQUE CONVERTER TRANSMISSION WITH MAIN TRANSMISSION PLANETARY GEARING AND A COMPOUND TORQUE SPLITTER PLANETARY GEAR UNIT BETWEEN THE CONVERTER AND THE MULTIPLE RATIO GEARING

Po-lung Liang, Livonia, and Alan R. Fisher, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1981, Ser. No. 265,746
Int. Cl.³ F16H *47/08*
U.S. Cl. 74—688 **6 Claims**



1. A hydrokinetic split torque transmission mechanism comprising a torque converter and a split torque gear unit;
said converter comprising an impeller, a turbine and a reactor situated in a torus circuit, said impeller having an impeller shell enclosing said turbine and said reactor, a torque input shaft connected to said impeller shell;
a split torque gear unit in said impeller shell comprising a ring gear, a sun gear and two planet gear sets, the planet gears of one set meshing with said ring gear and the planet gears of the other set meshing with said sun gear, said planet gears being journalled rotatably in engagement with each other on a common carrier;
a driving connection between said turbine and said common carrier, a first torque delivery shaft centrally located in said converter connected directly to said common carrier, a torque delivery sleeve shaft surrounding said first shaft connected directly to said ring gear;

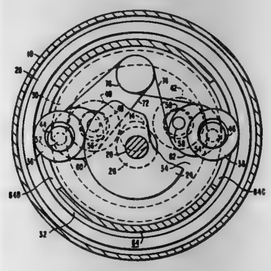
multiple ratio gearing comprising multiple sun gears, ring gears and planet pinions journalled on a pinion carrier, one member of said multiple ratio gearing being adapted to be connected to a driven member;
first clutch means for connecting a first input member of said multiple ratio gearing to said sleeve shaft and second clutch means for connecting a second torque input member of said multiple ratio gearing to said first shaft.

4,408,502

TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 10, 1981, Ser. No. 242,361
Int. Cl.³ F16H *3/44*
U.S. Cl. 74—789 **12 Claims**



1. A planetary type traction roller transmission comprising: input and output shafts; first and second traction ring structures supported by, and for rotation with, one of said input and output shafts; first and second sun roller structures associated with the other of said input and output shafts, said first and second sun roller structures being disposed within said first and second traction ring structures, respectively, with the axis of said first and second sun roller structures being in axially parallel alignment with, but spaced from, the axis of said traction ring structures such that annular spaces of varying width are formed between the first and second sun roller structures and, respectively, the first and second traction ring structures; planetary first and second traction rollers disposed in the annular spaces between said first and, respectively, second sun roller and traction ring structures; support means extending into said traction ring structure and supporting therein said first and said second traction rollers; and means for moving said first traction roller into a narrowing area of the annular space between said first sun roller and traction ring structures for firm frictional engagement therewith for the transmission of motion therebetween, and said second traction roller into a widening area of the annular space between said second sun roller and traction ring stuctures for disengagement therefrom, and, alternatively, for moving said first traction roller into a widening area of the space between the first and second sun roller and traction ring structure and said second traction roller into a narrowing area between said second sun roller and traction ring structure for engagement therewith and transmission of motion therebetween.

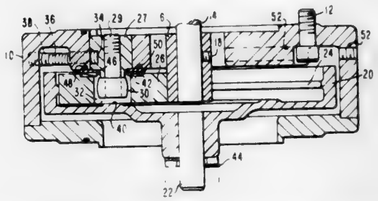
4,408,503

TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Mar. 6, 1981, Ser. No. 241,242
Int. Cl.³ F16H *13/06, 13/10, 13/00, 55/34*
U.S. Cl. 74—798 **8 Claims**

2. A traction roller transmission comprising: a traction ring having an inner traction race; a sun roller arranged within said traction ring, said sun roller having a traction surface spaced from the race of said traction ring to form an annular path therebetween; a number of motion transmitting traction rollers disposed in said annular path and being in engagement with said traction ring race and the sun roller surface for the transmission of motion therebetween; an annular guide structure arranged adjacent said traction rollers and in a plane normal to the axis of said traction ring, said traction rollers having annular side faces adjacent said annular guide structure, means for resiliently forcing said annular guide structure and said traction rollers toward each other permitting lubricant present in



the transmission and adhering to said annular guide structure and the traction roller side faces, while being drawn between said annular guide structure and the roller side faces, to form a lubricant pad therebetween adapted to provide for a clearance whose size is dependent on the relative speed between said guide structure and the roller side faces thereby reducing high speed shear losses and permitting passage of particulate matter while firmly steering the traction rollers into parallel alignment with the traction ring.

4,408,504

SOCKET DRIVE

Raymond M. Dobosh, 5455 Brownsville Rd., Pittsburgh, Pa. 15236

Filed Jul. 24, 1981, Ser. No. 286,688
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—59.1 **2 Claims**



1. A socket drive comprising:
a handle having a cylindrical head at one end thereof;
a roller clutch that is secured within the cylindrical head;
a drive member concentrically maintained within the roller clutch and having a passage extending therethrough, said drive member and roller clutch being locked from movement in one angular direction and being substantially free turning in the opposite angular direction;
an extension member that is slideably lodged in the passage of said drive member, said extension being longitudinally moveable within said passage in one direction to expose a first end of the extension member for insertion into the socket and longitudinally moveable in the opposite direc-

tion to expose a second end of the extension member for insertion into the socket;

at least one detent ball adjacent each end of the slideable extension member and at least one detent socket adjacent each end portion of the passage of said drive member, said detent balls and detent sockets being positioned so that when one of the detent balls is in registry with one of said detent sockets one end of the extension member extends from the passage, and when a second detent ball is in registry with a second detent socket, the opposite end of the extension member extends from the passage; and

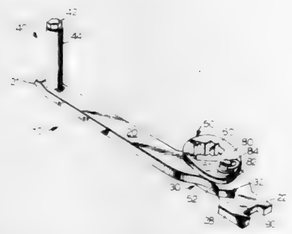
a keyway adjacent the passage of said drive member, said keyway having a stop member in the central region thereof, and first and second projections adjacent the slideable extension member, said first and second projections arranged to cooperate with said stop member to limit the longitudinal movement of the extension member in said passage.

4,408,505

MULTIPURPOSE RATCHETING WRENCH

E. Wayne Cook, 4455 Delespine Rd., Cocoa, Fla. 32922

Filed Sep. 10, 1980, Ser. No. 185,764
Int. Cl.³ B25B *13/28*
U.S. Cl. 81—98 **8 Claims**



1. A ratcheting wrench for turning components, such as fire hydrant valve stems, water meter valve stems, fire hose couplers, and the like, comprising in combination:

a lever having first and second ends, with said lever having a convexly curved arcuate portion defining first and second cam surfaces located generally along a longitudinal axis of said lever but spaced from said second end thereof; a pivot disposed along a center line of said arcuate portion and coupled to said lever adjacent said first and second cam surfaces;

a gripping head defining an aperture therein for receiving the component to be turned therethrough, with said gripping head being movably coupled about said pivot so as to move responsive to the magnitude and direction of the torque exerted on said first end of said lever between a tightening direction and position, wherein said gripping head closes upon said first cam surface, and an untightening direction and position, wherein said gripping head closes upon said second cam surface, so as to reduce in both of said positions the effective size of said aperture for gripping the component therein; and

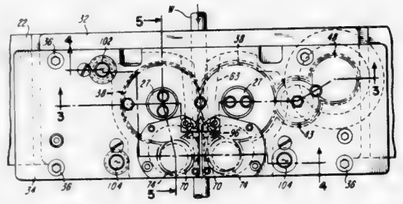
said second end of said lever including in a distended section thereof, notch means sized for coupling with and rotating the stem of a water meter valve, said notch means comprising in combination first and second opposing sides each defined by first and second surfaces with said first surfaces of said first and second opposing sides being generally parallel with each other but offset perpendicularly from each other generally by the thickness of the stem of the water meter valve to be rotated.

4,408,506

MACHINE FOR PRECISELY FEEDING AND TURNING AN AXIALLY MOVABLE NON-ROTATING WORKPIECE

Donald L. Coy, and Dale L. McEvers, both of Dayton, Ohio, assignors to H & H Industries, Inc., Dayton, Ohio

Filed Apr. 13, 1981, Ser. No. 253,706
Int. Cl.³ B23B *5/00*
U.S. Cl. 82—20 **20 Claims**



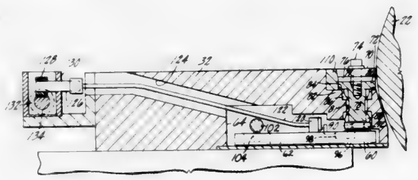
1. A machine adapted for precisely turning a cylindrical workpiece to a predetermined outside diameter, said machine comprising a forming head including an annular spindle supported for rotation on an axis, a plurality of angularly spaced tool elements mounted on said spindle for engaging the workpiece, means for driving said spindle, a plurality of workpiece feeding units spaced axially with said forming head disposed between two said feeding units, each of said feeding units including a pair of opposing feed rollers spaced to receive a workpiece therebetween, a pair of pivot members supporting said feed rollers for rotation on parallel spaced axes, means supporting said pivot members for pivotal movement on parallel spaced axes eccentric to the corresponding said axes of said feed rollers for changing the spacing between said feed rollers, means for simultaneously driving said feed rollers while said pivot members are pivoting, and a power actuated member disposed for simultaneously engaging and pivoting said pivot members in opposite directions while said feed rollers are driven to effect movement of said driven feed rollers between corresponding retracted positions and workpiece gripping positions for feeding the workpiece through said forming head in precise alignment with the axis of said spindle.

4,408,507

MACHINE TOOL INDEXING MECHANISM

Richard S. Szewczyk, Rochester, N.Y., assignor to USM Corporation, Farmington, Conn.

Filed Feb. 25, 1981, Ser. No. 238,015
Int. Cl.³ B23B *29/04*
U.S. Cl. 82—36 A **2 Claims**



1. A support for a cutting tool comprising: a circular insert having a cutting edge extending along the periphery of the insert, a holder to which the insert is secured, means mounting the holder for rotation in the support, a mechanism for incrementally indexing the holder, including a pawl and ratchet mechanism in driving relation to one end of the holder, an actuating arm carrying the indexing mechanism and swingable about the axis of rotation of the holder, a reciprocating device connected to the arm for swinging the arm to cause the pawl and ratchet mechanism to incrementally rotate the holder to present successive portions of the insert cutting edge, a control

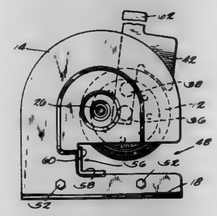
device to change the direction of rotation of the holder, a flexible shaft extending from an actuating means through the support to the control device, the actuating means being effective to rotate the flexible shaft, and a lever associated with the shaft to vary the effectiveness of the pawls of the indexing mechanism.

4,408,508

CUTTING TOOL HAVING CIRCULAR BLADE MOUNTED ON A PIVOTED LEVER

Robert R. Brester, New Berlin, and Thomas L. Roberts, Mukwonago, both of Wis., assignors to Velvac, Inc., New Berlin, Wis.

Filed Jan. 7, 1982, Ser. No. 337,573
Int. Cl.³ B23D *21/00, 17/00*
U.S. Cl. 83—397 **7 Claims**



1. In a cutting tool of the type having a circular blade having a center hole and a plurality of pivot holes spaced apart on a common radius and a handle fixed to the center hole and one of said pivot holes the improvement comprising,

spaced side plates,

a pivot shaft extending between the side plates,

said blade being mounted on said pivot shaft,

a throat in each side plate,

an anvil welded to each side plate at the rear lower corner of the throat and having a bed plate and a back plate on which and against which the material to be cut is positioned,

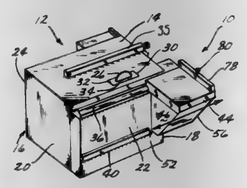
a blade guard depending from the handle and contoured to lie close to the adjacent circumference of the blade and extend across that throat when the handle is in its lowermost position.

4,408,509

CANTILEVERED SLIDING TABLE

Galen J. Winchip, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Nov. 27, 1981, Ser. No. 325,390
Int. Cl.³ B27B *25/10*
U.S. Cl. 83—435.1 **12 Claims**



1. A cantilevered sliding table, comprising,

an elongated main table including a generally horizontal top surface and a main frame for supporting said top surface,

an elongated guide rail,

means for supporting said guide rail adjacent one end of said top surface with said guide rail extended longitudinally of and parallel to said one edge,

an elongated thrust rail mounted on said main frame and extended longitudinally thereof in parallel and vertically spaced relation below said guide rail,

a sliding table,

a pedestal connected to and depending from said sliding table,

said sliding table having an elongated open bottomed guide way in the underside thereof for placement onto said guide rail for sliding movement thereon, and

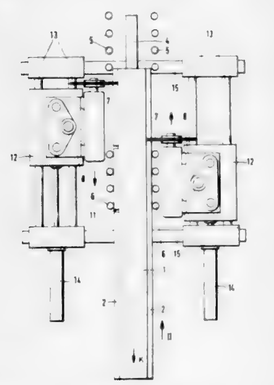
an elongated thrust surface on said pedestal at a position for sliding engagement against said thrust rail when said guide rail is received in said guide way whereby said sliding table and pedestal are slidably mounted in cantilevered fashion on said main table.

4,408,510

APPARATUS FOR CUTTING BOARDS FROM TREE TRUNKS

Alfred Reuter, Oberkirch, Fed. Rep. of Germany, assignor to Gebrüder Linck Maschinenfabrik und Eisengiesserei "Gatterlinck", Oberkirch, Fed. Rep. of Germany

Filed Mar. 11, 1981, Ser. No. 242,475
Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020321
Int. Cl.³ B27M *1/08;* **B25B** *7/14*
U.S. Cl. 83—869 **9 Claims**



1. An apparatus for cutting boards from tree trunks, comprising means for making transversal cuts into a tree trunk to a predetermined depth; means for making longitudinal cuts into the tree trunk in a plane passing through the inner ends of said transversal cuts whereby the boards are separated from the trunk; and means for continuous advancing movement of the tree trunk in the longitudinal direction, said means for making transversal cuts including a pair of saw units positioned at two opposite sides of said trunk and each carrying a rotary saw, said saw units being arranged to move in said longitudinal direction with a speed corresponding to a speed of said advancing movement and in the transversal direction to produce said transversal cuts in said trunk.

4,408,511

ELECTRONIC MUSICAL INSTRUMENT

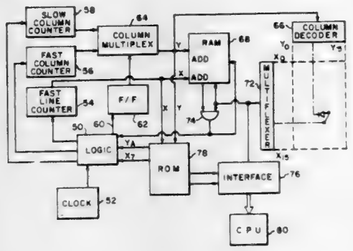
Christian J. Deforeit, Trossingen, Fed. Rep. of Germany, assignor to Matt. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,903

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1980, 3023579

Int. Cl.³ G10H *1/34*

U.S. Cl. 84—1.01 **4 Claims**



1. In an electronic musical instrument having plural inputs, the inputs including key operated switches and operator adjustable input devices for setting additional switches in preselected positions, the state of the switch contacts being scanned to provide control signals for a tone generator, the improvement comprising:

means connecting the contacts of the key operated and additional switches in a matrix defining rows and columns, the contacts of the key operated switches all being interconnected to define a first block within the matrix, sequential row and column scanning of said first block of the matrix sampling the state of only key operated switches, the contacts of the additional switches being connected to define at least a first additional block within the matrix, the first contacts of switches comprising said first additional block at least in part defining columns of the matrix which are not encompassed by the said first block, the scanning of a single row of the matrix including the scanning of second contacts of such additional switches; and

control means for determining the pattern of scanning of said matrix, said control means scanning said first matrix block at a first repetition rate and the additional switches at a repetition rate which is lower than the said first rate, said control means scanning at least a different one of the columns of the matrix which comprises said additional block after each complete scan of said first block of the matrix.

4,408,512

TONE SOURCE OF RHYTHM

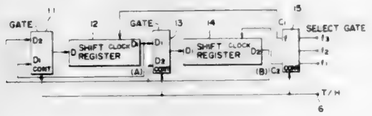
Toshio Mishima, Kitamoto, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho and Tokyo Shibaura Denki Kabushiki Kaisha, both of, Japan

Filed Aug. 14, 1981, Ser. No. 292,910

Claims priority, application Japan, Aug. 30, 1980, 55-119928

Int. Cl.³ G10H *1/42*

U.S. Cl. 84—1.03 **5 Claims**



1. A rhythm tone source comprising:

a plurality of shift registers, each register having a plurality of stages, a first input to one stage for a clock pulse, a second input to one stage for a feedback pulse and at least one output from one stage, each register being shifted from one stage to another by one of the clock and feedback pulses, said plurality of shift registers forming a noise generator for generating random pulses on said at least one output of at least one of said plurality of shift registers;

first means for providing one of a plurality of clock pulses to said first input of each of said shift registers; and

second means for selectively connecting said second input of each of said shift registers to said at least one output of any one of said shift registers;

wherein each shift register is shiftable by both said first and said second means.

4,408,513

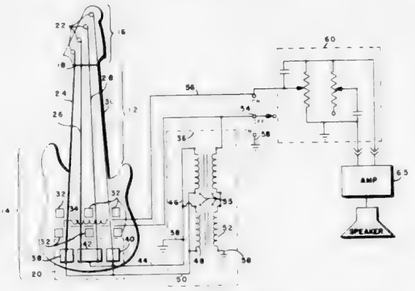
DUAL SIGNAL MAGNETIC PICKUP WITH EVEN RESPONSE OF STRINGS OF DIFFERENT DIAMETERS

Martin R. Clevinger, 5410 Telegraph Ave. #4, Oakland, Calif. 94609

Filed Mar. 22, 1982, Ser. No. 360,181

Int. Cl.³ G10H *1/08, 3/18*

U.S. Cl. 84—1.15 **32 Claims**



1. Apparatus for use in stringed musical instruments, of the type having a plurality of strings which are positioned parallel to one another in a common string plane wherein the strings have a maximum excursion, for converting string motion into electrical signals, comprising

sensing coil means positioned with central axis perpendicular to the string plane, the coil means defining elongated top and bottom surfaces which are perpendicular to the principle axis of the coil means and which each cover a predetermined surface area, wherein the bottom surface is disposed transversely to the strings and lies in a first plane which is spaced apart from the string plane, and further wherein the top surface is aligned with the bottom surface and lies in a second plane which is spaced apart from the string plane and positioned between the string plane and the first plane;

magnetic source means positioned about but spaced apart from the coil means, having an upper planar surface which defines a magnetic pole and a lower planar surface which defines an opposite magnetic pole, wherein the upper planar surface is positioned generally within the second plane and the lower planar surface is positioned generally within the first plane, the upper and lower planar surfaces each having an area substantially larger than the surface area of the top or the bottom surface of the coil means; and

elongated core means encompassed by the coil means and extending through the top and bottom surfaces of the coil, the core means comprising magnetically permeable material so that an effective magnetic field is formed which extends from the upper planar surface, through the strings, and thence through the core means and to the lower planar surface, the effective magnetic field having a volume in the region of the string plane which is greater than the volume occupied by the strings during maximum string excursion.

4,408,514

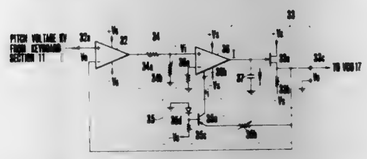
ELECTRONIC MUSICAL INSTRUMENT HAVING PORTAMENTS PROPERTY

Hideo Suzuki, Kosai, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Continuation of Ser. No. 807,084, Jun. 6, 1977, abandoned. This application May 22, 1978, Ser. No. 908,489

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **11 Claims**



1. In an electronic musical instrument including a capacitor which is charged with a pitch voltage to hold the same, and a voltage controlled type oscillator which is controlled by the terminal voltage of said capacitor for playing a portamento, the improvement which comprises a first mutual conductance converter responsive to an input voltage signal to produce a current signal for varying said capacitor terminal voltage, means for supplying the current signal of said mutual conductance converter to said capacitor, means for detecting said capacitor terminal voltage to produce a control voltage signal corresponding to said capacitor terminal voltage, means coupled to said mutual conductance converter and said detecting means for controlling the current signal of said mutual conductance converter in accordance with said control voltage signal so that said current signal is substantially directly proportional to said capacitor terminal voltage thereby causing said capacitor terminal voltage to vary exponentially with respect to time both in ascending and descending characteristics, and a comparator responsive to said pitch voltage and said capacitor terminal voltage for delivering to said mutual conductance converter an output voltage signal as said input voltage signal to said converter when said capacitor terminal voltage is in a predetermined relation in magnitude to said pitch voltage, said voltage controlled type oscillator having a substantially linear input-output characteristic thereby producing a tone signal having a frequency varying exponentially with respect to time in said both characteristics.

4,408,515

STRINGED INSTRUMENT CONVERSION KIT EMPLOYING COMBINED BRIDGE/TUNING MECHANISM

Michael N. Sciuto, 2310 Chetwood Cir., Apt. 101, Timonium, Md. 21093

Filed Jul. 13, 1981, Ser. No. 282,545

Int. Cl.³ G10D *3/04, 3/12*

U.S. Cl. 84—267 **23 Claims**

1. A double stringed instrument, which comprises:

a body;

a neck extending from said body;

a head connected to said neck;

first and second sets of strings extending between said body and said head;

a first set of tuning keys mounted to said head for tuning said first set of strings;

means mounted on said head for terminating said second set of strings; and

a bracket mounted to said body, said bracket having bridge means mounted thereon over which said first and second sets of strings pass, said bracket also having a second set of tuning keys mounted thereon for tuning said second set of strings.

4,408,516

GRAPHITE FIBRE VIOLIN

Leonard K. John, 6154 Slarfield Crescent, Mississauga, Ontario, Canada L5N 1X1

Filed Aug. 24, 1981, Ser. No. 295,942

Int. Cl.³ G10D *1/02*

U.S. Cl. 84—275 **15 Claims**



1. A violin-type musical instrument having an acoustic box generally of conventional violin acoustic box shape with a soundboard, a back, and sides, in which the soundboard comprises:

a first pair of sheets of unidirectional graphite fibres in a resin matrix, the fibres of the first pair of sheets substantially aligned with a longitudinal axis of the soundboard;

a second pair of sheets of unidirectional graphite fibres in a resin matrix, the fibres of one of the second pair of sheets oriented at an acute angle of predetermined magnitude relative to the longitudinal axis, the fibres of the other of the second pair of sheets oriented at an angle of substantially minus the predetermined magnitude;

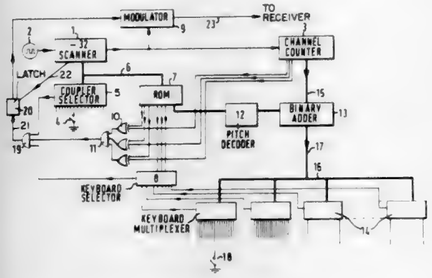
the sheets bonded to one another in overlaid relationship with the sheets of each pair symmetrically placed about a hypothetical three dimensional curve of the general shape of the soundboard.

4,408,517

PIPE ORGAN

Leonard W. Ellen, "Briarmead", Chiltern Rd., Ballinger, Great Missenden, Buckinghamshire, England

Filed Aug. 28, 1980, Ser. No. 182,211
Int. Cl.³ G10B *3/10*
U.S. Cl. 84—345 **8 Claims**



1. A pipe organ comprising:
a pipe sounding section having ranks of pipes for sounding musical notes;
a note playing section having a plurality of playing keys allocated to individual notes and operable by a player of the organ;
a plurality of stops operable by the player of the organ for selecting correlations between keys played and pipes to be sounded, said stops selecting various pitch relationships between the keyboard and the pipes;
a receiving section;
means for deriving and transmitting electric signals providing information relative to the operative conditions of the stops and keys to said receiving section;
said receiving section comprising binary logic means arranged for addressing pipes and ranks in a predetermined sequence and arranged for examining the said transmitted signals, whereby to derive pipe and rank enable signals if for the particular pipe or rank address the said operative conditions of the stops and keys require the pipe or pipes to be sounded;
said receiving section having a programmed read-only memory (ROM) holding specifications for the rank coupling to be effected to meet the requirements of given stops;
a time division multiplex system for transmission of the signals to the receiving section;
a random access memory (RAM) in said receiving section providing temporary storage of data corresponding to the transmitted signals;
means for examining the RAM status while performing the pipe and rank address sequencing in order to derive the pipe and rank enable signals;
electromagnetic devices for controlling sounding of the pipes;
a pipe latch for energising the controlling device of each pipe, each pipe latch having a data input terminal for receiving signals indicative of whether the pipe is required to be sounded, a data output terminal for transferring the data requirement to the controlling device of the pipe, and an enable clock input terminal for receiving a clock signal, the pipe latch changing its state, if the data input signals specifies a change of state, only when the clock signal is received;
means connecting together the data input terminals of the pipe latches of any one rank to form a common data input line for that rank;
the clock input terminals of the pipe latches for pipes of corresponding pitch of all ranks being connected in common whereby an array is formed of clock lines each of which clocks all of the pipe latches of a given pipe pitch;
a de-multiplexing system arranged to connect the said clock lines one at a time to a master clocking line;
a binary counter forming part of said binary logic means, by which the de-multiplexing system is addressed, the counter operating at a rate permitting examination of all of the stops requirements during a time period allocated for the processing of signal data relevant to each pipe;
means for interrogating the RAM to determine the current state of a stop;
a binary adder having one set of inputs to which the address of the pipes as represented by the current state of the said de-multiplexing system is connected; and
means for feeding to another set of inputs of the adder, binary signals from the ROM which define the number of semitones difference between pipe pitch corresponding to the current state of said de-multiplexing system and the note pitch required whereby the output of the adder defines the address within a keyboard of a key which would sound the pipes of any rank at the pipe and stop addresses currently under examination.

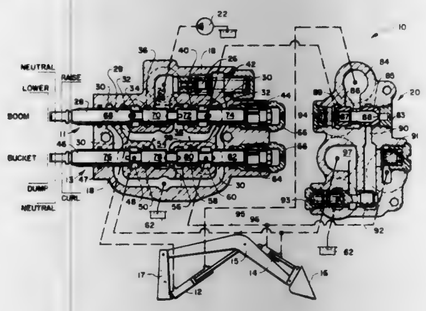
5. A pipe organ comprising:
a pipe sounding section having ranks of pipes for sounding musical notes;
a note playing section having a plurality of playing keys allocated to individual notes and operable by a player of the organ;
a plurality of stops operable by the player of the organ for selecting correlations between keys played and pipes to be sounded, said stops selecting various pitch relationships between the keyboard and the pipes;
a receiving section;
means for deriving and transmitting electric signals providing information relative to the operative conditions of the stops and keys to said receiving section;
a time division multiplex system for transmission of the aforesaid electrical signals to the receiving section;
said receiving section comprising binary logic means arranged for addressing pipes and ranks in a predetermined sequence and arranged for examining the said transmitted signals, whereby to derive pipe and rank enable signals if for the particular pipe or rank address the said operative conditions of the stops and keys require the pipe or pipes to be sounded;
said receiving section having a programmed read-only memory (ROM) holding sepcifications for the rank coupling to be effected to meet the requirements of given stops, the ROM providing one bit of its output as a marker indicating when the last stop relative to a rank has been reached;
a random access memory (RAM) in said receiving section providing temporary storage of data corresponding to the transmitted signals;
means for examining the RAM status while performing the pipe and rank address sequencing in order to derive the pipe and rank enable signals;
electromagnetic devices for controlling sounding of the pipes;
a master latch having an input for receiving rank data signals from the ROM, the master latch having its output connected in common to the ranks of pipes
each rank of pipes having its own enable line which controls that rank of pipes;
sequencing means responsive to the marker bit of the ROM output for enabling the individual ranks in sequence; and
means for controlling the pipe controlling devices jointly through said master latch and said sequencing means.

4,408,518

SERIES SELF-LEVELING VALVE

Robert McK. Diel, Hutchinson, and James P. Huebert, Halstead, both of Kans., assignors to The Cessna Aircraft Company, Wichita, Kans.

Filed Mar. 17, 1981, Ser. No. 244,831
Int. Cl.³ F15B *13/06*
U.S. Cl. 91—31 **6 Claims**



6. A self-leveling system controlling a boom and bucket including boom and bucket cylinders controlled by separate boom and bucket directional control valves having motor ports in an open center series circuit having the boom control valve located upstream of the bucket control valve with a pressure source supplying the two control valves in a series path, the improvement comprising:
a flow dividing valve means connected to the rod end of the boom cylinder which splits the flow from the boom cylinder supplying a portion of the flow to the bucket cylinder to maintain the bucket level as the boom raises with the remaining flow connected to one of the boom motors ports whereby the bucket valve can be separately supplied concurrent with the boom valve and be supplied with oil so as to override the boom cylinder.

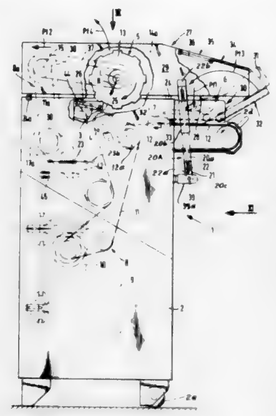
4,408,519

APPARATUS FOR SLICING BACON OR THE LIKE

Herman Schill, Kehl, Fed. Rep. of Germany, assignor to Maja Maschinenfabrik Hermann Schill GmbH, Kehl-Goldscheuer, Fed. Rep. of Germany

Filed May 21, 1981, Ser. No. 266,095
Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020351
Int. Cl.³ A22C *17/12*
U.S. Cl. 99—486 **26 Claims**

1. Apparatus for skinning or analogous treatment of bacon or like products, comprising a frame; a knife mounted in said frame; means provided in said frame for feeding the product along an elongated path toward and into the range of said knife; a hold-down device adjacent to said knife and said feeding means and arranged to engage a product which is advanced toward and severed by said knife; means for movably mounting said device so that the latter can perform movements in a plurality of directions in response to engagement by a product which is in the process of advancing toward and thereupon moves past said knife, said mounting means including a shround for said knife and said feeding means, at least one first lever articulately connecting said shroud to said frame at one side of said knife and a second lever articulately connecting said shroud to said frame at the other side of said knife, as considered in the direction of transport of products along said path; means for separably coupling one of said levers to said frame so that said shroud can be pivoted to a position in which it exposes said knife and said feeding means upon uncoupling of said one lever from said frame; and means for biasing said



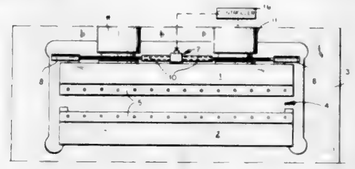
device to a predetermined starting position which said device assumes in the absence of a product in said path.

4,408,520

APPARATUS FOR MEASURING PLATEN-PRESS BEND IN PLATEN PRESS

Hubert Wons, Brüggen, and Hans-Dietrich Sitzler, Nettetal, both of Fed. Rep. of Germany, assignors to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,797
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1981, 3101616
Int. Cl.³ B30B *7/02, 15/28, 15/34*
U.S. Cl. 100—93 P **10 Claims**



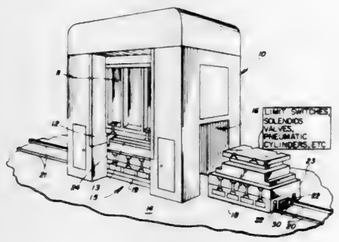
1. In a platen press having:
a press frame;
an upper press platen having at least one elongated beam;
a lower press platen having at least one elongated beam; and
means for urging said platens toward each other in a pressing direction to compress a workpiece therebetween, whereby said elongated beams may bend during such compression, an apparatus for measuring the bending of one of said beams, said apparatus comprising:
a flexible strand;
holder means at the ends of said one beam for gripping the ends of said strand and holding same straight and under tension; and
sensor means fixed on said one beam at a location between the ends of said one beam for measuring the displacement of said strand relative to said beam at said location during pressing, said sensor means lying wholly out of physical contact with said strand.

4,408,521

POWER PRESS WITH AUTOMATIC DIE CHANGING SYSTEM

William Schelli, Elmhurst, and William E. Sindelar, Darien, both of Ill., assignors to Danly Machine Corporation, Chicago, Ill.

Filed Aug. 10, 1981, Ser. No. 291,578
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—229 R **8 Claims**



1. An automatic die changing system for a power press having a press bed and carriers for transporting dies to and from a selected location in the press, said system comprising

a plurality of air lines and a plurality of electrical lines in the press bed for supplying compressed air and electrical power to the dies on said carriers, said air and electrical lines terminating at the surface of the press bed,

a normally closed valve at the end of each of said air lines, said valve being disposed below the surface of the press bed below and communicating with a plurality of apertures in the surface of the press bed,

electrical contact means at the end of each of said electrical lines at the surface of the press bed,

a plurality of connectors mounted on each of said carriers for movement therewith and positioned to register with said valves and electrical contact means at the surface of the press bed when the carrier is in its operative position in the press bed,

said connectors being adapted to automatically connect said air and electrical lines at the surface of the press bed with corresponding air and electrical lines for operating control devices associated with dies on the carrier, in response to the lowering of the carrier onto the press bed,

each of the connectors for said air lines having an actuator for automatically opening the valve of the corresponding air line in response to the lowering of the carrier onto the press bed and a fixed sealing ring around the periphery of the connector for engaging the surface of the press bed around said plurality of apertures when the carrier is lowered onto the press bed,

each of the connectors for said electrical lines having movable electrical contact means projecting downwardly from the carrier for engaging a corresponding one of said electrical contact means at the surface of the press bed, and biasing means for pressing each pair of engaged electrical contact means firmly against each other at the surface of the press bed when the carrier is lowered onto the press bed.

4,408,522

DEVICE FOR SECURING DIES

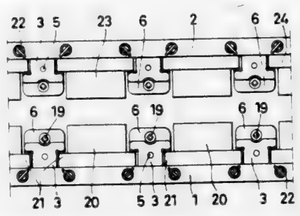
Yasuhide Yamane, Osaka, Japan, assignor to Teikoku Chuck Co., Ltd., Yao, Japan

Filed Nov. 9, 1981, Ser. No. 319,876
Int. Cl.³ B30B *15/02*
U.S. Cl. 100—295 **1 Claim**

1. A device for securing dies on a die mount of a press or the like, said device comprising:

a plurality of first clamps tiltably mounted on said die mount and formed with a shoulder at each side thereof, a projection at one side of the bottom, and a round opening, and provided with a spring at the other side of the bottom;

a plurality of second clamps tiltably mounted on said die mount and formed with a shoulder at each side thereof, a projection at one side of the bottom, and an opening of a trapezoidal shape, and provided with a spring at the other side of the bottom; and



a camshaft extending through said first and second clamps and formed with a plurality of enlarged portions received in the openings of said first clamps and a plurality of spiral cams received in the opening of said second clamps;

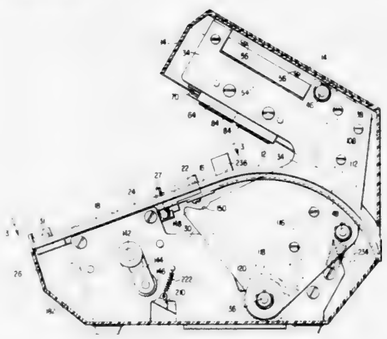
said dies being placed between the rows of said first and second clamps and secured by said shoulders of said first and second clamps against the die mount when said camshaft is turned.

4,408,523

ELECTRIC IMPRINTER WITH ROLLER PLATEN POSITIONAL CONTROL

Erwin J. Senyitko, Eastlake, Ohio, assignor to DBS, Inc., Randolph, Mass.

Filed Aug. 11, 1981, Ser. No. 291,969
Int. Cl.³ B41L *47/46*
U.S. Cl. 101—56 **3 Claims**



1. An imprinter comprising:

a base;

a head pivotably mounted with respect to said base;

at least one roller platen rotatably mounted with respect to said head;

an electric motor;

means for connecting said motor to said roller platen for moving the roller platen from a home position to an actuated position and then back to the home position;

a data containing printing member disposed on said base;

a least one document disposed over said printing member on said base;

means for latching said head with said base;

means cooperating with said latching means for energizing said motor;

means for unlatching said head with said base prior to said roller platen being returned by said motor to its home position in the event said motor becomes deenergized; and

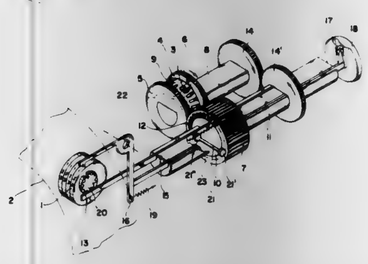
means for returning said platen to its home position upon re-energization of said motor independently of whether or not said head and base are relatched.

4,408,524

DEVICE FOR LOCKING AND ALIGNING PRINTING NUMERAL ROLLS AND A CONTROL CYLINDER

Klaus Nückel, Mülheim am Main, and Manfred Schleuchardt, Offenbach am Main, both of Fed. Rep. of Germany, assignors to Postalia GmbH, Berlin, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 176,054, Aug. 7, 1980, abandoned. This application Jul. 30, 1982, Ser. No. 403,792
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2932425
Int. Cl.³ B41J *1/60*
U.S. Cl. 101—110 **7 Claims**



1. Device for locking and aligning a printing numeral roll and a control cylinder for internal counters in franking and value stamping machines, comprising a printing cylinder shaft, a shaped part disposed on said printing cylinder shaft, a toothed shaped part gear supported on said shaped part, a control cylinder shaft opposite said printing cylinder shaft, a toothed control disc gear being fixed on said control cylinder shaft and having a concave recess formed in the periphery thereof in which said shaped part gear is freely rotatable in a rest position, an extension disposed on said control disc gear, the control cylinder being rotatably supported on said extension; sprockets disposed on the control cylinder being settable by rotation of said shaped part gear in said rest position, a rack at least partially disposed in said printing cylinder shaft for setting the numeral roll in said rest position, the teeth of said control disc gear being engageable with the teeth of said shaped part gear for locking the control cylinder and blocking changing of the setting of said control cylinder sprockets in a denomination printing position, a slider guidable in said printing cylinder shaft, an angle lever connected to said slider for aligning and securing the numeral roll against change in said denomination printing position and for releasing the numeral roll in said rest position, and a cam for moving said slider between said positions.

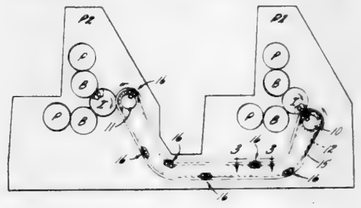
4,408,525

ARRANGEMENT FOR LOW-VIBRATION SHEET TRANSFER BETWEEN PRINTING UNITS ON MULTI-COLOR PRINTING PRESSES

Herbert Rebel, Rodgau, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,380
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 8034521[U]
Int. Cl.³ B41F *21/00*
U.S. Cl. 101—183 **4 Claims**

1. An arrangement for the transfer and conveyance of sheets between first and second printing units of a multi-color press comprising, in combination, a receiving drum in the first printing unit, a feed drum in the second printing unit having an associated impression cylinder, an endless chain including links joined by pins and trained about the drums, a stationary guide rail following the path of the chain, a plurality of gripper carriages movable with respect to the rail, a carriage coupler for coupling each carriage to the chain for movement therewith, each coupler including a drive roller on the chain mounted outboard parallel to the pins thereof, each gripper carriage having a yoke for snugly embracing the drive roller in the driving direction, each carriage having a cam roller and the feed drum having a radially mounted drive fork defining a notch having a root for engaging the cam roller as the gripper carriage comes in the vicinity of the feed drum, the cam roller



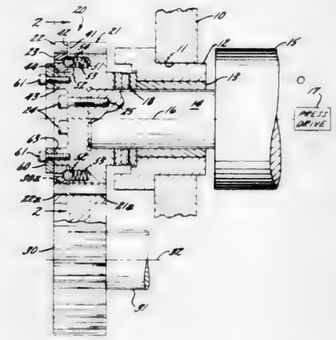
being snugly fitted in the notch between the walls of the fork to achieve a condition of accurate register between the feed drum and the gripper carriage, (a) the root of the notch being lined with a pad of resilient material for resiliently pressing the carriage outwardly against the guide rail thereby to insure seating of the cam roller snugly fitted in the notch and (b) the yoke being resiliently mounted with respect to the carriage in the driving direction to permit slight accommodating movement of the carriage with respect to the chain so that each carriage at the time of sheet transfer is sequentially in a phase position which is dependent only upon the phase position of the feed drum for accurately phased transfer of the sheet thereon to the associated impression cylinder.

4,408,526

NO-PLAY GEAR DRIVE FOR PRINTING MACHINES

Josef Mathes, Offenbach am Main, Fed. Rep. of Germany, assignor to M.A.N.—Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,013
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1981, 3112508
Int. Cl.³ B41F *13/00*; F16H *55/18*
U.S. Cl. 101—216 **3 Claims**



1. In a drive for a printing press having a drive shaft and a driven shaft, a main driving gear on the drive shaft and a driven gear on the driven shaft, the main driving gear having coaxially mounted thereon for limited rocking movement an

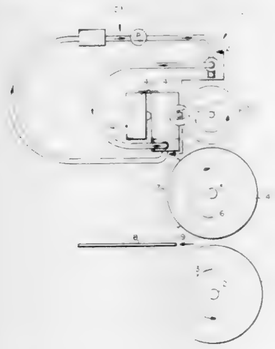
auxiliary driving gear the main and auxiliary driving gears having adjacent faces in closely spaced parallel relation and having identical profiles, the gears all being of the spur type with the teeth on the driving gears being in mesh with the teeth on the driven gear, a plurality of axially extending bores in the face of one of the driving gears and a plurality of matching conical recesses in the face of the other driving gear, balls fitted in the respective bores and having associated springs for pressing the balls outwardly in the direction of the recesses so that the auxiliary driving gear tends to be rocked into a detented position with respect to the main driving gear in which the matching bores and recesses are all in respective alignment, the bores and recesses being so angularly phased with respect to the gear teeth that when the auxiliary driving gear is in its detented position the teeth on the auxiliary driving gear are angularly offset by a small amount with respect to the teeth on the main driving gear with the result that the engaged teeth on the driven gear are pinched between the teeth on the driving gears for removal of play between the driving and driven gears, the auxiliary driving gear having a flat axially facing outer surface, and a retaining member rigidly fixed to the main driving gear and having a flat annular surface which is presented to the flat outer surface of the auxiliary driving gear to hold the latter captive against relative outward movement and to develop a frictional drag between the driving gears for damping relative oscillatory movement between them which tends to take place in the face of fluctuating load.

4,408,527

FLEXOGRAPHIC INK DISTRIBUTION SYSTEM

Clinton C. Bell, Charlotte, N.C. 28211

Filed May 26, 1981, Ser. No. 266,890
Int. Cl.³ B41F *31/06*; B41L *27/08*
U.S. Cl. 101—350 **5 Claims**



1. A system for applying and then removing in metering fashion ink from a roll comprising:

first means including ink and operable to drip ink atop said roll;

second means spaced from said first means operable to meter and remove ink from said roll and including a member with an outer surface with parallel ridges thereon separated by grooves to receive ink from said roll at a location aside said roll as said ridges contact said roll and remove ink therefrom;

third means connected to and between said first means and said second means to provide ink to said first means from said second means;

fourth means in contact with said second means and operable to move said member to and from said roll; and

wherein:

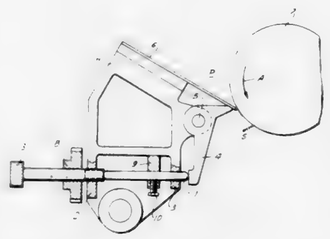
said first means includes a main body with a main ink inlet leading into a hollow interior of said main body and a plurality of downwardly extending outlets opening adjacent said roll and spaced along the length of said main body, said third means includes a reservoir of ink and pumping means connected thereto, said third means further includes conduit means connecting said main ink inlet, pumping means and second means together directing ink from said grooves into said hollow interior and minimizing collection of said ink at said location, said member is a rod with a wire helically wound thereon, said rod is mounted adjacent said roll and is removable therefrom to install an identical rod with a different sized wire wound thereon depending on the amount of ink to be metered from said roll.

4,408,528

PRINTING EQUIPMENT WITH SCREW CONTROLLED DOCTOR BLADE

Hans Johne, Radebeul; Karl-Heinz Förster, Dresden; Arndt Jentzsch, and Wolfgang Müller, both of Coswig, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Mar. 19, 1981, Ser. No. 245,672
Claims priority, application German Democratic Rep., Apr. 10, 1980, 220343
Int. Cl.³ B41F *31/02*
U.S. Cl. 101—364 **5 Claims**



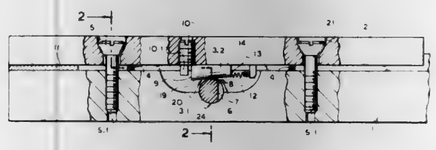
1. In a printing-machine inking arrangement having a stationary part, a ductor roller and a doctor blade a marginal portion of which defines with the roller an inking gap, a combination comprising at least one ink-control screw operatively engageable with the marginal portion of the doctor blade and movable forwards and backwards along its axis to effect varying deflection of the marginal portion and thus change the width of the inking gap; elongated abutment means projecting radially from said screw and engageable at opposite sides thereof with the stationary part of the arrangement, depending upon the direction of rotation of the screw, so as to define two end positions for the axial movement of the screw and hence a maximum and a minimum width for the inking gap, said abutment means comprising an alongated abutment member which is removably mounted on said screw and having a free end portion for engagement with said stationary part, and said free end portion having a side which is leading when said screw turns in a sense causing it to advance and to reduce the width of said gap, said free end portion being formed with a slit extending lengthwise of the elongation of said abutment member parallel to said side and subdividing said free end portion into two parallel tongues spaced by said slit; and further comprising means for resiliently displacing one of said tongues transversely of said slit relative to the other of said tongues.

4,408,529

PLATE CLAMPING DEVICE

Hans Johne, Radebeul; Arndt Jentzsch, Coswig; Günter Schumann, Radebeul; Arnfried Jehring, Coswig, and Fritz Liebschner, Weinböhla, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Oct. 27, 1980, Ser. No. 201,321
Claims priority, application German Democratic Rep., Oct. 29, 1979, 216506
Int. Cl.³ B41F *15/04*
U.S. Cl. 101—415.1 **4 Claims**



1. A plate clamping device for clamping flexible printing plates on printing rollers in rotary printing machines, comprising a lower guiding rail and an upper guiding rail adapted to clamp a portion of a printing plate therebetween; at least two bolts spaced from one another and connecting said rails with freedom of relative movement between a plate-clamping position and a plate-releasing position, each of said bolts having a rounded head positioned in said upper guiding rail, whereby said upper guiding rail is adapted to pivot about said rounded heads when it is moved toward said plate-releasing position; biasing means permanently biasing said rails to said plate-releasing position; and clamping means located in the central region between said bolts and below said upper guiding rail and operative for applying to one of said rails midway between said bolts a clamping force which moves said one rail to said plate-clamping position, said clamping means including a rotatable clamping stud mounted in said lower guiding rail and extending normally to a direction of elongation of said lower guiding rail, a movable key arranged between said upper guiding rail and said stud, and an adjusting element for limiting the movement of said key, said clamping stud including a hex head part outwardly extended from said lower guiding rail and a substantially cylindrical part extending through said lower guiding rail, said head part being eccentrical relative to said cylindrical part, said cylindrical part being formed with a surface including a substantially flat portion, a transition curved portion and an arresting portion, said portions merging one into another in a circumferential direction, said key being biased by a supporting spring and having a rounded upper surface and a tapering lower surface adapted to engage with said surface of the cylindrical part so that said key becomes clamped between the stud and the upper rail when said stud is rotated to position said arresting portion against said tapering lower surface or released when said stud is rotated to position said flat portion against said tapering lower surface, the upper surface of said key being so dimensioned that between said upper surface and said upper guiding rail a clearance is provided when said lower tapering surface of said key is positioned against said flat portion of said stud, said lower surface being inclined in the direction toward said upper guiding rail.

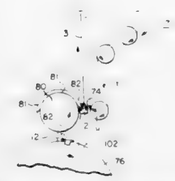
4,408,530

AUTOMATIC PRINTING PLATE EXCHANGE SYSTEM

Tadashi Yano, and Noriyuki Hoshino, both of Mihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,783
Int. Cl.³ B41F *27/12, 1/28*
U.S. Cl. 101—415.1 **1 Claim**

1. An automatic printing plate exchange system comprising plate holding means adapted to be mounted to a printing plate while presenting a resilient effect as a whole and having anchor-shaped engaging sections along its front and rear edges, send-out means for sequentially sending out plates, which have been preliminarily arranged in a predetermined order, up to predetermined position, conveyor means for receiving the plate sent out from said send-out means by engaging with the anchor-shaped engaging section of said plate holding means



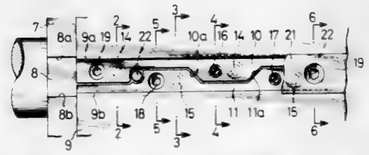
and conveying the plate up to a predetermined position above a printing section, a printing cylinder on which said plate can be mounted, and delivery means for receiving the plate from the conveyor means by engaging with the anchor-shaped engaging section and delivering the plate to said printing cylinder.

4,408,531

BLANKET TENSIONING SYSTEM IN PRESS

Yuichi Okamura, Tokyo, and Akitoshi Komatsu, Yokohama, both of Japan, assignors to Tokyo Kikai Seisakusho Ltd., Tokyo, Japan

Filed Jan. 4, 1982, Ser. No. 336,510
Claims priority, application Japan, Oct. 16, 1981, 56-153983[U]
Int. Cl.³ B41F *27/12*
U.S. Cl. 101—415.1 **6 Claims**



1. A blanket tensioning system comprising: a groove formed in the outer peripheral surface of a blanket cylinder to extend in the longitudinal direction of said blanket cylinder, said groove having parallel opposing walls; a pair of retainers, each of said retainers being attached to an opposite end of a blanket so as to maintain a portion of said blanket adjacent each said end within said groove, and said retainers having opposing surfaces provided with alternating convexities and concavities mating with each other whereby said retainers are free to slide up and down relative to each other, said retainers each having a width such that the total width of the mated retainers, with the attached blanket ends is substantially equal to the width of said groove; and a plurality of tightening bolts engaged with each of said retainers and being adapted to selectively displace either of said retainers toward the bottom of said groove independent of the other of said retainers.

4,408,532

LITHOGRAPHIC PRINTING PLATE WITH OLEOPHILIC AREA OF RADIATION EXPOSED ADDUCT OF DIAZO RESIN AND SULFONATED POLYMER

Joseph H. Incremona, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 145,025, Apr. 30, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,338
Int. Cl.³ B41N *1/08*; G03F *7/08*
U.S. Cl. 101—456 **7 Claims**

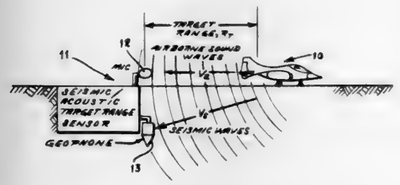
1. A lithographic printing plate comprising a substrate having oleophilic image areas and hydrophilic background areas thereon, said oleophilic image areas comprising an actinic radiation-exposed adduct comprising the combination of a diazo resin having a plurality of pendant diazonium groups and a sulfonated polymer having a plurality of sulfonate groups, said sulfonated polymer being selected from the group consisting of sulfonated polyesters and sulfonated polyurethanes.

4,408,533

ACOUSTIC AMPLITUDE-THRESHOLD TARGET RANGING SYSTEM

Thomas E. Owen, Helotes; Sidney A. Suhler, and Wendell R. Peters, both of San Antonio, all of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,820
Int. Cl.³ F42C *13/06*
U.S. Cl. 102—211 **6 Claims**



1. An acoustic amplitude-threshold system for generating munition actuation signals responsive to the time of closest approach of a moving target to within a set range limit of a munition, said acoustic-amplitude threshold system comprising:

an acoustic sensor circuit for sensing moving target sound waves and generating an amplitude function signal P in response thereto,

differentiating means receiving said amplitude function signal P and developing a first derivative signal $\dot{P}$ therefrom,

amplifier means having an amplification factor K for amplifying said first derivative signal $\dot{P}$, said amplifier means providing an amplified first derivitive signal $K\dot{P}$,

differencing means differencing said amplitude function signal P and said amplified first derivative signal $K\dot{P}$ and providing a difference signal $P-K\dot{P}$,

a threshold circuit providing reference level signals L, and

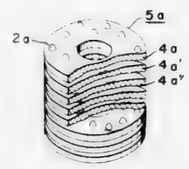
comparator means comparing said difference signal $P-K\dot{P}$ and said reference level signals L and generating munition actuation signals therefrom.

4,408,534

GAS GENERATING CHARGE AND A PROCESS FOR PRODUCING THE SAME

Ikuo Araki; Teruo Kanazawa; Shinji Ito, and Kenji Sumikawa, all of Aichi, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1981, Ser. No. 296,708
Claims priority, application Japan, Sep. 1, 1980, 55-119861
Int. Cl.³ C06B *45/00, 21/00*
U.S. Cl. 102—288 **20 Claims**



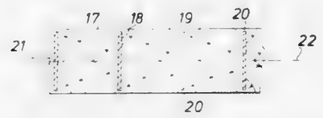
1. A propellant charge capable of rapid combustion to generate a large volume of combustion gas in a short time, comprising: a stack of a plurality of relatively thin layers of relatively large surface area and which are joined to each other to form the propellant charge, said layers being made of a solid combustible propellant composition and having substantially parallel upper and lower surfaces, the lower surface of each of said layers being opposed to, spaced from and extending substantially parallel with the upper surface of the adjacent lower layer in said stack, each of said layers having a plurality of projections of relatively small surface area and height on at least one of said surfaces thereof and extending into contact with the opposing surface of the adjacent layer in said stack so that said layers are maintained spaced from each other, the surface areas of said projections being small relative to the surface areas of said surfaces of said layers to provide gaps of large area between adjacent layers so that said layers have large surface areas exposed for uniform ignition and burning to generate a large volume of combustion gas in a short time.

4,408,535

EXPLOSIVE CUTTING MEANS

Sidney C. Alford, Corsham, England, assignor to Alflex Limited, Great Britain

Filed Jan. 13, 1981, Ser. No. 224,808
Claims priority, application United Kingdom, Jun. 28, 1980, 8021273
Int. Cl.³ F42B *1/00*
U.S. Cl. 102—305 **26 Claims**



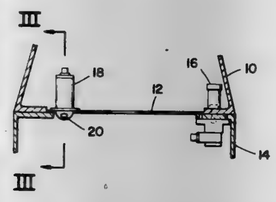
21. A method of cutting using explosive material, the method comprising arranging explosive material in at least one strip in contact with a surface of a target to be cut on either side of an intended line of cut and so detonating the strip of explosive material that shock waves will be produced in the target material simultaneously on either side of the intended line of cut and will travel towards and coincide substantially at the intended line of cut after initiating detonation of the strip of explosive material from at least one end, and so controlling detonation of the strip of explosive material that said detonation proceeds both longitudinally and laterally inwardly of the strip and the shock waves produced thereby will coincide substantially at the intended line of cut with the line of coincidence of the shock waves moving longitudinally along said intended line of cut.

4,408,536

METHOD OF RE-ENTRY BODY SEPARATION AND EJECTION

Frank Swales, deceased, late of Saratoga, Calif., and Doris Swales, heir, Santa Clara, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1977, Ser. No. 819,447
Int. Cl.³ F42B *15/00*
U.S. Cl. 102—379 **2 Claims**



1. A method of re-entry body separation and ejection from a rocket booster, the rocket booster and the re-entry body being held together by a plurality of separation nut and bolt catcher assemblies, comprising the steps of:

(a) igniting a pair of rockets arranged at two diametrically opposite positions on the base of said re-entry body to provide a thrust vector at an angle such that one component of said thrust vector provides the necessary separation velocity between said re-entry body and said rocket booster upon separation, and a second component of said thrust vector provides the spin-up of said re-entry body about the re-entry body axis upon separation;

(b) firing a plurality of separation nut assemblies simultaneously shortly after igniting said pair of rockets; and

(c) ejecting a plurality of attachment bolts released by the firing of said plurality of separation nut assemblies to a position within a plurality of respective bolt catcher assemblies,

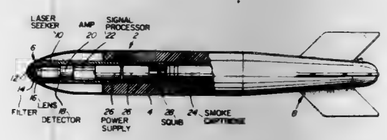
whereby said re-entry body and said rocket booster are separated without tip-off, and said pair of rocket motors are free to accelerate said re-entry body away from said booster while spinning-up said re-entry body for ballistic stability.

4,408,537

LASER-GUIDED BOMB TRAINER

Michel Fortier, Ste-Foy, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Quebec, Canada

Filed Jul. 14, 1981, Ser. No. 283,333
Claims priority, application Canada, Nov. 21, 1980, 365272
Int. Cl.³ F42B *25/18*
U.S. Cl. 102—395 **4 Claims**



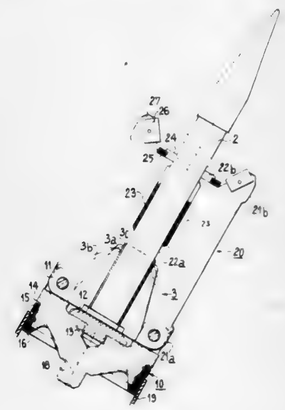
1. For use as a laser-guided bomb trainer, a practice bomb having an approximately similar ballistic coefficient to that of a laser-guided bomb, the practice bomb having a nose and tail section; a laser seeker being fixed to the body of the practice bomb within its nose section and having means to provide an internal signal upon target acquisition; a smoke cartridge being secured in the practice bomb to release a smoke producing chemical to the atmosphere when activated; and means associated with the laser seeker and smoke cartridge to activate the smoke cartridge upon receipt of the internal signal from the laser seeker.

4,408,538

LAUNCHING MECHANISM FOR SUBCALIBRE PROJECTILE

Jean Deffayet, and Etienne Lamarque, both of Paris, France, assignors to Thomson-Brandt, Paris, France

Continuation of Ser. No. 107,681, Dec. 27, 1979, abandoned. This application Feb. 22, 1982, Ser. No. 350,657
Claims priority, application France, Dec. 28, 1978, 78 36677
Int. Cl.³ F42B *13/16*
U.S. Cl. 102—522 **9 Claims**



1. Launching mechanism for a finned subcalibre projectile to be fired from a gun barrel,

said launching mechanism comprising a pusher sabot fitted with a folded projectile centering means that unfolds as said projectile leaves the gun barrel,

characterized in that said folded projectile centering means comprises a plurality of rigid, thin, flat, radially extending and axially elongated blades paralleling a longitudinal axis of said projectile,

pivot means pivotally supporting said blades on said sabot adjacent one end thereof for swinging movement from a folded position to an unfolded radially extending position as said projectile is launched,

and retention means at the other end of said blades for securing said blades in their folded position prior to insertion in said gun barrel,

said blades being configured to abut in folded position against said projectile and said gun barrel.

4,408,539

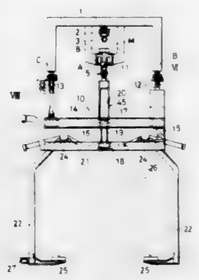
OVERHEAD CONVEYOR

Takao Wakabayashi, Shinsenri-Minamimachi, Japan, assignor to Nakanishi Metal Works Co., Ltd., Osaka, Japan

Filed Jul. 27, 1981, Ser. No. 287,113
Int. Cl.³ B61B *3/00*; E01B *25/24*
U.S. Cl. 104—89 **5 Claims**

1. An overhead conveyor comprising a main rail, right and left two auxiliary rails arranged on the opposite sides of the main rail and positioned at a higher level in an upward slope section of the conveyor line and at a lower level in a downward slope section of the conveyor line, relative to their immediately previous horizontal position based on the main rail, a main running body forwardly movable along the main rail, auxiliary running bodies forwardly movable along the auxil-

iary rails following the main running body, and a front suspender and right and left rear suspenders connecting the main running body and the auxiliary running bodies respectively to a hanger support positioned below the running bodies, the front and rear suspenders being pivotally movable forward and



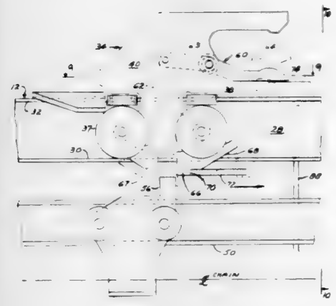
rearward and horizontally turnable, one of the right and left rear suspenders comprising a forward-rearward pivotable member and a sidewise pivotable member connected to the lower end thereof, whereby the main rail and the auxiliary rails can be arranged on arcs of three concentric circles in a curved section.

4,408,540

METHOD AND CONVEYOR SYSTEM FOR PROCESSING ARTICLES THROUGH SUCCESSIVE OPERATIONS

Clarence A. Dehne, Farmington Hills, Mich., assignor to Jervis B. Webb Company, Farmington Hills, Mich.

Filed May 13, 1981, Ser. No. 263,270
Int. Cl.³ B61B *10/00*
U.S. Cl. 104—172 B **7 Claims**



6. A driving trolley for moving an article carrier of a conveying system in a forward direction along a carrier track, said trolley having a body, wheels mounted on the body and adapted to engage the carrier track, and a driving dog carried by the trolley body for movement between driving and non-driving positions in which the driving dog is respectively engageable and not engageable by a pusher of a driven propelling member mounted below the carrier track, said driving dog being movable to non-driving position in response to engagement with a stop plate positionable below the carrier track in the path of forward movement of the driving dog; the improvement wherein:

the trolley body includes an upper portion projecting above the carrier track;

said driving dog and a holdback dog are formed integrally with a driving member having a stem portion movably mounted in the trolley body;

a lever pivotally attached to said upper portion of the trolley body has one arm connected to the stem portion of the driving member and a second operating arm projecting forwardly from said upper portion of the trolley body, said lever and the driving member being movable with the driving dog between said positions and being biased by weight to said driving position;

an upwardly inclined cam formed on the driving member forwardly of the driving dog and projecting below the carrier track is adapted to engage said stop plate and move the driving dog to non-driving position; and

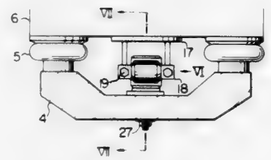
an abutment surface on said driving member rearwardly of said cam and forwardly of said driving dog is adapted to engage said stop plate for stopping the driving trolley with the driving dog in non-driving position and with the holdback dog in a non-engageable position relative to the stop plate and to a pusher.

4,408,541

BOGIE TRUCK CAR BODY SUPPORT SYSTEM

Hideo Takai, Hikari, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,262
Claims priority, application Japan, Jun. 11, 1980, 55-77739
Int. Cl.³ B61F *5/00*
U.S. Cl. 105—199 R **4 Claims**



1. A bogie truck car body support system, wherein a car body is supported on a truck frame through air springs of low transverse rigidity, comprising:

a link support attached to a portion of the underside of the car body which corresponds to a central portion of the truck frame;

a center pin mounted on the central portion of the truck framing with its longitudinal axis oriented vertically;

a link arranged longitudinally of the car body, one end of said link being connected to said link support by a first connecting means capable of transmitting longitudinally directed forces between the car body and the truck frame and accommodating relative vertical, transverse and rotary movements of the car body relative to the truck frame; and

the other end of said link being detachably connected to the center pin by a second connecting means capable of transmitting longitudinally directed forces between the car body and the truck frame and accommodating relative vertical and transverse movements of the car body and the truck.

4,408,542

CENTER SILL GONDOLA CAR

James C. Heap, Munster, Ind., assignor to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Jul. 25, 1977, Ser. No. 818,671
Int. Cl.³ B61D *3/00, 7/00, 17/00*
U.S. Cl. 105—406 R **9 Claims**

1. A gondola railway car comprising:

a car truck attached to each end of a continuous center sill,

a pair of generally vertical end panels,

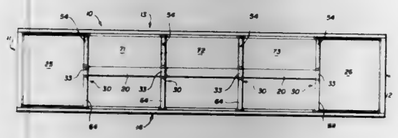
a pair of generally vertical side panels joined to the end panels,

a plurality of cross bearers extending from the center sill to a longitudinal chord at the bottom of each side panel,

a vertical plate joined to each cross bearer extending downwardly terminating in a peripheral edge corresponding to the shape of the trough,

a strip joined to each such plate peripheral edge and extending laterally therefrom between the longitudinal chords at the bottom of the side panels,

the trough being in sections supported at the ends by such strips,



a car bottom between the end and side panels having substantially flat portions over the truck and a longitudinal trough portion between the trucks and the flat bottom portions,

the trough portion having side edges joined to the side panel bottom edges and extending beneath the center sill, and

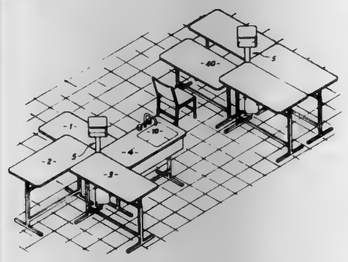
an end wall at each end of the trough extending to the adjacent flat bottom portion.

4,408,543

LABORATORY SUPPLY ARRANGEMENT

Brian C. Griffin, New South Wales, Australia, assignor to Brian Griffin Pty. Limited, New South Wales, Australia

Filed Apr. 15, 1981, Ser. No. 254,245
Claims priority, application Australia, Apr. 28, 1980, PE3307
Int. Cl.³ A47B *85/00*
U.S. Cl. 108—24 **5 Claims**



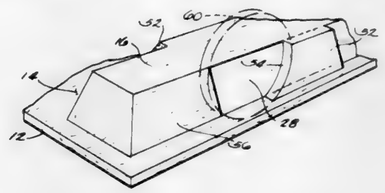
1. A laboratory supply arrangement comprising a services tower and more than two bench or table-like articles of furniture surrounding said tower, said services tower comprising a base, a narrow riser tube extending upwardly from said base above the upper surface of said table-like articles of furniture, and an outlet housing surmounting said tube, wherein electrical cables and at least some plumbed fluid services pass through said tube and into said housing, the terminals for said fluid services and electrical cables being mounted on the exterior of said housing and wherein a portion of the periphery of the upper surface of each of said table-like articles is shaped to be complementary with a corresponding portion of the cross-sectional shape of said tube whereby the surfaces of adjacent ones of said table-like articles can edge abut each other to provide a continuous working surface and also abut said riser tube.

4,408,544

MOLDED WOOD PARTICLE PALLET HAVING INCREASED BENDING STRENGTH

Bruce A. Haataja, Lake Linden, Mich., assignor to Board of Control of Michigan Technological University, Houghton, Mich.

Filed Aug. 12, 1981, Ser. No. 292,280
Int. Cl.³ B65D *19/24*
U.S. Cl. 108—53.3 **5 Claims**



1. A molded unitarily formed pallet comprising wood particles bonded together by a cured binder in compressed relation and forming a deck having an upper surface supporting a load, the deck including a lower surface and spaced apart opposite edges, and a plurality of elongated substantially parallel spaced channels supporting said deck, said channels extending from adjacent one of said edges to adjacent an opposite edge, and said channels each including spaced channel side walls extending downwardly from said deck and terminating in a planar bottom wall parallel to said deck, said side walls being integrally joined at their upper edges to said deck and being integrally joined at their lower edges to said bottom wall, said side walls including generally planar outer surfaces, and said bottom wall including an elongated lower surface, said pallet being adapted to be supported by said elongated lower surfaces of said channels, and a pair of spaced apart parallel passageways extending through said channels in a direction transverse to said channels and adapted to receive the forks of a forklift truck, said passageways being formed by openings formed in said channel side walls, said openings being aligned in the direction transverse to the direction of said channels, said deck and said elongated channels being formed by laying a loosely felted mat of wood particles in a press, and by compressing said loosely felted mat in said press, said mat including wood flakes mixed with a binder, and said wood flakes being thin and generally planar and being laid in felted relation so as to lie in substantially horizontal planes in interleaved relation, and said openings in said channel side walls being formed by pressing said mat in said press such that each of said side walls includes a pair of spaced apart projections projecting from said planar outer surface and by subsequently removing said pair of spaced apart projections.

4,408,545

SAFE, AND METHOD AND APPARATUS FOR BUILDING IT

Robert J. Lichter, 15571 Placid Cir., Huntington Beach, Calif. 92647

Continuation of Ser. No. 40,895, May 21, 1979, which is a division of Ser. No. 890,489, Mar. 27, 1978, which is a continuation-in-part of Ser. No. 758,587, Jan. 12, 1977, abandoned. This application May 18, 1981, Ser. No. 264,565
Int. Cl.³ E05G *1/00*
U.S. Cl. 109—50 **49 Claims**

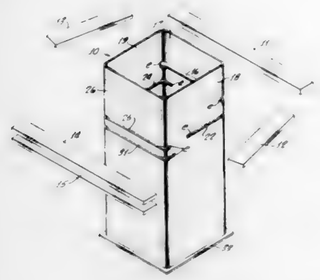
1. A safe, comprising:

(a) a liner which defines an opening therein, said liner having elongated slot means therein extending along substantial portions thereof,

(b) a mass of concrete engaged with the exterior of said liner and extending outwardly therefrom,

(c) bar means mounted in said slot means in said liner, said

bar means being strong, said bar means being partially inside said liner, within said opening, and partially outside said liner and embedded in said concrete, said bar means being a relatively tight fit throughout the length of said slot means whereby said bar means will be held in said slot means frictionally, with no need for adhesives, prior to



molding of the concrete, and whereby to minimize the possibility of grout flow through said slot means prior to setting of said concrete, and

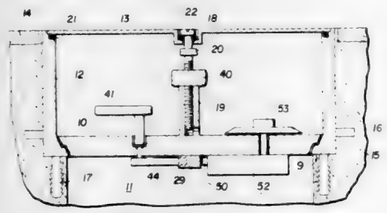
(d) door means provided in said opening, said door means being strong, part of said door means being adjacent interior regions of said bar means, at least when said door means is in closed condition.

4,408,546

HINGELESS SAFE DOOR ASSEMBLY

Jacob D. Schmidt, Box 68-204 Railroad Ave., Wagon Mound, N. Mex. 87752

Filed Jan. 12, 1981, Ser. No. 224,488
Int. Cl.³ E06B 7/16; E05G 1/04; B65D 55/14; E05C 5/04
U.S. Cl. 109—75 **1 Claim**



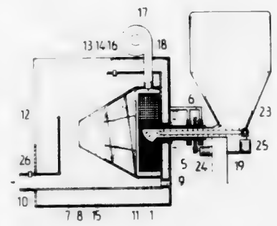
1. A removable hingeless safe door for a safe compartment, comprising in combination, a lock assembly, a latch assembly with a plurality of interconnected latch bolts movable together in response to non-locked and locked positions of said lock assembly, said lock assembly and latch bolts being mounted on a circular plate having integrally secured thereto guide channels for movement of the latch bolts, said latch bolts being interconnected for movement together by means of pivotable levers connected to the bolts solely by socket joint structure, said door including a frame member for retaining the door in a recessed position in a wall or floor permitting access to the lock and latch assemblies, a cover plate fitting in the frame member to cover the door and provide a flush mounting member with a wall or floor in which the safe compartment resides, a watertight seal member between the cover plate and the frame member to keep the lock and latch assemblies free of water and a centrally mounted bolt flush with said cover plate extending into a mating receptacle on the circular plate to secure the cover against dislodging and to press against said seal, wherein the mating receptacle comprises handle structure for removing the circular plate.

4,408,547

HEATING BOILER

Ilpo Autere, Keksikuja 4, 86300 Oulainen, Finland

PCT No. PCT/FI81/00054, § 371 Date Mar. 8, 1982, § 102(e) Date Mar. 8, 1982, PCT Pub. No. WO82/00187, PCT Pub. Date Jan. 21, 1982
PCT Filed Jul. 6, 1981, Ser. No. 359,668
Claims priority, application Finland, Jul. 7, 1980, 802162
Int. Cl.³ F23B 7/00
U.S. Cl. 110—234 **3 Claims**



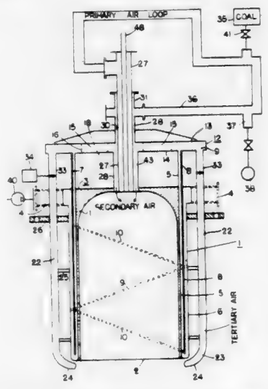
1. A heating boiler intended for solid fuel and comprising a furnace, a cylindrical burning basket having a generally horizontal axis, said burning basket serving as grate of the furnace, and a hollow tube connected to the burning basket and extending in the direction of the axis of the basket to the outside of the boiler, said tube serving as means for communicating a rotary movement to the basket and forming a channel through which fuel is supplied to the basket.

4,408,548

PULVERIZED COAL COMBUSTION METHOD AND APPARATUS

Jorg Schmalfeld, Mohnweg 7, Heiligenhaus; Werner Bruckner, Pfalzstr. 17a, Dusseldorf; Jorn Jacobs, Waldsaum 59, Essen; H. S. Greulich, Bremensfeld 105, Oberausen, and A. Schlutter, Rheinstr. 42, Kempen, all of Fed. Rep. of Germany

Continuation-in-part of Ser. No. 30,737, Apr. 17, 1979, abandoned. This application Dec. 8, 1980, Ser. No. 213,938
Int. Cl.³ F23D 1/00
U.S. Cl. 110—347 **72 Claims**



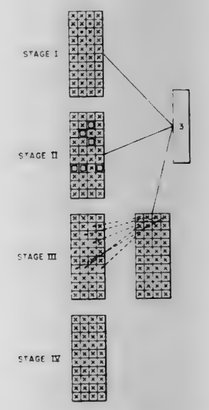
1. A method of controlling coal combustion of finely ground coal, including anthracite coal and semi-bituminous coal with low inflammability in a flame chamber, comprising: injecting a mixture of pulverized coal with primary air at one end of said flame chamber; burning the coal below the slag melting point; supplying to said mixture a high amount of heat to ignite the fuel from the sides of said flame chamber; supplying cooling air for cooling said flame chamber, with at least a portion of said cooling air after being warmed up by said flame chamber being used for preheating said coal, wherein said step of supplying heat includes igniting coal from said injected mixture and circulating pulverized coal particles towards walls of the flame chamber to cause ignition of the coal particles.

4,408,549

METHOD FOR TRANSPLANTING OF SEEDLINGS

Bengt G. L. Qvarnström, Falun, Sweden, assignor to Stora Kopparbergs Bergslags Aktiebolag, Falun, Sweden

Filed May 27, 1981, Ser. No. 267,883
Int. Cl.³ A01C 11/02
U.S. Cl. 111—2 **13 Claims**



1. In mass-growing of seedlings in a greenhouse using seedling units of the type having a plurality of pots joined together in side-by-side relationship in an array to form a tray-like structure, where each pot is bottomless and comprises a plurality of resilient strips extending from the pot opening to converge towards the pot bottom side, the strips in use being rigid enough to hold and retain in use a lump of growth medium to support a seedling therein, a method of automatically inserting healthy seedlings together with growth medium into pots where seeds previously inserted into the growth medium did not germinate, said method comprising the steps of:

scanning the array of pots in each tray aided by a control unit, to identify the locations of pots wherein an acceptable seedling is absent;

automatically emptying the pot contents from said locations by using information regarding the identified locations; and

automatically inserting replacement seedlings with lumps of growth medium in emptied pot locations by taking replacement seedlings from a replacement seedling tray, whereby with the processed seedling units all having acceptable seedlings and no pots with ungerminated seeds, the utilization of the greenhouse space is improved.

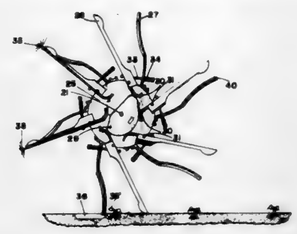
4,408,550

TRANSPLANTING IMPLEMENT

Wayne S. Ellis, 401 S. Marietta, Verona, Wis. 53593

Filed Dec. 7, 1981, Ser. No. 328,202
Int. Cl.³ A01L 11/2
U.S. Cl. 111—2 **2 Claims**

1. In a transplanting machine of a type embodying pairs of mechanical fingers mounted on a hub to radially extend and be carried in a vertical plane by rotation of the hub, one finger of each pair being fixedly mounted and the other being pivotally mounted on said hub and driven by cam actuation to open and close with respect to the fixed finger for alternatingly holding and releasing plants to be planted, an improvement comprising the tipmost portion of said fixedly mounted mechanical finger bearing an extension of rubber-like yieldable material extending beyond said portion whereby said extension will flex and yield sufficiently while being drawn across the top of a transplant so as not to inflict damage to such



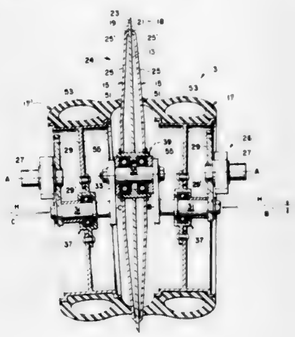
transplant and thereby enable transplants to be planted at closer spacing than would be possible by a fixed mounting finger being caused not to traverse across the top of a transplant.

4,408,551

ROW PLANTER

Phillip D. Keller, Fort Collins; Oren D. Urich, Windsor, both of Colo., and Deroy E. Mahagan, Everett, Wash., assignors to Heath Farm Equipment, Ft. Collins, Colo.

Filed Sep. 14, 1981, Ser. No. 301,640
Int. Cl.³ A01C 5/06
U.S. Cl. 111—85 **20 Claims**



1. In a row planter having a furrow opening means mounted for rotation about a horizontal axis perpendicular to the travel direction of the row planter and further having a furrow forming shoe means following said opening means, the improvement comprising:

means for mounting said opening means and said shoe means with peripheral portions thereof overlapping when viewed from a direction substantially parallel to said horizontal axis of rotation of said opening means and wherein said opening means has a first profile when viewed from a point ahead of said row planter in a direction substantially parallel to said direction of travel of said row planter and said overlapping peripheral portion of said shoe means has a second profile, said second profile, when viewed from ahead of said row planter in a direction substantially parallel to said direction of travel of said row planter being smaller than said first profile, and said mounting means including means for mounting said shoe means wherein said second profile lies within said first profile when viewed from said point ahead of said row planter and wherein the remainder of said shoe means has at least a portion thereof with a third profile when viewed from said point ahead of said row planter in a direction substan-

tially parallel to said direction of travel of said row planter with said third profile extending outwardly of said first profile and forming the final shape of the furrow.

4,408,552

APPARATUS FOR AUTOMATICALLY PRODUCING COMFORTERS

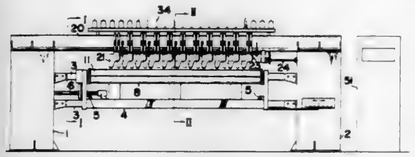
Atsushige Kondo, and Masakazu Kondo, both of 1126 Oaza Gamou, Yanagawa-shi, Fukuoka, Japan

Filed Jan. 2, 1980, Ser. No. 108,989

Claims priority, application Japan, Mar. 15, 1978, 53-30049; Jul. 14, 1979, 54-75399

Int. Cl.³ D05B *11/00, 21/00*

U.S. Cl. 112—119 **8 Claims**



1. Apparatus for automatically producing comforters comprising:

(a) two support structures transversely disposed in a parallel spaced-apart manner interposing a comforter material feeding path therebetween,

(b) guide rails bridging said two support structures at a desired level above and parallel to a floor surface, said guide rails extending perpendicular to said feeding path;

(c) a movable frame structure slidably mounted on said guide rails in a transverse direction relative to said feeding path, said movable frame structure including feed roller means for feeding said comforter material along said feeding path,

(d) a plurality of sewing machines stationarily disposed above said movable frame structure, said sewing machines being fixedly mounted on a transverse sewing-machine mounting frame which has both ends rigidly supported by said support structures,

(e) a first drive mechanism including a first servo motor for moving said movable frame structure in a transverse direction,

(f) a second drive mechanism including a second servo motor for driving said feed roller means in either a forward or a backward direction, and

(g) a third drive mechanism including a power-operated motor for operating said sewing machines and further including electromagnetic clutch means and electromagnetic brake means interposed between said power-operated motor and said sewing machines.

4,408,553

LOW TORQUE DIRECT DIALING PATTERN SELECTION MECHANISM

John Mihovch, Keansburg, and John Blackwood, Union, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 221,177

Int. Cl.³ D05B *3/02*

U.S. Cl. 112—158 A **6 Claims**

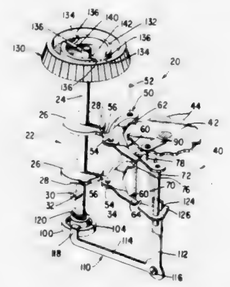
1. A sewing machine having stitch forming instrumentalities at least one of which partakes of vibratory motion in the formation of lockstitches,

a. a plurality of information cams moving in timed relation to said stitch forming instrumentalities,

b. a cam follower arranged for operational engagement with and movement by a selected one of said information cams,

c. coupling means between said cam follower and said at least one stitch forming instrumentality effective for imparting said vibratory motion to said at least one stitch forming instrumentality in response to said movement of said cam follower,

d. information cam selection means including an operator influencable element supported for one continuous operational movement, first means driven by said operator influencable element for effecting a first mode of operation rendering said coupling means ineffective, second means driven by said operator influencable element for effecting a second mode of operation to serially position said cam follower into operational engagement with said plurality of information cams one by one, a lost motion connection between said operator influencable element and said second means, said first means being driven only



during the lost motion movement of said operator influencable element provided by said lost motion connection and said second means being operative only after completion of the lost motion movement of said operator influencable element provided by said lost motion connection, said first means remaining effective after completion of said lost motion movement while said second means is effective, said operator influencable element being biased so that upon the absence of operator influence thereon said operator influencable element partakes of lost motion movement to render inoperative said second means and to cause said first means to render effective said coupling means.

4,408,554

AUTOMATIC NEEDLE THREAD CONTROL APPARATUS

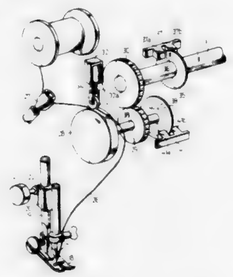
Michitaka Takiguchi, Anjo, and Fujio Horie, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Japan

Filed Jan. 28, 1981, Ser. No. 229,087

Claims priority, application Japan, Jan. 29, 1980, 55-9006

Int. Cl.³ D05B *49/00, 47/04*

U.S. Cl. 112—302 **4 Claims**



1. In a sewing machine having a thread supply, a thread carrying needle, a thread path between the supply and the needle, and a looptaker seizing thread from the supply for forming a loop of fixed size for forming stitches in cooperation with the needle, an automatic thread handling system for controlling the thread comprising;

thread take-up means comprising reverse feed roller means positioned along said path and operable to positively move the thread in a direction for taking up the thread of said loop released from said looptaker only during discrete time periods,

controllable driving means operative to impart movement to said thread take-up roller means and to controllably vary the length of thread taken up,

sensing means for sensing the thickness of a workpiece being sewn and for generating thickness data corresponding to the sensed thickness,

means for generating stitch data corresponding to the distance between successive stitches to be formed in said workpiece,

means for generating a thread take-up start signal in timed relation to termination of the expansion of said loop, and

data processing means for calculating a desired length of thread to be taken up based on said thickness data and said stitch data, said data processing means being responsive to said thread take-up start signal for controlling the operation of said driving means to positively take-up the thread for a determined time period according to the desired length calculated thereby.

4,408,555

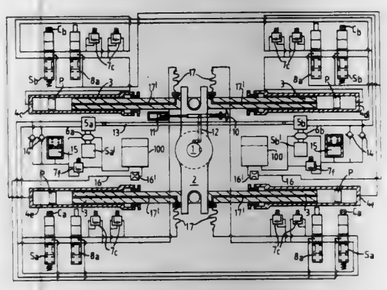
SHIPS STEERING GEAR

U. Soe Aung, 6A First Mansion, Jalan Daliah, Singapore

Filed Jun. 16, 1981, Ser. No. 274,365

Int. Cl.³ B63H *25/22*

U.S. Cl. 114—150 **8 Claims**



1. In a pressurised-fluid operated steering gear system for a ship comprising four pressurised-fluid actuators disposed in opposed pairs to control a common tiller arm, two pumps adapted selectively to supply pressurised fluid to actuators which are diametrically opposite across the rotary axis of the tiller arm while fluid is vented from the other two actuators, each said actuator comprising a chamber and means defining opposite end walls of the chamber relatively movable in response to variations of fluid pressure in the chamber and two supply lines opening into each chamber in spaced relation therealong between said end wall defining means and respectively connected to the pumps, the modification which comprises inserting in each chamber between the end wall defining means thereof an element forming a barrier between said supply line openings of the chamber which barrier element is movable in the chamber to close one or the other of said supply line openings in response to a pressure difference across said barrier element and the barrier elements collectively serving to isolate the pumps from one another so that failure of one pump or the pressurised-fluid circuitry associated therewith will not prevent operation of the steering gear solely by the other pump.

4,408,556

FENDER, RESPECTIVELY PLUG FOR A FENDER

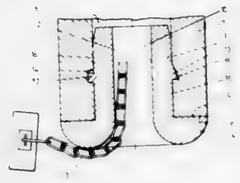
Adrianus W. van der Wiel, Rijswijk, Netherlands, assignor to Vredestein N.V., The Hague, Netherlands

Continuation of Ser. No. 31,103, Apr. 18, 1979, abandoned. This application Feb. 3, 1981, Ser. No. 230,993

Claims priority, application Netherlands, Apr. 25, 1978, 7804384

Int. Cl.³ B63B *59/02*

U.S. Cl. 114—219 **5 Claims**



1. A fender of the type to be suspended from a mooring place for ships, said fender comprising

a body of elastic material having an annular end wall and having a hole extending through said annular end wall and all through said body,

a plug removably secured in at least one of the end portions of said hole and including

a pin shaped portion extending into said hole fitted for securing in said hole, and

an annular head attached to said pin shaped portion, said head having a continuously curved outer surface substantially smoothly connected to the inner surface of said pin shaped portion, and substantially completely covering said annular end wall of said body,

said plug having an all the way through hole extending through said annular head and said pin shaped portion and concentric with said hole extending through said body,

a suspension means slidably passing over said annular head and through said pin shaped portion through said hole all through said body and having each of the ends of said suspension means secured to the mooring place at points spaced from one another,

whereby said plug protects the end of the fender from sliding wear by said suspension means and allows said suspension means to freely slide through the fender.

4,408,557

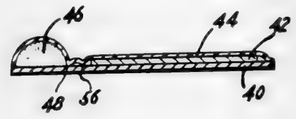
TIMER AND STORAGE CONDITION INDICATOR

Robert F. Bradley, and Lindell P. Bradley, both of New Buffalo, Mich., assignors to Micro-Circuits Co., Inc., New Buffalo, Mich.

Division of Ser. No. 49,082, Jun. 18, 1979, Pat. No. 4,292,916. This application Apr. 17, 1981, Ser. No. 255,119

Int. Cl.³ G01N *31/32;* **G04F** *1/00*

U.S. Cl. 116—206 **15 Claims**



1. A timer and storage conditions indicator adapted to indicate the passage of time integrated with various ambient physical environmental conditions, said indicator comprising a base layer of impervious material, a fluid carrier mixture containing a component the migration of which during operation of said indicator can be observed and indicates the passage of a prede-

termined length of time under predetermined ambient physical environmental conditions, said carrier mixture being in a stored condition in a relatively small area near one edge of said base layer until said indicator is activated, an absorptive layer on said base layer adapted to accept said carrier mixture within various elapsed time limits, a component in said indicator responsive to one or more of the ambient conditions, said component coacting with said fluid carrier mixture for causing the variation of said elapsed time limits by altering the rate of migration of said carrier mixture, a removable impervious barrier disposed between said carrier mixture and said absorptive layer, a cover layer disposed over and sealingly enclosing said absorptive layer and forming a capsule-like means for said carrier mixture near the one edge of said absorptive layer and means on said cover layer for indicating and for aiding in the indication of said migration rate within said elasped time limits.

4,408,558

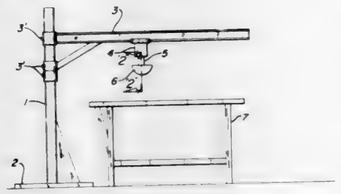
REPAIR APPARATUS

Dolan D. Faber, Akron; Richard G. Holmes, Wadsworth, and Joseph J. Varano, Hartville, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 370,873, Apr. 22, 1982. This application Jul. 21, 1982, Ser. No. 400,527

Int. Cl.³ B05C *11/02*

U.S. Cl. 118—59 **3 Claims**



1. An apparatus useful for the repair of molded thermoset FRP parts comprising a vertically disposed stand, an arm attached to said stand for vertical movement on and horizontal movement about said stand, pressure applying means slidably mounted on said arm for horizontal movement on said arm, said pressure applying means containing a vertically movable piston connected to a rotatable and tiltable pressure pad for applying pressure to an FRP part containing a defect having a repair material, an adjustable nest for substantially rigidly supporting a molded thermoset FRP part to be repaired under pressure from said pressure applying means, and means to provide heat to said FRP part where said pressure applying means is applied under pressure to the repair area of said part on said nest.

4,408,559

IMAGE FIXING DEVICE

Yoshinori Sugiura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,895

Claims priority, application Japan, Oct. 27, 1980, 55/153287[U]

Int. Cl.³ B05C *11/00*

U.S. Cl. 118—60 **20 Claims**

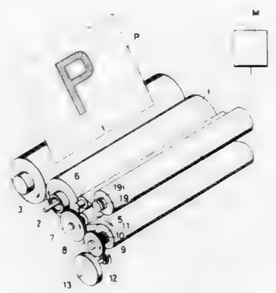
1. An image fixing device comprising:

a rotatable fixing member for fixing a toner image onto an image bearing member;

a web member retaining therein a parting agent for coating the parting agent on said fixing member and for cleaning the surface of said fixing member;

a first urging member for sandwiching said web member between it and said fixing member at a first region on the surface of said fixing member and urging said web member against the surface of said fixing member;

a second urging member for sandwiching said web member between it and said fixing member at a second region on the surface of said fixing member downstream of said first region with respect to the direction of rotation of said fixing member, said second urging member urging said web member against the surface of said fixing member; and



means for moving said web member in such a manner that said web member is moved at said first and second regions, in a direction opposite to the direction of rotation of said fixing member, whereby said web member mainly cleans said first region of said fixing member and mainly coats the parting agent at said second region of said fixing member.

4,408,560

APPARATUS FOR APPLYING SOLDER TO PRINTED CIRCUIT BOARDS

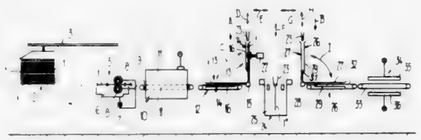
Hans-Peter Caratsch, Bremgarten, Switzerland, assignor to Sinter Limited, Bristol, England

Filed Oct. 2, 1980, Ser. No. 193,099

Claims priority, application Switzerland, Nov. 2, 1979, 9846/79

Int. Cl.³ B05C *3/09*; **B23K** *31/02*

U.S. Cl. 118—69 **23 Claims**



1. Apparatus for applying solder simultaneously to both sides of printed circuit boards, comprising:

means for holding a liquid solder bath;

means for moving the essentially vertically oriented circuit boards into and out of said solder bath;

a holder device having a substantially U-shaped cross-sectional configuration for receiving the printed circuit boards removed from the solder bath by said moving means and for transferring said boards into an essentially horizontal position;

said holder device being movable between a receiving position where such holder device receives the essentially vertically oriented printed circuit boards and a transfer position where the printed circuit boards are arranged in an essentially horizontal plane; and

said holder device being provided with support element means upon which the printed circuit boards bear during their transfer into the horizontal position.

4,408,561

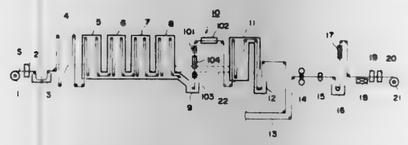
DUAL-PURPOSE PLANT FOR PRODUCING COLD ROLLED STEEL SHEET AND HOT-DIP GALVANIZED STEEL SHEET

Hideo Yokoyama, Ikuhashishi; Ichiro Shimbashi; Koichi Sakurai, both of Kitakyusyushi, and Munetsugu Matsuo, Kawasakishi, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 24, 1981, Ser. No. 295,316

Int. Cl.³ B05D *1/18*

U.S. Cl. 118—72 **26 Claims**



1. A dual-purpose production plant for producing either cold rolled steel sheets or hot-dip galvanizing steel sheets, comprising, successively disposed one directly after the other in series, a heating zone, a soaking zone, a primary cooling zone, an overaging zone having a controlled cooling facility therein, a hot-dip galvanizing means, an intermediate cooling means, a secondary cooling zone, a temper rolling means, and a chemical treatment means, and a bypass means for directly connecting said overaging zone and the secondary cooling zone with each other.

4,408,562

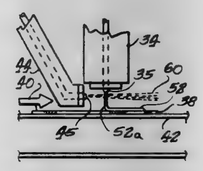
APPARATUS FOR APPLYING A COATING TO A MOVING SURFACE

James E. DeCamp, Olympia Fields; Raymond J. Arndt, Chicago, and Ronald L. Gruzewski, Tinley Park, all of Ill., assignors to Mactron, Inc., Worth, Ill.

Filed Dec. 21, 1981, Ser. No. 332,947

Int. Cl.³ B05B *12/04*

U.S. Cl. 118—669 **19 Claims**



1. Apparatus for applying a coating to a surface of a workpiece moving in a predetermined direction and comprising: conveying means moving the workpiece in said predetermined direction with the workpiece surface exposed for coating; coating dispensing means having at least one coating outlet spaced in juxtaposition to said surface for dispensing the coating material to said surface as it traverses the coating outlet, dispensing control means operatively coupled with said dispensing means for initiating and terminating the dispensing of coating thereby as predetermined portions of said moving workpiece surface come into operative alignment with said coating outlet during traverse thereby, and air jet means for substantially preventing tailing of said coating on said surface following termination of dispensing thereof as the workpiece with its coated surface continues movement without substantial tailing of the applied coating, said air jet means including nozzle means juxtapositioned to said coating outlet for directing an air jet in the direction of movement of the surface being coated and upon the coating as it issues from the coating outlet so as to impart at least a component of acceleration to said coating in said predetermined direction.

4,408,563

APPARATUS FOR REGULATING THE EVAPORATION RATE OF OXIDIZABLE SUBSTANCES IN REACTIVE VACUUM DEPOSITION

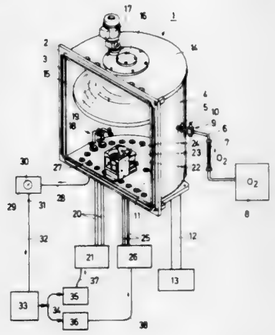
Klaus-Jurgen Heimbach, Hattersheim, and Walter Zultzke, Hanau, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Division of Ser. No. 65,013, Aug. 9, 1979, Pat. No. 4,287,224. This application May 4, 1981, Ser. No. 260,484

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834813

Int. Cl.³ C23C *13/12*

U.S. Cl. 118—692 **3 Claims**



1. Apparatus for regulating the evaporation rate of oxidizable substances in reactive vacuum deposition comprising a vacuum deposition chamber with at least one evaporation source connected to a power supply unit which is regulated by regulating means, an oxygen source, means communicating said chamber with said oxygen source, means for adjusting the supply of oxygen to a predetermined value, means for measuring the pressure in the vacuum chamber, and means intermediate said pressure measuring means and said power supply unit regulating means permitting regulation of the evaporation rate to any pressure changes such that the ratio of pressure to evaporation rate may be maintained substantially constant.

4,408,564

MILKING APPARATUS

Andrew J. Flocchini, 7050 Lakeville Hwy., Petaluma, Calif. 94952

Division of Ser. No. 60,253, Jul. 23, 1979, Pat. No. 4,263,874. This application Nov. 26, 1980, Ser. No. 210,701

Int. Cl.³ A01J *5/04*, *9/08*

U.S. Cl. 119—14.08 **2 Claims**

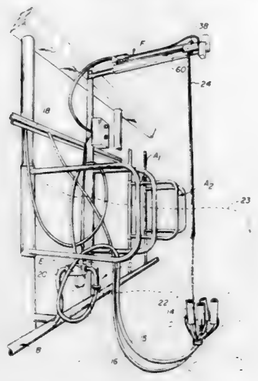
1. In a milking station having first and second stations for holding first and second side-by-side cows to said first and second milking stations and a teat cup assembly for milking cows at both said stations and means for retraction of said teat cup assembly from both of said milking stations; the improvement in said retraction means including:

a retraction arm medially pivotable along a vertical axis at a pivot support between said stalls adjacent and between the head portions of said first and second cows, said arm extending horizontally to a position overlying and along side of the bags of said cows;

a tensive support member extending between the outward end of said arm and said teat cup assembly for retracting said teat cup assembly from a milking position underneath said cow; and

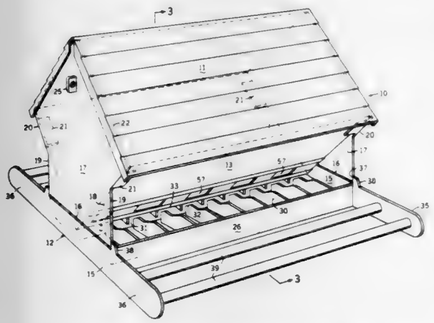
means for retracting said teat cup assembly operatively connected to said tensive support member and attached to

said arm for movement along said arm, said means for retracting causing upward and inward simultaneously



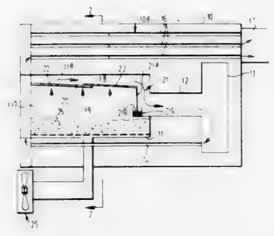
movement of said teat cup assembly from a milking position at or near the bag of said cow to a storage position between said milking stations.

4,408,565
FEED DISPENSER
Brad J. Kerbs, Eureka, Mo., and Kent J. Lanter, Millstadt, Ill., assignors to Ralston Purina Company, St. Louis, Mo.
Filed Mar. 8, 1982, Ser. No. 355,822
Int. Cl.[3] A01K *39/01*
U.S. Cl. 119—52 R **10 Claims**



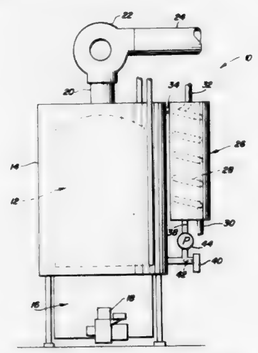
1. A feed dispenser for flowable particulate feed materials comprising a base, feed container and roof elements, the base including a tray with means for supporting the feed container in a dispensing position, the feed container having means separable in the dispensing position for rendering operative a plurality of openings in the container for dispensing feed into the tray, the base having opposed foldably connected end walls for releasably supporting the roof in overlying relation to the feed container.

4,408,566
BOILERS
Reginald D. Northcote, Lower Penn, and Mehdi G. Mehdi, Dudley, both of England, assignors to Thorn Emi Energy Developments Limited, Burton Works, England
Filed Jun. 9, 1981, Ser. No. 272,034
Claims priority, application United Kingdom, Jun. 10, 1980, 8018999
Int. Cl.[3] F23C *11/02*
U.S. Cl. 122—4 D **9 Claims**



1. A boiler comprising a furnace box, having a peripheral wall, from which products of combustion pass to a smoke box wherein the furnace box comprises a lower compartment, means to establish a fluidized bed in the lower compartment, an upper compartment, an exit connected to said upper compartment for passage of products of combustion from said furnace box, means to isolate said lower compartment from said exit except by communication through said upper compartment and through a foraminous element located in the path of the products of combustion from said lower compartment to said upper compartment; said boiler being of the shell type comprising an outer shell containing a water/steam space of the boiler as well as said furnace box; said furnace box being generally cylindrical and having a longitudinal axis which extends horizontally; and said foraminous element being located above said fluidized bed and being generally part circular in cross-section, said foraminous element having lower ends which are connected to said wall of the box.

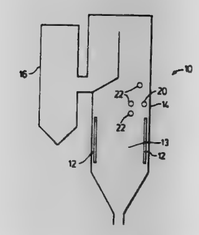
4,408,567
FURNACE CONSTRUCTION
Michael S. Morton, Box 923, Conway, N.H. 03818
Filed Feb. 3, 1981, Ser. No. 231,059
Int. Cl.[3] F22B *5/00*
U.S. Cl. 122—14 **16 Claims**



1. A fuel-fired hot water furnace, said furnace comprising:
fuel and air supply means for facilitating a combustion process in said furnace;
combustion chamber means in which said combustion process occurs;

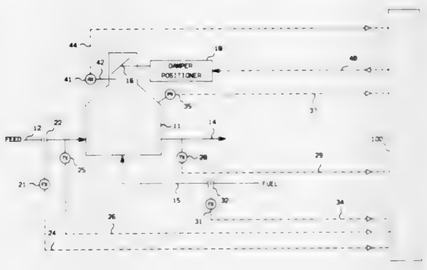
said combustion chamber means including a horizontal primary combustion chamber in orthogonal communication with a secondary vertical combustion chamber, said combustion process being initiated in said primary chamber and continuing in said secondary chamber;
heat exchanger means for facilitating an exchange of heat between combustion gases generated in said combustion process and said water so as to heat said water, said heat exchanger means including a first set of surfaces forming an annular space means directing combustion gases upwardly along one side of said first set of said surfaces and providing a primary rise for flow of combustion gases between said first set of surfaces, a cylindrically-shaped outer water container means and cylindrically-shaped inner water container means defined by the proximate surface of said first set of surfaces and concentrically positioned within said heat exchanger means whereby said combustion gases must move upwardly along said surfaces, a second set of surfaces forming another annular space means for directing said combination gases downwardly along said second set of surfaces and providing a primary fall for flow of said combustion gases between said second set of surfaces and forming at least another surface of said inner water container means so as to facilitate exchange of heat between said combustion gases and said water;
combustion gas exhaust means for removing said combustion gases from said heat exchanger, said combustion gas exhaust means including a breaching tube through which said combustion gases are exhausted to a desired location, said combustion gas exhaust means further including a breaching damper positioned within said breaching tube for controlling a rate of flow of said combustion gases outwardly through said breaching tube, said breaching damper including an adjustable stop operable to limit positioning of said damper during operation of said furnace; and
domestic hot water heating means, said domestic hot water heating means including a side container means including a hot water heater in fluid communication with said hot water contained in said furnace, said furnace water being utilized to heat a domestic water supply separately passing through said side container means including said domestic hot water heater.

4,408,568
FURNACE WALL ASH MONITORING SYSTEM
John R. Wynnyckyj, 711 Westmount Rd. W., Kitchener, Ontario; Edward Rhodes, 214 Willowdale Ave., Waterloo, Ontario, and Allan K. Chambers, 14324-50th Ave., Edmonton, Alberta, all of Canada
Filed Nov. 12, 1981, Ser. No. 320,604
Int. Cl.[3] F22B *37/18*
U.S. Cl. 122—379 **20 Claims**



1. A method of monitoring the build up of ash on the inside walls of a coal-fired boiler, which comprises:
simultaneously determining the actual heat flux present in said boiler and the heat flux reaching the walls of said boiler, and determining the difference in heat flux value as a measure of the build up of ash on said inside walls.

4,408,569
CONTROL OF A FURNACE
Danny E. Novak, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 18, 1981, Ser. No. 322,614
Int. Cl.[3] F22B *37/42*; F22D *5/00*
U.S. Cl. 122—448 R **17 Claims**



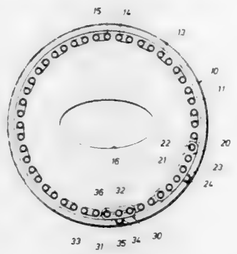
1. Apparatus for controlling the amount of oxygen supplied to a combustion zone in a furnace comprising:
means for establishing a first signal representative of the calculated efficiency of said furnace during a first time period;
means for establishing a second signal representative of the actual oxygen concentration in the furnace flue gas during said first time period;
means for establishing a third signal representative of the calculated efficiency of said furnace during a second time period, wherein said second time period is later in time then said first time period and wherein the amount of oxygen supplied to said combustion zone in said furnace has been changed after said first time period;
means for establishing a fourth signal representative of the actual oxygen concentration in said furnace flue gas during said second time period;
means for establishing a fifth signal representative of the desired oxygen concentration in said furnace flue gas during a third time period in response to said first, second, third and fourth signals, wherein said third time period is later in time then said second time period;
means for establishing a sixth signal representative of the most current measurement of the actual oxygen concentration in said furnace flue gas;
means for comparing said fifth signal and sixth signal and for establishing a control signal which is responsive to the difference between said fifth signal and said sixth signal; and
means for manipulating the amount of oxygen supplied to said combustion zone during said third time period in response to said control signal.

4,408,570
TUBE HANGER FOR STEAM GENERATOR
Manuel F. Dominguez, and Joseph E. Ferguson, both of Bakersfield, Calif., assignors to Shell Oil Company, Houston, Tex.
Filed May 26, 1982, Ser. No. 382,339
Int. Cl.[3] B22B *37/24*; F28F *9/02*
U.S. Cl. 122—510 **3 Claims**

1. A tube hanger for the longitudinal steam generating tubes in a cylindrical radiant steam generator comprising:
a leg member having an I-beam cross section, said leg member having sufficient length to extend through the cylindrical insulating wall of the steam generator, the outer end

of said leg terminating in an anchoring flange disposed at right angles to the longitudinal axis of the leg;

a tube support member having a plurality of curved surfaces formed thereon, said curved surfaces conforming substantially to a portion of the outer diameter of the steam generating tubes of the steam generator, said tube support means being attached to the inner end of said leg;



a removable yoke member having a plurality of curved surfaces formed thereon, said curved surfaces conforming substantially to a portion of the outer diameter of the tubes of the steam generator, said removable yoke member being fastened to said tube support means with the curved surfaces on each being aligned so that said surfaces substantially surround the tubes of the steam generator.

4,408,571

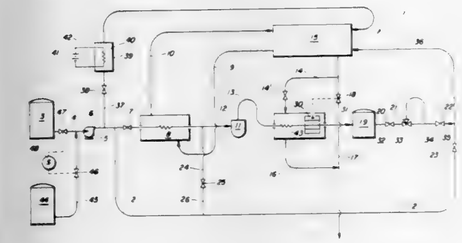
METHANE COLD STARTER IN ALCOHOL FUEL TREATMENT AND DISTRIBUTION METHOD

Robert G. Jackson, Weston, Conn., and Heeyoung Yoon, McMurray, Pa., assignors to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 286,992, Jul. 27, 1981, Pat. No. 4,366,782. This application Jun. 16, 1982, Ser. No. 388,839

Int. Cl.³ F02B *43/00*; F02M *27/02*

U.S. Cl. 123—3 **8 Claims**



1. A method of cold start-up for an engine fueled by alcohol or hydrogen dissociated from alcohol comprising the sequence of steps as follows:

(a) providing a first vaporizer means, a second vaporizer means, a methanation catalyst within a first reactor means, and a dissociation catalyst within a second reactor means,

(b) vaporizing alcohol in said first vaporizer means to form a first alcohol vapor,

(c) contacting said first alcohol vapor and said methanation catalyst to form methane,

(d) passing said methane to said engine,

(e) starting said engine,

(f) vaporizing alcohol in said second vaporizer means to form second alcohol vapor,

(g) contacting said second alcohol vapor and said dissociation catalyst in said second catalytic reactor to form hydrogen and carbon monoxide,

(h) conveying said hydrogen and carbon monoxide to said engine to sustain the operation of said engine.

4,408,572

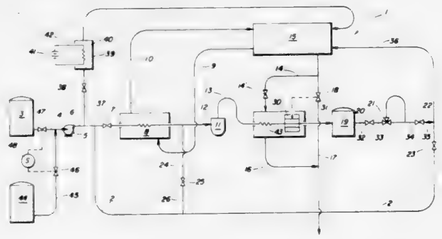
ETHER COLD STARTER IN ALCOHOL FUEL TREATMENT AND DISTRIBUTION APPARATUS AND METHOD

Heeyoung Yoon, McMurray, Pa., and Robert G. Jackson, Weston, Conn., assignors to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 286,992, Jul. 27, 1981, Pat. No. 4,366,782. This application Jun. 16, 1982, Ser. No. 389,131

Int. Cl.³ F02B *43/00*; F02M *27/02*

U.S. Cl. 123—3 **9 Claims**



1. A fuel treatment and distribution apparatus for use with an internal combustion engine comprising

an alcohol fuel storage means,

an electrical power source means,

a vaporizer means,

a catalyst containing start-up reactor means, said catalyst containing reactor comprising an electric resistance heating means connected to receive electrical power from said electrical power source means and a dehydration catalyst, and a by-pass conduit means,

said alcohol storage means being in fluid flow communication with said vaporizers means,

said vaporizer means being in fluid flow communication with said dehydration catalyst containing start-up reactor means,

said catalyst containing start-up reactor means being in fluid flow communication with said internal combustion engine,

said alcohol storage means being in fluid flow communication with said internal combustion engine through said by-pass conduit means circumventing said start-up reactor means.

4. In a fuel treatment and distribution process comprising providing an alcohol fuel storage means, a first catalyst containing reactor, an internal combustion engine, said first reactor containing a dissociation catalyst, passing alcohol from said storage means through said first reactor to form a combustible gaseous mixture comprising hydrogen, and passing said hydrogen to said engine wherein the improvement comprises providing a second catalyst containing reactor for start-up in fluid flow communication with said fuel storage means and said engine, said second reactor containing a dehydration catalyst, passing said alcohol through said second catalyst to form ether, and passing said ether along with said alcohol delivered through said by-pass conduit means to said engine, whereby said engine may be started using ether formed in said second reactor and said alcohol, and then operated using hydrogen formed in said first reactor.

4,408,573

SYSTEM AND METHOD FOR SUPERHEATED-WATER INJECTION SYSTEM (SWIS)

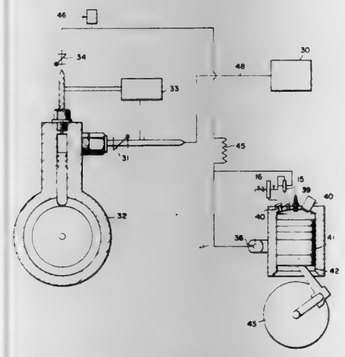
William B. Schlueter, Rte. 3, Box 174, Big Pine Key, Fla. 33043, and Ignacio D. Debuque, Jr., 9 Ermin Garcia St., Cubao, Quezon City, Philippines

Filed Oct. 9, 1981, Ser. No. 310,208

Claims priority, application Philippines, Oct. 14, 1980, 24719

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 P **2 Claims**



1. The design and system for a superheated-water injection system (SWIS) which superheats water under pressure conditions to temperatures above 212° F. (100° C.) while preventing it from boiling, and injects such superheated water into the engine combustion chamber some micro- or milli-seconds after the point of ignition thus flashing the injected superheated water into superheated steam and generating a usable workforce incremental to and separate from that produced by combusting the fuel itself, the principal components of such superheated water injection system consisting of: (a) a water reservoir, (b) a water line, (c) a high-pressure, high-temperature water pump powered either by a motor or from a power takeoff run by the engine, such pump being designed both to move water from the reservoir through the whole circuit and to build up and maintain pressure on the water contained in the line in excess of that existing at any time within the combustion chamber of the engine to which the SWIS device is intended to be attached, so as to prevent the water, though superheated, from flashing into steam until it is finally injected into the combustion chamber; (d) an accumulator to maintain water pressure in the circuit at the desired level at all times; (e) a water bypass system equipped with pressure-control valves to prevent water pressure inside the water line from building up beyond a designated maximum, (f) exchangers to transfer heat from the radiator water and/or the exhaust manifold gases and/or an electric heating device to the water passing through the water line; (g) a power unit connected directly to the engine combustion chamber and actuated by the engine's combustion gases a designed to force a timed and metered volume of superheated, pressurized water through the injector into the combustion chamber some micro- or milliseconds after the point of ignition, such power unti consisting of (i) a cylinder and a piston actuated by pressure from combustion gases; (ii) return springs positioned at the top and lower ends of the cylinder piston; (iii) check and pressure-central valves to prevent the contained water from being ejected or backing up until the desired pressure is brought to bear on the piston; (iv) a manually adjusted injection timing-control system consisting of an up-and-down screw installed at the top of the cylinder with a pointer and lock-in device; (v) an automatic injection timing-control system actuated by a hydraulic pump powered from the main engine by belt, gear or any means direct power takeoff and connected to the power piston by a pipe, check valves and pressure relief system designed to maintain a desired pressure directly proportional to the engine speed that is brought to bear on the upper return spring that the distance travelled by piston; and (h) an injector, turned and actuated by the power piston positioned to discharge superheated water into the engine combustion chamber.

4,408,574

METHOD AND APPARATUS FOR FORMING FUEL-AIR MIXTURE IN AN INTERNAL COMBUSTION ENGINE

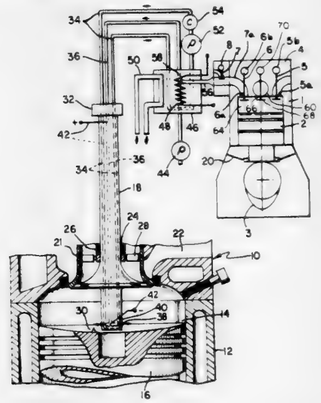
Josef Schaich, 118 Oschle, 7906 Markbronn, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,775

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846416

Int. Cl.³ F02M *67/02*

U.S. Cl. 123—26 **3 Claims**



1. A mixture formation device in an internal combustion engine comprising: fuel vaporizing means for producing fuel vapor, engine nozzle means connected to said vaporizing means by a fuel vapor passage for introducing fuel vapor into a combustion chamber, and an air pump means connected to said fuel vapor passage for introducing pressurized air into said fuel vapor passage at a selected time in the engine cycle, said air pump means comprising a cylinder and a plunger therein, valve means connecting said cylinder with said combustion chamber, means synchronized with said engine for reciprocating said plunger in said cylinder, an auxiliary chamber communicating with said cylinder, and a valve means for opening and closing the communication between said chamber and cylinder on selected strokes of said plunger.

4,408,575

NOZZLE ASSEMBLY FOR CONTROLLED SPRAY

Floyd H. Clairmont, Jr., Peoria, and Russell R. Graze, Jr., Dunlap, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00092, § 371 Date Jan. 23, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO82/02575, PCT Pub. Date Aug. 5, 1982

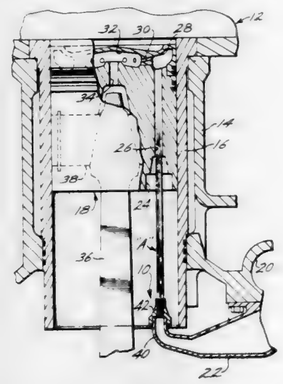
PCT Filed Jan. 23, 1981, Ser. No. 278,511

Int. Cl.³ F01P *3/10*

U.S. Cl. 123—41.35 **1 Claim**

1. In a nozzle assembly (**10**) adapted for controllably spraying a cooling liquid toward the underside of a reciprocating engine piston (**18**), the piston (**18**) defining an upper annular chamber (**28**) and a vertical passage (**26**) connected to the chamber (**28**), said nozzle assembly (**10**) having an inlet portion (**40**) which includes an inner circular wall (**44**) defining a straight cylindrical opening (**46**) therethrough, an outlet portion (**42**) adapted to be connected to said inlet portion (**40**) comprising:

said outlet portion (42) having a central straight cylindrical primary outlet passge (62) of a length (L) and of a uniform circular cross-sectional diameter (D_1) which is less than the cross-sectional diameter of the inlet portion opening (46), the primary outlet passage (62) being positionable for axial alignment with the opening (46) and adapated to communicate a first liquid flow from said opening (46) through the outlet portion (42) and outwardly thereof at a first velocity alignably into the passage (26) and upper chamber (28) of the piston (18), said outlet portion (42) further including a plurality of straight cylindrical secondary passages (66) axially parallel with and symmetrically encircling the primary outlet passage (62), the secondary passages (66) each being of the same axial length (L) and having a preselected uniform circular cross-sectional diameter (D_2), said secondary passages (66) positioned so



that their radially outer edges are adpated to be flush with the inner wall (44) of the inlet portion opening (46) and the radially inner edges of said secondary passages (66) are equally spaced a preselected radial separation distance (S) from the periphery of the primary outlet passage (62), the radial separation distance (S) being at least equal to one half of D_2, the first ratio of L/D_1 falling within a range of 3.75 to 6.0 and the second ratio of L/D_2 falling within a range of 7.5 to 13.0, the secondary passages (66) adapated to communicate a plurality of second liquid flows from said opening (46) through the outlet portion (42) and outwardly thereof alignably into the passage (26) and upper chamber (28) of the piston (18) at a second velocity less than said first velocity so that the first and second liquid flows combine outside of the nozzle assembly (10), form, and maintain a substantially columnar and diametrically compact liquid spray pattern (A).

4,408,576

INTAKE SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Hiromu Sakaoka, Asaka, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

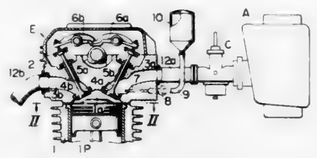
Filed Aug. 7, 1980, Ser. No. 176,542

Claims priority, application Japan, Aug. 10, 1979, 54-101258

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—52 MB **16 Claims**

1. In an intake system for an internal combustion engine of a type having a combustion chamber, an intake passage and an exhaust passage opening to the combustion chamber, and an intake valve and an exhaust valve disposed in said intake and exhaust passages to open and close the respective passages, said intake valve having a longitudinal axis and a peripheral edge, the improvement comprising a closed supply chamber of a predetermined volume, and control passage means connected at one end to the supply chamber and being open at another end to a lower surface of the intake passage upstream of and in the immediate vicinity of the intake valve and being substantially directed at an angle offset from the longitudinal axis of the intake valve to a juncture formed upstream of the intake valve where the peripheral edge of the intake valve meets the intake passage, whereby intake mixture is drawn from the



portion of intake passage lying adjacent the intake valve into the supply chamber through the control passage means upon closure of the intake valve, and the mixture in the supply chamber is fed to the combustion chamber through the control passage means upon opening of the intake valve.

4,408,577

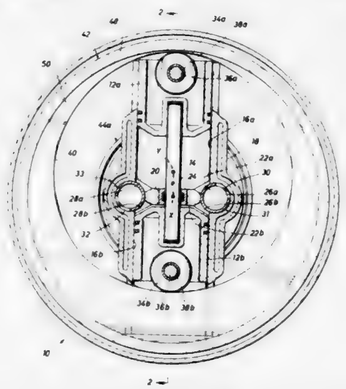
ROTARY ENGINE

Henry R. Killian, 915 Longview, Sugarland, Tex. 77478

Filed Sep. 2, 1980, Ser. No. 182,856

Int. Cl.³ F02B *75/22*

U.S. Cl. 123—55 AA **21 Claims**



1. A rotary internal combustion engine apparatus comprising:
(a) a stationary cylinder block having at least one pair of opposed cylinder bores;
(b) at least one pair of opposed piston means for reciprocating operation within said one pair of opposed cylinder bores;
(c) a piston connecting means comprising a rod connecting at least one pair of opposed piston means together;
(d) a dividing wall between said pair of cylinder bores, having a reduced bore concentric with said cylinder bores for communication of said piston connecting means therethrough;
(e) inlet and exhaust means communicating with each cylinder bore and comprising:
(i) a cylinder inlet port and a cylinder exhaust port communicating with each cylinder bore, generally positioned adjacent to opposite ends of said dividing wall;
(ii) first and second valve bores oriented generally transversely to said cylinder bores and communicating with said cylinder inlet and exhaust ports, respectively, and aligned with said dividing wall;

(iii) first and second valve shaft bores, concentric with said first and second valve bores, passing through said stationary cylinder block;
(iv) a first rotatable valve means contained within said first valve bore for timed admission of combustible fuel mixture;
(v) a second rotatable valve means contained within said second valve bore for timed extraction of exhaust gases;
(vi) rotatable valve actuation means for timed rotation of said first and second rotatable valve means; and
(vii) opposing cylinder inlet and exhaust ports intersecting respective ones of said cylindrical valve bores and displaced from one another;
(f) a cam follower means at each extremity of said one pair of opposed piston means;
(g) at least one rotatable eccentric cam means coacting with said cam follower means;
(h) a rotatable frame means secured about said cam means;
(i) an output drive means connected to said rotatable frame means; and
(j) a housing means for enclosing said rotatable frame means and stationary cylinder block.

4,408,578

PISTON ENGINE AS A COMBUSTION ENGINE OR AS A COMPRESSOR WITH OPPOSED CYLINDERS

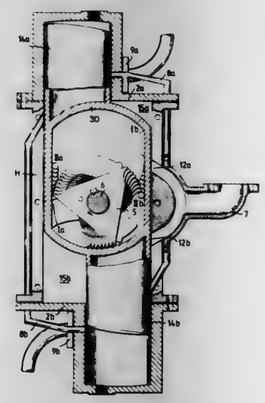
Siegfried Konther, and Siegfried Konther-Chamorro, both of Cerro Cora y Azara, San Lorenzo, Paraguay

Filed Dec. 2, 1980, Ser. No. 212,290

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3010362

Int. Cl.³ F01B *9/00*

U.S. Cl. 123—56 R **2 Claims**



1. A piston engine comprising a housing for opposed cylinders with reciprocating pistons therein adapted during engine operation to effect rotation of an engine shaft mounted in said housing, in which two opposedly working pistons are rigidly connected to each other by a hollow carrier through which the engine shaft extends, said carrier having interior wall portions that move tangentially to the engine shaft on opposite sides thereof during reciprocating movement of the pistons and carrier, said wall portions being provided with a main series of staggered projections thereon and said engine shaft being provided with a first corresponding stack of toothed discs fixedly mounted thereon, said main series of staggered projections being formed and arranged to successively engage and push the teeth of said first corresponding stack of toothed discs to apply rotational torque to the engine shaft as the carrier reciprocates, the number of teeth on a single disc corresponding to the number of working strokes of a piston for each revolution of the shaft.

4,408,579

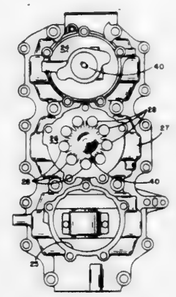
INDUCTION SYSTEM FOR A TWO-CYCLE ENGINE

David W. Kusche, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 28, 1981, Ser. No. 335,017

Int. Cl.³ F02B *33/04*

U.S. Cl. 123—73 V **13 Claims**



1. A two-cycle, crankcase compression engine comprising:
(A) a crankshaft;
(B) a crankcase surrounding said crankshaft;
(C) an induction passage for supplying air-fuel mixture to said crankcase, said induction passage having an axis transverse to the axis of said crankshaft;
(D) a reed valve means mounted in said induction passage, said reed valve means including a valve seat member having a plurality of valve ports arranged in a generally circular pattern equidistant from the axis of said induction passage, and a plurality of reed valve members, each normally closing one of said valve ports and opening in response to low pressure within said crankcase to admit air-fuel mixture to said crankcase;
(E) a flow modifying body mounted in said induction passage immediately upstream from said reed valve means; and
(F) a carburetor mounted on said engine, said carburetor having a barrel, said barrel having an axis aligned with the axis of said induction passage.

4,408,580

HYDRAULIC VALVE LIFT DEVICE

Toru Kosuda; Yasuhiro Takeuchi, both of Okazaki; Noboru Matsubara, Susono, and Masaaki Takizawa, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Aug. 15, 1980, Ser. No. 178,285

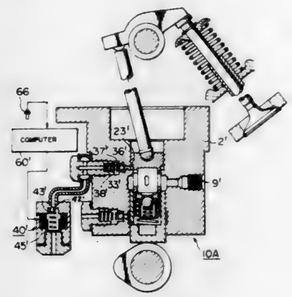
Claims priority, application Japan, Aug. 24, 1979, 54-108471; Aug. 28, 1979, 54-109510

Int. Cl.³ F01L *1/34*

U.S. Cl. 123—90.16 **4 Claims**

1. In a hydraulic valve lift device including a lifter having therein an oil pressure chamber for introduction of oil and slidably disposed in a cylindrical bore of a housing with its one end engaged by a cam on a cam shaft and a plunger slidably disposed in said lifter for opening and closing an intake or exhaust valve, of which a valve lift is made variable depending on the rotational speed of said cam due to discharge of oil from said oil pressure chamber through a throttling port, the improvement comprising a braking chamber defined by a flange portion of said plunger and said cylindrical bore, a slit adapted to communicate said braking chamber with an oil feed chamber of said plunger for flow-in of oil and to be reduced in its opening area depending upon the downward movement of said plunger, a relief valve provided in association with said braking chamber for controlling an oil pressure therein so as to cause it to be below a set value, a sensor for producing an

electric signal representing a braking force generated by said braking chamber, an electromagnetic means for regulating a set working pressure of said relief valve, and a computer for energizing said electromagnetic means depending upon the output signal of said sensor to control said relief valve such that its set working pressure corresponds with a desired value, and wherein said computer comprises an amplifying circuit for



amplifying the output of said sensor, an A-D converting circuit for A-D converting the output of said amplifying circuit, a ROM circuit for outputting a predetermined value depending upon the output of said A-D converting circuit and an output circuit for D-A converting and amplifying the output of said ROM circuit, said output circuit being adapted to output to said electromagnetic means.

4,408,581

DEVICE FOR CONTROLLING THE SPEED OF TRAVEL AND REGULATING THE IDLING SPEED OF AUTOMOTIVE VEHICLES WITH AN OTTO ENGINE

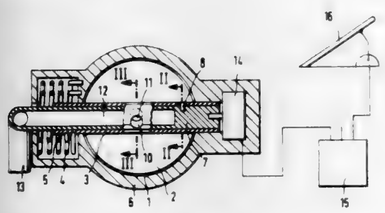
Manfred Pfalzgraf, Frankfurt am Main; Eckhart Kern, Hofheim, and Harald Collonia, Glashütten, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 313,884

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040144

Int. Cl.³ F02M *3/00*

U.S. Cl. 123—339 **13 Claims**



1. In a system for controlling the vehicle speed of travel as well as for regulating the idling speed of automotive vehicles having an Otto engine, comprising an actuator which adjusts the position of a regulating element for control of the vehicle speed as a function of the position of a desired-value transmitter as well as a closure element which determines the throughput passage cross section of a by-pass, the latter connecting a region in front of the regulating element with a region behind the regulating element, which closure element is displaceable by an automatically controlled actuator, the improvement wherein

said first-mentioned actuator and said automatically controlled actuator constitute a single actuator means common both for the controlling of the vehicle speed of travel and for regulating the idling speed,

said single actuator means being for actuating the closure element for regulating the idling speed, in a first operating range and being for operating the regulating member for controlling of the vehicle speed of travel in a second operating range.

4,408,582

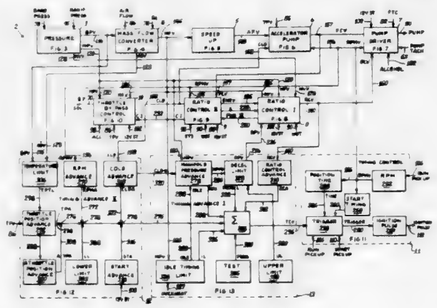
ELECTRONIC ENGINE CONTROL

James W. Merrick, El Paso, Tex., assignor to General Dynamics Corporation, St. Louis, Mo.

Division of Ser. No. 899,355, Apr. 24, 1978, Pat. No. 4,284,053. This application Jan. 30, 1981, Ser. No. 229,924

Int. Cl.³ F02B *3/00*; F02P *5/04*; F02M *39/00*

U.S. Cl. 123—415 **9 Claims**



1. In an electronic controller for an internal combustion engine having an ignition system responsive to ignition pulses for producing ignition sparks in combustion chambers and wherein rate of air flow into the intake manifold of the engine is measured by producing an air flow signal systematically related to the rate of air flow, and rate of fuel flow into the engine is measured by producing a fuel flow signal systematically related to the rate of fuel flow, said electronic controller including means responsive to engine parameters for producing a ratio control signal corresponding to a respective air/fuel ratio, and means responsive to said air flow signal, said fuel flow signal and said ratio control signal for controlling fuel flow as to make the ratio of air flow to fuel flow substantially equal to said respective air/fuel ratio, said controller further including means for generating a reference timing signal indicative of movement of the engine to a reference position in the engine cycle, timing advance control means for producing a timing advance control signal corresponding to a respective angular displacement of said engine from said reference position, and means responsive to said reference timing signal and said timing advance control signal for producing ignition pulses at positions relative to said reference timing position systematically related to said timing advance control signal, the improvement wherein said timing advance control means comprises RPM advance means responsive to engine speed for producing an RPM timing advance signal systematically related to engine speed and corresponding to a respective timing advance systematically increasing with increase in engine speed, manifold pressure advance means responsive to manifold pressure for producing a manifold pressure timing advance signal systematically related to manifold pressure and corresponding to a respective timing advance systematically decreasing with increase in manifold pressure, ratio control advance means responsive to said ratio control signal for producing a ratio control timing advance signal systematically related to said ratio control signal and corresponding to a respective timing advance systematically increasing with said increase in respective air/fuel ratio, output means responsive to applied timing advance signals for producing a timing advance control signal corresponding to the sum of the respective timing advances, and means for applying said RPM timing advance signal, said manifold pressure timing advance signal and said ratio control timing advance signal to said output means.

4,408,583

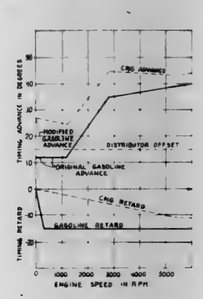
IGNITION TIMING CONTROL

James W. Merrick, El Paso, Tex., assignor to Automatic Controls, Corp., El Paso, Tex.

Filed May 26, 1981, Ser. No. 267,011

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—415 **6 Claims**



1. For use in an ignition system for a spark ignited internal combustion engine having a plurality of cylinders, which system includes timing means responsive to engine position for producing a timing signal indicative of engine position in an engine cycle, means responsive to said timing signal for initiating a spark in a respective cylinder of the engine, and programmed timing control means responsive to engine speed for controlling the occurrence of said timing signal relative to engine position in systematic relation to engine speed to provide such spark at a timing angle appropriate for a first fuel at each respective engine speed: a timing control for an alternative fuel comprising means responsive to engine speed for producing a controlled timing angle interval systematically related to engine speed, and means responsive to said controlled timing angle interval and said timing signal for changing the timing angle of such spark by said controlled timing angle interval to provide such spark at a timing angle appropriate for a second fuel at each respective engine speed.

4,408,584

AIR-FUEL RATIO CONTROL SYSTEM

Hideo Yabuhara, Musashino, and Ichiro Kudo, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Jul. 14, 1981, Ser. No. 282,984

Claims priority, application Japan, Jul. 16, 1980, 55-97358

Int. Cl.³ F02B *3/00*; F02M *7/00*

U.S. Cl. 123—440 **5 Claims**

1. In an air-fuel ratio control system for an internal combustion engine having an intake passage and an exhaust passage, detector means for detecting the concentration of a constituent of exhaust gases passing through said exhaust passage and producing an output signal having cycles of output variation, an electromagnetic valve for correcting the air-fuel ratio of the air-fuel mixture supplied to the intake passage by an air-fuel mixture supply means, a feedback control means comprising a judging circuit means for judging the output signal of said detector means and a driving circuit for producing a driving output for driving said electromagnetic valve in dependency on an output signal of said judging circuit means for controlling the air-fuel ratio by feedback control to a value approximately to a stoichiometric air-fuel ratio, the improvement comprising

a maximum value hold circuit means for holding a maximum value of the output signal of said detector means in one cycle of the output variation of the detector means,

a minimum value hold circuit means for holding a minimum value of the output signal of said detector means in said one cycle of output variation of said detector means,

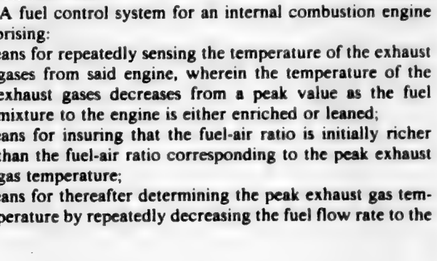
a first comparator means for comparing outputs of said both hold circuit means and for producing an output signal which is low when the difference of said maximum value from said minimum value is lower than a predetermined value,

a second comparator means for comparing the output signal of said detector means with a predetermined reference level and for producing an output signal

gate circuit means responsive to said output signals of said first and second comparator means for producing gate control signals,

a fixed voltage supply source,

switch circuits responsive to said gate control signals and



connected to said detector means and said fixed voltage supply source, respectively, and to said judging circuit means,

said gate circuit means for operating said switch circuits such that

when the output signal of said detector means is at least as high as said predetermined reference level regardless of the level of the output signal of said first comparator means, or,

the output of said detector means is lower than said predetermined reference level and the output of said first comparator means is high, said switch circuits connect the output signal of said detector means to said judging circuit means for performing the feedback control,

but when the output signal of said first comparator means is low and the output of said detector means is lower than said predetermined reference level, said switch circuits connect said fixed voltage supply source to said judging circuit means.

4,408,585

FUEL CONTROL SYSTEM

Kenneth J. Stuckas, Mobile, Ala., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 88,767, Oct. 29, 1979, Pat. No. 4,305,364. This application Nov. 16, 1981, Ser. No. 321,911

Int. Cl.³ F02M *7/00*; F02B *3/00*

U.S. Cl. 123—440 **6 Claims**

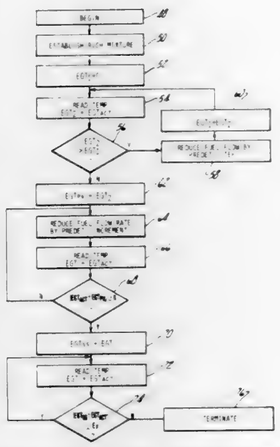
1. A fuel control system for an internal combustion engine comprising:

means for repeatedly sensing the temperature of the exhaust gases from said engine, wherein the temperature of the exhaust gases decreases from a peak value as the fuel mixture to the engine is either enriched or leaned;

means for insuring that the fuel-air ratio is initially richer than the fuel-air ratio corresponding to the peak exhaust gas temperature;

means for thereafter determining the peak exhaust gas temperature by repeatedly decreasing the fuel flow rate to the

engine by predetermined fuel flow increments until the exhaust gas temperature is less than the previously determined exhaust gas temperature so that the fuel-air ratio is less than that corresponding to the peak exhaust gas temperature; and



means for thereafter decreasing the fuel flow rate to the engine in predetermined increments until the exhaust gas temperature attains a steady state temperature, said steady state temperature being equal to a predetermined temperature offset from the peak exhaust gas temperature, and for thereafter maintaining a constant fuel flow rate to the engine.

4,408,586

FUEL INJECTION PUMP

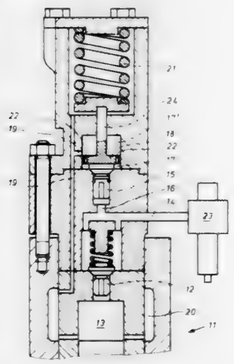
Cornelis van Rinsum, Kressbronn, Fed. Rep. of Germany, assignor to MTU Motoren- und Turbinen-Union Friedrichshaften GmbH, Fed. Rep. of Germany

Filed Jun. 16, 1981, Ser. No. 274,188

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023731

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—446 **11 Claims**



1. A fuel injection pump for a diesel engine, the pump comprising means for supplying a flow of fuel to a fuel injection nozzle means, and a first delivery valve means arranged in the supply means for controlling a flow of fuel therethrough, a fuel holding chamber means is arranged on a downstream side of the delivery valve means, means are provided for communicating the holding chamber means with the supplying means, a further delivery valve means is provided for controlling a flow of fuel through the communicating means, means are displaceably mounted in the holding chamber means for separating the holding chamber means into two volumes, and in that means are provided for communicating the holding chamber means with a relief chamber means,

the separating means is a movable wall member, the means for communicating the holding chamber means with the supplying means is a fuel duct branching off the supplying means on a downstream side of the first delivery valve means, and in that the means for communicating the holding chamber means with the relief chamber means is an overflow duct, characterized in that

the further delivery valve means includes a valve insert,

spring means are provided for normally urging the wall member in a direction toward the valve insert, the wall member being mounted so as to be movable with the valve insert.

4,408,587

FUEL INJECTION SYSTEM

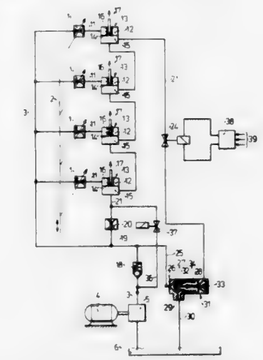
Michael Wissmann, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,384

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006258

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—454 **1 Claim**



1. A fuel injection system for mixture-compressing internal combustion engines with external-supplied ignition having metering valves disposed in a fuel supply line for metering a quantity of fuel which is in a specific ratio to the quantity of air aspirated by the engine, wherein the metering is effected at a pressure difference determined by a regulating valve, said regulating valve having a movable valve element disposed downstream of each of said metering valves and arranged to regulate said pressure difference at each of said metering valves, said movable valve element further arranged to be subjected on the one hand to the fuel pressure downstream of the respective metering valve and a spring and on the other hand to the pressure in a control pressure line, a pressure regulating valve arranged to communicate with said fuel supply line between said metering valve and a pressure-reduction valve said last named valve disposed in said fuel supply line upstream of said metering valves, said control pressure line communicates with said fuel supply line via at least one control throttle, and at least one electromagnetic valve is provided to influence the pressure in said control pressure line so that at least a portion of said regulating valve closes, and wherein said control pressure line communicates via said control throttle with said fuel supply line downstream of said pressure-reduction valve, further that said regulating valves have control

chambers, and wherein said at least one electromagnetic valve comprises a control pressure valve electromagnetically triggerable in accordance with operating characteristics of said engine disposed downstream of said control throttle, and an electromagnetic valve is located in a bypass line around said control throttle and said pressure-reduction valve, said last named valve arranged to open in the presence of specific control signals, in particular those characterizing engine overrunning.

4,408,588

APPARATUS FOR SUPPLEMENTARY FUEL METERING IN AN INTERNAL COMBUSTION ENGINE

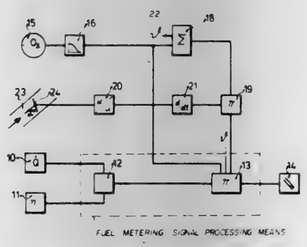
Eberhard Mausner, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 117,691, Feb. 1, 1980, abandoned. This application Mar. 19, 1982, Ser. No. 359,955

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903799

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—489 **1 Claim**



1. An apparatus for fuel metering in an internal combustion engine, comprising:

an air mass flow transducer (**10**) for producing an output,

a rotational speed transducer (**11**) for producing an output,

an oxygen sensor (**15**) for air-fuel closed loop control for producing an output,

a fuel metering signal processing means (**12, 13**) connected to said respective outputs for delivering fuel metering signals, in dependence at least upon the actual air-fuel ratio,

means (**19**) responsive to an acceleration detection means (**20, 21**) connected to said signal processing means for prolonging said signals continuously during acceleration,

said means for prolonging said signal includes a multiplier stage means connected to said fuel metering signal processing means for providing an adaptation signal formed as an output signal of said multiplier stage means in accordance with the formula:

$$UA = k \cdot d\alpha/dt \cdot \partial(d\alpha/dt) \cdot [f(O_2) + f(\theta) + \dots]$$

α = engine operating parameter; k = constant; and

$\sigma(\times)$ = sigma function.

4,408,589

PROCESS AND APPARATUS FOR OPERATING AN INTERNAL COMBUSTION ENGINE

Peter Hauler, Karlsruhe; Frieder Heintz, Blankenloch, and Erich Zabler, Karlsruhe, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 590,704, Jun. 26, 1975, abandoned. This application Jul. 14, 1977, Ser. No. 815,868

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1974, 2441826

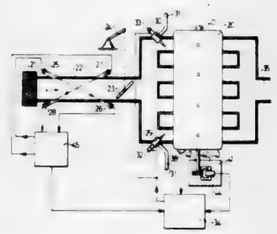
Int. Cl.³ F02B *3/00*

U.S. Cl. 123—494 **4 Claims**

1. In an apparatus for operating an internal combustion engine, said apparatus including an induction tube, an electronic fuel injection system and an air flow rate metering device, said system metering out a definite quantity of fuel into the induction tube to correspond to a definite quantity of air, the improvement in the apparatus comprising:

(A) two ultrasonic transmitter means, associated with the induction tube and capable of generating ultrasonic signals and of transmitting these into the interior space of the induction tube;

(B) two ultrasonic receiver means associated with the induction tube located opposite to respective ones of the ultrasonic transmitter means and such that a line connecting each of the transmitter means with its oppositely disposed receiver means is oblique to the longitudinal axis of the induction tube, each said receiver means being capable of receiving the ultrasonic signals transmitted by its oppositely disposed ultrasonic transmitter means after passage



of the signals through at least a portion of the interior of said induction tube; and

(C) means for measuring the travel time of the ultrasonic signals between said transmitter means and said receiver means, said measuring means including:

(i) oscillator means, connected to each ultrasonic transmitter means, with the operating frequency of said oscillator means being such that each of said transmitter means produces thereby a continuous resonant ultrasonic output signal; and

(ii) phase comparator means, connected to the ultrasonic receiver means for receiving and continuously comparing the phase difference between the continuous resonant ultrasonic output signals, and generating an output signal which is a measure of the compared phase difference.

4,408,590

FUEL INJECTION PUMP

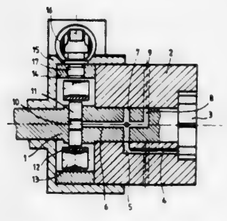
Jean-Claude Bonin, Blois, France, assignor to CAV Rotodiesel, Blois, France

Filed Feb. 20, 1980, Ser. No. 122,835

Claims priority, application France, Feb. 28, 1979, 79 05146

Int. Cl.³ F02D *1/16*

U.S. Cl. 123—502 **6 Claims**



1. In a fuel injection pump for an internal combustion engine of the type comprising a body, a rotary distributor mounted in the body, driven in timed relationship with the associated

engine, at least one pumping member carried by the rotary distributor, an angularly movable ring surrounding the rotary distributor, means provided on the ring to move the pumping member thereby to effect injection of fuel as the rotary distributor rotates, the piston means coupled to the ring and slidably mounted with respect to the body, said piston means being subjected on a first end face to a fluid pressure acting between said first end face and a first part of the body and varying with the speed of the engine, and on a second end face opposed to said first end face to spring means bearing on a second part of the body and acting to oppose the movement of said piston means under the action of said fluid pressure, the improvement comprising:

a rod slidably mounted in said second part of the body, a cup-shaped member facing said second end face of the piston means and slidably mounted on said rod, said spring means urging said member towards said second end face, whereby said cup-shaped member comes into contact with said second end face when said piston means is urged by the fluid pressure towards said second part of the body, and an actuating member for defining the axial position of said rod.

4,408,591

INJECTION TIMING CONTROL DEVICE FOR DISTRIBUTOR-TYPE FUEL INJECTION PUMPS

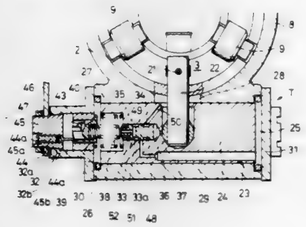
Hisashi Nakamura, Higashi-Matsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,787

Claims priority, application Japan, Nov. 15, 1980, 55-161189

Int. Cl.³ F02M 59/20

U.S. Cl. 123—502 **3 Claims**



1. An injection timing control device for combination with a fuel injection pump of the type including a pumping and distributing plunger, and a roller holder carrying a plurality of rollers circumferentially arranged and disposed in camming engagement with an end face of said plunger, said injection timing control device comprising:

a cylinder;

a timer piston slidably received within said cylinder, said timer piston being coupled to said roller holder such that displacement thereof causes a corresponding change in the circumferential position of said roller holder;

a first chamber defined at one end of said timer piston;

a second chamber defined at another opposite end of said timer piston, said second chamber communicating with a zone under lower pressure;

a timer spring accommodated within said second chamber and axially urging said timer piston;

a passageway formed in said timer piston for supplying said first chamber with fuel pressure variable as a function of the rotational speed of an internal combustion engine associated with said fuel injection pump; and

servo valve means arranged within said timer piston and across said passageway, said servo valve means being actuatable in response to said fuel pressure variable as a function of the rotational speed of said engine;

said servo valve means being automatically displaceable relative to said timer piston in response to a change in said fuel pressure, to open said passageway at a first predetermined position thereof to allow feeding of said fuel pressure to said first chamber for displacement of said timer piston in an injection timing advancing direction, to open said passageway at a second predetermined position thereof to allow escape of fuel pressure in said first chamber to said zone under lower pressure for displacement of said timer piston in an injection timing retarding direction, and to close said passageway at a third predetermined position thereof to hold said timer piston stationary;

said servo valve means comprising:

a valve bore axially formed in said timer piston;

a valve body slidably fitted in said valve bore, said valve bore having end faces, an outer peripheral surface formed with a land and first and second annular grooves arranged in axial juxtaposition, said valve body being arranged to be urged at one of said end faces thereof by said fuel pressure variable as a function of the engine rotational speed, said first annular groove being disposed to communicate with a suction chamber of said fuel injection pump to be supplied with fuel pressure variable as a function of the engine rotational speed, said second annular groove communicating with said second chamber;

a servo spring disposed to urge another of said end faces of said valve body against said fuel pressure variable as a function of the engine rotational speed;

a spring seat on which said servo spring is seated, said spring seat having an axis and a spirally extending end face remote from said servo spring; and

an adjusting member arranged rotatably and eccentrically with respect to the axis of said spring seat and having an end disposed in urging contact with said spiral end face of said spring seat;

whereby said adjusting member, when rotated about said axis of said spring seat, causes a change in the axial position of said spring seat to thereby vary the setting load of said servo spring;

said valve body being disposed such that said passageway encounters said first annular groove at said first predetermined position of said servo valve means, said second annular groove at said second predetermined position of said servo valve means, and said land at said third predetermined position of said servo valve means, respectively.

4,408,592

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toru Yoshinaga, Okazaki; Toshihiko Igashira, Toyokawa; Kouichi Mori, Okazaki; Hisasi Kawai, Toyohashi, and Seiji Morino, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 18, 1981, Ser. No. 264,693

Claims priority, application Japan, May 29, 1980, 55/72276; Nov. 17, 1980, 55/162229; Nov. 26, 1980, 55/166180

Int. Cl.³ F02P 9/00

U.S. Cl. 123—625 **8 Claims**

1. An ignition system for an internal combustion engine comprising:

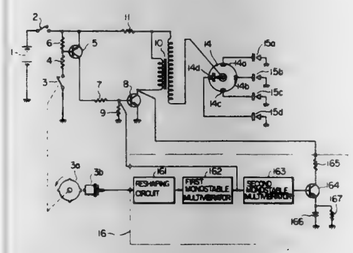
an ignition coil having a primary and secondary winding generating a spark voltage when said primary winding is deenergized,

first signal generating means for generating a first signal having two output levels,

switching means for permitting energization and deenergization of said primary winding in response to one and the other of said two output levels of said first signal respectively,

second signal generating means for generating a second signal when an engine output shaft arrives at a predetermined angular position close to the top dead center position of said output shaft; and

control means, including discriminating means for determining whether an ignition advance angle period starting with the deenergization of said primary coil and ending at the timing of compression top dead center is shorter than a duration period of the high-voltage induced spark discharge, for causing reenergization of the primary winding to interrupt the generated spark discharge in response to said second signal and the other of said two output levels only when said discriminating means determines that said ignition advance angle period is shorter than said duration period.



4,408,593

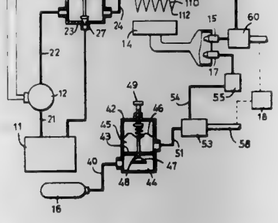
LIQUID FUEL COMBUSTION APPARATUS

Michitake Furumoto, and Shinichi Harada, both of Tokyo, Japan, assignors to Nippon Carbureter Co., Ltd., Tokyo, Japan

Filed May 27, 1982, Ser. No. 382,673

Int. Cl.³ F24C 5/00; F23D 11/44

U.S. Cl. 126—85 R **7 Claims**



1. A liquid fuel combustion apparatus comprising a housing, a liquid fuel tank to be disposed in said housing, a vaporizer for evaporating the liquid fuel supplied thereto from said fuel tank, a liquid fuel pump for supplying the liquid fuel from said fuel tank, a burner for burning the vaporized liquid fuel in passing through said vaporizer, a first nozzle for injecting the vaporized liquid fuel into said burner, a fuel conduit communicating said vaporizer with said first nozzle, a first valve means provided in said conduit, a fuel gas supply source, a second nozzle for injecting the fuel gas of said fuel gas supply source, a fuel gas conduit communicating said fuel gas supply source with said second nozzle, a second valve means provided in said fuel gas conduit, means for changing the operation of said first valve means and the operation of said second valve means, and a thermo-electric generator for producing electric energy for operating said fuel pump when said vaporizer has been heated by the fuel gas to a desired temperature.

4,408,594

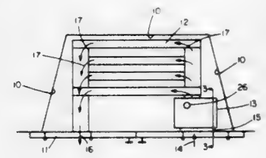
FIREPLACE HEATED GRATE

Ronald J. Shimek, Rte. 3 Lakeview Dr., Prior Lake, Minn. 55372, and Daniel C. Shimek, 2050 Fairmount Ave., St. Paul, Minn. 55105

Filed May 4, 1981, Ser. No. 260,351

Int. Cl.³ F24B 7/00

U.S. Cl. 126—121 **12 Claims**



1. A plenum for cooling an electric motor in a fireplace enclosure environment, comprising:

a box shaped plenum adapted to be placed in a heated fireplace,

an electric motor mounted in said plenum,

a blower connected to said electric motor in said plenum,

an inlet to said blower inside said plenum,

an outlet port in said plenum,

an outlet from said blower connected to said outlet port in said plenum,

a cool air inlet port in said plenum,

a diversionary air vent in said plenum located at an elevation above said cool air inlet port,

said diversionary vent comprising a normally open movable closure,

said movable closure adapted to be opened when said electric motor and said blower are not circulating cool air through said plenum, and

means for closing said movable closure when said electric motor and said blower are circulating cool air through said plenum, whereby cool air is circulated from said cool air inlet port through said diversionary air vent when said plenum is hot, thus creating convection cooling of said electric motor when said electric motor is not running.

4,408,595

TURRET MOUNTED SOLAR CONCENTRATOR WITH BOOM MOUNTED SECONDARY MIRROR OR COLLECTOR

Howard F. Broyles, 4283 Aralia Rd., Altadena, Calif. 91001; Mark L. White, 2535 Whittier Dr., La Cresenta, Calif. 91214, and Neil F. Dipprey, 20920 Anza Ave. #353, Torrance, Calif. 90503

Filed Sep. 5, 1978, Ser. No. 939,346

Int. Cl.³ F24J 3/02

U.S. Cl. 126—424 **18 Claims**

18. A solar energy concentrator and collector assembly comprising,

a base having a vertical axis;

a turret mounted on said base for rotation about said vertical axis;

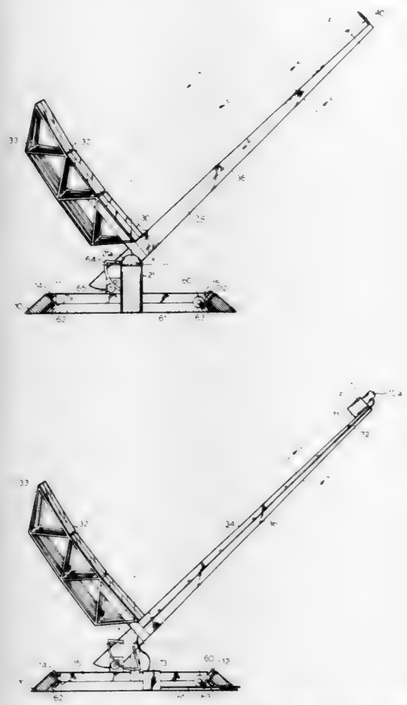
a concentrator/collector assembly amounted on said turret for rotation about a second axis intersecting said second axis;

the primary concentrator of said concentrator/collector assembly constituting a concentrating mirror formed in substantially a hemi-parabolic section configuration;

the collector of said concentrator collector assembly including an elongated boom extending normal to said second axis and a solar energy collector positioned or said boom substantially at the focus region of said concentrator;

said concentrator extending substantially entirely above the

plane defined by said boom and said second axis; and means for receiving energy from said concentrator/collector located within said turret in the region of the intersection of said axes.



4,408,596

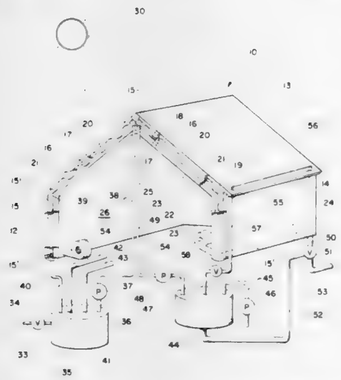
HEAT EXCHANGE SYSTEM

Douglas L. Worf, 109 Perth Ct., Cary, N.C. 27511

Filed Sep. 25, 1980, Ser. No. 190,665

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—428 **10 Claims**



1. An improved solar energy heating and cooling system comprising: a structure having a solar exposure and a nonsolar exposure; first heat exchange means mounted on said solar exposure of said structure for collecting solar energy and transferring the collected solar energy in the form of heat into said structure for heating the same, said first heat exchange means including solar energy collecting and transferring means provided with two adjacent but separate and distinct fluid flow paths with each fluid flow path being adapted to receive and channel a particular fluid medium therethrough; said first heat exchange means further including means for directing a first fluid medium through one fluid flow path of said solar energy collecting and transferring means and a second fluid medium through the other fluid flow path of said solar energy collecting and transferring means, and wherein said fluid flow paths of said solar energy collecting and transferring means are disposed such that energy in the form of heat can be readily transferred from one passing fluid medium to the other passing fluid medium; second heat exchange means mounted on said nonsolar exposure of said structure for cooling said structure and including an energy collecting and transfer means provided with two adjacent but separate and distinct fluid flow paths; said second heat exchange means further including means for directing a first fluid medium through one fluid flow path of said energy collecting and transfer means and a second fluid medium through the other fluid flow path of said energy collecting and transfer means, and wherein said fluid flow paths of said energy collecting and transfer means are disposed adjacent each other in side-by-side relationship such that energy in the form of heat can be readily transferred from one passing fluid medium to the other passing fluid medium such that energy in the form of heat may be selectively extracted from said structure so as to cool the same, whereby said first solar exposure heat exchange means can be used to both collect solar energy and use the same to heat the interior of said structure while said second nonsolar exposure heat exchange means can be utilized to effectively cool the structure.

4,408,597

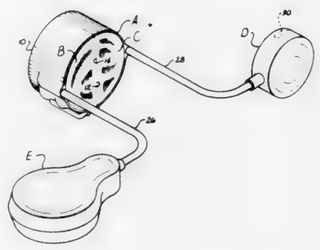
PROSTHETIC OCCLUSIVE DEVICE FOR AN INTERNAL PASSAGEWAY

John B. Tenney, Jr., Williamson, N.Y., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 23, 1982, Ser. No. 371,352

Int. Cl.³ A61B *19/00*

U.S. Cl. 128—1 R **6 Claims**



1. An occlusive cuff device for surgical implantation in the human body for the purpose of opening and closing an internal passageway in a tubular organ and the like comprising:

cuff means including a first and second isolated cuff pressure chamber;

said first cuff chamber being regulated and pressurizable for effectively occluding said passageway of said tubular organ;

said second cuff chamber being unregulated during normal operation of said device;

each said cuff chamber including a faying surface in which said passageway is receivably fitted;

a deformation resistant cuff collar encircling said two cuff chambers; and

a fluid containing septum means in fluid communication with said second cuff chamber adapted for subcutaneous placement so that the fluid volume of said septum means and hence said second chamber may be adjusted accordingly by means penetrating the skin to accommodate use on organs of different diameter sizes and to compensate for changing organ conditions without re-operation.

4,408,598

ENDOSCOPE WITH AN AIR-LIQUID SUCTION DEVICE

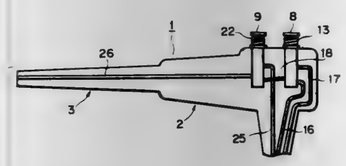
Yasuhiro Ueda, Kokubunji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,655

Claims priority, application Japan, Dec. 26, 1980, 55/185941

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—4 **8 Claims**



1. An endoscope comprising:

an insertion section including a proximal end and a distal end portion;

a control section connected with the proximal end of said insertion section;

an air-liquid selector valve and a suction control valve attached to said control section;

a common tube extending through said insertion section, having one end connected with said suction control valve and the other end opened at the distal end portion of said insertion section; and

connecting means for connecting said suction control valve and said air-liquid selector valve,

said air-liquid selector valve having a feed-air port, a feed-liquid port, and selector means for selectively connecting said ports with said connecting means, and

said suction control valve having a suction port and selector means for selectively connecting said suction port and said connecting means with said common tube.

4,408,599

APPARATUS FOR PNEUMATICALLY CONTROLLING A DYNAMIC PRESSURE WAVE DEVICE

Thomas A. Mummert, Toledo, Ohio, assignor to Jobst Institute, Inc., Toledo, Ohio

Filed Aug. 3, 1981, Ser. No. 289,489

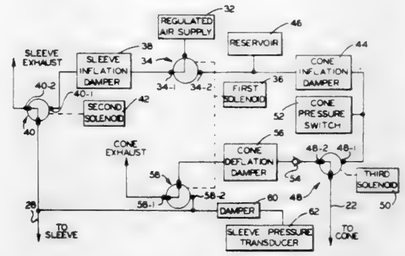
Int. Cl.³ A61H *1/00*

U.S. Cl. 128—24 R **14 Claims**

12. In an apparatus intended for use in applying compressive pressure to a mammal extremity including a first inflatable chamber surrounding the extremity, a second inflatable chamber enclosing the first chamber, and a pneumatic control means pneumatically connected to the first and second chambers for inflating and deflating the chambers from a source of pressurized gas such that the chambers apply compressive pressure to the extremity, a pneumatic control means comprising:

means for inflating a first chamber;

means for sealing the first chamber and for inflating a second chamber when the pressure within the first chamber reaches a first predetermined level; and



means for deflating the first chamber while continuing to inflate the second chamber when the pressure within the second chamber reaches a second predetermined level.

4,408,600

LEG AID DEVICE AND METHOD

Edward P. Davis, 1446 Delaware Ave., West St. Paul, Minn. 55118

Continuation-in-part of Ser. No. 146,142, May 2, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,363

Int. Cl.³ A61F *3/00;* **A41D** *13/00*

U.S. Cl. 128—80 R **28 Claims**



1. A leg aid device comprising elongated means for placement upon a user's leg and holding means for maintaining said elongated means upon the user's leg, wherein:

(a) said elongated means consists essentially of elongated flexibly resilient biasing means having a length sufficient for placement in approximate alignment with the user's leg from a level near the ankle area up to at least the level of the mid-thigh area and having a flexibility sufficient for said length to be repeatedly yieldingly bent into at least a semi-circle without taking on a permanent set, said biasing means, when held upon a body-supporting user's leg by the holding means hereinafter recited, functioning to support a portion of the user's body weight during times the user's leg is in flexed condition and functioning to aid the user's leg muscles in causing extension of the user's leg from a flexed condition, and

(b) said holding means consists essentially of

(i) a lower holder for fastening the lower end of said biasing means at a level near the user's ankle area,

(ii) an upper holder for maintaining the upper end of said biasing means at a level at least as high as the user's mid-thigh area, and

(iii) an intermediate holder comprising means for applying a forward pulling force transversely upon said biasing means at a mid-portion thereof at the level of the user's knee area, said intermediate holder being separate from said lower and upper holders but functioning in cooperation therewith to cause said biasing means to urge the

user's leg toward a straightened condition without significant torsion or twisting of the user's leg and also functioning in cooperation therewith during leg flexure to cause said biasing means to take on an arcurate contour throughout substantially the entire length of said biasing means.

4,408,601

BONE COMPRESSION PLATE

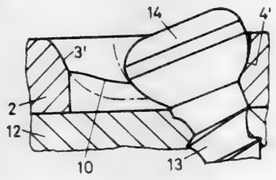
Rolf A. Wenk, Balsthal, Switzerland, assignor to Wilh. Wenk AG, Hägendorf, Switzerland

Filed Apr. 6, 1981, Ser. No. 251,872

Claims priority, application Switzerland, Apr. 14, 1980, 2870/80

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 D **2 Claims**



1. An elongated bone compression plate having a longitudinal centerline and a transverse centerline, said plate being formed with a plurality of slitlike holes each adapted to receive a countersunk bone screw having a ball head, each said slitlike hole being located in said plate substantially along the longitudinal centerline thereof and on both sides of the transverse centerline thereof with one end of said slitlike holes being distal thereto, each said slitlike hole being a compound countersink and having a portion of substantially uniform depth forming a first countersunk depression extending from said one end of said slitlike hole and having a tapered second countersunk depression extending from its other end, the depth of said second countersunk depression being greater than the depth of said first countersunk depression, a bearing surface formed in said second depression cooperating with said ball head of a said bone screw, said bearing surface being formed in the area of said other end of said slitlike hole, and said bearing surface being provided over an angular zone which is symmetrical with respect to said longitudinal centerline and extending in total over an angle of more than 180° when seen in the plane defined by said longitudinal and transverse centerlines.

4,408,602

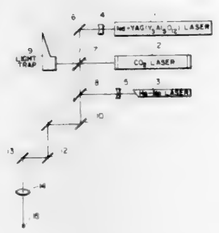
LASER KNIFE DEVICE

Tohru Nakajima, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 14, 1981, Ser. No. 224,997

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **5 Claims**



1. A laser knife device comprising first and second operating light beam sources emitting first and second laser light beams of different wave lengths respectively, a guide light source for producing a guide light beam, reflecting means for directing said first and second laser light beams from said first and second operating light beam sources and said guide light beam along a common path, a multi-articulation flexible light conducting device disposed along said common path, a focusing lens provided at an end of said multi-articulation flexible light conducting device, said reflecting means including first moveable mirror means having a first position for reflecting said guide light beam along said common path and a second position for removing said guide light beam from said common path, and second moveable mirror means having a first position for reflecting said first laser light beam along said common path when said first moveable mirror means is in said second position thereof while reflecting said second laser beam elsewhere and a second position permitting passage of said second laser light beam along said common path.

4,408,603

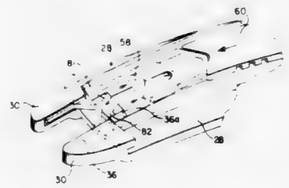
SURGICAL DEVICE

Joseph W. Blake, III, RR #2, Box 106, Kitchewan Rd., South Salem, and Jack W. Kaufman, 357 Frankel Boulevard, Merrick, both of N.Y.

Continuation of Ser. No. 200,407, Oct. 24, 1980, Pat. No. 4,372,316, which is a continuation of Ser. No. 63,268, Aug. 2, 1979, Pat. No. 4,296,751. This application Jun. 23, 1982, Ser. No. 391,367

Int. Cl.³ A61B *17/12*

U.S. Cl. 128—325 **2 Claims**



2. A cartridge for use with a surgical device, particularly for use with hemostatic forceps, comprising

a housing having a track provided with an outlet;

means for advancing a string of surgical clips in direction towards said outlet so that the respectively leading clips of the string are sequentially discharged from the outlet to become cinched by jaws of the surgical device; and

means for retracting the clips located upstream of the respective leading clip counter to said direction and away from said outlet prior to cinching of the discharged leading clip, so as to avoid interference by the upstream clips with such cinching, said retracting means comprising a retracting member mounted for movement between said leading clip and its adjacent clip for urging said adjacent clip and the successive clips away from said anvils;

wherein each of said clips is generally U-shaped with a pair of free ends interconnected by a bight, said clips being positioned in said housing with the free ends of one clip disposed at the bight of its adjacent successive clip, and said retracting member being mounted for insertion between said bight of said leading clip and said bight of said adjacent clip, whereby movement of said retracting member away from said anvils causes said adjacent clip and said successive clips to move away from said anvils.

4,408,604

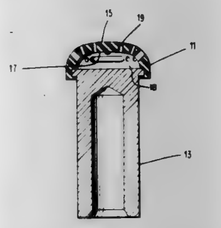
POROUS PACEMAKER ELECTRODE TIP

Michael S. Hirshorn, Double Bay; Michael Skalsky, Waverley, both of Australia; Petrus A. van Berkum, Elmhurst, Ill.; Loraine K. Holley, Rockdale, and David K. Money, Pennant Hills, both of Australia, assignors to Teletronics Pty, Limited, New South Wales, Australia

Filed Apr. 6, 1981, Ser. No. 251,708

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—785 **12 Claims**



1. An implantable porous electrode for use in a cardiac pacemaker comprising:

an electrode cap having an inner surface, an outer surface, and a plurality of uniformly spaced apertures extending from said inner surface through said electrode cap to said outer surface, and adapted for tissue ingrowth when the electrode is implanted; and

an electrode shaft joined to said cap with a cavity resulting between said inner surface of said cap and said shaft.

4,408,605

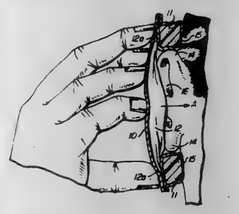
DEVICE FOR TREATMENT OF BAROTRAUMA OF THE MIDDLE EAR

John D. Doerr, 2601 E. Camino Principal, and Donn G. Duncan, 6135 E. Miramar Dr., both of Tucson, Ariz. 85715

Filed Nov. 6, 1981, Ser. No. 318,831

Int. Cl.³ A61F *7/00*

U.S. Cl. 128—402 **1 Claim**



1. A device for treatment of barotrauma of the middle ear, said device comprising, in combination:

(a) a flexible backing portion, crushable by hand-kneading;

(b) an annular cushion portion carried by said backing portion, shaped and adapted to fit over and enclose the pinna of the outer ear and being deformable under hand pressure against said backing portion to fit the contours of the exterior portion of the head and neck around the auricle; and

(c) a hand pressure-activated chemical heating package retained by the backing and annular cushion portions and exposed to the opening of the cushion portion, said package containing chemicals separated therewithin in separate compartments and which, upon rupture of one of the compartments and subsequent mixing of said chemicals by crushing and hand-kneading, produces an exothermic reaction,

such that when said device is held in operative position over and enclosing the pinna and against the exterior portion of the head and neck around the auricle, the heat generated by said exothermic reaction is transmitted to the middle ear to treat said barotrauma by directly reducing the painful effects thereof and by increasing the volume of the air contained therewithin.

4,408,606

RATE RELATED TACHYCARDIA CONTROL PACER

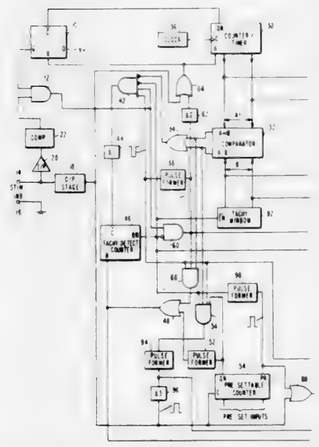
Roworth A. J. Spurrell; Alan J. Camm, and David E. Ward, all of London, England, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Mar. 19, 1981, Ser. No. 245,216

Claims priority, application United Kingdom, May 19, 1980, 8016455

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **3 Claims**



1. A tachycardia control pacer comprising means for confirming tachycardia, means responsive to each operation of said confirming means for generating a sequence of at least three heart stimulating pulses, means for controlling successive heart stimulating pulses in said sequence to be generated after decreasing time intervals, means for registering the last interval between heartbeats prior to the operation of said confirming means, means for controlling the first pulse in said sequence to be generated at the end of a first time interval following the last heartbeat which is equal to said registered interval less a predetermined value, the successive pulses in said sequence being generated after decreasing time intervals starting with said first time interval, means for controlling the same number of pulses to be generated during each pulse sequence, and means for preventing the pulses toward the end of any sequence from being generated after time intervals which are less than a predetermined interval.

4,408,607

CAPACITIVE ENERGY SOURCE AND CIRCUITRY FOR POWERING MEDICAL APPARATUS

Donald D. Maurer, Anoka, Minn., assignor to EMPI, Inc., Fridley, Minn.

Filed Apr. 13, 1981, Ser. No. 253,308

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 R **16 Claims**

1. An electric power supply for providing electrical energy to an electrically operated medical device comprising:

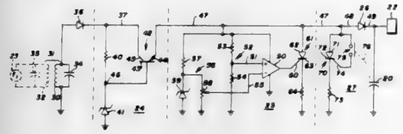
capacitor means for accommodating an electric charge;

first means providing a regulated source of unidirectional electrical energy;

second means connecting said first means to said capacitor means for supplying charging current to said capacitor

means at a first voltage which increases with charge in the capacitor means;

third means deriving from said first means a comparison second voltage of constant magnitude;



comparator means operative when said first voltage reaches a first value to reduce said first voltage to a second, lower value; and

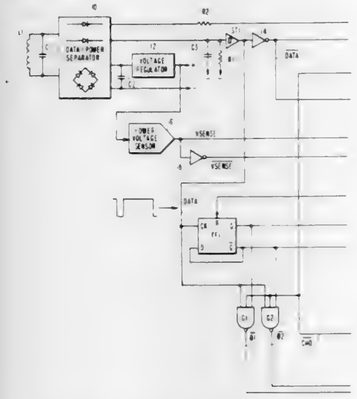
voltage regulator means connected to said capacitor means and medical device to limit the voltage supplied to the medical device.

4,408,608

IMPLANTABLE TISSUE-STIMULATING PROSTHESIS

Christopher N. Daly, Bilgola Plateau, and David K. Money, Pennant Hills, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Apr. 9, 1981, Ser. No. 252,319
Int. Cl.³ A61N *1/30*
U.S. Cl. 128—421 **145 Claims**



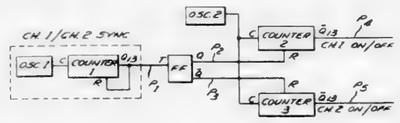
1. A cochlear prosthesis comprising a plurality of electrodes, pairs of which are associated with respective stimulation sites and with at least almost all of said electrodes being included in each of at least two different pairs, means for detecting a transmitted information signal which represents both stimulation sites and stimulation intensities required therefor, and means under control of said detecting means for energizing the pair of electrodes associated with a represented stimulation site with successive opposite-polarity current pulses in accordance with the respective represented stimulation intensity, said energizing means energizing only a single pair of electrodes at any instant of time and operating fast enough such that at least any two electrode pairs can be energized successively within the time interval that allows the respective site stimulations to be perceived as occurring simultaneously.

4,408,609

ELECTRICAL MUSCLE STIMULATION FOR TREATMENT OF SCOLIOSIS AND OTHER SPINAL DEFORMITIES

Jens Axelgaard, Downey, Calif., assignor to Professional Staff Association of the Rancho Los Amigos Hospital, Inc., Downey, Calif.

Division of Ser. No. 136,310, Apr. 1, 1980, Pat. No. 4,342,317.
This application Jan. 28, 1982, Ser. No. 343,485
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 **4 Claims**



1. Apparatus for producing dual-channels of electrical pulse patterns for application to the patient by way of two pairs of body contacting electrodes to evoke separate fields of stimulation of predetermined muscle sites proximate the site of said pairs of electrodes, comprising:

(a) means for repetitively applying a first selected electrical pulse pattern to one pair of said electrodes sufficient to evoke contraction and relaxation of one of said muscle sites;

(b) means for applying a second selected electrical pattern to the other pair of said electrodes for contraction and relaxation of the other of said muscle sites;

(c) each of said first and second electrical pulse patterns having a varable ON period and a variable OFF period, and each of said ON periods including a RAMP-up phase, a HOLD phase and a RAMP-DOWN phase; and

(d) means for producing an adjustable synchronization pulse to trigger, in alternating fashion, the onset of said ON period of each of said first and second pulse patterns to produce, in alternate fashion, a partial overlap of said RAMP-UP and RAMP-DOWN phases of said first electrical pulse pattern with the ON period of said second electrical pulse pattern, and to produce non-simultaneous OFF periods in said first and second electrical pulse patterns, whereby each muscle site is placed, alternately, in a contraction and in a relaxation mode.

4,408,610

EMERGENCY ELECTRODE

Stanley J. Sarnoff, Bethesda, Md., assignor to Survival Technology, Inc., Bethesda, Md.

Filed Jun. 12, 1981, Ser. No. 272,973
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—642 **7 Claims**



1. An emergency electrode comprising:

a housing assembly,

stressed spring means mounted within said housing assembly so as to be released in response to a predetermined manual actuating procedure,

an electrode needle structure mounted within said housing assembly in a sterile condition in cooperating relation with said stressed spring means for movement outwardly of said housing assembly in response to the release of said stressed spring means so as to penetrate into the muscle tissue of a patient,

said needle structure being a hypodermic needle member provided with a hollow interior and having a bendable wire member extending outwardly from said hollow interior adjacent the leading end thereof in a trailing direction for yieldably retaining the leading end portion of said hypodermic needle member in penetrating condition within the muscle tissue of a patient,

said hypodermic needle member being encased within a resilient shroud within said housing assembly through which the leading end portion thereof extends when moved outwardly of said housing assembly, and

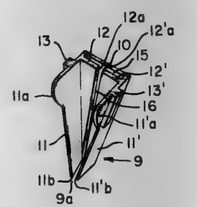
means for completing an electric circuit exteriorly through said needle structure when in said penetrating relation within the muscle tissue of a patient.

4,408,611

PROBE FOR ULTRASONIC IMAGING APPARATUS

Susumu Enjoji, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasakishi, Japan

Filed Feb. 26, 1981, Ser. No. 238,203
Claims priority, application Japan, Jul. 3, 1980, 55-89990
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **1 Claim**



1. An ultrasonic probe for receiving therethrough a puncturing cannula, said probe comprising:

a support member having at least one substantially planar surface, said member including a plurality of ultrasonic transducer elements arranged in at least one row on said one planar surface, a pyramid-shaped space formed in said member, said space having a V-shaped cross section, the apex of the V comprising a first slot between converging walls of the space and lying substantially at the center of said row of transducer elements, said space opening through a wall of the support member substantially perpendicular to said one planar surface; and

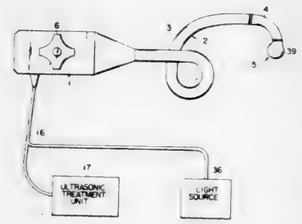
a wedge-shaped auxiliary member removably inserted into said space, said auxiliary member being substantially complementary in shape to said space and having a pair of tapering walls conforming to said converging walls, the inner apex edges of said tapering walls forming a second slot lying substantially in the plane of said planar surface and overlying the edges of the converging walls forming the first slot, the side edges of said tapering walls being free and conforming on one side to said opening of said space in said perpendicular wall and terminating on the other side in a back wall perpendicular to said tapering walls, said auxiliary member including a pair of opposing partitions extending from said tapering walls parallel to said back wall and spaced therefrom a predetermined distance, and the surfaces of said opposing partitions facing away from said tapering walls forming a uniform gap of substantially the same width as said predetermined distance, said gap opening into said second slot and said predetermined distance being slightly greater than the diameter of said cannula, the portions of said tapering walls being unobstructed between said partitions and said edges on one side for forming said free edges of said auxiliary member, and wherein said probe also includes a pair of grooves in the inner surfaces of said converging walls parallel to said perpendicular wall, and a pair of projections on the outer surfaces of said tapering walls, said projections conforming with and fitting into said grooves when said auxiliary member is installed in said support member and being positioned on the outer surfaces of said unobstructed portions of said tapering walls, and said tapering walls are formed of elastic synthetic resin and include projecting tab means on said free edges, said unobstructed portions of said elastic tapering walls being manually compressible toward each other for installation of said auxiliary member substantially horizontally into said support member, said installation including the insertion of said projections into said grooves.

4,408,612

ULTRASONIC SCANNING DEVICE FOR EXAMINING VISCERA

Mikio Utsugi, Machida, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 245,100
Claims priority, application Japan, Mar. 29, 1980, 55-40688
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **7 Claims**



1. An ultrasonic scanning device for examining viscera, comprising:

a control section having two ends;

an elongate flexible insertion section having an opening therethrough and two ends, one end being fixed to one of said two ends of said control section;

a distal end portion which is formed at the other end of said insertion section, said distal end portion having a peripheral wall, and a chamber open at said peripheral wall and being provided with front and rear end faces;

ultrasonic wave transmission-reception means provided on said front end face of said chamber;

means provided in said control section for pulsing and receiving echo signals from said ultrasonic wave transmission-reception means;

an ultrasonic wave reflector having two ends, one end of said reflector being rotatably disposed adjacent to said rear end face of said chamber, and the other end of said reflector being fitted with an inclined reflection plane facing said opening of said chamber of said distal end portion and ultrasonic wave transmission-reception means at a predetermined angle;

a motor provided in said control section for driving said ultrasonic wave reflector;

a flexible linear member which extends through said insertion section and has two ends, one end of said flexible linear member being fixed to said motor, and the other end of said flexible linear member being fixed to said one end of said ultrasonic wave reflector, said linear flexible member being so arranged as to transmit the rotation of said motor to said ultrasonic wave reflector;

a flexible guide tube extending through said insertion section and having two ends, one end of said flexible guide tube being connected to said control section and the other end of said flexible guide tube being connected to said distal

end portion, said flexible linear member extending through said flexible guide tube;

a sealing member provided only at said one end of the flexible linear member effecting a liquid-tight seal between the interior of said guide tube and said motor;

a liquid filled in said chamber and in that portion of said flexible guide tube which extends between said sealing member and said other end of said flexible linear member; and

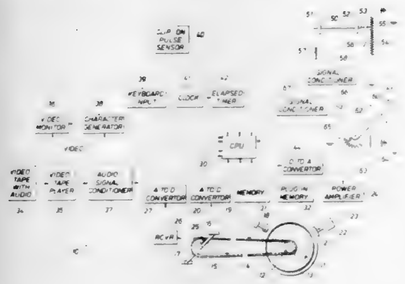
closing means coupled to said chamber to close said chamber in a liquid-tight state to retain said liquid in said chamber, said closing means being ultrasonically transparent.

4,408,613

INTERACTIVE EXERCISE DEVICE

Richard D. Relyea, Austin, Tex., assignor to Aerobitronics, Inc., Austin, Tex.

Filed Oct. 2, 1981, Ser. No. 307,738
Int. Cl.³ G01L 5/02
U.S. Cl. 128—670 **16 Claims**



1. For use with an exercise device including a movable part and moved by exercise of an user input through an input means and retarded by an adjustable brake, and further including sensor means for detecting the rate of exercising on the exercise device by a user, the apparatus comprising:

(a) means for receiving a specified exercise rate for a user;

(b) comparator means for comparing the specified exercise rate from said receiving means with the exercise rate sensed by the sensor means on the exercise device;

(c) a video monitor positioned to be viewed by the user;

(d) video player means adapted to be loaded with a storage medium having a video storage track and a separable storage track;

(e) means connecting a video signal output from said video player means to said video monitor to form a visual image for a user;

(f) signal forming means responsive to said storage medium wherein a signal is recorded on the separable storage track, said signal forming means forming signals from said storage track applied to said receiving means to set an instantaneous specified exercise rate for the user responsive to the signal of said storage track; and

(g) wherein said storage track signal varies said instantaneous specified exercise rate.

4,408,614

BLOOD PRESSURE MEASUREMENT WITH KOROTKOV SOUND ARTIFACT INFORMATION DETECTION AND REJECTION

Charles S. Weaver, Palo Alto, and Constance T. Chittenden, Los Altos, both of Calif., assignors to SRI International, Menlo Park, Calif.

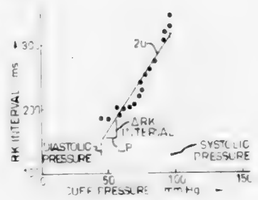
Filed Jul. 6, 1981, Ser. No. 280,798
Int. Cl.³ A61B 5/02
U.S. Cl. 128—680 **14 Claims**

1. A machine implemented method for identifying and removing artifacts in Korotkov sound signals for use in a system for measuring systolic and diastolic blood pressure, obtaining a measure of the systolic slope of blood pressure waves, or the like, comprising the steps of:

(1) recurrently obtaining cuff pressure measurements and arrival times of peak R-wave signals and Korotkov sound signals including artifacts through the active K-sound range of a cuff pressure deflation,

(2) using arrival times of associated R-wave signals and Korotkov sound signals and artifacts, determining RK intervals from which a plurality of RK interval versus cuff pressure points are obtained, some of which are true points and others of which are artifact points,

(3) processing said points to group the same such that one group includes substantially only true points, said processing comprising;



(a) from an existing point at high cuff pressure, estimating an RK interval value RK for a next lower cuff pressure which includes a point,

(b) including the point at said lower cuff pressure in a group which includes also said existing point when the difference $\Delta RK = RK - RK$ at a lower cuff pressure is within a predetermined range, and not including the point at said lower cuff pressure in the group when the difference ΔRK is outside said predetermined range,

(c) repeating steps *3a* and *3b* but using the last included point in the group for estimating an RK interval value for a next lower cuff pressure which includes a point,

(d) repeating steps *3a*, *3b* and *3c* using ungrouped points until all points are included in a group, and

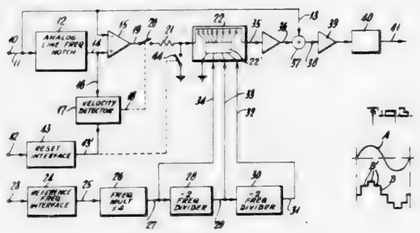
(4) selecting as the one group which includes substantially only true points that group which includes the greatest number of points.

4,408,615

INTERFERENCE FILTER

Hyman Grossman, Buchanan, N.Y., assignor to Cambridge Instruments, Inc., Ossining, N.Y.

Filed Mar. 2, 1981, Ser. No. 239,469
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 **13 Claims**



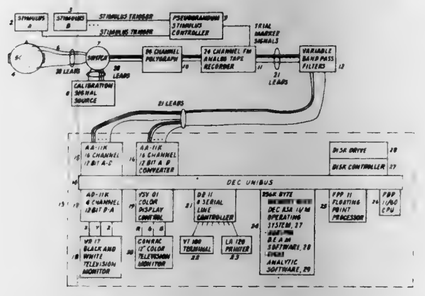
1. An interference filter for the removal of AC interference caused by power lines from a signal containing information to be processed comprising means for filtering said interference from said signal and producing a filtered signal free of interference, means for combining the filtered signal with the unfiltered signal to produce an interference signal, means for reversing the phase of the interference signal relative to the interference in the first said signal and means for combining the last said interference signal with the first said signal to produce a resultant signal wherein the interference is cancelled.

4,408,616

BRAIN ELECTRICAL ACTIVITY MAPPING

Frank H. Duffy, Brookline, Mass., and Norman D. Culver, Spotswood, N.J., assignors to The Children's Medical Center Corporation, Boston, Mass.

Filed May 15, 1981, Ser. No. 264,043
Int. Cl.³ A61B 5/04
U.S. Cl. 128—731 **82 Claims**



1. Apparatus for generating a topographic display of information on the electrical activity of the brain, said apparatus comprising

a plurality of electrical-activity transducers adapted to be placed at spaced apart locations on the skull of a patient,

stimulus means for repeatedly providing a sensory stimulus for activating the brain to produce EP responses to said transducers,

response averaging means connected to be responsive to said transducers, to produce average responses for each transducer,

processing means connected to be responsive to said averaging means for processing said average responses to generate a time sequence of matrices,

display means connected to be responsive to said processing means, for displaying said matrices as a time sequence of topographic maps of the skull, said matrice having elements defining discrete points of said maps,

said display means including means for displaying said topographic maps at a variable frame rate, said maps corresponding to different portions of said average responses being displayed respectively at different selected frame rates.

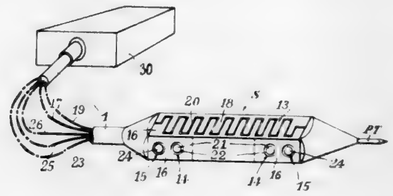
4,408,617

APPARATUS FOR DETECTING THE ACUPUNCTURE POINTS ON A PATIENT AND FOR APPLYING ELECTRICAL STIMULATING SIGNALS TO THE DETECTED POINTS

Deloffre Auguste, 13 bis, rue George Sand, 94500 Champigny S/Marne, France

Filed Jan. 19, 1981, Ser. No. 226,014
Claims priority, application France, Jan. 21, 1980, 80 01177
Int. Cl.³ A61H 39/02, 1/36
U.S. Cl. 128—735 **9 Claims**

1. Apparatus for detecting the acupuncture points of a patient and for applying electrical stimulating signals to the detected points, comprising a main DC voltage source, a probe having a contact needle, an electrode to be held by a patient, a sawtooth signal generator connected to said main DC voltage source for producing a sawtooth signal and having an RC circuit determining the rise time of each sawtooth of said sawtooth signal, said RC circuit including a first capacitor and a resistive circuit which comprises, connected in series, a first fixed resistor and a variable resistor, said first capacitor having one terminal connected to one pole of said main DC voltage source and another terminal connected to one end of said resistive circuit, one of said contact needle and electrode being connected to another end of said resistive circuit and the other of said contact needle and electrode being connected to another pole of said main DC voltage source, a second fixed resistor, a second capacitor, DC voltage booster means connected to said sawtooth signal generator for supplying, when activated, said sawtooth signal generator with a DC voltage higher than that of said main DC voltage source, and mode-changing means for selecting between an acupuncture point



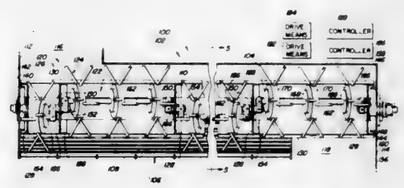
detection mode and a soft stimulation mode, said mode-changing means comprising first, second and third switch means which are associated with said second resistor, said second capacitor and said DC voltage booster means, respectively, and which, when switched in a state corresponding to said soft stimulation mode, combines said second fixed resistor with said resistive circuit so that the resultant resistance of the combined second resistor and resistive circuit is lower than the resistance of said resistive circuit, combines said second capacitor with said first capacitor so that the resultant capacitance of the combined first and second capacitors is higher than the capacitance of said first capacitor, and activates said DC voltage booster means, respectively.

4,408,618

AXIAL FLOW ROTARY SEPARATOR

Homer D. Witzel, 1700 Gulf Blvd., Englewood City, Fla. 33533

Filed Jun. 6, 1980, Ser. No. 157,141
Int. Cl.³ A01F 7/06
U.S. Cl. 130—23 **60 Claims**



1. An axial flow rotary separator for a combine, the combine having a forward harvesting header for gathering crop material from a field and delivering it to a rearward outlet of the header, comprising:

a generally tubular separator housing including a housing wall having an inner surface and at least one foraminous portion and an upstream inlet for receiving at least a portion of the crop material gathered by the header, and a downstream outlet for discharging at least a portion of the crop material received at the inlet, some of the material passing outwards through the foraminous portion;

a rotor supported for rotation and extending within the housing for engaging crop material adjacent the inlet and propelling it to the outlet, the rotor having a frame and an axis of rotation approximately parallel to the axis of the

housing and a plurality of crop material-engaging elements carried by the frame, each element having a radially outward portion which defines a path of revolution as the rotor rotates, the inner surface of the housing wall and the path of revolution of the rotor element outward portions cooperating to define a plurality of annular clearances each having spaced apart zones of lesser and of greater radial thickness, and each crop material-engaging element being articulated with respect to the rotor frame so as to provide relative axial movement between at least the radially outward portion of the element and the housing axis as the rotor rotates; and

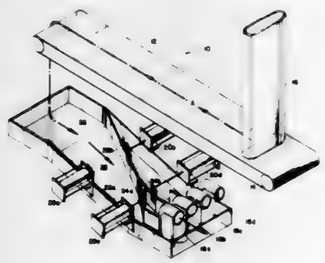
means for rotating the rotor and actuating the crop material-engaging elements so that at least some of the material engaged by the elements is propelled circumferentially at such a speed that it is maintained by centrifugal force in a mat generally in contact with the inner surface of the housing wall, the articulation of the crop material-engaging elements being such that when in a zone of lesser radial thickness, the axial component of the movement of each crop material-engaging element radially outward portion is substantially in a downstream direction so that each element, while engaging the mat, periodically increases and decreases its radial penetration of the mat and, while in such increased penetration, displaces at least a portion of the crop material downstream while also propelling it circumferentially and the net effect is to move the material progressively downstream towards the outlet.

4,408,619

VIBRATORY PNEUMATIC TOBACCO FEEDER

J. E. Steven Perkins, Colonial Heights, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jun. 11, 1981, Ser. No. 272,817
Int. Cl.³ A24C *1/02*
U.S. Cl. 131—108 **5 Claims**



1. An automatic tobacco feeder for pneumatically conveying tobacco from a storage area to cigarette making machines, said feeder comprising;

a metering tube;

a conveyor belt on which tobacco from said metering tube is deposited;

a collecting pan which receives tobacco from said conveyor;

vacuum tubes located above said collecting pan for removing tobacco from said collecting pan for transport to cigarette making machines; and

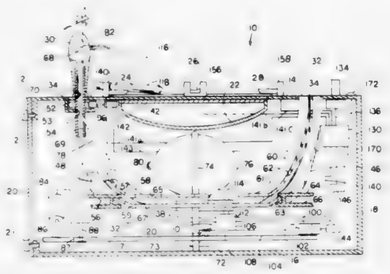
control flaps for directing the flow of the tobacco to one or more of said vacuum tubes.

4,408,620

NOVELTY ITEM OF A CIGARETTE EXTINGUISHING ASHTRAY

Marvin W. Sasseen, 7145 Lindewood Pl., St. Louis, Mo. 63109

Filed Oct. 14, 1981, Ser. No. 311,412
Int. Cl.³ A24F *13/18*
U.S. Cl. 131—236 **17 Claims**



17. An ashtray comprising a receptacle having a plurality of cigarette holders spaced around the periphery thereof, a track having a portion thereof extending around at least a portion of said receptacle, said track having spaced control surfaces thereon, a figure including means supporting said figure for movement along said track, other means including a source of liquid and means connecting the source of liquid to said figure, means associated with said figure engageable with the control surfaces on said track to control the supply of liquid from said source to said figure for discharging thereby at a cigarette in the ashtray, means operatively connected to said figure for moving said figure along said track, and means connected to said moving means for generating audio and visual signals during at least a portion of the movement of said figure.

4,408,621

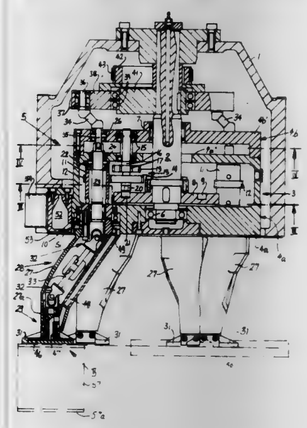
APPARATUS FOR TRANSFERRING CIGARETTES OR THE LIKE

Peter Schumacher, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 271,857
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022827
Int. Cl.³ A24C *5/32, 5/33, 5/35*
U.S. Cl. 131—282 **13 Claims**

1. Apparatus for transferring cigarettes or analogous rod-shaped articles between first and second stations at which the articles respectively advance axially and sideways at different first and second speeds, comprising a rotary carrier; a plurality of crank arms having first portions rotatably mounted on said carrier and second portions; article receiving means connected with and movable relative to the second portions of said crank arms and arranged to travel, in response to rotation of said carrier, along an endless path having spaced apart first and second portions respectively adjacent to said first and second stations; means for preventing charges in orientation of said receiving means in response to rotation of said carrier; and means for rotating said first portions of said crank arms relative to said carrier in response to rotation of said carrier, comprising stationary cam means, discrete lever means for each of said crank arms, each of said lever means being pivotable with reference to said carrier and having means for tracking said

cam means so that said lever means pivot back and forth in response to rotation of said carrier, and transmission means for



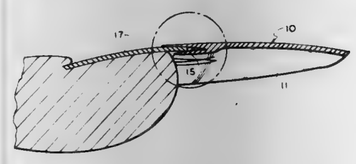
rotating said crank arms relative to said carrier in response to pivoting of the respective lever means.

4,408,622

FINGERNAIL EXTENSION

Carl H. Meyerhoefer, Huntington Station, and Carl E. Meyerhoefer, Little Neck, both of N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,123
Int. Cl.³ A45D *29/00*
U.S. Cl. 132—73 **3 Claims**



1. An artificial fingernail extension attachable to a natural fingernail comprising:

(a) A nail extension body having a forwardmost edge, and

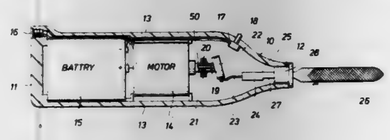
(b) a rearward concave distal upper edge and a rearward concave lower edge forming a wedge shaped arcuate pocket to receive and conform generally to the shape of the convex forward edge of the natural fingernail to position the artificial nail so that it will overlap and underlap the natural nail and be bonded thereto.

4,408,623

ELECTRICAL MANICURING DEVICE

Grant Murray, 15815 Bitridge, Houston, Tex. 77053

Filed Jun. 26, 1981, Ser. No. 277,966
Int. Cl.³ A45D *29/05*; F16H *25/08*
U.S. Cl. 132—73.6 **15 Claims**



1. A power manicuring device, comprising:

an elongate hollow housing,

an electrically powered motor means disposed in said housing,

a source of electrical energy disposed in said housing and adapted to energize said motor means,

a shaft extending from said motor means and rotatable about a shaft axis,

an offset plate interconnected with said shaft and rotatable about said shaft axis,

an attachment arm attached adjacent to the outer periphery of said offset plate and movably responsive to rotation by said offset plate,

guide means for restricting movement of at least a portion of said attachment arm to a substantially linear direction, and

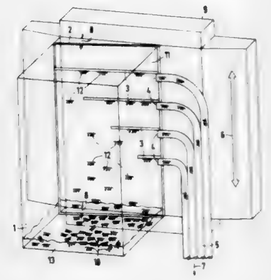
a reciprocating manicuring implement interconnected with said attachment arm and driven linearly in both directions along its longitudinal axis by said electrically powered motor means.

4,408,624

SYSTEM FOR ARRANGING FERROMAGNETIC COIL SPRINGS AND FEEDING SAME TO A WORK STATION

Horst Friemert, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,014
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1980, 3047587
Int. Cl.³ B08B *3/04*
U.S. Cl. 134—133 **5 Claims**



1. An arrangement for unscrambling ferromagnetic coil springs from a random pile, the arrangement being of the type which utilizes a traveling electromagnetic field for unscrambling the coil springs and for feeding them to a work station, the arrangement comprising:

cassette means formed of non-ferromagnetic material in a rectangular configuration, said cassette means having a first interior vertical surface provided with outlet openings which are arranged vertically above one another, and at predetermined distances from one another, said cassette means further having a second interior surface having impact edges thereon, said impact edges being horizontally arranged at vertical heights corresponding to respectively associated ones of said outlet openings of said first interior surface, said impact edges being raised from said second interior surface by a predetermined impact edge height;

discharge tube means formed of a non-ferromagnetic material engaged with respectively associated ones of said outlet openings of said first interior surface; and

linear motor stator means for producing the traveling electromagnetic field, said cassette means being vertically fastened to said linear motor stator means so as to produce an acute angle between said linear motor stator means and said second interior surface of said cassette means, said

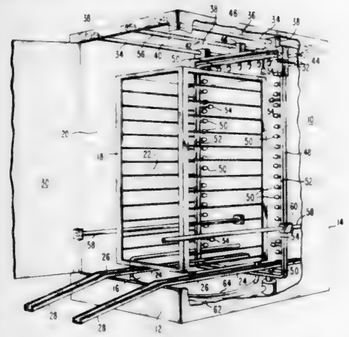
acute angle having an apex which is in the vicinity of a junction between said first and second interior surfaces.

4,408,625

ARTICLE WASHING MEANS WITH MOVABLE SPRAY HEADS

Henry Y. Kuhl, Kubl Rd., R.D. 1, Box 485A, Flemington, N.J. 08822

Filed May 7, 1982, Ser. No. 375,835
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—144 **13 Claims**



1. An article washing means with movable spray heads comprising:

(a) a housing means including a front wall and a rear wall and defining an entry opening in said front wall through which to move articles into said housing to be washed and rinsed, said housing further defining a washing compartment therein to contain washing and rinsing solutions being sprayed;

(b) article support means extending through said housing means and adapted to elevate an article to be washed above the floor of said washing compartment;

(c) a frame means secured to the interior of said housing means and being longitudinally movable therein from adjacent said front wall to adjacent said rear wall;

(d) at least one frame support means extending from adjacent said front wall to adjacent said rear wall, said frame support means being fixedly secured with respect to said housing means;

(e) a frame support guide means fixedly secured with respect to said frame means and movably secured with respect to said frame support means to guide said frame means in longitudinal movement along said frame support means within said washing compartment;

(f) a drive shaft rotatably mounted within said washing compartment and extending longitudinally therethrough, said drive shaft defining a spiral groove means extending therealong;

(g) a drive means secured with respect to said drive shaft to cause selective rotation thereof;

(h) a drive follower fixedly secured with respect to said frame means and movably secured with respect to said drive shaft, said drive follower extending into said spiral groove means of said drive shaft to urge said frame means to move longitudinally within said housing responsive to selective rotation of said drive shaft;

(i) a washing conduit means for carrying washing solution and being fixedly secured with respect to said frame means to be longitudinally movable therewith in said washing compartment, said washing conduit means extending peripherally around the location of an article to be washed for thorough cleansing thereof;

(j) a plurality of washing spray means each secured with respect to said washing conduit means and in fluid flow communication with respect to the washing solution thereof to deliver the solution to the article to be washed within said washing compartment;

(k) a rinsing conduit means for carrying rinsing solution and being fixedly secured with respect to said frame means to be longitudinally movable therewith in said washing compartment, said rinsing conduit means extending peripherally around a location of an article to be rinsed for thorough rinsing thereof;

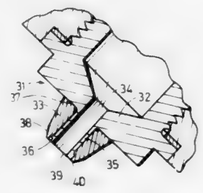
(l) a plurality of rinsing spray heads each secured with respect to said rinsing conduit means and in fluid flow communication with respect to the rinsing solution thereof to deliver the solution to the article to be rinsed.

4,408,626

VALVE SEAT ASSEMBLY FOR A STEAM TRAP

Katsuji Fujiwara, Kakogawa, Japan, assignor to TLV Co., Ltd., Tokyo, Japan

Filed Oct. 5, 1981, Ser. No. 308,563
Claims priority, application Japan, Oct. 8, 1980, 55-141224; Nov. 4, 1980, 55-158431[U]
Int. Cl.³ F16T *1/30*
U.S. Cl. 137—185 **7 Claims**



1. A valve seat assembly for a steam trap including a housing having an interior wall defining a valve chamber, said valve seat assembly being mounted in said housing and defining a valve orifice in flow communication with said valve chamber with a buoyant float member being movably mounted within said valve chamber and adapted to be brought into and out of engagement with said valve seat assembly to close and open said orifice, said valve seat assembly comprising a body portion made of stainless steel mounted within said housing and defining a valve bore having said valve orifice defined at the inner end of said valve bore, a valve seat surface contiguous with and surrounding said valve orifice, and a float abutment member made of carbide located adjacent said valve seat surface on the outer periphery thereof, said float abutment member being located to serve as a contact point for said float member and to define a fulcrum about which said float member may pivot when moving into and out of contact with said valve seat surface.

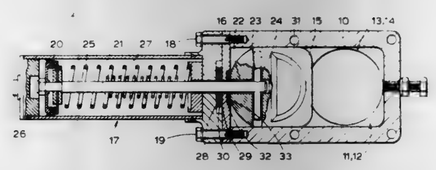
4,408,627

EXHAUST BRAKE VALVE UNIT

Victor A. Harris, Llanwono Rd., Ynyshir, Porth, Mid Glamorgan, Wales

Continuation-in-part of Ser. No. 575,864, May 8, 1975. This application Feb. 1, 1978, Ser. No. 874,171
Int. Cl.³ F16K *3/02;* **B08B** *9/00*
U.S. Cl. 137—242 **7 Claims**

1. An automatic exhaust brake valve unit adapted to be connected into the exhaust system of a motor vehicle comprising a hollow body having an open end face and opposing planar walls defining a valve chamber therebetween which is open to said end face; said opposing walls each defining therein a port which in alignment with the port in the respective opposite wall defines an exhaust passage through the valve chamber; a valve closure member located within the valve chamber for sliding movement therein between said opposed planar walls and having opposed planar faces and a recess in each of said faces to leave a land thereon for sealing engagement with a respective one of said planar walls, the valve closure member being located in the valve chamber with a clearance fit therein and being movable in a direction transverse to the common axis of said ports between a closed position whereat exhaust gas pressure on either of said planar faces of the value closure member is operable to urge it against the one of said planar walls on the opposite side of the valve closure member to effect sealing engagement of said one planar wall and planar face and thereby close the respective port in said one planar wall, and an open position in which the exhaust passage defined by said ports is substantially unobstructed; an end plate arranged to be mounted across said open end face of said hollow body to close the valve chamber, said end plate defining therein an aperture; a fluid pressure operated piston and cylinder device mounted on said hollow body with the piston rod thereof extending through said aperture defined in said plate and being coupled with the valve closure member, the valve closure member defining therein an axial bore for receiving said piston rod with clearance and a cross bore



through the axial bore, there being a pin mounted in the piston rod and extending through said cross bore with clearance whereby universal relative movement is allowed between said piston rod and said valve closure member; and securing means located externally of said cylinder device for securing said cylinder device to said open end face of said hollow body with said end plate located between said cylinder device and said open end face of said hollow body, said cylinder device, said end plate being removable from said hollow body upon releasing the securing means, whereby the cylinder device is removable from said valve body and the valve closure member is removable from said valve chamber through said open end face of said valve hollow body; and said exhaust brake valve unit further comprising scraping means disposed in a recess between said end plate and said piston and cylinder device for engagement with said piston rod, the scraping means comprising two rings having bores to closely receive the piston rod, and a coil compression spring disposed in said recess between said rings and around said piston rod to hold said rings respectively against said plate and said piston and cylinder device.

4,408,628

SYSTEM AND METHOD FOR REPAIR OF LEAKING STORAGE TANKS CONTAINING FLUIDS WHICH CONTAMINATE GROUND WATER

Robert J. Monk, Eng. Div. HQ-AAFES-EUR, APO New York, N.Y. 09245

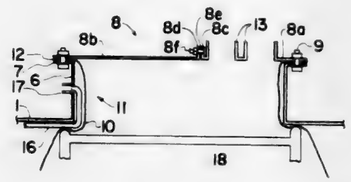
Filed Jan. 29, 1982, Ser. No. 344,207
Int. Cl.³ F16K *23/00*
U.S. Cl. 137—312 **6 Claims**

1. A system and method for repair of leaking storage tanks containing fluids which contaminate ground water comprises:

a flexible fluid tight containment means formed to the interior shape of said tank whereby fluid is stored with zero leakage inside the tank, said tank restrains said containment means from movement beyond its fully inflated size preventing overstressing;

an opening edge jointed fluid tight to said containment means and formed to the inside shape of a combination manway and appurtenances access whereby a fluid tight seal is formed with said tank when said edge is assembled as a gasket between the flange and cover of said access, said access is an integral part of said tank;

a support cage assembly inside said containment means adjacent to said access holds said containment means tight against said tank whereby strain on said opening edge is relieved when fluid storage level is low and said containment means is not fully inflated and whereby said containment means is maintained separated from said appurtenances installed inside said tank through said access;



a sampling means located between the lowest positions of said tank interior and the outside of said containment means with said sampling means being joined fluid tight with a pump which discharges into a sealed reservoir whereby leaking ground water or stored fluid can be observed and removed; and,

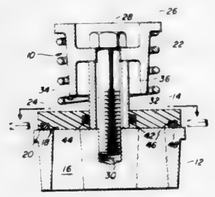
multiple corrugated spacers installed between the bottom of said containment means and bottom interior of said tank and said sampling means whereby the effective area of said sampling is increased to cover most probable tank leakage areas.

4,408,629

VALVE MODIFICATION FOR FLUID PUMP VALVES

Larry J. Lafont, Lockport, La., assignor to Conoco Inc., Ponca City, Okla.

Filed Jun. 25, 1982, Ser. No. 392,187
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—329.04 **4 Claims**



1. In a valve for controlling the flow of an abrasive fluid, said valve having a valve body with a seating surface; a fluid passage extending through said valve body to said seating surface; valve closure means comprising a planar polymeric disc having a primary planar sealing surface adapted for engagement with said seating surface and further including spring means for biasing said primary planar sealing surface of said disc into compressive engagement with said valve seating surface, said disc and spring means being mounted concentrically on a central shaft passing through a central opening having a cylindrical side wall in said disc and secured within said valve body, the improvement which comprises;

a first annular groove disposed in said primary planar sealing surface of said disc so as to engage said seating surface radially outwardly of said fluid passage, said first annular groove including a secondary sealing surface having a first resilient circular sealing member disposed therein and a second annular groove including a third sealing surface disposed in said cylindrical side wall of said opening of said disc having a second resilient circular sealing member

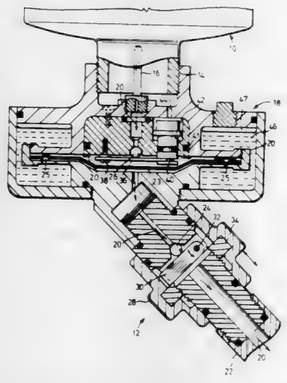
disposed therein, said second resilient circular sealing member being in compressive engagement around said shaft whereby flow of said abrasive fluid is controlled after erosion of said disc by said first and second resilient circular sealing members.

4,408,630

TORCH FOR VAPORIZABLE PRESSURIZED LIQUID

Richard J. Armstrong, 7 Jackes Ave., Suite 703, Toronto, Ontario, Canada

Filed Mar. 23, 1982, Ser. No. 361,039
Int. Cl.³ F16K *49/00*
U.S. Cl. 137—340 **6 Claims**



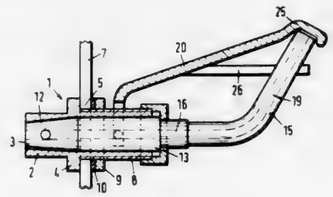
1. A valve assembly for a container of pressurized liquid fuel material that vapourizes under normal atmospheric conditions, the valve assembly being adapted to vapourize the liquid material as it flows from the bottom of a container through the valve assembly, comprising a body having an escape passage therethrough with a control valve therein operable between a closed and open position to control the escape of fuel material from the container, means forming a jacket chamber in heat exchange relation with the escape passage to contain heat storage material that is liquid under normal atmospheric conditions and that solidifies at about the vapourization temperature of the pressurized liquid fuel material to be used in the container with which the valve assembly is to be used to release latent heat of fusion, a pressure regulating expansion valve in said passage upstream of said jacket chamber, pressure regulating expansion valve control means responsive to the closed position of said control valve to close said pressure regulating expansion valve and responsive to an open position of said control valve to open said pressure regulating expansion valve and permit fuel material to flow from the container through the escape passage in heat exchange relation with the jacket chamber whereby latent heat of fusion of the heat storage material supplies the latent heat of vapourization of the fuel material as it vapourizes in the area of said expansion valve.

4,408,631

WEDGE-TYPE TAP FOR THE STERILE SAMPLING OF LIQUIDS

Klaus Uhlig, Apt. 2331 c/o Cerveceria Polar; Marian Szczurek, Calle Caurimare, Res. Los Tulipanes Apto. 52 Col.B.Monte; Carlos Vilacha, Av. Circunvalacion Del Sol, Res "46" Apto 42 Santa Paula, all of Caracas, Venezuela, and Juergen Beckmann, 7410 Reutlingen, Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 77,639
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1978, 28407343
Int. Cl.³ F16K *27/08*
U.S. Cl. 137—380 **2 Claims**



1. A wedge-type tap for the sterile sampling of beer or wine contained in a tank, said tap comprising:

a tap housing having a cylindrical longitudinal bore with a tapered end portion defining a frusto-conical surface, said housing being sealingly mounted transversely in a wall of the tank with the apex of the tapered end of the bore lying inside the tank, said housing having an inlet opening on one side of the tapered end inside the tank;

a cylindrical faucet plug with a tapered end adapted to mate with the bore in the housing and formed with a through-passage extending in its longitudinal axis and terminating in a radial inlet portion within the tapered portion inside the tank, said faucet plug being arranged in said housing bore, being rotatable about its own longitudinal axis and having a further end portion extending from said housing;

a screw cap threaded to an outer cylindrical end portion of said faucet plug thereby securing said faucet plug to said housing in liquid-tight manner;

a bent discharge pipe fixedly connected to the outer end portion of said faucet plug,

said radial inlet portion of the faucet plug being positioned longitudinally to connect with the inlet opening of said housing and providing a flow path from the tank through the discharge pipe when said discharge pipe is in its downward position, and said tapered end of the faucet plug sealing off the inlet opening of said housing when said discharge pipe is in its upward position;

said housing and said faucet plug consisting of a material selected from the group consisting of a metal and a self-sealing slidable plastics material; and

a locking means designed as a strap pivotally mounted on said housing and having at its free end a cap for covering said discharge pipe, two legs being formed onto said strap which surroundingly engage the upwardly directed discharge pipe on either side whereby said locking means secures said discharge pipe in its upwardly directed position against inadvertent turning and covers the discharge opening of said discharge pipe.

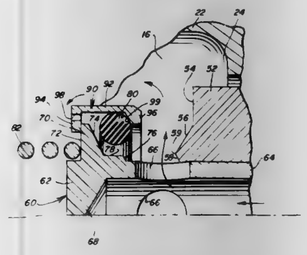
4,408,632

HIGH FLOW SHROUD CHECK VALVE

Preben Kent, Altadena, Calif., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 23, 1981, Ser. No. 257,224
Int. Cl.³ F16K *15/00*
U.S. Cl. 137—516.29 **18 Claims**

1. In a check valve having a valve body comprised of a housing having a valve chamber, an inlet fitting extending into said valve chamber and having concentric sealing surfaces facing into said valve chamber, a poppet valve positioned in said valve chamber and being slidably mounted relative to said inlet fitting, flow ports through said poppet valve, concentric sealing surfaces on said poppet valve downstream from said flow ports, one of the sealing surfaces on said inlet fitting aligning with a sealing surface on said poppet valve, a second sealing surface on said poppet valve aligning with a second sealing surface on said inlet fitting, an annular resilient seal ring encircling said poppet valve in alignment with the second



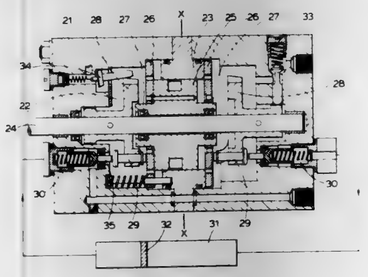
sealing surface on said poppet valve, and means for moving said poppet valve to seal said one sealing surface on the inlet fitting and poppet against each other and to seal said seal ring between said two second sealing surfaces, in combination: shroud means encircling said seal ring and said second sealing surface on said poppet valve and movable relative to said poppet valve, means for moving said shroud means with said poppet valve as said poppet valve is moved to the open position, and means for retaining said seal ring concentrically enclosed in said shroud means as said poppet valve is opened and closed.

4,408,633

HYDRAULIC CONTROL VALVE MECHANISM

Norman J. Lee, Yapton, England, assignor to Matburn (Holdings) Limited, London, England

Filed Mar. 31, 1981, Ser. No. 249,501
Claims priority, application United Kingdom, Apr. 1, 1980, 8010927; Dec. 9, 1980, 8039450
Int. Cl.³ F15B *13/06*
U.S. Cl. 137—596.2 **5 Claims**



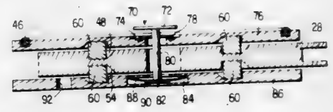
1. A hydraulic control valve comprising a valve body having a valve chamber therein an intermediate member dividing the valve chamber into two; a plurality of control outlets leading from the valve chamber on opposite sides of the intermediate member each of the said outlets being adapted to be connected to a device to be operated by hydraulic pressure supplied from the valve chamber; a check valve located in each one of the control outlets, each said check valve being biased to a closed position; a pair of inlet valves through which liquid can enter the valve chamber on opposite sides of the intermediate member, the said valves being biassed to a closed position; a pair of relief outlet valves leading out of the valve chamber on opposite sides of the intermediate member, and also being biassed to a closed position; a selector plunger located on each side of the intermediate member, each of the selector plungers being movable to an angular setting in which it registers with a check valve and is displaceable to open the check valve by the pressure of liquid entering the valve chamber through one of the inlet valves; and means for opening a selected inlet valve whereby liquid under pressure can enter the valve chamber to displace a selector plunger registered with a check valve so as to open that check valve and permit liquid pressure to flow from a hydraulic device to be operated.

4,408,634

GATE STOP VALVE

Roy N. Peacock, Lafayette, Colo., assignor to HPS Corporation, Boulder, Colo.

Filed Nov. 5, 1981, Ser. No. 318,459
Int. Cl.³ F16K *3/02*
U.S. Cl. 137—630.12 **11 Claims**



1. A gate valve comprising:

(a) a casing having an inlet aperture and an outlet aperture at least one of which has a valve seat,

(b) an actuator member reciprocal in said casing transversely of said apertures and having two oppositely disposed faces.

(c) means for imparting reciprocation to said actuator member,

(d) two plate members flanking said two oppositely disposed faces of said actuator member, at least one of said plate members being a valve head for cooperation with said valve seat, and

(e) rectangular rotative means positioned between said actuator member and said two plate members for moving said two plate members from an open to a closed and latched position as said actuator member is reciprocated.

4,408,635

HYDROPNEUMATIC PULSE INTERCEPTOR

Martin R. Packer, Rocky Mount, N.C., assignor to Liquid Dynamics, Inc., Rocky Mount, N.C.

Continuation of Ser. No. 121,517, Feb. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 100,697, Dec. 5, 1979, abandoned. This application Nov. 2, 1981, Ser. No. 317,185
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—30 **4 Claims**

1. A liquid flow smoother comprising in combination:

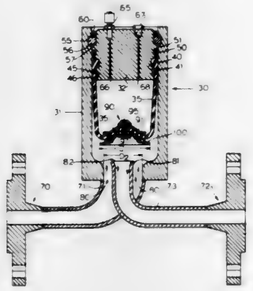
(a) a hollow cylindrical vessel having one end substantially closed and the opposite end closed by a removable circular base member extending across and closing said opposite end;

(b) gas valve means associated with said substantially closed end of said vessel and having a channel formed in said gas valve means to permit entry of a gaseous fluid within said vessel;

(c) a flexible membrane member suspended within said vessel immediately adjacent said base member and having an outer peripheral edge portion held in clamped sealing relation between said vessel and base member and establishing within said vessel and on one side of said membrane member a first fluid-type chamber communicating with said channel and valve means and holding a com-

pressible fluid admitted through said channel and valve means and held at a predetermined pressure within said chamber, said membrane member having an outer peripheral portion within said clamped peripheral edge portion which assumes a folded position when said membrane member is inoperative and flexes from such folded position when said membrane member is operative;

(d) an annular tubular inlet portion surrounding and concentric with an outlet port formed by a tube having a flared trumpet-like entrance within said vessel, said ports being formed and centrally located in said removable base member enabling a substantially incompressible fluid to flow into said vessel through the inlet portion, while within said vessel enabling said incompressible fluid to turn towards selected portions of said membrane on the side thereof opposite the said one side of said membrane establishing said chamber and thereafter without any flow restrictions between said ports exit through said outlet port, said membrane being adapted when operative to move in a first direction in a limited amount towards said gaseous fluid chamber and when inoperative being adapted to



move in an opposite second direction toward said inlet and outlet ports to an inoperative position in correspondence with the changing character of said fluid flow; and

(e) an anti-extrusion valve plate centrally located on said membrane member on the said opposite side thereof and adapted when said membrane member is moved to its inoperative position toward said inlet and outlet ports to be supported on said base member within said vessel and provide a cover over both said ports to prevent extrusion of said membrane member therethrough and to simultaneously establish an unrestricted flow path between said ports and partially bounded by said valve plate whereby the fluid entering said vessel through said inlet port is under all positions of said membrane member provided with an unrestricted flow path to flow out of said vessel through said outlet port, said valve plate being shaped so as to direct incoming liquid flow impinging thereon when said membrane is in said inoperative position and said plate is over said ports, said valve plate being further adapted to move towards and rest against said valve means and thereby limit the movement of said membrane in said first direction when said membrane is operative.

4,408,636

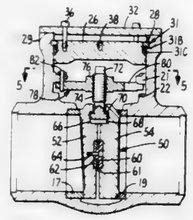
REHEATER ISOLATION DEVICE AND CHEMICAL CONNECTOR

Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, San Mateo, Calif.

Filed Aug. 13, 1982, Ser. No. 407,792
Int. Cl.³ F16L *55/10, 55/16*
U.S. Cl. 138—94 **2 Claims**

1. A combination pipe coupling, clean out and isolation device comprising in combination:

a. a "T" fitting having opposite arms adapted to couple two pipes together in end-to-end relationship,
b. a side arm extending at right angles to said arms, said side arm having a terminal end,
c. valve seats in each of said opposite arms, said seats being set at an angling relationship to each other, forming a "V" shaped opening therebetween with the open side of the "V" facing said side arm,
d. an annular, internal recess in said side arm,
e. a sealing plate forming part of said combination, said sealing plate being adapted to be placed in said side arm



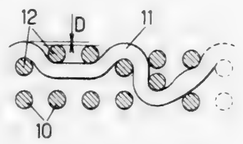
and held in place by ring segments fitting into said recess and said plate,
f. a flange at the terminal end of said side arm, said flange being adapted to fasten to a clean out connector,
g. internal, inwardly extending projections within said side arm,
h. complementary split disc halves fitting into said "V" shaped opening between the valve seats,
i. a spider engaging the underside of said projections, and
j. screw means carried on said spider, said screw means engaging said split disc halves and forcing them into sealing relationship with said valve seats.

4,408,637

DOUBLE LAYER FORMING FABRICS FOR USE IN PAPER MAKING MACHINES

Robert Karm, Selestat, France, assignor to Martel, Catala & Cie, Selestat, FranceA

Filed Sep. 29, 1980, Ser. No. 191,837
Claims priority, application France, Nov. 19, 1979, 79 28501
Int. Cl.³ D03D *15/00, 15/02;* **B21F** *1/10;* **B10D** *39/08*
U.S. Cl. 139—425 A **9 Claims**



1. Multi-layer endless forming fabric for paper-making machine and the like, comprising at least:
an upper layer of shute threads located on the material forming side of the fabric,
a lower layer of shute threads located on the wear or machine side of the fabric,
and longitudinal warp threads interwoven with the layers of shute threads, said fabric being woven with an aggregate warp ratio of at least 6 threads and an aggregate shute ratio of at least 12 strands,
wherein the binding points of the warp threads with the lower layer are distributed in a satin weave pattern, the ratio of which is equal to the aggregate warp ratio;
wherein the binding points of the warp threads with the shute threads of the upper layer are distributed according to a pattern having a cumulated ratio equal to the aggregate warp ratio, but constituted by juxtaposed weaving patterns each with a warp ratio lower than 6; and wherein there are at least two shute threads of the upper layer between each point where a warp thread comes down through the upper layer and another point farther on where it comes up again through that same upper layer.

4,408,638

FORMING FABRIC

Jan T. Ström, Gusum, Sweden, assignor to Gusums Bruk AB, Gusum, Sweden

Filed Jan. 28, 1981, Ser. No. 229,281
Claims priority, application Sweden, Feb. 12, 1980, 8001108
Int. Cl.³ D03D *15/02*
U.S. Cl. 139—425 A **5 Claims**



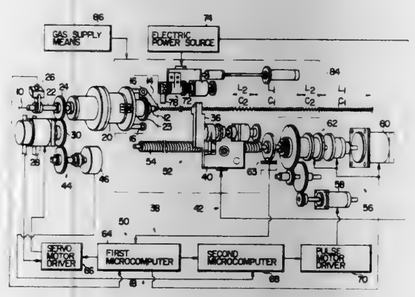
1. Endless form of fabric or screen for paper making, wherein the fabric or screen consists of one layer of first threads extending in the longitudinal direction in which the fabric is moving in the machine and one layer of second threads extending in a direction transverse to said longitudinal direction, comprising said first threads being offset from the upper plane of the screen between two longitudinally spaced points, one of said points being the position where the said first threads are passed down between two adjacent second threads, the second of said points being the position where said first threads are passed up again between another two of said second threads, each of said first threads passing over at least two of said second threads between said points, whereby cavities are formed between said two points and the area of the screen is larger than the sum of the areas of a projection of the areas of the threads onto a plane parallel with the screen.

4,408,639

COIL MANUFACTURING APPARATUS

Yoshihiro Hayama, Fujisawa, and Yuukou Hosokawa, Yokosuka, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 23, 1980, Ser. No. 220,235
Claims priority, application Japan, Dec. 26, 1979, 54-169784; May 14, 1980, 55-63636
Int. Cl.³ B21F *3/04*
U.S. Cl. 140—71.5 **9 Claims**



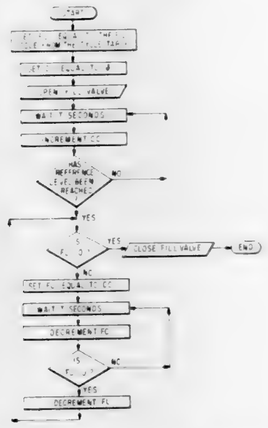
1. A coil winding apparatus for manufacturing a wire coil having a leg portion at each end comprising:
a longitudinally moveable mandrel wire;
guide means operatively associated with said mandrel wire for guiding said mandrel wire during said longitudinal movement;
supply means for supplying filament wire to said mandrel wire and including means defining a filament wire feed path for feeding said filament wire to said mandrel wire between an initial position spaced from said mandrel wire to a final position downstream of said initial position, wherein said filament wire comes into contact with said mandrel wire at said final position;
coiling means operatively associated with said filament wire supply means for coiling said filament wire around said mandrel wire;
revolving means connected to said coiling means for revolving said coiling means around said mandrel wire between a coiling start time and a coiling end time;
means operatively connected to said revolving means for stopping said revolving means at said coiling end time;
leg forming means for forming said leg portion disposed between said initial and final positions of said filament wire feed path and reciprocably moveable between a starting position wherein said leg forming means is in a disengaged relationship with said filament wire and an end position wherein said leg forming means is in a filament wire engaging position to deflect said feed path and thus said filament wire towards said mandrel wire to lay said filament wire substantially parallel to said mandrel wire between said final position of said feed path and said end position of said leg forming means; and
transfer means for longitudinally moving said mandrel wire and including first and second holding means for holding said mandrel wire, and driving means operatively connected to said first and second holding means and said leg forming means for (a) moving said first holding means into a holding relationship with said mandrel wire at said coiling start time, (b) longitudinally moving said first holding means while in said holding relationship at a predetermined rate of speed away from said guide means between a first position corresponding to said coiling start time and a second position downstream of said first position corresponding to said coiling end time, (c) stopping said longitudinal movement of said first holding means at said coiling end time, while (d) simultaneously moving said second holding means into a holding relationship with said mandrel wire upstream of said first holding means when said first holding means is at said second position, the coiled filament wire thereby being disposed between said first and second holding means, (e) releasing said first holding means from its holding relationship with said mandrel wire at said second position and moving said released first holding means in a direction towards said guide means to a third mandrel wire holding position upstream of and separated from said second holding means, (f) moving said leg forming means from said starting position to said end position when said first holding means is in said third mandrel wire holding position to form said leg portion and retaining said leg forming means in said end position until said coiling start time wherein it is moved from said end position to said starting position, and (g) releasing said second holding means from said holding relationship with said mandrel wire, whereby
said first holding means is once again holding said mandrel wire at said coiling start time thereby permitting said transfer means to once again execute steps (a) through (g) to form a wire coil having a leg portion at each end.

4,408,640

METHOD AND APPARATUS FOR FILLING A CONTAINER

Alfonse N. Voza, Jersey City, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 26, 1981, Ser. No. 314,604
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—1 **3 Claims**



1. A method for filling a container with a predetermined volume of liquid, there being a controllable liquid flow valve intermediate a source of the liquid and the container, the method comprising the steps of:
(a) opening the valve;
(b) providing a signal when an elemental volume of the liquid is in the container;
(c) timing the interval between the valve opening and the signal provision;
(d) providing an indication of said predetermined volume as a multiple of said elemental volume;
(e) timing a period commencing with the providing of said signal and terminating at said multiple less one times the interval determined in step (c); and
(f) closing the valve at the termination of the period timed in step (e).

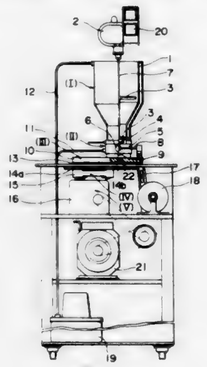
4,408,641

APPARATUS FOR FILLING VISCOUS SUBSTANCES INTO HARD GELATIN CAPSULES

Taizo Yamamoto, Osaka, and Tetsuhisa Ishida, Ando, both of Japan, assignors to Nippon Elanco Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1981, Ser. No. 265,054
Claims priority, application Japan, May 22, 1980, 55-68636
Int. Cl.³ B65B *43/60*
U.S. Cl. 141—82 **9 Claims**

1. An apparatus for filling viscous substances into hard gelatin capsules, comprising:
(a) a hopper member capable of storing viscous substance to be filled at a predetermined temperature and under agitation,
(b) a pumping mechanism which is communicated with the bottom portion of said hopper member and is kept at the same constant temperature as that of said hopper member, and is equipped with filling nozzle means capable of weighing and discharging the viscous substance to be filled by a predetermined amount at a predetermined cycle,
(c) a capsule body loading board which aligns and accommodates, in capsule body accommodating holes formed therein, a plurality of hard capsule bodies into which the viscous substance is to be filled,
(d) a reciprocating feed mechanism for the capsule body loading board, which transfers said capsule body loading board from a preliminary operating station to a filling station and returns said capsule body loading board back to the preliminary operating station again after completion of the filling, and
(e) an intermittent rotary mechanism for the capsule body loading board, which causes said capsule body accommodating holes formed in said capsule body loading board to



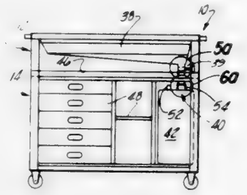
correspond to the filling cycle of the pumping mechanism at said filling station thereby to sequentially align said accommodating holes with said filling nozzle means;
said reciprocating feed mechanism for the capsule body loading board further including an arm member associated with a pivoting mechanism therefor, and pivotally fitted, at its one end, over an output shaft of an index unit driven by a motor, and pivotally supporting, at its other end, an index table on which said capsule body loading body is detachably mounted for transferring said capsule body loading board between said preliminary operating station and said filling station.

4,408,642

PORTABLE WORKBENCH

Thomas M. Jeruzal, 6983 Lafayette, and Dennis G. Koski, 6484 Silvery La., both of Dearborn Heights, Mich. 48127

Filed Jun. 1, 1981, Ser. No. 268,689
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—286 A **16 Claims**



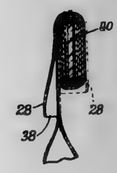
8. A portable workbench, comprising:
a cabinet assembly comprising a lower cabinet assembly supported by a plurality of wheels and an upper removable work section,
said upper section including a work surface having perforations therein for permitting liquid to drain therethrough, and
a self-draining basin, having a drain opening and mounted under said work surface for receiving said liquid drained through said work surface and directing said liquid to said drain opening,
said lower cabinet assembly having a removable reservoir disposed below said self-draining basin for collecting liquid drained through said drain opening and storing said liquid for subsequent disposal, said lower cabinet assembly having a second work surface having a drain assembly in communication with said reservoir, said second work surface adapted to support workpieces when said upper section is removed.

4,408,643

PLASTIC BAGS HAVING A PRESSURE RESISTANT CLOSURE

Louis L. Laske, Grayslake, and Donald R. Harreld, Antioch, both of Ill., assignors to Vonco Products, Inc., Lake Villa, Ill.

Filed Feb. 6, 1981, Ser. No. 232,139
Int. Cl.³ B65D *33/16, 33/24*
U.S. Cl. 383—70 **29 Claims**



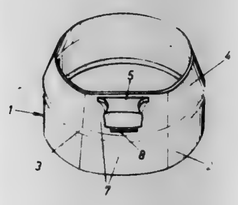
1. A flexible plastic bag for holding gas, liquid, or solid contents and capable of withstanding external forces applied to the bag comprising:
first and second sheets of plastic secured together to form a bag having a body portion for said contents and an open end in an end portion, said open end comprising a stiffener strip secured to one of said sheets;
a closure member secured to the exterior of said bag forming a pocket having an opening facing away from said bag open end, said pocket opening extending across at least a portion of said bag substantially parallel to and spaced from said open end far enough so that said end portion may be folded over said stiffener strip upon itself from said open end at least two times; and
said pocket being capable of being turned inside out over said end portion folded over said stiffener strip, the end of the pocket toward said bag open end being closed when said end portion is in condition for said pocket being turned inside out.

4,408,644

DRINKING CUP

Gustav I. Svantesson, Vargarda, Sweden, assignor to Svantesson & Andersson Mekaniska (SAMEK) AB, Vargarda, Sweden

Filed Dec. 8, 1981, Ser. No. 328,708
Int. Cl.³ A47G *19/22*
U.S. Cl. 150—55 **6 Claims**



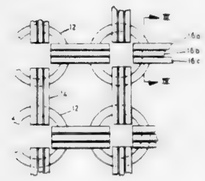
1. An improved drinking cup manufactured from a resilient and flexible synthetic resin material and intended for repeated use, comprising a lower section, at least one upper section, said upper section being essentially in the shape of a truncated cone which cone-shaped section may be turned downwards and folded upon the lower section to reduce the volume of the cup, and a handle, said handle provided on said upper section of the cup, the improvement comprising an essentially straight portion in the upper section of the cup adjacent the handle, said straight portion imparting to the upper section a slightly oval shape serving to facilitate drinking from the cup and a rigid portion of said upper section of the cup, said handle formed at said rigid portion.

4,408,645

LAMINATED WEARING PLATE ASSEMBLY FOR TIRE CHAIN

Hans O. Dohmeier, 24 Shipston La., Victoria, Johannesburg, South Africa

Filed May 24, 1982, Ser. No. 381,626
Claims priority, application South Africa, May 22, 1981, 81/3438
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—172 **6 Claims**



1. A tire protective chain to be applied to a rubber tire of an earth-moving machine and the like, comprising a closed, substantially uniform network of stiff metal wearing plates that will be substantially perpendicular to the surface of a tire in use and stiff metal connectors that are in the form of closed loops that will be substantially parallel to the surface of the tire in use and that interconnect the wearing plates by being threaded through at least one opening in each wearing plate, each wearing plate being connected to two connectors that are themselves connected to wearing plates only and each connector being connected to at least three wearing plates, the chain having a central tread portion and flanking sidewall portions, each wearing plate of the tread portion comprising a laminated assembly of at least two plate elements each of which is substantially rectangular and has at least one opening through which a connector is threaded, the opening being closer to one long edge than the other, each plate element having a thickness of between 6 and 10 mm and a hardness adjacent the surface of excess of 50 Rockwell C-scale for at least 40% of the thickness of the plate with the remaining core portion having a hardness below 50 Rockwell C-scale.

4,408,646

WHEELED VEHICLE SUPPORT APPARATUS

Robert W. Forsyth, 1267 W. 9th St., Upland, Calif. 91786

Filed Nov. 2, 1981, Ser. No. 317,559
Int. Cl.³ B60C *27/00*
U.S. Cl. 152—179 **6 Claims**

1. A wheeled vehicle support apparatus comprising:
at least three elongated tread segments; means detachably connecting adjacent ends of said tread segments together to provide a continuous and endless circular tread;
each of said tread segments having a plurality of individual track block members hingably coupled together;
each of said track block members having ground engaging means on its exterior surface and a tire engaging means on its internal contact surface;
each of said track block members is of U-shaped cross sec-

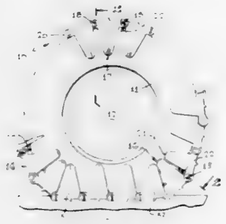
tion having a flat base with upright spaced apart guide horns; and

each of said track block members includes an internal contact surface configured with a pair of cone-shaped masses having opposing apexes terminating at the center line vertex.

6. A wheeled vehicle support apparatus comprising:

at least three elongated tread segments; means detachably connecting adjacent ends of said tread segments together to provide a continuous and endless circular tread;

each of said tread segments having a plurality of individual track block members hingably coupled together;



each of said track block members having ground engaging means on its exterior surface and a tire engaging means on its internal contact surface;

each of said track block members is of inverted T-cross section having a flat base with a single guide horn occupying the void between a dual wheel arrangement; and

each of said track block members includes an internal contact surface configured with a pair of cone-shaped masses having opposing apexes terminating at the center line vertex.

4,408,647

VEHICLE WHEEL

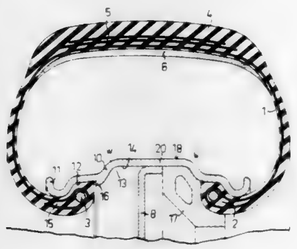
Dieter Kuhn, Burgwedel; Heinz-Dieter Rach, Garbsen; Udo Frerichs, and Henner Pieper, both of Langenhagen, all of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,336

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019742

Int. Cl.³ B60B *21/10*

U.S. Cl. 152—330 RF **4 Claims**



1. A vehicle wheel having a rigid wheel rim for mounting thereon a pneumatic tire having relatively flat configuration with height/width ratio ranging from approximately 80% to 25% and having tire beads with pull-resistant cores movable over wheel flanges, said wheel rim including an outer unitary body which collectively extends substantially in the circumferential direction of said tire and comprises in combination therewith:

a middle portion of said unitary body of the rigid wheel rim which extends substantially in the circumferential direction of said tire;

respective transversely projecting flanges of said unitary body which are arranged laterally on each side of said middle portion integral therewith and extend substantially transversely thereto and radially inwardly to form a recess between said flanges on the inner periphery of said middle portion, said inner periphery of said middle portion forming the base of said recess, said recess having a width corresponding at least to the width of said respective tire beads, and serving to temporarily receive same during mounting of said tire; said transversely projecting flanges terminating laterally outwardly between

respective laterally outwardly located wheel flanges of said unitary body which extend along inner space of the tire to permit bulging of the tire laterally outwardly during emergency running operation after leakage of air therefrom free of danger of tire destruction therewith;

respective seating surfaces of said unitary body, for said respective tire beads, located between said transversely projecting flanges of said middle portion and said laterally outwardly located wheel flanges, said seating surfaces being located on the inner periphery of said outer unitary body and adjacent to said recess, said laterally outwardly located wheel flanges extending radially of said seating surfaces, said laterally outwardly located wheel flanges securing said tire beads from sliding laterally from said seating surfaces, said base of said recess having a larger diameter than do said seating surfaces of said unitary body; and

respective mantle surfaces on the outer periphery of said outer unitary body between said transversely projecting flanges and said middle portion adjacent to said recess, said mantle surfaces forming essentially planar supporting surfaces for the zenith portion of said tire during emergency operation thereof, that part of the outer periphery of said middle portion between said mantle surfaces also being, at least partially, embodied as an overall supporting surface considerably increased in axial width for said zenith portion of said tire during emergency operation of said tire, said supporting surface of said middle portion being located essentially at the level of said mantle surfaces collectively as a single, integral rim in one piece.

4,408,648

TUBELESS RADIAL PLY TIRE FOR HEAVY-DUTY VEHICLES

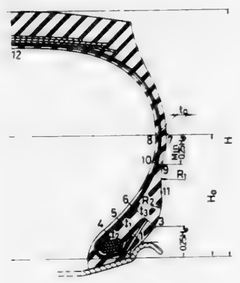
Junichi Ohashi, Mishinomiya, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed May 6, 1982, Ser. No. 375,643

Claims priority, application Japan, May 17, 1981, 56-74707

Int. Cl.³ B60C *15/00, 13/00, 9/00*

U.S. Cl. 152—353 C **1 Claim**



1. A tubeless radial ply tire for heavy-duty vehicles to be mounted on a frusto-conical seat rim comprising a carcass composed of at least two cord plies of orgaic fiber and a belt of at least two plies of metallic cords, wherein when said tire is mounted on a standard rim and inflated to a design inner pressure, a height H_o at the maximum section width point (7) of the tire from the rim seat is in the range of 40 to 60% of the section height H at the outside diameter point of the tire; assuming that the thickness of a normal drawn from the maximum section width point to the tire inside point (8) is t_o, dimensions at the bead portion are determined so that a thickness t_1 of a normal from the bead outside point (1) at the rim flange height to the tire inside point (5) is 2.5 or more times the thickness t_o, a thickness t_2 of a normal from the rim base diameter point (2) at the inner end of the flange to the tire inside point (4) is 100 to 110% of the thickness t_1, and a thickness t_3 of a normal from the 0.25 H_o point (3) spaced apart 0.25 H_o from the rim base diameter point (2) on the maximum section width side to the tire inside point (6) is 90 to 100% of the thickness t_1; a thin sidewall region (7-9) having substantially the same thickness as t_o extends from the maximum section width point (7) toward the bead portion in a dimension of at least 0.25 H_o in height up to the min. 0.25 H_o point (9), said region being defined by a radius of curvature centered on the inside of the tire (a positive curve); and a transitional region (9-11-3) extending from the minimum 0.25 H_o point (9) in the sidewall portion to the bead portion has progressively increasing thicknesses, and is shaped so that when the tire is in as-molded state in a vulcanization mold or in a free state after releasing from the mold, its sectional contour defines a smooth line into which two curves or arcs having a radius of curvature R_1 centered on the outside of the tire (a negative curve) and a radius of curvature R_2 centered on the inside (a positive curve) blend whereas when the tire is mounted on the standard rim and inflated to the inner pressure, its sectional contour defines a positive curve or a straight line.

4,408,649

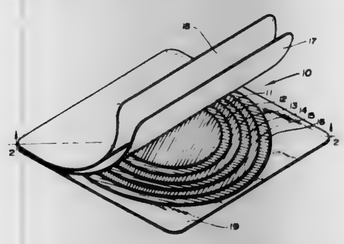
TIRE REPAIR UNIT

Donald E. Litterini, Johnstown, Ohio, assignor to Technical Rubber Company, Inc., Johnstown, Ohio

Continuation of Ser. No. 166,024, Jul. 7, 1980, abandoned. This application Jan. 18, 1982, Ser. No. 340,404

Int. Cl.³ B60C *21/00*

U.S. Cl. 152—367 **11 Claims**



1. A tire repair unit comprising a plurality of sheet-form, rubberized cord plies assembled in superposed, stacked relationship with opposed surfaces of adjacent plies secured in contacting engagement with each ply having a plurality of cords that are all disposed in parallel relationship to each other and are formed in a planar layer extending substantially across said ply and adjacent plies arranged with the cords thereof oriented in predetermined relationship to each other, each of said plies being of a configuration wherein the cords thereof disposed laterally outward with respect to a central longitudinal axis are of progressively shorter length in proportional relationship to increasing displacement from the longitudinal axis, a first one of said plies being of predetermined size in surface area with each succeeding ply disposed in stacked relationship thereto being progressively larger in surface area with said plies being oriented with respect to each other whereby each ply disposed adjacent a next smaller size ply has a peripheral marginal edge portion extending a distance outwardly of the entire peripheral edge of that next adjacent smaller size ply, and an uncured rubber layer disposed in overlying relationship to the plies assembled in superposed stacked relationship at the side thereof adjacent said first ply, said uncured rubber layer being of a size in area to be at least coextensive with the largest of said plies for direct bonding of all of said first one of said plies and direct bonding of the peripheral marginal edge portion of each of the other of said plies to a tire casing.

4,408,650

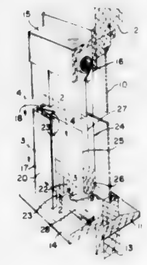
ROLL-DOWN WINDOW INSULATION

John T. Verch, Rice Lake, Wis., assignor to Nichols-Homeshield, Inc., Aurora, Ill.

Filed Apr. 8, 1982, Ser. No. 366,525

Int. Cl.³ E06B *9/08*

U.S. Cl. 160—121 R **3 Claims**



1. A window insulating multiple film curtain installation comprising a top mounting roller for the film curtain, a rigid bottom bar for the film curtain, said curtain including at least two films spaced apart and secured at the top to the roller and at the bottom engaged with said bar, a guide track at each side edge of the film curtain, each track having opposite guide walls, said film curtain operating vertically in said guide tracks, and a pair of flexible sealing members in each of said guide tracks for association with the respective films, said sealing member being deflected by said rigid bar as the film curtain is moved downwardly in said tracks with the films entering behind the deflected sealing members as the bar passes and then pressed by the sealing member against a guide wall of the track, at least one intermediate film disposed between said two films and which floats freely between said sealing members.

4,408,651

HOT CHAMBER DIE-CASTING

Dennis Smedley, Walsall, and Noel C. Spare, Nauton Beauchamp, nr. Pershore, both of England, assignors to Promagco Limited, Staffordshire, England

Filed Mar. 3, 1980, Ser. No. 126,352

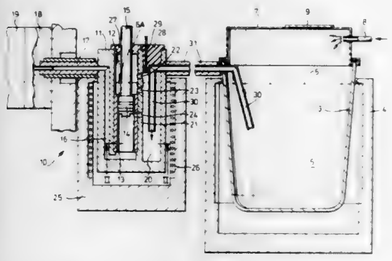
Claims priority, application United Kingdom, Mar. 21, 1979, 7909934

Int. Cl.³ B22D *17/04*

U.S. Cl. 164—316 **3 Claims**

1. A gooseneck assembly for hot chamber die-casting, said assembly comprising a shot cylinder with an upright axis, an injection duct leading in a direction from the bottom of said cylinder upward along a side of said cylinder to a substantially horizontal nozzle which extends in a direction away from said cylinder and which is provided with a connection to a die, a separate reservoir of molten metal which is closed from the atmosphere by a closure member which is removable from the top of said reservoir independently of said cylinder whereby said reservoir can be serviced without removing said cylinder, means connecting said reservoir to the interior of said cylinder,

means for supplying molten metal to the interior of said reservoir from a separate source of molten metal, means for maintaining a common protective atmosphere in the top of said reservoir and in the top of said cylinder, a piston which is movable downwardly in said cylinder from an upper to a lower position to perform a working stroke and to displace a shot of said molten metal out of said cylinder through said injection duct and nozzle into said die, and means for moving said piston between said upper and lower positions wherein said cylinder and said reservoir are formed as an integral unit with a common bottom wall and with said reservoir positioned



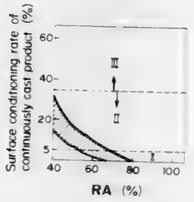
only at one side of said cylinder remote from said injection duct, said cylinder interior and said reservoir interior being separated by a partition wall which extends upwards from said bottom wall and which is provided with a first passageway interconnecting said reservoir interior and said cylinder interior at a position spaced above the bottom of said reservoir and adjacent to but below said piston when in said upper position, a second passageway in said partition wall interconnecting said reservoir interior and said cylinder interior at a position spaced below the top of said reservoir and above said piston when in said upper position.

4,408,652

METHOD OF CONTINUOUSLY CASTING NICKEL CONTAINING STEEL WHEREIN SURFACE CRACKS ARE PREVENTED

Chiaki Ouchi, Yokohama, and Tetsuya Sampei, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 22, 1981, Ser. No. 286,032
Claims priority, application Japan, Jul. 23, 1980, 55-99833
Int. Cl.³ B22D *11/00*; C22C *38/06*
U.S. Cl. 164—459 **7 Claims**



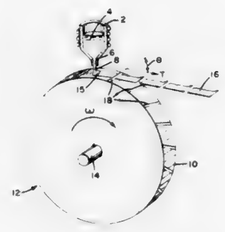
1. An improved method of continuously casting nickel-containing steel wherein the formation of surface cracks is prevented comprising continuously casting molten nickel steel in the form of a continuous casting, the improvement wherein said molten nickel-containing steel comprises less than 0.0020% S, less than 0.0045% N, Ca in an amount from 0.0020 to 0.0070%, Ni in an amount from 5.5 to 10%, the remainder being Fe and unavoidable impurities.

4,408,653

METHOD FOR MAKING SERRATED METAL RIBBON

Louis F. Nienart, Bloomsbury; Richard G. Fehrman, Mine Hill, both of N.J., and Chung-Chu Wan, Diamond Bar, Calif., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 9, 1981, Ser. No. 319,515
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 **5 Claims**



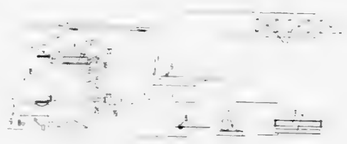
1. In a method of melt spinning or casting metal ribbon wherein a stream of molten metal is impinged on a chill surface and is ejected from the surface by centrifugal force in the form of a metal filament, the improvement comprising providing at least one groove in the chill surface, the longitudinal axis of said groove run transverse to and is orientated at an angle between about 25° and 70° with respect to the direction of travel of the chill surface.

4,408,654

ACCUMULATOR FOR STORING HEAT OR COLD

Cornelis Doomernik, Berghem, Netherlands, assignor to Doomernik B.V., Netherlands

Filed Jul. 2, 1980, Ser. No. 164,540
Claims priority, application Netherlands, Jul. 5, 1979, 7905277
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—10 **5 Claims**



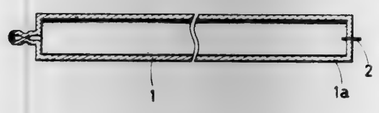
1. An accumulator for heat or cold, comprising a container filled for the greater part with a layer of buffer material melting at a constant temperature and a considerably smaller layer of heat transfer liquid having a lower melting point than the buffer material and a specific gravity lower than both that of the solid and that of the liquid buffer material, said transfer liquid being virtually immiscible with the buffer material, the container having a conduit for discharging heat transfer liquid from said layer at a location near the top of the container to devices outside the accumulator, a supply conduit for returning heat transfer liquid to a distributor near the bottom of the layer of buffer material for causing the transfer liquid to flow upwardly in direct contact with the buffer material, at least one coalescer comprising a mat of knitted threads or wires united into a spatial network between the buffer material and the outlet for the heat transfer liquid for retaining solid and liquid particles of the buffer material which otherwise may be entrained with the discharged transfer liquid, said buffer material being water or a eutectic aqueous solution of one or more salts having a melting point less than or equal to 0° C.

4,408,655

HEAT PIPE

Michitaka Hashimoto, and Koichiro Fukui, both of Tochigi, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Filed Dec. 14, 1981, Ser. No. 330,474
Claims priority, application Japan, Nov. 18, 1981, 56-185906
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—104.27 **5 Claims**



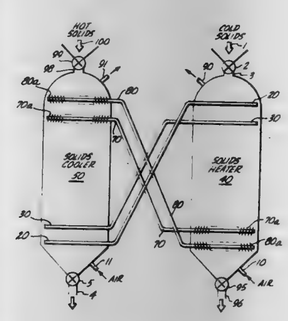
1. A heat pipe comprising an iron container having enclosed therein an aqueous solution of a vanadate as a working liquid.

4,408,656

COUNTERCURRENT HEAT EXCHANGER FOR TWO STREAMS OF SOLIDS USING HEAT PIPES

Octave Levenspiel, and Riley T. Chan, both of 1634 NW. Crest Pl., Corvallis, Oreg. 97330

Filed Sep. 3, 1981, Ser. No. 299,296
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **7 Claims**



1. An apparatus for transferring heat continuously in countercurrent flow from a stream of relatively hot solid materials to a stream of relatively cold solid materials, both streams being gravity fed, comprising:

a cooling section for containing said relatively hot solid materials which are passing therethrough, said cooling section having a hot solids inlet and a cooled solids outlet and having a plurality of heat pipes arranged therein for contacting a cascade of said relatively hot solid materials, whereby heat is transferred from said relatively hot solid materials to said heat pipes; a heating section for containing said relatively cold solid materials which are passing therethrough, said heating section having a cool solids inlet and a heated solids outlet and having continued portions of said plurality of heat tubes arranged therein for contacting a cascade of said relatively cold solid materials, whereby heat is transferred from said heat tubes to said relatively cold solid materials;

each of said heat pipes forming an enclosed vessel containing a heat transfer fluid which is vaporized in the portion of the heat pipe located in said cooling section and condensed in the portion of the heat pipe located in said heating secition, thereby transferring heat from the stream of hot materials to the stream of cold materials said heat pipes further being arranged so that those of said heat pipes positioned in said cooling section at the top thereof transfer heat to a position in said heating section at the bottom thereof.

5. A method for transferring heat in an essentially countercurrent fashion from relatively hot solid materials to relatively cold solid materials, comprising:

cascading said relatively hot solid materials flowing downwardly in a first vessel over a plurality of heat pipes; said heat pipes each forming an enclosed vessel containing a heat transfer fluid which is vaporized by heat transferred thereto from said cascading of hot materials thereover;

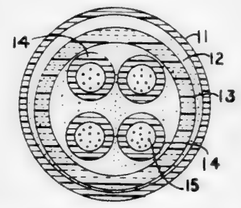
cascading said relatively cold solid materials flowing downwardly in a second vessel over a different portion of said heat pipes wherein said heat transfer fluid is condensed releasing heat which is transferred to said cold solid material, said heat pipes being arranged so that heat from solid material adjacent the inlet to said first vessel is transferred to material adjacent the outlet of said second vessel; whereby countercurrent heat transfer occurs between said relatively hot and cold solid materials.

4,408,657

METHOD FOR TRANSPORTING LOW TEMPERATURE HEAT LONG DISTANCES

Paul F. Pugh, 4082 Sequoyah Rd., Oakland, Calif. 94605

Filed Jan. 19, 1981, Ser. No. 225,868
Int. Cl.³ F28D *13/00*
U.S. Cl. 165—1 **6 Claims**



1. A method for transporting low temperature thermal energy underground from distant geothermal, solar, or waste heat processing plants by means of a system comprising;

an air compressor which compresses ambient air to 100 to 400 pounds per square inch gauge pressure with a controlled specific heat of said air from 0.1 to 0.5;

said compressed air passing through a heat exchanger which raises the temperature of said air;

said air continuing through one or more pressurizable non-metallic enclosures to a utilization point;

said enclosure being surrounded by an outer dry insulating spacer filled with dry compressed air, and a pressurizeable outer non-metallic enclosure; and

said outer enclosure directly buried in the earth.

4,408,658
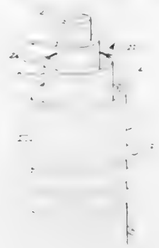
APPARATUS AND METHOD FOR HEATING A MATERIAL IN A TRANSPARENT AMPOULE

Lawrence R. Holland, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1981, Ser. No. 280,151
Int. Cl.³ H05B *1/00*; F27D *11/00*; C30B *1/00, 35/00*
U.S. Cl. 165—2 **4 Claims**

1. In a process for heating a material within a transparent ampoule by radiation through the wall of the ampoule, the improvement of disposing the ampoule within a sleeve, wherein the sleeve is of a material having similar spectral properties to that of said ampoule, passing a cooling gas between the ampoule and the sleeve to chill the outside of the

ampoule while the temperature of the material within the ampoule is raised to thereby increase the temperature of the



material within the ampoule above the strain point of the ampoule without rupturing the ampoule.

4,408,659

HEAT STORAGE MASS FOR REGENERATIVE HEAT EXCHANGE

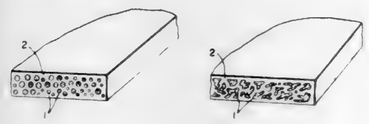
Bernd Hermanns, and Stanislaw Michalak, both of Reichshof, Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Oct. 13, 1981, Ser. No. 311,046

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1980, 3038723

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—10 **2 Claims**



1. A regenerative heat exchanger for cooling hot gas streams and heating cool gas streams with heat extracted from the hot gas streams, the heat exchanger comprising: a fluidized bed through which both the cool and hot gases pass, the fluidized bed including a plurality of individual elements, wherein each element comprises a hollow body having a wall comprising a carrier material having a relatively high thermal conductivity and resistance to destruction by the gases, the wall having a plurality of spaces therein, and a material of high heat storage capacity sealed within the spaces.

4,408,660

VEHICLE HUMIDITY CONTROL APPARATUS FOR PREVENTING FOGGING OF WINDOWS

Shinji Sutoh, Konan; Toshizo Hara, Higashi Matsuyama; Takeshi Harada, Higashi Matsuyama, and Masahiro Eda, Higashi Matsuyama, all of Japan, assignors to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Oct. 20, 1980, Ser. No. 198,429

Claims priority, application Japan, Oct. 20, 1979, 54-135535

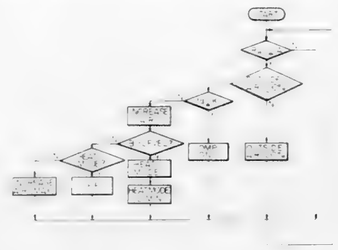
Int. Cl.³ F24F *3/14;* **G05D** *23/00;* **B61D** *27/00*

U.S. Cl. 165—21 **5 Claims**

1. A vehicle interior humidity control apparatus including window inner surface humidity sensor means for sensing a window inner surface humidity and interior air control means, characterized by comprising:

system control means responsive to the humidity sensor means for controlling the air control means in such a manner that when the humidity rises above a predetermined humidity value the air control means increases a proportion of outside air in inlet air to a maximum value;

the air control means further comprising cooling means, the apparatus further comprising air temperature sensor means for sensing an outside air temperature, the system control means being responsive to the temperature sensor means for controlling the air control means in such a manner that when the proportion of outside air is at the maximum value, the humidity is above the predetermined



humidity value and the air temperature is above the predetermined temperature value, the cooling means is energized; and when the air temperature is below the predetermined temperature value the air control means increases an amount of inlet air.

4,408,661

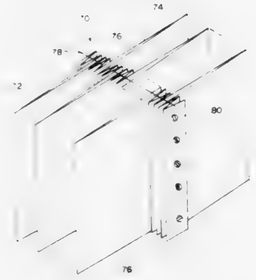
CABINET COOLER HEAT EXCHANGER

George Y. Eastman, Lancaster; Donald M. Ernst, Leola, and Warren E. Thomas, Lancaster, all of Pa., assignors to Thermacore, Inc., Lancaster, Pa.

Filed Sep. 28, 1981, Ser. No. 306,079

Int. Cl.³ F28D *9/00;* **F28F** *1/42*

U.S. Cl. 165—164 **1 Claim**



1. In a stacked plate heat exchanger of the type comprising conductive fins extending into both a first and a second isolated environment and conducting heat between the isolated environments, the improvement comprising:

an assembly of fins, of equal width mounted together in a configuration with the planes of all fins parallel to each other and their edges in alignment, with alternate fins extending into the first environment and the remaining fins extending into the second environment, and with a portion of the length of each fin overlapping the adjacent fins, comprising a continuous folded sheet assembly forming both the heat exchange fins and heat conductive spacers between adjacent fins, by the use of long lengths of heat conductive material between alternately directed folds to form the fins and several short lengths of heat conductive material between alternately directed folds to form the spacers.

4,408,662

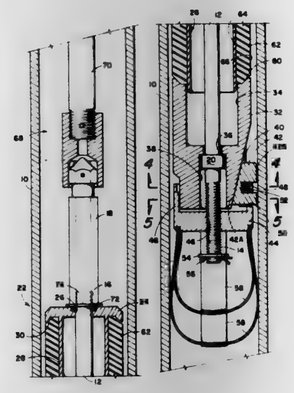
RETRIEVABLE PACKER FOR OIL WELL CASING

Billy G. Shearhart, Nowata, Okla., assignor to Sooner Oil Tools, Inc., Nowata, Okla.

Filed Jul. 27, 1981, Ser. No. 287,367

Int. Cl.³ E21B *33/128, 33/129*

U.S. Cl. 166—124 **5 Claims**



1. A retrievable packer for the casing of a well comprising:

an elongated central shaft being threaded at the lower end and having means at the upper end for attachment of insertion or retrieval tools;

an upper body portion providing an upper flange having an opening therein rotatably receiving said shaft and having a downwardly extending tubular sleeve, the outer diameter of the sleeve being less than the outer diameter of the flange portion providing an upper annular gland surface therearound;

a lower body portion having an opening therethrough receiving said shaft, the upper portion of the opening slideably receiving said sleeve, the upper end of the lower body providing a lower annular gland surface, the lower exterior portion of the lower body having a plurality of spaced apart slots therein each having an inner surface which tapers inwardly towards the body lower end;

a slip member slidably positioned in each of said slots in said lower body portion, each slip having an inner tapered surface engaging the slot tapered surface and having an irregular outer surface for non-slidably engaging a casing in which the packer is positioned;

a base plate having a threaded opening therein receiving the threaded portion of said shaft, the upper end of the base plate engaging said slip members; and

a tubular packing gland of elastomeric material received about said sleeve with the upper end thereof in engagement with said upper body portion gland surface and the lower end thereof in engagement with said lower body portion annular gland surface whereby when said shaft is rotated one direction said bottom plate is upwardly advanced to force said slips outwardly to engage the interior of a casing and to compress said packing gland to expand outwardly to sealably engage the interior of a casing and when said shaft is rotated in the opposite direction to move said base plate in the downward direction to release compressive force and said packing gland to allow it to contract and to cause said lower body member to be upwardly displaced relative to said slips whereby said slips are radially inwardly retracted allowing the packer to be removed from the casing.

4,408,663

PROCESS FOR ENLARGEMENT OF ROCK FRACTURES

Peter W. John, An der Wedel 5, 3006 Burgwedel 1, Fed. Rep. of Germany

Filed Sep. 9, 1981, Ser. No. 300,544

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1980, 3037807

Int. Cl.³ E21B *43/263, 43/267*

U.S. Cl. 166—259 **8 Claims**

1. Process for the controlled enlargement of a rock fracture, comprising the steps of

(a) placing an aluminothermic mixture of aluminum and ferric oxide of pumpable grain size having a predetermined concentration distribution of detonation bodies spaced from one another into said fracture;

(b) introducing into said fracture a high pressure fluid which acts as a carrier to place said mixture and said distribution of detonation bodies as said fluid is pumped, whereby said fracture is created and enlarged and a detonation body distribution adapted to a characteristic signal pattern is produced; and

(c) igniting said mixture.

4,408,664

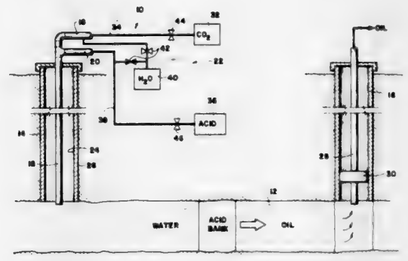
SECONDARY OIL RECOVERY METHOD

Harold P. Santee, Skiatook, Okla., assignor to Jack H. Santee; Robert P. Santee and Catherine A. McAfee, all of Tulsa, Okla.

Filed Sep. 26, 1980, Ser. No. 184,255

Int. Cl.³ E21B *43/20, 43/27*

U.S. Cl. 166—263 **6 Claims**



1. Method of oil recovery from subterranean formations penetrated by at least one injection well and a production well comprising the steps of:

establishing a rate of oil production for the formation as a function of formation characteristics;

injecting into said injection well a bank of water solution containing carbon dioxide gas and a dissolved citric and phosphoric acid solution; and

driving said bank from said injection well to said production well and withdrawing oil from said production well at said established rate of oil production.

4,408,665

IN SITU RECOVERY OF OIL AND GAS FROM WATER-FLOODED OIL SHALE FORMATIONS

Paul N. Dougan, County of Salt Lake, Utah, assignor to Equity Oil Company, Salt Lake City, Utah

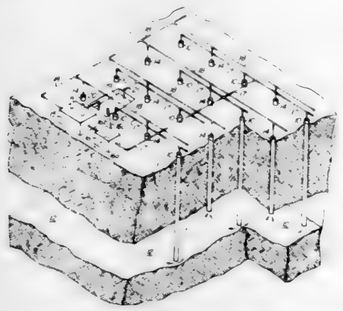
Continuation-in-part of Ser. No. 793,404, May 3, 1977, abandoned. This application Oct. 2, 1978, Ser. No. 947,994

Int. Cl.³ E21B *43/24, 43/40*

U.S. Cl. 166—266 **11 Claims**

1. An in situ process for recovering shale oil and gas from a naturally water-flooded, naturally porous zone in a subterranean oil shale formation, comprising drilling at least one injection borehole and at least one extraction borehole into such a

naturally water-flooded, naturally porous zone of the subterranean oil shale formation; injecting superheated steam through said injection borehole and into said water-flooded zone of the oil shale formation to heat the oil shale and the water in said zone and to convert kerogen in the heated oil shale to shale oil in liquid or vapor form; collecting in and carrying along with the water in said zone, and with water resulting from the condensation of the injected steam, the shale oil and any gas occurring therewith; and withdrawing the mixture of shale oil, gas, and carrier water from the said zone through said extraction borehole.



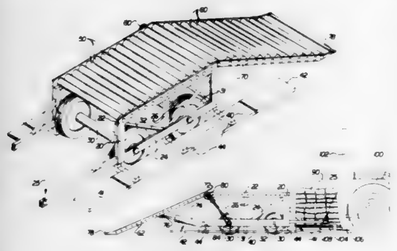
8. A plant for recovering shale oil products from a naturally water-flooded, naturally porous zone of a subterranean oil shale formation, comprising at least one injection borehole extending from the surface of the earth into said zone; at least one recovery borehole extending from the surface of the earth into said zone in spaced relation to said injection borehole; means for generating superheated steam and passing it into said at least one injection borehole; and means for receiving and separating a mixture of shale oil products and carrier water recovered from said at least one recovery borehole.

4,408,666

SOD HANDLING APPARATUS

Charles L. Lawson, 612 Dundee Cir., Melbourne, Fla. 32901

Filed Oct. 28, 1981, Ser. No. 315,744
Int. Cl.³ A01B *45/04, 75/00;* **A01D** *90/10*
U.S. Cl. 172—19 **10 Claims**



1. An apparatus for handling sod, comprising in combination: a frame having wheels for moving along the ground, said frame having a front end adapted to receive a pallet of sod adjacent thereto;

conveyor means coupled with said frame for transporting pieces of sod between the pallet of sod and the ground; and

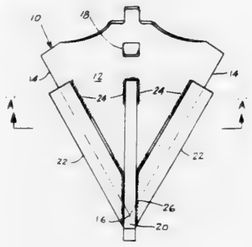
a pair of foot supports attached on either side of said frame for allowing workers handling the sod to move therealong, with said foot supports extending forward from adjacent a rear end of said conveyor means, past said front end of said frame to adjacent the pallet of sod.

4,408,667

AGRICULTURAL SHARES

Henry F. Jarvis, 21 Fermaner St., Karrinyup, Western Australia, Australia

Filed May 28, 1981, Ser. No. 267,807
Claims priority, application Australia, Jun. 20, 1980, PE4344; Dec. 23, 1980, PE7046
Int. Cl.³ A01B *23/00, 39/22*
U.S. Cl. 172—722 **8 Claims**



1. An unworn agricultural share formed of metal having a front and rear and two sides converging together to form a point and a mounting aperture located remote from the point, wherein a first, separate central protective metal length is secured by welding to the front of the share extending rearwardly from the point substantially equidistant from the sides of the point and in alignment with the mounting aperture, and second and third separate lateral protective metal lengths each have a forward end and inner and outer edges extending rearwardly from said forward end are secured by welding to the front of the share, wherein each said lateral protective metal length extends rearwardly from adjacent the point, the forward end of each lateral protective metal length is located adjacent to a side of the central protective metal length and is shaped so as to be substantially parallel with the adjacent side of the center protective metal length, the outer edge of each lateral protective metal length extends generally parallel to a respective side of the share and said outer edges of the lateral protective metal lengths are disposed at least as far outwardly as said respective sides of the share, the inner edge of each lateral protective metal length diverges away from an intermediate point on a side of the central protective metal length such that there is a depression between the central protective metal length and the inner edge of each lateral protective metal length, and said center protective metal length is fixed in position such that its position cannot be adjusted without first breaking the weld by which it is secured to the front of the share.

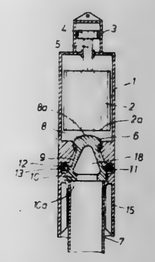
4,408,668

IMPACT TRANSFER DEVICE FOR POWER RAMS

Hans Kühn, Hamburg, and Arno Viecenz, Quickborn, both of Fed. Rep. of Germany, assignors to Koehring GmbH, Hamburg, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,942
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1980, 3006234
Int. Cl.³ B25D *17/06*
U.S. Cl. 173—139 **27 Claims**

1. An impact transfer device for use between a hammer of a pile driver and a pile to be driven, comprising a solid percussion part having a substantially cylindrical configuration and a convex impact surface to be directly hit steel-on-steel by the hammer without interposed buffer means, an intermediate part in the form of a substantially frustoconical tubular piece diverging from that side of said solid percussion part facing away from said impact surface, and a reinforcing base ring formed on that end of said frustoconical tubular wall distant from said



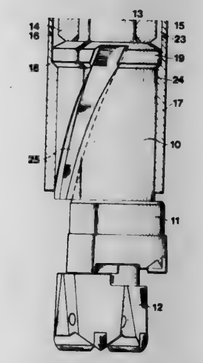
percussion part, said base ring having on its side facing away from said impact surface an annular support surface for unbuffered impact transmission to the pile.

4,408,669

MEANS FOR DRILLING

Harry A. I. Wiredal, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sweden

Filed Apr. 24, 1978, Ser. No. 899,170
Claims priority, application Sweden, Apr. 29, 1977, 7704972
Int. Cl.³ E21B *10/26, 1/02*
U.S. Cl. 175—258 **2 Claims**



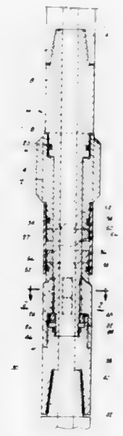
1. Means for drilling of the type comprising a rotatable drilling tool adapted to drill a hole in advance of a trailing casing tube means which are moved by rotatable drill rod means, said casing tube means having a forward mouth portion with a cylindrical interior surface, said drill rod means and said casing tube means having an annular space therebetween, said drilling tool comprising a central bit, an eccentrically disposed reamer cutting edge means in axial proximity rearwardly of said bit, characterized by a cylindrical guide body in coaxial relation to said bit, the forward portion of said guide body having such a diameter as to provide sliding engagement with the interior cylindrical surface of said mouth portion of said casing tube means, said guide body having a plurality of rearwardly-extending recesses in the cylindrical surface of its forward portion for the discharge of drilling debris rearwardly to said annular space provided between said rotatable drill rod means and said casing tube means, said recesses being U-shaped in cross-section and the width of each said recess exceeding the radial depth thereof, said drilling tool and said guide body being connected to a rotatable drill tube associated with a down-the-hole drilling machine and said casing tube having at its lower end a thickened mouth portion providing an upward annular driving shoulder for cooperation with a flange on said guide body for transmitting impacts to said casing tube, characterized in that said rearwardly extending recesses extend along said forward portion of said guide body and also pass axially through said flange on said guide member.

4,408,670

IMPACT CAM SUBASSEMBLY FOR DRILLS

William N. Schoeffler, 3600 E. Simcoe, Apt. 8, Lafayette, La. 70501

Filed Apr. 24, 1981, Ser. No. 257,366
Int. Cl.³ E21B *4/10*
U.S. Cl. 175—298 **7 Claims**



1. An impact cam sub assembly for drill strings comprising:

a driving member adapted to be attached to a drill string to be rotated thereby;

a drill holder longitudinally slidable on the lower end of said driving member but non-rotatable relative thereto;

a stabilizer sleeve rotatable about the upper portion of said driving member and having means thereon engageable with the sides of a well bore for resisting rotation of said stabilizer sleeve when said driving member rotates;

interchangeable substantially identical cams, one of which is fixed to said stabilizer sleeve, and the second cam fixed to said drill holder and cooperating with said first cam to longitudinally reciprocate said stabilizer sleeve and drill holder relative to each other; and

cooperating shoulders on said driving member and stabilizer sleeve arranged to exert an upward thrust on said driving member and drill string upon upward movement of said stabilizer sleeve relative to said drill holder.

4,408,671

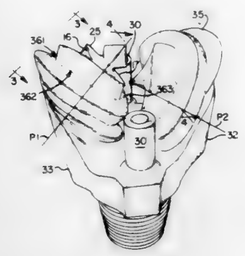
ROLLER CONE DRILL BIT

Beauford E. Munson, P.O. Box 3047, Butte, Mont. 59702

Continuation of Ser. No. 143,340, Apr. 24, 1980, abandoned. This application Feb. 19, 1982, Ser. No. 350,280
Int. Cl.³ E21B *10/16*
U.S. Cl. 175—377 **7 Claims**

1. A roller bit for use with drilling strings in the penetration of earth, as in drilling through rock formations, said roller bit comprising first and second roller cone cutters, each of said roller cone cutters formed in a generally conical configuration and having a base and an apex, said first roller cone cutter revolving around a first axis, said second roller cone cutter revolving around a second axis, said first and said second roller cone cutters each having a plurality of teeth extending in planes about the perimeter of each of said roller cone cutters, said teeth extending generally from the base toward the apex of

each of said roller cone cutters, the spacing between adjacent teeth on the same roller cone cutter increasing as said adjacent



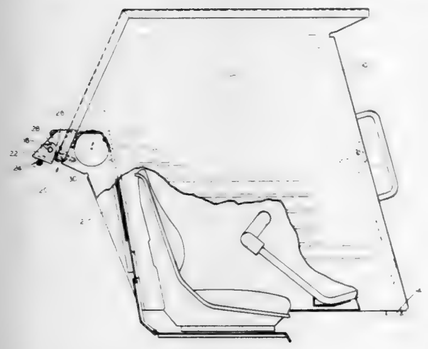
teeth extend from said base of said roller cone cutter toward said apex thereof, thereby allowing larger cuttings and increased cleaning action of said cutter.

4,408,672

LATCH MECHANISM FOR A SKID-STEER LOADER WITH A ROLL OVER PROTECTIVE STRUCTURE HAVING A TILT-BACK CAPABILITY

Larry E. Albright, and Lonnie D. Hoechst, both of Gwinner, N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jan. 26, 1981, Ser. No. 228,646
Int. Cl.³ B62D 27/04
U.S. Cl. 180—89.14 **4 Claims**



1. An improved latch mechanism for a skid-steer loader wherein the loader includes:

a frame structure;

a cab enclosure or Roll Over Protective Structure (ROPS) pivotally mounted at the rear and fastened at the front of the frame structure;

biasing means between the cab enclosure and the frame rotatably biasing the cab enclosure up and away from the frame wherein the latch mechanism comprises a cam member having an arcuate surface mounted on the frame;

a latch member comprising an elongated plate mounted on the cab enclosure and having an end surface of the plate engaging the arcuate surface of the cam member;

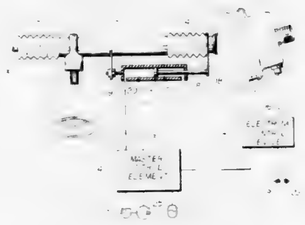
biasing means associated with the latch member biasing the edge portion of the latch plate into engagement with the arcuate surface of the cam member and retaining such latch plate in engagement with the arcuate portion of the cam member as the cab enclosure is rotated about the frame structure at the rear of the cab enclosure and a gap or notch provided in the arcuate surface of the cam member to receive the latch plate when the cab enclosure is fully rotated about the frame structure at the rear of the cab enclosure to retain the cab enclosure in a fixed position away from the frame.

4,408,673

SPEED-CONTROLLED SERVO-ASSISTED STEERING APPARATUS

Heinz Leiber, Leimen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 59,354, Jul. 20, 1979, abandoned. This application Jun. 29, 1981, Ser. No. 278,246
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838152
Int. Cl.³ B62D 5/06
U.S. Cl. 180—141 **11 Claims**



1. A servo-assisted power steering apparatus and system for motor vehicles comprising

a steering gear including a steering housing, said steering gear including a rack coupled to a steering knuckle assembly for steering a vehicle,

a servo apparatus including a servo cylinder and piston therein with the servo cylinder supported from said steering housing and said piston is coupled by a rod and a crosspiece to said rack coupled to said steering knuckle assembly,

said steering knuckle assembly including an electrical control means,

a control device for processing signals picked up from said electrical control means and from engine speed sensors for producing an output signal,

a master control element for controlling the servo apparatus in response to an output signal of the control device, and

said electrical control means in the steering knuckle assembly having switching values fed to said control device in response to a position of said rack relative to said steering knuckle assembly.

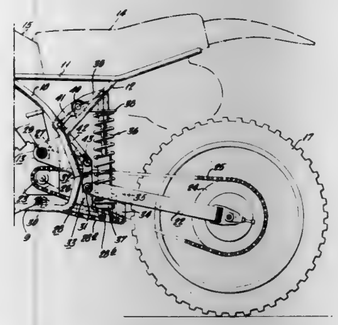
4,408,674

MOTORCYCLE DRIVE WHEEL SUSPENSION SYSTEM

Eyvind Boyesen, Kempton, Pa., assignor to Performance Industries, Inc., Kempton, Pa.

Continuation-in-part of Ser. No. 351,630, Feb. 23, 1982, which is a continuation-in-part of Ser. No. 269,322, Jun. 1, 1981, abandoned. This application Apr. 14, 1982, Ser. No. 368,220
Int. Cl.³ B62K 25/04
U.S. Cl. 180—227 **7 Claims**

1. In a motorcycle having a frame, a drive wheel, a motor, and wheel drive mechanism including a motor sprocket, a wheel sprocket, and a drive chain connecting the sprockets, a drive wheel suspension system comprising first and second levers pivotally mounted on fixed axes respectively spaced, one above and the other below the axis of the motor sprocket, first linkage pivotally interconnecting said levers on axes spaced to provide a first parallelogram linkage, a swing arm for the drive wheel pivotally connected with said first linkage on an axis between the axes of pivotal interconnection of said first linkage with the levers, one of said levers having an extension beyond the first linkage, a swing arm link pivotally interconnecting the swing arm and said extension and forming a second parallelogram linkage with said first linkage, the swing arm and said lever extension, and a shock absorber connected with



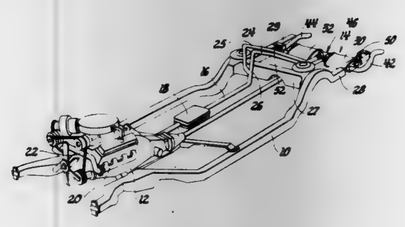
the wheel suspension system for resisting drive wheel deflection.

4,408,675

DUAL OUTLET ENGINE EXHAUST SYSTEM

Robert C. Keller, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 22, 1981, Ser. No. 266,171
Int. Cl.³ F01N 7/04
U.S. Cl. 180—296 **1 Claim**



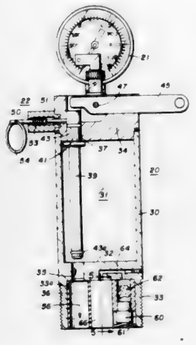
1. In a dual outlet engine exhaust system for an internal combustion engine mounted in a vehicle, an exhaust pipe extending from the engine, a pair of branch pipes connected to said exhaust pipe and extending rearwardly longitudinally and centrally of the vehicle in substantially parallel relationship, a pair of resonators each having an inlet and an outlet, said resonators being arranged end-to-end at their inlet end and transverse of the vehicle, mounting means mounting the outlet end of each resonator on the vehicle, a tail pipe connected to each outlet, and resonator manifold means including a gas separator located directly between the inlet ends of said resonators for both rigidly mechanically interconnecting said resonators while separately gaseously directly connecting their inlets to the respective branch pipes whereby said resonators form a rigid assembly and together with said tail pipes are mounted directly on the vehicle by only said mounting means at the outlet ends of said resonators and whereby the exhaust gases are divided by said branch pipes with such divided exhaust gases thereafter maintained separate from each other by said gas separator while passing through said resonators and thence separately out through said tail pipes to create a distinct exhaust sound.

4,408,676

GAS GUN ASSEMBLY

James N. McCoy, 5001 Ditto La., Wichita Falls, Tex. 76302

Filed Feb. 25, 1981, Ser. No. 237,860
Int. Cl.³ G01V 1/40
U.S. Cl. 181—113 **13 Claims**



8. A gas gun assembly for measuring depths of reflectors in a well bore comprising:

(a) A housing having an upper central chamber with a bottom bulkhead through which a first valve bore passes;

(b) coupling structure below said bulkhead for securing said housing to said well;

(c) a cap secured to close said chamber and having a second valve bore therethrough of diameter larger than the diameter of said first valve bore and located in axial alignment with said first valve bore;

(d) a valve stem having one end axially movable within said second valve bore while closing the same and the other end movable into and out of said first valve bore;

(e) means to establish a pressure differential across said bulkhead;

(f) means to release said valve stem for rapid equalization of pressure across said bulkhead thereby to produce an acoustic pulse in said well bore below said bulkhead; and

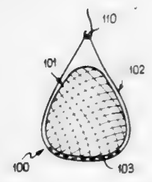
(g) lever means in said cap mounted to engage the head of said valve stem to force the lower end of said valve stem into said first valve bore.

4,408,677

METHOD AND APPARATUS FOR THE PRODUCTION OF SEISMIC SHOCKS

Jean-Joseph Roy, Veynes, France, assignor to Compagnie Generale de Geophysique, Massy, France

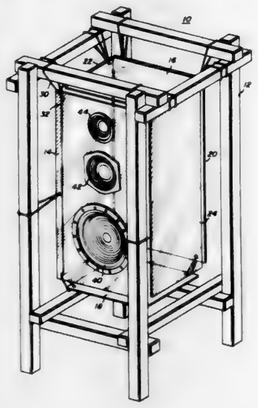
Filed Nov. 7, 1977, Ser. No. 849,022
Int. Cl.³ G01V 1/146, 1/109
U.S. Cl. 181—121 **3 Claims**



1. A method for producing shocks in the ground, comprising the step of releasing a mass for free fall from an aircraft from a height of between about 5 and 100 meters, said mass comprising a multiplicity of individual heavy elements connected together, and a base of large relative surface, said mass on

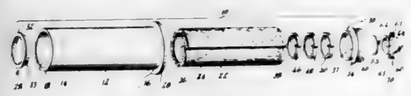
impact with the ground deforming without losing cohesion, said release step including the steps of: maintaining said base substantially plane by providing means for stiffening the base; and maintaining the base substantially horizontal at least after release and up to impact.

4,408,678
LOUDSPEAKER ENCLOSURE
Lahroy A. White, Jr., 4008 Pinehurst, Amarillo, Tex. 79109
Filed Feb. 19, 1982, Ser. No. 350,217
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—199 **9 Claims**



1. A loudspeaker enclosure comprising:
a front portion, side portions and a back portion,
said front portion adapted for emitting frontwave radiation from a loudspeaker,
said front, side and back portions being arranged to substantially contain the backwave radiation from said loudspeaker,
at least one of said front, side and back portions being formed of a panel, said panel being mechanically suspended such that it is adapted to be deflected by backwave radiation from said loudspeaker and thereby dissipate the energy thereof.

4,408,679
SOUND ATTENUATOR
J. Kerry Littrell, Redmond, Wash., assignor to Peabody Spunstrand, Inc., Seattle, Wash.
Filed Sep. 28, 1981, Ser. No. 306,190
Int. Cl.³ F01N *1/10, 7/18*
U.S. Cl. 181—243 **10 Claims**



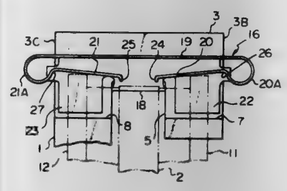
1. A lightweight, corrosion resistant sound attenuator having replaceable sound attenuating material which may become contaminated, abraided or absorb moisture during use, the attenuator comprising:
a tubular housing comprising a lightweight plastic material, having two end portions and having an interior surface;
a layer of sound attenuating material having an outer side positioned in abutting relation with said interior surface of the tubular housing, said layer having an interior surface defining an axial flow passage through the housing, said layer being removeable to provide for replacement thereof;
a first annular ring inserted in and fixed to the interior surface of said housing at one end portion, said ring having a wall extending inwardly from the interior surface of the housing, said wall having an inward end, said wall retaining said layer against longitudinal sliding movement in one direction, said first ring including an interior transition surface converging from the interior surface of said housing radially and longitudinally inwardly to said inward end of said retaining wall, said first ring including a cyclindrical sleeve extending longitudinally from said inward end of said retaining wall to define a slot between it and said interior surface of said housing for retaining the end of said layer of sound attenuating material, said sleeve providing a smooth transition betwen said ring and the end of said layer;
a second annular ring fixed to the interior surface of the housing at the other end portion and having a wall extending inwardly from the interior surface of the housing for retaining said layer against longitudinal sliding movement in an opposite direction;
means for retaining said attenuating layer in abutting relation with the interior surface of the housing, said retaining means being removeable to provide for replacement of said sound attenuating layer.

4,408,680
LADDER SUPPORT ASSEMBLY
Don O. Ross, Rte. 1, Box 458, Gulfport, Miss. 39503
Filed Mar. 6, 1981, Ser. No. 241,250
Int. Cl.³ E06C *5/04, 7/46*
U.S. Cl. 182—68 **4 Claims**



1. A ladder support assembly for use with vehicles comprising:
a ladder having a pair of spaced apart generally parallel rails, a plurality of rungs connecting said rails, and a rearwardly facing L-shaped slot in the bottom portion of each of said rails;
a bottom part on said rails substantially the width of said rails for gripping the ground whereby said ladder may be supported on the ground in a conventional manner when not supported by said vehicle;
a pair of support brackets, each comprising a pair of spaced apart cantilevered sections forming a channel with a support pin across the channel adapted to engage said slots; and
at least two flexible tensile support cables, each attached during operation at one end portion to said ladder between the end portions thereof and at the other end portion having means for removably affixing each of said cables to said vehicle body to thereby determine the angle formed by the ladder and the vehicle chassis.

4,408,681
DISC BRAKE
Harumi Oshima, Kawasaki, Japan, assignor to Tokico Ltd., Kawasaki, Japan
Filed Jun. 17, 1981, Ser. No. 274,452
Claims priority, application Japan, Jun. 23, 1980, 55-87846[U]
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.38 **3 Claims**



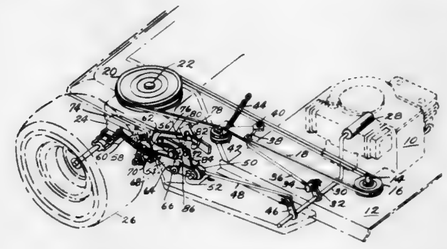
1. A disc brake comprising:
a stationary member adapted to be secured to a non-rotatable part of a vehicle at one side of a rotatable disc and including a pair of legs spaced in the direction of the circumference of the disc, said legs straddling the outer circumference of the disc to extend to the other side of the disc and having respectively pad guiding portions extending in a direction parallel to the axis of the disc, each of said pad guiding portions being interrupted by a circumferential groove in each of said legs which rotatably receives the outer circumference of the disc;
a pair of friction pads disposed on the opposite sides of the disc and supported slidably on the guiding portions; and
a pad spring retained on the stationary member for biassing the friction pads against the pad guiding portions, said pad spring comprising a main body portion retained on said stationary member, generally arcuate portions connected to axial ends of the main body portion, and pressing portions connected respectively to respective arcuate portions and extending axially inwardly and radially inwardly therefrom in inclined fashion, said pressing portions pressing respective friction pads radially inwardly and in the direction separating the friction pads from the disc, said arcuate portions and said pressing portions defining therebetween stops which act to prevent the movement of the friction pads in the direction separating the friction pads from the disc.

4,408,682
RAIL VEHICLE SLACK ADJUSTER
Lars M. Severinsson, Hishult; Peter Beijbom, Lund, and Anders K. Martensson, Bjärred, all of Sweden, assignors to SAB Industri AB, Landskrona, Sweden
Filed Jun. 10, 1981, Ser. No. 272,182
Claims priority, application Sweden, Jun. 24, 1980, 8004669
Int. Cl.³ F16D *65/66*
U.S. Cl. 188—202 **4 Claims**



1. A rail vehicle slack adjuster of the axial type, comprising in combination, an elongated barrel (**4**), a pull rod (**6**) and a threaded spindle (**2**) extending out of the barrel from its opposite ends, an adjuster mechanism contained in the barrel for cooperation with the pull rod and the spindle, said barrel comprising sheet metal with at least one circumferential notch retaining therein against axial movement along the barrel an element for engaging and coacting with a mating element of the adjuster mechanism thereby to stop axial movement thereof relative to the barrel notch.

4,408,683
COMBINED CLUTCH AND BRAKING ARRANGEMENT FOR A TRACTOR
Raymond L. Elmy, Franklin, and Joe Crabtree, Lewisburg, both of Tenn., assignors to The Murray Ohio Manufacturing Co., Brentwood, Tenn.
Filed Feb. 16, 1978, Ser. No. 878,448
Int. Cl.³ F16D *13/76, 67/02;* **G05G** *9/08*
U.S. Cl. 192—11 **3 Claims**



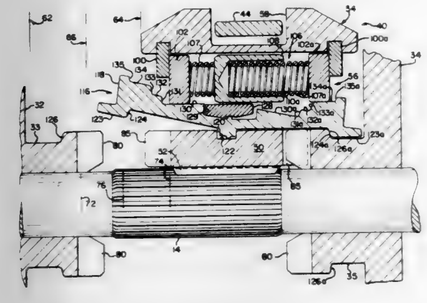
1. A combined clutch and braking arrangement for a powered tractor comprising:
a pedal adapted to be depressed and released;
means operatively joined to said pedal and responsive to an initial depression thereof to interrupt a power transfer path arranged to move said tractor, said power transfer path including: an idler pulley operatively connected to said pedal and movable as the pedal is depressed and released, and a drive belt engaged by said idler pulley and retained in operative relationship with a drive pulley when said pedal is released, said drive belt being removed from operative relationship with the drive pulley when the pedal is depressed;
additional means operatively joined to said pedal and responsive to further depression thereof to brake the tractor, said braking means including: a connecting rod operatively joined at one of its ends to said pedal, a link plate provided with a first slot, means received within said slot for joining the other end of said rod to the link plate, said slot being dimensioned such that during the initial depression of the pedal said joining means moves freely within the slot and during the further depression of the pedal said joining means engages an end of the slot to displace the plate, and means connected to said plate and responsive to plate displacement for actuating the brakes of said tractor; and
manually operative means to brake the tractor independently of depression and release of said pedal, said manually operative braking means including: handle means operatively connected to said link plate and movable between first and second positions for displacing said plate independently of movement of the connecting rod to operate said brake actuating means, and means received within an additional slot in said link plate for connecting the handle means to said link plate, said slot extending substantially parallel to said first slot and being dimensioned such that when said pedal is released and the handle means is in said first position, the handle connecting means is positioned adjacent an end of the additional slot whereby movement of the handle means towards said second position displaces the link plate, and when said pedal is depressed and the handle means is in said first position, the handle connecting means is located intermediate the ends of said additional slot.

4,408,684

SEQUENCE SHIFTING COUPLING

Radisko S. Gladich, Willowbrook, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Feb. 25, 1981, Ser. No. 238,387
Int. Cl.³ F16D *23/02, 11/10, 13/71*
U.S. Cl. 192—53 G **10 Claims**



1. An improved clutch means having movable parts including a coupling element aggregated together for selectively engaging a gear on a rotatable shaft, said clutch means incorporating mechanical logic determinative for selective operation comprising a fixed mass value of said movable parts;
spring means having a biasing force capability related to and depending on a plurality of variables including said fixed mass value of said movable parts; and
teeth means on said coupling element having tooth shapes relating to and depending on a plurality of variables including said fixed mass value of said movable parts and said spring means biasing force;
said fixed mass value is the mass of said improved clutch means including said coupling element and said spring means; and
a rocker pivotably mounted on said coupling element and lockingly engageable with said gear for conjoint rotation of said coupling element with said gear.

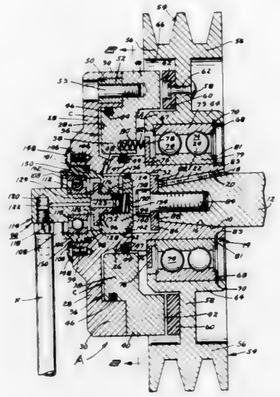
4,408,685

FLUID SET AND SPRING RELEASED CLUTCH

Hugh K. Schilling, St. Paul, and Charles D. Raines, Bethel, both of Minn., assignors to Horton Industries, Inc., Minneapolis, Minn.

Filed Nov. 13, 1980, Ser. No. 206,362
Int. Cl.³ F16D *25/063*
U.S. Cl. 192—85 A **10 Claims**

1. A fluid engaged and spring disengaged clutch comprising:
(a) a hub,
(b) means for securing said hub to a shaft to be driven,
(c) a pulley,
(d) means rotatably mounting said pulley on said hub,
(e) said hub having a radially extending integral flange portion,
(f) means mounting an annular piston on said radially extending flange for slidable movement relative to said flange,
(g) annular friction facing means,
(h) means mounting said friction facing means in an annular recess formed in said pulley inwardly of the radially and outwardly extent of said pulley for engagement by
(i) an integral annnular extension of said piston, with the annular piston mounting means including: an annular lip formed on said flange and having a series of spaced holes formed therethrough, with the annular lip, the radially extending flange, and the hub forming a piston cavity for the reciprocal receipt of the piston, and a series of spaced torque bolts mounted on one end on said flange and extending freely through the holes of said lip with the other ends of said bolts secured in said extension of said piston,
(j) a rotary air union,
(k) means rotatably mounting said hub on said rotary air union,



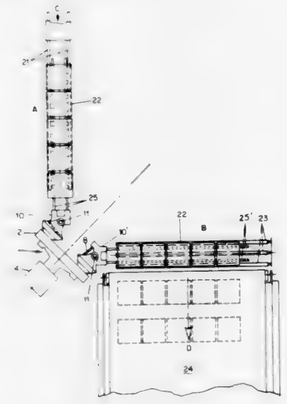
(l) spring means located between said piston and said hub for urging said piston and extension thereon from contact with said friction facing means, and
(m) means for introducing fluid pressure from the rotary air union between said piston and said radially extending flange to cause said piston extension to contact said friction facing means for driving said shaft.

4,408,686

APPARATUS FOR TRANSFERRING ARTICLES FROM ONE CONVEYING LINE TO ANOTHER CONVEYING LINE WHOSE DIRECTIONS ARE ANGULARLY SPACED

Andrea Taverna, Florence, Italy, assignor to Gabbrielli Impianti di Gabbrielli Franco & C.s.a.s., Florence, Italy

Filed Feb. 24, 1981, Ser. No. 237,798
Claims priority, application Italy, Mar. 6, 1980, 9374 A/80
Int. Cl.³ B65G *47/26, 47/24*
U.S. Cl. 198—433 **8 Claims**



1. An apparatus for transferring objects from one conveying line to another conveying line, the directions of which form an angle between 0° and 180° with respect to one another, the apparatus comprising:
a shaft fixed in space with respect to the conveying lines;
a rotating body rotatively mounted on the shaft;

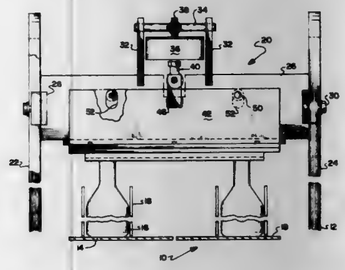
drive means usable for causing the rotating body to rotate on the shaft;
pivot means rotatively fixed to the rotating body;
a conveying arm pivoted with respect to the rotating body for picking up articles on one of the conveyers and transferring them to the other of the conveyers;
support means connected to the rotating body for pivotally supporting the conveying arm with respect to the rotating body;
a planetary gear train interposed between the shaft and the support means, the planetary gear train being driven by relative rotation of the rotating body and the shaft, the planetary gear train being configured to rotate the support means at a speed equal to but in a rotational direction opposite to the rotating body; and
an articulated connection between the pivot means and the conveying arm for causing spatial movement of the conveying arm necessary to transfer the objects from a first of the conveyor lines to a second conveyor line.

4,408,687

POWER BRAKE FOR ARTICLE FEED APPARATUS

Walter F. Bartsch, Canton, Ohio, assignor to Figgie International, Willoughby, Ohio

Filed Sep. 3, 1981, Ser. No. 298,996
Int. Cl.³ B65G *35/00*
U.S. Cl. 198—491 **6 Claims**



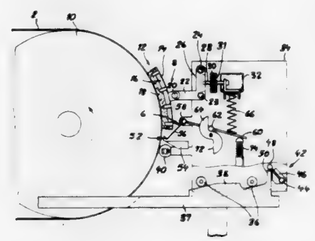
1. In article processing apparatus including a frame and feed conveyor on the frame for supply of a plurality of rows of abutted articles, the improvement comprising
a stop member positioned above said feed conveyor and extending transversely of the rows of abutted articles,
a power device operatively engaging said stop member to move it vertically downwardly to engage the tops of corresponding articles in all of said rows simultaneously to press them downwardly and prevent forward movement thereof whereby feed of articles into the apparatus can be controlled, and
a guide means engages and positions said stop member for slide movement in a vertical plane, and a connector means connects said power device operatively to said stop member to provide limited rotation of said stop member in a vertical plane to compensate for irregularity in engagement of said stop member with a transversely extending row of articles, said vertical plane having said row of articles included therein.

4,408,688

DEVICE FOR COATING A SURFACE OF A CONVEYOR BAND

Rudolf Bieri, Winterthur, Switzerland, assignor to Rud. Bier Maschinen Und Apparatebau AG, Effretikon, Switzerland

Filed Nov. 12, 1981, Ser. No. 320,686
Claims priority, application Switzerland, Nov. 14, 1980, 8461/80
Int. Cl.³ B65G *45/02*
U.S. Cl. 198—500 **11 Claims**



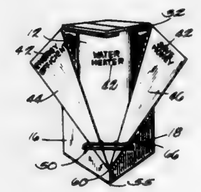
1. An apparatus for coating a surface of an endless conveyor band, comprising:
support means juxtaposable with a deflecting roller hugged by a rising bight portion of a conveyor band to be coated;
applicator means on said support means including a plurality of daubers adapted to deposit coating material upon said bight portion at mutually isolated locations spaced apart in axial direction of said deflecting roller; and
distributing means on said support means including a holder, a plurality of wipers on said holder spaced apart in said axial direction, a horizontal guide structure on said support means engaged by said holder, and drive means on said support means coupled with said holder for reciprocating said holder along said guide structure with resulting displacement of said wipers across a zone of said bight portion lying above said locations.

4,408,689

FLOOR MERCHANDISE DISPLAY CONTAINER

Joseph C. Daniels, Kingston Springs, Tenn., assignor to State Industries, Inc., Ashland City, Tenn.

Filed Mar. 11, 1982, Ser. No. 357,280
Int. Cl.³ B65D *5/50*
U.S. Cl. 206—45.17 **6 Claims**



1. A package for containing, shipping and exhibiting floor display merchandise, comprising:
a plurality of adjoining side panels with ends and interior surfaces,
a plurality of end flaps on said ends of said panels,
indicating means which indicate to cut two to said panels across their width near one end of said panels and then along said two panels adjoining edge to near the other end of said panels in order to permit said two panels to be bent so a

portion of said interior surfaces of said panels can be viewed, and

diagonally extending bending means across the width of said two panels which intersect at said panels adjoining edge so that when said two panels are cut they can be bent along said bending means without damaging the structural integrity of said two panels.

4,408,690

BEVERAGE CONTAINER PIERCEABLE BY A DRINKING STRAW

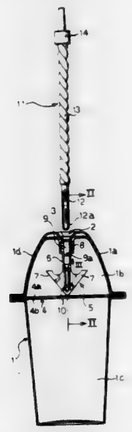
Giovanni Ferrero, Pino Torinese, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Jun. 10, 1982, Ser. No. 387,251

Claims priority, application Italy, Jun. 12, 1981, 67815 A/81; Jan. 4, 1982, 67001 A/82

Int. Cl.³ B65D *25/08, 51/22;* **B01F** *7/16*

U.S. Cl. 206—222 **11 Claims**



1. A container for beverages, comprising a body having an upper end wall at least part of which is pierceable by a drinking straw, wherein the improvements consist in:

the body of the container having a frangible internal diaphragm which sub-divides the container into two superimposed chambers, one for containing a beverage and the other for containing an additive substance;

a cutting tool being mounted in the body of the container above the diaphragm, the cutting tool having at least one cutting edge facing the diaphragm and being engageable by an end of the straw, in the first stage of the introduction of the straw into the body of the container, to cause piercing of the diaphragm due to the tool being driven by the straw, and

the pierceable part of the container being provided with a nut of large pitch and the straw having a threaded portion with threading corresponding to the threading of the nut, whereby, after its engagement by the end of the straw, the cutting tool is rotated due to the axial sliding of the threaded portion of the straw in the nut, promoting the mixing of the beverage and the additive substance.

4,408,691

NEEDLE HOLDER

Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Co., Ltd., Hiroshima, Japan

Filed Jun. 15, 1982, Ser. No. 388,523

Int. Cl.³ B65D *85/24*

U.S. Cl. 206—382 **7 Claims**

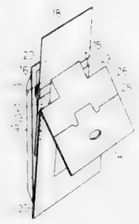
1. A package for elongated articles comprising:

(a) a base member having:

(i) a centrally located U-shaped cut defining a tongue-shaped member;

(ii) a pair of fold lines perpendicular to the longitudinal axis of the package and extending from said U-shaped cut to the longitudinal edges of the package; and

(iii) a fold line in said tongue-shaped member parallel to said first fold lines and dividing said tongue-shaped member into distal and fixed portions;



(b) retaining means for said elongated articles attached to said distal portion of said tongue-shaped member; and

(c) a cover member for covering the elongated articles secured to one end of said base member;

whereby bending of said package along said pair of fold lines causes said distal end of said tongue-shaped member and said elongated articles to slide between said base member and said cover member to a position where the elongated articles will protrude beyond said cover member.

4,408,692

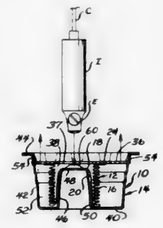
STERILE COVER FOR INSTRUMENT

Bernard Sigel, Winnetka; Carolyn M. Semrow, Island Lake; Mark W. Kolstedt, Cary, all of Ill.; Edward J. Arkans, Sunland, Calif., and Lynn M. Kaczmarek, Park Ridge, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Apr. 12, 1982, Ser. No. 367,527

Int. Cl.³ B65D *85/16, 83/00;* **A61I** *17/02*

U.S. Cl. 206—438 **11 Claims**



1. A sterile cover for an instrument, comprising:

a tray having an upright annular post, with the post having an upper end and a lower end; and

a sleeve of flexible material having an open end and a closed end, said sleeve being placed on the post with the closed end being located adjacent the upper end of the post, with said sleeve extending over the post around the post from the upper end toward the lower end of the post, and with the open end of the sleeve being located adjacent the upper end of the post and being accessible to a user to remove the sleeve from the post.

4,408,693

BLISTER PACK

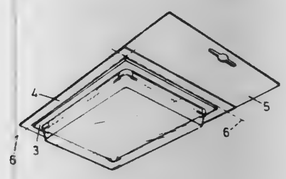
Luc Brewaeys, and Maurice Hens, both of Wilrijk, Belgium, assignors to CMP Chemical & Metallurgical Products Ltd., Switzerland

Filed Sep. 9, 1981, Ser. No. 300,504

Claims priority, application Belgium, Sep. 19, 1980, 202157

Int. Cl.³ B65D *5/64, 43/00*

U.S. Cl. 206—461 **3 Claims**



1. A blister pack container comprising, a box-shaped holder and a corresponding cover for said holder, said holder comprising a lower inner rim and an upper outer rim with a step being defined between said inner and outer rims, said cover including a support and a downwardly projecting underlying rim which inserts into said inner rim of said holder when said cover is inserted into said holder, said cover underlying rim and said lower inner and upper outer holder rims extending substantially fully around the peripheries of said cover and holder respectively, and said holder being initially attached to said cover by securing said upper outer rim of said holder to said support, and said cover being removable from said holder by cutting through the blister pack through said upper outer rim around said step to remove the outer rim and the support to which it is attached, leaving said holder with its inner rim and the step and said cover with its downwardly projecting underlying rim on top of said inner rim to form a reusable and reopenable container.

4,408,694

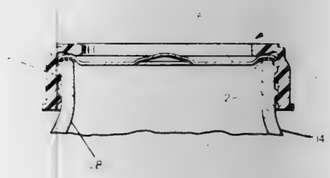
REINFORCED PLASTIC HOME CANNING RING

Bruce Mueller, Sylvania, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 28, 1981, Ser. No. 267,965

Int. Cl.³ B65D *45/30*

U.S. Cl. 215—276 **2 Claims**



1. A plastic device for securing a lid to a mouth defining portion of a threaded glass container, said device defining an annulus molded of polypropylene material having glass reinforcing fibers disposed therein, said annulus having an inner surface, thread means defined on said inner surface for engaging the threaded portion of said container, and an outer surface, said annulus defining a reference circle disposed therein medially between said inner and outer surfaces thereof, and said reinforcing fibers disposed in generally aligned, overlapped relationship along axes generally parallel to said reference circle of said annulus in two diametrically opposed substantially semicircular regions and said fibers being in random orientation in two diametrically opposed regions between said semicircular regions, said glass fibers having a diameter in the range of 12 to 14 microns and average in length between about 0.075 and 0.300 inches, said fibers, constituting about 30% by weight of said device, the outer surface of said annulus being provided with a plurality of spaced-apart axial flutes.

4,408,695

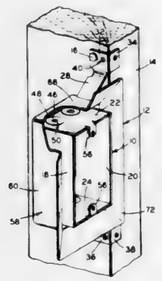
AIR AND MOISTURE RESISTANT COVER WITH ELECTRICAL BOX HAVING FASTENING FLANGE

G. Russell Balkwill, 2429 Howard Ave., Windsor, Ontario, Canada N8X 3Y5; Jules P. Robinet, 2865 Virginia Park, Windsor, Ontario, Canada N9E 2B8, and John F. Tamasovics, 2530 Todd La., Windsor, Ontario, Canada N9H 1K5

Continuation-in-part of Ser. No. 176,571, Aug. 4, 1980, Pat. No. 4,345,693, which is a continuation of Ser. No. 36,436, May 7, 1979, abandoned, which is a continuation of Ser. No. 908,223, May 22, 1978, Pat. No. 4,158,420. This application Mar. 26, 1982, Ser. No. 362,144

Int. Cl.³ H02G *3/08*

U.S. Cl. 220—3.3 **11 Claims**



1. In combination, a rigid electrical box having an open face, side walls, and a back wall oposite the open face, at least one fastening flange affixed to the box and extending outwardly from one of said side walls and back wall thereof for fastening said box to a structural member, a cover of flexible plastic material of the same general shape as said box extending around and enclosing all of said side walls and said back wall of said outlet box with the open face of said box remaining uncovered, to form an air and vapor barrier around said side walls and said back wall of said box, said cover having wall portions which are contiguous with and affixed to corresponding wall portions of said electrical box, and said cover having two other, opposite wall portions which are spaced from opposite side walls of said box, said cover having a flexible, thin-wall flange around the perimeter extending outwardly therefrom and slanting toward the open face of said box, whereby the peripheral edge of said thin-wall flange can tightly contact the back surface of a wall or the like around the open face of said box and on the same side of the wall or the like as said box, said fastening flange extending through said cover behind said thin-wall flange and sealed with respect to said cover to maintain the air and vapor barrier around said box.

4,408,696

REMOVABLE ELECTRICAL RECEPTACLE

William J. Crosson, Greensburg, Pa., assignor to Westmoreland Plastics Company, Latrobe, Pa.

Filed May 7, 1981, Ser. No. 261,492

Int. Cl.³ H02G *3/12*

U.S. Cl. 220—3.6 **2 Claims**

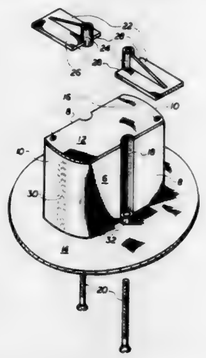
1. A removable receptacle for electrical apparatus, said receptacle comprising:

a receptacle body having a side wall and an end wall and having a removable cover on one end and a peripheral, external flange on the opposite end, said body having at least one channel in said side wall along the outer surface

thereof between said removable cover and said peripheral, external flange;

fastening means having threads on one end and a head on the opposite end, said fastening means extending through an aperture in said peripheral, external flange such that the threaded portion of said fastening means is maintained substantially parallel adjacent to the channel in the side wall of said receptacle body;

a sleeve member provided in juxtaposition to the aperture of sufficiently large diameter to allow the threaded portion of said fastening means to pass, but of small enough diameter to maintain said fastening means substantially orthogonal with respect to said peripheral, external flange; and



at least one clamp threadingly connected to said fastening means, said clamp having a guide portion defining a sleeve that has a surface complimentary to and maintained within the channel such that said guide portion guides said clamp axially of said channel, said clamp further including a retainer portion,

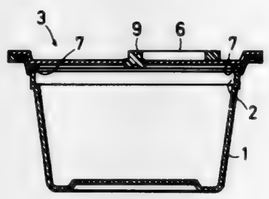
said retainer portion including edge portions extending laterally from opposing sides of said sleeve to act as stops that cooperate with the surface of the side wall of said receptacle body adjacent and outside said channel to prevent said clamp from rotating when said fastening means is turned.

4,408,697

OPENING MEANS HAVING CUTTING GUIDE

Tsukasa Yoshikawa, Inagi, and Masuo Kitamura, Ohmiya, both of Japan, assignors to Tokan Kogyo Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1982, Ser. No. 387,438
Claims priority, application Japan, Jun. 20, 1981, 56-95609
Int. Cl.³ B65D *17/46*
U.S. Cl. 220—279 **9 Claims**



1. A container for holding an article, comprising:

(a) a container main body;

(b) a lid covering an opening of said container main body, said lid having a laminate structure of at least two kinds of materials, a first material being exposed upon an outer surface of said lid, and a second material being exposed upon an inner surface of said lid; and

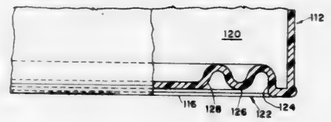
(c) cutting means for cutting at least part of said lid so as to form a cutting region, said cutting means comprising a pull-tab arranged on the outer surface of said lid, a cutting guide arranged on the inner surface of said lid along at least an outer periphery of said cutting region, and a connecting portion extending through a small hole formed in said lid so as to connect said pull-tab with said cutting guide, and said cutting means comprising molded bodies of a synthetic resin which can not be bonded to said first material and which can be bonded to said second material upon molding process thereof on said lid.

4,408,698

NOVEL COVER AND CONTAINER ASSEMBLY

Jose F. Ballester, GPO Box 4523, San Juan, P.R. 00936

Continuation-in-part of Ser. No. 209,823, Nov. 24, 1980, Pat. No. 4,334,631, and Ser. No. 272,307, Jun. 10, 1981. This application Jun. 10, 1982, Ser. No. 387,034
Int. Cl.³ B65D *41/16, 41/18*
U.S. Cl. 220—306 **13 Claims**



1. A cover and container assembly comprising:

(a) a container portion having a bottom wall, a side wall extending therefrom, and an interlocking assembly projecting upwardly from a terminus thereof, said interlocking assembly being formed of a neck portion and a locking member; and

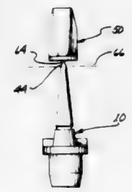
(b) a cover portion having a top wall terminating in a peripherally disposed interlocking assembly and an annular bellows-like portion of at least two grooves separated by a ridge, said interlocking assembly being formed with a locking slot of a conforming shape to said locking member of said container portion cooperatively engageable with said locking member to form a seal.

4,408,699

DISPENSING TIP FOR CYANOACRYLATE ADHESIVES

Hugh J. Stock, Saratoga, Calif., assignor to Pacer Technology and Resources, Inc., Campbell, Calif.

Continuation of Ser. No. 119,452, Feb. 7, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,116
Int. Cl.³ B01L *3/00*; B65D *1/08, 17/24*
U.S. Cl. 222—149 **1 Claim**



1. A dispensing tip attachable to the mouth of a container of cyanoacrylate adhesive for dispensing the cyanoacrylate adhesive, said dispensing tip comprising in combination:

(a) a disk section supporting an hollow boss for sealingly and internally engaging the mouth of the container;

(b) a conical tip extending from said disk section for dispensing the cyanoacrylate adhesive;

(c) a diametrically oriented ridge extending from said disk section and from opposed sides of said conical tip for providing a gripping surface upon installation of said conical tip within the mouth of the container;

(d) a constant diameter passageway extending through said conical tip from said hollow boss and terminating at a discharge outlet to provide fluid communication between the interior of the container and the discharge outlet; and

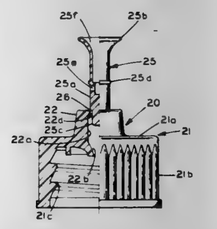
(e) a stopper detachably attached to the end of said conical tip for hermetically sealing said passageway prior to detachment of said stopper from said conical tip, said stopper including: a disk extending radially at the extremity of said conical tip, an inverted conical shroud extending from the center of said disk, said conical shroud including a cavity having an interior conical surface for receiving said conical tip and a plug enclosed within said cavity for engaging said passageway on mounting of said stopper upon said conical tip to force flow of any residual cyanoacrylate adhesive within said passageway into the container, and a pair of flanges disposed upon opposed sides of said shroud and joined to said disk for providing an enlarged surface area to grip said stopper and which grip is restrained from sliding by said disk.

4,408,700

MULTI-PART DISPENSING CLOSURE HAVING A FRANGIBLE CONNECTING WEB

William E. Fillmore; George V. Mumford, both of Toledo, and Ned J. Smalley, Perrysburg, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 28, 1981, Ser. No. 267,958
Int. Cl.³ B65D *47/26, 47/36*
U.S. Cl. 222—153 **4 Claims**



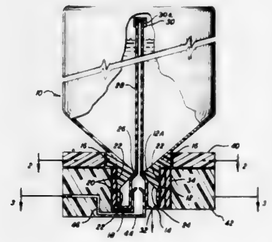
1. A unitary molded article of elastomeric material for forming a dispensing closure for a container neck, said article comprising a cap-shaped portion having a panel and a depending annular skirt constructed and arranged to snugly engage a container neck, said cap-shaped portion defining a vertical sleeve having a valve receiving opening, a hollow valve portion coaxially disposed relative to said skirt portion but axially upwardly spaced from said opening, said hollow valve portion initially comprising integrally molded components including a transverse cylindrical base portion snugly insertable in said vertical sleeve and having an upstanding plug and vertical dispensing openings below said plug; and a cup shaped portion having an open top bore, a vertical opening in its bottom portion adapted for sealing engagement with said plug and a severable web portion initially connecting said cap portion to said plug to maintain said cap portion in axially spaced relationship to said base portion, and a severable web portion joining said sleeve and said base portion, adapted to shear when a predetermined axial downward force is applied to said hollow valve portion thereby causing said hollow valve portion to move axially downwardly into said valve receiving opening to close said valve receiving opening in said cap portion, said hollow valve portion being vertically slidable in said sleeve when said web means is severed, said cup portion thereof having an external surface snugly engageable with the interior wall of said vertical sleeve, and retaining means on said sleeve engageable with said external surface of the cup shaped portion to resiliently retain the latter within said sleeve, whereby vertical movement of said cup shaped portion after severing thereof from said plug portion to a position above said plug portion permits product dispensing flow through said closure.

4,408,701

LIQUID DISPENSING VALVE

Edward L. Jeans, Ledbury, England, assignor to Cadbury Schweppes PLC, London, England

Continuation-in-part of Ser. No. 140,698, Apr. 16, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,487
Int. Cl.³ B67D *5/56*
U.S. Cl. 222 **14 Claims**



1. A dispensing valve for dispensing concentrate and diluent to make a beverage comprising:

(a) a first member containing therein a cylindrical bore having a first pressurizing gas passage terminating at an elongated outlet in said bore, and a first diluent passage terminating in a further outlet in said bore, the bottom of said bore containing an open area through which concentrate can be dispensed;

(b) seals surrounding said elongated outlet and said further outlet;

(c) a central, rotatable valve member of generally annular shape disposed for rotation within said cylindrical bore, a peripheral portion thereof sealing against said seals, said rotatable valve member having a diluent outlet;

(d) means within the annulus of said rotatable valve member for supplying pressurizing gas to a container;

(e) a second pressurizing gas passage extending through said rotatable valve member from said peripheral portion to said means within the annulus, the inlet of said second gas passage adapted to be brought into alignment with said elongated outlet over a range of rotation of said rotatable valve member;

(f) a second diluent passage and expansion chamber within said rotatable valve member for coupling said further outlet with said diluent outlet when said rotatable valve member is rotated to a pre-determined position within said range of rotation;

(g) means in said rotatable valve member for engaging a first container part;

(h) means for retaining said rotatable valve member in place;

(i) means fixed with respect to said first member for engaging a second container part; and

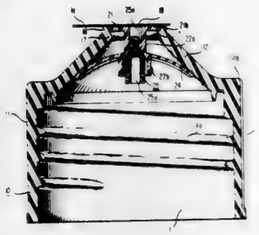
(j) means to rotate said rotatable valve member.

4,408,702

AUTOMATIC DISPENSER CAP

William Horvath, 10 Crestwood Dr., Watchung, N.J. 07060

Filed Nov. 6, 1981, Ser. No. 318,835
Int. Cl.³ B05B *11/04*
U.S. Cl. 222—212 **27 Claims**



1. A cap, for dispensing product contained in a squeeze container having a mouth at one end, comprising in combination:

a hollow body portion with a circular section substantially symmetrical about a central axis, having at one end an enlarged opening including means for connecting said body portion in liquid-tight relation to the mouth of said container, and having at its other end a frustoconical outwardly-projecting spout tapering from a larger internal diameter to a smaller outer spout opening symmetrically disposed about said axis;

a valve-head comprising a disc for seating in liquid-tight relation against the outer edge of said smaller spout opening, a stem with one end centered on the inner face of said disc and projecting into said frustoconical spout along said central axis, a plurality of resilient flexible members fixed to and extending radially outward from the surface of said stem adjacent its inner end, the outer ends of said flexible members being curved in outwardly-directed convex relation to the principal axis of said hollow body portion, and with their ends bearing against the inner surface of said frustoconical spout in tangential relation thereto;

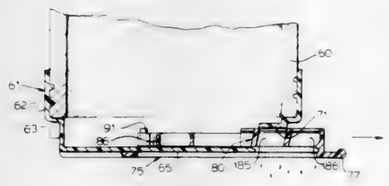
wherein said valve-head disc is responsive to squeeze pressure exerted on said container to unseat from said spout opening, and wherein said plurality of resilient members is constructed and arranged to provide spring bias between said valve-head and the inner surface of said frustoconical spout which operates to reseat said valve-head disc on said spout opening upon release of said squeeze pressure.

4,408,703

DISPENSER COFFEE CAP

Sidney M. Libit, 441 Lakeside Ter., Glencoe, Ill. 60022

Filed May 13, 1981, Ser. No. 263,144
Int. Cl.³ G01F *11/18, 11/26*
U.S. Cl. 222—284 **28 Claims**
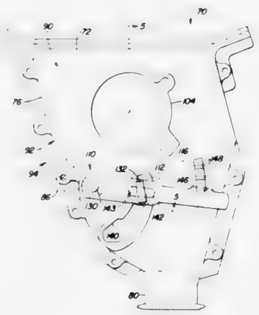


1. Apparatus for dispensing a predetermined amount of material from a container comprising a cap attachable to said container and having a top portion, said top portion comprising housing wall means, for defining a collection space communicating with the interior of said container and a laterally facing discharge opening leading from said collection space, and a planar ledge portion between an outer edge of said top portion and a bottom edge of said discharge opening, and a slide element comprising a generally planar top wall having an opening formed intermediately thereof and carrying underneath a chute element and a biasing means, said chute element comprising a series of longitudinally spaced lateral wall surfaces defining therebetween a corresponding series of vertically open trap chambers facing said top wall opening therebeneath across a gap, said biasing means comprising a resilient member which is compressed during outward movement of said slide element for providing a return force upon said slide element, said slide element top wall lying on said housing wall means for slidable movement thereover such that said chute element trap chambers pass into and out of said discharge opening and a portion of said housing wall means fits into said gap, whereby said trap chambers are contained in said collection space when said slide element is in its closed position and pass over said ledge portion during outward movement of said slide element.

4,408,704

FEED CUP ASSEMBLY WITH FLEXIBLE METERING GATE

Ronald M. Steilen, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 3, 1981, Ser. No. 289,629
Int. Cl.³ B65D *88/54*
U.S. Cl. 222—312 **10 Claims**



1. In an implement seed metering device including first and second opposed sidewalls and a metering roll supported between the sidewalls adjacent the first sidewall and rotatable about an axis generally transverse to the sidewall, said roll terminating inwardly of the second sidewall, an improved feed gate assembly comprising:

a resilient feed gate extending adjacent the metering roll between the sidewalls, said gate having a first end connected for pivoting about an axis parallel to the rotational axis and a second end opposite the first, said ends spaced by first and second side members extending generally along the first and second sidewalls, respectively, said first side member movable adjacent the first sidewall generally about the axis parallel to the rotational axis whereby said gate contains seeds adjacent the metering roll between the sidewalls, and means for pivoting the feed gate about the pivotal axis to adjust the position of the gate relative to the roll including a lever selectively positionable adjacent the second sidewall and means extending through the second sidewall for connecting the lever to the second side member between the pivotal connection and the second end to restrict the movement thereof relative to the metering roll and the first side member, wherein the first side member is substantially free to flex between the pivotal axis and the second end.

4,408,705

CYCLE CARRIER

Heinz Niemann, Herford, Fed. Rep. of Germany, assignor to Esge-Marby GmbH & Co. KG, Bielefeld, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,684
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1981, 3110870
Int. Cl.³ B62J *7/04;* **F16B** *7/00*
U.S. Cl. 224—39 **19 Claims**



1. Cycle carrier having

an essentially rectangular frame (**1**) including longitudinal frame elements (**3**) and cross elements (**4**);

support struts (**6, 7**) to support the frame from an axle amount of the cycle, said support struts (**6, 7**) extending in parallel planes essentially transverse to the plane defined by the rectangular frame;

and means attaching the support struts to the frame comprising in accordance with the invention

a plastic element (**12**) having a first portion (**13**) molded in place in surrounding relation to the longitudinal frame element (**3**) and having an integral projecting portion (**15**) extending at right angles with respect to the longitudinal frame element,

the projecting portion being formed with an opening (**17** therein) dimensioned to receive a bent-over portion (**10, 11**) of the support strut (**6, 7**), which is bent-over at right angles with respect to the major extend of the support struts;

an insertion slit (**18**) extending from the opening to the outer circumference of the projecting portion;

and means including a holding ring (**19**) surrounding the bent-over portion and adapted to be slid over the projecting portion in the region of the opening for closing off the insertion slit and retained on said projecting portion for holding the bent-over portion of the support strut in position on the frame.

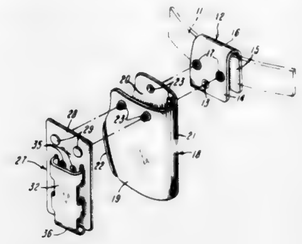
4,408,706

HOLSTER FOR LABELER

Thomas M. Hurley, Miamisburg, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Aug. 16, 1979, Ser. No. 67,242
Int. Cl.³ F41C *33/02*
U.S. Cl. 224—192 **13 Claims**

1. A holster adapted to hold a gun-like labeler, comprising: a generally U-shaped holder adapted to fit over a belt of a user, a snap fastener for connecting opposed legs of the holder, one leg of the holder having a first snap fastener portion, a first holster member comprised of a one-piece panel having end portions connected by a lap joint and opposed side portions, each side portion having a second snap fastener portion so that either side of the first holster member can be detachably connected to the holder, a second generally U-shaped holster member adapted to carry a roll of labels, the second holster member comprised of a one-piece panel having opposed sides and overlapped, connected, end tabs, one side of the second holster member having a first snap fastener portion for connection of the remaining second snap fastener portion on the first holster member.



4,408,707

REVOLVER RELOADER HOLSTER

William H. Rogers, Jacksonville, Fla., assignor to Rogers Holster Co., Inc., Jacksonville, Fla.

Filed Oct. 13, 1981, Ser. No. 310,796
Int. Cl.³ F42B *39/04, 39/00*
U.S. Cl. 224—239 **12 Claims**



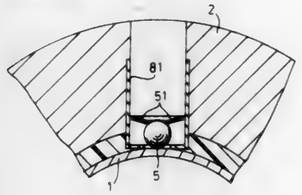
1. A holster for a cartridge reloader for a revolver, the reloader being of the type having a plurality of chambers for holding cartridges with the chambers being disposed on both sides of a longitudinal plane passing through the longitudinal axis of the reloader and the chambers being substantially parallel to the longitudinal axis, said holster comprising a body having a front, a back, a top, a bottom, two sides, and a flap extending downwardly from said top and overlapping said front, and fastening means for releasably attaching said top to said front; said holster having an interior cavity adapted to fit closely around the reloader when positioned with the base of the cartridges adjacent said top and the bullets of the cartridges adjacent said bottom, said sides of said holster having opening means open sufficiently to permit a belt to be threaded therethrough below said reloader and to permit grasping of the reloader while unfastening said fastening means, said opening means and said cavity being related so that said belt separates generally half of said cartridges of said reloader on either side of said belt to provide enhanced unobtrusiveness of said reloader and holster when worn.

4,408,708

METHOD OF SECURING PREFABRICATED LAGGING COMPONENTS TO A METAL SURFACE, AND A PREFABRICATED LAGGING COMPONENT FOR USE IN THE METHOD

Leon J. E. Delcour, Liege, Belgium, assignor to Cockerill Sambre, Seraing, Belgium

Filed Apr. 9, 1981, Ser. No. 252,290
Claims priority, application Belgium, Apr. 11, 1980, 200196
Int. Cl.³ B23K *31/00*
U.S. Cl. 228—139 **3 Claims**



1. A method of securing a lagging component to a metal surface, comprising: positioning a prefabricated lagging component on the metal surface, said lagging component having one or more holes lined with a hollow sleeve having a base formed with an aperture, each hollow sleeve containing a securing element held by a cardboard washer having an aperture revealing part of the surface of the corresponding securing component; welding the securing element to the surface using a welding gun; and filling the remaining hole cavity with a packing material around the securing element.

4,408,709

METHOD OF MAKING TITANIUM-STABILIZED FERRITIC STAINLESS STEEL FOR PREHEATER AND REHEATER EQUIPMENT APPLICATIONS

Thomas M. Devine, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 244,379, Mar. 16, 1981, Pat. No. 4,374,666, which is a continuation-in-part of Ser. No. 234,213, Feb. 13, 1981, abandoned. This application Sep. 27, 1982, Ser. No. 424,113
Int. Cl.³ B23K *31/06*; **C22C** *38/28*
U.S. Cl. 228—183 **1 Claim**

1. In the method for making moisture separator reheater and feedwater preheater apparatus for the exchange of heat in which a plurality of thin-walled metal members are formed, welded, finned and affixed to tube sheets in an array with gaps between said members the improvement of using as a metal for the walls of said members a titanium-stabilized and corrosion resistant ferritic stainless steel resistant to sensitization during long-term operation at intermediate temperatures in said apparatus for the exchange of heat and consisting essentially of, in weight percent:

Carbon	= 0.025% max
Nitrogen	= 0.025% max
Carbon + Nitrogen	= 0.045% max
$\left(\frac{\text{Titanium}}{\text{Carbon}}\right)$	≧ 45
Silicon	= 1.0% max
Manganese	= 1.0% max
Phosphorous	= 0.04% max
Sulfur	= 0.03% max
Chromium	= 18–20%

-continued

Molybdenum	= 1.75–2.25%

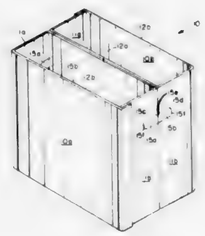
the balance being iron and incidental impurities.

4,408,710

CARTON HAVING TEAR RESISTANT HAND HOLES

John J. Aust, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 12, 1981, Ser. No. 273,131
Int. Cl.³ B65D *5/46, 5/48, 25/28*
U.S. Cl. 229—15 **2 Claims**



1. In a rectangular box including two opposed end walls, two opposed side walls extending between opposite ends of said end walls and a divider wall extending between said side walls, thereby dividing the interior of the box into two compartments, the improvement wherein:

(a) said divider wall and side walls comprise a pair of U-shaped vertically disposed corrugated panels each having a central portion and arm portions, integral with said central portion, extending from opposite ends of said central portion, the central portions of said pair of U-shaped panels abutting to form said divider wall and said arm portions extending at right angles in opposite directions from the respective of said central portions and joined to the respective opposite ends of said end walls, the pair of arm portions at each end of said divider wall forming the respective of said side walls; and

(b) each of said pair of arm portions, forming an end wall, having a pair of contiguous finger insertion openings, one of said openings being in each arm portion immediately adjacent to the respective central portion, said finger insertion openings being aligned and each limited in size to permit insertion of only two adult fingers therein, each said opening being formed with a fillet of a substantial radius provided at the upper corner of each opening adjacent the respective central portion, said fillet bridging said arm portion and said central portion, and said central portion extending from said fillet at a right angle to reinforce said fillet and said finger insertion opening against tearing.

4,408,711

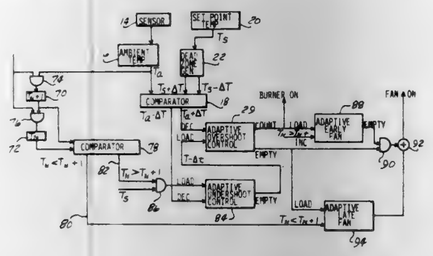
THERMOSTAT WITH ADAPTIVE OPERATING CYCLE

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104

Division of Ser. No. 206,761, Nov. 24, 1980, Pat. No. 4,356,962. This application Jul. 26, 1982, Ser. No. 401,787
Int. Cl.³ F24D *5/10*; **G05D** *23/32*
U.S. Cl. 236—11 **5 Claims**

1. In a thermostat for controlling a temperature modifying apparatus of the fluid transfer type, the temperature modifying apparatus having means for modifying the temperature of the fluid and means for circulating the fluid, the thermostat having connections to the temperature modifying apparatus for separately controlling the temperature modifying apparatus and the fluid circulating apparatus, and the thermostat having means for generating electrical signals representative of its ambient temperature, the improvement comprising:

means for adaptively modifying the time delay between the initiation of a control signal for energizing the thermal modifying apparatus and the subsequent generation of a control



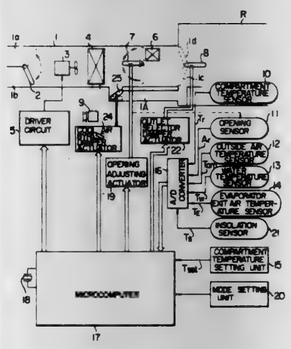
signal energizing the fluid circulating apparatus, comprising means for storing a delay signal and means for adaptively modifying the period of the delay signal as a function of the direction of change of the signal representative of ambient temperature at the thermostat following initiation of the energizing signal for the fluid circulating apparatus.

4,408,712

APPARATUS FOR CONTROLLING AIR CONDITIONERS FOR AUTOMOBILES

Masanori Naganoma, Kariya; Kazuaki Takemoto, Anjo, and Mitsutoshi Moriya, Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 8, 1982, Ser. No. 386,266
Claims priority, application Japan, Jun. 11, 1981, 56-90625
Int. Cl.³ G05D *23/00*; **B60H** *3/00*
U.S. Cl. 236—13 **4 Claims**



1. An apparatus for controlling an air conditioner for an automobile comprising:

an air conditioning unit including an air duct, a heater unit having means for heating air passing through said air duct and means for adjusting the amount of air passing said heater unit, an air distributing unit for switching among a plurality of positions of air supply outlets into a compartment of said automobile, said outlets including a ventilation supply outlet, and an air bypass containing an air valve therewithin for supplying cool air upstream of said heater unit to said ventilation supply outlet;

a compartment temperature setting unit for setting a desired value for temperature within said compartment;

sensing units for sensing the temperature within said compartment and the amount of insolation into said compartment, respectively;

a processing unit responsive to output signals from said compartment temperature setting unit and said sensing units for computing a desired temperature of supply air into said compartment, determining the positions of the air supply outlets of said air distributing unit in accordance with the desired supply air temperature, deciding whether the desired supply air temperature is lower than a first preset value and whether the sensed insolation amount is less than a second preset value, and producing output signals indicative of the results of the determination and decisions; and

actuator means for actuating said air distributing unit and said air valve disposed within said air bypass in response to the output signals of said processing unit,

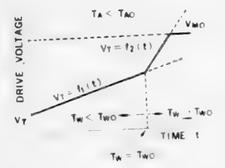
whereby the temperature within said compartment is maintained at the desired value and the supply of cool air through said air bypass is controlled in response to the insolation amount.

4,408,713

CONTROL FOR AUTOMOBILE AIR CONDITIONING SYSTEM

Tetsuya Iijima, Yamato, and Seiichi Takahashi, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 3, 1981, Ser. No. 317,863
Claims priority, application Japan, Nov. 4, 1980, 55-153721
Int. Cl.³ F24F *7/00*; **G05D** *23/00*
U.S. Cl. 236—49 **20 Claims**



1. An air quantity control method for an automobile air conditioning system including a blower fan, and a heat source, comprising the steps of:

(a) monitoring an ambient temperature condition of the automobile to detect a predetermined ambient temperature condition;

(b) sensing the temperature of said heat source; and

(c) setting operation of the blower fan speed in accordance with a timed mode when said predetermined ambient condition is detected, said setting step including the further steps of

(d) controlling the blower fan speed in accordance with a first mode of operation in which the blower fan speed is gradually increased with time when said sensed temperature is lower than a predetermined reference level, and

(e) controlling the blower fan speed in accordance with a second mode of operation in which the blower fan speed is more rapidly increased than that in the first mode of operation when said sensed temperature is higher than said predetermined reference level or when said ambient temperature condition is other than said predetermined ambient temperature condition.

4,408,714

HEATING APPARATUS FOR MOTOR VEHICLES

Shigeru Kobayashi, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

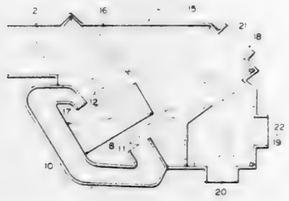
Filed Feb. 18, 1982, Ser. No. 349,843
Claims priority, application Japan, Feb. 27, 1981, 56-26998
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 C **5 Claims**

1. A heating apparatus for motor vehicles, comprising:

an air flow passage provided with a first and second port

which are adapted for taking in air from the vehicle compartment and for taking in air from outside the motor vehicle, respectively;

an air intake door provided in said air flow passage in proximity to said first and second ports, said air intake door being arranged to selectively assume a first position to close said first port and open said second port for permitting the air taken in from outside the motor vehicles to be introduced into said air flow passage, a second position to open said first port and close said second port for permitting the air taken in from the vehicle compartment to be introduced into said air flow passage, and any intermediate position to open both of said first and second ports for permitting a mixture of the air taken in from outside the motor vehicle and the air taken in from the vehicle compartment to be introduced into said air flow passage;



a heater core disposed in said air flow passage;

a blower disposed in said air flow passage; and

a heated air recirculation passage communicating with said air flow passage at a position upstream of said heater core and at a position downstream thereof, so that part of an air flow passed through and heated by said heater core to be used for heating the vehicle compartment is passed through said recirculation passage to be recirculated to a region upstream of said heater core.

4,408,715

HEATING INSTALLATION FOR PREMISES FOR DWELLING OR INDUSTRIAL USE

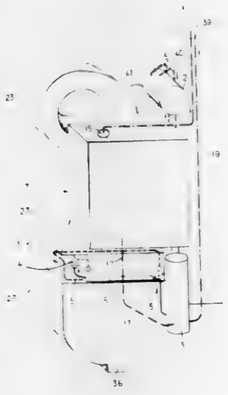
Michel Gueneau, Aurignac, France, assignor to Societe Nationale Elf Aquitaine Tour Aquitane, Courbevoie, France

Filed Mar. 17, 1981, Ser. No. 244,702

Claims priority, application France, Mar. 19, 1980, 80 06103

Int. Cl.³ G05D *23/00*

U.S. Cl. 237—2 B **23 Claims**



1. A heating installation for home or industrial use, comprising:

a boiler enclosure containing an intermediate liquid to be heated;

an internal combustion engine suspended in said boiler and at least partially submerged in said intermediate liquid for operating in said submerged condition so that heat generated by the operation of said engine is transferred directly to said intermediate liquid;

an exhaust pipe means for removing exhaust gases connected to said internal combustion engine and at least partially submerged in said intermediate liquid;

an exhaust heat exchanger located within the boiler enclosure and operatively connected to said exhaust pipe, so that heat from the submerged portions of the exhaust is transferred to the intermediate liquid;

a heat pump having a condenser, an evaporator, and a compressor which is driven by said internal combustion engine, said compressor being the only load of said internal combustion engine, so that at lower temperatures the amount of required compression and resulting load increases, producing therefore a greater thermal dissipation from said internal combustion engine, while heat from said condenser is transferred to said intermediate liquid within the condenser;

heating members located in the premises to be heated and supplied with a heating fluid heated by the intermediate liquid of said boiler; and

said condenser being situated downstream from the heating members and upstream from the boiler so that the heating fluid flowing from said heating members to said boiler is heated during its passage through the condenser.

4,408,716

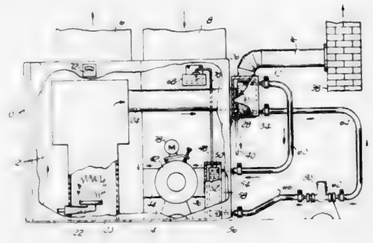
FLUE GAS HEAT RECOVERY SYSTEM

Leon G. Rockwell, 621 N. Lafayette, Dearborn, Mich. 48128

Filed Mar. 1, 1982, Ser. No. 353,407

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **1 Claim**



1. A flue gas heat recovery system for a forced hot air furnace having a combustion chamber, a hot air plenum surrounding the combustion chamber, a flue for conducting gases from the combustion chamber to the atmosphere, a cold air chamber in communication with the hot air plenum, an electrically driven blower fan in the cold air chamber for accelerating the flow of air through the furnace, and a thermal device associated with the hot air plenum controlling the blower fan; such system comprising a first heat exchanger in a heat absorbing relationship with the flue gases, a second heat exchanger in the cold air chamber in a heat transferring relationship with the air passing through the blower fan, a hydraulic circuit connecting the two heat exchangers, an electrically driven pump in the hydraulic circuit adapted to be actuated simultaneously with the blower fan for continuously circulating the fluid in such hydraulic circuit while the blower fan is in operation, a reservoir, a fluid conductor providing communication between the reservoir and such hydraulic circuit for maintaining the pressure therein at a constant pre-selected level, a box enclosing the first heat exchanger and drain means associated with the box for removing therefrom condensate.

4,408,717

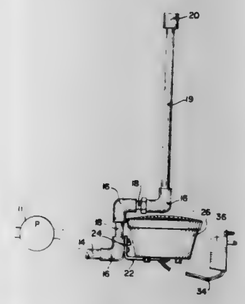
FOUNTAIN CONSTRUCTION WITH LIGHTING MEANS

Robert W. Rynberk, Hinsdale, Ill., assignor to Valley View Specialties Co., Crestwood, Ill.

Filed Apr. 27, 1981, Ser. No. 257,882

Int. Cl.³ F21P *7/00*

U.S. Cl. 239—18 **2 Claims**



1. In a water fountain construction for creating a spray of water over the surface of a pond or the like including a water feed line, a water feed pipe having an upper end extending at least to the water surface, at least one nozzle mounted on said upper end of said pipe, and a pump for delivering water under pressure through said line and to said pipe whereby the water is forced out of said nozzle to form the water spray, the improvement comprising means for removably mounting a lamp at the juncture of said line and said pipe, said means including elbows and short pipe sections providing the juncture between said line and said pipe, said elbows forming an area adapted to be occupied by said lamp, and including a bracket supporting said lamp in said area, one of said elbows including a first arm connected to said light and a second arm extending at a right angle to said first arm, said second arm having an axis displaced to the side of the axis of said pipe, said bracket being connected to said first arm and including a member extending outwardly to intersect the axis of said pipe, the outermost end of said member including a cut-away section, said lamp being mounted in said cut-away section of said member beneath said pipe for removal from the construction without disconnecting the bracket from the first arm whereby light beams emitted by the lamp are directed substantially axially of said pipe, the spray of water emitted by said nozzle being emitted within said light beam.

4,408,718

ELECTROMAGNETIC UNIT FUEL INJECTOR

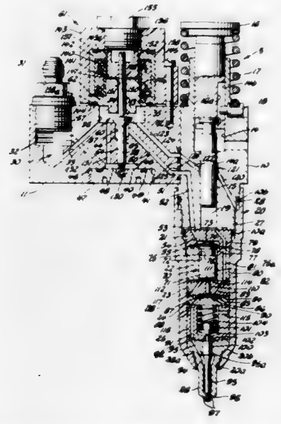
Thomas J. Wich, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 25, 1981, Ser. No. 305,501

Int. Cl.³ F02M *47/00*

U.S. Cl. 239—88 **5 Claims**

1. An electromagnetic unit fuel injector including a housing means having fuel passage means for the ingress and egress of fuel at a suitable supply pressure; a pump cylinder means in said housing means; an externally actuated plunger reciprocable in said cylinder means and defining therewith a pump chamber open at one end for discharge of fuel during a pump stroke and for fuel intake during a suction stroke of said plunger; said housing means including a valve body having a spray outlet at one end thereof for the discharge of fuel; an injection valve means movable in said valve body to control flow from said spray outlet; a discharge passage means connecting the said pump chamber to said spray outlet; and, a valve controlled passage means connecting said fuel passage means to said discharge passage means adjacent to said pump chamber; said valve controlled passage means including a solenoid actuated valve means controlling flow communication with said fuel passage means, a stepped servo control valve means and a control pressure passage means interconnecting said solenoid actuated valve means and said servo control valve means; said servo control valve means including a servo control valve controlling flow between said control pressure passage and said discharge passage means and a piston operatively connected at one end to said servo control valve and having its other end exposed to the pressure of fuel in said discharge passage means, the effective area of said servo control valve being substantially greater than the effective area of said piston.



4,408,719

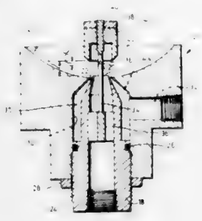
SONIC LIQUID ATOMIZER

Anthony J. Last, 191 King St., Oakville, Canada L6J 1B3

Filed Jun. 17, 1981, Ser. No. 274,411

Int. Cl.³ B05B *3/14*

U.S. Cl. 239—102 **4 Claims**



1. A sonic liquid atomizing device comprising:

a body member having a concave face and a bore having a tapered outlet end terminating in an opening centrally located in the face;

a nozzle member mounted in the bore of the body member and having an externally tapered outlet end projecting through the opening in the face of the body member to provide, with the bore, a tapering annular passage circumscribing the nozzle and having converging side walls in the direction of the opening in the face of the body member, the nozzle being adjustable axially to vary the area of the annular aperture;

a stem mounted axially in the nozzle and carrying a resonator spaced from the outlet end of the nozzle and from the concave face of the body member;

inlet means in the body member connecting with the annular passage for the passage of liquid therethrough; and

inlet means in the nozzle connecting with the tapered outlet end for the passage of gas therethrough;

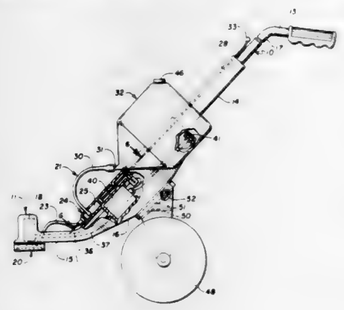
the converging projection of the tapered outlet end of the nozzle terminating on the axis of the stem between the resonator and a point one third of the distance from the resonator to the outlet end of the nozzle.

4,408,720

DEMOUNTABLE WHEELED LIQUID SPRAYER

Donald R. Anderson; Iven R. Norstrud, and John H. Threlkeld, all of Britt, Iowa, assignors to Britt Tech Corporation, Britt, Iowa

Filed Jan. 15, 1981, Ser. No. 225,196
Int. Cl.³ B05B 9/00
U.S. Cl. 239—149 **17 Claims**



1. A demountable wheeled liquid sprayer comprising:

(a) a wheeled frame;

(b) an elongated handle member detachably mounted at its medial portions in inclined supported relation upon said frame for ready detachment therefrom and having its lower end portion angulated and extending generally horizontally from said medial portions;

(c) a powered motor mounted on said lower end portion and detachable therewith and having a vertically extending drive shaft;

(d) an upwardly facing cup member mounted on said drive shaft in depending driven relation for rapid rotation therewith;

(e) a liquid container mounted on the medial portions of said handle member in supported relation and having a liquid outlet;

(f) conduit means connected to said container outlet and conveying liquid therefrom and discharging the same within the confines of said cup; and

(g) said cup member having liquid containing walls through which a plurality of discharge openings extend to cause the liquid received therein to be dispersed in tiny droplets as it is received therewithin and as said cup member is rapidly rotated by said motor;

(h) said handle member, motor, cup member, container, and conduit means being constructed and arranged for ready detachment as a unit from said frame and its wheels for hand-carried operation apart therefrom.

4,408,721

FITTING TO COMBINE AIR AND PRESSURIZED WATER

Carlos Cohen, Toronto, and Alfred Raab, Brampton, both of Canada, assignors to Jacuzzi Inc., Little Rock, Ak.

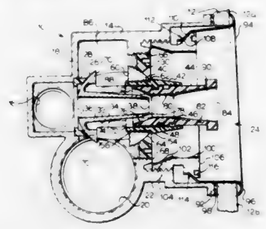
Filed Feb. 23, 1981, Ser. No. 237,532
Int. Cl.³ E03C 1/084; B05B 7/12
U.S. Cl. 239—417 **8 Claims**

1. In a hydro-air fitting assembly for controlling and directing a flow of aerated water including a housing, a hollow ball member pivotable in said housing and having passages therein for directing a flow of water and a flow of air, and a nozzle member co-pivotable with said ball having an axial passage therethrough where said air flow and water flow mix,

a nozzle holder to be received in said ball and having

a central passage therethrough for telescopingly receiving said nozzle,

means formed on said nozzle and said nozzle holder to provide for axial adjustment of said nozzle with respect to said ball between a first open position and a second paritally closed position,



said means comprising a channel of limited duration, which channels's ends terminate inboard of the ends of the member of which it is a part, and

means formed on said nozzle holder and said ball to permanently retain said nozzle holder in a fixed axial position after insertion into said ball,

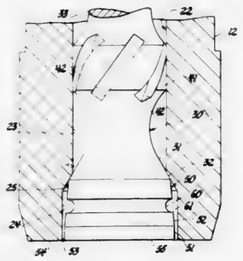
whereby no additional elements are required to secure said nozzle holder in said ball or to limit the axial movement of said nozzle.

4,408,722

FUEL INJECTION NOZZLE WITH GROOVED POPPET VALVE

Arthur R. Frelund, Okemos, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 29, 1981, Ser. No. 268,366
Int. Cl.³ B05B 1/32
U.S. Cl. 239—453 **2 Claims**



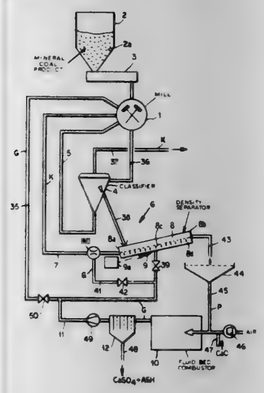
1. In a fuel injection nozzle of the outward opening poppet valve type for a diesel engine, the injection nozzle having a spray tip housing with an axial bore therethrough defining a cylindrical straight walled outlet opening extending a predetermined axial distance from one end thereof to an annular valve seat and a valve member axially movable in the bore, the valve member having an annular seating surface for engagement with the valve seat with a spray control pintle integrally extending therefrom and coacting with the wall of the bore to define a discharge orifice of annulus configuration, the pintle including a straight pintle land portion at its free end and a control cone tapering inwardly from the pintle land to join said seating surface, said pintle land portion having an outside diameter so as to define with said straight walled outlet opening an annular spray discharge orifice; the improvement wherein said valve member further includes a recessed annular groove located on said pintle cone from said free end a preselected distance greater than the axial extent of travel of said valve member so that during full opening movement of the valve member, said groove will not project outboard of said spray tip housing to thus affect the spray discharge pattern while said groove is operative so as to provide a thermal boundry downstream, in terms of fuel flow through the injector, of the seating surface of the poppet valve and, it is operative to effect turbulence of the fuel being discharged when the poppet valve is in an open position relative to the valve, said groove thus being operative so as to substantially eliminate carbon build-up inside the injector during its operation in an engine.

4,408,723

METHOD OF AND APPARATUS FOR THE TREATMENT OF PYRITE-CONTAINING MINERAL COAL

Fritz Adrian, Ratingen; Heinrich Sättler, Treis, and Werner Sauerland, Voerde, all of Fed. Rep. of Germany, assignors to Steag Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,380
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943555
Int. Cl.³ B02C 23/24
U.S. Cl. 241—19 **2 Claims**



1. A method of treating mineral coal containing pyrite which comprises the steps of:

(a) milling a mineral coal product containing pyrite and mineral detritus in the presence of a gas stream to form a fine component consisting predominantly of coal and a coarse component comprising pyrite, mineral detritus and coal;

(b) classifying the milled product step (a) to separate said fine component from said coarse component;

(c) subjecting said coarse component to a density separation on a vibrating trough while fluidizing same on said trough with a gas stream to produce a light product consisting predominantly of coal and a heavy product in the form of a combustible mixture of pyrite, coal and mineral detritus;

(d) burning said combustible mixture in the presence of lime to produce a gas and an environmentally safe solid residue consisting essentially of gypsum and ash; and

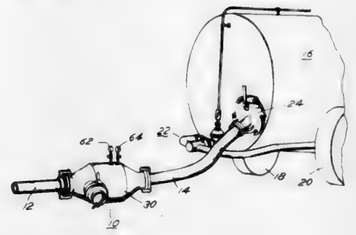
(e) feeding the gas produced in step (d) to at least one of steps (a) and (c) as the respective gas stream thereof.

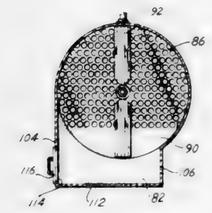
4,408,724

PULVERIZER DEVICE FOR HANDLING LIQUIDS CONTAINING SOLID AND SEMI-SOLID MATERIALS

Charles R. Meyer, Rte. 2, North Manchester, Ind. 46962

Continuation-in-part of Ser. No. 255,337, Apr. 17, 1981, abandoned. This application Mar. 11, 1982, Ser. No. 357,253
Int. Cl.³ B02C 23/36
U.S. Cl. 241—46.17 **15 Claims**





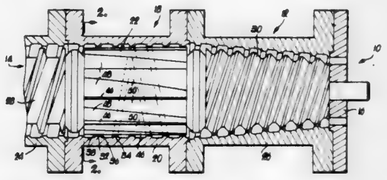
1. A pulverizer device for handling liquids containing solid and semi-solid materials, comprising a housing for receiving untreated liquid and for discharging treated liquid, an inlet port adapted for connection to a liquid supply means, a discharge port adapted for connection to a liquid collection or handling system, a screen in said housing disposed between said ports for trapping solids and semi-solids in the untreated liquid and having a substantially imperforate area near the bottom to facilitate removal of hard solids from said screen means on the intake side thereof, chopping means for pulverizing the solids and semi-solids in the liquid, a sump disposed in said housing beneath said screen for collecting the undisintegrated hard solids in the liquid, and a port means having a closure for removing the collected solids from said sump.

4,408,725

SCREW AND HEAD ASSEMBLY FOR PROCESSING WHOLE GRAINS AND CELLULOSIC MATERIALS

Lavon G. Wenger, and Bobbie W. Hauck, both of Sabetha, Kans., assignors to Wenger Manufacturing, Sabetha, Kans.

Continuation of Ser. No. 210,683, Nov. 26, 1980, abandoned. This application May 17, 1982, Ser. No. 378,994
Int. Cl.³ B02C 7/04
U.S. Cl. 241—260.1 **11 Claims**



6. In an extruder barrel assembly adapted to receive and convey a material:

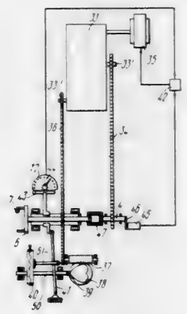
a tubular barrel section presenting on the interior thereof at least one relatively sharp cutting edge;
a rotatable screw section disposed within said section and including an elongated body having means on the periphery thereof for pushing said material outwardly against said cutting edge during rotation of the screw section in order to subdivide said material,
said means including structure defining a series of separate, circumferentially spaced, elongated grooves extending generally along the length of the body, said grooves progressively decreasing in depth from one side margin thereof to the other side margin.

4,408,726

ORTHOCYCLIC COIL WINDING MACHINE

Ivan A. Leonov, Bezbozhny pereulok, 3, kv. 31; Boris V. Smirnov, Chusovskaya ulitsa, 10, korpus 1, kv. 17; Vladimir V. Mashinin, Igralnaya ulitsa, 10, kv. 220, and Viktor I. Sharovatov, ulitsa Burakova, 11, korpus 1, kv. 35, all of Moscow, U.S.S.R.

Filed Mar. 31, 1981, Ser. No. 249,481
Int. Cl.³ H01F *41/06*
U.S. Cl. 242—7.09 **3 Claims**



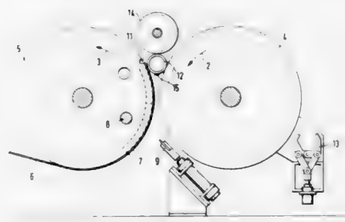
1. An orthocyclic coil winding machine comprising:
a bed;
a turntable mounted on said bed;
a plurality of mandrels installed radially on said turntable;
each of said mandrels comprising:
a body;
a tapered supporting sleeve installed on said body;
a slotted head flange;
a removable tail flange;
a carrier with radial slots therein;
said head flange, removable tail flange and carrier with radial slots being installed on said supporting sleeve;
sectors which are tapered downwardly and inwardly from the ends on the inner surface thereof and have teeth forming grooves on the outer surface thereof;
elastic retaining rings installed on said sectors;
said sectors being radially movable installed in said radial slots of said carrier;
said tapered surfaces of said sectors mating with said tapered supporting sleeve;
a winding spindle coaxial with one of said mandrels, and a drive unit therefor;
a faceplate fixed to said winding spindle at the end proximate said one mandrel;
a shaft mounted on said faceplate at a location radially outward of the axis thereof;
said winding spindle being spaced apart from said one of said mandrels;
wire placer means mounted on the shaft of said faceplate in an overlying relationship with said one mandrel.

4,408,727

METHOD AND APPARATUS FOR THE AUTOMATIC SEVERING AND REATTACHMENT OF A WEB

Hartmut Dropczynski, Konstrukteur, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 140,052
Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920707
Int. Cl.³ B65H *17/12, 19/26*
U.S. Cl. 242—56 R **11 Claims**



1. In a method for the severing and reattachment of a web of the type wherein the web is severed and the new head end of the web so formed is attached to a core which is wound on two driven support rolls between which the web runs, the improvement comprising the steps of: holding the web to the circumference of one support roll by suction; severing the web downstream of the held portion when the web is in the held condition; removing the finished roll; inserting a new core with a pressure roll in contact therewith; and adhering the new head end of the web by previously applying an adhesive to one of the head end of the web and to the core and removing the suction as winding of the core is started; wherein the one support roll is stopped in a first predetermined position, the web is severed in the first predetermined position of the support roll, the support roll is rotated to a second predetermined position and the head end of the web is adhered to the core when or after the support roll is in the second predetermined position and wherein the web is severed in said first predetermined position on the lower portion of the circumference of the support roll and the head end of the web is led, through continued rotation of the support roll before the new core is inserted in the wedge between the support rolls, into the second position for being adhered to the core.

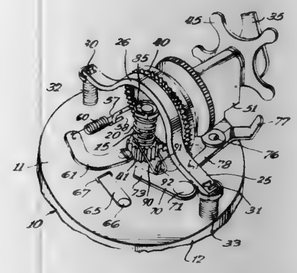
4,408,728

ANTI-REVERSE ACTUATOR MECHANISM

John B. Pittman, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 21, 1981, Ser. No. 333,119
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.2 A **10 Claims**

7. In a spin-cast reel having a center shaft (15), means for rotating the center shaft (15) to cause take-up of line within the reel, means for advancing the center shaft (15) lengthwise of the reel, a coil spring (20) surrounding said shaft for yieldably urging said center shaft to a rearward position in the reel, and an anti-reverse pawl (70) selectively positionable to prevent rotation in one direction of said center shaft as controlled by rotation of the center shaft, the improvement wherein said coil spring (20) is yieldably rotatable with the center shaft (15) and has an end coil (90) extended away from the center shaft; and



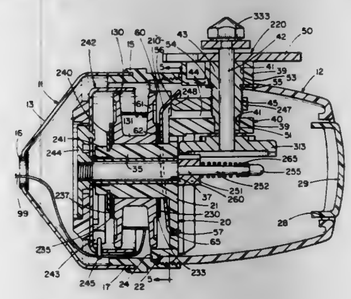
said pawl and end coil having a motion-transmitting connection (91,92) therebetween.

4,408,729

STAR DRAG SYSTEM FOR SPIN CAST REELS

Elvis W. Moss, Tulsa, Okla., and John T. Shackelford, Littleton, Colo., assignors to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 223,736, Jan. 9, 1981, abandoned. This application Oct. 18, 1982, Ser. No. 434,920
Int. Cl.³ A01K *89/01, 89/02*
U.S. Cl. 242—84.5 A **11 Claims**



1. In a spinning reel including a cylindrical reel body having a deck plate, a forwardly extending hub affixed to the deck plate and having an opening therethrough, a spool supported on the hub forwardly of the deck plate, a center shaft extending axially through the opening in the deck plate and the hub, a crank drive mechanism mounted in the reel body for rotating the center shaft, the improvement including:
(a) bracket means extending rearwardly from the deck plate and having aperture means therrein;
(b) an externally threaded post means mounted in the aperture means in the bracket means and having a longitudinal axis lying substantially parallel to the deck plate, the axis of the post means lying radially of the center shaft;
(c) a wheel affixed to the post means;
(d) a drag plate having a body portion supported between the deck plate and the spool and applying pressure to the spool, the drag plate having a cam surface angled upwardly and outwardly away from the body portion of the drag plate;
(e) a drag actuator mounted on the post means for movement radially along the longitudinal axis of the post means;
(f) a contact head on the drag actuator extending through the deck plate and into contact with the cam on the drag plate, rotation of the wheel advances or retracts the drag actuator radially along the cam surface on the drag plate to increase or decrease the pressure applied by the drag plate on the spool.

4,408,730

PORTABLE WIRE DISPENSER

Vasant J. Shend'ge, London, and Geoffrey S. Thompson, Windlesham, both of England, assignors to Multicore Solders Limited, Hemel Hempstead, England

Filed Feb. 25, 1982, Ser. No. 352,205
Claims priority, application United Kingdom, Mar. 25, 1981, 8109291
Int. Cl.³ B65D *85/675;* B65H *49/00, 75/40*
U.S. Cl. 242—96 **3 Claims**



1. A hand-held portable dispenser for a solder wire comprising, in combination, a hollow cylindrical body having a closed end and an open end, an outlet member having a generally cylindrical portion force fitted into said open end of said body, said cylindrical portion having a helical passageway formed on its external surface, said helical passageway having a substantially semicircular cross-section, a substantially linear passageway of substantially semicircular cross-section formed in said helical passageway and extending from the outer end of said helical passageway to the outlet of the dispenser, said linear passageway being substantially parallel to the longitudinal axis of the body, a helical coil of solder wire disposed in and occupying substantially the entire cross-sectional area of said cylindrical body and having one free end extending through said helical passageway and said linear passageway in said outlet member, said free end of said wire turning through an angle of approximately 90° as it passes from said helical passageway into said linear passageway, whereby said wire can be withdrawn from said outlet member through said helical and linear passageways without any substantial tendency to slip back into said cylindrical body.

4,408,731

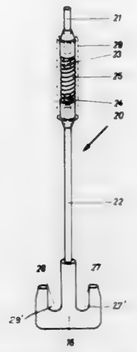
CREEL FOR A SPINNING MACHINE

Eduard Schenkel, Seuzach, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Jun. 14, 1982, Ser. No. 388,096
Claims priority, application Switzerland, Jun. 24, 1981, 4167/81
Int. Cl.³ B65H *49/02;* D02H *1/00*
U.S. Cl. 242—131 **14 Claims**

1. A creel for a spinning machine having a center plane and a longitudinal direction of extent, comprising:
at least two rows of rotatably mounted roving bobbins located to each side of the center plane of the spinning machine;
each of said row of roving bobbins extending essentially parallel to the center plane;
each of the roving bobbins of a row being adjacently aligned with respect to one another and serving for paying-off roving therefrom and for infeeding the same to a related drafting arrangement;
at least one row of substantially rod-shaped holders arranged to each side of the center plane and extending essentially parallel to said center plane;
each said row or rod-shaped holders being located behind one of the rows of bobbins defining a front row;
said holders having opposed ends;
one of the ends of each of the holders being rigidly mounted;

the opposite end of each of said holders being equipped with means defining at least two guides for rovings; and



said rovings extending directly from their roving bobbins by means of said guides to their related drafting arrangement.

4,408,732

STRIP FILM HANDLING DEVICE

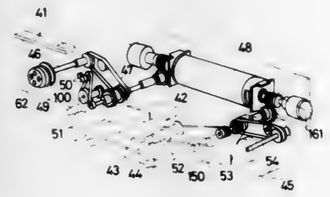
Shiro Toriumi, Zama; Kenjiro Ishii, Yokohama, and Seiichi Yamagishi, Machida, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 13, 1981, Ser. No. 253,461

Claims priority, application Japan, Apr. 16, 1980, 55-51384[U]; Apr. 18, 1980, 55-52184; May 21, 1980, 55-68238; Nov. 19, 1980, 55-166373

Int. Cl.[3] **G03B** *1/04*; **G11B** *15/32*

U.S. Cl. 242—192 **24 Claims**



3. In combination for use with any selected film cartridge of a plurality of film cartridges, each containing a strip film wound on a reel in the form of a roll and having similarly positioned film feed outlets through which film is withdrawn from the cartridge and at least some of the cartridges having an opening through which a feed roller is insertable at respectively different positions, a strip film handling mechanism comprising:

drive means engageable with the reel of the cartridge held loaded in a predetermined position for rotatingly driving the reel, said drive means including interchangeable engaging members for engaging the drive means with the reel;

feed means for separating the leading end of the strip film from its roll and feeding the leading end from the cartridge, the feed means including a roller member movable into the film feeding outlet of the cartridge to contact the surface of the film wound on the reel;

a support member for supporting the roller member while permitting the roller member to advance or retreat between the frictional contact position and a retracted position, an assembly for bringing the roller member to the frictional contact, and a drive transmitting assembly for rotatingly driving the roller;

transparent guiding means for transporting the strip film from the feed means to a take-up station by way of an illuminating station; and

take-up means for winding up the strip film.

4,408,733

MAGNETIC TAPE CASSETTE

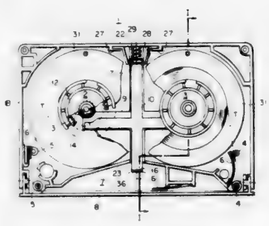
Kengo Ooishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1981, Ser. No. 304,465

Claims priority, application Japan, Sep. 24, 1980, 55-132591

Int. Cl.[3] **G11B** *15/32*

U.S. Cl. 242—199 **7 Claims**



1. A magnetic tape cassette comprising: a cassette case having upper and lower halves; first and second magnetic tape winding hubs arranged in respective right and left positions in an interior of said cassette defined by said upper and lower halves of said case, each of said two hubs comprising a first cylindrical wall forming a shaft hole adapted to receive a rotary drive shaft, and a second cylindrical wall formed coaxially with said first cylindrical wall, said second cylindrical wall having a plurality of engaging grooves formed in an inner surface thereof; locking means comprising a crosswise locking member slidably supported on a bottom of said lower half between said hubs, said locking member comprising a straight bar and oppositely extendable arms substantially in the form of a cross with an upstanding pawl on the outer end of each arm disposed intermediate said first and second cylindrical walls and a spring member, said locking member being moveable back and forth in the longitudinal direction of said straight bar and being urged in one direction by said spring member to bias said pawls into engagement with said grooves, rotation in at least one direction of said hubs being stopped by engagement of said locking pawls with said engaging grooves; a magnetic tape laid over said hubs; and a tape running guiding means arranged symmetrically right and left in said case so as to guide said tape across an opening in said case in a front portion thereof.

4,408,734

SYSTEM FOR GUIDING A MISSILE BY LIGHT BEAM

Wladimir Koreicho, Chilly Mazarin, France, assignor to Societe Anonyme de Telecommunications, Paris, France

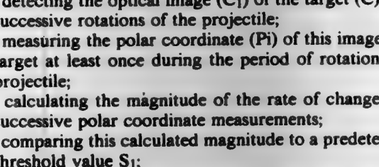
Filed Jan. 23, 1981, Ser. No. 227,818

Claims priority, application France, Jan. 29, 1980, 80 01840

Int. Cl.[3] **F41G** *7/26*

U.S. Cl. 244—3.13 **6 Claims**

1. In a system for guiding a missile, comprising a source emitting a light beam of which the axis defines the direction of sight, at least one modulation sight placed in the path of the beam, means for producing a relative movement of rotation between the sight and the beam, and, on the missile, at least one detector and a calculating circuit for determining, from the output signal from the detector, the coordinates of the detector with respect to the direction of sight, the control surfaces of the missile being actuated as a function of said coordinates with a view to controlling the path of the missile on the direction of sight, the improvement comprising the modulation sight comprises transparent and opaque, and possibly semi-transparent sectors, defined by curves symmetrical with respect to the center of the sight, at least certain of these curves having for equation $f(\rho,\theta \text{ modulo } \pi)=0$, where ρ varies monotonically as



a function of θ, and defining 2n angles at the center which are equal whatever the radius in question, so that the duration of relative illumination of the detector remains equal to 50%, whatever its position.

4,408,735

PROCESS FOR PILOTING AND GUIDING PROJECTILES IN THE TERMINAL PHASE AND A PROJECTILE COMPRISING MEANS FOR IMPLEMENTING THIS PROCESS

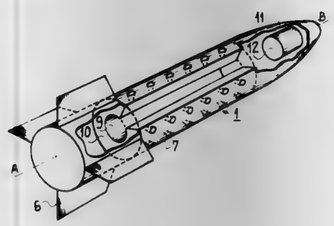
Pierre Metz, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 4, 1980, Ser. No. 204,039

Claims priority, application France, Nov. 9, 1979, 79 27712

Int. Cl.[3] **F41G** *7/20*; **F42B** *15/02*

U.S. Cl. 244—3.22 **7 Claims**



1. A method for correcting the terminal portion of the ballistic trajectory of a rotating projectile directed toward a target; said projectile having a barrel of impeller each provided with at least one lateral nozzle equally spaced around the circumference of the projectile body and an optical sensor located within the nose section, said method comprising the steps of:

(a) measuring the period of rotation T of the projectile about its longitudinal axis (A-B);

(b) detecting the optical image (C_1) of the target (C) on the successive rotations of the projectile;

(c) measuring the polar coordinate (Pi) of this image of the target at least once during the period of rotation of the projectile;

(d) calculating the magnitude of the rate of change of the successive polar coordinate measurements;

(e) comparing this calculated magnitude to a predetermined threshold value S_1;

(f) measuring the instant of time T_d when the calculated magnitude rate exceeds the threshold value;

(g) triggering of a first impeller at time T_d, and then sequentially after a given delay a second, third and finally n^{th} impeller in relation to the measured period of rotation of the projectile so that the mean thrust of all the impellers is in the same direction to correct said terminal portion of trajectory.

5. A projectile rotating around its longitudinal axis (A-B) and having a barrel of n impellers equally spaced around the circumference of the projectile for generating an orientable lateral thrust P, and an optoelectronic sensor located within its nose-section, said optoelectronic sensor comprising:

(a) a clock source;

(b) a first electronic means for calculating the period of rotation T of the projectile;

(c) at least a linear array of optical detector cells extending radially from the longitudinal axis of the projectile, this detector array being located in the image plane of the lens;

(d) a second electronic means for detecting the polar coordinate (ρi) of the target image received on a detector cell on successive rotations of the projectile;

(e) a third electronic means for calculating the value of magnitude rate of change of the detected polar coordinate of the image target on successive rotation of the projectile;

(f) a signal level comparator having inputs connected to the third electronic means and a threshold signal source for generating a triggering signal when said magnitude exceeds said threshold signal which is provided to a first impeller and sequentially via a time delay to a second, third, and finally to the nth impeller so that the mean thrust of all the impellers is in the same direction to correct said terminal portion of tragectory.

4,408,736

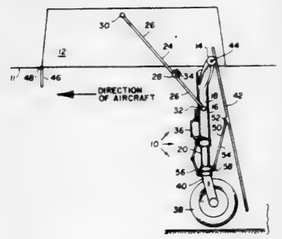
LANDING GEAR DOOR MUD GUARD

Nathan Kirschbaum, Huntington, and Augustus Sclafani, East Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,732

Int. Cl.[3] **B64C** *25/10, 25/16*

U.S. Cl. 244—100 R **10 Claims**



1. A combination fairing and splash guard for an aircraft landing gear comprising:

a door;

means for pivotally attaching the door to the aircraft;

a collar;

a means for rotatably attaching the collar to a moveable shock strut cylinder slidably disposed within a stationary shock strut cylinder of the landing gear;

a first pivot mounted on the collar;

a second pivot mounted intermediately on the door, said first and second pivots being parallel to a pivotal axis of the door; and

a rod attached at one end to the first pivot and at another end to the second pivot.

4,408,737

METHOD AND APPARATUS ENABLING A HORIZONTAL LANDING OF A FLYING BODY

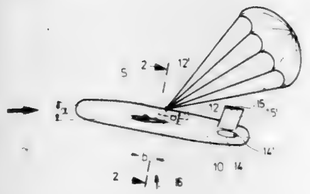
Hans Schwaerzler, Munich, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 97,201, Nov. 26, 1979, abandoned. This application Jul. 6, 1981, Ser. No. 280,280

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852220

Int. Cl.³ B64D *17/80*

U.S. Cl. 244—110 D **2 Claims**



1. An apparatus for horizontally landing a flying body having a center of gravity and steering means, comprising paraglider canopy parachute means having a given diameter and being normally stored in a top side portion of the flying body, said parachute means including load suspending means comprising a plurality of load suspending flexible cords divided into at least two groups of load suspending cords, said apparatus further comprising at least two pivot point means (**23**, **24**) including a forward pivot point secured to said flying body forward of said center of gravity and rearward pivot point means secured to said flying body to the rear of said center of gravity, one group of load suspending cords (**26**) being connected to said forward pivot point (**23**) and the other group of load suspending cords being connected to said rearward pivot point means, each group of cords having a given constant length such that said one group of load suspending cords connected to the forward pivot point is longer than the other group of load suspending cords connected to the rearward pivot point means, whereby the load exerted by the flying body on the load suspending cords is suspended at least at two axially separated pivot points and so that said given diameter of said paraglider canopy parachute is at least about 70% smaller than the diameter of a conventional parachute for a substantially vertical landing of a comparable load.

4,408,738

VARIABLE ENERGY ABSORBING SYSTEM FOR CRASHWORTHY HELICOPTER SEATS

Bernard Mazelsky, West Covina, Calif., assignor to ARA, Inc., City of Industry, Calif.

Filed Sep. 21, 1981, Ser. No. 303,788

Int. Cl.³ B64D *25/04*

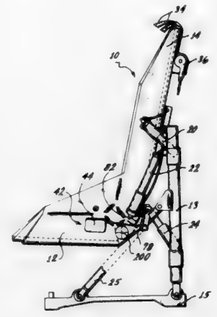
U.S. Cl. 244—122 R **39 Claims**

38. A variable energy absorbing system for crashworthy seats in an aircraft to protect occupants of varying weights from crash induced injury comprising,

sensor means connectable to said seat for sensing the weight of an occupant thereof and for providing a signal in response thereto,

actuation means connectable to said sensor means in response to signals therefrom to actuate energy absorber means, and

energy absorber means connectable to said actuation means and connectable between the said seat and aircraft, said energy absorbing means being in the form of energy absorbing devices capable of absorbing energy at different levels of force in response to signals from said actuation



means, the said signals being responsive to varying weight of the occupant of said seat.

4,408,739

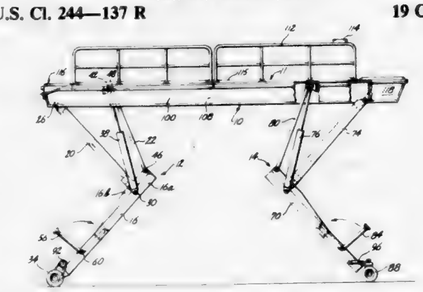
AIR TRANSPORTABLE CARGO LOADER FOR AN AIRPLANE

Christian K. E. Buchsel, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 31, 1980, Ser. No. 221,783

Int. Cl.³ B64C *1/22*

U.S. Cl. 244—137 R **19 Claims**



1. An air transportable, self-contained aircraft cargo loader, comprising a cargo platform having opposite inboard and outboard ends with foldable wheeled leg assemblies supportively connected to said platform beneath said respective ends, the leg assembly at each platform end being movable between a folded position wherein said leg assembly is retracted to lie compactly against said platform through a range of extended positions to a fully extended position wherein said leg assembly projects generally downwardly from said platform, wheel means journalled to said leg assemblies operable to support said platform on the extended leg assemblies, and means constraining the leg assemblies to move along predetermined motion paths during extension and retraction, said motion paths for the wheel means of the leg assemblies extending generally in a substantially vertical line relative to the platform with the platform in a substantially horizontal position, said leg assemblies being dimensioned to position the platform substantially at cargo deck level of an airplane with the leg assemblies at least partially extended, independently operable power actuation means for the respective leg assemblies for extending and retracting each independently of the other and adapted for conjoint operation to extend and retract said leg assemblies substantially synchronously, the inboard end of the platform being adapted in conjunction with the inboard leg assembly so as to permit the platform to be advanced over the cargo deck of the airplane and to be lowered onto the same whereby with the inboard leg assembly retracted and the inboard platform end resting on the airplane cargo deck and the outboard leg assembly extended to the ground the loader.thus supported can be slid inwardly and outwardly of the airplane, and whereby with the platform still so supported and approaching full withdrawal from the cargo deck the inboard leg assembly may also be extended to the ground, and whereby with the platform resting on the cargo deck and with the inboard leg assembly retracted and inside the airplane the outboard leg assembly may be retracted for full insertion and stowage of the loader inside the airplane, and further whereby with the loader fully withdrawn from the airplane the platform may be raised and lowered in the manner of an elevator by synchronous extension and retraction movement of the leg assemblies while maintaining the platform substantially horizontal and may alternatively be positioned with the inboard and outboard ends at different heights to enable the loader to be employed as a loading ramp.

4,408,740

APPARATUS FOR ACCELERATION-FREE MOUNTING OF A BODY IN A SPACECRAFT

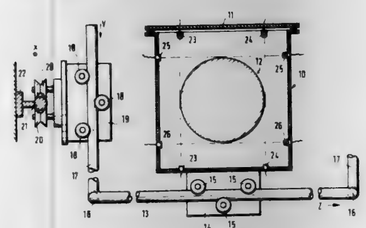
Peter Kleber, Bergisch-Gladbach, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft, Fed. Rep. of Germany

Filed Jun. 17, 1981, Ser. No. 274,456

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024127

Int. Cl.³ B64G *1/22*

U.S. Cl. 244—158 R **9 Claims**



1. Apparatus for acceleration-free mounting of a body in a spacecraft comprising an evacuatable protection box adapted for enclosing therein without contact a relatively free floating body, means for monitoring the position of said body relative to x, y and z axes and to said protection box without physically contacting the body, means for supportingly guiding said protection box for movement along x, y and z axes corresponding to said body axes, and means responsive to outputs of said monitoring means indicative of movement of said body along its x, y and z axes corresponding to said monitoring means indiciative of movement of said body along its x, y and z axes for correspondingly moving said protection box along its corresponding x, y and z axes to compensate for body movement and thereby maintain the body out of contact with said protection box.

4,408,741

BINDING DEVICE FOR ELONGATED PIPES

Fumio Mimura, Kawasaki, and Hiroo Asakawa, Yokohama, both of Japan, assignors to Nichiei Distribution Systems, Inc., Kawasaki and Nippon Kokan Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 23, 1981, Ser. No. 286,367

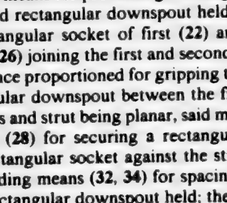
Int. Cl.³ F16L *3/22*

U.S. Cl. 248—68 CB **8 Claims**

1. A binding device for a plurality of elongated pipes comprising:

a plurality of sleepers of rectangular crosssection disposed in spaced and parallel arrangement to each other, at least a first pair of said sleepers being in a first vertical arrangement and at least a second pair of said sleepers being in a second vertical arrangement horizontally spaced apart from said first arrangement, a plurality of the elongated pipes being adapted to be placed side by side on and in transverse relation to each of said sleepers,

a plurality of spacers, each spacer being formed with at least one recess, said recesses being collectively adapted to couple with at least two outer surfaces of each of said



sleepers and being disposed in spaced arrangement to each other in a transverse relation to said respective sleepers, and

bundling strap means for tightly fastening and encircling said plurality of sleepers and spacers, whereby said sleepers and spacers extend respectively in spaced relation to each other and are assembled to form a plurality of spacers defined by the surfaces of said sleepers and spacers and adapted to receive the outer peripheral surfaces of said respective elongated pipes in tight contact relation thereto.

4,408,742

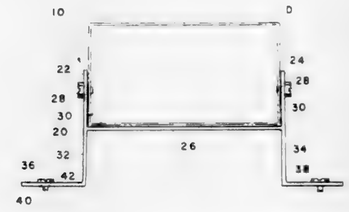
HANGER FOR RECTANGULAR-SECTION DOWNSPOUTS

George P. Korb, 7518 Harford Rd., Baltimore, Md. 21234

Filed Feb. 17, 1981, Ser. No. 234,964

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 R **1 Claim**



1. In a hanger for a downspout of rectangular cross-section, means for fastening a rectangular downspout to the hanger, and means for affixing the hanger to a building, the improvement comprising: means for preventing twisting and vibration-loosening of a said rectangular downspout held in the hanger, including: a rectangular socket of first (**22**) and second (**24**) arms and a strut (**26**) joining the first and second arms together parallel at a distance proportioned for gripping tightly the sides of a said rectangular downspout between the first and second arms, all said arms and strut being planar, said means for fastening being means (**28**) for securing a rectangular downspout tightly in the rectangular socket against the strut, said means for affixing including means (**32**, **34**) for spacing free of a said building a said rectangular downspout held; the means (**32**, **34**) for spacing including parallel extension (**32**, **34**) of said first and second arms past the strut, a respective foot (**36**, **38**) on the end of each extension at right angles thereto, said means for affixing including means (**42**) for attaching each foot to a building;

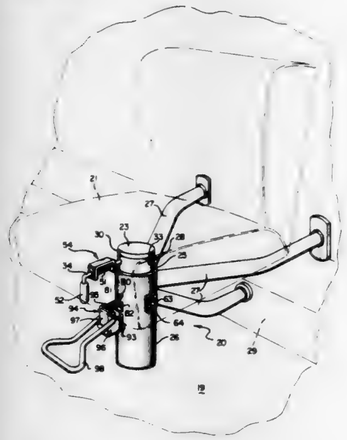
each foot oriented outboard of the respective said extension; all said extensions and feet being planar and substantially of the same width and thickness as the arms and strut, said means (42) for attaching, including a structure defining a fastener hole (40) in each foot; and said parallel extensions (32, 34) of said first and second arms located for flexibly pivoting said first and second arms about said strut by springing apart said feet.

4,408,743

SEAT WITH WEAR-RESISTANT MOUNTING

Robert W. DeWitt, Lombard, and Lester H. Feddeler, Elk Grove Village, both of Ill., assignors to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Filed Oct. 13, 1981, Ser. No. 310,778
Int. Cl.³ B61L *11/04*
U.S. Cl. 248—285 **6 Claims**



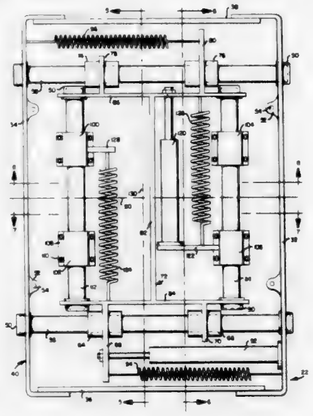
1. A seat assembly comprising:
a base member;
a vertically disposed, tubular intermediate member;
means mounting said intermediate member for vertical movement relative to said base member;
said tubular intermediate member having an upper portion terminating at a top edge defining an open upper end;
said upper portion of the tubular intermediate member having a cylindrical cross-section;
a vertically disposed trunnion member having a cylindrical cross-section;
said trunnion member having a lower portion received within said upper portion of the tubular intermediate member and an upper peripheral lip portion radially overlapping said top edge of the tubular intermediate member;
means on said trunnion member and on the upper portion of said tubular intermediate member mounting the trunnion member for rotation about a vertical axis;
said upper peripheral lip portion of the trunnion member having a lower surface engaging against said top edge on the upper portion of the tubular intermediate member without a friction-resistant surface therebetween;
a planar element fixed within said tubular intermediate member below its open upper end, said planar element having a flat upper surface and a lower surface;
said lower portion of the trunnion member having a flat bottom surface located adjacent said planar element;
a friction-resistant, wear-resistant member sandwiched between said flat bottom surface on the lower portion of the trunnion member and said flat upper surface on the planar element;
said planar element comprising means for supporting said trunnion member;
and means for supporting a seat atop said trunnion member.

4,408,744

COMPACT, PLANAR, MULTI-DIRECTIONAL VIBRATION ATTENUATOR SEAT SUPPORT

Raymond D. Thompson, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 24, 1980, Ser. No. 219,987
Int. Cl.³ B60N *1/08*
U.S. Cl. 248—636 **12 Claims**



1. A vibration attenuator seat support comprising:
a relatively thin, generally planar seat support assembly for supporting a seat, the seat support assembly having a central plane thereof;
an intermediate assembly substantially completely contained within the seat support assembly and including means for permitting limited movement of the seat support assembly relative to the intermediate assembly along a first axis generally parallel to the central plane of the seat support assembly; and
a base assembly substantially completely contained within the seat support assembly and including means for permitting limited movement of the intermediate assembly relative to the base assembly along a second axis generally parallel to the central plane of the seat support assembly and extending in a direction generally perpendicular to the direction of the first axis.

4,408,745

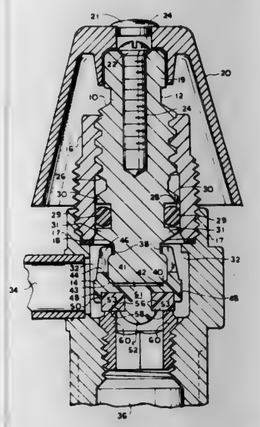
SWIVEL VALVE

Richard H. Swiers, and Richard G. Parkison, both of Louisville, Ky., assignors to American Standard, Inc., New York, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,515
Int. Cl.³ F16K *1/34*
U.S. Cl. 251—357 **22 Claims**

1. A faucet valve assembly comprising a valve stem and a swivel valve; one end of said valve stem defining a radially expanded foot member and an annular groove disposed about said stem adjacent said expanded foot member, the opposing end of said stem being adapted to receive a faucet handle; said swivel valve comprising an annular valve body having a bearing surface adapted to mate with the bottom radially expanded surface of said foot member, gripping means adapted to engage one end of said valve stem, said gripping means comprising a plurality of resilient vertically disposed arms spaced about the periphery of one surface of said valve body, said arms terminating in a plurality of inwardly and radially directed fingers adapted to engage said annular groove formed in said valve stem to provide free rotation of said valve stem independently

of the rotation of said valve; a dependent annular skirt disposed peripherally about the opposite surface of said valve body; an axially disposed neck element descending from said latter surface and terminating in an expanded knob; said skirt, neck and knob forming an annular recess; and a compression washer of resilient, compressible composition disposed in said annular recess; said washer having a valve seat engaging surface.

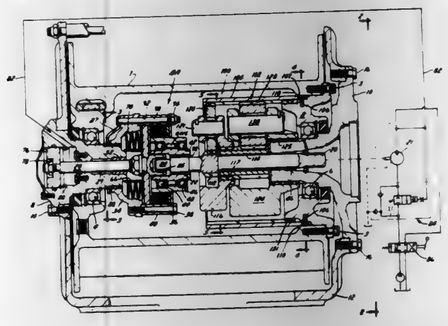


4,408,746

HYDRAULICALLY ACTUATED WINCH ASSEMBLY

James E. Marsch, and Herbert L. Eckert, both of Cedar Rapids, Iowa, assignors to Harnischfeger Corporation, West Milwaukee, Wis.

Filed Jul. 9, 1981, Ser. No. 281,917
Int. Cl.³ B66D *1/22*
U.S. Cl. 254—344 **7 Claims**



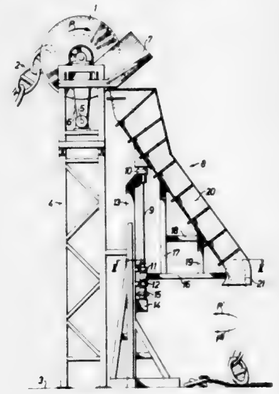
1. A hydraulically actuated winch assembly comprising a bearing support housing, a winch drum rotatably mounted in said housing, a power input shaft rotatably mounted in said housing and having a primary sun gear formed thereon, a common internally toothed ring gear secured to and within said winch drum, a secondary sun gear concentric to said power input shaft, a primary planetary gear system within said common ring gear and including a planet gear carrier having gear means in fixed constant mesh with said secondary sun gear for delivering power to said secondary sun gear, a plurality of planetary gears rotatably mounted on said carrier and in constant mesh with said primary sun gear of said input shaft and with said common ring gear for delivering power from said input shaft to said common ring gear, a secondary planetary gear system within said ring gear and including a secondary planet gear carrier fixed to said bearing support housing whereby said secondary planet gear carrier is anchored, a plurality of planet gears rotatably mounted on said secondary planet gear carrier and in constant mesh with said secondary sun gear and with said common ring gear for delivering power from said secondary sun gear to said common ring gear, whereby input power from said power input shaft is split between said two planetary gear systems and said power is delivered to said common ring gear for driving said winch drum, a brake assembly mounted within said housing and having a driving connection with said power input shaft, said brake assembly including an interleaved friction plate clutch for forming a releasable driving connection between said power input shaft and said bearing support housing, said brake assembly including spring means for normally urging said clutch into an engaged position to thereby lock said input shaft against rotation, said brake assembly also having hydraulically actuated means for releasing said friction plate clutch and thereby permitting rotation of said power input shaft, and a retainer plate mounted on said bearing support housing and within said drum and held against axial movement in one direction by a snap ring secured in said housing, said brake assembly being insertable in an axial direction in said drum and against said snap ring, and bolt means connected between said retainer plate and said brake assembly whereby the latter is axially fixed within said drum by said snap ring and can be assembled as a unit prior to insertion in said drum.

4,408,747

DEVICE AND METHOD FOR COLLECTING CHAINS OR THE LIKE

Carl-Henning Camitz, and Stig Lindgren, both of Ramnäs, Sweden, assignors to Bulten-Kanthal AB, Hallstahammar, Sweden

Continuation of Ser. No. 36,468, May 7, 1979, abandoned, which is a continuation of Ser. No. 864,037, Dec. 23, 1977, abandoned.
This application Sep. 2, 1980, Ser. No. 183,673
Claims priority, application Sweden, Dec. 30, 1976, 7614747
Int. Cl.³ B66D *1/72*; B65H *54/80*
U.S. Cl. 254—382 **5 Claims**



1. A device for collecting coarse and heavy chains in a manner suitable for storage and transportation, comprising
(a) means for feeding a chain at a predetermined rate of speed;
(b) chain guide means for receiving said chain from said feeding means, and pivotable about a substantially vertical axis for motion above a non-rotatable stationary support means at which said chain is to be collected, said support means comprising a means upon which said chain is deposited link by link for subsequent transport;
(c) means for pivotally reciprocating said chain guide means over said support means along a circular arc of less than 180° between two terminal positions; and
(d) means for synchronizing the speed of reciprocation of

said chain guide means with said predetermined rate of speed;

(e) whereby the portion of said chain emerging freely from said chain guide means is deposited link by link at said support means in a plurality of well-ordered elongated loops.

4,408,748

INTEGRAL FENCE POST AND CAP

Philip C. Lewis, Houston, Tex., assignor to Southwestern Pipe, Inc., Houston, Tex.

Filed Jun. 28, 1982, Ser. No. 392,880
Int. Cl.³ E04H *17/06*
U.S. Cl. 256—11 **7 Claims**



1. An integral fence post and cap comprising

a vertical post means having vertical walls defining a polygonal, horizontal cross section and providing planar side walls,

an upper portion of said post means defining a top rail receiving recess into which a horizontal top rail can be dropped,

at least one of said vertical walls extending vertically above said top rail receiving recess to form a rail enclosing portion having a polygonal cross section,

said rail enclosing portion being adapted to be bendable over said top rail to secure it in said recess,

said at least one vertical wall which extends above said top rail receiving recess defining a planar, coextensive continuation of a vertical wall of said post means,

said polygonal cross section of said rail enclosing portion defining, when bent over said rail, an angled coextensive continuation of a portion of said polygonal horizontal cross section of said post means, and

said rail enclosing portion defining, when bent over said top rail, a flat cap top means extending at least partially across the top of said top rail.

4,408,749

VARIABLE PITCH RAILING AND SYSTEM

Steven A. Zieg, Anaheim Hills, Calif., assignor to Mansion Industries, Inc., City of Industry, Calif.

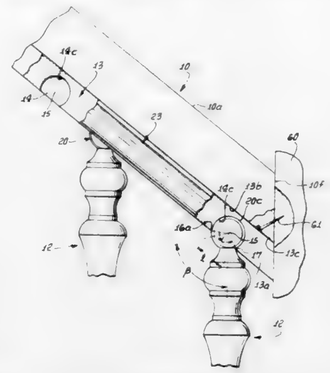
Filed Jan. 18, 1982, Ser. No. 339,877
Int. Cl.³ E04H *17/14*
U.S. Cl. 256—67 **8 Claims**

1. For use in a connection between a one-piece rail and at least one baluster having a pivot at an end thereof, the improvement comprising

(a) the rail having an elongated recess sunk in one exterior lateral side thereof, and having at least one interior socket laterally intersecting said recess,

(b) the socket having a curved wall that pivotally receives the baluster pivot with the baluster projecting from the rail, the socket having an interior laterally facing wall defined by the rail, said curved wall and said laterally facing wall being of one-piece with the rail,

(c) the recess having L-shaped interior sides that receive and



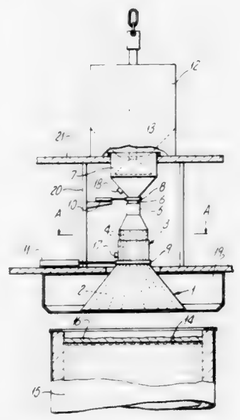
confine an exterior moulding fitting to the rail which laterally confines the pivot in the socket between the moulding and said interior wall, that providing pivoting in said socket, said L-shaped interior sides being laterally exposed to the exterior.

4,408,750

METHOD AND ARRANGEMENT FOR SPREADING COVERING MATERIAL

Kjell Andersson, Nyköping, and Ragnar Forsell, Oxelösund, both of Sweden, assignors to Scandinavian Lancers Aktiebolag, Hoganas, Sweden

Filed Mar. 12, 1982, Ser. No. 352,865
Claims priority, application Sweden, Feb. 26, 1981, 8101242
Int. Cl.³ C21C *7/00*
U.S. Cl. 266—216 **5 Claims**



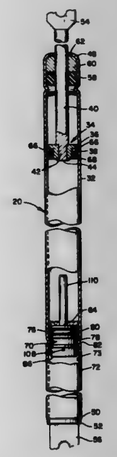
1. Apparatus for spreading powdered or granulated material on the surface of a metal which is contained in an open metallurgical ladle located beneath said apparatus, said apparatus comprising dosing container means for providing a predetermined quantity of said material to be spread upon the metal melt surface, first and second valve means located above and below, respectively, said dosing container means for filling and emptying, respectively, said dosing container means, spreading means for spreading material from said dosing container means on said surface and including a plurality of truncated tubular cone means arranged concentrically to each other for defining spreading passageways leading from said dosing container means towards said surface, said dosing container means including a plurality of concentrically arranged tubular wall means for dividing said dosing container into concentrically arranged divisional containers adjoining said tubular cones with each divisional container being associated with a respective spreading passageway, and a filling aperture which is common to all said divisional containers.

4,408,751

MULTI-CHAMBER TEMPERATURE COMPENSATED PNEUMATIC COUNTERBALANCE

Daniel P. Dodson, Florence, and George C. Ludwig, Marion, both of S.C., assignors to AVM Corporation, Jamestown, N.Y.

Filed Apr. 24, 1981, Ser. No. 256,997
Int. Cl.³ F16F *9/02*
U.S. Cl. 267—120 **36 Claims**



1. A temperature compensated pneumatic counterbalance spring link comprising: a gas-charged cylinder with a cylinder wall having two ends; a piston rod and attached piston operably disposed in said cylinder intermediate said two ends with said rod projecting from one end of the cylinder; retaining means and seal means around said rod and maintained in said one end of the cylinder; the portion of said cylinder between the piston and the other end of said cylinder constituting a space and including at least one fixed partition wall means included in said space having means providing a fluid seal with said cylinder and dividing said space into a variable volume piston operating space and at least one auxiliary volume space; said wall means including temperature responsive valve means enabling substantially free gas flow in a direction away from the piston space and preventing gas flow in the opposite direction except when temperature to which the spring link is normally subjected falls below a predetermined value.

4,408,752

MAGNETIC CHUCK

Mamoru Uchikune; Kiyoshi Yanagisawa; Mutsukazu Tagami, all of Ueda; Taketo Shimizu, Nagano; Kunio Horiuchi, and Hiroo Sakaguchi, both of Ueda, all of Japan, assignors to Kanetsu Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Jul. 24, 1981, Ser. No. 286,561
Claims priority, application Japan, Aug. 21, 1980, 55-114077
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—8 **6 Claims**

1. A magnetic chuck operative to removably retain magnetic substances with magnetic force, comprising: a casing opening at one side; a top plate fixed to the open side of said casing to define a mounting surface for said magnetic substance and having a plurality of elongate magnetic main pole members and auxiliary pole members alternatively arranged in a side-by-side manner and integrally incorporated to close such open side and sandwich thin non-magnetic separators therebetween; and a magnet assembly received in said casing and slidable laterally of said main pole members and auxiliary pole members to magnetize and demagnetize the mounting surface of the top plate and having a plurality of magnetic yokes and permanent magnets alternatively arranged in a side-by-side manner in the sliding direction, the said main pole members having on the side facing said magnet assembly laterally extending portions partially overlapping the adjacent said auxiliary pole members so as to be interposed between the auxiliary pole members and the magnet assembly, and in contact with the magnet assembly to permit the magnet assembly to be slid and to enable the chuck to retain thin workpieces or several small size magnetic substances firmly.

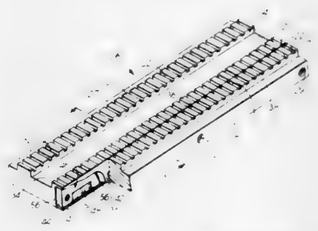


4,408,753

HOLDER FOR ALIGNING PARAMAGNETIC ARTICLES

James S. Chapman, Lee's Summit, and Anthony Tedeschi, Raytown, both of Mo., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 254,725, Apr. 16, 1981, Pat. No. 4,383,357.
This application Feb. 3, 1983, Ser. No. 463,681
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—8 **5 Claims**



1. A holder for aligning and supporting elongate, paramagnetic articles comprising:

a support, having a plurality of first grooves formed in a surface thereof for receiving one of a first group of the articles in each of such first grooves;

a magnet mounted adjacent to said first grooves, said magnet having a field extending substantially parallel to said first grooves;

a spacer mounted with a first surface against said one end of said first grooves and blocking the one end of said first grooves, said spacer having a predetermined thickness; and

a plurality of second grooves formed in a surface of said support, said second grooves extending in alignment with said first grooves against said spacer, whereby a second group of said articles, upon being placed into said second grooves, are magnetically attracted toward said first

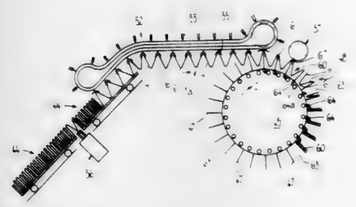
group of articles to become spaced therefrom by the thickness of the spacer.

4,408,754

METHOD AND APPARATUS FOR GATHERING TOGETHER SHEETS OR THE LIKE INTO MULTI-SHEET PRINTED PRODUCTS, ESPECIALLY NEWSPAPERS AND MAGAZINES

Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,650
Claims priority, application Switzerland, Mar. 11, 1980, 1889/80
Int. Cl.³ B65H *39/00*
U.S. Cl. 270—52 **25 Claims**



1. An apparatus for gathering together sheets to form multi-sheet printed products, especially newspapers, magazines and periodicals, wherein the sheets are supplied from webs which are each constituted by printed sheets which are interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the webs, comprising:

a sheet associating device having support means for independently supporting each of at least two zig-zag folded webs defining a first web and at least one other web, each constituted by printed sheets which are interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the webs, at predetermined fold lines;

cutting means for cutting each web independently of one another at given ones of said fold lines to form cut sheets therefrom;

said cutting means cutting said first web after it has been introduced to said sheet associating device at given ones of said fold lines to allow the sheets to be supported at said sheet associating device between said support means and thereafter cutting said at least one other web after it has been introduced to said sheet associating device at given ones of said fold lines to allow the sheets thereof to be supported at said sheet associating device between said support means; and

means for bringing the cut sheets of said first web successively into a position aligned with the cut sheets of said at least one other web following the severing of said first web and depositing upon such sheets severed from said first web the sheets severed from said at least one other web.

16. An apparatus for gathering together sheets into multi-sheet printed products, comprising:

a support device for the spaced supporting of each one of zig-zag folded webs at their fold locations;

each of said webs comprising a substantially zig-zag folded web formed of sheets interconnected with one another at fold locations extending transversely with respect to the lengthwise direction of the web;

a cutting device for cutting each web at predetermined fold locations;

transport means which following the cutting of the sheets serves to bring the sheets of a first one of said webs into a position aligned with a next following web;

each support device containing support elements arranged in spaced relationship from one another;

each web resting upon said support elements at fold locations of the web;

all of the support devices being formed by a revolvingly driven drum member;

said support elements being structured as rib means upon which rest said webs and arranged at the circumference of the drum member and extending in the axial direction of said drum member;

said drum member comprising at least two infeed portions for the individual webs and a removal portion for superimposed sheets formed from said webs; and

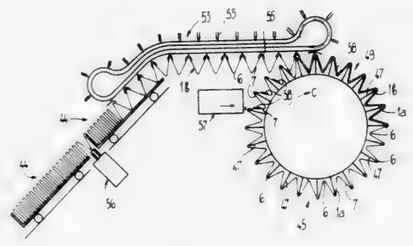
said infeed portions and said removal portion being offset with respect to one another in the axial direction of the drum member.

4,408,755

METHOD AND APPARATUS FOR FORMING MULTI-SHEET PRINTED PRODUCTS, ESPECIALLY NEWSPAPERS AND MAGAZINES

Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Feb. 17, 1981, Ser. No. 235,661
Claims priority, application Switzerland, Mar. 11, 1980, 1888/80
Int. Cl.³ B65H *39/00*
U.S. Cl. 270—52 **28 Claims**



1. A method of forming multi-sheet printed products, especially newspapers, magazines and periodicals, comprising the steps of:

supporting at least one first zig-zag folded web, constituted by printed sheets which are interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the web, at fold lines at spaced locations of said first zig-zag folded web;

thereafter and concurrently while said first web is supported at said fold lines substantially in a zig-zag form laying upon said first web at least one further zig-zag folded web likewise constituted by printed sheets which are interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the web, with the fold lines of said at least one further web being in alignment with the fold lines of said first web; and

supporting said at least one further web at fold lines thereof at the same locations as said first web.

11. An apparatus for forming multi-sheet printed products, especially newspapers, magazines and periodicals, comprising:

a support device for supporting at spaced support locations at least one first zig-zag folded web constituted by printed sheets interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the web;

said support device supporting said first web at predetermined fold lines thereof;

means for laying upon said supported first web and concurrently while said first web is supported at said predetermined fold lines substantially in a zig-zag form at least one further zig-zag folded web constituted by printed sheets interconnected with one another at fold lines extending transversely with respect to the lengthwise direction of the web;

the fold lines of said at least one further web being in alignment with the fold lines of said first web; and

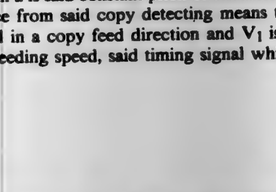
said support device supporting said at least one further web at predetermined fold lines at said spaced support locations.

4,408,756

COLLATOR WITH COLLATE MODE AND JOB SEPARATION MODE

Kiyoshi Miyashita; Muneo Kasuga; Akira Shimizu, all of Hachioji; Fumitaka Ozeki, Inagi; Hiroshi Tsuda, Mitaka; Katsuhiko Kimura, Hino; Nobuoto Hattori, Hachioji; Norio Amemiya, Hachioji, and Masaru Yamazaki, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,376
Claims priority, application Japan, Jul. 31, 1980, 55-105440
Int. Cl.³ B65H *39/10*
U.S. Cl. 271—288 **6 Claims**



1. A collator for use in combination with a copy discharge apparatus such as a copying machine, a printing machine and the like which discharges a plurality of copies of originals in succession, said collator comprising:

a series of bins arranged in parallel with each other at a constant pitch;

feeding means for feeding the copies through a copy feed path along the series of bins at a constant speed, a distributor operative to move along said copy feed path across a predetermined number of bins to deliver the copies into said predetermined number of bins;

first setting means in response to actuation of an operation for setting the collator in a collate mode in which a plurality of copies of respective orginals are delivered into successive bins;

second setting means in response to actuation of the operator for setting the collator in a job separation mode in which all copies of each of successive originals are delivered into respective bins in succession, and

time pulse generating means for generating a timing signal for moving said distributor in said job separation mode, said time pulse generating means including

counting means for accumulating a signal supplied from said copy discharging apparatus to produce a count value N, said signal representing the number of said originals,

means arranged at an inlet portion of the collator for detecting a rear edge of the respective copies to produce a copy detection signal,

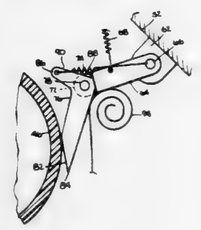
variable timer means for settiing, in response to the copy detection signal supplied from said copy detecting means upon detection of the rear edge of the last copy of an Nth original, a set time represented by $b+(N-1)xa/V_1$, wherein a is said constant pitch of the series of bins, b is a distance from said copy detecting means to the first bin viewed in a copy feed direction and V_1 is said constant copy feeding speed, said timing signal which defines the timing for advancing the distributor bin by bin being produced at a completion of said set time.

4,408,757

SHEET SEPARATING DEVICE

Jay M. Yarm, Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jan. 28, 1982, Ser. No. 343,686
Int. Cl.³ B65H *29/56*
U.S. Cl. 271—311 **5 Claims**



1. In a photocopy machine wherein a toner image is produced on a sheet of copy paper and is fused thereto by passing the sheet of copy paper between a pair of fusing rollers, at least one of which is heated and has a relatively soft outer surface, a sheet separating device for stripping sheets of copy paper from the heated fuser roller, said device comprising:

A. fixed support means located adjacent the heated fuser roller,

B. an elongate member pivotably mounted on said support means with a free end of said elongate member in juxtaposition with the outer surface of said heated fuser roller,

C. a stripper finger pivotally connected to said free end of said elongate member and having a knife edge formed at the free end of said stripper finger, and

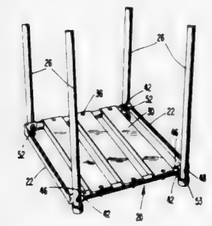
D. resilient means interconnecting both said elongate member and said stripper finger with said fixed support for normally maintaining said elongate member and said stripper finger in substantial alignment and with said knife edge in scraping engagement with said surface of said roller, but acting to move both said elongate member and said stripper finger out of said substantial alignment and thereby move said knife edge away from said surface in response to a force exerted on said elongate member or said stripper finger in a direction which would tend to cause said knife edge to gouge into said surface.

4,408,758

FOOT SUPPORT FOR LAWN CHAIR SWING

Herbert S. Gurbst, Kingston, and William Fulton, Dallas, both of Pa., assignors to Roth American, Inc., Wilkes-Barre, Pa.

Filed Oct. 30, 1980, Ser. No. 202,308
Int. Cl.³ A47C *15/00*
U.S. Cl. 272—85 **2 Claims**



1. A foot support structure disposed between and below a

pair of opposed seats in an oscillating lawn chair swing, the foot support structure comprising:

a first slat support rod;

a second slat support rod;

a first impact absorbing flexible plastic tube secured to and disposed between a first end of each of the first and second slat support rods to form an outer edge of the foot support;

a second impact absorbing flexible plastic tube secured to and disposed between a second end of each of the first and second slat support rods to form another outer edge of the foot support, said first and second flexible plastic tubes being generally parallel with an axis of oscillation of the lawn chair swing;

at least one floor slat secured to and disposed between said first and second slat support rods and also disposed between said first and second plastic tubes; and

means for suspending the foot support structure from the lawn chair swing.

4,408,759

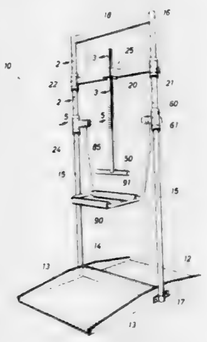
TOTAL RESISTANCE GYM

J. R. Reneau, and Richard D. Relyea, both of Austin, Tex., assignors to Bullseye Gun Centers, Inc., Austin, Tex.

Filed Feb. 27, 1980, Ser. No. 125,202

Int. Cl.³ A63B *21/00*

U.S. Cl. 272—131 **4 Claims**



1. An exercise device comprising:

(a) a frame extending above an open area;

(b) an adjustable resistance means mounted on said frame providing constant two-way resistance to in line reciprocating forces exerted by a user, said resistance means including spring biased friction drag means for resisting the forces exerted by a user;

(c) handle means operatively associated with said resistance means and movable with respect thereto so as to transfer energy exerted by a user during an exercise program, said handle means including an elongated arm which is in sliding contact with said friction drag means;

(d) said resistance means further including rotary drag brake means for resisting the forces exerted by a user, said rotary drag brake means comprising a sleeve guide having a protrusion extending therefrom, said protrusion including threaded hole means, a support shaft threadably secured to said protrusion, a pair of spaced and opposite friction pads simultaneously engageable about said handle means, said friction pads affixed to metal backing plates mounted on said support shaft, cylindrical housing means enclosing said rotary drag brake means, spring means mounted on said support shaft providing a compressive force acting against said friction pads, and locking means for preventing rotational movement of said friction pads and said backing plates; and

(e) a bench positioned at the open area beneath said frame permitting a user to perform various exercises on manipulating said handle means, which exercises are resisted by said resistance assembly and are performed from a lying or sitting position.

4,408,760

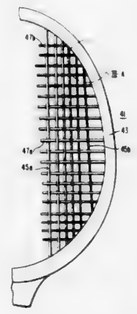
STRUNG RACQUET

Harry Ferrari, 144 W. Swissvale Ave., Pittsburgh, Pa. 15218

Division of Ser. No. 939,481, Sep. 5, 1978, Pat. No. 4,330,132. This application Nov. 9, 1981, Ser. No. 319,576

Int. Cl.³ A63B *49/00*

U.S. Cl. 273—73 D **9 Claims**



1. A racquet for tennis, squash, racquet ball or the like, where, in play, the racquet strikes a ball, said racquet including a frame having holes and also including string threaded through said holes, said string being made up of separate short string lengths, each said string length having predetermined selectable properties or structure, each said string length threaded through a plurality of holes and each string length being subject to a predetermined tension, coordinated with its properties or structure, the coordination of said properties or structure of said string lengths being such that the deflection of a length produced by the impact of a ball around the periphery of the racquet is substantially equal to the deflection produced by a like impact of said ball near the center of said racquet, and means for securing each said string length in at least a pair of said holes through which it is threaded, so that the tension of said length is maintained under repeated impacts of said ball.

4,408,761

GAME AND GAME DEVICES

William McAllister, London, England, assignor to McAllister (Sports Games) Limited, London, England

Filed Sep. 2, 1981, Ser. No. 298,733

Claims priority, application United Kingdom, Dec. 4, 1980, 8038885

Int. Cl.³ A63F *7/06, 7/40*

U.S. Cl. 273—85 R **9 Claims**

6. A table game, comprising:

a table having a playing surface and a goal at each end;

a plurality of playing devices, each device comprising a housing means, including:

a semi-spherical shaped hollow member providing a domed upper outer surface;

a base plate mounted on an underside of said hollow member;

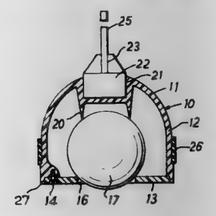
means defining a central aperture in said base plate, said central aperture having a ball means supporting edge;

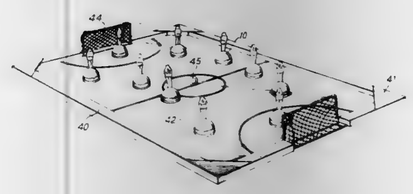
said hollow member including a plurality of inwardly extending projections each having a free end and each extending inwardly within said hollow member;

ball means rotatably mounted in said base plate and projecting slightly through said central aperture, each of said free ends of said inwardly extending projections contacting said ball means to hold said ball means in contact with said internal edge of said central aperture and to keep said ball means projecting slightly through said central aperture, while enabling said ball means to rotate easily;

said housing means having external side and bottom surfaces forming a sharp lower braking edge on said housing means, said lower edge achieving a braking effect when said housing means tilts to engage said lower edge with said playing surface;

cues for striking said playing devices; and a ball.





4,408,762

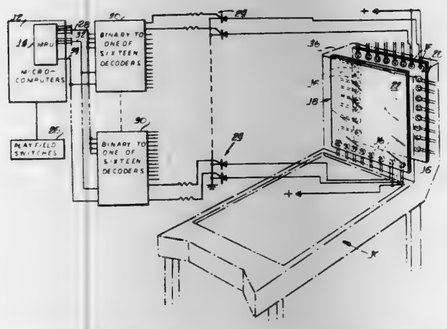
ELECTRONIC PINBALL GAME

Arthur L. Brey, Antioch, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Continuation of Ser. No. 92,993, Nov. 9, 1979, abandoned. This application Jun. 12, 1981, Ser. No. 273,246

Int. Cl.³ A63F *7/02*

U.S. Cl. 273—121 A **8 Claims**



1. In a pinball machine which is controlled by a micro computer including a micro processing unit and which includes a plurality of switches on its playfield which are actuated by the pinball and provide signals to the micro computer, a display means comprising an infinity box including a one-way mirror disposed in the box, a two-way mirror disposed in said box in spaced relation to said one-way mirror, and a plurality of lamps disposed so as to provide repetitive images to the viewer of the display means, said lamps being disposed in the space between the two mirrors, and a plurality of switch means for energizing respective lamps, said micro processing unit being connected to said plurality of switch means so as to repetitively actuate said plurality of switch means in a predetermined sequence in accordance with the actuation of the playfield switches, whereby the lamps are energized in the predetermined sequence to create apparent rotational motion of the repetitive images of the display means, the micro processing unit repetitively actuating said plurality of switch means at different sequential speeds as determined by different play related functions to create apparent rotational motion at different speeds, said play related functions being determined by the actuation of predetermined playfield switches.

4,408,763

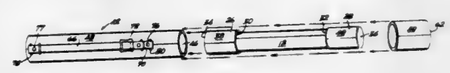
GAMEBOARD AND CARRYING CASE

Charles R. Simons, 19 W. Thompson Ave., Pleasantville, N.J. 08232

Continuation-in-part of Ser. No. 236,720, Feb. 23, 1981, Pat. No. 4,381,113, which is a continuation of Ser. No. 952,311, Oct. 11, 1978, Pat. No. 4,252,324, which is a continuation-in-part of Ser. No. 748,820, Dec. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 674,986, Apr. 8, 1976, abandoned. This application Feb. 22, 1982, Ser. No. 350,617

Int. Cl.³ A63F *3/00*

U.S. Cl. 273—286 **6 Claims**





1. In combination, a carrying case, a gameboard, a pair of die tossing cups, play pieces and a game pack for storing the play pieces,

said gameboard comprising a sheet of pliable material of uniform thickness having a first and a second pair of opposed right-angularly arranged margin edges spaced from one another a first and a second predetermined distance respectively, and each edge being of said uniform thickness, said gameboard being rolled into a roll and defining a bore of generally circular cross section throughout its length, said length being of a length equal to said first predetermined distance;

said pair of die tossing cups comprising a first and second end cap, said first end cap and said second end cap each having an open end and including a closed circular end wall and a cylindrical axially extending side wall of circular cross section of a predetermined inner diameter substantially equal to the diameter of said gameboard when rolled and each of said end caps including said side walls and end walls being of a common predetermined outer diameter, and each of said end caps being positioned on the ends of said rolled gameboard with the end wall of each cap being in abutting engagement with one of the margins of said gameboard along said second pair of opposed edges and captivated within said end caps and within said axially extending side walls of said end caps, each of said end caps being of an axial length substantially

less than one-half the distance between said second pair of opposed edges; and

said carrying case comprising a longitudinally-extending tubular container of circular cross-section of an inner diameter substantially equal to but slightly greater than the outer diameter of the cylindrical side walls and end walls of the end caps, said case having a closed end and an open end, and said gameboard and end caps being in said container, said container snugly jacketing said gameboard and end caps, said container being of an axial length substantially equal to but slightly greater than the first predetermined length of same gameboard and the thickness of the end walls of said first and second end caps and said container having an outer uniform diameter said container being comprised of a formed sheet of pliable material of uniform thickness;

cap means for said open end of said tubular container, said cap means comprising a cup-shaped member of a diameter substantially equal to said outer diameter of said container and having an axially extending skirt sized to and snugly jacketing said container adjacent said open end and closing said open end of said container; and

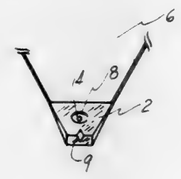
said game pack comprising an openable receptacle of rigid plastic which when closed is essentially a closed tube, said receptacle comprising two corresponding portions joined together by closure means on the axial length of the receptacle being capable of closure along edge strips of each portion 180° from said closure means, said portions having end walls which reinforce the firmness of closure of the receptacle, there being present in at least one of said receptacle portions at least two divisions, said divisions being sized to hold play pieces all of which are sized and configured of non-interlocking configuration to be nested within said divisions such that the play pieces cannot substantially move except for axial movement within said receptacle when it is closed.

4,408,764

STICK AND PEG GAME DEVICE

Adolph A. Morgan, 932 Garfield Ave., Belvidere, Ill. 61008

Filed Feb. 20, 1981, Ser. No. 236,257
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—341 **1 Claim**



1. A stick and peg game device comprising for use on the ground or other surface,

plate means, said plate means comprising a flat plate in the form of a trapezoid wherein the thickness of the plate is reduced uniformly proceeding from the short top to the long base of the trapezoid, provided with peg mounting means in the form of a "V" slot in the upper edge of the short top of the trapezoid,

peg means operably mounted on said plate means and disposed such that a portion thereof rests in said "V" slot and one end thereof rests on the ground and the other end is free and extends above the upper surface of said plate means,

field marking means operably attached to the corners at the ends of the long base of the trapezoid, and

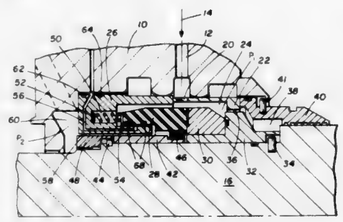
stick means.

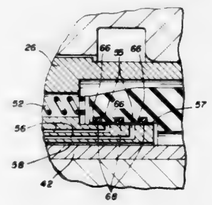
4,408,765

DIFFERENTIAL PRESSURE CONTROL FOR GAS SEAL IN TURBO MACHINERY

William J. Adelmann, Jr., Westchester, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 6, 1980, Ser. No. 194,110
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—3 **5 Claims**





1. In turbo machinery for gas compression including a rotating shaft, a non-rotatable gas seal of carbon composition generally surrounding a portion of said shaft and adapted for slideable displacement thereover, a rotatable running ring having a radial face situated contiguously opposed to a radial face on said gas seal, force generating means on the opposing face of said gas seal or said ring effective during the course of rotation to create aerodynamic forces urging lateral separation between the contiguous opposed faces of said gas seal and said running ring by slideably displacing said gas seal away from said running ring, and spring means axially urging said gas seal toward said running ring in balanced opposition to the aerodynamic forces created by said force generating means to effect a controlled leakage clearance between the opposed faces of said gas seal and said running ring, the improvement comprising secondary seal means contained in a clearance defined in a flow path of the gas between the relatively sliding surface of said gas seal and its supporting surface thereat for effecting a controlled pressure seal in said seal clearance while concomitantly effecting a predetermined limit of frictional drag force imposed against slideable displacement of said gas seal and correlated to the operational displacement required of said gas seal, said secondary seal means comprising at least two tandemly arranged resilient O-ring gaskets in said seal clearance and a bleed port communicating from inward of said seal clearance and between said O-rings to an outlet at a gas pressure of lower value than the gas pressure exposed to the inlet surface of said gas seal.

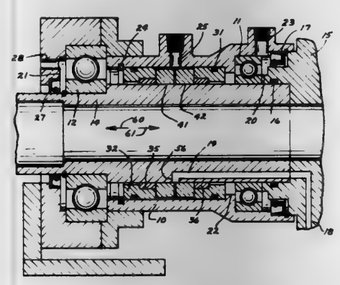
4,408,766

ROTARY SEAL APPARATUS WITH DUAL SELF-CENTERING ANNULAR FACE SEALS

Ivor N. Paech, Edwardstown, Australia, assignor to Longyear Australia Pty. Ltd., Mitchell Park, Australia

Filed Nov. 29, 1982, Ser. No. 445,351
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—3 **11 Claims**

1. Rotary seal apparatus for permitting the transfer of fluid under pressure from an inlet in a stationry housing having an inner circumferential wall portion to an inlet of a passage in a drivable member rotatably mounted by the housing while permitting leakage fluid to flow in opposite axially directions from the housing inlet to housing outlets comprising first and second annular sealing means respectively mounted axially between the housing inlet and drivable member inlet and one of the housing outlets, and the housing inlet and drivable member inlet and the other of the housing outlets for forming fluid seals with the housing circumferential wall portion, in conjunction with the drivable member and housing forming a seal chamber to which said inlets open, and in conjunction with the drivable member provide annular leakage fluid clearance spaces that open to the seal chamber, said first and second means having axially adjacent annular sealing surfaces, and a first and second annular seal mounted in the seal chamber to surround the drivable member, said seals being freely rotatably



and axially movable relative one another, the drivable member and the housing when no fluid under pressure is applied at the housing inlet, and having axially remote ends that have annular surfaces for abutting against the axially adjacent one of the first and second means sealing surface to form fluid seals therewith when fluid under pressure is applied to the seal chamber, axially adjacent ends that have radially extending surfaces abuttable against one another when no fluid under pressure is applied to the housing inlet and inner circumferential surfaces to provide an annular clearance space with the drivable member to permit leakage fluid flowing therethrough to the first and second means clearance spaces when fluid under pressure is applied to the housing inlet to flow radially between the seals to the drivable member inlet, the housing inlet and drivable member inlet opening radially to the seal chamber adjacent the axially adjacent ends of the seals.

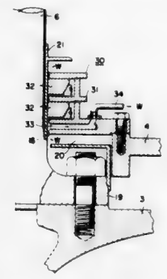
4,408,767

SHAFT SEALING DEVICES FOR HYDRAULIC MACHINES

Takuya Kako, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 152,316, May 22, 1980, abandoned.
This application Jan. 12, 1982, Ser. No. 338,970
Claims priority, application Japan, May 31, 1979, 54-67759
Int. Cl.³ F16J *15/40*
U.S. Cl. 277—27 **3 Claims**

1. In a shaft sealing device for a hydraulic machine comprising a packing box provided about a rotatable shaft of the hydraulic machine, said shaft being connected to a runner of said machine, and a number of packings encased in the packing box so that sliding surfaces of the packings are urged against the rotatable shaft for preventing water in a high-pressure space of the hydraulic machine adjacent said packing box from leaking out through gaps between the sliding surfaces of the packings and the rotatable shaft, the improvement wherein said shaft sealing device further comprises water supply means opening intermediately between said packing box and said high-pressure space for supplying water from a source of water at least at a time when said runner of the hydraulic machine is rotated in compressed air, passage means for guiding the thus supplied water to the sliding surfaces of said packings, said supplied water preventing compressed air from leaking out through said shaft sealing device, each of said packings being provided with a cutoff portion along a high pressure side edge of its sliding



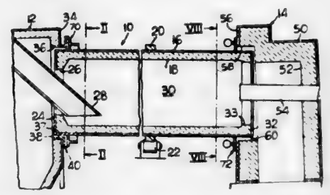
surface and each of said packings being made of 40 to 90 wt. % of tetrafluoroethylene resin mixed with a filler of the remaining wt. % and molded under a pressure into a predetermined shape.

4,408,768

GAP ADJUSTING ECCENTRIC PIN FOR ARTICULATED SEALS OF ROTARY KILNS

Carl F. Novotny, Greenfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 4, 1981, Ser. No. 327,608
Int. Cl.³ F16J *15/34*
U.S. Cl. 277—84 **4 Claims**



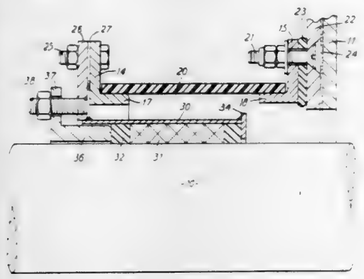
1. A seal for use in sealing an annular opening between a stationary member and a rotating cylinder which is telescopically arranged in said stationary member, said seal comprising an annular ring member circumscribing said cylinder adjacent said stationary member and closing said annular opening, said annular ring member formed of a plurality of circumferentially extending ring segments, means for pivotally connecting circumferentially contiguous segments to each other and permitting adjustment of the inner circumferential dimension of said ring comprising an eccentric pin pivotally connecting contiguous segments; said eccentric pin having a neck portion and a base portion having a common central axis; said neck and base portions each engaging one of said contiguous segments; said eccentric pin also having a body portion disposed between said neck and base portion; said body portion having a central axis disposed away from and parallel to the central axis of said neck and base portion; and said body portion pivotally engaging the second of said contiguous segments.

4,408,769

STUFFING BOX WITH OUTER FLEXIBLE TUBE TO ALLOW SHAFT GYRATORY MOVEMENTS

Erland Wolff, Greenbrae, Calif., assignor to Jude Engineering, Inc., San Francisco, Calif.

Filed Sep. 21, 1982, Ser. No. 420,891
Int. Cl.³ F16J 15/18
U.S. Cl. 277—105 **4 Claims**



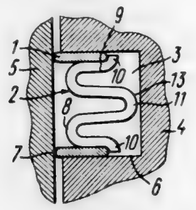
1. A stuffing box comprising two hollow annuli spaced apart and adapted to surround a shaft spaced from it, said annuli having annular flanges projecting towards each other, a flexible tube having its opposite ends seating on the annular flanges and secured thereto in gas-tight manner, a rigid tube within the flexible tube and spaced radially from it and adapted to surround the shaft and to be spaced from it, a radially inwardly extending flange at one end of the rigid tube, packing rings within the rigid tube, a tubular presser member in the other end of the rigid tube, and means for supporting the presser member and urging it into the rigid tube to compress the packing rings against said flange.

4,408,770

PISTON RING ASSEMBLY WITH TANGENTIAL EXPANDER

Rusaam S. Nemets, Sirenevy bulvar, 57, kv. 50; Vladimir G. Kislov, Lomonosovsky prospekt, 4, korpus 1, kv. 60; Efim S. Gorbulev, Tovarischesky pereulok, 9/11, kv. 5., all of Moscow; Ivan A. Koval, ulitsa Girshmana, 18, kv. 5., Kharkov; Boris S. Eremenko, Moskovsky prospekt, 96a, kv. 273., Kharkov; Felix A. Brainman, ulitsa Derzhavinskaya, 2, kv. 264., Kharkov; Jury M. Kontsov, ulitsa Krasnova, 14, kv. 29, Odessa; Anatoly V. Adamovich, 2-ya ulitsa Marinoi Roschi, 14a, kv. 35; Lev A. Burov, Kutuzovsky prospekt, 33, kv. 253., both of Moscow, and Viktor P. Moldavanov, ulitsa Perekopskoi divizii, 19, kv. 52., Odessa, all of U.S.S.R.

Filed Apr. 14, 1982, Ser. No. 368,225
Int. Cl.³ F16J 9/06
U.S. Cl. 277—140 **3 Claims**



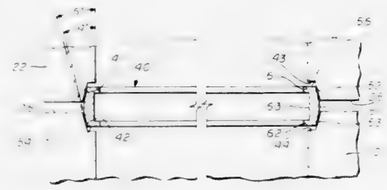
1. A piston ring assembly comprising a pair of flat rings and a tangential expander installed between said flat rings adapted to support said rings in contact with the wall of a groove in which said assembly is installed; said tangential expander comprising an annular integrally bent serpentine spring having a plurality of vertically extending webs and alternatively connecting horizontally extending flanges terminating in vertically extending bearing shoulders therebetween, said horizontally extending flanges respectively defining annular surfaces on which said rings are supported in contact with the walls of said groove, and said groove, and said vertical shoulders defining a thrust bearing for said rings; each vertically extending web being bent to form at least one fold extending into the interior of the piston ring assembly with the fold portions defining said bend extending substantially horizontally and the bend being such that the horizontal fold portions remain spaced from each other during use.

4,408,771

HIGH PRESSURE SEALING CONNECTION WITH METAL SEAL

William S. Shelton, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,143
Int. Cl.³ F16J 15/08
U.S. Cl. 277—206 R **6 Claims**



1. A metallic sealing ring for sealing between connected first and second coaxially aligned and centrally bored members having opposed frusto-conical surfaces at their joined ends, said sealing ring having upper and lower annular end surfaces which reside in planes transverse to the axis of the sealing ring;

an external peripheral surface comprised of a central circular cylindrical surface, a lower frusto-conical surface extending from said lower annular end surface to said circular cylindrical surface in a downwardly convergent coaxial relationship with said sealing ring;

an upper frusto-conical surface extending downwardly from said upper annular end surface to said circular cylindrical surface in an upwardly convergent coaxial relationship with said sealing ring; and

upper and lower radial flanges extending into the interior of said ring at the upper and lower ends of said sealing ring, respectively, said sealing ring having an enlarged bore section as defined by a central inner peripheral surface intermediate said upper and lower radial flanges and extending therebetween, and said sealing ring being adapted to be received in the bores of said coaxially aligned members for effecting a fluid-tight pressure energizable sealing relationship with the opposed frusto-conical surfaces of the coaxially aligned members.

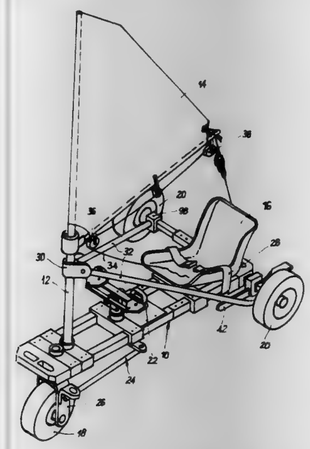
4,408,772

SAILING VEHICLE

Armin Höllwarth, Waldstr. 25, 6108 Darmstadt-Weiterstadt, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,926
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951995
Int. Cl.³ B62B 3/00
U.S. Cl. 280—1 **9 Claims**

1. A sailing vehicle with a collapsible frame comprising several supports and struts and having at least one sail mast, at least one seat, two rear moving elements and one forward moving element, the latter being steerable via a steering suspension, characterized in that the frame (**10**) consists of two longitudinal supports (**44**) which are collapsible at their center section, a cross arm (**46**) which is detachably connected to the rear end of the longitudinal supports, a plurality of identically constructed transverse struts detachably connected to the longitudinal supports to unify the frame, the mast (**12**), the seat



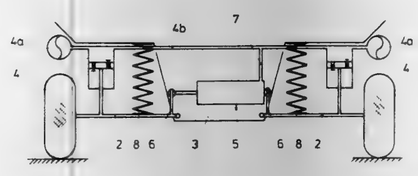
(**16**), the forward moving element (**18'**, **18''**), and the steering suspension (**24**, **62**, **64**, **86**) being supported by separate ones of the transverse struts (**48**) with at least the transverse strut supporting the seat being connected to the longitudinal supports for adjustment lengthwise thereof.

4,408,773

SELF PUMPING, LEVEL REGULATING APPARATUS FOR VEHICLES, ESPECIALLY AUTOMOBILES

Theo Meller, and Heinz Knecht, both of Eitorf, Fed. Rep. of Germany, assignors to BOGE GmbH, Eitorf, Fed. Rep. of Germany

Filed Apr. 30, 1981, Ser. No. 258,998
Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3020050
Int. Cl.³ B60G 17/00
U.S. Cl. 280—611 **8 Claims**



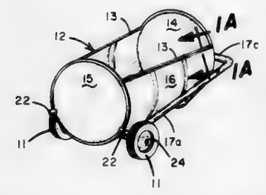
1. In a self pumping, level regulating apparatus in a wheeled vehicle, comprising at least one damping hydropneumatic telescoping spring element with a gas spring chamber, and an automatic pumping and regulating element for pumping oil into the working chamber of the telescoping spring element as a function of the spring motion of at least one wheel axle of the vehicle for increasing the vehicle level, and, upon exceeding of a predetermined level, for delivering oil back from the working chamber of the telescoping spring element, the improvement characterized in that the hydropneumatic telescoping spring element is separate from the pumping and regulating element and is connected in the region of a vehicle wheel between the vehicle body and the wheel axle, and in that the pumping and regulating element comprises a pumping means, level regulating means and an oil storage reservoir in a compact construction and is separately disposed generally in the central area of the vehicle relative to opposed wheels and is connected to be actuated and controlled by the spring motions and relative positions of a generally centrally located part of a wheel axle, and wherein the pumping and regulating element is actuatably disposed between two upwardly directed levers that are rigidly fixed on two associated swinging axle halves in the region of their articulation to the vehicle body.

4,408,774

TWO-WHEEL CART

Richard L. Raskob, 19835 Larkin Rd., Corcoran, Minn. 55340

Filed May 15, 1981, Ser. No. 264,060
Int. Cl.³ B62B 1/26
U.S. Cl. 280—47.26 **4 Claims**



1. Two-wheel cart for transporting and storing a quantity of a given solid material, said two-wheel cart comprising:

a. a body means including a closed cylinder having a tapered opening defined in its circumferential wall by two opposed edges which extend from the top of the body to the bottom of the body, the distance between the opposed edges being at a maximum at the top of the body and decreasing to a minimum at the bottom of the body;

b. a cart frame including a handle member, an axle, and means for attaching the cart frame to the body; and

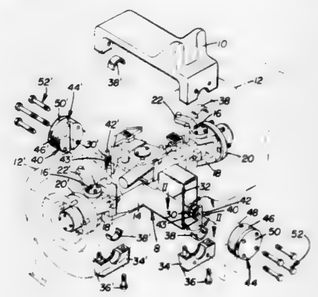
c. two wheels rotatably attached to the cart frame axle.

4,408,775

APPARATUS FOR SUSPENDING A TRUNNION MOUNTED AXLE ASSEMBLY FROM A VEHICLE

Harold V. Hildebrecht, Cleveland, Ohio, assignor to Tewmotor Corporation, Mentor, Ohio

PCT No. PCT/US81/00121, § 371 Date Jan. 26, 1981, § 102(e) Date Jan. 26, 1981, PCT Pub. No. WO82/02519, PCT Pub. Date Aug. 5, 1982
PCT Filed Jan. 26, 1981, Ser. No. 275,080
Int. Cl.³ B60G 11/02
U.S. Cl. 280—95 R **7 Claims**



1. In an axle assembly (**8**) for a vehicle frame (**10**) having an axle (**14**) and a cylindrical trunnion shaft (**30**), said cylindrical trunnion shaft having an end (**43**) and a longitudinal trunnion

axis (32) and being rigidly connected to said axle (14), said longitudinal trunnion axis (32) being oriented normal to said elongate axle (14) and said trunnion shaft (30) being rotatable with and in response to pivotal movement of said axle (14), the improvement comprising:

means (34) for connecting said trunnion shaft (30) to said frame (10) and permitting only pivotal movement of said trunnion shaft (30) about said longitudinal trunnion axis (32);

a resisting member (42) rigidly securely affixed to the end (43) of said trunnion shaft (30) and rotatable with and in response to rotation of said trunnion shaft (30); and

a resisting cap (44) having a resilient member (46) and being connected to one of said frame (10) and said connecting means (34) adjacent the end (43) of said trunnion shaft (30), said resilient member (46) being free from supporting the trunnion shaft (30) and engageable with said resisting member (42), said resilient member (46) being deformable in response to rotation of said resisting member (42) to resist rotation of said trunnion shaft (30).

4,408,776

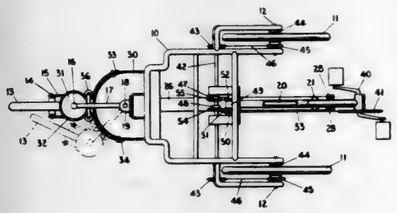
THREE WHEEL VEHICLE

Travis M. Randolph, P.O. Box 505, and Charles P. Schreiner, P.O. Box 711, both of Saugatuck, Mich. 49453

Filed Apr. 6, 1981, Ser. No. 251,216

Int. Cl.³ B62K *5/04, 21/00;* **B62M** *1/02*

U.S. Cl. 280—261 **7 Claims**



1. A three wheel vehicle comprising:

a frame;

a pair of front wheel and axle assemblies rotatably mounted on either side near the front of said frame;

means on said frame for driving at least one of said front wheels;

a strut member having its proximal end pivotably mounted in a generally horizontal plane at the rear center of said frame with its distal end extending behind said frame;

a rear wheel fork rotatably mounted at the distal end of said strut member so as to be rotatable about a generally vertical axis;

a rear wheel and axle assembly rotatably mounted in said fork; and

steering means including means for rotating said fork about a generally vertical axis to turn said vehicle and means for simultaneously pivoting said strut member in a generally horizontal plane to displace said fork laterally with respect to the vehicle in a direction opposite the direction of turning the vehicle.

6. A three wheel vehicle according to claim **1** wherein said driving means comprises:

a rotatable pedal and drive sprocket assembly mounted at the front of said frame;

a transverse axle rotatably mounted on said frame;

a solid mounted sprocket on each end of said transverse axle;

a free-wheeling sprocket assembly mounted on each front wheel and axle assembly in chain engagement alignment with said transverse axle end sprockets, respectively;

a transmission assembly rotatably mounted on said frame having first, second and third solid mounted transmission sprockets, said first transmission sprocket being in chain engageable alignment with said drive sprocket;

a first free-wheeling sprocket mounted on said transverse axle in the forward drive orientation in chain engageable alignment with said third transmission sprocket;

a second free-wheeling sprocket mounted on said transverse axle in the reverse drive orientation in chain engageable alignment with said second transmission sprocket; and

endless loop chains interconnecting each of said front wheel sprockets and said corresponding transverse axle end sprockets, said drive sprocket and said first transmission sprocket, said second transmission sprocket and said second free-wheeling sprocket, and said third transmission sprocket and said first free-wheeling sprocket.

4,408,777

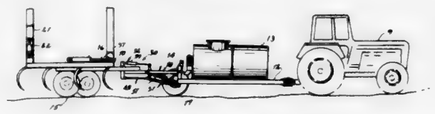
HITCH MECHANISM

Lawrence K. Carrick, Spokane, Wash., assignor to Calkins Manufacturing Company, Spokane, Wash.

Filed Oct. 28, 1981, Ser. No. 315,976

Int. Cl.³ A01B *59/042*

U.S. Cl. 280—461 A **28 Claims**



1. A hitch assembly for pivotably connecting an elongated wheel supported towing tongue frame to a trailing implement frame having support means selectively operable to elevationally move the implement frame between a raised position and a lowered position, said assembly comprising:

an elongated link member adapted to be connected at one end to the tongue frame for pivotal motion about a first horizontal axis and at a remaining end to the implement frame for pivotal motion about a second horizontal axis;

first lock means responsive to the support means of the trailing implement frame, interconnecting the link member and one of the frames for locking the link member against pivotal motion about the first axis in response to operation of the support means to elevationally move the implement frame to the lowered position; and

second lock means operably connected to the support means of the trailing implement frame, interconnecting the link member and remaining frame for locking the link member against pivotal motion about the second axis in response to operation of the support means to elevationally move the implement frame to the raised position.

4,408,778

AUTOMATICALLY CONNECTING HITCH

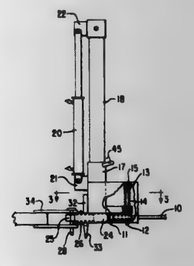
Ronald G. Steuben, Box 191, Everly, Iowa 51338

Filed Oct. 26, 1981, Ser. No. 314,857

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—509 **8 Claims**

1. For hitching a tractor drawbar to a pulled implement having a tongue, means comprising connecting means adapted to be connected to said drawbar, pillar means on said connecting means, column means slidably disposed on said pillar means, jaws connected to said column means, at least a first jaw being pivotally mounted relative to said column means, said jaws being formed with notches adapted to embrace a pin on said tongue, said jaws being normally opened but being engageable by means on said pillar means to force said first mounted jaw closed when said column means is slidably moved to a pulling position.



4,408,779

SKI AND A SKI BINDING

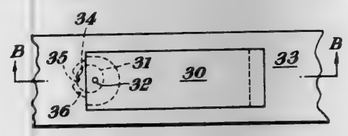
Robert J. Shekter, 912 Lea Dr., San Rafael, Calif. 94903

Filed Feb. 23, 1981, Ser. No. 237,087

Claims priority, application United Kingdom, Feb. 27, 1980, 8006570

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—607 **14 Claims**



1. An assembly for detachably mounting a ski binding with a safety release system on a ski, which comprises

a ski plate having means for fixing said ski plate to a ski and having first and second portions coupled for relative movement between locking and release positions;

a binding plate having means for mounting a ski binding thereon and an aperture extending completely and vertically through said binding plate, said aperture having opposite ends which engage opposite ends of said ski plate with mating male and female connections when said portions are in said locking position; and

blocking means for releasably engaging and preventing relative movement of said first and second portions from said locking position.

4,408,780

BOUND BOOK AND METHOD OF MAKING SUCH BOOKS

Don E. Detterman; Ronald S. Danhoff, both of Willard, and William E. Wheeler, Plymouth, all of Ohio, assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Filed Apr. 22, 1981, Ser. No. 256,552

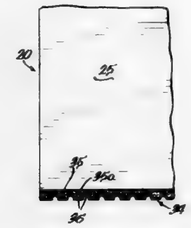
Int. Cl.³ B42D *1/00;* **B42C** *9/00*

U.S. Cl. 281—15 R **19 Claims**

1. An improved book which is bound and ready to be covered or cased, said book comprising:

a pack of signatures at least some of which comprise a plurality of interleaved sheets, each signature having a closed side along the spine, and said pack having its entire spine and all the closed sides of sheets in each signature penetrated by a multiplicity of closely spaced, wide open notches which greatly enlarge the area of the spine to which adhesive may be applied;

and a wrap-around coating of adhesive which covers the entire spine area including the faces of the notches, the spine between the notches, and the front and back surfaces of the pack between and immediately adjacent the notches, said wrap-around coating of adhesive consisting of thin coats which are on the front and back surfaces of the pack and extend into the notches, each said thin coat having a thick bead along its margin remote from the notches, and a thick coat which is on the faces of the notches and the spine between the notches, said thin coats and said thick coat being amalgamated in the notches.



4,408,781

RECORDING MATERIALS

Shojiro Watanabe, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1981, Ser. No. 314,341

Claims priority, application Japan, Oct. 24, 1980, 55-149132; Aug. 12, 1981, 56-126161

Int. Cl.³ B41M *5/16, 5/18, 5/22*

U.S. Cl. 282—27.5 **21 Claims**

1. A recording material comprising a base and a developer composition comprising (1) a phenolic compound selected from a bisphenol compound and a phenolic resin, (2) acid-treated activated clay, and (3) a polyalkylene oxide compound in an amount of from 0.2 to 5 wt%, based on the weight of the acid-treated activated clay, applied to said base.

4,408,782

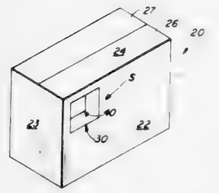
GRAPHIC MEANS AND METHOD FOR MAXIMIZING UTILIZATION OF CARGO SPACE

Edward L. Condon, Oak Park, Ill., assignor to Merriam, Marshall & Bicknell, Chicago, Ill., part interest

Filed Jan. 19, 1981, Ser. No. 226,198

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—70 **27 Claims**



1. The method of loading cargo elements in a cargo receiving space so that the number of cargo elements loaded in said space is substantially maximized, said cargo elements all having substantially the same dimensions, said method comprising the steps of determining the loading pattern which will substantially maximize the number of cargo elements in said cargo receiving space, applying the same graphic means to each of said cargo elements which means provides graphic instructions to a loader for loading said cargo elements in said space in said predetermined pattern, and loading said cargo elements in said

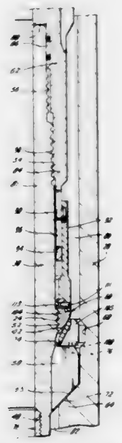
cargo space in accordance with the instructions provided by said graphic means.

4,408,783

HOLDDOWN APPARATUS

David L. Gruller, Houston, Tex., assignor to Smith International Inc., Newport Beach, Calif.

Filed Dec. 22, 1980, Ser. No. 219,252
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—3 **16 Claims**



1. A well apparatus for preventing axial movement of a hanger within a wellhead, the hanger having a shoulder supported by a seat in the bore of the head, the shoulder having an upper annular surface, the head having a holddown groove in the wall of the bore spaced above the seat, comprising:

expansible means including a latch ring radially slidably disposed on an upper annular surface of said hanger shoulder adjacent said holddown groove for expanding into locking engagement with such holddown groove of the head, said latch ring and said holddown groove having abutting shoulders which prevent relative axial motion therebetween when said latch ring engages said groove, said latch ring having a bevelled inside diametral surface;

cam means including a locking ring threadedly connected to said hanger with first threaded means and having a bevelled outside diametral surface shaped correlatively to said bevelled surface of said latch ring and in axially slidable engagement therewith for camming said latch ring radially outwardly into locking engagement with the holddown groove of the head when the first threaded means are made up; and

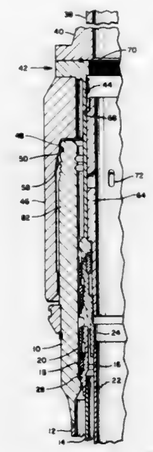
actuation means for actuating said locking ring into camming engagement with said latch ring, said actuation means including a tubular body threadedly connected to the hanger above said locking ring with second threaded means, said second threaded means being opposite-handed to said first threaded means; a torque sleeve telescopically slidably disposed on said body, there being an axial lost motion connection between said sleeve and said body which permits limited relative axial movement of said sleeve and said body but prevents relative motion therebetween; and shear means releasably connecting said sleeve to said locking ring, so that when said body is rotated so as to make up said first threaded means to actuate said latch ring, said second threaded means are loosened so as to disconnect said body from said hanger whereby said expansible means engages the head to prevent the axial movement of the hanger within the head.

4,408,784

PRODUCTION CASING TIEBACK CONNECTOR ASSEMBLY

Larry E. Reimert, Thousand Oaks, Calif., assignor to Vetco, Inc., Calif.

Filed Mar. 6, 1981, Ser. No. 241,187
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—24 **11 Claims**



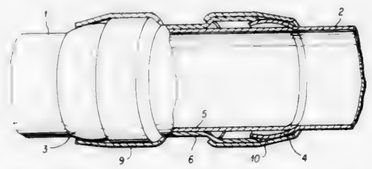
1. A connector assembly for tying back a subsea wellhead to a tensioned leg platform comprising: a casing hanger supported and sealed within the wellhead, said hanger having a sealing surface; a connector comprising a tieback joint and a guiding means for limiting deflection; said tieback joint comprising a vertically elongated hollow cylinder rigidly connected at its upper end to said guiding means, the lower portion of said cylinder having an outside diameter less than the inside diameter of the wellhead, and having a sealing surface; said guiding means comprising means interacting with the wellhead for limiting angular deflection of said tieback joint with respect to the wellhead; a circumferential seal located between the sealing surfaces of said casing hanger and said tieback joint; and means for axially preloading said seal between said casing hanger and said tieback joint.

4,408,785

ENGINE VIBRATION FILTRATION SYSTEM

Andre Legros, Marly le Roi, and Andre Chalesle, Paris, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 24, 1981, Ser. No. 277,041
Claims priority, application France, Jun. 27, 1980, 80 14349; May 12, 1981, 81 09393
Int. Cl.³ F16L *55/04, 27/04*
U.S. Cl. 285—49 **5 Claims**



1. A pipe joint for filtering vibrations produced by an internal combustion engine comprising:

an exhaust pipe assembly connected to said engine and which further comprises first and second pipes having first and second adjacent end portions, each of said end portions forming a spherical member:

a connecting mechanism interconnecting said first and second end portions, wherein said connecting mechanism further comprises;

an internal cylindrical element having first and second beveled end portions disposed, respectively, within said spherical members of said first and second end portions;

a second external element mounted on a central portion of said cylindrical element and having first and second opposite ends forming sealing portions sealingly engaging external surface portions, respectively, of said spherical members of said first and second end portions;

a ring member mounted on said cylindrical element between said cylindrical element and a portion of said second element; and

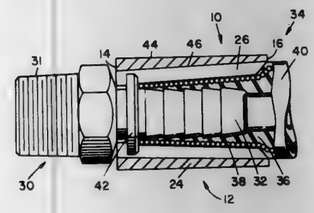
first and second envelope members engaging and interconnecting, respectively, said first and second spherical members and said opposite ends of said second element for holding the pipe joint in place.

4,408,786

FERRULE, COUPLING AND COUPLING PROCESS

Robert E. Stuemky, Elizabeth, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Feb. 26, 1982, Ser. No. 352,987
Int. Cl.³ F16L *33/20*
U.S. Cl. 285—256 **6 Claims**



1. In a deformable ferrule for use in coupling hose and of the type having a sleeve-type body with an outer surface, an inner surface, a fitting end and a hose end, the improvement comprising:

the sleeve-type body which has a sidewall portion that decreases in thickness going longitudinally of the body toward the hose end and whereupon deformation of the body when coupling hose, the outer surface has a generally cylindrical shape and the inner surface juxtaposed said sidewall portion has generally a frustoconical shape; and

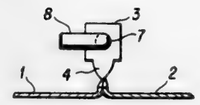
a plurality of generally parallel and spaced apart ribs extending from the inner surface and generally longitudinally oriented with the body, whereupon deformation of the body, the ribs are generally oriented as frustoconical elements of a cone where the circumferential spacing between ribs near the fitting end is reduced and becomes smaller than the circumferential spacing near the hose end.

4,408,787

SYSTEM FOR CONNECTING THE EDGE AREAS OF THIN-WALLED BODIES

Günter Petz, Flachslander St. 8, D 8500 Nürnberg, Fed. Rep. of Germany

Filed Oct. 21, 1980, Ser. No. 199,345
Claims priority, application Switzerland, Jan. 28, 1980, 641/80
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—305 **16 Claims**



1. A system for connecting adjacent thin-walled bodies to each other comprising:

(a) each body including a bent edge area disposed transversely thereto;

(b) a plurality of staggered notch portions having apertures therethrough carried by each bent edge area for engagement with a plurality of corresponding staggered notch portions having apertures therethrough carried by the adjacent bent edge area, with the notch portions of both bent edge areas being configured for interlaced engagement with each other at free ends thereof;

(c) when the corresponding notch portions are in interlaced engagement with each other, the apertures are disposed in coaxial alignment, with the notch portions extending in a row successively to each other and the joined bodies define an interior joint side and an exterior joint side, wherein:

i. the notch portions are disposed on and visible only from the interior joint side; and

ii. the exterior joint side presents a linear joint defined by abutting portions of the bent edge areas; and

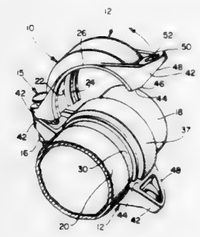
(d) an elongate member for insertion through the aligned apertures to secure the bodies together.

4,408,788

HINGEABLE SPLIT PIPE COLLAR

John A. Beukema, Whitinsville, Mass., assignor to Grinnell Fire Protection Systems Company, Inc., Cranston, R.I.

Filed Sep. 23, 1981, Ser. No. 305,030
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—419 **5 Claims**



1. A split collar for use with pipe and the like comprising a pair of opposed collar halves the inner surfaces of which cooperate to define a substantially circular opening having a central axis and an axial plane which contains said axis, outwardly extending flanges at each end of each of said halves, each of said flanges having a substantially flat inner surface which abuts the adjacent inner flange surface of the opposite half along a radial plane extending radially outwardly from said circular opening and substantially normal to said axial plane

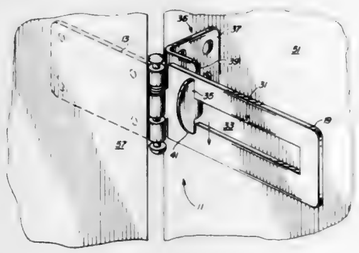
and which then diverges with respect to the opposite flange inner surface, aligned holes in said adjacent flanges, fastening means extending through said holes and substantially parallel to said axial plane operable to clamp said abutting inner surfaces of said adjacent flanges against each other to maintain said halves in assembled relation, said holes having substantial clearance inwardly and outwardly of said fastening means in a direction generally normal to said axial plane, the point at which said inner flange surfaces commence to diverge being located at least as close to said circular opening as the innermost edges of the adjacent fastening means in a direction substantially normal to said axial plane, whereby when one of said fastening means is completely removed, said halves may be swung outwardly with respect to each other without loosening the other fastening means, said outward swinging motion taking place substantially along a fulcrum located at the point where the inner surfaces of said still connected flanges commence to diverge.

4,408,789

SAFETY LATCH FOR IN SWINGING DOORS

Elbrige H. Miller, 1254 S. Florida Ave., Rockledge, Fla. 32955

Filed Feb. 23, 1981, Ser. No. 236,810
Int. Cl.³ E05C *17/16*
U.S. Cl. 292—268 **4 Claims**



1. A safety latch to be attached to a door and a jamb having an inner face for selectively locking the door in a closed position, permitting the door to open a predetermined angular displacement, or permitting the door to open freely, comprising:

a jamb plate attached to the inner face of the jamb and having a hollow cylindrical end portion protruding from the jamb a predetermined distance;

a pivotable bar having a tubular end portion concentrically juxtaposed to the hollow cylindrical end portion of the jamb plate, the pivotable bar also having a longitudinally disposed T-shaped slot with a first portion of predetermined width and a contiguous second portion of substantially larger width than the first portion said pivotable bar having a barrier defined by the contiguous first and second portions of the slot;

a pin disposed through the hollow cylindrical end portion of the jamb plate and the tubular end portion of the pivotable bar, said pin being a predetermined amount longer than the combined lengths of the hollow cylindrical end portion of the jamb plate and the tubular end portion of the pivotable bar, whereby the pivotable bar can pivot on the pin and can be displaced vertically relative to the jamb plate;

means disposed about the pin for vertically biasing the tubular end portion of the pivotable bar against the cylindrical end portion of the jamb plate; and

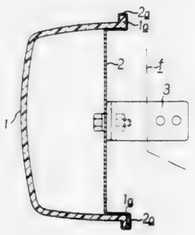
a bracket having a base portion secured to an edge of the door, a normal portion substantially perpendicular to the base portion, and a projecting portion substantially perpendicular to the normal portion, but disposed in a direction opposite the base portion, said projecting portion having a stem with a width slightly smaller than the width of the first portion of the slot, and a flared portion having a width greater than the width of the stem, but smaller than the width of the second portion of the slot, said flared portion having a substantially smooth contour throughout except at the point where the flared portion joins the stem, at which point there is an abrupt change of contour, whereby as the second portion of the T-shaped slot on the pivotable bar is rotated into contact with the flared portion, the smooth contour acts as a cam surface to raise the pivotable bar against the means for biasing, until the second portion of the T-shaped slot passes the abrupt change of contour where the flared portion meets the stem, and the biasing means forces the pivotable bar downwards against the stem so that the stem portion abuts against the barrier thereby providing a locking function when the door is closed; and whereby as the pivotable bar is displaced vertically, the stem can slide along the first portion of the T-shaped slot as the door is opened.

4,408,790

SHOCK-ABSORBING BUMPER FOR VEHICLES

Nobuyoshi Shimoda, Tokyo, and Michiyoshi Hagino, Urawa, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 23, 1981, Ser. No. 237,499
Claims priority, application Japan, Feb. 22, 1980, 55-20488
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—122 **7 Claims**



1. A shock absorbing bumper comprising:

a bumper face member formed of a synthetic resin in the shape of a beam with both longitudinal end portions bent in substantially the same direction, said bumper face member having a channel-shaped cross section opening sidewardly with upper and lower edges thereof directed substantially rearwardly;

outwardly extending flanges being formed along said upper and lower edges of said bumper face member over a length thereof substantially corresponding to the width of said vehicle body on which said shock absorbing bumper is mounted;

a back plate formed of metal, said back plate having upper and lower bent end portions formed to closely fit in said bumper face member with substantially the entire outer surface areas of said upper and lower bent end portions of said back plate being in surface contact with the inner surfaces of said upper and lower edges of said bumper face member; and

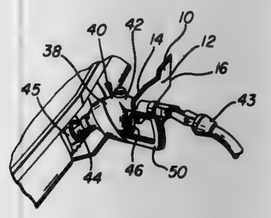
said upper and lower end portions of said back plate being provided with extensions for continuously tightly overlapping and seizing said outwardly extending flanges formed along said upper and lower edges of said bumper face member in operable association with said end portions of said back plate.

4,408,791

GAS PUMP LEVER HOOK MEMBER

James E. Griffin, and Lamar H. Griffin, both of 4746 Memphis St., Dallas, Tex. 75207

Filed Feb. 27, 1981, Ser. No. 238,847
Int. Cl.³ A47F *13/08*
U.S. Cl. 294—1 R **5 Claims**



1. A gas pump lever hooking member for use with a gas pump having a nozzle, a valve for regulating gas flow through the nozzle, a manually operable lever arm to open the valve, means for biasing the lever arm in a position whereby the valve is normally closed, and a fluid conveying handle disposed about the lever arm, said hooking member comprising:

an elongated generally rectangular member having first and second ends and opposite edge portions, at least one of said edge portions including means providing a hand grip; and one of said ends including a wedge shaped ice scraping surface formed thereon;

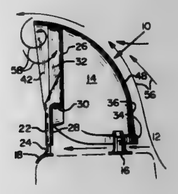
a pair of opposed claw portions formed at the other of said ends and spaced apart from each other a distance slightly greater than the combined width of the lever arm and the fluid conveying handle to define a slot sized to receive the lever arm and the fluid conveying handle whereby the lever arm is held in substantial proximity to the fluid conveying handle against the biasing means by said claw portions, said claw portions being releasably engageable with the lever arm and the fluid conveying handle at a point spaced apart from the end of the lever arm, and said claw portions forming reentrant edges of said slot to prevent said hooking member from falling off of said pump nozzle.

4,408,792

CAB-MOUNTED FAIRING

Patrick F. Sullivan, 3645 Glen Oak, Eugene, Oreg. 97405

Filed Mar. 19, 1981, Ser. No. 245,397
Int. Cl.³ B62D *35/00*
U.S. Cl. 296—1 S **9 Claims**



1. A fairing for mounting atop the cab of a vehicle such as a truck for improving the flow of air around the vehicle, comprising:

(a) an aerodynamic front member having a forwardly convex shape for reducing the turbulence of the flow of air around the top and sides of a vehicle, said front member including an arcuate, substantially horizontal forward lower edge extending rearwardly on each side, a rear edge extending transversely and side edges extending downward on each respective side of said front member, from said rear edge toward said forward lower edge, defining a concave interior of said front member; and

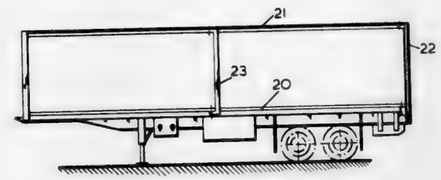
(b) substantially vertically-extending transverse rear panel means fixedly attached to said front member proximate said rear and side edges, for substantially blocking forward movement of air against the interior of said front member.

4,408,793

CURTAINSIDED VEHICLES

Edward G. Broadbent, Radnor Park Trading Estate, West Heath, Congleton, Cheshire, CW12 4QA, England

Filed Oct. 20, 1981, Ser. No. 313,146
Claims priority, application United Kingdom, Oct. 24, 1980, 8034421
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—181 **5 Claims**



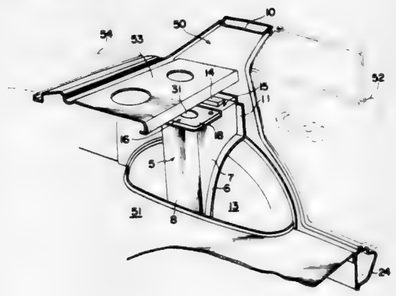
1. A curtainsided vehicle comprising a pillar between the roof and the bed of the vehicle, the pillar being carried by a pair of supports disposed normally to the pillar and pivoted respectively to a top rail and to the chassis of the vehicle, the pillar mounting a locking mechanism which secures the pillar in position, and which, when released, allows pivoting of the supports to move the pillar outboard of the vehicle bed.

4,408,794

SUPPORT COLUMN FOR AUTOMOBILE WHEEL SUSPENSION ASSEMBLY

Hayathugu Harasaki, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 4, 1981, Ser. No. 318,276
Claims priority, application Japan, Nov. 11, 1980, 55-159196
Int. Cl.³ B62D *25/08*
U.S. Cl. 296—198 **12 Claims**



1. A support column for an automobile body structure for accommodating a wheel suspension assembly for a rear wheel, the automobile body structure having a wheel housing generally encircling halfway the perimeter of the rear wheel, the body structure including an inner panel extending above the wheel housing, said support column comprising:

a column structure for being rigidly mounted on the wheel housing and projecting generally upwardly therefrom in a

direction away from the wheel, said column structure including a major upright wall and a pair of opposite side walls protruding from respective opposite side edges of said major upright wall so as to terminate in rigid and non-separable contact with a portion of the inner panel above the wheel housing;

a plate means for connecting the column structure to the inner panel, said plate means connecting said side walls together in spaced relation at a position adjacent the inner panel and on one side of said side walls opposite to the wheel housing; and

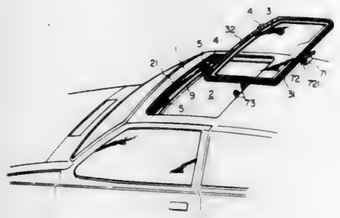
a support plate means having a bracket portion rigidly mounted on said column structure for connection with the suspension assembly and a brace portion having an end for rigid contact with the inner panel, extending downwardly from said bracket portion so as to diverge away from said major upright wall and terminating at said end.

4,408,795

HINGE DEVICE FOR A DETACHABLE ROOF PANEL IN AN AUTOMOBILE

Masaaki Saitoh, Wakou, and Michitada Kameoka, Musashino, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,636
Int. Cl.³ B60J *7/18*
U.S. Cl. 296—218 **4 Claims**



1. A hinge device for a detachably attachable type roof plate in a vehicle, comprising:

(a) a roof of the vehicle having an opening formed in one part of it, said opening having an inner peripheral rim;

(b) a roof plate of a size to be snugly fitted in said opening of said roof;

(c) at least one hinge member provided on the front edge of said roof plate;

(d) latching means provided on the rear edge of said roof plate;

(e) a receiving member provided on said inner peripheral rim of said roof opening to receive into a slot formed therein said hinge member at a position corresponding each other; and

(f) engaging means to be engaged with said latching means on said roof plate in a disengageable manner,

a plurality of channels, for retaining therein dust, and other foreign matter, formed in the lower surface of said hinge member receiving slot of said receiving member in the direction substantially along the inserting and withdrawing direction of said hinge member.

4,408,796

MECHANISM FOR PROVIDING ANGULAR ADJUSTABILITY TO LEGREST OF RECLINER ONLY WHEN PROJECTED

Ned W. Mizelle, High Point, N.C., assignor to The Lane Company, Inc., Altavista, Va.

Filed Dec. 29, 1980, Ser. No. 220,859
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—85 **9 Claims**



1. For a legrest projecting and retracting means of the lazy tongs type having a four-bar linkage, an improvement for permitting a legrest mounted thereto to become angularly rockable, only when the projecting and retracting means is more projected than retracted,

said improvement comprising:

a legrest mounting bracket having means for securing a legrest thereto;

means pivotally securing said legrest mounting bracket to said four-bar linkage about a lateral pivot axis; and

control means active between said four bar linkage and said legrest mounting bracket to prevent pivoting of said legrest mounting bracket about said lateral pivot axis unless said projecting and retracting means is more projected than retracted;

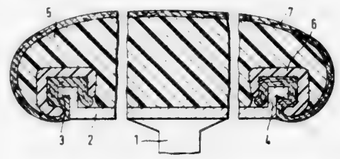
said control means comprising a lateral pin means provided on one of said legrest mounting bracket and said four-bar linkage and a cam slot means receiving said lateral pin means, said cam slot means being provided in the other of said legrest mounting bracket and said four-bar linkage.

4,408,797

FURNITURE ARTICLE WITH PADDING ATTACHED TO A SUPPORTING SHELL

Klaus Franck, Hanover; Werner Sauer, Wennigsen, and Herbert L. Wiesmann, Hameln, all of Fed. Rep. of Germany, assignors to Wilkhahn, Wilkening & Hahne GmbH & Co., Fed. Rep. of Germany

Filed Feb. 9, 1981, Ser. No. 232,861
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1980, 3004585
Int. Cl.³ A47C *31/02*
U.S. Cl. 297—218 **20 Claims**



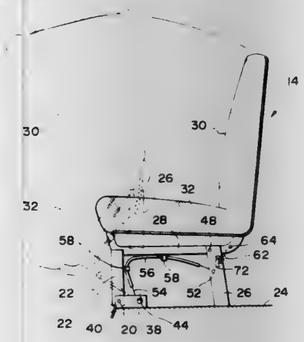
1. An article of furniture comprising a supporting means and a padding means adapted to be mounted on the supporting means, characterized in that the padding means includes a cushion member, a cover means for covering the cushion member, and a profile means having an outer surface embedded in the cushion member for clamping the padding means and cover means directly to the supporting means whereby the padding means and cover means are clamped to the supporting means by said profile means without additional retaining means.

4,408,798

VEHICLE SEAT STRUCTURE FOR TWO-DOOR TYPE VEHICLE

Yoichi Mizushima, Yokohama; Taketoshi Hosonaga, Tokyo; Takashi Murakami, Yokohama, and Nikio Ujiie, Akishima, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Tachikawa Spring Co., Ltd., Akishima, both of, Japan

Filed Sep. 30, 1980, Ser. No. 192,288
Claims priority, application Japan, Oct. 3, 1980, 54-128985
Int. Cl.³ A47C *27/00*
U.S. Cl. 297—326 **12 Claims**



1. A vehicle seat structure comprising:

a seat mounted on a vehicle floor;

a front and rear legs for supporting said seat on said vehicle floor;

first pivot means for pivotably connecting said front legs on said vehicle floor;

second pivot means for pivotably connecting said rear legs with said seat so that said rear legs are rotatably secured to said seat with said second pivot means at the top thereof;

actuator means for moving said rear legs to fold relative to said second pivot means below the seat according to inclination of said seat about said first pivot means, said actuator means being provided along front leg and lower portion of said seat and secured to said front leg and lower portion of said seat by guides fixed thereto, and said actuator means being responsive to dimensional variation of said rear legs and said floor panel, and

returning means for returning said rear legs to an initial position responsive to returning of the seat to normal position.

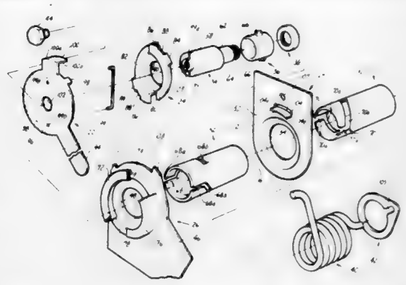
4,408,799

INFINITELY VARIABLE SEAT BACK RECLINER

James A. Bowman, Georgetown, Ky., assignor to Hoover Universal, Inc., Ann Arbor, Mich.

Filed Jun. 25, 1981, Ser. No. 277,416
Int. Cl.³ A47C *1/027*
U.S. Cl. 297—361 **23 Claims**

1. In a seat having a cushion and a back which are relatively angularly positionable about a hinge axis, an infinitely variable mechanism which, by means of an operating lever, relatively positions the back and cushion about the hinge axis to any angular position within a range of angular positions and which for any angular position to which the two have been positioned by the operating lever disallows the two from being further angularly displaced except by subsequent operation of the lever, said mechanism comprising wedge means operatively coupled between the back and the cushion comprising a pair of wedging members which, at any relative angular position between the back and cushion within said range, in response to application of an external torque to the back and cushion about the hinge axis other than via the operating lever, wedge together to disallow angular displacement between the back and cushion, and means operatively coupling the lever, the wedge means, the seat cushion and the seat back such that operation of



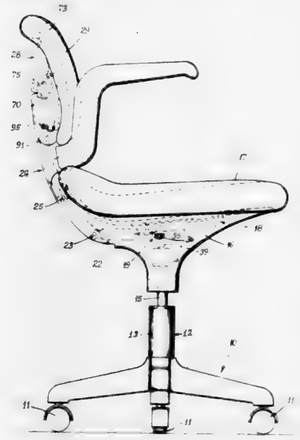
the lever is effective to freely angularly position the back and cushion about the hinge axis without the two wedging members disallowing the relative rotation.

4,408,800

OFFICE CHAIRS

Robert L. Knapp, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

Filed Jun. 11, 1980, Ser. No. 158,433
Int. Cl.³ A47C *3/00, 1/02, 1/022*
U.S. Cl. 297—285 **8 Claims**



1. In an office chair comprising a base adapted to support the chair; seating means including a seat support frame above said base; and a backrest assembly for supporting the back of an occupant of said chair and pivotally mounted to said seat support frame for rotation about a horizontal axis, the improvement comprising: first pneumatic cylinder means interconnecting said seat support frame with said base of said chair for adjusting the height of said seat support frame and including a first actuator valve; second pneumatic cylinder means interconnected between said backrest assembly and said seat support frame for adjusting said backrest in postural attitude and including a second actuator valve; and an actuating mechanism carried by said seat support frame for selectively independently actuating said first and second pneumatic cylinder means and including a cam member mounted in said seat support frame for rotation about a horizontal axis transverse of said chair, a rotatable shaft connected to said cam and journalled in said frame and accessible by said occupant, said cam member having first and second cam surfaces for selectively engaging and actuating said first and second actuator valves of said first and second pneumatic cylinder means respectively when said shaft is rotated respectively in a first angular direc-

tion and a second angular direction counter to said first angular direction.

4,408,801

ELEVATED SWIVEL CHAIR HAVING A MOVABLE FOOT SUPPORT FOR LOCKING THE CHAIR AGAINST SWIVELING MOTION

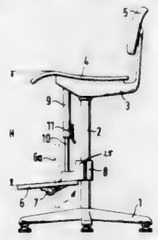
Hans J. Edel, Wittekindallee 17, D-4950 Minden/West, and Helmut Hornung, Karolingerstrasse 9, D-6057 Dietzenbach/West, both of Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,305

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024920

Int. Cl.³ A47C *7/50*

U.S. Cl. 297—433 **14 Claims**



1. In a swivel chair of the type comprising a base, a tubular pillar on said base, a seat supported by said pillar at an elevated position above said base for swiveling motion relative to said base, and a foot support disposed between said base and said seat for aiding a user of the chair to ascend to the elevated seat, the improvement wherein a bracket is mounted on said pillar between said base and said seat for swinging motion around said pillar, said foot support being carried by said bracket, and stop means disposed adjacent said bracket and responsive to foot pressure applied to said foot support in excess of a predetermined amount for preventing the swinging motion of said bracket and the foot support carried thereby relative to said pillar.

4,408,802

ADJUSTABLE VEHICLE SEAT

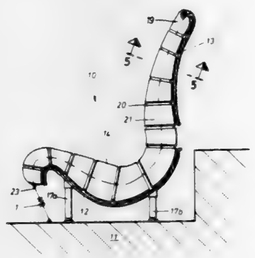
Heinz-Dieter Adomeit, Berlin, and Volkmar Schulz, Coburg, both of Fed. Rep. of Germany, assignors to Heinz-Dieter Adomeit, Berlin and Metallwerk Max Brose GmbH & Co., Coburg, both of, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,664

Claims priority, application Fed. Rep. of Germany, May 9, 1980, 3018323

Int. Cl.³ A47C *1/02, 7/02*

U.S. Cl. 297—452 **3 Claims**



1. In an adjustable vehicle seat adapted to be installed in a longitudinal vehicle chassis, and including a seat frame, a back frame, and an upholstery disposed on said frames, and wherein said seat frame is adjustable in inclination and along the longitudinal direction independently of said back frame, and said seat frame together with said back frame are adjustable along said longitudinal direction, and are adjustable in height with respect to said vehicle chassis, and said back frame is adjustable in inclination with respect to said seat frame, the improvement comprising

said seat frame being adjustable in height independently of said back frame with respect to said vehicle chassis,

said back frame being adjustable independently of said seat frame in the longitudinal direction, and in height with respect to said vehicle chassis and

said upholstery being longitudinally slidably guidable with respect to said frames.

4,408,803

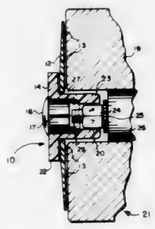
HUB ASSEMBLY FOR ROLLER SKATES

James P. Green, and Paul L. Cobaris, both of 4749 Marbello Blvd., Orlando, Fla. 32805

Filed May 4, 1981, Ser. No. 260,295

Int. Cl.³ A63C *17/22*

U.S. Cl. 301—5.7 **14 Claims**



1. A hub assembly for attachment to a roller skate wheel which has a hexagonal axle nut for retaining wheel bearings comprising:

hub means having a cylindrical body portion and an outer flange portion, the inner end of said body portion having a hexagonal opening therein in which said opening forms a force fit over the hexagonal axle nut, said hub means adapted to be installed on he hexagonal axle nut so as to provide a space between said flanged portion and the outside face of the skate wheel;

flat ring means having an outside diameter less than the diameter of the skate wheel, and an inside diameter slightly greater than the diameter of said body portion of said hub means, said flat ring means having a plurality of projections from an inner face thereof, said flat ring means installed on said body portion of said hub in said space between said flange portion and the outside face of the skate wheel with said projections in frictional contact with the outside face such that said flat ring means is free to rotate with respect to said hub means whereby said frictional contact of said projections causes said flat ring means to rotate when the skate wheel is turning in use; and

whereby said hub means and said flat ring means act to protect the wheel bearings from intrusion of dirt.

4,408,804

COMPOSITE WHEEL COVER

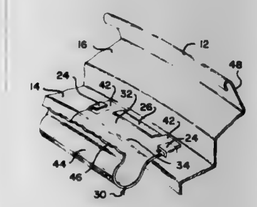
Claude J. Marshall, Jr., Ann Arbor, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 251,674, Apr. 6, 1981, abandoned, which is a continuation of Ser. No. 93,427, Nov. 13, 1979, abandoned. This application Nov. 23, 1981, Ser. No. 323,528

Int. Cl.³ B60B *7/04, 7/06*

U.S. Cl. 301—37 R **1 Claim**

1. A wheel cover disposed on the axial outer face of a vehicle wheel having a wheel flange, said wheel cover being of the composite type comprising: an annular ring of one type material; said annular ring having a rim portion disposed in a plane substantially parallel to said wheel flange; said rim portion having formed on the outer surface thereof a plurality of receptacles each of which receive retention means of another material for mechanically interlocking said retention means to said annular ring and said retention means being engageable with said wheel flange for mounting said wheel cover on said vehicle wheel; said annular ring is formed from a strip material into a closed loop; the ends of said closed loop are mechanically interlocked one to the other; said ends of said closed loop are interlocked one to each other by spot welding; said strip material is galvanized steel; said retention means is a retention clip; said retention clip is formed from annealed spring steel; said annular ring has formed thereon a radially projecting annular lip, an annular ornamental cover of a different material than said annular ring and said retention means being mechanically interlocked to said annular ring by the deforming of said annular ornamental cover about said radially projecting lip; said ornamental cover is formed from stainless steel; said receptacle including two opposed radially outwardly extending and circumferentially facing tabs and a radially outwardly extending and axially inwardly facing stop tab all formed by upsetting said tab material from said annular ring; said spring steel retention clip having an arcuate base portion whose arc corresponds generally to the arc of the outer surface of said annular ring; said spring steel retention clips having at least one locking tab formed by upsetting the axially inner edge of said locking tab in a radially inwardly direction; said base portion of said spring steel retention clip being received by said receptacle such that said locking tab thereof is captured and guided by one of said opposed tabs by way of said locking tab being biasingly registered with one of the openings formed in said rim portion resulting from the forming of said opposed tabs and said stop tab capturing said base portion of said spring steel retention clip along the axially outward edge thereof.



4,408,805

CONTROL VALVE ASSEMBLIES FOR HYDRAULIC BRAKING SYSTEMS

Roy E. Edwards, Warley, and Anthony G. Price, Birmingham, both of England, assignors to Lucas Industries Limited, Birmingham, England

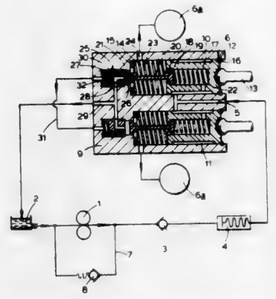
Filed May 28, 1981, Ser. No. 268,006

Claims priority, application United Kingdom, Jun. 17, 1980, 8019806

Int. Cl.³ B60T *13/00*

U.S. Cl. 303—6 A **7 Claims**

1. A dual hydraulic braking system for a vehicle comprising a source of high pressure hydraulic fluid, a reservoir for fluid, brakes on wheels on opposite sides of the vehicle, a control valve assembly for controlling the supply of high pressure fluid to said brakes, and independently operable pedals for operating said control valve assembly to cause fluid under pressure to be supplied to the respective brakes on opposite sides of the vehicle, said control valve assembly comprising a housing having separate bores, a pedal-operated piston working in each of said bores, pressure spaces defined by said bores in advance of said pistons, a normally closed inlet valve associated with each of said pistons for isolating said source from said pressure space, a normally open exhaust valve associated with each of said pistons for providing communication between said pressure space and said reservoir, a pair of outlets for connecting said pressure spaces to said brakes on opposite sides of the vehicle, each of said pistons being movable in a brake-applying direction to close a respective one of said exhaust valves and thereafter to open a respective one of said inlet valves whereby fluid under pressure is supplied to a respective one of said pressure spaces, and a transfer connection which is adapted to interconnect said pressure spaces when said exhaust valves are open and which ensures that, when both said pedals are operated simultaneously, both said inlet valves can only open substantially simultaneously following closure of both said exhaust valves.



4,408,806

ARTICULATION DEVICE FOR CONNECTING A MEMBER TO A SHAFT SO THAT THE MEMBER PIVOTS AND SLIDES RELATIVE TO THE SHAFT

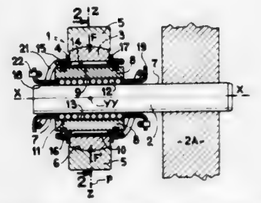
Meidul Orain, Conflans-Sainte-Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Jan. 28, 1981, Ser. No. 228,932

Claims priority, application France, Feb. 15, 1980, 80 03355

Int. Cl.³ F16C *19/48, 25/08*

U.S. Cl. 308—6 R **4 Claims**



1. An articulation device allowing a pivotal and sliding motion of a member on a shaft having an axis, said device comprising said shaft which defines two axially extending raceways which face in two substantially opposed directions radially of said axis for taking loads exerted on said shaft in two privileged directions, said shaft further defining two cylindrical outer surfaces which are interposed between and interconnect said two raceways, said member which defines a bore, an outer ring arrangement of rolling members which have a linear contact and are parallel to the axis of the shaft, an intermediate support means for said roling members and comprising two distinct second members in combination with said two cylindrical surfaces of the shaft, each second member having substantially the shape of a segment of a cylinder coaxial with the shaft and defining a groove, said ring arrangement of rolling members being interposed between said bore and the two second members, and inner rows of rolling members which are perpendicular to said axis, the inner rows of rolling members being interposed between and having linear contact with a

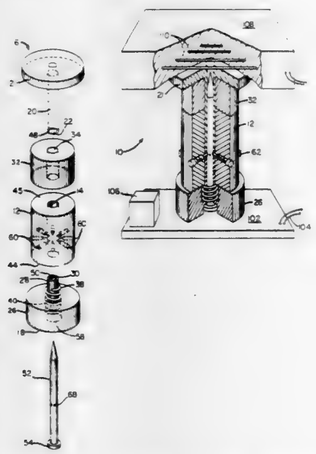
respective one of said grooves in said second members and a respective one of said two axially extending raceways on the shaft, and the radius of said cylindrical surfaces of the shaft being slightly less than the radius of the cylindrical surface of the second members, whereby said cylindrical surfaces of the second members constitute raceways for the ring arrangement of rolling members and said two cylindrical surfaces of the shaft merely guide the ring arrangement of rolling members.

4,408,807

COMPRESSION MOLDING OF POROUS RETAINERS

Herbert B. Singer, Randolph, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Feb. 11, 1981, Ser. No. 233,396
Int. Cl.³ F16C *33/44;* B28B *1/08*
U.S. Cl. 308—187 **9 Claims**



1. A method for direct molding of a ball bearing retainer comprising the steps of:

filling a ball bearing retainer mold with a predetermined quantity of polyamide-imide powder;

compressing said powder in said mold and applying an elevated temperature thereto; and

subsequently curing said compressed powder at a curing temperature for a predetermined time interval to form from the powder a porous retainer having a plurality of ball bearing pockets with the retainer pores open to the surface in the pockets to promote the flow of an impregnating lubricant across said surface.

4,408,808

RELUBRICATABLE DOUBLE ROW BEARING

Jerry L. Redmann, Jr., Sparta, and Gerald W. Gurney, Ada, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Jul. 30, 1981, Ser. No. 288,317
Int. Cl.³ F16C *33/66, 19/08*
U.S. Cl. 308—187 **32 Claims**

1. In a relubricatable bearing having:

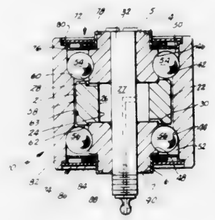
an outer race member having an inner wall defining two outer races, said inner wall including a portion between said outer races;

first and second inner race members defining first and second inner races, respectively, said first and second inner race members being located within said outer race member;

a first row of balls positioned between and engaging both said outer race and said first inner race;

a second row of balls positioned between and engaging both said outer race and said second inner race, the improvement comprising:

a spacer positioned between and engaging both said first and second inner race members, said spacer comprising a body having an inner wall defining a lubricant reservoir, an outer wall adjacent said inner wall portion between said outer races of said outer race member, and first and second faces abutting said first and second inner race members, respectively, said first face defining at least one first groove extending along said first face from said reservoir to said first row of balls, said second face defining at least one second groove extending along said second face from said reservoir to said second row of balls, whereby lubricant under pressure in said reservoir will migrate through said first and second grooves between said spacer and said inner race members to lubricate said first and second rows of balls, respectively.

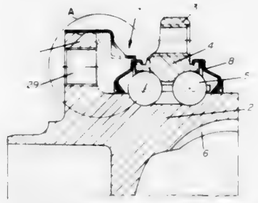


4,408,809

SEAL, ESPECIALLY FOR WHEEL BEARING ARRANGEMENTS FOR VEHICLES

Lothar Walter, Schweinfurt; Horst M. Ernst, Eltingshausen; Manfred Brandenstein, Eussenheim; Heinz Kiener, Waigolshausen, and Wolfgang Friedrich, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Industries, Inc., King of Prussia, Pa.

Filed Mar. 27, 1981, Ser. No. 248,277
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012421
Int. Cl.³ F16C *33/00, 33/76*
U.S. Cl. 308—187.1 **12 Claims**



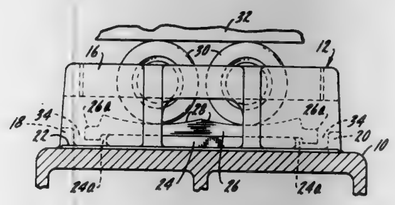
1. In a bearing having an inner bearing ring with a first radially outwardly directed flange, an outer bearing ring with a second radially outwardly directed flange, a plurality of rolling bodies positioned to roll between said inner and outer rings, a seal affixed to said outer ring and having a free edge slidably engaging said inner ring, and a cover mounted to cover said seal; the improvement wherein said cover has a first portion mounted on said first flange, a free edge portion spaced from said first portion and extending to lie radially outward of an outer shoulder of said outer ring to form a narrow gap therebetween, and an intermediate portion between said first portion and edge portion defining a lubricant accumulation space, said intermediate portion having an axially extending sleeve-shaped section affixed to said first portion, and an angled section between said sleeve shaped section and free edge portion, said angle section extending in a substantially radially inwardly direction from said sleeve-shaped section toward said portion of said outer ring.

4,408,810

RESILIENT SIDE BEARING

Robert P. Geyer, Palatine, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

Filed May 27, 1982, Ser. No. 382,766
Int. Cl.³ F16C *19/00;* B61F *5/14*
U.S. Cl. 308—226 **10 Claims**



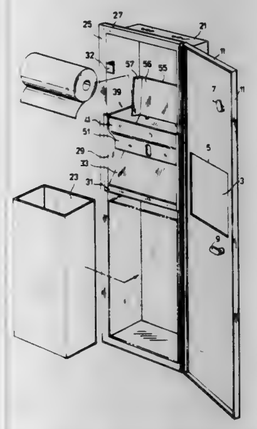
1. A constant contact side bearing adapted to be positioned on a railroad car truck bolster and in constant contact with the underside of the car body for retarding turning movement of the car truck relative to the car body, said side bearing including a housing adapted to be positioned on the bolster, a pair of rollers mounted within said housing for contact with the underside of a car body, said rollers being arranged with their axes parallel to the longitudinal axis of the bolster, a contoured bearing plate positioned within said housing and supporting said rollers, an elastomeric pad positioned within said housing beneath and supporting said bearing plate, said contoured bearing plate and elastomeric pad providing resistance to rolling movement of said rollers responsive to relative rotation between the car truck bolster and car body underside.

4,408,811

WALL MOUNTED PAPER TOWEL HANDLING UNIT

Frank Richardson, Georgetown, and Allan H. Campbell, Burlington, both of Canada, assignors to Twin-Cee Limited, Georgetown, Canada

Filed Nov. 10, 1980, Ser. No. 205,463
Int. Cl.³ B65H *19/00*
U.S. Cl. 312—37 **10 Claims**



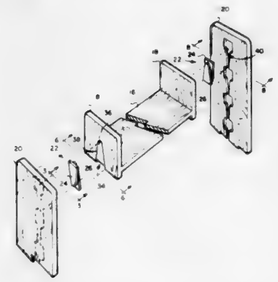
1. A tamper resistant towel dispenser and waste unit for mounting to a wall and comprising a wall box and a forward door for opening and closing the wall box, said wall box being provided with a towel cradle assembly, a towel dispensing cavity in the towel cradle assembly, a waste bin receiving region for receiving a waste bin which substantially fills the waste bin receiving region when inserted in the wall box, and an outwardly projecting box flange around the wall box; said door having a mouth which opens into the towel dispensing cavity in the wall box when the door is closed, an outer peripheral region adapted for mating with the box flange around the wall box and locking means for locking the door closed, the arrangement being such that when the waste bin is received within the wall box with the door closed, the waste bin which is sandwiched by the door in the wall box and the box flange and, the towel cradle assembly, support the door against the inward collapsing, and such that the box flange underlies the outer peripheral region of the door and the towel cradle assembly shields the door mouth at its periphery to substantially reduce leverage for outward prying of the door away from the wall box.

4,408,812

DISMOUNTABLE FURNITURE

John Krautwurst, 67 Ingram Dr., Toronto, Canada M6M 2L7

Continuation-in-part of Ser. No. 30,846, Apr. 17, 1979, abandoned. This application Jul. 28, 1980, Ser. No. 172,554
Int. Cl.³ A47B *91/00, 3/00*
U.S. Cl. 312—256 **12 Claims**



1. Dismountable furniture comprising; at least two vertical members;

a plurality of horizontal members;

a vertical end wall attached to each end of each said horizontal member;

a plurality of upwardly directed V-shaped recesses formed in inwardly facing surfaces of said vertical members;

a downwardly facing V-shaped recess formed in the outwardly facing surface of each said vertical end wall of each said horizontal member, and,

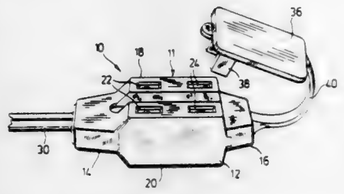
at least two joining members, each said joining member having two generally V-shaped locking portions, having inner and outer sides, and being integrally joined between their inner sides thereby locating said V-shaped locking members in spaced apart parallel planes, with their apices overlapping and extending in opposite directions, with one of said V-shaped locking members being dimensioned to be received in one of said V-shaped recesses in said vertical members, and the other of said V-shaped locking members being dimensioned to be received in said V-shaped recess of said vertical end walls, whereby said horizontal members may be supported between said vertical members, by interlocking engagement of said V-shaped locking members.

4,408,813

MULTIPLE OUTLET AND COVER THEREFOR

Rudolph Koehler, Willowdale, Canada, assignor to Noma Canada Ltd., Scarborough, Canada

Filed Sep. 4, 1981, Ser. No. 299,405
Int. Cl.³ H01R *13/44*
U.S. Cl. 339—38 **7 Claims**



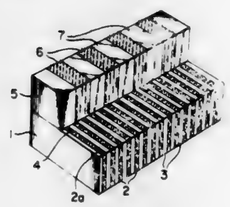
1. A cube tap comprising:
an insulating housing having a pair of generally opposed ends respectively defining the axial ends of said housing;
a pair of generally opposed side faces extending between said ends;
a plurality of electrical contacts contained within said housing;
inlet conductors secured to said housing at one axial end thereof and being electrically connected to said electrical contacts;
a pair of transversely spaced prong openings one said side face having a first pair of prong openings therein adjacent the one axial end of said housing and a second pair of prong openings adjacent the other axial end;
the other said side face having a pair of prong openings therein, said prong openings being adapted to receive the prongs of an electrical plug connector within said housing to contact said electrical contacts;
an insulating cover having a pair of tabs projecting from one side thereof, and
a flexible tether integrally connecting said cover to said cube tap at the axial end thereof remote from said inlet conductors, said tether permitting said tabs to engage in any said pair of prong openings,
said tabs located on said cover such that when engaged in said second pair of prong openings said first pair of prong openings is uncovered, and when engaged in said first pair of prong openings said first and second pair of prong openings are covered.

4,408,814

ELECTRIC CONNECTOR OF PRESS-CONTACT HOLDING TYPE

Nogami Takashi, Tokyo, and Masuda Haruhiko, Hasuda, both of Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,215
Claims priority, application Japan, Aug. 22, 1980, 55-115647
Int. Cl.³ H01R *4/00, 9/00*
U.S. Cl. 339—59 M **5 Claims**



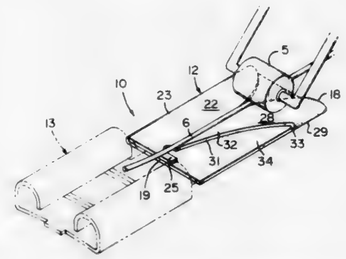
1. An elastomeric electric connector of the stratification type in the form of an alternately stratified body having a rectangular cross section formed of a plurality of layers of an electrically conductive rubber and a plurality of layers of an electrically insulating rubber bonded together and surrounded by the lateral surfaces each having a striped appearance made of the peripheral surfaces of the alternately stratified layers of the rubbers, in which a plurality of whisker-like upright projections of electrically conductive linear bodies are provided on at least one of the lateral surfaces of the striped appearance in the areas corresponding to the peripheral surfaces of the layers of the electrically conductive rubber.

4,408,815

HIGH COMPLIANCE ROLL-IN CHANNEL WIRE TERMINATION

Samuel W. Apicelli, Highspire, Pa., and Dimitry G. Grabbe, Lisbon Falls, Me., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 28, 1981, Ser. No. 315,833
Int. Cl.³ H01R *11/08*
U.S. Cl. 339—95 R **10 Claims**



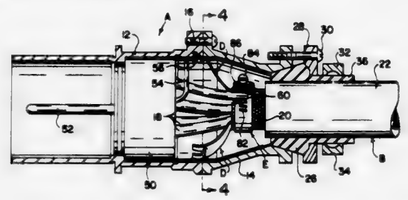
1. An electrical connector of the type comprising a first end, a second end, and a wire-receiving channel extending inwardly from said first end toward said second end, said channel having opposed first and second edges which converge from said first end to a wire-contacting portion toward said second end, said opposed edges being spaced apart at said wire-contacting portion by a distance which is less than the diameter of a wire for which said device is intended, said wire being axially channeled in said slot, characterized in that
said connector comprises a plate-like member having generally parallel first and second bights where said member is folded against a base portion of said member to form respective first and second laps which define respective first and second edges of said wire-receiving channel.

4,408,816

TERMINATOR CONNECTOR FOR SHIELDED CABLES

George W. Knecht, Brooklyn, N.Y., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Nov. 25, 1981, Ser. No. 324,811
Int. Cl.³ H01A *4/66*
U.S. Cl. 339—143 R **15 Claims**



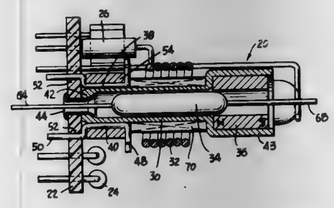
1. A terminator connector for grounding a conductive shield on a cable to a housing comprising: a generally cylindrical base portion having a longitudinal axis, opposite circumferential edges and overlapping ends, and a plurality of spring fingers extending outwardly from one of said edges away from said axis in circumferentially-spaced relationship to one another, said base portion being clampable against a conductive cable shield and at least one of said fingers being engageable with a conductive housing at an end portion of the cable.

4,408,817

P. C. BOARD BOBBIN CONSTRUCTION

Donald J. Mattis, Norwalk, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Jul. 22, 1981, Ser. No. 285,808
Int. Cl.³ H01R *13/70*
U.S. Cl. 339—147 R **15 Claims**



1. A P. C. board electrical component assembly comprising, in combination:
(a) a holder in the form of a cylindrical body adapted to support electrical entities,
(b) a terminal retainer sleeve fitted over one end of said cylindrical body,
(c) said retainer sleeve having aligned notches in both its ends and having an aligned internal groove connecting said notches and forming a U-shaped recess, and
(d) a terminal wire constituted as a piece separate and apart from said body and sleeve, said terminal wire having a rigid U-shaped portion, which is slidably received and disposed in said groove and notches and closely fits therein, said terminal wire being received in said recess with essentially a purely translational movement wherein the legs of the wire move essentially endwise during the receiving movement,
(e) said cylindrical body engaging the terminal wire and constituting a means for retaining the latter in said groove and notches,
(f) said terminal wire having an extremity terminal portion which is essentially parallel to the yoke part of the U-shaped portion, and which is adapted for insertion in an opening of a printed circuit board, and said wire being pre-formed.

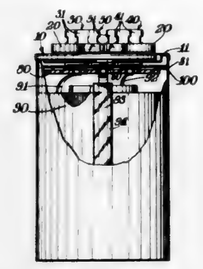
4,408,818

CAPACITOR COVER-TERMINAL ASSEMBLY

Paul M. Markarian, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 26, 1981, Ser. No. 238,314
Int. Cl.³ H01R *3/00*
U.S. Cl. 339—147 C **7 Claims**

1. A cover-terminal assembly for a multi-section capacitor comprising a round metal cover having a rim portion and three terminals mounted therein in a triangular array, each of said terminals having a plurality of flat blade portions and being located in an insulative bushing having a pentagonal shape, there being at least minimum safety distance between any blade portion of any one of said terminals and any blade portion of any other of said terminals and between any blade portion of any of said terminals and a vertical plane in which an edge of said cover lies, wherein each of said bushings has a curved edge that lies on an imaginary circle concentric with and smaller than the cover, two straight edges that form an apex pointing to the center of said cover and lying opposite said curved edge, and two straight edges parallel to each other and each joining an edge that forms said apex and said curved edge.

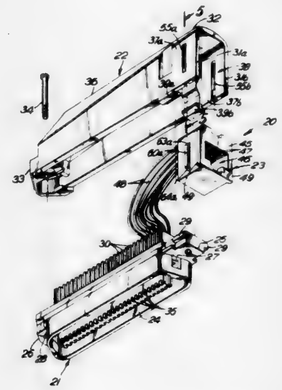


4,408,819

ELECTRICAL ADAPTER WITH SNAP-FITTED JACK AND HOOD

Ronald H. Guelden, Shreveport, La., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Feb. 25, 1982, Ser. No. 352,497
Int. Cl.³ H01R *13/506, 27/02*
U.S. Cl. 339—154 A **10 Claims**



1. In an electrical telecommunications adatpter for coupling the terminating plug of a telephone set to contacts in turn coupled to the wires of a distribution cable, said adapter comprising:
(a) a longitudinally elongated electrical multi-pin connector horizontally disposed in its longitudinal direction, and the pins of which are adapted to be coupled with said contacts.
(b) a hood disposed over said connector and of transverse vertical cross-sectional upside down "U" shape so as to have an interior open at the bottom and to be enclosed by a top wall and transversely spaced resilient vertical sidewalls, all of said walls being portions of said hood which longitudinally extend to a forward end thereof to terminate at a front opening therefor of said shape; and
(c) a jack for receiving said plug in a passage formed in said jack, said jack including contacts at the rear of said passage for respectively engaging with contacts in said plug, and said jack also including a housing containing said passage and said contacts therein and having longitudinally extending vertical surface areas on transversely

opposite sides thereof, said housing being adapted to be disposed in the forward end of said hood at least partly to the rear of said opening with said surface areas of said housing being enclosed by said sidewalls of said hood;

the improvement in which:

(d) said jack housing has projections thereon which are adapted to be disposed within and above the bottom of said hood, rearward of said opening, and which extend transversely outward of said surface areas of said housing;

(e) said sidewalls of said hood have formed therein receptacles disposed above the hood's bottom and within which said projections are receivable; and

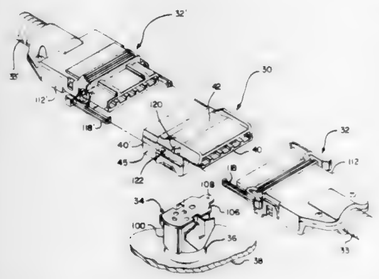
(f) said jack when separated from said hood is insertable therein by wedging said jack upward into said hood to produce a transverse resilient spreading of said hood's sidewalls until said projections have entered said receptacles and, thereafter, a resilient restoration of said sidewalls towards each other so as to produce a snap-fitting together of jack and hood.

4,408,820

ELECTRICAL TERMINALS FOR MODULAR WIRING SYSTEMS

Daniel G. Eaby, Mt. Joy; William B. Long, Camp Hill, and John R. Shuey, Carlisle, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1981, Ser. No. 249,519
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—156 R **8 Claims**



1. An electrical junction connector of the type comprising an insulating housing having oppositely directed first and second mating faces and having a third mating face which is directed laterally of said first and second mating faces, a plurality of parallel feed-through conductors extending between said first and second mating faces and a plurality of tap conductors, each of said tap conductors being connected to one of said feed-through conductors intermediate the ends thereof and extending from said feed-through conductor to said third mating face, said electrical connector being characterized in that:

each of said feed-through conductors comprises an elongated flat stamped member of conductive metal, said feed-through conductors being in parallel side-by-side coplanar relationship, each of said feed-through conductors having a tap conductor receiving opening extending therethrough intermediate its ends, said opening having opposed arcuate edges,

each of said tap conductors comprising a rod-like member having a uniform cross-section along its length, each rod-like member having a first end which is inserted through said opening in its associated feed-through conductor from one surface thereof and beyond the other surface, said tap conductor having an interference fit in said opening whereby said tap conductor is electrically connected to said feed-through conductor,

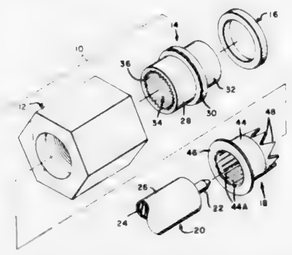
each of said rod-like members having a second end located at said third mating face.

4,408,821

CONNECTOR FOR SEMI-RIGID COAXIAL CABLE

Edgar W. Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 222,188, Jan. 2, 1981, which is a continuation of Ser. No. 55,564, Jul. 9, 1979, abandoned. This application Oct. 5, 1981, Ser. No. 308,760
Int. Cl.³ H01R *11/08*
U.S. Cl. 339—177 R **10 Claims**



1. An electrical connector for terminating semi-rigid coaxial cable, comprising:

a bored tubular shell member having rearward bore means of relatively large inner diameter inwardly contoured toward forward bore means having a relatively smaller inner diameter dimensioned to receive said cable therethrough;

coupling means on said tubular member;

bored gripping means having a rearward collar portion dimensioned to closely receive said cable therethrough, and having a plurality of spline fingers extending forward from the periphery of said collar portion defining therebetween a profiled opening of a dimension substantially equal said cable diameter, and grooves extending along an inside surface of said gripping means, said gripping means being rearwardly disposed of said tubular member, whereby,

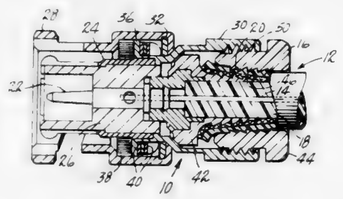
upon moving said gripping means forwardly into said rearward bore means, said spline fingers are resiliently deflected inwardly along said contour to embed into an outer conductive layer of said cable and said grooves engage the outer conductive layer of the cable.

4,408,822

COAXIAL CONNECTORS

Nick C. Nikitas, Danvers, Mass., assignor to Delta Electronic Manufacturing Corp., Beverly, Mass.

Filed Sep. 22, 1980, Ser. No. 189,668
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—177 R **8 Claims**



1. A coaxial connector adapted to be mounted on the end of a coaxial cable having a central conductor, a braided outer conductor, an interposed insulator and a covering sheath of yielding, flexible material, the connector comprising a central conductor and an outer conductive shell respectively connectible electrically to the central conductor and the braided outer conductor of the coaxial cable, the shell having an internally

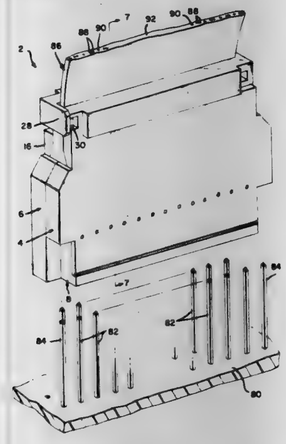
threaded rearward end portion, a bushing having a conical exterior surface adapted to being inserted between the insulator and the braided outer conductor and formed with a plurality of retaining spurs spaced apart in the direction of the axis of the bushing and an externally threaded collar engaging the threads of the shell and formed with a textured interior, tapered in generally parallel relationship with the exterior surface of the bushing for applying a clamping force to the sheath of the cable whereby the textured interior of the collar penetrates and anchors in the covering sheath.

4,408,823

MULTI-PIECE CONNECTOR AND COVER MEANS

John H. Huber, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 10, 1981, Ser. No. 252,770
Int. Cl.³ H01R *13/00*
U.S. Cl. 339—208 **8 Claims**



1. A multi-piece connector assembly comprising:

a connector block having a row of contact receiving cavities within a side surface of said block, said block having a like row of receptacle passageways through a frontal face of said block, each defined by interior side walls and each communicating with a respective one of said cavities;

a cover body for positionment over said side of said block to enclose said contact receiving cavities, and having forwardly projecting means at a forward end for insertion into said row of receptacle passageways and extending to said frontal face, whereby securing said forward end of said cover body to said block.

4,408,824

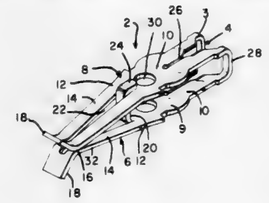
WIRE-IN-SLOT TERMINAL

Charles H. Weidler, Lancaster, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 8, 1981, Ser. No. 271,468
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—258 R **9 Claims**

1. A stamped and formed sheet metal electrical contact terminal of the type comprising a wire connecting portion which is intended to receive, and establish electrical contact with a wire, a pair of side-by-side arms extending from said connecting portion, said arms having opposed major surfaces and having converging portions, contact zones on said opposed surfaces at the ends of said converging portions, and end portions which extend from said contact zones to the free ends of said arms, said arms being flexible in opposite directions away from each other and normally of said major surfaces upon movement of a complementary terminal between said arms whereby said contact zones engage said complementary terminal and establish electrical contact therewith, said contact terminal being characterized in that:

a brace extends between said contact arms at a location between said wire connecting portion and said contact zones, said brace being formed from at least one of said arms and functioning to restrain said arms against movement away from each other, the brace comprising a lance



struck from one of the arms and extending along the length of the one arm, the lance extending laterally to the other arm and being secured to the other arm,

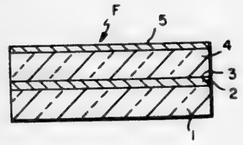
the portions of said arms which extend from said brace to said contact zones being cantilever beams, each of said beams having a fixed end at said brace and having an effective length which extends from said brace to said contact zone.

4,408,825

VACUUM ULTRAVIOLET REFLECTANCE FILTER

Lawrence A. Stelmack, Somerville, Mass., assignor to Acton Research Corporation, Acton, Mass.

Filed Nov. 10, 1980, Ser. No. 205,418
Int. Cl.³ G02B *5/28*
U.S. Cl. 350—1.7 **7 Claims**



1. An ultraviolet reflectance filter comprising:

a substrate with a reflective surface;

a spacer layer of transparent dielectric material on said surface; and

a thin film spaced from the reflective surface by the dielectric layer, wherein

said thin film is a heavy metal selected from the group consisting of tungsten, rhenium, osmium, iridium, platinum and gold and heavy metal alloys thereof.

4,408,826

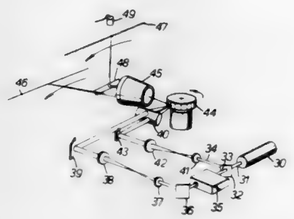
APPARATUS FOR SCANNING A LASER BEAM INCLUDING MEANS FOR FOCUSING A SCALE SCANNING BEAM AND A READ/WRITE SCANNING BEAM ON THE SAME FACET OF A POLYGON SCANNING MIRROR

Toshio Ike, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 30, 1981, Ser. No. 280,053
Claims priority, application Japan, Aug. 5, 1980, 55-107278; Aug. 5, 1980, 55-107279
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **2 Claims**

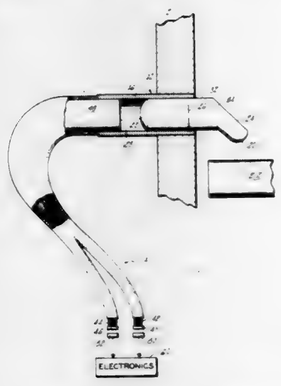
1. An apparatus for scanning a laser beam, the apparatus comprising:

laser means for generating a single collimated beam;
a beam splitter for permitting a portion of said collimated beam to pass therethrough and for redirecting another portion of said collimated beam as an unmodulated beam;
a modulator for modulating only one of said beam portions to a modulated beam;
a rotating polygon scanner;
means for directing both of said beam portions on the same facet of said polygon scanner, said directing means including a cylindrical lens for focusing said beam portions on a



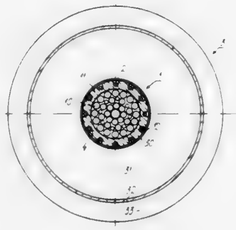
reflecting point of said same facet of said polygon scanner, said beam portions being off the axis of the cylindrical lens;
a scale having precisely spaced means thereon for receiving the unmodulated beam;
a scanning lens for focusing the modulated and the unmodulated beam portions, as reflected by said polygon scanner, to a scanned medium and on the scale, respectively; and
detecting means for receiving the unmodulated beam portion passing through said spaced means and for producing timing pulses for said apparatus.

4,408,827
IMAGING SYSTEM FOR HOSTILE ENVIRONMENT OPTICAL PROBE
Richard W. Guthrie, West Palm Beach, Fla., and Dale M. Byrne, Arlington, Tex., assignors to United Technologies Corporation, Hartford, Conn.
Filed Sep. 2, 1981, Ser. No. 298,829
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.10 **4 Claims**



1. An apparatus for collecting optical radiation preferentially from a defined region in a first environment and transporting said radiation to a second environment comprising:
a heat-resistant optical collector transmissive to said radiation and having an internal axis extending from a first end to a collecting end at a predetermined position within said first environment, said collector having a first curved surface having a first radius of curvature on said first end and a reflective surface disposed in said collecting end for reflecting along said axis collected radiation passing through and focused by a second curved surface having a second radius of curvature, said second surface being disposed with respect to said axis and said reflective surface such that said collected radiation reflected along said axis is preferentially collected from a defined region within said first environment and is directed along said axis and through said first curved surface which defined region is located a predetermined distance along an external axis passing through said second curved surface and said reflective surface, said apparatus having a sensitivity for optical radiation that varies as a function of position along said external axis, said sensitivity having a predetermined maximum value for radiation emanating from said defined region;
optical transmission means, having an entrance end and an exit end in said second environment, for transmitting out said exit end radiation passing through said first curved surface and entering said entrance end; and
heat-resistant means for maintaining said entrance end in proximity to said first end and for maintaining said collecting end in said predetermined position within said first environment.

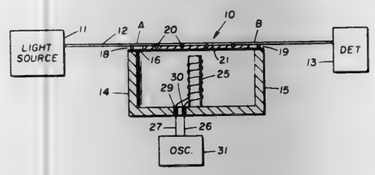
4,408,828
OPTICAL FIBRE SUBMARINE CABLE
Georges E. Le Noane, Kerrougant Bras, Tregastel, France 22730, and Bernard G. Nonclercq, Kergomar Troguery, La Roche Derrien, France 22450
Filed Nov. 20, 1980, Ser. No. 208,684
Claims priority, application France, Nov. 22, 1979, 79 28850
Int. Cl.³ G02B *5/16, 5/172*
U.S. Cl. 350—96.23 **27 Claims**



1. An optical fibre cable comprising:
a central member including a central strand of metal wires and a tubular grooved jacket,
said grooved jacket including juxtapositioned cylindrical cross-section segments surrounding said metal wire strand, each of said cylindrical segments having an outer periphery including one or more helicoidal grooves, each receiving at least one optical fibre; and
a tubular sheath having a jacket surrounding said central member and closing said grooves of said grooved jacket,
said grooved jacket and said jacket surrounding said central member being metallic.

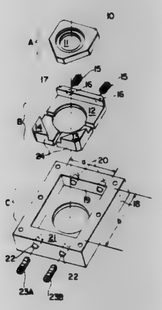
4,408,829
FIBER OPTIC TRANSDUCERS
Robert W. Fitzgerald, Jr.; Robert L. Hall, and Gary P. Bickford, all of Houston, Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.
Filed Jan. 30, 1981, Ser. No. 229,823
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.29 **6 Claims**

1. An optical transducer comprising a housing having an open end, a flexible diaphragm stretched across said open end and secured to said housing so as to be subject to displacement upon application of a force thereto,
a length of multimode optical fiber,
means for mounting said fiber relative to said diaphragm such that displacement of said diaphragm effects mi-



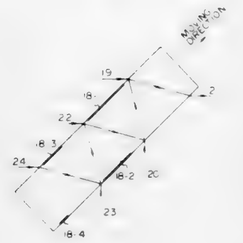
crobending at at least one point along said fiber to vary the transmission mode characteristics of said fiber as a function of the force, wherein said mounting means includes a rigid member secured to one surface of said diaphragm being concentric therewith and having an area less than the area of said diaphragm.

4,408,830
MULTIDIRECTIONAL TRANSLATOR MECHANISM
Hermann A. Wutherich, Rancho Palos Verdes, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Mar. 2, 1981, Ser. No. 239,717
Int. Cl.³ G02B *7/02*
U.S. Cl. 350—247 **5 Claims**



1. A planar translation device for alignment of one part relative to another comprising, in combination:
a mounting plate holder, an optical element mounted in said holder that requires alignment in one single plane to a fixed beam, an adjustable cradle means for cradling the mounting plate holder comprising a multi-section segment that is split into three sections, with a housing for moving the mounting plate by means of the adjustable cradle parts along both the x axis and y axis with projecting adjustment means that project through the wall of the housing.

4,408,831
OPTICAL SWITCH
Haruo Sakaguchi; Norio Seki, both of Tokyo; Shu Yamamoto, Chofu, and Hiroharu Wakabayashi, Kawasaki, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan
Filed Aug. 24, 1981, Ser. No. 295,311
Claims priority, application Japan, Sep. 5, 1980, 55-122270
Int. Cl.³ G05D *25/00*
U.S. Cl. 350—269 **7 Claims**

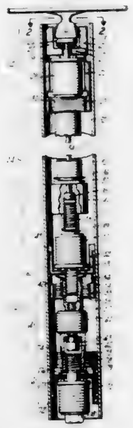


1. An optical switch comprising:
a transparent plate having a pair of parallel planes,
a reflection film provided on both of said parallel planes,
a first input means for providing a first input beam to a first plane of said transparent plate, wherein the angle between the first beam and the first plate is 45°,
a second input means for providing a second input means to the first plane of said transparent plate through a second plane of said transparent plate, wherein the angle between the second beam and the second plane is 45°,
output means for providing an output beam by receiving one of the input beams through said transparent plate,
said input beams and output beam residing in the plane perpendicular to the transparent plate,
said second input means being provided so that the angle between the first and the second input beams is 90°, and the second input beam illuminates the same spot of the first plane as the first input beam does,
said output means being provided so that the first input beam is coupled with the output means through the transparent plate, and the second input beam is coupled with the output means through the reflection by the reflection film,
means for displacing said transparent plate together with the reflection film in the plane defined by said transparent plate, and
a housing for securing the above components.

4,408,832
MIRROR ADJUSTING FIXTURE
Paul R. Hartman, and Thomas B. Milam, both of Jupiter, Fla., assignors to United Technologies Corporation, Hartford, Conn.
Filed Dec. 7, 1981, Ser. No. 328,298
Int. Cl.³ G02B *7/18, 5/08;* H01L *41/08*
U.S. Cl. 350—310 **1 Claim**

1. An adjusting device for applying force along an axis to a projecting member affixed to the rear surface of a deformable mirror comprising:
a support tube directed substantially along said axes and having a cylindrical interior surface, gripping means having three prongs for gripping said projecting member, said prongs being released in response to movement of a first piezoelectric actuator, dynamic piezoelectric actuator means for applying temporally variable force to said deformable mirror in response to control signals, said force being transmitted to said mirror along said axis and through said gripping means;
stepping and positioning means connected to said dynamic actuator means for moving said dynamic actuator means

and said gripping means through said tube along said axis from a first position to a second position, said stepping and positioning means further including first and second locking means spaced apart axially and having first and second sets of three locking prongs, radially movable in response to first and second piezoelectric actuators, respectively, for clamping said stepping means in said support tube



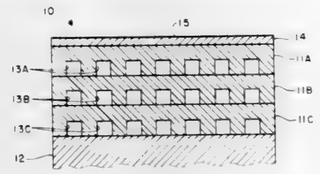
thereby providing a support with respect to which force is applied to said deformable mirror, and further including a piezoelectric extending means for altering the axial spacing of said first and second locking means, whereby the axial position of said gripping means may be varied by sequential energization of said first locking means, extending means and second locking means.

4,408,833

HOT PRESSED AND DIFFUSION BONDED LASER MIRROR HEAT EXCHANGER

John G. Gowan, London, England, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 13, 1982, Ser. No. 339,260
Int. Cl.³ G02B *5/08*; B22F *5/00*; C22C *27/04*; B32B *15/02*
U.S. Cl. 350—310 **8 Claims**



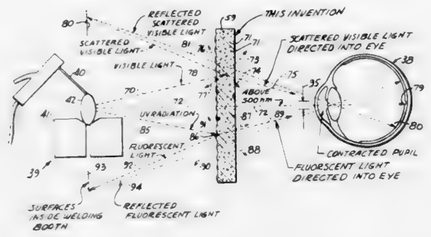
1. A fluid cooled laser mirror structure which comprises:
a. a heat exchanger defining a plurality of internal passageways for conducting fluid coolant therethrough, said heat exchanger comprising a hot pressed member of powdered tungsten carbide and a binder, said hot pressed member having on a first surface thereof a plurality of channels configured in a predetermined pattern, and a backing plate covering said first surface to define said passageways configured in said pattern;
b. inlet and outlet means communicating with said passageways for conducting said fluid coolant into and out of said heat exchanger; and
c. a mirrored surface supported by said member adjacent a second surface of said pressed member.

4,408,834

CURTAIN FOR SHROUDING WELDING OPERATIONS

Charles G. Miller, 841 S. Oak Knoll Ave., Pasadena, Calif. 91106, and James B. Stephens, 2303 Maurice Ave., La Crescenta, Calif. 91214

Division of Ser. No. 201,052, Oct. 27, 1980, Pat. No. 4,330,177, which is a continuation of Ser. No. 946,163, Sep. 27, 1978, abandoned. This application Jan. 20, 1982, Ser. No. 341,004
Int. Cl.³ G02B *27/00*; A47G *5/00*
U.S. Cl. 350—321 **6 Claims**



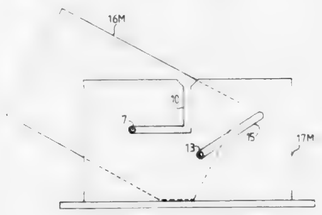
1. In a welding curtain of substantial area forming at least a portion of the perimeter of an area in which an electrical arc welding or an electrical arc cutting operation is conducted, for the purpose of protecting an observer from damage to his eyes by light from welding or cutting arcs, said curtain having a pair of surfaces spaced apart by a dimension of thickness, and, being sufficiently clear for said observer to see through it an object of substantial size located inside said perimeter, the improvement comprising:
discontinuities distributed throughout the curtain, said discontinuities having an optical index of refraction which differs from the optical index of refraction of the material of which the curtain is primarily made by at least 0.2 units, so as to scatter from 5% to less than 50% of the light which passes through the curtain and thereby to cause a decrease in scene contrast.

4,408,835

VIEWING SYSTEM WITH AUTOMATIC CORRECTION OF THE READING DISTANCE AS A FUNCTION OF THE INCLINATION OF THE VIEWING SCREEN HOUSING

Michel Deprez, Epernon; Andre Fromion, L'Haye les Roses; Claude Hardouin, Villiers St Frederic, and Jean C. Vilas Boas, Sannois, all of France, assignors to 501 Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 23, 1981, Ser. No. 333,745
Claims priority, application France, Dec. 30, 1980, 80 27771
Int. Cl.³ G03B *21/56, 21/14, 21/22*
U.S. Cl. 350—117 **3 Claims**



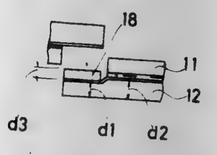
1. In a viewing system having a viewing screen situated within a housing (16M) suspended along a horizontal axis (9) on a U shape base (17M) including vertical wings, the said horizontal axis (9) passing substantially in the region of the center of gravity of the screen housing (16M), the improvement comprising:
means for suspension of the screen housing on the base, said suspension means comprising cylindrical pins (7) and (8) disposed on opposite sides of the screen housing and extending therefrom for insertion in L shape slots (10) in the wings of the base (17M), each of said L shape slots have a vertical branch open at the upper part of the associated wing so as to permit insertion of the said cylindrical pins (7) and (8), and a horizontal branch permitting horizontal translation movement of the screen housing (16M), and means for coordination of the movements of the screen housing, said means for coordination comprising guide pins (21) and (22) disposed on opposite sides of the screen housing (16M) and adapted to be inserted in slots (15) (36) (37) in the wings of the base (17M), being inclined to the horizontal to accomodate tilting movement of the screen housing (16M) and horizontal translation movement of the said screen housing (16M) upon displacement of the said cylindrical pins (7) and (8) along the horizontal branch of the said L shape slot.

4,408,836

WIDE SCREEN LCD PANEL WITH ELECTRICAL TERMINAL CONNECTIONS

Masayuki Kikuno, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 27, 1981, Ser. No. 238,817
Claims priority, application Japan, Feb. 28, 1980, 55-24885
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—334 **5 Claims**



1. A liquid crystal display device comprising:
a plurality of liquid crystal display cells in a substantially coplanar arrangement;
each cell comprising two plates disposed in parallel planes;
each of said plates having a length which exceeds the width of the other of said plates, the lengths of the respective plates extending in respective directions which are normal to each other, thereby forming extension portions for overlapping similar extension portions of adjacent cells;
lead terminals disposed on said extension portions of said plates; and
electrically conductive members for connecting said lead terminals of respective ones of said cells to said lead terminals of adjacent coplanar cells in overlapping and electrically conductive relationship.

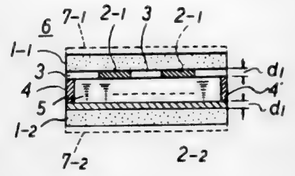
4,408,837

ANTIREFLECTION, LIQUID CRYSTAL, ELECTRODE AND NONCONDUCTIVE LAYER

Syuichi Kozaki, Nara; Fumiaki Funada, Yamatokoriyama, and Shigehiro Minezaki, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1981, Ser. No. 277,847
Claims priority, application Japan, Jun. 26, 1980, 55-87619
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—336 **4 Claims**

1. A liquid crystal cell comprising:
a pair of opposing supports one carrying a patterned electrode and the other carrying a counter electrode placed vis-a-vis with the patterned electrode; and
a liquid crystal material sandwiched between the two electrodes,
wherein at least the patterned electrode comprises an In_2O_3



coating and a remaining portion of the support where the In_2O_3 coating is not disposed comprises a CeO_2 coating whose refractive index is substantially equal to that of the In_2O_3 coating.

4,408,838

SYSTEM FOR THE REGULATION OF LIGHT FOR A SEQUENTIAL PICTURE APPARATUS

Neal Factor, 33-52 Crescent St. #4A, Long Island City, N.Y. 11106

Filed Mar. 14, 1979, Ser. No. 20,915
Int. Cl.³ G02F *1/13*; G03B *19/18, 27/72, 27/73*
U.S. Cl. 350—347 E **4 Claims**



1. A system for the regulation of light entering a motion picture camera having at least a lens for producing an image therein and a film for recording said image having a film stock color temperature characteristic, said system comprising:
means for regulating the color temperature of said light including at least one liquid crystal plate assembly, disposed in the path of said light entering said motion picture camera, having two spaced, crossed polarization filters, a nematic liquid crystal plate, located between said filters capable of regulating the selective color transmissivity thereof by the interference of the ordinary and the extraordinary light rays entering said plate assembly due to the alignment of the crystals in said liquid crystal plate when a potential for the duration of time interval is applied thereacross, and a pair of electrodes situated on both sides of said liquid crystal plate for supplying said potential thereacross;
means for monitoring the color temperature of said light including at least a color temperature meter having an electrical output related to the color temperature of said light;
a logic circuit, connected to the output of said color temperature monitoring means, having at least,
means for pre-setting a color temperature reference value therein equal to said film stock color temperature characteristic;
means, responsive to said color temperature reference value pre-setting means, and to said color temperature monitoring means, for calculating said potential and for

calculating said duration of the said time interval for the application of said potential to said liquid crystal plate necessary for the color temperature of said light passing through said liquid crystal plate assembly to equal said color temperature reference value;

a variable voltage source connected to said logic circuit and responsive to said calculation means thereof, having means for supplying said potential as calculated by said calculation means of said logic circuit; and

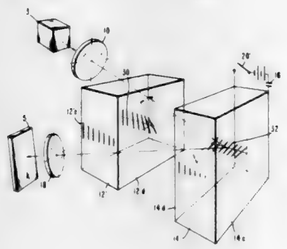
a timer, connected to said variable voltage sourse, to said electrodes and to said logic circuit and responsive to said calculation means thereof, having means for regulating said duration of said time interval, as calculated by said calculation means of said logic circuit, that said potential is supplied to said electrodes.

4,408,839

TWISTED NEMATIC LIQUID LIGHT VALVE WITH BIREFRINGENCE COMPENSATION

Eliezer Wiener-Avnear, Carlsbad, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 1, 1981, Ser. No. 249,754
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—347 R **17 Claims**



1. A light valve for controlling light propagating along an axis of propagation, said light valve comprising:

a pair of optically birefringent layers, each of said layers having a front surface and a back surface facing the back surface of the other layer, said front and back surfaces being nonparallel to said propagation axis;

each of said layers having a major optical axis corresponding to parallel refractive indices exhibited to radiation components polarized in a direction parallel to said optical axis and perpendicular refractive indices exhibited to radiation components polarized in a direction perpendicular to said optical axis;

wherein said optical axis of one of said two layers at its back surface is substantially perpendicular to the optical axis of the other of said two layers at the back surface of said other layer and said optical axis of one of said two layers at its front surface is substantially perpendicular to the optical axis of the other of said two layers at the front surface of said other layer and each is twisted along said axis of propagation in opposite directions with respect to the other; and

means for polarizing light incident on said front surface of one of said layers so that said incident light may resolve into said parallel and perpendicular radiation components in said one layer and so that a total phase shift of substantially zero is introduced between said parallel and perpendicular radiation components as they travel along said propagation axis through both said two layers.

4,408,840

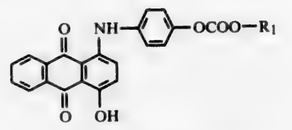
LIQUID CRYSTAL COMPOSITIONS CONTAINING PLEOCHROIC ANTHRAQUINONE DYES, LIQUID CRYSTAL DEVICES CONTAINING THE COMPOSITIONS, AND THE DYES

Shuji Imazeki, Hitachi; Akio Mukoh, Mito, and Mikio Sato, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

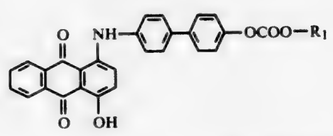
Filed Sep. 22, 1981, Ser. No. 304,360
Claims priority, application Japan, Sep. 22, 1980, 55-130689
Int. Cl.³ G02F *1/13*; C09K *3/34*; C09B *1/514*
U.S. Cl. 350—349 **5 Claims**

1. A liquid crystal composition containing a pleochroic anthraquinone dye, said dye having one of the two following formulae I and II:

(I)



(II)



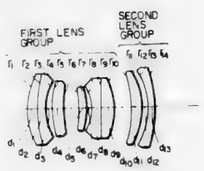
wherein R_1 is selected from the group consisting of alkyl and cycloalkyl.

4,408,841

VARIABLE POWER LENS SYSTEM FOR COPYING

Yasunori Arai, Hatoyama, and Ryota Ogawa, Kawagoe, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,728
Claims priority, application Japan, Oct. 18, 1980, 55-145989
Int. Cl.³ G02B *15/00*
U.S. Cl. 350—425 **2 Claims**



1. In a variable power lens system for copying, composed in order from the object side, of a first lens group having a positive focal length and a second lens group having a negative focal length, in which a distance between said first and second lens groups is variable and the overall lens system is movable while maintaining constant a distance between the object surface and the image surface, said variable power lens system for copying comprising an improvement wherein the movement of the first lens group functions mainly as a variator of magnification power and the second lens group mainly serves to maintain constant the distance between the object surface and the image surface, said first lens group being constructed on the basis of a single focal lens system used for copying, and being composed, in order from the object side, of a cemented lens consisting of a positive lens a convex surface of which is directed to the object and a negative lens a concave surface of which is directed to the image, a positive meniscus lens a convex surface of which is directed the object, a positive meniscus lens a convex surface of which is directed to the image, and a cemented lens consisting of a negative lens a concave surface of which is directed to the object side and a positive lens a convex surface of which is directed to the image, and said second lens group consisting of a positive meniscus lens a convex surface of which is directed to the image side, said variable power lens system satisfying the following conditions:

$$M_{max}/M_{min} < 3.0 \quad (1)$$

$$1.2 < |f_{II}|/f_{max} < 3.0 \ (f_{II} < 0) \quad (2)$$

$$0.02 \leqq \Delta D_{I,II}/f_{max} \leqq 0.20 \quad (3)$$

$$0.10 \leqq |r_{IIP}|/f_{max} \leqq 0.30 \ (r_{IIP} < 0) \quad (4)$$

where,

M_{max} is the magnification on the high magnification side (on the enlargement side) in the magnification power range;

M_{min} is the magnification on the low magnification side (on the reduction side) in the magnification power range;

M_{max}/M_{min} is the ratio of variable power;

f_{max} is the overall focal length of the lens system at an equal magnification;

f_{II} is the focal length of said second lens group;

$\Delta D_{I,II}$ is the amount of movement between said first and second lens groups; and

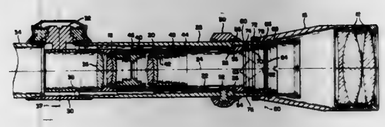
r_{IIP} is the radius of curvature of the image side surface of the positive meniscus lens in the second lens group.

4,408,842

TELESCOPIC SIGHT HAVING LENS HOLDER TUBE WITH HALF SOCKET PIVOT MOUNT

Dale E. Gibson, Salem, Oreg., assignor to Leupold & Stevens, Inc., Beaverton, Oreg.

Filed Oct. 8, 1981, Ser. No. 309,826
Int. Cl.³ G02B *27/32*
U.S. Cl. 350—560 **20 Claims**



1. A telescopic sight apparatus, comprising:

a lens holder tube containing lenses including at least one erector lens therein mounted in alignment along an optical axis;

support means for supporting said tube within a housing between an objective lens system forward of the front end of said tube and an eyepiece lens system rearward of the rear end of said tube;

pivot means for pivotally mounting the rear end portion of said tube;

adjustment means engaging the front end portion of said tube for adjusting the position of said tube by pivoting it about said pivot means in at least two mutually perpendicular directions; and

reticle means supported within said housing between said objective lens system and said eyepiece lens system;

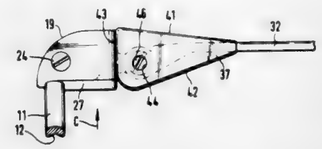
said pivot means being a half socket pivot means including a socket surface in engagement with a spherical pivot surface on said rear end portion of said tube and a socket spring for resiliently urging said pivot surface in contact with said socket surface.

4,408,843

HINGE JOINT FOR CHILDRENS EYEGLASSES

Walter H. Bononi, Zeppelinstrasse 9, 7012 Fellbach-Schmiden, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,266
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945938
Int. Cl.³ G02C *5/14*, *5/22*
U.S. Cl. 351—153 **8 Claims**



1. A metal hinge joint for children's glasses, comprising:

a lens bow having a temporal region,

a temple,

a first hinge half firmly connected to said temporal region of the said lens bow,

a second hinge half firmly connected to said temple, and

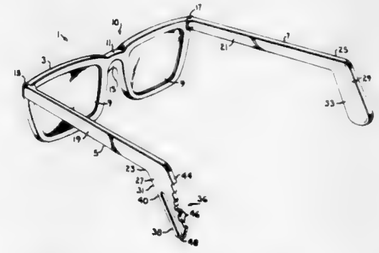
a homogeneous silicone body covering at least one of said hinge halves, said silicone body having a Shore-D hardness of between 10 to 30 measured according to DIN 53505, said silicone body having the form of a bushing, said silicone bushing surrounding one of said hinge halves and extending at least in part over both hinge halves.

4,408,844

EYEGLASS FRAME WITH STRUCTURAL SPARE KEY

Arnold Schoolman, 400 Rockhill Medical Bldg., 6700 Troost Ave., Kansas City, Mo. 66131

Filed Jul. 30, 1981, Ser. No. 288,470
Int. Cl.³ G02B *1/24*
U.S. Cl. 351—158 **10 Claims**



1. An eyeglass frame structure comprising:

(a) a lens support member including a portion thereof engageable with and partially supported by a nose of a user of said eyeglass frame structure;

(b) a pair of lenses retained within said lens support member, each lens placed in optical alignment with an eye of said user;

(c) at least one temple bar extending from and connected to a side of said lens support member, said temple bar including on a distal end thereof an earpiece engageable with an ear of a user thereof, said eyeglass frame structure being partially supported by said earpiece, and wherein:

(d) said earpiece, being in the form of a key member; said key member includes thereon suitable ridges and grooves mateable with tumbler pins of an associated lock so as to

allow said key member to be utilized to unlock such a lock.

4,408,845

IONICALLY COAGULATED HYDROPHILIC POLYELECTROLYTE CONTACT LENS

Maurice Seiderman, 3306 Deronda Dr., Hollywood, Calif. 90068

Division of Ser. No. 78,196, Sep. 24, 1979, Pat. No. 4,273,734. This application Nov. 17, 1980, Ser. No. 208,490
Int. Cl.³ G02C *7/04*
U.S. Cl. 351—160 H **3 Claims**

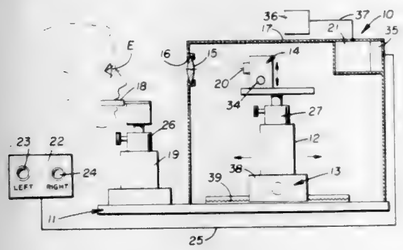
1. A contact lens, comprising a transparent, self-sustaining and three-dimensional, irreversibly gelled, ionically coagulated hydrophilic polyelectrolyte material hydrated with water, said polyelectrolyte material being selected from the group consisting of naturally occuring polysaccharides and collagen.

4,408,846

METHOD AND APPARATUS FOR INCREASING VISUAL ACUITY

Richard F. Balliet, Martinez, Calif., assignor to Andrew M. Clay, San Francisco, Calif., a part interest

Filed Feb. 2, 1981, Ser. No. 230,905
Int. Cl.³ A61B *3/00, 3/02*
U.S. Cl. 351—203 **30 Claims**



1. The method of increasing visual acuity of a myopic person, comprising the steps of:

determining the far point of the myopic person's visual acuity;

providing a target having randomly different appearances each of which can be identified by a person when positioned at an effective optical distance from the person equal to said person's far point;

positioning the target at a first position closer to the person than said far point with the target randomly displaying one of said appearances for identification by said person

moving the target away from the person to a second position further from the person than said first position in the event the identification of the target appearance at said first position was correct, or alternatively moving the target toward the person to a third position closer to the person than said first position in the event the identification of the target appearance at said first position was incorrect; and

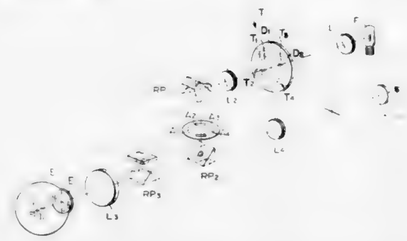
repeating such alternative movement of the target alternatively toward or from the person to new positions in accordance with the correctness or incorrectness of the identifications at each new position.

4,408,847

REFRACTORY POWER MEASURING DEVICE

Shinji Wada; Yoshinori Oana; Ikuo Kitao; Yasuo Kato, and Taketoshi Ishihara, all of Tokyo, Japan, assignors to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Nov. 5, 1980, Ser. No. 204,229
Claims priority, application Japan, Nov. 9, 1979, 54-145270
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—211 **5 Claims**



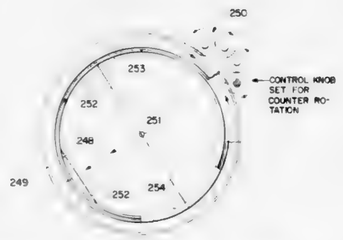
1. A refractory power measuring device comprising a target projecting optical system for optically projecting a target through an optical body to be inspected to produce an image of the target, said target projecting optical system including means for moving the target along an optical axis of the system, means for observing the image of the target to locate a position of the target along the optical axis wherein the image of the target is focussed at a predetermined position, said target including two optical elements adapted for measuring refractory powers in orientations perpendicular with each other, one of said optical elements being at one side of the optical axis and the other being at the other side of the optical axis, said two optical elements being located close to each other and movable generally parallel to the optical axis independently from and without any interference with each other.

4,408,848

APPARATUS FOR INDICATING A LINE AND FOR PRODUCING AND VISUALLY DISPLAYING AN IMAGE OF A LINE INDICATOR

Fred C. Gast, 209 W. El Bonito Dr., Ocean Springs, Miss. 39564

Filed Oct. 21, 1977, Ser. No. 844,439
Int. Cl.³ G03B *21/00, 21/10*
U.S. Cl. 353—11 **28 Claims**



1. Apparatus for indicating a line comprising

a support means,

plural means for indicating a line, and

plural means carried by the said support means for mounting the said line indicating means and altering the relative position thereof,

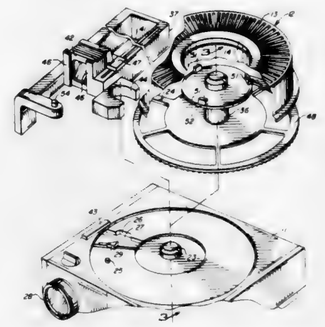
each of the said plurality of line indicating means including a movable and rotatable suspended elongated line indicator having a linear axis and first and second end portions, each of the said plurality of mounting and position altering means including first rotatable suspension means rotatably carried by the said support means for supporting the said first end portion of a given line indicator and second rotatable suspension means rotatably carried by the said support means for supporting the said second end portion of the said given line indicator, each of the said line indicators being suspended between their respective said first and second suspension means and each of the said first and second suspension means being rotatable around a common axis, the said mounting and position altering means including means carried by the said support means for rotating each of the said first and second suspension means around the said common axis, the said rotating means including means for co-rotating each of the said first and second suspension means and means for counter-rotating each of the said first and second suspension means, the respective said first and second suspension means for each of the said suspended line indicators including means cooperating therewith for varying the effective suspended length of each of the line indicators as the said first and second suspension means are counter-rotated by the said counter-rotating means, each of the said line indicators being suspended by its respective said first and second suspension means whereby it is movable in a direction substantially perpendicular to the said linear axis and whereby it is also rotatable around the said common axis, the said first and second rotatable suspension means for a given suspended line indicator including means for moving the said given suspended line indicator in a direction substantially perpendicular to the said linear axis when the said first and second suspension means therefor are counter-rotated by the said counter-rotating means, the said common axis being angularly disposed with respect to the said linear axis and also being angularly disposed with respect to the direction of movement of the said given suspended line indicator by the said means for moving the said given suspended line indicator, the said first and second suspension means for the said given suspended line indicator including means for rotating the said given suspended line indicator around the said common axis when the said first and second suspension means therefor are co-rotated, each of the said suspended line indicators being suspended by its respective said first and second suspension means whereby when it is moved to a desired position by the said moving means the said common axis is substantially perpendicular to the said linear axis and is also substantially perpendicular to the direction of movement of the line indicator by the said moving means, each of the said suspended line indicators being movable in a fixed plane by the said moving means and being rotatable in substantially the same fixed plane by the said line indicator rotating means, each of the said suspended line indicators being movable by the said moving means to a position whereby the said common axis passes through the said linear axis and when a given line indicator is in this position the said common axis passes through the said linear axis at a point substantially equidistant the ends of the suspended length of the said given line indicator, and a plurality of the said line indicating means being carried by the said mounting and position altering means in a superimposed nestled relationship, the resultant plurality of the said line indicators thereof being suspended by their respective said first and second suspension means in a closely adjacent superimposed nestled relationship, and the said line indicators being moved by their respective said moving means and being rotated by their respective said line indicator rotating means in their respective closely adjacent superimposed fixed planes to positions wherein they are angularly disposed with respect to each other.

4,408,849

SLIDE MACHINE LOADING APPARATUS

Ralph A. Sickles, 1418 Steamboat Bend, Tempe, Ariz. 85283

Filed Nov. 22, 1982, Ser. No. 443,431
Int. Cl.³ G03B *23/00*
U.S. Cl. 353—103 **5 Claims**



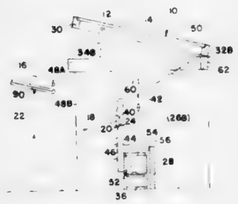
1. Loading apparatus for a slide magazine having individual compartments for containing photographic slides, said magazine being adapted for use with a projector adapted to receive slides from the magazine, said projector being equipped with means for returning slides to a compartment of said magazine and means for advancing the magazine to expose the next compartment of the magazine, said loading apparatus comprising a tray adapted to contain a stack of slides to be loaded into the compartments of said magazine, means for positioning said tray between said projector and said magazine, means associated with said tray and responding to motion of the slide returning means of said projector for moving the endmost slide from said stack of slides in said tray into a compartment of said magazine and means connecting the magazine advancing means of said projector to the magazine to advance said magazine and expose the next compartment for loading with a slide.

4,408,850

DRAWING TABLE

George G. Norek, 8534 Roseview Dr., Niles, Ill. 60648

Filed Aug. 10, 1981, Ser. No. 291,274
Int. Cl.³ G03B *21/10*
U.S. Cl. 353—122 **7 Claims**



1. A drawing table comprising:

an at least substantially translucent panel having a working surface;

means supporting said panel comprising a frame supported on a pair of spaced apart substantially parallel side walls, wherein said frame is pivotally mounted at its forward edge to the top surfaces of said side walls;

means for translating said panel to a plurality of positions whereby said working surface can be disposed in a plurality of oblique angles from said top surfaces of said side walls;

means for illuminating said working surface through said panel seated between said side walls; and

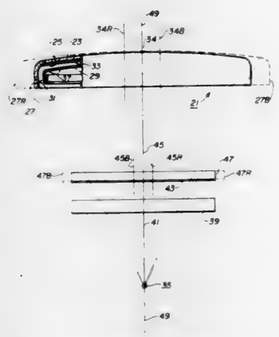
means for optically projecting an image onto said working surface through said panel at a plurality of angles of impingement and at variable scales comprising a detachable mirror pivotally mounted about its upper edge to mirror support means mounted on the inner faces of said side walls, means for translating said mirror support means to a plurality of positions along the horizontal along said inner faces, a detachable roller that is supported on an axial shaft and disposed between said side walls and adjustable to a plurality of positions along the vertical, wherein said mirror is held at an oblique angle at least partially spaced between said panel and said illuminating means when said mirror support means is in at least one of its positions while said roller is in at least one of its positions, and a projector adapted to project an image to at least one of said panel and mirror, said projector being mounted so as to be translatable to a plurality of positions from said mirror.

4,408,851

PHOTOGRAPHIC METHOD FOR PRINTING A VIEWING-SCREEN STRUCTURE USING A LIGHT-TRANSMISSION FILTER

Thomas L. Chase, and George M. Ehemann, Jr., both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 19, 1982, Ser. No. 379,870
Int. Cl.³ G03B *41/00*
U.S. Cl. 354—1 **7 Claims**



1. In a method for printing a viewing-screen structure for a cathode-ray tube including projecting a light field from a light source through a path-refracting lens, a light-transmission filter and incident upon a photosensitive layer, said lens, filter and layer having nominal axes that are substantially parallel to one another, and repeating said projecting step at least a total of three times, the combination of requirements that

A. during one of said projecting steps, said light source and said axes are aligned along a common axis,

B. during another of said projecting steps, said light source and the axis of said lens are aligned along said common axis, the axis of said layer is offset a prescribed first distance to one side of said common axis, and the axis of said filter is offset a prescribed second distance to the opposite side of said common axis and

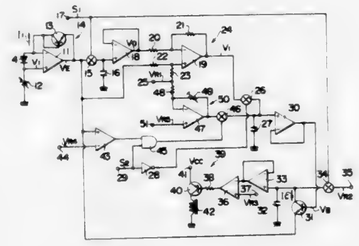
C. during the other of said steps, said light source and the axis of said lens are aligned along said common axis, the axis of said layer is offset a prescribed third distance to said opposite side of said common axis, and the axis of said filter is offset a prescribed fourth distance to said one side of said common axis.

4,408,852

AUTOMATIC EXPOSURE CONTROLLER FOR CAMERA OF TTL DIRECT PHOTOMETRY TYPE

Masafumi Yamasaki, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Nov. 19, 1981, Ser. No. 322,853
Claims priority, application Japan, Dec. 5, 1980, 55-172452; Feb. 23, 1981, 56-025759
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—24 **6 Claims**



1. Automatic exposure controller for a camera of TTL direct photometry type including a photoelectric transducer element which effects photometry of light from an object being photographed which light passes through a taking lens of the camera, is reflected by a first blind surface and a film surface which becomes exposed as the first blind runs and impinges on the transducer element, a proper exposure period being determined in accordance with a photometric output from the photoelectric transducer element, the controller comprising:

(A) a logarithmic compression circuit for producing a voltage which represents a logarithmic compression of a photocurrent produced by the photoelectric transducer element;

(B) a storage circuit for storing an output voltage from the logarithmic compression circuit which corresponds to light reflected from only the first blind surface at the initiation of running of the first blind;

(C) a subtraction circuit for detecting a difference between the voltage stored in the storage circuit and the output voltage from the logarithmic compression circuit;

(D) a logarithmic expansion circuit for producing an output current which:

(1) varies in response to both an output voltage from the subtraction circuit and an output voltage from the logarithmic compression circuit during a first exposure period which starts at the initiation of a shutter release operation and ends when the shutter is fully open, said output voltage from said subtraction circuit being permitted to vary as a function of said output voltage from said logarithmic compression circuit during said first exposure period; and thereafter

(2) varies in response to both a voltage which is derived from the subtraction circuit and which remains fixed once the shutter is fully open and to the output voltage from the logarithmic compression circuit during a second exposure period which follows said first exposure period;

(E) an integrating circuit for integrating an output current from the logarithmic expansion circuit to determine an exposure period; and

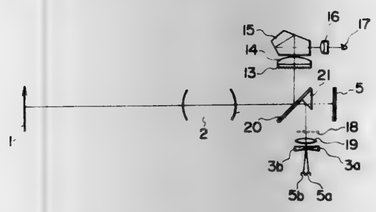
(F) a shutter control circuit for terminating an exposure operation in response to an output of the integrating circuit which reaches a given value.

4,408,853

FOCUS DETECTING DEVICE

Seijiro Tokutomi; Kazuo Nakamura, both of Tokyo, and Kasao Jyojiki, Tsurugashima, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,440
Claims priority, application Japan, Oct. 27, 1977, 52/128951
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **12 Claims**



1. A focus detecting device comprising:

a lens system having an optical lens for forming an object image at a lens focal plane;

split prism means, including first and second prisms disposed between said optical lens and said focal plane with each of said prisms receiving light passing through a different half of said optical lens, for dividing said object image into two identical images;

at least first and second light receiving elements disposed on an image forming surface and positioned such that both are illuminated substantially equally when said lens system is focused, said first element receiving greater illumination when said optical system is out-of-focus in a first direction and said second element receiving greater illumination when said optical system is out-of-focus in a second opposite direction; and

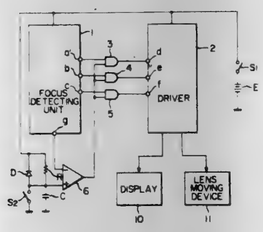
signal processing means receiving the output of said light receiving elements and generating an output signal indicative of focus adjustment.

4,408,854

AUTOMATIC FOCUS DETECTING APPARATUS OF A CAMERA

Nobuhiko Terui, Tokyo, and Sakuji Watanabe, Warabi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 15, 1982, Ser. No. 339,660
Claims priority, application Japan, Feb. 3, 1981, 56-13220[U]
Int. Cl.³ G03B *3/00*
U.S. Cl. 354—25 **5 Claims**



1. An automatic focus detecting apparatus of a camera comprising:

a focus detecting unit for receiving the light from an object to be photographed and producing a focus detection output;

a driving circuit responsive to said focus detection output to effect the driving of at least one of a phototaking lens and a focus condition display;

an object brightness detecting unit for producing a brightness detection output corresponding to the brightness of the object;

means for producing a time count starting signal;

a timer circuit adapted to start time count in response to said time count starting signal and produce a blocking signal in response to said brightness detection output for a short time if the brightness is high or for a long time if the brightness is low; and

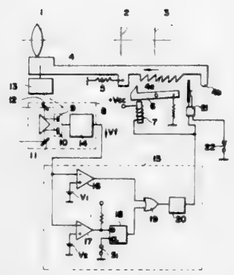
a blocking circuit for preventing said driving circuit from responding to said focus detection output during the time said blocking signal is produced.

4,408,855

AUTOMATIC FOCUS ADJUSTING DEVICE FOR USE IN A CAMERA

Toshinori Imura, and Shinji Tominaga, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Higashi, Japan

Filed May 28, 1982, Ser. No. 382,937
Claims priority, application Japan, Jun. 1, 1981, 56-84835
Int. Cl.³ G03B *3/10*
U.S. Cl. 354—25 **9 Claims**



1. An automatic focus adjusting device for use in a camera which permits flash photography by means of an electronic flash device comprising:

an objective lens including a movable lens element movable along the optical axis of the objective lens to change the focusing thereof;

means for shifting said movable lens element along the optical axis from its infinity focusing position toward its closest focusing position;

means for detecting a proper position of said movable lens element on a target object by scanning from an infinity position towards the closest position and for generating an in-focus signal when said movable lens element is positioned on said proper position;

means for comparing a contrast of an image of said target object with a predetermined contrast level prior to the lens shifting and for generating a substitute signal when said movable lens element is positioned on its infinity focusing position if the contrast of said image is lower than said predetermined contrast level;

means for stopping the lens shifting when said in-focus signal or said substitute signal is received thereby, and

means for restraining the effect of said in-focus signal or said substitute signal on said stopping means until said movable lens element is shifted to a position corresponding to a maximum permissible distance for flash photography, when said camera is set in a flash photography mode.

4,408,856

DEVICE FOR LOCKING A BLADE DRIVER IN AN ELECTRONIC SHUTTER

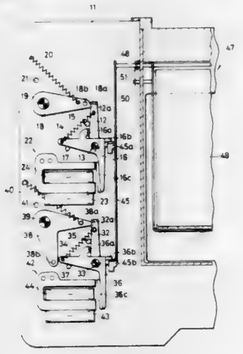
Akira Suzuki; Yukio Yoshikawa, both of Tokyo, and Katumi Kaneko, Ageo, all of Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Dec. 2, 1981, Ser. No. 326,633

Claims priority, application Japan, Dec. 9, 1980, 55-177401[U]; Feb. 2, 1981, 56-13399[U]; Feb. 25, 1981, 56-26233[U]

Int. Cl.³ G03B *9/08*

U.S. Cl. 354—234 **5 Claims**



1. A blade driver locking device for use with an electronic shutter in a camera, comprising:

a base;

a driver mounted on said base for actuating a shutter blade;

a locking member mounted on said base for locking said driver against movement to actuate the shutter blade;

an electromagnet mounted on said base and energizable for attracting said locking member out of locking engagement with said driver; and

means mounted on said base and actuatable in one direction prior to starting of an exposure operation and in an opposite direction upon completion of the exposure operation for retaining said locking member against movement to unlock said driver while said means is at rest before and after being actuated.

4,408,857

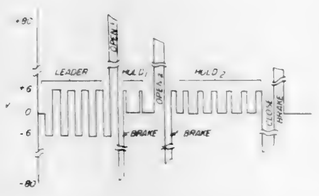
METHOD AND CIRCUIT FOR CONTROLLING AN ELECTROMAGNETIC ACTUATOR IN PHOTOGRAPHIC APPARATUS

Lee F. Frank, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,281

Int. Cl.³ G03B *7/097, 9/02, 9/62*

U.S. Cl. 354—234 **23 Claims**



1. In photographic apparatus having an electromagnetic actuator of the type including an armature mounted for movement between a rest position and an extreme position in a magnetic field and means for urging the armature toward the rest position, a control circuit comprising:

means for applying a first polarity voltage pulse to said armature of duration effective for moving said armature against the force of said urging means to a programmed position between said rest position and said extreme position; and

means for applying an opposite polarity voltage pulse to said armature of duration effective for braking said armature at said programmed position.

4,408,858

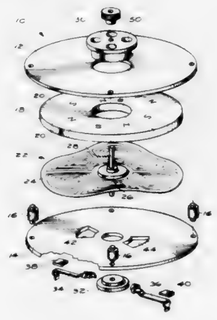
ELECTROMAGNETIC ACTUATOR HAVING A COMPLIANT ARMATURE

James K. Lee, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 219,168, Dec. 22, 1980, Pat. No. 4,333,722. This application Mar. 22, 1982, Ser. No. 360,494

Int. Cl.³ G03B *9/02, 9/62*

U.S. Cl. 354—234 **17 Claims**



1. An electromagnetic actuator of the type having means for forming a substantially planar magnetic gap and a flat armature positioned for movement in a magnetic gap, said actuator being characterized in that a portion of said armature is sufficiently compliant to contact and generally conform to the shape of said gap, and in that portions of said gap are substantially coextensive with said armature, for supporting said armature in a direction generally perpendicular to the path of said armature movement.

4,408,859

SPEED GOVERNOR FOR CAMERA

Hidehiko Fukahori, Yokohama; Tomonori Iwashita, Fuchu, and Katsunori Nakamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,293

Claims priority, application Japan, Dec. 29, 1980, 55-189239; Dec. 29, 1980, 55-189240; Dec. 29, 1980, 55-189241

Int. Cl.³ G03B *9/06*

U.S. Cl. 354—274 **6 Claims**

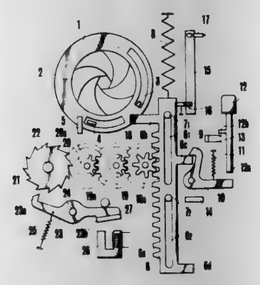
1. A speed governing device for a camera, said device comprising:

a moving member capable of being moved from an initial position thereof to a predetermined position;

a driving member for actuating said moving member, said driving member being arranged to be driven in association with a release action of the camera;

a first speed governing means interlocked with said driving member, said first speed governing means being arranged to synchronously drive said driving member with an increased speed; and

a second speed governing means interlocked with said first speed governing means, said second speed governing means being arranged to stabilize the driving speed of said driving member in cooperation with said first speed governing means by braking the driving force of said driving



member, said second speed governing means utilizing an eccentric oscillating motion in applying a braking force to said driving member.

4,408,860

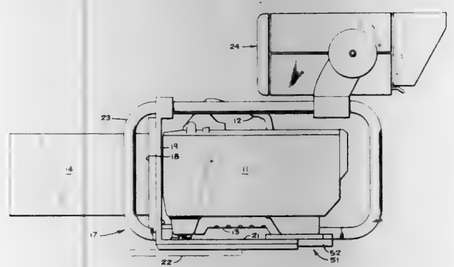
APPARATUS FOR A CAMERA MOUNT

Verl N. Barzee, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,727

Int. Cl.³ G03B *17/56*

U.S. Cl. 354—293 **7 Claims**



1. A camera mount of the type having a front plate attched to a lens which is attached to the front of the camera, a base plate extending therefrom and beneath the camera, and a manually-operable latching apparatus including clamping means and pressurizing means mounted on the base plate for respectively securing the bottom of the camera and for exerting a predetermined supporting force upwardly on said camera to counter the moment otherwise exerted by the camera on the lens, wherein:

said latching apparatus is adapted to control said means thereof to operate in the first sequence pressurizing-then-clamping during latching mode and the second sequence depressurizing-then-unclamping during the unlatching mode.

4,408,861

TRANSFER-PRINTING SHEET SEPARATING SYSTEM FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Minolu Hukuda, Kawasaki, and Tsutomu Watanabe, Yokohama, both of Japan, assignors to Ricoh Co., Ltd., Japan

Filed Aug. 25, 1980, Ser. No. 181,054

Claims priority, application Japan, Aug. 31, 1979, 54-119134[U]; Oct. 30, 1979, 54-140184; Nov. 14, 1979, 54-147547

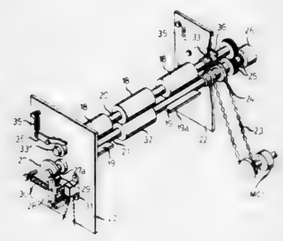
Int. Cl.³ G03G *15/00, 15/14*

U.S. Cl. 355—3 TR **4 Claims**

1. In an electrophotographic copying apparatus of the type having a sheet feeding device for pressing a transfer printing sheet through a feed path to the surface of a photosensitive member having a toner image formed thereon, the toner image being printed on the transfer-printing sheet from the photosensitive member at a transfer-printing station, and means for separating the transfer-printing sheet having the toner image printed thereon from the photosensitive member, an improved transfer-printing sheet separating system comprising:

a device for bending a leading end portion of the transfer-printing sheet located in the feed path of the transfer-printing sheet between the sheet feeding device and the transfer-printing station; and

means for actuating the device for bending the leading end portion of the transfer-printing sheet in synchronism with the passing of the leading end of the transfer-printing sheet,



said device for bending the leading end portion of the transfer-printing sheet comprises soft rollers and rotary members disposed in juxtaposed relation on opposite sides of the feed path of the transfer-printing sheet, said rotary members each being formed at a forward end with an edge angle parallel to the axis of the rotary member, said forward ends of said rotary members being spaced apart from the soft rollers when said device is inoperative and brought into engagement therewith when the device is operative, whereby the edge-angled forward ends of the rotary members bite into the soft roller to form a bend in the leading end portion of the transfer-printing sheet held between the soft roller and the rotary members, wherein said device for bending the leading end portion of the transfer-printing sheet further comprises at least one follower roller supported coaxially with the rotary members for rotation responsive to the rotation of the soft rollers.

4,408,862

DEVELOPING APPARATUS FOR ELECTROSTATIC COPYING MACHINE

Toshimasa Takano, Sagamihara; Masahiro Hosoya, and Reiji Murakami, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 9, 1981, Ser. No. 223,928

Claims priority, application Japan, Jan. 18, 1980, 55/4320; Jan. 18, 1980, 55/4321; Jan. 18, 1980, 55/4325

Int. Cl.³ G03G *15/08*

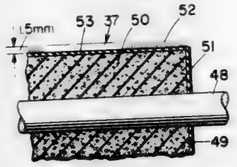
U.S. Cl. 355—3 DD **9 Claims**

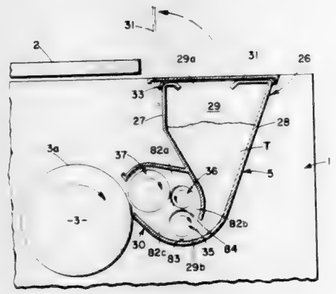
1. A developing apparatus for developing an electrostatic image on an electrostatic image bearing member, said apparatus comprising:

container means for storing toner; and

developing means for transporting the toner from said container means and applying it to the electrostatic image on said electrostatic image bearing member, said developing

means comprising a base made with elastic material and a fur formed on the peripheral surface of said base to





contact the surface of said electrostatic image bearing member,

said base comprising a roller-like core.

4,408,863

TRANSFER MEDIUM SEPARATING DEVICE

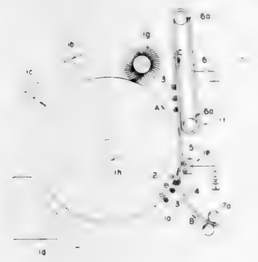
Yoshihiro Ogata, Yokohama; Koji Sakamoto, Tokyo; Harumi Takahashi, and Koji Hirakura, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 17, 1981, Ser. No. 284,454

Claims priority, application Japan, Jul. 21, 1980, 55-98697; Jul. 21, 1980, 55-98698; Jul. 21, 1980, 55-98699; Dec. 10, 1980, 55-177106[U]

Int. Cl.³ G03G *15/14, 15/22*

U.S. Cl. 355—3 TR **18 Claims**



1. A separating device for separating a transfer medium from a first carrier adapted to carry a toner image held electrostatically, said transfer medium having been previously brought into contact with said first carrier to transfer a toner image from said first carrier onto the front surface of said transfer medium by applying transfer charges of a polarity opposite to the polarity of the toner forming said toner image to the rear surface of the transfer medium, said separating device comprising

means including a second carrier formed of an electrically conductive material and having a portion located close to said first carrier for attracting the leading edge of said transfer medium by electrostatic attraction between said transfer charges on the rear surface of the transfer medium and charges on said second carrier;

potential application means for applying a potential in the range between a predetermined first level and a predetermined second level to said second carrier, said first level being capable of electrostatically attracting the leading edge of said transfer medium toward said second carrier from said first carrier and said second level

being capable of securely retaining the transferred toner image to the front surface of said transfer medium when said transfer medium is conveyed by said second carrier;

detecting means for detecting that said transfer medium has reached a reference position for supplying a detection signal; and

timing control means for controlling the timing for changing the potential applied to said second carrier by said potential application means from said first level toward said second level in response to said detection signal such that said second carrier is applied with a potential of said first level until the leading edge of said transfer medium has been separated from said first carrier and electrostatically attracted and securely held to said second carrier.

4,408,864

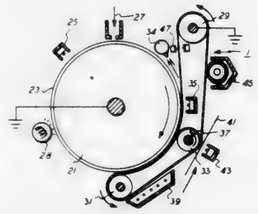
APPARATUS FOR INDUCING AN ELECTROSTATIC IMAGE IN A CONDUCTIVE MEMBER

James M. Hardenbrook, Altamonte Springs, Fla., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 142,565, Apr. 21, 1980, Pat. No. 4,318,972. This application Sep. 2, 1981, Ser. No. 298,701

Int. Cl.³ G03G *15/18*

U.S. Cl. 355—3 TE **17 Claims**



1. An apparatus for creating an electrostatic latent image in a sectionally conductive layer, said layer comprising an electrically insulating material having extended therethrough electrically conductive paths, comprising:

(a) a sectionally conductive layer in the form of a web entrained over rollers;

(b) a photoconductive surface rotatably mounted on a grounded electrode;

(c) means to electrostatically charge said photoconductive surface and expose said charged surface to an imagewise pattern of light;

(d) means to bring said photoconductive surface and said conductive layer into proximity with each other including means to maintain a predetermined distance between said surface and layer;

(e) means to ground said conductive paths on the side opposite said photoreceptor surface while in proximity to said photoreceptor surface;

(f) means to bring a grounded electrode adjacent said conductive layer coincident with means to separate said photoreceptor surface and said conductive layer;

(g) means to develop the latent image created on said conductive layer and to transfer said developed image to an image substrate;

(h) means to clean said conductive layer of untransferred residue of said developed image; and

(i) means to erase the electrostatic latent image on said photoreceptor and on said conductive layer.

4,408,865

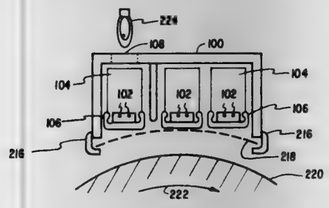
CORONA DISCHARGE DEVICE FOR ELECTROPHOTOGRAPHIC CHARGING AND POTENTIAL LEVELING

Thomas Camis, Boise; Paul R. Spencer, Meridian; Erwin H. Schwiebert, Eagle, and Robert R. Hay, Boise, all of Id., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Nov. 23, 1981, Ser. No. 324,339

Int. Cl.³ G03G *15/02*

U.S. Cl. 355—3 CH **5 Claims**



1. A corona discharge device for simultaneous potential leveling and uniform primary charging to a desired drum potential of a rotating photoreceptor drum of an electro-photographic printing device comprising:

a shield;

a plurality of corona wires within the shield, all of the corona wires being connected to receive a positive d.c. voltage, for producing positive ions;

a screen mounted on the shield for steering said positive ions toward said photoreceptor drum for charging said photoreceptor drum, the screen and the shield being maintained at a potential below the desired drum potential; and

a continuously illuminating light source for illuminating a first portion of said photoreceptor drum while said first portion of said photoreceptor drum is being charged by said positive ions.

4,408,866

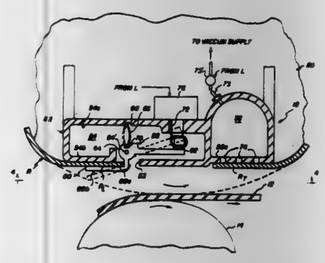
RECEIVER SHEET TRANSPORT WITH ALIGNMENT MEANS

Gary B. Gustafson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,779

Int. Cl.³ G03G *15/00, 15/01*

U.S. Cl. 355—3 TR **8 Claims**



1. In apparatus for transferring related transferable marking particle images seriatim, from spaced areas on a member onto a receiver sheet, such apparatus including tow means for successively moving a receiver sheet into transfer relation with each of the related transferable images on the member, said tow means being adapted to capture the lead and trail edges of a receiver sheet so that a portion of the receiver sheet intermediate the lead and trail edges is self-supporting, and means for effecting transfer of such related images to the self-supporting portion of such receiver sheet in accurate superimposed register when such self-supporting portion is in transfer relation with the related transferable images on the member, the improvement wherein:

said tow means includes means operatively associated with an area on the member for positioning such lead edge relative to such area, to accurately align the receiver sheet with such area during image transfer.

4,408,867

OPTICAL SCANNING UNIT DRIVING DEVICE FOR ELECTROPHOTOGRAPHIC REPRODUCING APPARATUS

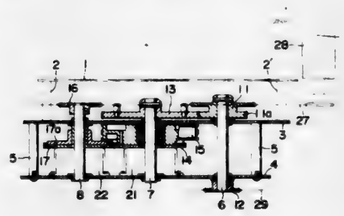
Yozo Fujii, Hachioji, and Takao Shiozawa, Akigawa, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,937

Claims priority, application Japan, Mar. 12, 1981, 56-34649

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—8 **2 Claims**



1. A driving device for optical scanning unit of electrophotographic reproducing apparatus comprising: a driving source; a plurality of gear means, each driven at different speed by the driving source; a first power transmission means to transmit the driving force to the optical scanning unit; and a second power transmission means which, in synchronism with the magnifying ratio selection operation, transmits the rotation of the specified gear means of the multiple gear means to the first power transmission means; whereby the specified gear means is mounted to the member easily accessible from outside of the electrophotographic reproducing apparatus.

4,408,868

DIGITAL PLATE MAKER SYSTEM AND METHOD

E. Raymond Thomas; Lysle D. Cahill, both of Dayton; John L. Tibbits, Centerville, all of Ohio; Kenneth D. Fraser, Scarboro, Canada; John F. Keane, Bellbrook, Ohio; Stanley C. Harting, Kettering, Ohio; George H. Kramer, Xenia, Ohio; Ronald J. Duke, Miamisburg, Ohio; Theodore A. Kessis, Dayton, Ohio; John C. Butler; Gary L. Frank, both of Centerville, Ohio, and John A. Lawson, Dayton, Ohio, assignors to Coulter Systems Corporation, Bedford, Mass.

Filed Apr. 11, 1980, Ser. No. 139,462

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **39 Claims**

1. A method of imaging an electrophotographic member with an array of discharged elements to form latent graphics and text images thereon, the member thereafter being able to be used to reproduce the latent graphics and text images on a receptor by printing or the like, in which discharged elements individual to the graphics image and discharged elements individual to the text image are produced intermixed, the method comprising:

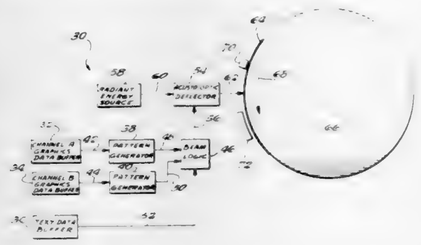
A. Acquiring graphics data in the form of a series of graphics

digital words from a source of such words representative collectively of the graphics image, the value of each word corresponding to a scaled density of an incremental area of the graphics image;

B. acquiring text data in the form of a series of text digital words comprised of bits from a source of such words representative collectively of the text image, the states of the bits of each data word corresponding to the binary densities of incremental areas of the text image;

C. charging said electrophotographic member;

D. providing a fine beam of radiant energy consisting of a plurality of rays which may be modulated on and off such that at times the beam includes no rays, and directing the beam against the electrophotographic member to cause



discharge of elements thereof, each ray discharging a single element when impinging against the member;

E. moving the beam and the electrophotographic member relative to one another to scan the entire surface of the member so that there will be discharged elements wherever said rays have impinged;

F. generating bit signals from at least the graphics data;

G. selecting certain ones of the bit signals in response to the text data; and

H. modulating said rays on and off in response to said selected certain ones of the bit signals;

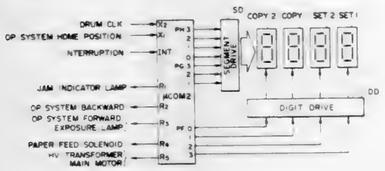
whereby independent graphics and text latent images may be laid down upon said electrophotographic member surface in one scanning thereof by said fine beam.

4,408,869

DIGITAL DISPLAY DEVICE CONTROLLED BY A MICROCOMPUTER

Masahiro Tomosada, Kawasaki, and Katsuyoshi Maeshima, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1981, Ser. No. 231,109
Claims priority, application Japan, Feb. 8, 1980, 55-15084
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **21 Claims**



1. A display device, comprising:

a display unit;

serial signal generating means for generating signals at predetermined time intervals; and

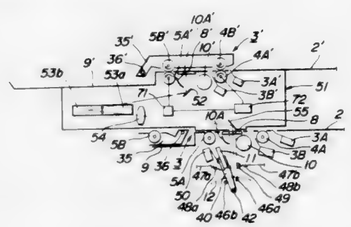
a microcomputer coupled to control said display unit to provide a flashing display, said microcomputer having a program interruption port for receiving the signal from said serial signal generating means, wherein the flashes of said display are synchronized with said serial signal at a predetermined ratio.

4,408,870

DUPLICATING SYSTEM COMPRISING ELECTROPHOTOGRAPHIC COPYING APPARATUS AND OPTION DEVICES

Masaji Nishikawa; Kiyoshi Miyashita, and Muneo Kasuga, all of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed May 7, 1981, Ser. No. 261,740
Claims priority, application Japan, May 9, 1980, 55-61300
The portion of the term of this patent subsequent to Jan. 25, 2000, has been disclaimed.
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 SH **27 Claims**



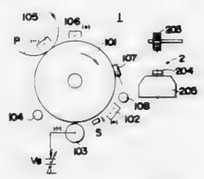
1. A duplicating system comprising an electrophotographic copying apparatus which includes first optical scanning means for making a slit exposure, first means for feeding a first document to be copied at a first speed with respect to said first optical scanning means, photosensitive means for forming an electrostatic latent image corresponding to the image of document, and means for forming a duplicated copy with the aid of said latent image; and an option device which includes means for detachably mounting the option device onto the copying apparatus, second optical scanning means for making a slit exposure, second means for feeding a second document to be copied at a second speed with respect to said second optical scanning means and optional optical means for projecting the image of second document onto said photosensitive means of the copying apparatus; wherein said first feeding means in the copying apparatus and second feeding means in the option device are so constructed that the first and second documents are fed in the same direction.

4,408,871

CONTROL SYSTEM FOR ELECTROSTATIC RECORDING APPARATUS

Hiroaki Kojima, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1982, Ser. No. 358,377
Claims priority, application Japan, Mar. 19, 1981, 56-40875
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **15 Claims**



1. In an electrostatic recording apparatus having a photosensitive member relatively movable in a secondary scan direc-

tion, a charging device for charging the surface of the photosensitive member, means for exposing the charged surface of the photosensitive member by line-scanning in a primary scan direction with optical signals subject to a switching control to form a latent electrostatic image, and a control system for controlling the surface potential of the photosensitive member, the control system comprising:

a detecting means for detecting the surface potential of the photosensitive member at a position subsequent to the means for exposing;

first control means for controlling application of charging power to the charging device to regulating the charged potential to a predetermined charging value in response to the detected value of the detecting means in a first situation with the photosensitive member and the charging device in operation and at least that portion of the photosensitive member opposite to the detecting means not being exposed;

second control means for controlling an exposing power of the exposing means after completion of said first control means operation for regulating the surface potential following exposure to a predetermined potential in accordance with the detected value of the detecting means in a second situation with the photosensitive member and the charging device in operation and at least that portion of the photosensitive member opposite to the detecting means is exposed; and

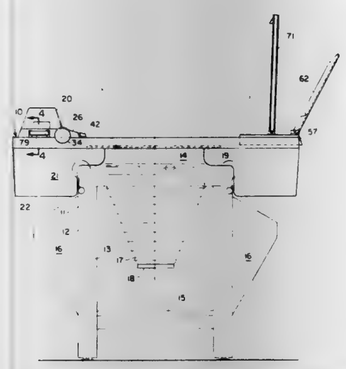
a control device for controlling the line-scanning operation of the exposing means and the first and second control means to effect the first and second control operation in that order.

4,408,872

COMBINED STORING, TRANSPORTING, EXPOSING AND PROCESSING APPARATUS FOR CAMERA

Quentin D. Vaughan, Hollywood, Fla., assignor to Visual Graphics Corporation, Tamarac, Fla.

Filed Mar. 1, 1982, Ser. No. 353,637
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—28 **20 Claims**



1. Apparatus for use in combination with a camera having an object plane and an image plane comprising:

a. an elongated table coupled to the camera having a top surface parallel to the image plane of the camera;

b. a film transport section slidably carried on the table at one end thereof;

c. a light tight cassette on the transport section;

d. a supply of imaging film in said cassette;

e. means carried by the transport section to advance at least a portion of the imaging film from the cassette on to the table;

f. A translucent platen carried by the table to receive light directed through the camera from the object plane;

g. an elongated flexible sheet of light filtering material yieldably secured at one end within the transport section and adapted to be extended from said transport section along the table to overlie the platen;

h. control means to advance the imaging film across the table and beneath the light filtering material to overlie the platen;

i. at least one groove in the top surface of the table adjacent the platen and beneath the elongated flexible sheet;

j. a vacuum source coupled to said groove;

k. means to control the vacuum source to evacuate air from the space between the flexible sheet and the platen to bring the film into uniform contact upon the platen;

l. a processing station carried by the table opposite the transport section;

m. means to interrupt the vacuum source to release the atmospheric pressure against the flexible sheet and the film; and,

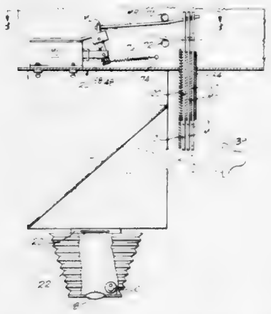
n. film advancing means carried by the transport section to urge the film into the processing station as the transport section is advanced along the table in the direction of said processing station.

4,408,873

COLOR CORRECTION ADAPTER FOR PHOTOGRAPHIC ENLARGERS

Ervin D. Labrum, 15828 4th Ave., SW., Seattle, Wash. 98166

Filed Dec. 8, 1980, Ser. No. 214,194
Int. Cl.³ G03B *27/73, 27/74*
U.S. Cl. 355—36 **24 Claims**



1. An exposure system for a color enlarger, comprising:

three separate color filters mounted to be independently movable into and outfrom the light path between a lamp and a supported color transparency in a color enlarger;

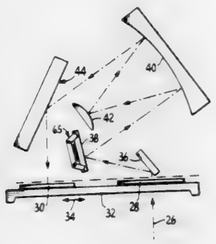
control means for sequencing said filters into and outfrom the light path to provide three separate exposures for the colors red, green and blue, including means providing an exposure time for each color exposure that is based on the color density of a standardized transparency, and balance means for adjusting the exposure time for each color exposure to compensate for differences in color density between the standardized transparency and a transparency in the color enlarger from which a color print is to be made including light intensity sensor means in the enlarger between the transparency and the lens, for measuring during each exposure the intensity of colored light passing through the transparency.

4,408,874

PROJECTION ALIGNER WITH SPECIFIC MEANS FOR BENDING MIRROR

William Zinky, Los Altos, and Larry Rosenberg, San Jose, both of Calif., assignors to Computervision Corporation, Santa Clara, Calif.

Filed May 7, 1981, Ser. No. 261,674
Int. Cl.³ G03B *27/68*
U.S. Cl. 355—52 **3 Claims**



1. In a projection printer wherein the image of a mask is projected through a narrow slit having a longitudinal axis extending from one side of the mask to the other and the image of the mask moves at a right angle to the longitudinal axis of the slit to expose the entire mask by means including at least one plane mirror into a sensitized wafer and wherein said mirror is anamorphically distorted to alter the image size in a direction perpendicular to the longitudinal axis of said slit, the improvement comprising:

a. means for gripping said plane mirror only along points of contact which are parallel with the longitudinal axis of said slit whereby said mirror is held in a strain-free relationship, and whereby said mirror can only be deformed about axes parallel to the longitudinal axis of said slit;

b. frame means supported by said mirror, said frame means extending across the back of said mirror in a direction perpendicular to the longitudinal axis of said slit;

c. pressure means extending between said frame means and said mirror for distorting said mirror anamorphically about one or more axes parallel to the longitudinal axis of said slit.

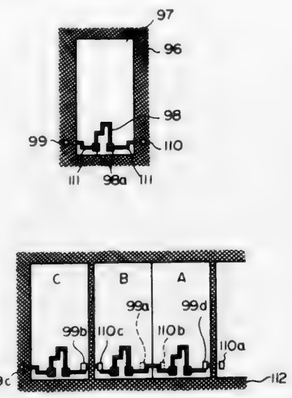
4,408,875

METHOD OF PROJECTING CIRCUIT PATTERNS

Teiji Majima, Komae, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 31, 1981, Ser. No. 333,814
Claims priority, application Japan, Dec. 29, 1980, 55-187235; Apr. 10, 1981, 56-53831
Int. Cl.³ G03B *27/42*
U.S. Cl. 355—53 **10 Claims**

1. A method of projecting circuit patterns which uses a photosensitive layer formed on a substrate and an exposing mask which has mask patterns formed within a transparent area thereof, said exposing mask and said substrate being relatively moved by predetermined pitch lengths while said mask patterns are printed on said photosensitive layer at every relative position, said printed mask patterns formed on said photosensitive layer a plurality of element patterns each of which comprises at least two adjacent circuit patterns, said method characterized in that said exposing mask comprises a first transparent area and second transparent areas which are disposed to the two sides of said first transparent area along the direction of movement of said substrate; said pitch length comprises pitch length A between adjacent printed mask patterns within said element pattern and pitch length B between adjacent printed mask patterns of the adjacent element patterns, said pitch length A and said pitch length B, being kept at constant values and said pitch length B being greater than said pitch length A; and mask patterns of said second transparent areas are printed on portions of areas of said photosensitive layer which correspond to said first transparent areas printed one pitch length before and after the projection of said mask



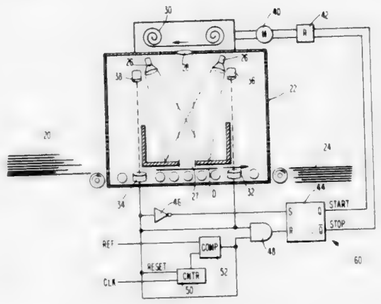
patterns of said second transparent area, thereby forming said element pattern including different portions from said mask patterns of said exposing mask.

4,408,876

METHOD AND APPARATUS FOR MICROFILMING DOCUMENTS OF VARIED LENGTH

Kurt A. Steidle, Basel, Switzerland, assignor to Motion Technology Corporation, Aston, Pa.

Filed Nov. 27, 1981, Ser. No. 325,349
Int. Cl.³ G03B *27/44*
U.S. Cl. 355—54 **1 Claim**



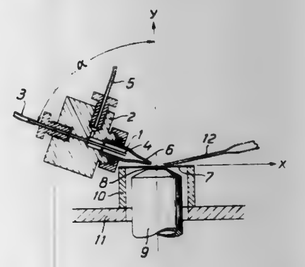
1. Apparatus for photographing documents onto microfilm comprising means for advancing the document to be microfilmed, means for advancing the microfilm, synchronization means for control of the movement of the film and document, whereby said film advancement is begun with introduction of the document, means for producing a signal at the termination of the document, means to measure the length of the moved forward film and means for control of the advancement of the film after the production of said signal, such that the film is advanced in lengths corresponding to whole multiples of a pre-established minimum length.

4,408,877

DEVICE FOR HYDRODYNAMIC FOCUSSING OF A PARTICLE-SUSPENSION IN A LIQUID FLOW CYTOPHOTOMETER

Tore Lindmo, Sofiemyr, and Harald B. Steen, Oslo, both of Norway, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

PCT No. PCT/EP80/00021, § 371 Date Dec. 10, 1980, § 102(e) Date Dec. 8, 1980, PCT Pub. No. WO80/02198, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 10, 1980, Ser. No. 220,038
Claims priority, application Norway, Apr. 10, 1979, 791228
Int. Cl.³ G01N *33/48*
U.S. Cl. 356—38 **10 Claims**



1. A device for carrying out liquid flow cytophotometry, comprising:

an optical excitation and detection system having an optical axis and an object plane;

a plate having a surface which is positioned in the object plane of said optical system to define a measuring area and which is open in relation to the surrounding atmosphere; and

means for hydrodynamically focussing a suspension of cells or particles and for openly directing the suspension through the surrounding atmosphere toward and against said measuring area defined by the surface of said plate to produce a laminar flow of the suspension on said surface, said suspension being focussed into a stream wherein the cells or particles pass by one after another through the measurement area.

4,408,878

METHOD AND APPARATUS FOR MEASURING EMISSIVITY

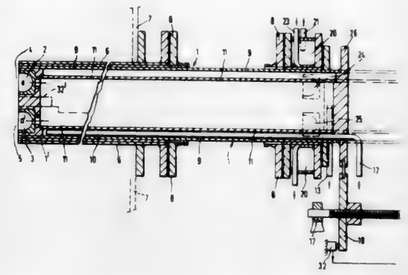
Jean-Paul F. Fischbach, Neupre, Belgium, assignor to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Filed Dec. 16, 1980, Ser. No. 216,866
Claims priority, application Belgium, Dec. 17, 1979, 6/47038
Int. Cl.³ G01J *5/04, 5/10*
U.S. Cl. 356—43 **11 Claims**

1. Apparatus for measuring the emissivity of a surface of a product, comprising

(a) an elongated support member, a sensor unit mounted at one end of said support member comprising two chambers disposed side-by-side, one of said chambers being substantially totally reflecting and the other being substantially totally absorbing, the chambers being open at one end facing outwardly of said one end of said support member so that they are exposable to the product, and a pyrometer arranged in each respective chamber and directed towards the open end thereof, and

(b) displacement means operatively engaging the other end of said support member for advancing said support member and sensor unit towards the product, placing it in



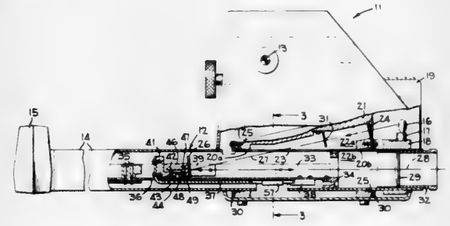
proximity to the product, and withdrawing it from the product.

4,408,879

BEAM PROJECTOR FOR WHEEL ALIGNER

Marshall P. Ragan, Mayflower, Ark., assignor to FMC Corporation, Chicago, Ill.

Filed May 8, 1981, Ser. No. 261,441
Int. Cl.³ G01B *11/26;* G02B *23/10*
U.S. Cl. 356—155 **4 Claims**



1. An aimable light projection system for measurement of vehicle wheel position in a toe plane wherein a beam of light is directed from an alignment head mounted on one wheel of a vehicle toward a target mounted on another wheel of the vehicle, comprising

a framework,

a passage having first and second angularly disposed lengths extending through said framework and having a reference axis therethrough,

a light source mounted at one end of said first passage length providing a light beam therealong,

a reticle mounted in said passage,

a projection lens mounted near the other end of said second passage length so that an image of said reticle is focussed at the target,

a condensing lens in said passage operating to focus an image of said light source substantially at said projection lens,

a reflector disposed substantially at the intersection of said first and second passage lengths operating to receive and reflect said light beam along said second length,

means for pivotally mounting said reflector at the interestion of said passage lengths for movement about an axis substantially perpendicular to the toe plane,

a cam positioned to bear against said means for pivotally mounting whereby cam movement induces said reflector pivotal movement,

manually accessible means for moving said cam,

and position sensing means coupled to said manually accessible means, whereby a signal indicative of the angular position of said light beam and the displacement of said

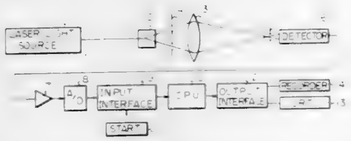
recticle image relative to said passage reference axis is provided.

4,408,880

LASER NEPHELOMETRIC SYSTEM

Yashuhiro Tsuji, Kawaguchi; Kiyoshige Wakabayashi, Ohmiya, and Mitsuo Watanabe, Machida, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1981, Ser. No. 304,578
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—338 **5 Claims**



1. A laser nephelometric system for measuring the concentration of substances to be measured in a solution comprising:
(a) a laser unit for applying a beam of laser waves to the solution to obtain the light waves scattered therein,
(b) means for receiving said scattered light waves to convert into corresponding electric signals in an analogue form,
(c) means for converting said analogue signals to digital signals,
(d) means for storing a predetermined number of said digital signals as a group of data elements,
(e) means for searching a minimum data element out of said group as a first lower limit,
(f) means for obtaining a first upper limit which is greater than and determined by said minimum data element, thus defining a first range,
(g) means for selecting those data elements only that are within said first range, thus defining a first set of selected data elements,
(h) means for averaging said first set of selected data elements to obtain a first average value,
(i) means for obtaining second upper and lower limits from said first average value and a deviation parameter in said first set of selection data elements, thus defining a second range including said first average value,
(j) means for selecting those data elements only that are within said second range, thus defining a second set of selected data elements,
(k) means for averaging said second set of selected data elements to obtain a second average value which is used as a measured value of the intensity of scattered light due to the substances to be measured.

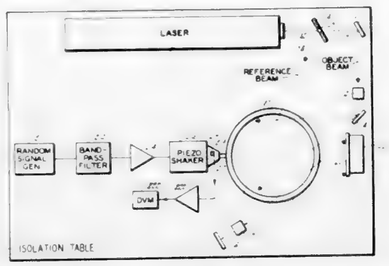
4,408,881

HOLOGRAPHIC INSPECTION TECHNIQUE

Joseph F. Clarady, Jr., Tequesta; Karen L. Jessee, Jupiter, and Joe L. Bearden, North Palm Beach, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1981, Ser. No. 334,504
Int. Cl.³ G01B *9/029*
U.S. Cl. 356—347 **4 Claims**

1. A holographic test apparatus for testing a test object comprising:
means for generating an optical object beam and reference beam;
means for exposing a test object to said object beam;
means for exposing a photosensitive detector simultaneously to said reference beam and to radiation emanating from said test object for a predetermined exposure time;
signal generating means for generating electrical signals having frequencies randomly distributed within a frequency range;
filter means for passing a portion of said randomly distributed frequencies within a predetermined frequency range to form a driving signal;



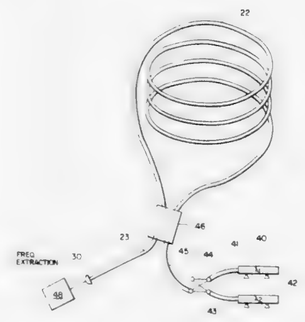
means responsive to said driving signal for mechanically shaking, during said exposure time, said test object with accelerating forces having a predetermined average strength.

4,408,882

OPTICAL GYROSCOPE WITH TIME DEPENDENT WAVELENGTH

Sang K. Sheem, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1981, Ser. No. 280,107
Int. Cl.³ G01B *9/02;* **G01C** *19/64*
U.S. Cl. 356—350 **11 Claims**



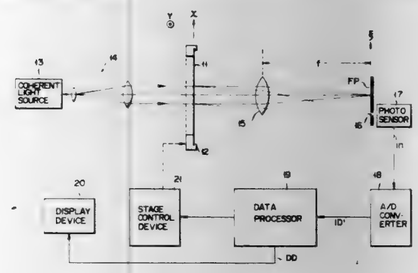
1. A Sagnac rotation measurement device comprising:
means for generating a plurality of different beams of electromagnetic energy with each beam having a different wavelength;
a light path circuit including a plurality of turns of optical path in or parallel to a given plane;
means for splitting a beam into two beams and for directing one of said two beams to travel in a clockwise direction around said light path circuit and directing the other of said two beams to travel in a counter-clockwise direction around said light path circuit, and for recombining said two beams after having traversed through their respective directions in said light path circuit to produce electromagnetic wave interference;
means for alternately gating each of said plurality of different wavelength beams from said generating means to said splitting means at a frequency substantially higher than the rates of change of phase due to rotation in the plane of said light path circuit and due to system noises; and
means for extracting a signal at said wavelength gating frequency from said interference pattern in order to detect a rotation-caused phase change therefrom.

4,408,883

APPARATUS FOR INSPECTING AVERAGE SIZE OF FUNDAMENTAL PATTERNS

Akito Iwamoto, Kamakura, and Hidekazu Sekizawa, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 4, 1981, Ser. No. 240,603
Claims priority, application Japan, Mar. 6, 1980, 55-27321
Int. Cl.³ G01B *11/00, 9/02*
U.S. Cl. 356—355 **40 Claims**



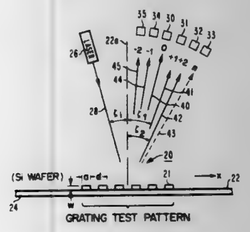
1. An apparatus for inspecting an object, comprising:
Fourier transform means for providing an output data corresponding to a Fourier transform pattern of a given region of an object containing substantially regularly arranged fundamental patterns;
extractor means coupled to the Fourier transform means, for extracting a single magnitude data representing a spatial frequency component of the order n from the output data, the magnitude of the order n component changing with variation of the size of fundamental patterns; and
first means coupled to the extractor means, for determining the average size of fundamental patterns according to the single magnitude data;
wherein the order n spatial frequency component is selected so that the rate of change or the differential coefficient of the magnitude of the order n component with respect to the variation of the size of patterns is substantially maximum.

4,408,884

OPTICAL MEASUREMENTS OF FINE LINE PARAMETERS IN INTEGRATED CIRCUIT PROCESSES

Hans P. Kleinknecht, Bergdietikon, Switzerland; William E. Ham, Mercerville, N.J., and Heinrich Meier, Urdorf, Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,448
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—355 **21 Claims**



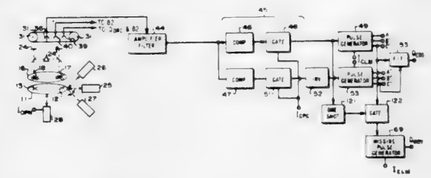
21. A method for optically monitoring the image transfer process for an LSI device by:
preparing by a given process a product wafer or mask with selected patterns extending over a selected area thereon, and
preparing by said given process a test sample comprising a specimen monitor mask or wafer having a diffraction pattern extending over an area thereon substantially equal to the pattern area of said product wafer or mask,
gross defects in the diffraction pattern of said specimen monitor mask or wafer being visually discernible and being indicative thereby of similar defects at corresponding area portions on said product wafer or mask.

4,408,885

APPARATUS FOR THE AUTOMATIC ALIGNMENT OF TWO SUPERIMPOSED OBJECTS, E.G. A SEMICONDUCTOR WAFER AND MASK

Karl-Heinz Johannsmeier, Mountain View; Paul E. Stoft, Menlo Park, and Tor G. Larsen, Cupertino, all of Calif., assignors to Kasper Instruments, Inc., Sunnyvale, Calif.

Division of Ser. No. 839,324 Oct. 4, 1977, Pat. No. 4,259,019, which is a division of Ser. No. 650,976, Jan. 21, 1976, Pat. No. 4,070,117, which is a division of Ser. No. 305,861, Jun. 12, 1972, Pat. No. 3,955,072, which is a continuation of Ser. No. 126,597, Mar. 22, 1971, abandoned. This application Jan. 13, 1981, Ser. No. 224,915
The portion of the term of this patent subsequent to May 4, 1993, has been disclaimed.
Int. Cl.³ G01B *11/00;* **G06F** *15/46*
U.S. Cl. 356—401 **2 Claims**



1. A system for aligning first and second relatively movable objects, where the first object has a pair of spaced alignment patterns thereon, the second object has a corresponding pair of spaced alignment patterns thereon, each of said alignment patterns on the first and second objects comprises at least one pair of non-parallel lines, and each of said alignment patterns on the first object is disposed in a preselected alignment position relative to the corresponding alignment pattern on the second object when the first and second objects are aligned; said system comprising first means for scanning images of said lines of each of said alignment patterns on the first object and of said lines of the corresponding alignment pattern on the second object in a straight line and in a single direction; second means for sensing the scanned images of said lines of each of said alignment patterns on the first object and of said lines of the corresponding alignment pattern on the second object to produce signals indicative of the position of each of said alignment patterns on the first object relative to the corresponding alignment pattern on the second object; and third means for changing the relative positions of the first and second objects to bring each of said alignment patterns on the first object into the preselected alignment position relative to the corresponding alignment pattern on the second object.

4,408,886

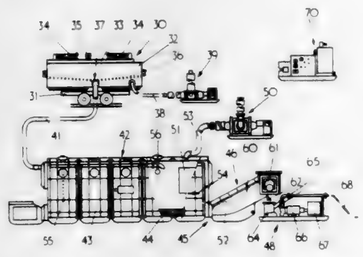
MIXING EQUIPMENT

John D. Sampson, and David J. W. Sparrow, both of Burton-on-Trent, England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 116,526, Jan. 29, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,491
Claims priority, application United Kingdom, Feb. 2, 1979, 7903693
Int. Cl.³ B01F *15/02;* **B28C** *5/06*
U.S. Cl. 366—13 **9 Claims**

1. Equipment for mixing powdered or particulate cement

with a liquid, comprising a mobile fluidised storage container for the powdered or particulate cement, the fluidised storage container having a floor, an outlet and an air permeable deck arranged above the floor for supporting the powdered or particulate cement, a blower unit detachably connectable to the container for supplying fluidising air to the container in the space between the floor and deck, said compressed air passing through the deck to fluidise the powdered or particulate cement, a receiver unit independent of the container being selectively connectable to and disconnectable from the container



for being supplied with and for accumulating cement from the container, a mixer unit for mixing the cement with liquid, conveyor means for feeding accumulated cement from the receiver unit to the mixer unit, liquid feed means for feeding liquid to the mixer, and pump means from the mixer unit for delivering a mixture of cement and liquid from the mixer unit to a point of use remote from said mixer unit whereby a succession of mobile fluidised storage containers can be connected to the receiver unit while said feeding of accumulated cement ensures a continuous flow of cement to the mixer unit.

4,408,887

CONTINUOUS KNEADER

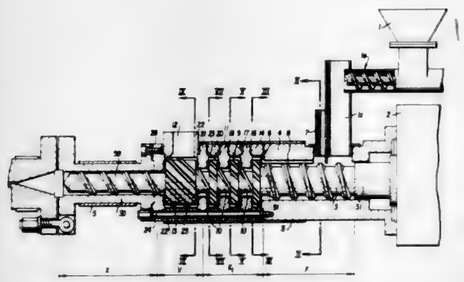
Kishihiro Yamaoka, 1-1001, Ikedakita-machi 24, Neyagawa-shi, Osaka, Japan

Filed Apr. 20, 1982, Ser. No. 370,213

Claims priority, application Japan, Dec. 7, 1981, 56-182630[U]; Dec. 7, 1981, 56-197368

Int. Cl.³ B29B *1/06*

U.S. Cl. 366—75 **5 Claims**



1. A continuous kneader comprising a rotary shaft in the form of a screw and rotatable within a cylinder for transporting a fluid axially thereof, a plurality of rotary disks mounted on the shaft and each formed on each side surface thereof with radial projections and recesses arranged alternately, and fixed disks provided on the cylinder and arranged on the opposite sides of each rotary disk coaxially therewith as opposed thereto, each of the fixed disks being formed on each side surface thereof with radial projections and recesses arranged alternately, the boundary between and defining each projection and the recess adjacent thereto on at least one of the rotary disk and the fixed disk being inclined from the radial direction so that the material supplied from a space between the rotary shaft and the inner surface of the cylinder to the space between the rotary disk and the fixed disk is passed over the outer periphery of the rotary disk toward the axis of the shaft into the space between the rotary disk and the fixed disk immediately adjacent thereto, the projections and the recesses being so formed as to reduce the space between each rotary disk and the fixed disk immediately adjacent thereto from disk to disk toward the forward end of the cylinder.

4,408,888

DOUBLE-WORM EXTRUSION PRESS

Wilhelm Hanslik, Vienna, Austria, assignor to American Maplan Corporation, McPherson, Kans.

Filed Nov. 9, 1981, Ser. No. 319,657

Claims priority, application Austria, Nov. 10, 1980, 5508/80

Int. Cl.³ B29B *1/10*

U.S. Cl. 366—83 **1 Claim**



1. A double-worm extrusion press, especially for high viscosity thermoplastic material comprising:

an elongated worm housing formed with an outlet at one end thereof;

a pair of meshing worms conically tapering toward said end, each of said worms having a flight with flank angle between 10° and 25° rising from a root of the respective worm and extending spirally over the length thereof, a plurality of turns of each flight forming a discharge zone at an extremity of the worm proximal to said end, the flight height/worm diameter ratio over said zones decreasing in a direction opposite the direction of flow of said material through said housing, the height of the flight of each worm at the downstream end of each zone being between 26 and 30% of the worm diameter at said downstream end; and

means for counter-rotating said worms to advance a thermoplastic material through said housing, substantially adiabatically through said zones, and out of said housing through said opening, the worm flights defining between them flank gaps which progressively increase in the direction of taper of said worms, said flank angle continuously diminishing in the direction of taper of each worm and the flanks of the two worms including angles between them.

4,408,889

UNIVERSAL BLENDING SILO

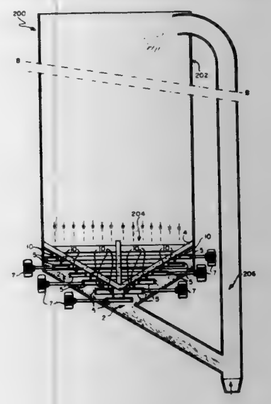
Ivan A. S. Z. Peschl, Kennedylaan 8, 6029 RE Sterksel, Netherlands

Division of Ser. No. 99,038, Nov. 30, 1979, Pat. No. 4,345,842. This application Sep. 21, 1981, Ser. No. 304,208

Int. Cl.³ B01F *5/00, 5/10, 5/26, 15/02*

U.S. Cl. 366—113 **28 Claims**

1. A universal blending system for blending the material contents of a silo, said silo having interior side walls and a blending bottom, said system blending bottom comprising a fixed support frame connected to said silo side walls, a collection hopper, a plurality of spaced apart blending rings positioned adjacent each other in an array above said collection hopper, said rings being hingedly connected to said frame in said array, a generally circular slot opening being formed between an adjacent pair of rings in said array for enabling controllable flow of said material between said adjacent rings into said collection hopper, and vibrator means operatively connected in said system for vibrating said rings and said frame relative to each other at a predetermined amplitude and frequency for disturbing the steady state condition of said mate-



rial between said adjacent pair of rings for providing said controllable flow, the intensity of said vibratory movement of each of said rings around the symmetric axis of said rings controlling the rate of flow of said material through each of said circular slot openings.

4,408,890

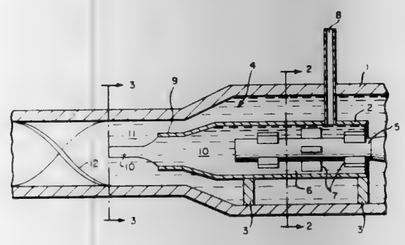
PIGMENT PRE-BLENDING MIXHEAD ATTACHMENT

Charles H. Beckmann, Getzville, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 11, 1981, Ser. No. 242,582

Int. Cl.³ B01F *15/02*

U.S. Cl. 366—155 **3 Claims**



1. A mixhead attachment for preparing a viscous fluid for marbled pigmentation, said attachment being adapted to convey said fluid from a mixhead to an in-line motionless mixer, said attachment comprising:

a generally cylindrical housing having an inlet end adapted for attachment to said mixhead and an outlet end adapted for attachment to said motionless mixer;

an open-ended, generally cylindrical tube coaxially positioned within said housing and radially separated therefrom, providing a first annular passage for the flow of a portion of said fluid;

means for securing said tube within said housing;

a mixing shaft rotatably mounted within said tube and radially separated therefrom, providing a second annular passage for the flow of the balance of said fluid;

a plurality of fins mounted on said mixing shaft and partially extending into the second annular passage;

means for rotating said mixing shaft; and

means for allowing the introduction of pigment into said second annular passage wherein substantially complete pigmentation of said balance of said fluid occurs.

4,408,891

ARRANGEMENT FOR DEVELOPING PHOTOGRAPHIC LAYER CARRIERS

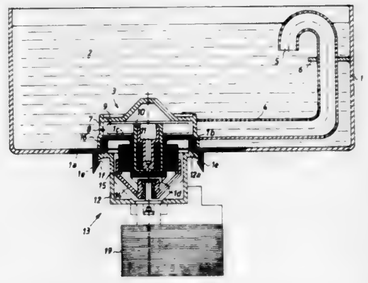
Günter Schirk, and Alfons Kastl, both of Munich, Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,671

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029044

Int. Cl.³ B01F *5/12, 13/08*

U.S. Cl. 366—265 **18 Claims**



1. An arrangement for developing photographic layer carriers, comprising at least two containers each for accommodating a treating medium and having an uninterrupted wall; means for circulating the treating medium in each of said container and including a pump which has a first part formed by said uninterrupted wall of each of said containers and a second part associated with said first part, said pump having a rotary body located inside each of said containers; magnetic means for each of said containers and imparting rotation to said rotary body of each of said pumps, said magnetic means being located outside each of said containers and magnetically acting upon said rotary body of each of said pumps so as to rotate the same, said magnetic means including a driven magnetic force-transmitting element located outside each of said containers and acting upon said rotary body of each of said pumps; and common means for driving the force-transmitting elements of both magnetic means for both said circulating means of both said containers, said driving means including a gear provided on each of said force-transmitting elements, an electric motor, and a motion-transmitting element arranged between said electric motor and the gears of both said force-transmitting elements and rotating both said gears and thereby both said force-transmitting elements.

4,408,892

APPARATUS FOR INCREASING THE HOMOGENEITY OF A FLUID FLOW IN A PIPE

Gilles Combes, Grenoble, and Raymond Kuntz, Saint Ismier, both of France, assignors to Societe Anonyme dite: Alsthom-Atlantique, Paris, France

Filed May 5, 1982, Ser. No. 375,157

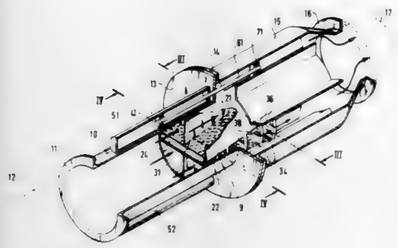
Claims priority, application France, May 5, 1981, 81 08883

Int. Cl.³ B01F *3/08, 5/06*

U.S. Cl. 366—337 **7 Claims**

1. Apparatus for increasing the homogeneity of the mixture of fluids which flow in the same pipe, the apparatus operating by dividing the flow into multiple converging jets, wherein the apparatus comprises a tubular structure for coupling in a pipeline end for end between pipe sections, a cylindrical sheath housed in said tubular structure, said sheath being fitted with two diverging longitudinal perforated plates merging at their

upstream ends so as to define two inlet chambers between which fluid flowing into the apparatus from the pipe is distributed, a plurality of partitions which are substantially perpendicular to the axis of the sheath partitioning the space between



the plates so as to constitute a plurality of outlet cells in which jets of fluid from the perforations through the plates converge, and said sheath having openings formed therein laterally to each side thereof for the lateral removal of the fluids which mix in the cells.

4,408,893

MOTIONLESS MIXING DEVICE

William T. Rice, III, Charlotte, N.C., assignor to Luwa A.G., Zurich, Switzerland

Filed Apr. 28, 1982, Ser. No. 372,464
Int. Cl.³ B01F *5/06*
U.S. Cl. 366—339 **21 Claims**



1. A device for intermixing a plurality of fluids comprising a body having formed therethrough a cylindrical bore having a fluid entrance end and a fluid exit end for flow therethrough of said fluids, two oppositely-curved primary helical baffles disposed longitudinally in said bore in axially spaced relation and respectively extending transversely across said bore to divide it for successively dividing and oppositely turning said fluids as they flow therethrough, and a connecting helical baffle of substantially smaller corresponding transverse dimension than said primary baffles extending longitudinally therebetween centrally in said bore and being curved oppositely of the primary baffle on the entrance end of said connecting baffle to obstructingly deflect the portion of said fluids flowing centrally of said bore along said entrance end primary baffle for diffusingly turbulent redirection of said fluids portion in conjunction with dividing and turning of said fluids by the other primary baffle, thereby enhancing the mixing of said fluids.

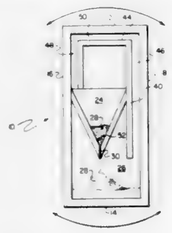
4,408,894

MULTIPLE SELECTABLE TIMER

Richard E. Hemperly, 2544 Unicornio St., Carlsbad, Calif. 92008

Filed Apr. 9, 1982, Ser. No. 366,830
Int. Cl.³ G04F *1/04*
U.S. Cl. 368—93 **10 Claims**

1. A timing device comprising:
a closed housing having a longitudinal axis,
a measured quantity of flowing medium contained within said housing,
first walls means in said housing separating the interior thereof into a timing reservoir, and a catch chamber displaced along said longitudinal axis from said timing reservoir,
said first wall means includes means defining a timing orifice for communicating a quantity of said flowing medium within said timing reservoir to said catch chamber, and



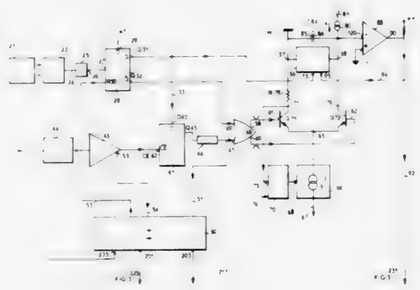
second wall means defining a generally U-shaped restricted metering passage having one leg extending parallel to said longitudinal axis along one side of said housing for communicating with said catch chamber and another leg extending parallel to said longitudinal axis along the other side of said housing for communicating with said timing reservir for controllably conveying a predetermined measured portion of said measured quantity of flowing medium between said catch chamber and said timing reservoir upon complete rotation of said housing in a selected direction.

4,408,895

APPARATUS FOR ACCURATELY TIMING AN EVENT RELATIVE TO CLOCK SIGNALS

Michel Geesen, Antony, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Oct. 30, 1981, Ser. No. 315,606
Claims priority, application France, Oct. 31, 1980, 80 23404
Int. Cl.³ G04F *8/00*
U.S. Cl. 368—118 **11 Claims**



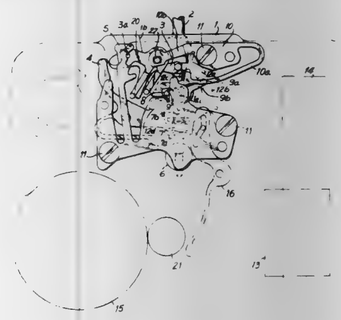
1. Apparatus for timing an event relative to a time reference provided by clock signals, the apparatus comprising:
an integrator circuit;
integrator signal providing means for providing a charge signal and a discharge signal to said integrator circuit with respective signal amplitudes such that the charge rate is high relative to the discharge rate;
control means for causing the charge signal to be applied to the integrator circuit in response to an event pulse representing the position in time of the event to be timed, and to halt the application of the charge signal to said integrator in response to a clock signal following said pulse and for causing the integrator circuit to begin discharging;
a detector to detect when said integrator circuit has discharged to a predetermined discharge level; and
time measuring means for measuring the time that elapses between the beginning of discharge and the detection of said predetermined discharge level;
said means for providing the charge signal comprising first current producing means for causing a first current to pass through a by-pass circuit independent of the integrator circuit, and switching means to divert said first current from the by-pass circuit to the integrator circuit in response to said event pulse;
said switching means comprising first and second substantially identical switching devices connected respectively to said by-pass circuit and to said integrator circuit and independently controlled by said control means in phase opposition to each other to simultaneously halt said first current passing through said by-pass circuit and to cause it to pass through said integrator circuit in response to said event pulse, and vice-versa in response to said following clock signal.

4,408,896

CORRECTING MECHANISM FOR HYBRID DISPLAY TIMEPIECE

Toshimasa Ikegami, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jun. 8, 1981, Ser. No. 271,150
Claims priority, application Japan, Jun. 6, 1980, 55-78813
Int. Cl.³ G04B *19/24, 19/00;* **G04C** *3/00;* **G04G** *9/00*
U.S. Cl. 368—185 **16 Claims**



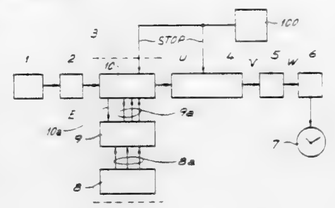
1. A correcting mechanism for a hybrid display timepiece including both an analog display and digital display, comprising:
a shaft mounted for rotation, and for translation in the directions of the longitudinal axis of said shaft;
first actuatable means for correcting said digital display;
second actuatable means for correcting said analog display;
a correcting member, said correcting member being slidably mounted on said shaft and for rotation therewith, said correcting member having a first portion adapted to actuate said first means for correcting said digital display and a second portion adapted for actuating said second means for correcting said analog display;
means cooperating with said shaft for translatting said correcting member, when said shaft translates, whereby said correcting member is selectively positioned to engage one of said first and second means for actuating.

4,408,897

ELECTRONIC TIMEPIECE HAVING A DIGITAL FREQUENCY CORRECTION CIRCUIT

Claude Mutrux, Cernier, Switzerland, assignor to Ebauches Electroniques S.A., Marin, Switzerland

Filed Sep. 22, 1982, Ser. No. 421,390
Int. Cl.³ G04C *3/00, 9/00;* **H03K** *1/17*
U.S. Cl. 368—200 **2 Claims**



1. An electronic timepiece comprising:
means for producing time base pulses;
a frequency divider connected to receive said time base pulses;
a pulse rate correction circuit connected between said time base pulses producing means and said frequency divider for modifying the number of pulses received by the frequency divider during a predetermined period of time by a predetermined number of correction pulses;
a driver circuit connected to receive the output signal provided by said frequency divider; and
a time display device controlled by said driving circuit, characterized in that said pulse rate correction circuit is arranged to divide said period of time into a given number of sub-periods and to distribute said correction pulses substantially equally over said sub-periods.

4,408,898

POSITIONING MECHANISM FOR A CENTER WHEEL

Cyril Vuilleumier, and Bruno Erni, both of Bienne, Switzerland, assignors to Societe Suisse pour l'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Nov. 12, 1980, Ser. No. 206,228
Claims priority, application France, Nov. 16, 1979, 79 28761
Int. Cl.³ G04B *19/02*
U.S. Cl. 368—220 **6 Claims**



1. Positioning mechanism for a centre wheel which is moved in steps in an electronic timepiece with analog display having an indicator attached to said centre wheel, said timepiece being of a type including a stepping motor and a jumper spring of which a first end is provided with two inclined planes adapted to cooperate with teeth of the centre wheel and the second end is rotatably mounted with friction fit into the base plate, said positioning mechanism comprising: a gear train coupled between the stepping motor and the centre wheel through which the motor drives the centre wheel in steps, said gear train comprising at least a pinion, a gear and a friction mounting means for mounting said pinion to said gear by friction which is sufficiently high so that in normal operation of the timepiece

transmission of motion is made without slippage between the pinion and the gear to drive the indicator, however low enough so that it is possible to manually cause slippage of the pinion relative to the gear; means for manually causing said slippage to adjust the position of the centre wheel relative to step positions of the motor to bring the two inclined planes of the jumper spring into proper coincidence with a tooth space on said centre wheel at each tooth position for precisely positioning the indicator relative to markings of the dial of the timepiece between steps.

4,408,899

ELECTRONIC CLOCK STRIKING MECHANISM

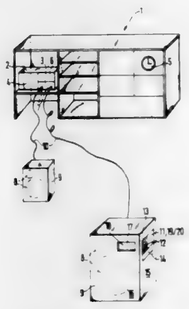
Hans Flaig, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,799

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033087

Int. Cl.³ G04B *21/00*

U.S. Cl. 368—273 **5 Claims**



1. In an electronic clock striking mechanism having a control circuit including a detector for detecting a real-time related signal and a signal transducer circuit which is actuated to produce an acoustic time indication in response to detection of a predetermined time signal, the improvement wherein said control circuit is built into a loudspeaker housing for a conventional diverse element commonly found in a dwelling and is operatively connected to a speaker in said housing to emit the acoustic time indication through said speaker upon actuation of said signal transducer circuit, and further including a sensor circuit for sensing a signal from said diverse element and for selectively disconnecting said signal transducer circuit from said speaker when a signal is sensed.

4,408,900

JOINT STRUCTURE OF BEZEL AND WATCH BODY

Tsuneji Takasugi, and Seiji Umezawa, both of Tanashi, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

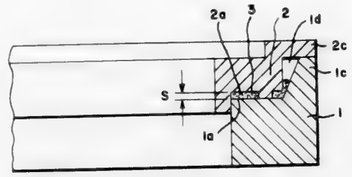
Filed Apr. 17, 1981, Ser. No. 255,110

Claims priority, application Japan, Apr. 24, 1980, 55-56166[U]

Int. Cl.³ B23K *9/12, 9/16*

U.S. Cl. 368—295 **10 Claims**

1. A joint structure of a watch body and a bezel comprising:
a watch body having a joint surface;
a bezel having a joint surface;
at least one projection extending from one of said joint surfaces, said projection being welded onto the other joint surface;
a space between said joint surface; and
connecting material filling said space provided in the proximity of said projection, wherein said connecting material



is melted by the heat and fills said space when said projection is welded.

4,408,901

MINIATURE PUSHBUTTON

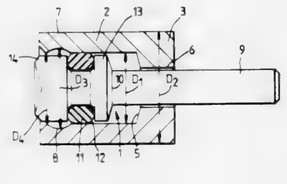
Gaston Gagnebin, Bienne, Switzerland, assignor to Societe Suisse pour l'Industrie Horlogere Management Services, S.A., Bienne, Switzerland

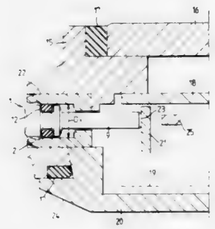
Filed Dec. 8, 1980, Ser. No. 214,156

Claims priority, application France, Dec. 13, 1979, 79 31025

Int. Cl.³ G04B *29/00*

U.S. Cl. 368—321 **5 Claims**





1. A miniature pushbutton for an electronic timepiece comprising a socket forming means defining a socket having its innermost extremity terminating in a base portion provided with an opening and a head-stem member integrally formed by a first portion adapted to pass through said opening and a second portion adapted to slide freely in the socket, said second portion including a groove arranged to retain a sealing means and a sealing means mounted in said groove for cooperating with the interior wall of the socket to allow relatively easy movement of said second portion in said socket, said pushbutton being of a dormant corrector type, the return movement thereof being assured by means entirely external thereto, the diameter of said first portion being constant and said socket forming means including a retaining means proximate the outermost extremity of the socket for cooperating with said sealing means to prevent said relatively easy movement of said second portion in said socket and thereby preventing inadvertent separation of said head-stem member from said socket.

4,408,902

METHOD OF AND DEVICE FOR DETERMINING THE BOILING POINT OF A LIQUID

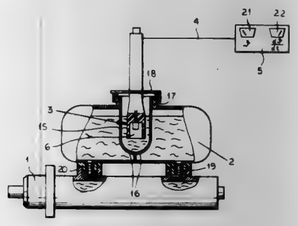
Karl Peuker, Ebern, Fed. Rep. of Germany, assignor to Fag Kugelfischer Georg Schäfer & Co., Schweinfurt, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,104

Claims priority, application European Pat. Off., Jan. 17, 1981, 81100334.2

Int. Cl.³ G01N *25/08*

U.S. Cl. 374—27 **9 Claims**



1. A method of determining the boiling point of a liquid, comprising the steps of:
(a) confining a quantity of the liquid to be tested in a space closed at the top and in communication at the bottom with a larger body of the same liquid;
(b) gradually heating the liquid in said space;
(c) continuously measuring the temperature in said space during the heating step; and
(d) registering the occurrence of a significant change in the rate of temperature rise measured in step (c) as an indication of the boiling point of the liquid having been reached

---

4,408,903

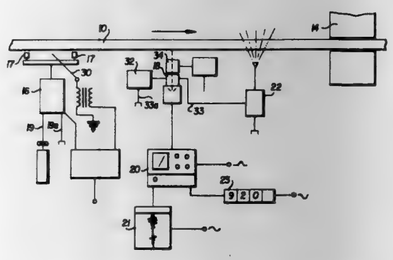
METHOD OF AND APPARATUS FOR RADIATION PYROMETRIC TEMPERATURE MEASUREMENT OF A CONTINUOUS CAST METAL BAR

Giuseppe Baldassarri, Carrollton, Ga., assignor to Southwire Company, Ga.

Filed Mar. 30, 1981, Ser. No. 248,155

Int. Cl.³ G01J *5/02*

U.S. Cl. 374—121 **26 Claims**



1. In a method for continuous casting and rolling of a metal bar into rod including the steps of casting molten metal into a metal bar in a casting machine, conveying the cast metal bar to a rolling mill and rolling said cast bar into a rod the improvement comprising, continuously measuring the temperature of said cast bar as said cast bar moves between said casting machine and said rolling mill said continuous temperature measurement comprising the steps of:
(a) providing a constant flow of acetylene from an acetylene source;
(b) flowing said acetylene through an acetylene filter;
(c) passing said filtered acetylene through an acetylene solenoid value adapted to receive remote signals capable of interrupting or starting flow of acetylene;
(d) flowing said acetylene through an acetylene flow control valve adapted to adjust acetylene flow to a rate which is independent of the pressure of the acetylene source;
(e) passing said acetylene through an acetylene flow meter;
(f) providing a constant flow of air;
(g) flowing said air through an air filter;
(h) passing said filtered air through an air solenoid valve adapted to receive remote signals capable of interrupting or starting flow of air;
(i) flowing said air through an air flow control valve adapted to adjust air flow to a rate which is independent of pressure up stream of said control valve;
(j) passing said air through an air flow meter;
(k) mixing said acetylene and said air into an acetylene air mixture;
(l) flowing said mixture through a manifold to sooting tips adjacent to the path of said cast bar;
(m) igniting and burning said mixture in a controlled manner whereby a uniform layer of soot is deposited on the surface of said cast bar to form an area of controlled emissivity;
(n) continuously detecting infrared radiation emitted from said area of controlled emissivity;
(o) continuously converting said detected radiation into an electrical signal representative of the temperature of said cast bar; and
(p) continuously removing said soot from the surface of said cast bar before said cast bar enters said rolling mill.

4,408,904

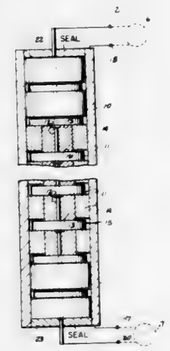
TEMPERATURE PROFILE DETECTOR

Richard D. Tokarz, West Richland, Wash., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Dec. 3, 1980, Ser. No. 212,310

Int. Cl.³ G01K *11/00, 13/00*

U.S. Cl. 374—137 **8 Claims**



1. A temperature profile detector, comprising:
a first elongated electrical conductor means;
a second elongated electrical conductor means spaced from and parallel to the first conductor means, the length of said second
conductor means overlapping at least a portion of the length of said first conductor means;
a plurality of meltable segments spaced apart from one another along the length of one of said conductor means and in electrical contact with said conductor means in positions physically separated from the remaining conductor means, each segment being fabricated from electrically conductive material having a preselected melting point below those of said both conductor means;
and electrical insulator means comprising a plurality of

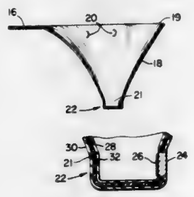
ceramic elements stacked along said both conductor means in bridging contact between said both conductor means at spaced locations along their lengths, each element including at least one defined channel for confining molten metal from an associated segment in such bridging contact.

4,408,905

URINARY TEMPERATURE MEASUREMENT DEVICE

Joel R. L. Ehrenkranz, 12 Crest Cir., South Orange, N.J. 07079

Filed Jun. 11, 1981, Ser. No. 272,689
Int. Cl.³ G01K *11/12*
U.S. Cl. 374—157 **7 Claims**



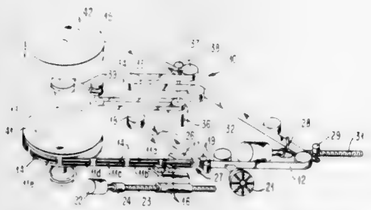
1. A device for measuring core body temperature in humans comprising: a funnel shaped receptacle having a mouth and an exit port adapted to receive urine voided directly thereinto; a chamber integrally attached to said receptacle at the exit port thereof for receiving at least a portion of the urine voided thereinto; said chamber having a base and upstanding walls and a transparent window mounted in at least a portion of said upstanding walls; liquid crystal temperature measurement means mounted within said chamber and affixed to said window for registering the temperature of urine voided into said receptacle and said chamber and for displaying said temperature registration through said window for external view.

4,408,906

HIGH SPEED ON-DEMAND PROCESSOR FOR PRESSURE SENSITIVE LABELS

Leonard J. Wallace, Charlotte, N.C., assignor to International Business Machines, Armonk, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,833
Int. Cl.³ B41J *3/516*
U.S. Cl. 400—104 **18 Claims**



1. On-demand apparatus for processing a plurality of closely spaced labels releasably mounted on a carrier strip which extends between first and second processing stations, comprising:

means for processing one of said plurality of labels before processing labels adjacent said one of said plurality of labels; said means for processing one of said plurality of labels further comprising:

means forming a loop of said carrier strip between said first and second processing stations, said loop having a gap at one end thereof;

means for moving said first processing station over said one of said plurality of labels to process said one of said plurality of labels;

means for transferring a processed label across said gap; and

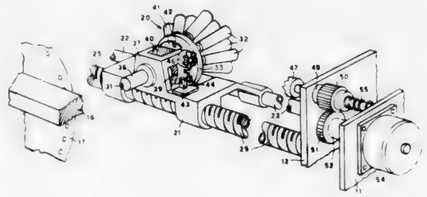
means for moving a transferred label through said second processing station independent of movement of said carrier strip at said first processing station by shortening said loop.

4,408,907

DOT PRINTING DEVICE FOR ACCOUNTING, TERMINAL, TELEWRITING MACHINE, AND SIMILAR OFFICE MACHINE

Francesco Bernardis, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Oct. 21, 1980, Ser. No. 199,189
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **5 Claims**



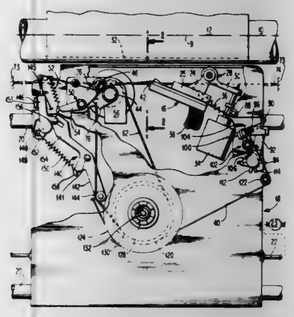
1. A dot printing device for printing characters and graphic symbols on a recording medium according to dot matrices which each have a predetermined standard height (h) said device comprising a print head having longitudinally movable printing wires, a plurality of electromagnets associated with said printing wires, an electronic circuit for the energization of said electromagnets and the actuation of the associated wires to impact said recording medium for printing thereon, and a guide member for guiding said printing wires adjacent to said recording medium and positioning them in an array, wherein the height (l) of said array of wires is at least twice said standard height (h), means for moving said print head parallel to said recording medium along a rectilinear path, means for varying the inclination of said guide member from a first angular position wherein said array of wires is substantially perpendicular to said rectilinear path to a second angular position wherein said single array is slanted with respect to said rectilinear path, and means associated with one or the other position of said guide member in order to control the actuation of said printing wires for simultaneously printing two lines of characters and graphic symbols with low definition dot matrices and high printing speed when said guide member is in said first angular position and for printing only one line of characters and graphic symbols with a high definition dot matrix having said standard height when said guide member is in said second angular position, said electronic circuit comprising a central unit connected to an input device and to at least two line memories, the data to be printed supplied by said input device being memorized in alternate lines on said two memories and taken from said central unit in parallel manner when said guide member is in said first angular position, and being memorized one line at a time on one of said memories and taken in serial manner by said central unit when said guide member is in said second angular position.

4,408,908

RIBBON FEED SYSTEM FOR A MATRIX PRINTER

Steven L. Applegate, and James J. Molloy, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,228
Int. Cl.³ B41J *3/04*
U.S. Cl. 400—120 **12 Claims**



1. For use in a printer of the kind that employs a multi-electrode printhead mounted on a carrier for engaging a printing ribbon in sweeping print motions along a print line to inject printing currents that are selectively supplied from a set of electrode drivers for causing marking of a receiving medium for graphic printing operation characterized by a forward direction of motion along the print line, a ribbon feed arrangement comprising:

supply means for supplying a printing ribbon,

takeup means for taking said ribbon from said supply means,

path means for defining a ribbon path between said supply means and said takeup means that extends said ribbon around said printhead;

metering means for feeding said ribbon, said metering means including a pair of cooperating rollers mounted on said carrier and separate from said takeup means, located on the takeup side of said printhead, that nip said ribbon and drive means for coupling motion corresponding to carrier movement relative to said receiving medium to at least one of said rollers;

coupling control means for selectively enabling and disabling said metering means; and

means for connecting one of said rollers to provide a return path for printing currents that extend from said ribbon to said electrode drivers.

4,408,909

PRINTER WITH CARTRIDGE TYPE WHEEL

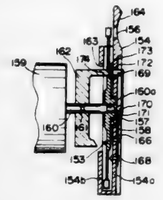
Kiyomitsu Asano, Musashino, and Tetsuo Watanabe, Tokyo, both of Japan, assignors to Ricoh Co., Ltd. and Nihon Tsushin Gijyutsu Kabushiki Kaisha, both of, Japan

Division of Ser. No. 76,389, Sep. 17, 1979, Pat. No. 4,310,255. This application Sep. 3, 1981, Ser. No. 299,079
Claims priority, application Japan, Sep. 18, 1978, 53/113585
Int. Cl.³ B41J *1/60, 1/27*
U.S. Cl. 400—144.2 **14 Claims**

1. A type wheel cartridge for a printer having a type selection motor with motor shaft and a type wheel mounted on the shaft for rotation of the type wheel when the cartridge is engaged with the printer, the type wheel having a center disk with a center opening for receiving the motor shaft and a plurality of fingers extending radially from the center disc comprising:

a box-shaped cartridge defining a space for receiving the type wheel; and

a resilient holding arm connected to the cartridge and having a projection extending into the center opening of the type wheel for centering the type wheel with the motor shaft disengaged from the type wheel, said projection being pushed out of the center opening by an introduction of the motor shaft into the center opening of the type wheel;



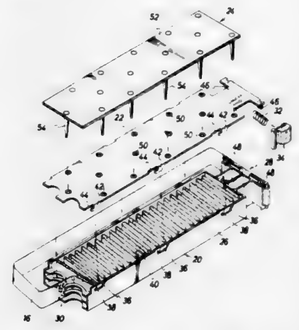
the holding arm including a holding claw, the cartridge including an opening for receiving the holding claw, the type wheel formed with another opening for receiving the holding claw when the holding claw is positioned through the cartridge opening.

4,408,910

INK RIBBON PROTECTING MECHANISM IN INK RIBBON CARTRIDGE

Sasaki Masao, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1981, Ser. No. 323,258
Claims priority, application Japan, Nov. 25, 1980, 55-167411[U]
Int. Cl.³ B41J *33/14*
U.S. Cl. 400—207 **4 Claims**



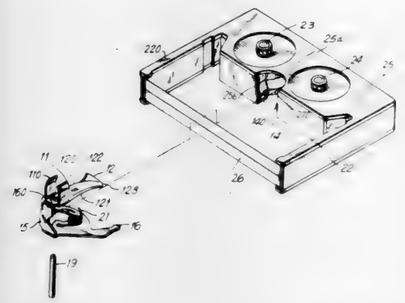
1. In an ink ribbon cartridge for a printer for containing therein an endless ink ribbon and successively feeding the ink ribbon for a printing operation by a feeding mechanism of the printer, a case member including wall members and having in the interior thereof an ink ribbon-storing portion having a depth substantially equal to the width of the ink ribbon and also having an inlet and an outlet for the ink ribbon and a plate-like lid member integrally associated with said case member; an ink ribbon protecting mechanism comprising through holes formed on said cartridge and an auxiliary member comprising a substrate and projections formed on the substrate, said projections corresponding to the interval and shape of said through holes, the projections of the auxiliary member being inserted in said through holes to intrude among laps of the ink ribbon in its folded state contained in the ink ribbon cartridge to thereby prevent falling or twisting of the ink ribbon during transportation.

4,408,911

INK RIBBON WINDING AND REVERSING ASSEMBLY

Tadayoshi Shimodaira, Shiojiri, Japan, assignor to Epson Corporation, Nagano, Japan

Filed May 15, 1978, Ser. No. 905,915
Claims priority, application Japan, May 13, 1977, 52-55104
Int. Cl.³ B41J *35/28, 33/50*
U.S. Cl. 400—208 **26 Claims**



1. An ink ribbon winding and reversing assembly comprising:
- a first and a second rotatably mounted ratchet wheel spaced apart from each other;
- winding means for selectively operatively engaging one of said ratchet wheels to become the first winding ratchet wheel to drive said ratchet wheel in a first winding direction;
- detecting means operatively engaged with the second ratchet wheel for selectively detecting completion of unwinding from said second ratchet wheel; and
- reversing means for reversing winding direction by operatively engaging said winding means with said second ratchet wheel to become the winding ratchet wheel to drive said second ratchet wheel in a second winding direction;
- said detecting means operatively coupled to said winding means for reversing engagement of said winding means from said first ratchet wheel to said second ratchet wheel and for reversing engagement of said detecting means from said second ratchet wheel to said first ratchet wheel upon detecting completion of winding; and said detecting means including projecting means for aligning said detecting means when an ink ribbon cassette having two ink ribbon spools rotatably mounted therein is being mounted on said assembly, said projecting means extending into the interior of said cassette in the region between said spools, said cassette including cooperating guide surfaces in the region between said spools for engaging said projecting means, whereby said detecting means is displaced to a neutral position substantially at the midpoint of the spools.

4,408,912

RIBBON CARTRIDGE WITH SHIELD

Edward Yonkers, Newton, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 78,653, Sep. 24, 1979, abandoned. This application Dec. 24, 1980, Ser. No. 219,904
Int. Cl.³ B41J *33/10*
U.S. Cl. 400—208 **6 Claims**

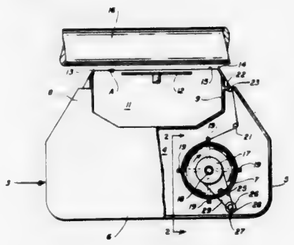
1. A ribbon cartridge for high speed printers having a printhead and paper to be printed thereon, comprising:
- a main ribbon storage compartment and a pair of arms extending generally in the same direction from the compartment,
- a ribbon stored in the compartment and extending from one arm and entering the other of the arms,
- a gap between the arms defining an exposed ribbon path essentially parallel to the print plane of the printer and between the plane of the paper on which the printing is to occur and the printhead,
- a bridge joining the arms below the lower edge of the ribbon in the gap,
- a shield mounted in part by the bridge and lying on the side of the ribbon facing the paper, said shield preventing the paper from engaging and displacing the ribbon from the ribbon path, and having a substantially flat central panel extending across the gap,
- a window in the shield through which the printhead may engage the ribbon to make an impression on the paper,
- said shield further having oppositely directed end wings extending from said flat central panel in a direction out of the plane of the central panel and extending rearwardly,
- said pair of arms each having a front surface extending from the gap,
- and means adhesively securing each wing to the compartment arm front surfaces.

4,408,913

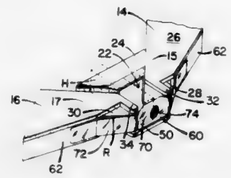
INKED RIBBON CARTRIDGE RIBBON WITH SUPPLY SPOOL DRAG DEVICE

Thomas E. Frechette, Windsor Locks, Conn., assignor to Royal Business Machines, Inc., Windsor, Conn.

Filed Feb. 22, 1982, Ser. No. 350,818
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208 **4 Claims**



1. An inked ribbon cartridge rotatably supporting supply and take-up spools adapted to be mounted on a typewriter or like machine, said cartridge having exit and entry apertures to permit ribbon to be incrementally drawn off said supply spool onto said take-up spool incident to print actions with a length of ribbon between exit and entry apertures exposed to a printing element,
- said supply spool having a core on which ribbon is wound,
- said supply spool being rotatable about a post,
- said core having an axial length greater than the width of the ribbon wound thereon whereby a terminal portion of its length extends beyond said wound ribbon,
- a circumferential groove in said terminal core portion,
- a fixed drag post in said cartridge extending parallel to the axis of said supply spool core and spaced therefrom a distance exceeding the radius of a fully wound supply spool,
- said drag post being fixed against both translational and rotational movement relative to said post,
- and a stretched O-ring of resilient material mounted in said groove and trained about said drag post.

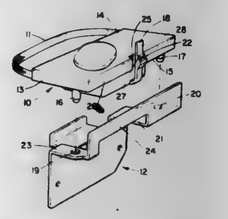


4,408,914

PRINTER RIBBON CARTRIDGE MOUNTING ASSEMBLY

Allen R. Ciesiel, Arlington Heights; Richard E. LaSpesa, and Ruperto B. Zolavvar, both of Chicago, all of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Sep. 29, 1982, Ser. No. 427,211
Int. Cl.³ B41J *32/00, 35/28*
U.S. Cl. 400—208 **9 Claims**



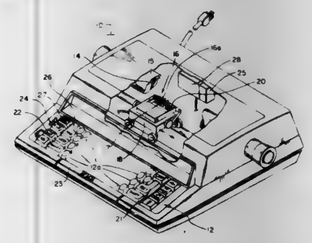
1. A printer ribbon cartridge mounting assembly comprising:
- a printer ribbon cartridge housing arranged to house a printer ribbon;
- a pair of guide pins projecting from the bottom surface of the housing;
- a resilient cantilevered tab projecting from the bottom surface of the housing and extending substantially parallel to a side of the housing and past the top surface of the housing;
- a mounting bracket having a pair of openings arranged to accommodate the guide pins and further having an aperture arranged to accommodate a portion of the resilient tab; and
- an uneven surface located on the resilient tab, a portion of the uneven surface arranged to enter the aperture and engage the bracket when the guide pins are inserted into their respective openings thereby locking the housing to the bracket.

4,408,915

REVERSE TAB CONTROL SYSTEM FOR TYPEWRITERS

Michael H. Smith, New Milford, Conn., assignor to SCM Corporation, New York, N.Y.

Filed Aug. 17, 1981, Ser. No. 293,747
Int. Cl.³ B41J *25/18*
U.S. Cl. 400—290 **7 Claims**



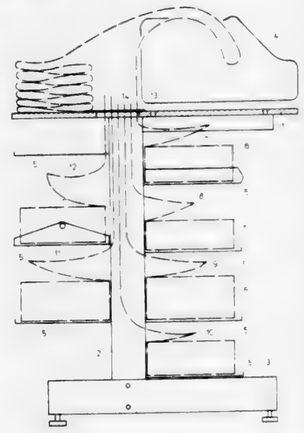
1. A tab control system for a typewriter comprising a keyboard containing character keys; type elements and a carrier therefor; mechanical striking means attached to said carrier and capable of striking said type elements against a platen in accordance with characters selected on said keyboard; said carrier, said mechanical striking means, and said type elements being arranged to move axially with respect to said platen, said carrier also being arranged to move a predetermined distance in a predetermined direction with the striking of any character of said type element means against said platen, said keyboard having:
- (a) tab set means for manually presetting a plurality of tab stop positions of said carrier with respect to said platen,
- (b) tab clear means for manually clearing any of said plurality of said tab stop positions, when set,
- (c) tab actuating means responsive to a first kind of manual actuation thereof for moving said carrier to any of said plurality of preset tab stop positions,
- said system including tab control means for moving said carrier from its present position to the closest preset tab stop position in said predetermined direction upon each manual actuation of said tab actuating means, said tab control means also being arranged to move said carrier to the closest predetermined tab position in a direction opposite to said predetermined direction and for rotating said platen through a predetermined angle so as to cause any type-receiving medium positioned around said platen to move to a lower line position with respect to said carrier, upon a second kind of manual actuation of said tab actuating means, and for moving said carrier to the closest predetermined tab position in said opposite direction and without rotating said platen, upon each manual actuation of said tab actuating means directly after said second kind of manual actuation thereof.

4,408,916

FEED-IN DEVICE FOR CONTINUOUS FORMS FOR A PRINTER

Manfred Burgert, Obere Breitensteinstrasse 16, 8201 Kolbermoor, Fed. Rep. of Germany

PCT No. PCT/DE80/00135, § 371 Date May 13, 1981, § 102(e) Date May 13, 1981, PCT Pub. No. WO81/00830, PCT Pub. Date Apr. 2, 1981
PCT Filed Sep. 18, 1980, Ser. No. 269,035
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1979, 2937687
Int. Cl.³ B41J *15/04, 15/18*
U.S. Cl. 400—613.2 **5 Claims**



1. Apparatus for the feed of continuously connected form strips to a printing device, comprising means for guiding said strips to said printing device, means for positioning said strips below the guiding means, and means included in said guiding means for individually retaining a plurality of said strips ex-

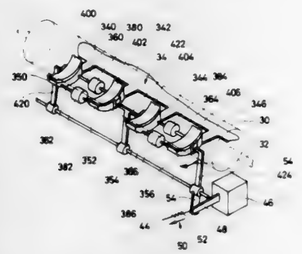
tending vertically through and terminating above said guiding means, said strips being from separate sources, and held in position for being grasped individually by a user for subsequent feed to said printing device.

4,408,917

PAPER GUIDE MECHANISM IN A PRINTER

Hiroji Iwai, Yamatokoriyama, and Hirotoshi Matsui, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1982, Ser. No. 346,188
Claims priority, application Japan, Feb. 9, 1981, 56-17496[U]
Int. Cl.³ B41J *13/048*
U.S. Cl. 400—637.2 **4 Claims**



1. A paper guide mechanism for guiding a paper sheet around the surface of a platen in a printer, comprising:

at least one paper feed roller disposed below said platen, the axis of said paper feed roller being fixed with respect to the axis of said platen;

at least one guide plate disposed below said platen juxtapositioned to said at least one feed roller, said guide plate being slidably superimposed on a corresponding stationary guide member, the face of said guide plate being shaped to accommodate the surface of said platen while maintaining a predetermined distance therebetween; and

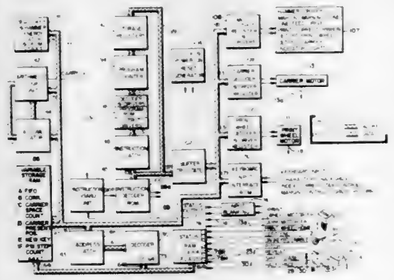
shift means for shifting said slidable guide plate relative to said stationary guide member and along the surface of said platen toward the front portion of said platen.

4,408,918

HALFSPACE CONTROL SYSTEM FOR ELECTRONIC TYPEWRITER WITH CORRECTION REGISTER

Michael H. Smith, New Milford, Conn., assignor to SCM Corporation, New York, N.Y.

Filed May 1, 1981, Ser. No. 259,722
Int. Cl.³ B41J *29/16*
U.S. Cl. 400—697.1 **6 Claims**



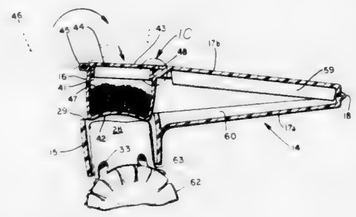
1. A halfspace control system for a typewriter comprising a keyboard containing character keys; an electronic system responsive to electrical outputs from said keyboard for generating control signals; mechanical striking means capable of striking any of the characters from said keyboard against a platen and moving across said platen, said mechanical striking means being responsive to said control signals for striking selected characters, corresponding to those selected upon operation of said keyboard, against said platen and moving a predetermined distance in a predetermined direction across said platen upon the striking of each character against said platen; storage means within said electronic system for storing and continuously updating its storage of the last plurality of characters struck against said platen; backspace and correction means within said electronic system for selectively causing said striking means to move in discrete steps, each step being of said predetermined distance, in a direction opposite to said predetermined direction and for selectively restriking the characters stored in said storage means in registration with the respective positions previously struck against said platen; a halfspace manually controllable input means within said typewriter; and halfspace control means within said electronic system responsive to a first operation of said halfspace input means for (A) causing said mechanical striking means to move across said platen by one-half said predetermined distance and (B) erasing the contents of said storage means in conjunction with execution of said half-distance motion of said striking means across said platen.

4,408,919

CORN BUTTERING AND SALTING APPARATUS

Martin J. Wolff, North Providence, and Joseph S. Falvo, Johnston, both of R.I., assignors to Dart Industries Inc., Northbrook, Ill.

Filed Oct. 9, 1981, Ser. No. 310,297
Int. Cl.³ A47G *21/06*
U.S. Cl. 401—12 **11 Claims**



1. Apparatus for applying butter and salt to an article such as an ear of corn or the like, comprising:

first means defining a butter receptacle having a butter receiving opening for receiving a quantity of butter or the like, and having a butter dispensing opening for dispensing the butter onto the article;

second means defining a salt receptacle for receiving a quantity of salt or the like;

means movably interconnecting said first means and second means and selectably movable either to a first position permitting butter to be inserted in said butter receiving opening, or to a second position entering said butter receiving opening to urge the butter toward said dispensing opening, so that said salt receptacle is operable to dispense butter from said butter receptacle; and

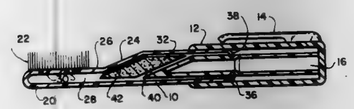
a salt dispensing opening on said salt receptacle unobstructed by said butter receptacle while said salt receptacle remains in said butter receptacle.

4,408,920

POCKET TOOTHBRUSH

Mike C. Walther, and Manuel A. Mena-Reyes, both of Bronx, N.Y., assignors to Ready Brush, Inc., New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 269,246
Int. Cl.³ A46B *11/04, 17/04*
U.S. Cl. 401—176 **6 Claims**



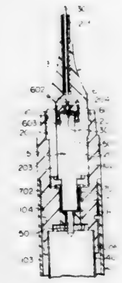
1. A pocket toothbrush having an exterior structure resembling a traditional fountain pen case including a removable cylindrical end cap cover, a main cylindrical body shaft over at least one end of which said end cap cover fits and having exterior protruding means engagable with the interior of said end cap cover to retain said end cap cover, said cylindrical body shaft having a cross section at one end which is reduced to substantially a minor segment of a circle, said reduced section end having toothbrush bristles extending transversely and confined within the circular profile of the transverse section of the remainder of the main cylindrical body shaft, said cylindrical end cap cover being adapted to cover said reduced section end and said bristles when placed over said reduced section end and engaged with said protruding means on said body shaft, said end cap cover being adapted to be attached to the end of said body shaft opposite to said reduced section end by telescoping over said opposite end of said body shaft, said cylindrical body shaft including an interior passage extending into said reduced section end and having at least one termination opening in the area at the base of said toothbrush bristles, means for feeding toothpaste through said passage and through said opening into said bristles at the time of use, said interior passage in said cylindrical body shaft being widened out to a full cylindrical bore at the end opposite said reduced section end, said means for feeding the toothpaste through said passage comprising a movable plunger extending into said cylindrical bore in said main cylindrical body shaft, said full cylindrical bore including an interior space for the accommodation of a charge of toothpaste to be fed to said bristles by the operation of said movable plunger, said interior space for the charge of toothpaste being defined by the inner end of said full cylindrical bore and by the inner end of said plunger as essentially a cylinder with substantially parallel axially oppositely aligned faces which are tilted substantially away from a plane normal to the cylinder axis to provide substantially slanted opposing cylinder faces, one of said faces being defined by the interior end of said plunger, and the other one of said cylinder faces being defined by the inner end of said full cylindrical bore in the transition of said interior passage to the portion connected to said termination opening at the base of said toothbrush bristles, said toothbrush bristles being of graded lengths when viewed in an end profile and with the longest bristles being positioned at the center and successfully shorter bristles positioned towards the sides so that the tips of said bristles form a semi-circular end profile to fit within said cylindrical end cap cover.

4,408,921

DETACHABLE HEAD MEMBER HAVING SLIT STRUCTURE

Masahiko Nagai, Tokyo, Japan, assignor to Ogawa Chemical Industries, Ltd., Tokyo, Japan

Filed Nov. 9, 1981, Ser. No. 319,316
Claims priority, application Japan, Nov. 13, 1980, 55-163186[U]
Int. Cl.³ B43K *3/00, 8/02*
U.S. Cl. 401—198 **2 Claims**



1. A marking pen including a head seat member extending from the top portion of a shaft tube and threadedly engaged therewith in an axially movable manner, and a tip member extending through said head seat member and removably mounted thereto, permitting the length of the top portion of said tip member projecting from said head seat member to be adjusted which comprises:

a projecting structure adapted to come in contact with the top portion of the inner surface of said shaft tube, said structure being provided in the outer circumferential surface of the engaging tube of said head seat member,

at least one axially elongated slit means provided in the said engaging tube of said head seat member and extending substantially to the end thereof, said engaging tube being engaged with said shaft tube and being deformable because of said slit means,

an ink guide core fixed within said shaft tube and communicating with an ink reservoir member disposed in said shaft tube, the top portion of said ink guide core being provided with a small-diameter central opening which is adaptable to the diameter of said tip member, said opening having a conical, inclined surface, and

a collector having an aperture adapted to accommodate the diameter of said ink guide core at the base part side of said central opening opposite said conical surface, said collector being positioned over and fixed to the top portion of said ink guide core, the base portion of said tip member projecting from said head seat member extending through said collector for connection with said ink guide core.

4,408,922

COUPLER

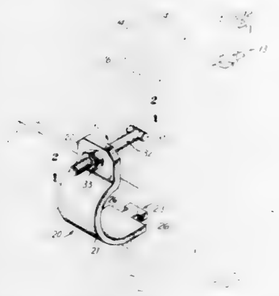
Michael S. D'Alessio, Flushing, N.Y., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Feb. 6, 1981, Ser. No. 232,318
Int. Cl.³ F16B *2/02*
U.S. Cl. 403—12 **31 Claims**

30. In combination, a shoring or scaffolding stanchion having a vertical T-slot extending therealong adapted to receive the head end and a portion of the shank of a bolt, and a coupler, the coupler comprising

collar means extending part way around the circumference of tubing to engage said length of tubing and to hold the same against said stanchion, said collar means having first and second ends;

engaging means formed at said first end of said collar means adapted to be insertable into said vertical T-slot to hold said first end of the collar means provisionally by achieving a provisional purchase against the stanchion and preventing the coupler from sliding in the T-slot, and to securely hold said first end in said T-slot after said collar means engages said tubing;



securing means at the second end of said collar means permitting engagement of said second end with said T-slot for securing said collar means and said length of tubing firmly in place against said stanchion; and

means for preventing said engaging means from disengaging from said provisional purchase while said securing means is being engaged with said T-slot.

4,408,923

FITTING FOR CONNECTING TWO VERTICALLY ABUTTING BODIES OF FURNITURE

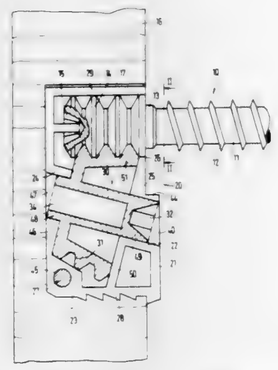
Eberhard Kubler, Frommern, Fed. Rep. of Germany, assignor to Hafele KG, Nagold, Fed. Rep. of Germany

Filed Mar. 9, 1981, Ser. No. 241,928

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 8006733[U]

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—20 **12 Claims**



1. Connection fitting for disconnectible joining two vertically abutting pieces of furniture in their region of contact, in which one furniture piece is provided with a projecting fastener bolt having a fastening head thereon, and the other furniture piece is provided with a cup-shaped casing in a cavity, said casing enclosing rotatably mounted tensioning means, and in which the head of the fastener bolt is in operative connection with the tensioning means and is adapted to be pulled into the casing by the rotational movement of the tensioning means, characterized in that the fastening head of the fastener bolt (**10**) is provided with external ribs (**14**) the individual ribs being circumferential and perpendicularly directed to the longitudinal axis of the fastener bolt (**10**), the tensioning means being constructed in the form of a worm (**30**) the screw thread (**31**) of which are adapted to mesh with said external ribs (**14**) of the fastening bolt (**10**), and that the fastener bolt (**10**) is adapted to be inserted from the front side of the casing (**20**), and the worm (**30**) is rotatable from said front side.

4,408,924

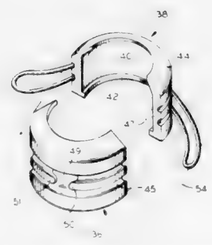
SPLIT COLLAR

Richard Huebner, New Berlin, Wis., assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Aug. 25, 1982, Ser. No. 411,547

Int. Cl.³ F16B *2/08*

U.S. Cl. 403—23 **12 Claims**



1. A collar for surrounding an article comprising:

first and second collar sections having abutting edges, internal surfaces and external surfaces, the internal surfaces of said collar sections being adapted to surround said article when said abutting edges are adjacent one another and said internal surfaces defining an opening through said collar to accommodate said article;

groove means formed in said external surfaces of said collar sections and lying in a plane which is perpendicular to said opening, said groove means comprising a pair of parallel and spaced apart grooves extending about said external surfaces,

coupling means on one of said first or second collar sections;

elastic means coupled to said coupling means and surrounding said first and second collar sections in said groove means and holding said collar sections together about said article.

4,408,925

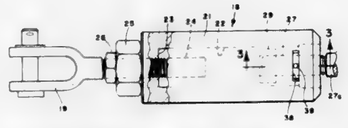
CABLE TENSION METER

Edmund A. Louie, San Jose, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 22, 1981, Ser. No. 276,238

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—27 **2 Claims**



1. In a turnbuckle assembly having a sleeve, a first coupler threadedly connected to one end of said sleeve, a second coupler spaced from said first coupler and connected to the other end of said sleeve, said couplers being adapted to be connected to externally anchored tension members, said sleeve being rotatable relative to said couplers for shortening the distance therebetween and subjecting the members to a tension force,

the improvement of means for indicating the application to said members of a tension force of predetermined value comprising:

first abutment means on the inner end of the second coupler,

second abutment means on said sleeve at said other end thereof,

spring means comprising a plurality of concave-convex washers between and in engagement with said first and second abutment means adapted to be compressed with a force proportional to the tension force on said members upon rotation of said sleeve relative to said members,

means responsive to compression of said spring means upon rotation of said sleeve relative to said members for indicating attainment of the tension force of predetermined value on said members,

one of said washers having a convex surface proximate to said second abutment means, a plane washer being disposed between said convex surface and said second abutment means, said plane washer being spaced from said convex surface when the compression force in said spring means is less than the predetermined value and engaging said convex surface when said compression force is equal to the predetermined value, and

means connected to said plane washer for indicating contact of said surface with said plane washer whereby to indicate a pre-load tension force of said predetermined value on said members.

4,408,926

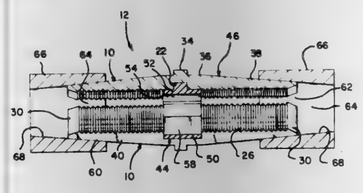
AXIAL CRIMP CONNECTION DEVICE

Walter M. Werner, Downingtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 26, 1981, Ser. No. 267,212

Int. Cl.³ F16B *2/02*

U.S. Cl. 403—310 **2 Claims**



1. A device for connecting two cylindrical objects together, said device comprising:

a. a jaw assembly of three elongated jaw segments, each segment having a first, U-shaped surface and generally opposite thereto a second surface which is curved from one side to the other and is beveled towards the first surface from adjacent the midpoint out to each end, said segments being joined together to form a jaw assembly having an interior passage adapted to receive cylindrical objects from each end and an outer, cylindrical surface which is tapered from adjacent the midpoint to the ends;

b. a spacer of compressible material having three sides with flanges extending outwardly from the corners thereof, said spacer being positioned in the assembly with each flange between adjacent segments for holding the segments together in spaced apart fashion; and

c. a pair of collars, each having a tapered passage therethrough, said collars being slidably mounted on each end of the jaw assembly with the wider end of the passage being placed on the assembly first so that upon driving the collars along the tapered surface of the assembly towards the midpoint, the jaw segments are axially compressed onto cylindrical objects which may be placed in the passage of the assembly.

4,408,927

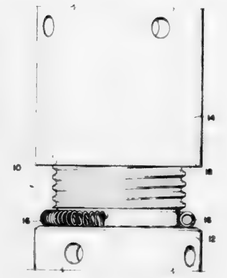
THREADED JOINT TOGGLE-LOCKED WITH A HELICAL SPRING

Igor Fraiberg, Fort Worth, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Aug. 17, 1981, Ser. No. 293,517

Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*

U.S. Cl. 403—320 **6 Claims**



1. A threaded joint comprising:

(a) a pair of threaded members that thread together;

(b) a circumferential confining member that creates an annular cavity as said pair of threaded members are assembled; and

(c) a latching means, that fits within said annular cavity, that requires the application of a torque to disassemble said threaded joint that is in excess of the torque required to assemble said joint.

4,408,928

CONNECTOR HAVING BENDING MEANS

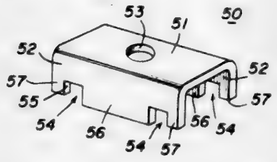
Mark H. Steinke, North Aurora, Ill., assignor to Lyon Metal Products, Incorporated, Aurora, Ill.

Division of Ser. No. 28,977, Apr. 11, 1979, Pat. No. 4,278,361.

This application Mar. 20, 1981, Ser. No. 245,900

Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*

U.S. Cl. 403—405 **3 Claims**



1. A connector for use in connecting a channel member to a support member wherein the channel member has spaced-apart wall portions defining therebetween a slot with each of said wall portions having a flange thereon extending therefrom and with the support member being provided with adjustable fastening means for extending into the slot, said connector comprising a U-shaped body member dimensioned and arranged to be disposed in a connecting position within the channel member transversely across the slot and engageable with the fastening means for interconnection with the support member, said body member including an end wall and two side walls, said end wall having an aperture therein which receives the associated fastening means, said body member having bending means thereon engageable with the flanges when said body member is disposed in its connecting position for bendingly deforming the flanges when said connector and the support member are moved together by the fastening means, thereby firmly to interconnect said connector and the channel member and the

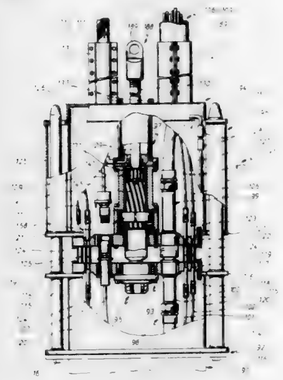
support member in an assembled condition, said bending means comprising two substantially rectangular recesses respectively formed in said side walls and respectively accommodating the flanges therein when said body member is disposed in its connecting position, the width of each of said notches being greater than the width of the projection of each flanges on its associated wall portion.

4,408,929

LATCHING SYSTEM FOR CONTROL LINES FOR PIPE-LAYING BARGES

Hollis A. Baugh, Rte. 1, Box 227, Hempstead, Tex. 77445

Filed Jan. 22, 1982, Ser. No. 341,631
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—166 **21 Claims**



1. A latching system for releasably connecting at least two conduits, comprising:

a base member having at least one upwardly extending conduit and a locking plate supported thereon;

a latching support member including at least one downwardly extending conduit and having a locking mandrel depending therefrom;

means for moving said locking mandrel downwardly through said locking plate; and

means for rotating in a first direction said locking mandrel into locking engagement with said locking plate, whereby the at least two conduits are releasably connected by the engagement of the locking mandrel with the locking plate.

4,408,930

DEVICE FOR DAMPING IMPACTS BETWEEN A LOAD AND A FLOATING SUPPORT WHEN THE LOAD IS REMOVED

Jean-Louis Ninet, and Robert Vaillant, both of Nantes, France, assignors to Societe Anonyme dite Ateliers et Chantiers de Bretagne-ACB, Nantes, France

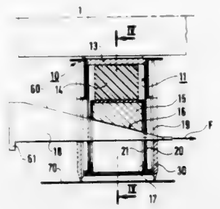
Filed Aug. 24, 1981, Ser. No. 295,453
Claims priority, application France, Dec. 23, 1980, 80 27348
Int. Cl.³ E02B *17/08*
U.S. Cl. 405—209 **2 Claims**

1. A device for damping impacts between a load and an underlying floatingg support at a load bearing point while the load is being removed from said support, said support including at least one housing extending vertically upwardly therefrom on which the load rests and defining a load bearing point, said device comprising:

a damping component mounted within said housing for movement towards and away from said load, and

a wedge operatively engaging said damping component for movement horizontally, and

means for subjecting said wedge to a horizontal traction force to automatically and irreversibly insert said damping component between said load and its bearing point on the



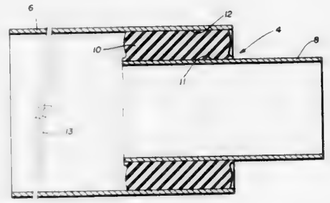
floating support as soon as the load is removed from said floating support.

4,408,931

SHOCK CELL PRODUCT

Raymond F. Leblanc, North Canton, and William T. Cummins, Mogadore, both of Ohio, assignors to Teledyne Industries Inc., Los Angeles, Calif.

Filed Apr. 27, 1981, Ser. No. 257,881
Int. Cl.³ E02B *3/20*
U.S. Cl. 405—213 **3 Claims**



1. Energy-absorbing shock cell construction for mounting bumper devices on legs of offshore oil rig structures including an inner small diameter metal pipe member, an outer large diameter metal pipe member, an annular sleevelike rubber body located between telescoped end portions of said inner and outer pipe members, an adhesive vulcanized bond between said sleevelike rubber body and one of the pipe members, an adhesive post-vulcanized-bond between said body and the other pipe member, and said sleevelike rubber body being maintained under compression between said vulcanized bonds with said inner and outer pipe members to absorb energy by deflection of the rubber under compression when external force is applied to the outer end of the inner pipe member.

4,408,932

SUBSEA TEMPLATE LEVELLING SYSTEM AND METHOD

William S. Cowan, West University Place, Tex., assignor to Armco Inc., Middletown, Ohio

Filed Dec. 30, 1980, Ser. No. 221,398
Int. Cl.³ E02B *17/08*; E02D *27/52*
U.S. Cl. 405—227 **49 Claims**

1. A template levelling system for levelling a template on a plurality of piles implanted in the floor of a body of water, the combination comprising:

an open ended hub having a pile received therein;

means for pivotally coupling said hub to the template in a passageway in the template;

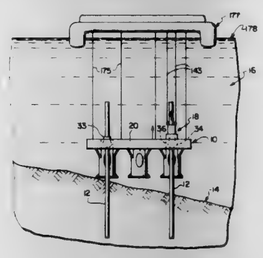
first gripping means, coupled to said hub, for releasably gripping the pile received in said hub;

a housing;

means for releasably coupling said housing to said hub;

second gripping means, slidably received in said housing, for releasably gripping the pile received in said hub;

means on the exterior of said second gripping means and on the interior of said housing for limiting the slidable move-



ment of said second gripping means relative to said housing; and

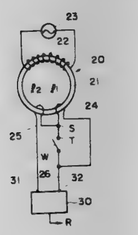
means for unlocking and locking said first and second gripping means and for reciprocating said second gripping means relative to said housing to raise and lower the template relative to the pile received in said hub.

4,408,933

CONTACT DETECTING APPARATUS

Tamaki Tomita, Okazaki; Hisaji Nakao, Toyota; Hideo Nishimura, Aichi; Kunihiko Eto, Toyota, and Haruo Ohmura, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 10, 1981, Ser. No. 356,818
Claims priority, application Japan, Mar. 10, 1981, 56/34197
Int. Cl.³ B23B *39/04*; G01R *31/02*; G08B *21/00*
U.S. Cl. 408—8 **4 Claims**



1. In a machine tool including a machine body, a work table mounted on said machine body for mounting thereon a workpiece to be machined, a spindle head mounted on said machine body, a tool spindle rotatably supported in said spindle head for supporting a tool, and control means for effecting relative movement between said work table and said tool spindle, a contact detecting apparatus comprising:

an AC power source;

a magnetic coil mounted on the periphery of said spindle head and connected to said AC power source for generating an induced current in a looped secondary circuit including the workpiece, work table, machine body, spindle head, tool spindle and tool, when said workpiece and said tool are moved relatively into contact with each other, and for generating a potential between the tool and the workpiece when said tool and said workpiece are not in contact;

a first conductive wire forming a secondary winding of one turn in parallel relationship with said looped secondary circuit and having a potential induced across said first conductive wire by energization of said magnetic coil;

a second conductive wire connected at one end thereof to said looped secondary circuit; and

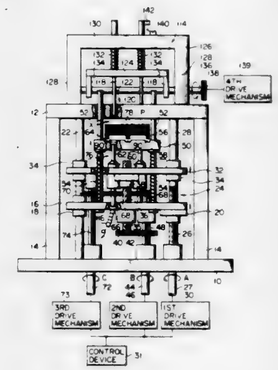
detecting means connected to said first and second conductive wires for detecting contact between said workpiece and said tool based on the difference between the potential across said tool and said workpiece and the potential induced across said first conductive wire.

4,408,934

DRILLING MACHINE

Hiroshi Ohba, and Shigeo Wakamatsu, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 4, 1981, Ser. No. 260,396
Claims priority, application Japan, May 9, 1980, 55-61329
Int. Cl.³ B23B *39/16, 47/26*; B26D *7/02*
U.S. Cl. 408—51 **20 Claims**



1. A drilling machine for drilling a stack of paper, which comprises:

a fixing frame including a base plate and an upper plate disposed above and substantially parallel to the base plate;

a pressing plate disposed within the fixing frame, substantially parallel to the upper plate and the base plate, movable between the upper plate and base plate along an axis perpendicular to the base plate, paper to be drilled being disposed between the pressing plate and the upper plate;

a first movable member disposed between the pressing plate and base plate, and movable along said axis;

elastic supporting means disposed between the pressing plate and first movable member, for biasing the pressing plate toward the upper plate;

a second movable member movable along said axis;

a drilling mechanism rotatably supported by said second movable member and movable along said axis with said second member for drilling the stack of paper pressed by the pressing plate;

a first driving mechanism for moving said first movable member in a direction to compress the stack of paper and in the other direction to release the stack of paper from said compression;

a second driving mechanism for driving said second movable member to move in a direction to cause said drilling mechanism to drill the stack of paper and another direction to separate said drilling mechanism from the stack of paper; and

a control device for causing said first and second driving mechanisms simultaneously to drive said first and second movable members respectively in said other directions, whereby the stack of drilled paper is released from said compression and said drilling mechanism is separated from the stack of drilled paper.

4,408,935

METAL BORER

Masaaki Miyanaga, Ashiya, Japan, assignor to Kabushiki Kaisha Miyanaga, Hyogo, Japan

Filed Mar. 11, 1981, Ser. No. 242,465
Claims priority, application Japan, Dec. 10, 1980, 55-174956
Int. Cl.³ B23B *41/02*
U.S. Cl. 408—206 **1 Claim**



1. A borer for making an annular cut in a material, said borer comprising a tubular body that is rotatable on its tubular axis and is movable axially forwardly into the material, a plurality of circumferentially spaced blade portions at the forward end of said body, said spaced blade portions forming generally axially extending channels therebetween, said channels being on the outer side of said body and being open at the forward and rearward ends thereof, each of said blade portions forming a sharpened cutting edge at its corner which is forwardmost and advanced in the direction of rotation, a first plurality of said cutting edges being on the radially inner side only of said blade portions and a second plurality of said cutting edges being on the radially outer side only of said blade portions, adjacent cutting edges of said first plurality having cutting edges of said second plurality therebetween whereby said cutting edges of said first and second pluralities alternate around the circumference of said body, the radial width of each cutting edge on said inner side being substantially equal to the radial width of each cutting edge on said outer side, the axial length of each cutting edge on said outer side being greater than the axial length of each cutting edge on said inner side, each cutting edge on said inner side forming a predetermined angle with respect to a radial plane, and at least a portion of each cutting edge on said outer side forming substantially the same angle with the radial plane, the contours of said cutting edges including straight lines connected by angles, and all of said angles being obtuse.

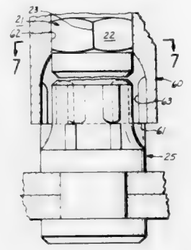
4,408,936

TORQUE-LIMITED THREADED LOCKING FASTENER, AND METHOD FOR SETTING THE SAME

Herman L. Williamson, Seal Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.

Filed Jan. 15, 1981, Ser. No. 225,356
Int. Cl.³ F16B *39/02*
U.S. Cl. 411—3 **11 Claims**

1. A torque-limited threaded locking fastener comprising:
a shank member having an axis, a head adjacent to one end, and an external thread adjacent to the other end thereof, said thread having a plurality of convolutions, at least one of said convolutions when viewed axially being non-circular;
a collar member comprising a nut section having an axially extending internal thread and at least one integral external rib projecting beyond the outer wall of said nut section and so disposed and arranged as to be axially aligned with the non-circular thread when said nut is fully engaged to said shank member, a drive section having an internal passage aligned with and larger than said internal thread, and a non-circular driver-engaging surface to receive a driver for applying torque to said drive section, and a shear section joining said nut section and drive section, said shear section having the least resistance to torque of said sections whereby to fracture when a predetermined torque is applied to said drive section;



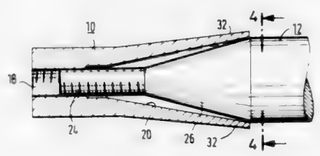
said rib being so proportioned and arranged that when a swaging tool is applied to displace the rib material radially inward thereby to displace material of which the nut section is made into said non-circular thread to lock said nut section to said thread after it does so, but only after, the drive section has torqued off, and without increasing the torque which existed when said shear section fractured;
the material of said rib and of said nut section being sufficiently ductile to enable said rib to be swaged inwardly.

4,408,937

ANCHOR BOLT

Volker Hainke, Lilienthalstrasse 16, 4800 Bielefeld 11, and Hans U. Hainke, Bielefeld, both of Fed. Rep. of Germany, assignors to Hainke Volker, Bielefeld, Fed. Rep. of Germany

Continuation of Ser. No. 108,884, Dec. 31, 1979, abandoned.
This application Jan. 29, 1982, Ser. No. 343,808
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—42 **6 Claims**



1. An anchor bolt for anchorage in a bore, comprising
(a) a tension rod having a male screw-threaded portion terminating in a frusto-conical head portion diverging therefrom at a first angle of conicity; and
(b) a sleeve of polygonal cross-section having a female screw-threaded portion for engagement with said male screw-threaded portion of said tension rod, said female screw-threaded portion terminating in a frusto-conical bore diverging therefrom at a second angle of conicity less than said first angle, for engagement with said head portion of said tension rod;
(c) axially parallel grooves being provided in the polygonal sides of said sleeve so as to define outwardly cornered segments therebetween, the conicity of said frusto-conical bore and the depth of said grooves being so selected that they converge to a substantial degree at the end of said bore remote from said female screw-threaded portion,

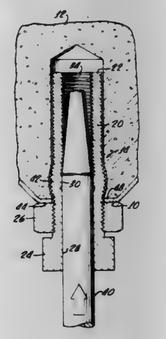
whereby, upon engagement of said head portion against said bore, said segments are forced arcuately outwardly by sequential tearing of said grooves from the trailing end to the leading end of said sleeve.

4,408,938

EXPANSION SLEEVE

James V. Maguire, 16862 Pacific Coast Hwy., Huntington Beach, Calif. 92549

Filed Aug. 24, 1981, Ser. No. 295,724
Int. Cl.³ F16B *13/10*
U.S. Cl. 411—71 **7 Claims**



1. An expansion sleeve comprising
a hollow elongated member having inner and outer ends and a bore,
projection means formed in said bore between said sleeve ends and projecting inwardly to form an opening smaller than the diameter of said bore, whereby a tapered tool may be driven into said bore and through said opening of said projection means to expand a portion of said sleeve adjacent said projection means,
means for pulling said sleeve outwardly of a sheet member having a hole through which said sleeve has been inserted to press said expanded sleeve section against said sheet member,
said sleeve being internally threaded for at least a portion of its length between said projection means and said inner end, whereby said opening in said projection means may be expanded by said tool to the size of said bore and an externally threaded hanger may be inserted through said outer end into threaded engagement with said internal threaded portion of said sleeve to maintain said expanded sleeve portion in expanded condition and to urge said inner end and said expanded sleeve portion against said sheet.

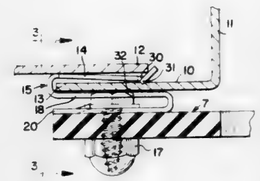
4,408,939

COMPOSITE FASTENER FOR ATTACHING SPLASH GUARD

Henry W. Graff, Elgin, and Lloyd A. Erickson, Park Ridge, both of Ill., assignors to Pathfinder Auto Lamp Company, Niles and Illinois Tool Works Inc., Chicago, both of, Ill.

Filed Mar. 5, 1981, Ser. No. 240,801
Int. Cl.³ F16B *37/04*
U.S. Cl. 411—112 **6 Claims**

1. A composite fastener for use in attaching a splash guard to a free edge of an exposed flange in vehicle wheel well, comprising, in combination: a sheet metal S-clip; a washer head screw; and, a nut for said screw; said sheet metal S-clip having planar generally parallel outer legs and a planar intermediate leg, said intermediate leg having a first slot therein extending inwardly from one end of said intermediate leg toward the opposite end thereof and said first slot having a width to slidably receive the head of said washer head screw without permitting rotation of said screw therein, and the end of said first slot adjacent said one end of said intermediate leg being open and merging into an opening in the adjacent loop connecting said one end of said intermediate leg with the proximal end of a first one of said outer legs, and the second and remaining outer leg having a second slot therein open at one end and extending inwardly from the distal end of said second outer



leg, said first and second slots being in overlying registration, the shank of said screw being received in said second slot and projecting from said second outer leg and said S-clip at approximately a right angle thereto, said free edge of said wheel well flange being receivable in the space between said first outer and intermediate legs, said screw shank being passable through said splash guard, and said nut being retaied on the distal end of said screw shank.

4,408,940

BOLT ANCHOR ASSEMBLY

Mark L. Fischer, P.O. Box 627, Merton, Wis. 53056

Filed Sep. 8, 1981, Ser. No. 300,011
Int. Cl.³ F16B *39/22*
U.S. Cl. 411—258 **5 Claims**



1. A bolt anchor assembly comprising
an anchor member adapted to be imbedded in concrete and a bolt positioned within said anchor member and extending beyond the end of the anchor member for attaching a machine to a concrete surface,
said anchor member including a hollow tubular portion and a base plate secured to the bottom of said tubular portion, said hollow tubular portion having inside diameter greater than the diameter of said bolt,
said base plate having a central opening and extending outwardly beyond the outside perimeter of the tubular portion, and
said bolt having a head at one end and a threaded section at the other end, said bolt being positioned in said opening with the head of said bolt bearing on the bottom of said base plate, whereby said base plate and the head of said bolt will become imbedded in the concrete.

4,408,941

EYEBOLT

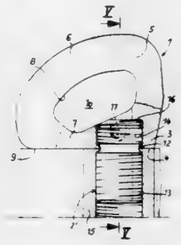
Heinz D. Motz, Solingen, Fed. Rep. of Germany, assignor to Firma Friedrich Schroeder, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 237,462

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1980, 3009789

Int. Cl.³ F16B *35/00*

U.S. Cl. 411—378 **15 Claims**



1. An eyebolt adapted to be connected to a load and to be coupled to a load hoisting means, comprising a threaded shank connected by a constricted portion to a one-piece eye portion having an eye opening therein and having a shoulder which limits the depth of screwing of the threaded shank and which shoulder is adapted to rest against the load, the inner surface of the eye opening which faces away from the threaded shank being so curved that its center is located at least approximately in the plane of the underside of the shoulder facing the threaded shank and aligned with the axis of the threaded shank.

4,408,942

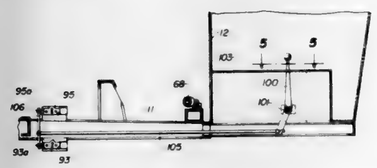
CONTROL LINKAGE FOR TWO FUNCTION BALE PICKUP

L. Dennis Butler, Kingsburg, and J. Dwayne Wells, Selma, both of Calif., assignors to Sperry Corporation, New Holland, Pa.

Filed Jun. 23, 1981, Ser. No. 276,603

Int. Cl.³ A01D *87/12*

U.S. Cl. 414—24.5 **8 Claims**



6. In a bale wagon for picking up round bales of crop material from the field, accumulating a plurality of said round bales and transporting the accumulated bales to a preselected storage location to be unloaded from the bale wagon, the bale wagon having a mobile frame adapted for movement across a field; a bale pickup means mounted on said frame for individually engaging bales of crop material on the ground and elevating said bales onto the bale wagon; a load bed supported on said frame for accumulating a plurality of said bales, said load bed including a receiving portion on which said bale pickup means deposits bales picked up from the field; means for arranging and positioning bales deposited on said load bed by said bale pickup means; and power means for operatively powering said bale pickup means and said means for arranging and positioning said bales, an improved bale pickup means comprising:

a subframe pivotally mounted by a pivot on said frame for movement in a generally vertical plane, said subframe including a first arm projecting from said subframe and a spaced apart second arm pivotally connected to said subframe for movement toward and away from said first arm;

a first hydraulic cylinder interconnecting said subframe and said second arm for moving said second arm relative to said first arm to releasably engage a bale of crop material therebetween;

a second hydraulic cylinder interconnecting said mobile frame and said subframe for rotating said subframe about said pivot to elevate a bale of crop material engaged between said first and second arms from the field to a position on said receiving portion of said load bed;

a first control valve supported on said frame in operative communication with said first hydraulic cylinder to control the flow of hydraulic fluid thereto;

a second control valve supported on said frame and spaced from said first control valve, said second control valve being in operative communication with said second hydraulic cylinder to control the flow of hydraulic fluid thereto;

a control lever mounted on said mobile frame for selective movement in first and second generally opposing directions; and

a linkage assembly interconnecting said control lever and said first and second control valves to effect operation thereof by the selective movement of said control lever, said linkage assembly including a cross link interconnecting said first and second control valves and a connecting link interconnecting said cross link and said control lever to transfer movement from said control lever to said cross link, said connecting link being connected to said cross link at a point closer to said first control valve than to said second control valve.

4,408,943

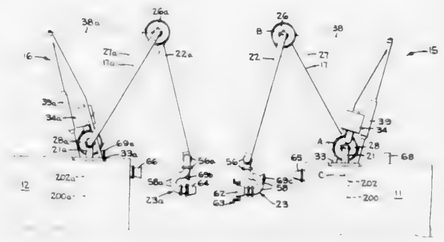
SHIP-TO-SHIP FLUID TRANSFER SYSTEM

Louis S. McTamaney, Cupertino, and Frank P. Haley, Upland, both of Calif., assignors to FMC Corporation, Chicago, Ill.

Filed Feb. 27, 1981, Ser. No. 238,772

Int. Cl.³ B65G *67/60*

U.S. Cl. 414—138 **10 Claims**



1. A ship-to-ship fluid transfer system having remote control means for connecting a loading arm on one ship with a storage facility on another ship, said system comprising:

an articulated loading arm;

means for mounting said loading arm on a first ship;

a receiving means;

means for connecting said receiving means to said storage facility on a second ship;

means for sensing the distance and the direction of said receiving means relative to an outboard end of said loading arm and for developing signals proportional to said distance and to said direction;

means for using said signals from said sensing means to move said outboard end of said loading arm into operating engagement with said receiving means;

means for storing a set of parameters of a safe operating boundary for said loading arm; and

means for disconnecting said loading arm from said receiving means when said loading arm moves outside said safe boundary.

4,408,944

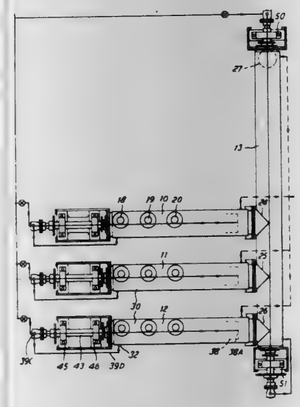
CONVEYOR FOR REMOVAL OF BED DRAIN MATERIAL FROM A COAL-BURNING FLUIDIZED BED COMBUSTOR

Robert F. Christian, San Francisco, Calif., assignor to Jude Engineering, Inc., San Francisco, Calif.

Filed Nov. 7, 1980, Ser. No. 204,784

Int. Cl.³ F23J *1/02*

U.S. Cl. 414—216 **2 Claims**



1. Apparatus for conveying bed drain material from a fluidised bed combuster comprising:

(1) a helical gathering conveyer (**13**),

(2) a plurality of helical receiver conveyers (**10,11,12**) parallel to each other and at right angles to the gathering conveyer and having their discharge ends connected to and discharging into the gathering conveyer,

(3) said discharge ends of the receiver conveyers being spaced from the discharge end of the gathering conveyer a sufficient distance to ensure densifying of the bed drain material adequate to prevent blow through of the material under pressure from the combuster,

(4) a plurality of entry openings (**18,19,20**) in each receiver conveyer to receive said bed drain material,

(5) said entry openings (**18,19,20**) being spaced a sufficient distance from the discharge ends of the receiver conveyers to enable the material to be densified adequately to prevent blow through of the material under pressure from the combuster.

each of said receiver conveyers comprising:

(a) a non-rotary double walled cylindrical casing (**30**) having a jacket space between its walls,

(b) exit and entry means (**32,33**) for circulating water through the jacket space,

(c) a first water carrying tube (**38**) located rotatably within the casing,

(d) said first water carrying tube (**38**) having a helical conveyer flight on its outer surface located between it and said casing (**30**),

(e) said flight having a progressively longer pitch from its inlet end to near its outlet end,

(f) said flight having a closer pitch (**40A**) near its discharge end than the pitch (**40**) immediately preceding said discharge end,

(g) a second water carrying tube (**39**) located within the first water carrying tube (**38**) and extending through said first water carrying tube and extending out of one end of said first water carrying tube,

(h) an opening (**39B**) in said second water carrying tube (**39**) connecting the interior of the second water carrying tube with the interior of the first water carrying tube (**38**),

(i) means (**39D**) connecting the second water carrying tube to said entry means (**32**) to said jacket space in the casing (**30**),

(j) a bearing tube (**43**) having an inner end extending a short distance into the first water carrying tube and its other end projecting out of said first water carrying tube and surrounding the second water carrying tube both within and outside of the first water carrying tube and spaced radially from the second water carrying tube to provide a space for exit of water from the interior of the first water carrying tube (**38**).

4,408,945

STATIONARY OR MOBILE RECEIVING BUNKER

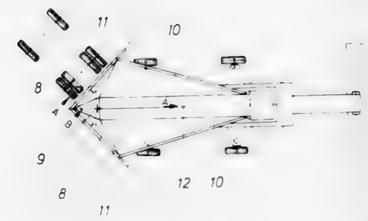
Jürgen-Michael Wenzel, Düsseldorf; Werner Guderley, Bad Oeynhausen, and Ernst Hamel, Löhne, all of Fed. Rep. of Germany, assignors to PHB Weserhütte Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,826

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1980, 3049236

Int. Cl.³ B65D *88/54;* **B65G** *47/90;* **A01F** *25/18*

U.S. Cl. 414—325 **5 Claims**



1. In a stationary or mobile receiving bunker adapted to be fed with bulk material, in particular by means of industrial trucks, with a delivery conveyor arranged under the receiving bunker,

the improvement which comprises two bunker walls enclosing the receiving bunker chamber on the side away from the direction of delivery, with straight lines running through their top edges and projected onto a horizontal plane each forming an angle $\alpha < 90°$ with the longitudinal axis of the delivery conveyor also projected onto the horizontal plane, said top edges of the two bunker walls enclosing the bunker chamber on the side away from the delivery direction having a common point of contact above the longitudinal axis of the delivery conveyor.

4,408,946

DUMPING HOPPER

James T. Haven, and Warren G. Haven, both of 537 N. Clark St., Orange, Calif. 92668

Filed Aug. 11, 1980, Ser. No. 176,675

Int. Cl.³ B66F *9/19*

U.S. Cl. 414—424 **4 Claims**

1. A dump hopper for transfer of particulate solids to a receiving hopper which comprises:

vertical rear and generally parallel sidewalls and an inclined front wall fixedly secured to a bottom wall defining an open-top chamber to receive said solids;

subjacent frame means including a fore frame having a first plurality of rails of lengths less than the length of said bottom wall and fixedly secured to the forward undersurface of said bottom wall and an aft frame pivotally interconnected thereto and having a second plurality of rails, each pivotally interconnected to a respective one of said

first plurality of rails along a hinge line intermediate the length of the bottom wall of said hopper, and interconnected by aft frame crossbar means;

first and second fork receptacle means on said fore and aft frame means, respectively, in alignment to receive a fork of a lift, immobilizing the pivotal interconnection of said fore and aft frame;



an open groove bracket carried on and laterally extending across the outside surface of said inclined front wall with coextensive lips along each edge thereof for engagement and coaction with the upper edge of said solids receiving hopper whereby said dump hopper can be fixedly engaged with the upper edge of said hopper to permit retraction of a fork from said first fork receptacle means, freeing the pivotal interconnection of said fore and aft frames, and permitting said hopper to tilt and dump its contents.

4,408,947

CONVEYOR ARRANGEMENT FOR A COMBINE HARVESTER

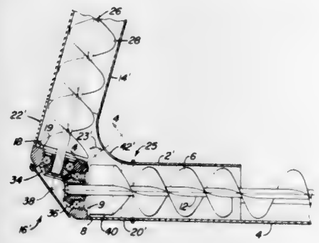
Ralph Lenski; Rolf W. Peiler, both of Zweibrucken, and Klaus H. Pauli, Homburg, all of Fed. Rep. of Germany, assignors to Deere & Company, Moline, Ill.

Filed Apr. 28, 1981, Ser. No. 258,503

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016840

Int. Cl.³ B60P *1/40*; B65G *33/14*

U.S. Cl. 414—526 **8 Claims**



1. In a combine harvester, an improved screw conveyor system for receiving grain passing downwards from a cleaning shoe and discharging it to a receptacle above the shoe comprising:

a first generally horizontal conveyor leg including a first conveyor screw and a first cylindrical conveyor tube at least partially surrounding the screw and having an outboard end and disposed in a receiving relationship with the cleaning shoe for receiving grain and conveying it laterally in a first direction to the outboard end;

a second generally upright conveyor leg including a second conveyor screw and a second cylindrical conveyor tube at least partially surrounding the screw and having opposite upper and lower ends and disposed with its axis coplanar with the axis of the first conveyor leg and inclined from the vertical in a second direction opposite the first direction so that the upper end is substantially inboard of the outboard end of the horizontal conveyor leg;

an elbow connecting the first and second conveyor legs and including a pair of generally tubular socket portions for receiving axially the ends of the respective conveyor screws, each socket portion being defined in part by an internal wall of the elbow, each wall extending perpendicular to the axis of the respective leg, and spanning substantially the full diameter of its conveyor tube so that the juxtaposed walls meet at a surface of intersection and a passage having an inlet and an outlet and communicating with the respective horizontal and upright legs for permitting the transfer of grain between them, said passage being defined in part by the surface of intersection and, generally opposite it, an outer passage wall, so that the inlet and outlet of the passage register substantially only with portions of the circumferential periphery of the respective conveyor screws; and

means carried by the first conveyor screw, adjacent the outboard end, for impelling grain through the passage into the second tube.

4,408,948

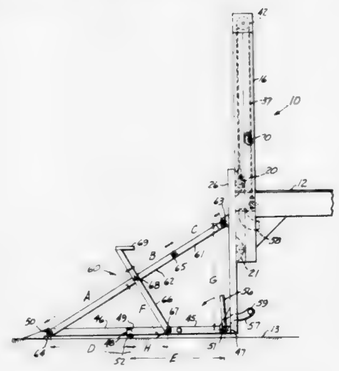
CONTROLLED-FOLDING AND CONTROLLED-UNFOLDING MULTIPLE SECTION PLATFORM ASSEMBLY

Morris D. Robinson, 179 Via Los Mira Dores, Redondo Beach, Calif. 90277

Filed Jan. 16, 1979, Ser. No. 3,988

Int. Cl.³ B60P *1/44*

U.S. Cl. 414—545 **14 Claims**



1. A controlled-folding and controlled-unfolding multiple-section platform assembly for a structural entry, said platform assembly comprising:

an inner platform section having an inner edge and an outer edge;

inner hinge means at said inner edge pivotally mounting said inner platform section for rotation around its inner edges, said inner hinge means being adapted to be mounted to structure associated with said entry;

an outer platform section having an inner edge and an outer edge;

outer hinge means pivotally joining the inner edge of the outer platform section to the outer edge of the inner platform section; and

fold control means comprising a first and a second rigid support member; first, second and third support hinge means, said first support member being adapted to be hinged to said structure at a hinge point above and substantially spaced from, said inner hinge means by said first support hinge means, said second support member being hinged to said outer platform section by said second support hinge means at a hinge point substantially spaced from the inner edge thereof, said first and second support members being hinged together by said third support hinge means at a location substantially spaced from the first and second support hinge means, a rigid co-ordinating member, and a first and a second co-ordinating hinge means, said first co-ordinating hinge means pivotally joining the co-ordinating member to the inner platform section at a first hinge point between and spaced from the inner and outer edges of said inner platform section, and said second co-ordinating hinge means pivotally joining the co-ordinating member to the second support member between and spaced from its respective hinge points;

whereby, when said inner platform section is substantially horizontal, said outer platform section is also substantially horizontal, the support members are aligned and support said outer platform section, and, when said inner platform is pivoted upwardly said fold control means causes the support members to fold toward one another and defines the angle of the other platform section relative to the inner platform section, said platform sections being substantially parallel to one another when the inner platform section is substantially vertical.

4,408,949

MECHANICAL DIGGER

Brian H. Witty, Kettering, England, assignor to Mantis Excavators, Ltd., Corby, England

Filed Aug. 11, 1982, Ser. No. 407,125

Claims priority, application United Kingdom, Sep. 15, 1981, 8127880

Int. Cl.³ E02F *3/32*

U.S. Cl. 414—694 **26 Claims**



1. A mechanical digger adapted for use in excavation comprising:

a frame having a forward end, a rearward end and a middle portion located between said forward and rearward ends;

conrollable digging means mounted on said frame forward end for excavating;

front end support feet for supporting said frame forward end above ground;

middle support means for supporting said frame middle portion above ground;

wheel means mountable on said frame for supporting said frame above ground;

means for alternately and selectively mounting said front support feet or said wheel means to said frame forward end and wherein said frame rearward end includes wheel mounting means which cooperate with said front end mounting means to provide inerchangable mounting of said wheel means between said frame forward end and said frame rearward end, said front support feet being selectively mounted to said frame forward end during excavation operations and said wheel means being selectively mounted to said frame forward end for towing transportation of said digger by a towing vehicle and excavation operations when said digger is attached to said towing vehicle; and

means for raising and lowering the frame rearward end relative said frame middle and front to thereby raise said middle support means out of contact with the ground when said wheel means are mounted to said frame rearward end to allow digging means assisted movement of said digger on said wheel means during excavation.

4,408,950

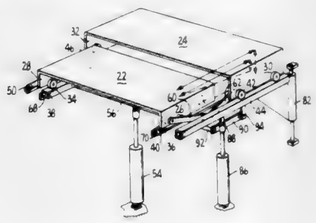
PRESS LOADER

Ben G. Laskey, 741 Hurlingame Ave., Redwood City, Calif. 95063

Continuation of Ser. No. 163,056, Jun. 26, 1980, abandoned. This application May 17, 1982, Ser. No. 379,168

Int. Cl.³ B65G *47/96*

U.S. Cl. 414—749 **5 Claims**



1. A press loader comprising a pair of first and second tables, said tables being telescopic and movable between a loading station and a horizontally spaced press operating station, means for moving said tables simultaneously and alternately between said stations, and an improved means for suppporting said tables comprising:

a first pair of parallel rails for supporting said first table, said rails extending between said loading station and said press operating station;

a second pair of parallel rails for supporting said second table, said rails extending between said loading station and said press operating station, said second pair of rails being parallel to and between said first pair of rails;

means for raising and lowering said first pair of rails between a loading position and a press operating position; and

means for raising and lowering said second pair of rails between a loading position and a press operating position.

4,408,951

FLUID DRIVEN ENGINE

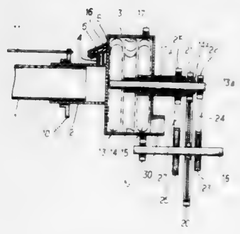
Tasuku Ishii, 32 Miyanowaki Aza Kayama Oaza, Tokiwamachi, Tamura-gun, Fukushima-ken, Japan

Filed Dec. 9, 1981, Ser. No. 329,203

Claims priority, application Japan, Dec. 10, 1980, 55-175135

Int. Cl.³ F01D *17/06*

U.S. Cl. 415—36 **7 Claims**



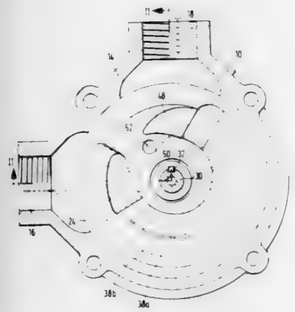
1. A fluid driven engine comprising:

a rotary hollow cylindrical shaft adapted to be rotatably mounted on a stationary fluid feed conduit for rotation around the axis of the stationary feed conduit;

a turbine housing coaxially secured to said rotary hollow cylindrical shaft for rotation with said cylindrical shaft and having at least one turbine rotatably mounted therein;

nozzle means in said housing connected between said cylindrical shaft and said turbine housing for directing fluid from said cylindrical shaft under pressure against said turbine for rotating said turbine, the reaction to the impact of the fluid on said turbine causing said housing to rotate;
a turbine shaft driven by said turbine;
an engine output shaft; and
transmission means connected between said turbine shaft, said housing and said engine output shaft and transmitting the rotation of said turbine and said turbine housing to said engine output shaft and limiting the speed of rotation of said turbine housing to a speed slower than the rotational speed of said turbine.

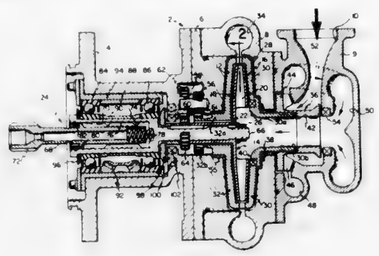
4,408,952
LATERAL CHANNEL PUMP
Friedrich Schweinfurter, Bergstr. 6, D-8541 Rottenbach, Fed. Rep. of Germany
Filed Apr. 10, 1981, Ser. No. 252,832
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1980, 3014452
Int. Cl.³ F04D 5/00
U.S. Cl. 415—53 T **8 Claims**



1. A lateral channel pump, comprising a housing provided with intake and outlet ports, a shaft extending into said housing, seal means sealingly engaged between said shaft and said housing, a rotor secured to said shaft, and a flow channel which starts from said intake port in said housing and leads to said outlet port in said housing through at least one lateral channel and also through blade compartments of said rotor, characterized in that the blade compartments are defined by a ring of blades of said rotor which alternate in length, towards the center of the rotor, between a long blade compartment and a short blade compartment, the lateral channel has a constant outer contour concentric with the center of the rotor and an inner contour tapering helically towards said outlet port, the spacing of the inner contour relative to said shaft at said intake port corresponds to the spacing of the long rotor blade compartment relative to the shaft and, at the outlet port, the spacing of the inner contour corresponds to the spacing of a short rotor blade compartment relative to the shaft.

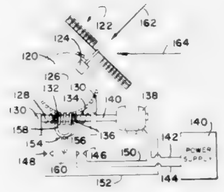
4,408,953
HIGH EFFICIENCY CENTRIFUGAL PUMP
Pius J. Nasvytis, Avon, and George W. Jahrstorfer, South Windsor, both of Conn., assignors to Chandler Evans Inc, West Hartford, Conn.
Filed Jan. 6, 1982, Ser. No. 337,473
Int. Cl.³ F01D 1/10; F04D 13/14
U.S. Cl. 415—62 **4 Claims**

1. In a high speed centrifugal fuel pump of the type having:
a housing with a pumping cavity therein, a main impeller mounted for rotation in the pumping cavity and a drive shaft assembly mounted in the housing for rotation and operatively connected to the main impeller for concurrent rotation at the same RPM, a shroud mounted for rotation in the housing surrounding the impeller in closely spaced relationship thereto, the improvement comprising:
a gear mounted on the drive shaft assembly;
a gear on the shroud;



two integral interconnecting gears in respective meshing engagement with the first and second mentioned gears and sized to rotate the second mentioned gear at one-half the RPM of the first mentioned gear whereby the shroud is rotated at an RPM one-half that of the drive shaft assembly; and seal means to isolate the gears from oil and fuel to minimize drag on the rotating gears.

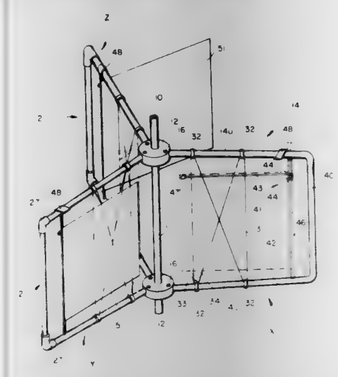
4,408,954
WINDMILL YAW AND SPEED CONTROLS
John L. Earle, P.O. Box 185, Forest Grove, Oreg. 97116
Filed Jul. 27, 1981, Ser. No. 287,456
Int. Cl.³ F03D 7/04
U.S. Cl. 416—9 **45 Claims**



1. Yaw control apparatus for a horizontal windmill assembly mounted for angular movement about a vertical axis comprising
rotation means connected to the assembly for selectively rotating the assembly about the vertical axis,
sensor means connected to the assembly for sensing externally induced angular movement of the assembly about the vertical axis, and
control means connected to the sensor means and rotation means for activating the rotation means when the sensor means senses said angular movement to rotate the assembly in a direction opposite the angular movement.

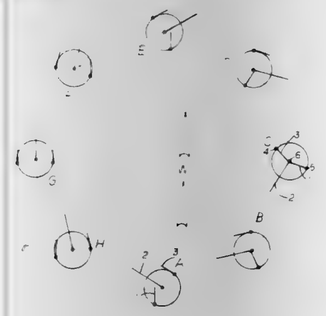
4,408,955
WIND OPERATED WHEEL
Joseph A. Wagle, and Joseph H. Wagle, both of Indianapolis, Ind. 46278
Filed Jun. 18, 1980, Ser. No. 160,672
Int. Cl.³ F03D 7/06
U.S. Cl. 416—119 **2 Claims**

1. A wind operated wheel comprising:
hub means rotatable on an axis;
a plurality of frame means projecting outward from said hub means;
vane mounting means in said frame means, said vane mounting means including vane pivot means, pivotally mounted in said frame means on pivot axes substantially parallel to and remote from said hub means axis;
vane stop means mounted in said frame means inboard from said pivot axes; and
flexible vane means secured to said vane mounting means and disposed within said frame means, said vane means being engageable with said stop means to drive the wheel in the direction of a wind when said vane means are on the upwind side of said vane stop means, and said vane means being pivotable away from said stop means as said frame means move said vane means to a position where said stop means are upwind of said vane means;



said stop means and pivot axis for the frame means lying in a plane containing the rotational axis for the wheel,
said stop means including a grid of wire lying in said plane,
said frame means including upper and lower radially extending arms and an outboard connector column;
said arms and column being tubular;
portions of said arms lying in said plane having superficial grooves therein facing the center of the area framed by said frame means;
said grid including a wire laced from grooves in the top arm to grooves in the lower arm, with sleeves encircling said arms and portions of said grooves and the laced wire in the grooves to retain said wire in said grooves.

4,408,956
FLIP-FLOP TURBINE VANE MODULE
William F. Price, Sr., 705 S. Fourth St., Folkston, Ga. 31537
Filed Nov. 27, 1981, Ser. No. 325,545
Int. Cl.³ F03D 1/06
U.S. Cl. 416—119 **1 Claim**



1. In a system for capturing energy from air or fluid motion having a rotatable framework containing equal length supporting arms and legs similar to an H with said H cross-mark being the piviot point and having bearing connections at the ends of said arms and legs, cross-mark of said H being 90 degrees to wind direction, a *FLUID MOTION TURBINE VANE MODULE* working with an oppositely same said *FLUID MOTION TURBINE VANE MODULE* upon said rotatable supporting H framework for movement in a circular motion around the said H cross-mark piviot point, said turbine vane module comprising a main surface area wing mounted leading edge center said main surface area wing being a part of said module framework, having rod axles mounted top and bottom center said module framework for mounting said entire vane module in a parallel spaced relation from said pivioting point H of said supporting rotating framework said vane module bearing mounting method upon said supporting H framework allowing free pivioting at said spaced distance of said module from said piviot point of said supporting H framework
said fluid motion vane module having a method of restricting its pivioting in relation to said H rotatable supporting framework to 20 to 30 degrees inward and 20 to 30 degrees outward the tangent of the circular rotation at the said H rotatable supporting framework bearing into which said fluid motion vane module is mounted
said module framework structure having extensions emerging laterally both top and bottom approximately 90 degrees in both directions from the width sides said main surface area wing extending outwardly sufficiently to support two auxilliary wings of about 66 percent the width said main surface area wing so when said auxilliary wings leading edges mounted in piviotal bearings, said bearings being part of and near the outward portions of said extensions and forward leading edge said main surface area wing by about 10 to 20 degrees, are able to piviot from a stopped position surfaces parallel said main surface area wing, stops being mounted upon said lateral extensions at positions about the same distance laterally as said bearings and less distant trailingly than said auxilliary wing width to said auxilliary wings trailing edges pivioting closed against and near said main surface area wing leading edge
said vane module operation being characterized by the continuing change of angular aspect in respect to wind direction and the changing position of its component wings such being that, for the 60 degrees of into-wind all wings are feathered to wind to present little drag, then about 30 degrees windward said H piviot point of said supporting structure at least two said component wings begin tacking into a diagonal position pushing strongly into wind, crosswind the outer component auxilliary wing closes upon the main surface area wing causing additional thrust, upon beginning travel down-wind chord, said outer auxilliary wing causes the inner aspect of said main surface area wing and said module framework to flip rotatingly outward, said inner auxilliary wing adding driving surface area by closing its trailing edge inward to the leading edge of said main surface area wing then across down-wind rotation said wings receive diagonal thrust in opposite direction across the down-wind chord said supporting framework circular movement, finally said component wings being thrust into tacking position forwardly thence into the into-the-wind feathered position.

4,408,957
SUPERSONIC BLADING
John W. Kurzrock, and Peter C. Tramm, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 22, 1972, Ser. No. 227,795
Int. Cl.³ F01D 5/14
U.S. Cl. 416—237 **6 Claims**

1. A compressor rotor blade cascade suited for supersonic gas entry conditions comprising a rotor body of circular cross-section and an annular row of blades extending from the body,

the blades being disposed with a substantial stagger angle, each blade having a leading pressure face and a trailing suction face, each blade including a spanwise portion the cross-sections of which are defined by at least four sides each deviating to the extent required from a straight line, the sides meeting at edges defining relatively abrupt changes in the contour of the perimeter of the blade cross-section, two of the said faces being defined by surfaces meeting at the leading edge and two by surfaces meeting at the trailing edge, each face of the blade being defined at least by two such surfaces extending chordwise and spanwise of the blade with adjacent surfaces meeting



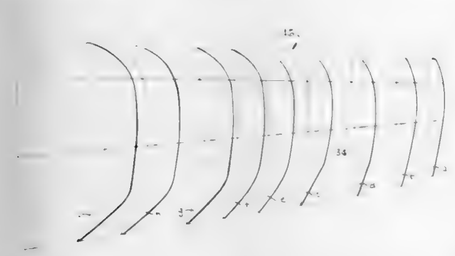
at a lateral edge extending spanwise of the blade; the blade pitch, the stagger angle, and the cross-section of the blades being such that the wave generated at the edge next downstream from the leading edge on the suction face of each blade intersects the leading edge of the next trailing blade, the leading edge shock wave of each blade intersects an edge of the next leading blade, and the trailing edge shock wave of each blade intersects a lateral edge on the pressure face of the next trailing blade, the faces being so directed downstream from each edge as to accord with the gas flow direction downstream of the waves and cancel the incident waves.

4,408,958

WIND TURBINE BLADE

Charles V. Schacle, Moses Lake, Wash., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 23, 1980, Ser. No. 219,467
Int. Cl.³ F03D *1/06*
U.S. Cl. 416—237 **11 Claims**



1. A wind turbine blade, said blade being attached to a hub and comprising a spar structure having an inboard end adjacent said hub and an outboard end, said spar structure being substantial width and thickness at its inboard end and tapering toward its outboard end;

a plurality of rib members attached to said spar structure at intervals, contours of said rib members defining both leading and trailing edges of said blade, and a skin structure covering said spar structure and said rib members;

wherein the improvement comprises forming the said rib member nearest said hub of greatest length of all said rib members and of an assymmetrical airfoil-like configuration with substantial deflection of both leading and trailing edges toward the direction of the wind to provide a high lift cross-section,

rib members located at a point along said spar structure substantially over half the distance from said hub to said outboard end and from there to said outboard end are formed of a conventional assymmetrical airfoil configuration having a relatively low maximum lift coefficient and a relatively low angle of attack for maximum lift, and

intervening rib members located between said point and the said rib member nearest said hub tapering in cross-section from the high lift cross-section of said rib member nearest said hub through a series of ribs having progressively less width and less deflection of said leading and trailing edges to the conventional airfoil section of the rib member at said point,

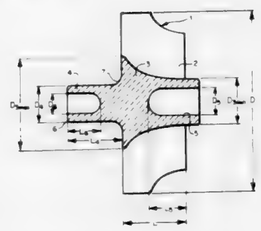
the length of said rib members including that nearest said hub and those extending at least one-fourth to one-third of the distance outwardly from the hub of said blade being such as to preclude substantial flow of air across said blade over an area whose radius is said distance when said wind turbine is rotating at a normal operating speed.

4,408,959

CERAMIC RADIAL TURBINE WHEEL

William D. Long, Tonawanda, N.Y., and Paul J. Rottenkolber, Wolfsburg, Fed. Rep. of Germany, assignors to Kennecott Corporation, Stamford, Conn. and Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

PCT No. PCT/US80/00419, § 371 Date Jul. 3, 1980, § 102(e) Date Jul. 3, 1980, PCT Pub. No. WO81/03047, PCT Pub. Date Oct. 29, 1981
PCT Filed Apr. 17, 1980, Ser. No. 224,509
Int. Cl.³ F01D *5/34*
U.S. Cl. 416—241 B **16 Claims**



1. A radial ceramic turbine wheel, comprising:

(a) a body portion, symmetrical about an axis;

(b) a plurality of blades, integral with and extending outwardly from the body portion; and

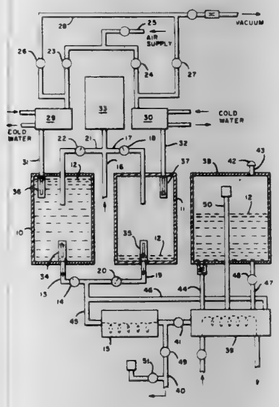
(c) a hub portion, integral and coaxial with the body portion, symmetrical about the axis, and connectable with a turbine shaft; characterized in that the body portion is provided with a hollow central core, on the side of the body portion opposite the hub portion; in that the blades extend outwardly partly from the hollow central core of the body portion, and partly from the solid part of the body portion; and in that the axial length of that part of the hollow central core of the body portion from which the blades extend does not exceed 60% of the axial length of the blades.

4,408,960

PNEUMATIC METHOD AND APPARATUS FOR CIRCULATING LIQUIDS

Paul E. Allen, Newtown, Conn., assignor to Logic Devices, Inc., Bethel, Conn.

Filed Sep. 11, 1981, Ser. No. 301,358
Int. Cl.³ F04F *1/02*
U.S. Cl. 417—54 **21 Claims**



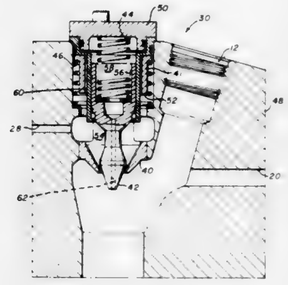
1. Method for causing the rapid recirculation of a liquid between a plurality of containers solely by adjusting the pressure of a gas exerted within each of said containers to superatmospheric, atmospheric and subatmospheric pressure, comprising providing a closed liquid circulation device including said plurality of containers and a liquid circulation system comprising a circulation conduit which communicates with each of said containers and which incorporates a work station, substantially filling a first container and said liquid circulation conduit with a circulation liquid while retaining the other container(s) substantially empty of said liquid, subjecting said filled container to superatmospheric pressure to force substantially all of said liquid out of said filled container and into said circulation conduit to said work station while subjecting a second container to subatmospheric pressure to such said liquid out of said circulation system to substantially fill said second container, opening said first container to atmospheric pressure to relieve the superatmospheric pressure therefrom, subjecting said first container or another container which is at atmospheric pressure to subatmospheric pressure, closing said filled second container to subatmospheric pressure and opening it to superatmospheric pressure to force substantially all of said liquid out to empty said second container into said circulation conduit to said work station, the subatmospheric pressure within said first or other container causing said liquid to be sucked from said circulation system to fill said first or other container, opening said empty second container to atmospheric pressure to relieve the superatmospheric pressure therefrom, closing said second container to atmospheric pressure and then subjecting it or another container which is under atmospheric pressure to subatmospheric pressure while closing said filled container to subatmospheric pressure and opening it to superatmospheric pressure to cause the recirculation of said liquid from said filled container, through said liquid circulation system into said second or other container which is under subatmospheric pressure.

4,408,961

JET PUMP WITH INTEGRAL PRESSURE REGULATOR

Bernard D. Laybourne, Farmington, Conn., assignor to Chandler Evans, Inc., West Hartford, Conn.

Filed Feb. 16, 1982, Ser. No. 349,009
Int. Cl.³ F04F *5/48*
U.S. Cl. 417—189 **14 Claims**



1. A pressure regulator device comprising:

housing means, said housing means having a fluid flow passage extending therethrough, said housing means defining a first chamber which communicates at one end with said passage, said first chamber having an axis;

valve means, said valve means including a valve member having an axis and a pair of reaction surfaces, said valve member being at least in part positioned in said first chamber and being coaxial therewith;

means for supporting said valve member for axial movement in said first chamber;

nozzle defining means, said nozzle defining means having an axis and being at least in part positioned in said first chamber and circumscribing said valve member, said nozzle defining means being coaxial with said first chamber and axially movable therein relative to said valve member, said nozzle defining means cooperating with said valve member to define therebetween a sensing chamber within said first chamber and a variable area nozzle which communicates between said sensing chamber and said housing means passage, said nozzle defining means having a reaction surface disposed within said sensing chamber whereby the pressure in said sensing chamber will urge said nozzle defining means in a first direction, a first of said valve member reaction surfaces also being disposed within said sensing chamber whereby the pressure in said sensing chamber will urge said valve member in a second direction opposite to said first direction;

means for delivering a fluid at a reference pressure to said sensing chamber; and

means for applying the pressure of the fluid in said housing means passage to said valve member second reaction surface to urge said valve member in the said first direction.

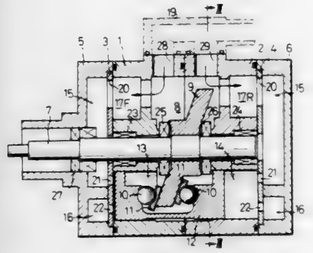
2. The apparatus of claim **1** wherein said pressure regulator device also functions as a jet pump and the reference pressure fluid is the driving fluid for said pump, passage of said driving fluid through said variable area nozzle inducing a flow of fluid through said housing means flow passage.

4,408,962

SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama, Kariya; Shigeru Suzuki, Nishio, and Mitsuhiro Hattori, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Apr. 11, 1980, Ser. No. 139,241
Claims priority, application Japan, Sep. 14, 1979, 54-118129
Int. Cl.³ F04B *1/16*
U.S. Cl. 417—269 **1 Claim**



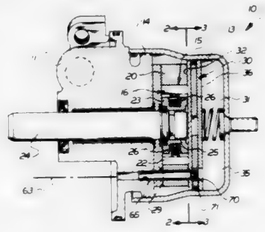
1. A swash plate type compressor comprising:
a pair of horizontal axially aligned cylinder blocks forming a combined block;
a swash plate chamber perforated in the axially central portion of said combined block;
a plurality of cylinder bores perforated in said combined block in the axial direction thereof;
a plurality of pistons, each of said plurality of pistons being slidably inserted within each of said plurality of cylinder bores;
a drive shaft disposed through said swash plate chamber and rotatably supported by said combined block in the axial portion thereof;
a swash plate disposed within said swash plate chamber and fixed to said drive shaft so as to be rotated therewith, said swash plate being connected with said pistons through bearing balls and shoes so as to reciprocate said pistons within said cylinder bores due to the rotation of said swash plate;
a pair of cylinder housing fixed to the ends of said combined block, one of said pair of cylinder housings having a shaft seal chamber in the axial portion thereof for accommodating a shaft seal member which is disposed around said drive shaft;
at least one suction chamber and at least one exhaust chamber perforated in each of said pair of cylinder housings, said suction chamber and said exhaust chamber being communicated with each of said cylinder bores through valve means;
at least one suction passage perforated in said combined block in the axial direction thereof between said cylinder bores adjacent to each other so as to be communicated with said swash plate chamber in the middle thereof;
two inlet ports for introducing a fluid from an outer pipeline and at least one outlet port for discharging a compressed fluid into an outer pipeline;
said two inlet ports being provided in said combined block so as to be aligned with each other in a longitudinal direction thereof; and
said two inlet ports opening into said swash plate chamber directly so that each of the wall surfaces defining said two inlet ports in the side of the center of said swash plate chamber in said longitudinal section is nearly in alignment with an inner edge portion of said swash plate when said swash plate is inclined to the utmost limit thereof in a front side or a rear side of said combined block in said longitudinal section, and so that each of the wall surfaces which define said two inlet ports in the side of said cylinder housings in said longitudinal section, is deviated from an outer edge portion of said swash plate by a predetermined distance outside of said outer edge portion of said swash plate when said swash plate is inclined to the utmost limit thereof in a front side or a rear side of said combined block in said longitudinal section.

4,408,963

POWER STEERING PUMP

Gilbert H. Drutchas, Birmingham, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Jul. 7, 1980, Ser. No. 166,407
Int. Cl.³ F04B *49/08, 49/02*
U.S. Cl. 417—283 **8 Claims**



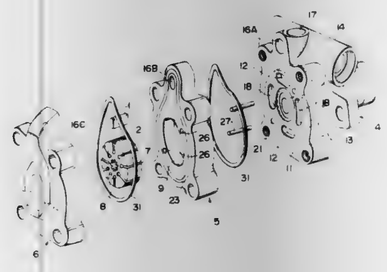
5. A pump for providing fluid flow to a system, said pump comprising a housing which partly defines a pumping chamber, pumping means in the pumping chamber, said pumping means having an inlet and outlet, said pumping means being operable to pump fluid from said inlet to said outlet, control means for maintaining a substantially constant flow of fluid to the system at pump speeds above a predetermined speed, said control means including a cheek plate defining with said housing said pumping chamber, said cheek plate having one side facing said pumping means and the other side facing a control chamber, spring means for biasing said cheek plate toward said pumping means and toward a position blocking said flow of fluid from said outlet to said inlet across said one side of said cheek plate, said cheek plate being movable upon an unbalance of forces acting thereon, said forces comprising first and second fluid pressure forces and the spring biasing force provided by said spring means, said second fluid pressure force being provided by fluid pressure in said control chamber and acting with said spring biasing force on said other side of said cheek plate to bias said cheek plate toward a position blocking flow of fluid from said outlet to said inlet across said one side of said cheek plate, said first fluid pressure force acting on said one side of said cheek plate and against said second fluid pressure force and said spring biasing force, and means for maintaining a continuous fluid flow from said system to said control chamber and from said control chamber to said inlet to effect balancing of said forces when said pump achieves said predetermined speed, said first and second fluid pressure forces acting respectively on first and second surfaces respectively provided on said one side and said other side of said cheek plate, said first and second surfaces having respectively first and second total areas that are unequal, and said means for maintaining a continuous fluid flow including orifices for directing fluid flow to and from said control chamber thereby providing a fluid pressure in said control chamber, the ratio of said fluid pressure in said control chamber to the pressure in the system at said predetermined pump speed being generally equal to the ratio of said second area to said first area.

4,408,964

VANE PUMP

Norihiro Mochizuki, Inuyama, and Fusayoshi Kugimiya, Minokamo, both of Japan, assignors to Kayaba Kogyo Kabushiki-Kaisha, Tokyo, Japan

PCT No. PCT/JP80/00279, § 371 Date Jul. 7, 1981, § 102(e) Date Jul. 7, 1981, PCT Pub. No. WO81/01446, PCT Pub. Date May 28, 1981
PCT Filed Nov. 11, 1980, Ser. No. 285,186
Claims priority, application Japan, Nov. 13, 1979, 54-146838
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—310 **2 Claims**



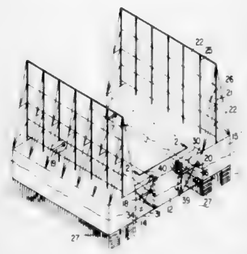
1. A vane pump comprising a rotor (2) which has a plurality of vanes (1) arranged radially thereon and driven for rotation by a pump shaft (3), a cam ring (5) having a cam surface (9), said cam ring (5) accommodating said rotor (2) thereinside to permit said vanes (1) to remain in slidable engagement with said cam surface (9), a pump housing (4) having an inlet and an outlet, said pump housing (4) rotatably supporting a pump shaft (3) and having a slide surface (11) which is engaged with one end face of said cam ring (5) and the corresponding end face of said rotor (2), a cover plate (6) having a slide surface (11) which is engaged with the other end face of said cam ring (5) and the corresponding end face of said rotor (2), fastening means for locking said pump housing (4), cover plate (6) and cam ring (5) together with said cam ring (5) held between said pump housing (4) and said cover plate (6), said pump housing (4) being formed with a valve chamber (14) adapted to receive a flow control valve to control outlet flow, said pump housing (4) having a pressure chamber (13) which communicates with said valve chamber (14), said slide surface (11) of said cover plate (6) being formed with a pair of inlet ports (29), said cover plate (6) having a bifurcated passageway (16C) terminating at said inlet ports (29), said pump housing (4) having an excess return passageway (16A) at an excess fluie return side of said pump housing (4), said cam ring (5) being formed with a cam ring passageway (16B) providing fluid communication between said bifurcated passageway (16C) and said excess return passageway (16A), said pump housing (4) having a suction port (17) which communicates with said excess return passageway (16A), said suction port (17) being adapted to be connected to a reservoir, said suction port (17) being disposed adjacent to said valve chamber (14), said cam ring (5) having engagement surfaces (22, 24) engaging said slide surfaces (11) of said pump housing (4) and said cover plate (6), and a seal ring (31) on each of said engagement surfaces (22,24), said seal rings (31) extending around said cam surface (9) and partially around the outer periphery of said cam ring passageway (16B), whereby said cam ring passageway (16B) and said cam surface (9) are enclosed with said seal rings (31).

4,408,965

WAVE POWERED TURBINE

James R. Ekstrom, 5537 Blossom Vista Ave., San Jose, Calif. 95124

Filed Aug. 21, 1981, Ser. No. 294,978
Int. Cl.³ F03B *13/12;* E02B *9/08*
U.S. Cl. 417—331 **8 Claims**



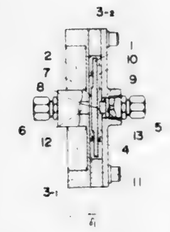
1. Apparatus for deriving power output from wave action from a fluid comprising:
a barge;
a watertight cylinder in said barge and forming a cavity having a longitudinal axis;
a piston in said cylinder forming a pump;
a float;
means supporting said barge and float in the fluid to allow relative motion therebetween due to the wave action;
a plurality of rigid members fixed at opposite ends to said barge and float by ball-type connectors to allow universal movement therebetween while holding the barge and float apart;
a plurality of elongate flexible cables connecting said barge and float;
means fixing one end of said elongated cables to said barge and the other end to said piston such that relative motion between said barge and float will cause said piston to move along the longitudinal axis of said cylinder;
means supplying fluid to said cylinder;
a turbine adapted to be driven by fluid;
conduit means for carrying fluid from said cylinder to said turbine; and
power generating means connected to be driven by said turbine.

4,408,966

PUMP FOR SUPPLYING LIQUID FUEL

Teruo Maruyama, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 19, 1980, Ser. No. 218,305
Claims priority, application Japan, Dec. 27, 1979, 54-172941
Int. Cl.³ F04B *35/04;* F01D *1/36;* H02K *1/22*
U.S. Cl. 417—356 **10 Claims**



1. A pump comprising housing means providing a rotor accomodating space and having an inlet channel and outlet

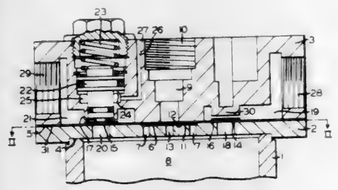
channel arranged substantially on the axis of the rotor accomodating space in communication therewith for the passage of a fluid;
a shaftless rotor completely and rotatably accomodated within the rotor accomodating space;
a stator for magnetically rotating the rotor within the rotor accomodating space; and
groove means formed on at least one of the surfaces of the rotor and the surfaces of the rotor housing means, whereby when the rotor is magnetically rotated by the stator, the fluid is forced forward by the groove means, the rotor being radially and axially supported in the rotor accomodating space solely by a fluid bearing provided by the fluid and the groove means.

4,408,967

PISTON CYLINDER AND HEAD FOR COMPRESSORS

Herbert Unger, Springe, and Gunther Meise, Hanover, both of Fed. Rep. of Germany, assignors to WABCO Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 238,287
Int. Cl.³ F04B *21/02*
U.S. Cl. 417—571 **7 Claims**



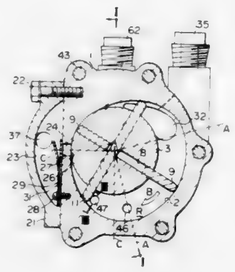
1. A piston cylinder and head arrangement for compressors comprising:
(a) a piston cylinder housing;
(b) a cylinder head;
(c) a valve plate secured between said cylinder housing and said cylinder head;
(d) said cylinder head having formed therein at least one intake chamber open to atmosphere, at least one discharge chamber provided with at least one discharge outlet and at least one atmospheric chamber provided with at least one atmospheric opening;
(e) an intake valve operably disposed adjacent one side of said valve plate;
(f) a discharge valve operably disposed adjacent said one side of said valve plate;
(g) an atmospheric vent valve operably disposed adjacent said one side of said valve plate;
(h) a sealing gasket disposed between said valve plate and said cylinder head for sealing said atmospheric chamber from said intake chamber and said intake chamber from said discharge chamber and for providing a valve seat for said discharge valve and said vent valve;
(i) said valve plate having formed therein intake passage means for communicating between said intake chamber and a compression chamber formed in said cylinder housing upon operation of said intake valve to an open position coincidental with air intake by the compressor, a discharge passageway via which said compression chamber may be communicated with said discharge chamber upon operation of said discharge valve to an open position responsively to discharge pressure coincidental with pression operation of the compressor and a vent passageway via which said compression chamber may be communicated with said atmospheric chamber, and
(j) piston means operably disposed in said cylinder head for controlling said vent valve to an open position when said discharge valve and said intake valve are closed and to a closed position when either said discharge valve or said intake valve are open, said piston means being effective according to a predetermined pressure reached in said compression chamber.

4,408,968

ROTARY COMPRESSOR

Mitsuo Inagaki; Hideaki Sasaya, and Seitoku Ito, all of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 11, 1981, Ser. No. 233,431
Claims priority, application Japan, Mar. 12, 1980, 55-31828
Int. Cl.³ F03C *2/00*
U.S. Cl. 418—15 **6 Claims**



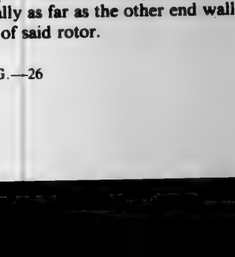
1. A rotary refrigerant compressor comprising:
a housing having therethrough a cylindrical bore and a discharge opening formed through the wall of said housing and communicating with said cylindrical bore;
a discharge chamber disposed downstream of said discharge opening and communicating therethrough with said cylindrical bore;
end plates attached to the axial ends of said housing to close the open axial ends of said cylindrical bore, respectively;
a rotor rotatably disposed in said cylindrical bore and having an axis extending in an eccentric relation to the axis of said cylindrical bore;
a plurality of vanes slidably mounted in said rotor, each of said vanes cooperating with the adjacent vane, the wall surface of said cylindrical bore in said housing, the outer periphery of said rotor and said end plates to define a working chamber, said working chambers having their volume changed, during one revolution of said rotor, to compress fluid to discharge the compressed fluid through said discharge opening into said discharge chamber;
first passage means having one end thereof opening to said cylindrical bore in said housing and the other end communicating with said discharge chamber, said one end of said first passage means being positioned at an area adjacent to and including a location where the leading one of the adjacent pair of vanes is positioned when the working chamber defined between the adjacent pair of vanes has its volume starting to decrease;
first check valve means provided in said first passage means for allowing the working chamber associated said first passage means to be communicated therethrough with said discharge chamber to directly introduce the fluid within the working chamber into said discharge chamber only when the associated working chamber has its volume decreased and pressure increased higher than normal discharge pressure in order to avoid damage due to the presence of liquid refrigerant in said working chamber;
second passage means having one end thereof opening to said cylindrical bore in said housing and the other end communicating with said discharge chamber, said one end of said second passage means being positioned at a location where said one end of said second passage means together with said discharge opening is communicated with the working chamber defined between the adjacent pair of vanes with the working chamber having its volume decreased and being communicated with said discharge opening; and
second check valve means provided in said second passage means for allowing the working chamber associated with said second passage means to be communicated therethrough with said discharge chamber only when the associated working chamber has its volume decreased and pressure increased higher than a predetermined value in order to avoid damage due to the presence of a liquid refrigerant in said working chamber, the passage of which through said discharge opening is so restricted as to cause a pressure rise in said working chamber.

4,408,969

VANE COMPRESSOR HAVING IMPROVED ROTOR SUPPORTING MEANS

Haruhiko Takada, Konan, Japan, assignor to Diesel Kiki Co., Ltd., Saitama, Japan

Filed May 20, 1981, Ser. No. 265,578
Claims priority, application Japan, May 31, 1980, 55-72935
Int. Cl.³ F04C *18/00, 29/02*
U.S. Cl. 418—93 **13 Claims**



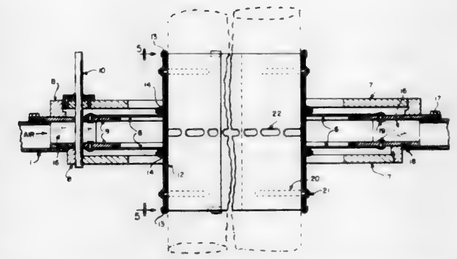
1. In a vane compressor including: a pump housing comprising an annular peripheral wall member having an endless camming inner peripheral surface, and first and second end wall members secured to opposite ends of said annular peripheral wall member; a cylindrical rotor rotatably received within said pump housing, said rotor having a plurality of axial slits formed in an outer peripheral surface thereof; a plurality of vanes radially movably received in said slits; and a drive shaft coupled to said rotor for causing rotation of said rotor in unison therewith, said drive shaft being formed of a member separate and discrete from said rotor;
the improvement wherein:
said rotor has an internal space formed at a central portion thereof in communication with said slits, said rotor having opposite end wall faces, and first and second axial through holes extending from said internal space to respective opposite end faces thereof, said first end wall member of said pump housing having an axially extending bearing through hole formed at a central portion thereof, said drive shaft extending through said bearing through hole of said first end wall member and having an end portion thereof fitted in said first axial through hole of said rotor and rigidly secured to said rotor at said first axial through hole to radially support said rotor for rotation in unison therewith;
said drive shaft having an end face thereof located on substantially the same plane with a corresponding one of said opposite end wall faces of said internal space of said rotor;
said second end wall member having a support shaft projecting therefrom and fitted in said second axial through hole of said rotor to radially support said rotor for rotation relative thereto; and
said support shaft extending toward said internal space substantially as far as the other end wall face of said internal space of said rotor.

4,408,970

STABILIZING AIR RING APPARATUS

Franz Bustin, Rochester, and Charles K. Bloomer, Newark, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 105,350, Dec. 19, 1979, abandoned. This application Jul. 20, 1981, Ser. No. 284,862
Int. Cl.³ B29D *7/22*
U.S. Cl. 425—72 R **7 Claims**



1. A system for extruding tubular thermoplastic comprising:
an extrusion die;
a cylindrical sleeve downstream from said die for receiving said tubular thermoplastic therethrough, said sleeve comprising a plurality of slidably interconnected arcuate plates;
a plurality of interconnected iris mechanisms spaced along the outer surface of said cylindrical sleeve, each of said iris mechanisms including a plurality of iris members, each of said iris members being connected to a respective one of said arcuate plates; and
means for directing a cooling gas stream through said cylindrical sleeve to said tubular thermoplastic to provide a mantle of said cooling gas between the inner surface of said cylindrical sleeve and the outer surface of said tubular thermoplastic for cushioning, stabilizing and increasing the cooling period of said tubular thermoplastic advancing through said cylindrical sleeve;
whereby operation of said interconnected iris mechanisms changes the diameters of said cylindrical sleeve and said tubular thermoplastic.

4,408,971

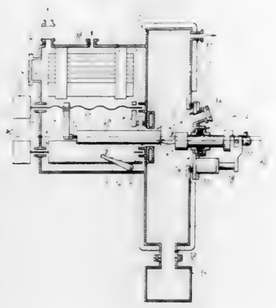
GRANULATION APPARATUS

Viktor N. Karinsky, bulvar Novoselovoi, 10, kv. 43, Odintsovo Moskovskoi oblasti; Viktor T. Musienko, ulitsa Molodezhnaya, 4, kv. 286, and Sergei G. Glazunov, ulitsa Bakinskaya, 29, kv. 90, both of Moscow, all of U.S.S.R.

Filed Mar. 27, 1978, Ser. No. 890,501
Int. Cl.³ B01J *2/04*
U.S. Cl. 425—8 **13 Claims**

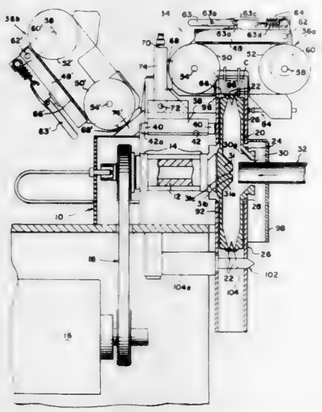
1. An apparatus for producing powdered or granular particles comprising: a sealed chamber with a lid in the form of a conical funnel expanding toward said chamber, a concentrated heat source having an axis arranged on an inclined lateral wall of said conical lid on one side of said chamber, means for feeding and rotating the end of a billet which enters the chamber through an opening in the opposite side of said chamber from said lid into contact with said heat source whereby the

end of the billet is melted and the molten material is removed from the billet by centrifugal force in the form of small drop-



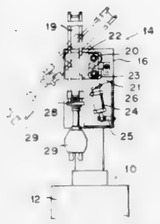
lets which are solidified in the chamber and wherein the axis of said heat source is displaced from the axis of the billet.

4,408,972
CENTRIFUGAL PELLETIZERS
James D. Layfield, Bay City, Mich., assignor to Baker Perkins Inc., Saginaw, Mich.
Filed Feb. 17, 1982, Ser. No. 349,575
Int. Cl.³ B22D *11/01*
U.S. Cl. 425—8 **17 Claims**



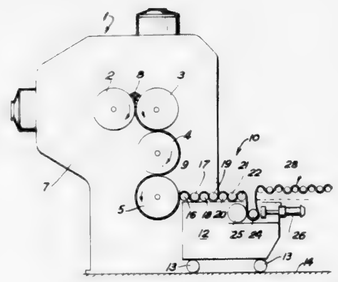
1. In a centrifugal plastics pelletizer for forming pellets from molten plastic material; a frame; a hollow disc-like rotor comprising side walls and a rim wall journaled on said frame and having an opening in one of its side walls for admitting plastics material thereto; there being a series of circumferentially spaced orifices in the rotor at the periphery thereof; a housing section mounted on said frame adjacent said rotor and including side walls connected by an outer wall; said housing being open to said rotor at its inner side to receive strands of material extruded through said orifices; a knife mounted at a predetermined fixed location within said housing and extending transversely to said orifices at a spaced distance from them for severing the strands of material into pellets, as the rotor rotates; a cooling and collecting duct extending generally tangentially from said housing generally in the plane of said knife; said duct having means for creating a coolant spray near its mouth; and means for driving said rotor at a selected rate of rotation to move said strands against said knife with sufficient velocity to provide the momentum to move the severed pellets through to be quenched in said coolant spray.

4,408,973
INJECTION MOLDING MACHINE
Toshiaki Tanaka, Tokyo, Japan, assignor to The Sailor Pen Co., Ltd., Tokyo, Japan
Filed May 14, 1982, Ser. No. 378,070
Claims priority, application Japan, Jun. 4, 1981, 56-81583[U]
Int. Cl.³ B29F *1/14*
U.S. Cl. 425—139 **4 Claims**



1. An injection molding machine comprising:
a stationary machine portion,
double-acting, fluid-operated cylinder means mounted vertically on the stationary machine portion and adapted to be moved between a removal position in which a molded part can be removed from the mold and a discharge position in which the molded part can be placed on a preselected unloading location, said cylinder means having a piston rod which has a chuck mechanism mounted thereon for grasping the molded part,
means for shifting said cylinder means between said removal and discharge positions,
a source of pressurized fluid for actuating said cylinder means to extend and retract said position rod, and
a control circuit coupling said cylinder means directly to said source of pressurized fluid to move said piston rod at higher speed when said cylinder means is in said removal position and for connecting said cylinder means to said source of pressurized fluid through a restricted flow path to move said piston rod at lower speed when said cylinder means is in said discharge position.

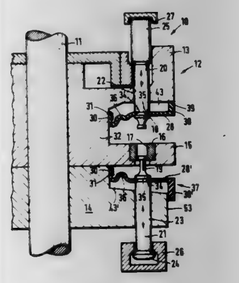
4,408,974
MOBILE FILM STRETCHING UNIT
Rinaldo I. Comerio, Busto A., Italy, assignor to Comerio Ercole, S.p.A., Busto A., Italy
Filed Jan. 20, 1982, Ser. No. 340,865
Int. Cl.³ A01J *21/00*
U.S. Cl. 425—194 **12 Claims**



1. In a take-off unit positionable adjacent to the final calender roll of a calender installation for processing plastic film and including a bed of stretching rollers for applying stretching forces to said plastic film, the improvement comprising means connected to alternate rollers of said bed of rollers for moving

said alternate rollers vertically in unison while continuously rotating the moving rollers.

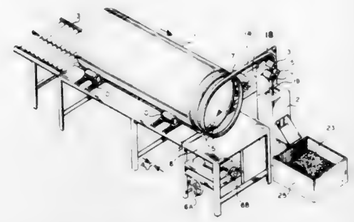
4,408,975
TABLET PRESS
Adolf Hack, Sinnersdorf, Fed. Rep. of Germany, assignor to Emdener Strasse, Cologne, Fed. Rep. of Germany
Filed Dec. 9, 1981, Ser. No. 328,939
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1980, 3049597
Int. Cl.³ B30B *11/08*
U.S. Cl. 425—231 **12 Claims**



1. In a tablet press comprising a plurality of dies, a plurality of upper and lower rams each having a ram shaft, a plurality of ram guides, and support means for supporting the dies and the ram guides, the arrangement being such that each ram is mounted for reciprocation in an associated one of said ram guides, and each pair of one of said upper and one of said lower rams cooperates with a respective one of said dies; the improvement comprising an upper intermediate wall generally peripendicular to the axis of said upper ram shafts having a plurality of holes, one for the passage of each upper ram shaft, means for maintaining the relative position of said wall with respect to each of said upper ram shafts, said upper intermediate wall engaging at its edges with the support means to form a dust barrier between the dies and the upper ram guides, and a lower intermediate wall generally perpendicular to the axis of said lower ram shafts having a plurality of holes, one for each lower ram shaft means for maintaining the relative position of said wall with respect to each of said lower ram shafts, said lower intermediate wall engaging at its edges with the support means, to form a dust barrier between the dies and the lower ram guides.

4,408,976
APPARATUS FOR THE RECOVERY OF THERMOPLASTIC FROM PIPING FOR REPROCESSING
Ray A. Parker, Jr., Brownwood, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.
Filed Jul. 9, 1981, Ser. No. 281,755
Int. Cl.³ A23P *1/00*
U.S. Cl. 425—301 **3 Claims**

1. An apparatus for preparing thermoplastic piping for recovery of the thermoplastic comprising in combination:
(a) means for cutting said pipe into a continuous spiral ribbon,
(b) means for straightening said continuous spiral ribbon into a continuous ribbon of thermoplastic, at least temporarily, without substantial curvature, said means comprising three rollers spaced so that a first roller and a second roller form a compression nip between which said continuous spiral ribbon is passed, said second roller driven in a direction to forward said continuous spiral ribbon between said first roller and said second roller with a third roller spaced in relation to the other rollers to form a compression nip with said second roller said nip removed on the face of said second roller at an angle of about 30 to about 60 degrees downstream of said first roller, and



(c) means for cutting said continuous ribbon without substantially curvature into pieces.

4,408,977
SPINNERET ORIFICE CROSS-SECTIONS
Bobby M. Phillips, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 21, 1982, Ser. No. 391,082
Int. Cl.³ D01D *3/00*
U.S. Cl. 425—382.2 **10 Claims**

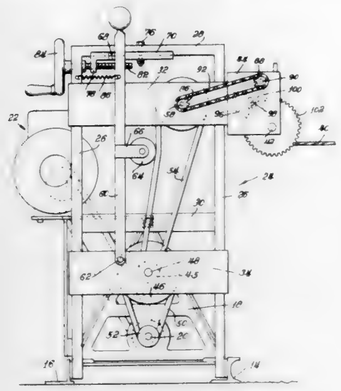


1. A spinneret defining at least one spinneret orifice the planar cross-section of which defines intersecting quadrilaterals in connected series with the L/W of each quadrilateral varying from 2 to 10, the improvement being that one or more of the defined quadrilaterals is or are characterized by its or their width being greater than the width of the remaining quadrilateral(s), with the wider quadrilateral(s) defining body section(s) and with the remaining quadrilateral(s) defining wing members.

4,408,978
ADVANCEMENT APPARATUS FOR CONCRETE SCREED
Joe M. Owens, 16 Pebblewood Trail, Naperville, Ill. 60540
Filed Oct. 6, 1981, Ser. No. 309,005
Int. Cl.³ B28B *1/08, 17/00*; E01C *19/38*
U.S. Cl. 425—456 **8 Claims**

1. An apparatus for automatically advancing a concrete screed as the screed tamps and levels concrete, the screed having a driven shaft for imparting vibrations to the concrete, comprising
a. cable reeling means attached to the concrete screed for winding a drive cable thereupon, the cable being adapted for attachment to a fixed location such that winding of cable on said reeling means propels the concrete screed toward the fixed location,
b. power transfer means connected to the driven shaft and said cable reeling means for imparting power from said driven shaft to said cable reeling means, said power transfer means including a driven pulley drivingly attached to said driven shaft and a slave pulley drivingly attached to said cable reeling means, and an endless belt loosely

mounted about said pulleys such that said driven pulley normally will not drive said belt, and



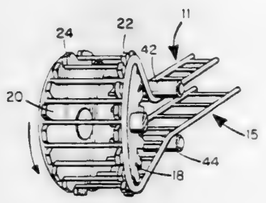
c. means to tension said belt between said pulleys to cause said driven pulley to drive said slave pulley through said belt.

4,408,979

APPARATUS FOR STRETCHING OF FASTENERS

David B. Russell, Southborough, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Continuation of Ser. No. 941,083, Sep. 11, 1978, Pat. No. 4,276,255, which is a division of Ser. No. 721,774, Sep. 9, 1976, abandoned. This application Sep. 24, 1980, Ser. No. 190,138
The portion of the term of this patent subsequent to Jun. 30, 1998, has been disclaimed.
Int. Cl.³ B29C *17/02*
U.S. Cl. 425—383 **10 Claims**



10. Apparatus for stretching the filaments of plastic fastener stock, said stock comprising two opposed, longitudinally extending side members joined together along their lengths by transversely-extending filaments, the filaments being spaced apart along the side members at a substantially constant interval, said apparatus comprising:

(a) a pair of wheels each of which has a plurality of upstanding projections about its periphery, the leading edges of the projections on each wheel being spaced apart, at said constant interval;

(b) means for mounting said wheels to rotate at substantially the same peripheral speed but in different planes, the planes and extensions thereof converging to define an acute angle, the wheels being spaced apart to define an angled gap therebetween, the wheels most closely converging and diverging from each other at points 180° apart about the periphery of the wheels, the wheels diverging to a distance at least equal to the desired length of the stretched filament and converging to a distance less than the unstretched length of the filaments;

(c) means for feeding successive filaments of fastener stock into driving engagement with successive opposed pairs of said projections at a peripheral position where said wheels are converged to a distance less than the length of the unstretched filaments; and,

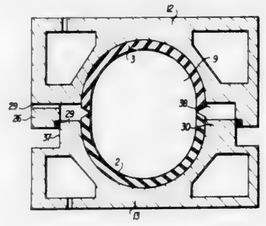
(d) means for removing stretched fastener stock from the wheels beyond their maximum separation positions.

4,408,980

DEVICE FOR MANUFACTURING CLOSED HOLLOW BODIES IN ELASTOMERIC MATERIAL

Achille Gallizia, Milan, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 104,396, Dec. 17, 1979, abandoned, which is a division of Ser. No. 924,301, Jul. 13, 1978, Pat. No. 4,224,276. This application Oct. 30, 1981, Ser. No. 316,965
Claims priority, application Italy, Jul. 21, 1977, 25936 A/77
Int. Cl.³ B29H *5/00, 7/00*
U.S. Cl. 425—501 **8 Claims**



1. In a device for manufacturing hollow bodies, a mold for molding the complementary halves of the hollow body, comprising:

two covers having faces disposed face to face with each other, each cover having a cavity shaped as one-half of the exterior surface of the hollow body to be produced, said cavities being opened on the faces of the covers and communicating with each other when the mold is closed;

an annular cylindrical relief and an annular cylindrical depression provided one on the face of one cover and the other on the face of the other cover where the covers contact as the mold is closed, said relief and said depression cooperating after they contact to produce an annular chamber aligned with the area where the halves of the hollow body to be produced are joined, the volume of said annular chamber being reduced as the mold is closed;

sealing means on the innermost portion of said relief;

a duct in said relief, said duct having an inner opening in communication with said annular chamber and an outer opening in communication with a face of the cover having said relief; and

depressurizing means connected to the outer opening of said duct, whereby a tight depressurized annular chamber, which is aligned with the area where the halves of the hollow body to be produced are joined, is formed.

4,408,981

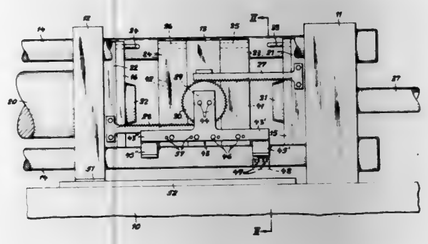
SUPPORT FOR AN INTERMEDIATE PLATEN OF A STACK MOLD

Paul Brown, Orangeville, Canada, assignor to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Jun. 18, 1982, Ser. No. 389,972
Int. Cl.³ B29C *3/02*
U.S. Cl. 425—589 **6 Claims**

1. In an injection-molding machine with two upper and two lower horizontal tie bars extending between a stationary outer platen and a fixed support mounted on a machine bed, a movable outer platen slidable along said tie bars, a first mold plate on said stationary platen confronting said movable platen, a second mold plate on said movable platen confronting said stationary platen, and a pair of further mold plates carried on an intermediate platen between said outer platens subjected to correlated displacement with said movable platen between a mold-closed and a mold-open position,

the improvement wherein said intermediate platen is provided with two pairs of outrigger arms extending in opposite directions generally parallel to said tie bars, each outrigger arm terminating in a respective part-cylindrical shoe slidably engaging one of said tie bars at a location between said intermediate platen and one of said outer platens.

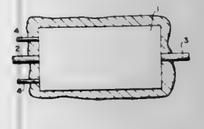


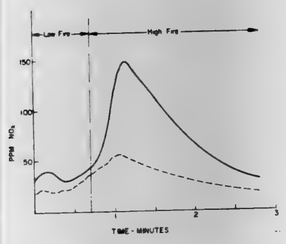
4,408,982

PROCESS FOR FIRING A FURNACE

Hisashi Kobayashi, Tarrytown, and John E. Anderson, Katonah, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jan. 5, 1982, Ser. No. 337,115
Int. Cl.³ F23M *3/04*
U.S. Cl. 431—10 **4 Claims**





1. In a process for firing a furnace by combusting fuel and oxidant gas, thereby producing furnace gases, wherein at least one jet of oxidant gas, selected from the group consisting of oxygen-enriched air and oxygen, and at least one jet of fuel are injected into the furnace aspirating the furnace gases into the oxidant jet prior to combustion, and wherein the furnace, in order to maintain a given temperature range which incorporates a specified temperature, is fired using alternating high and low firing rate periods, said low firing rate period being characterized by injection into the furnace of fuel and oxidant at flow rates such that substantial leakage of air into the furnace is caused to occur followed by a high firing rate period characterized by injection into the furnace of fuel and oxidant at flow rates, each greater than their respective flow rates during the low firing rate period, such that little or no air leakage into the furnace is caused to occur, the improvement comprising reducing NOx emissions to an acceptable level by delaying the injection of oxidant at the high firing rate at the start of the high firing rate period for a finite time no greater than S, wherein S is given by the formula:

$$S=(4.12\times10^5)V/FT$$

wherein:

S is the time delay in seconds,

V is the furnace volume in cubic meters,

F is the firing rate during the high firing period in kilocalories per second, and

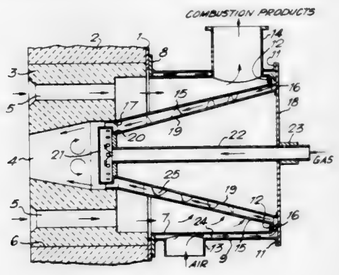
T is the specified temperature in °K.

4,408,983

RECUPERATIVE BURNERS

Jeffrey Masters; Manjit S. Saimbi, both of Solihull, and Roger J. Webb, Redditch, all of England, assignors to British Gas Corporation, London, England

Filed Jan. 5, 1981, Ser. No. 222,753
Claims priority, application United Kingdom, Aug. 29, 1980, 8027970
Int. Cl.³ F23D *11/44*
U.S. Cl. 431—116 **13 Claims**



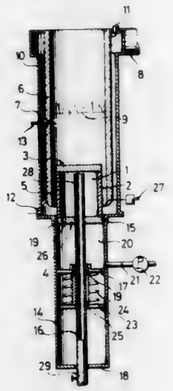
1. In a recuperative burner of the kind wherein, in use, fuel and combustion air are delivered separately by way of passages to a burner nozzle assembly in the form of a mixing nozzle or respective fuel and air nozzles which opens into a space for products of combustion, there being a combustion products passage for conducting products of combustion from the space to the exterior of the furnace, and the combustion air passage of the burner being disposed in use in heat-exchange relationship with the products passage to constitute a recuperator in which products of combustion indirectly preheat the combustion air passing along the air passage, the improvement wherein part of the length of the combustion air passage in heat-exchange relationship with the products of combustion is formed as a truncated substantially conical annular space which converges towards the burner nozzle assembly and wherein the remaining part of the length of the combustion air passage is formed as a substantially cylindrical annular space surrounding said conical annular space communicating with said conical annular space and with an air inlet.

4,408,984

BURNER FOR THE FORMATION AND COMBUSTION OF AN IGNITABLE MIXTURE OF A LIQUID FUEL AND COMBUSTION AIR

Siegfried Förster, Alsdorf, Fed. Rep. of Germany, assignor to Kernforschungsanlange Jülich Gesellschaft mit beschränkter Haftung, Julich, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,704
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013428; Dec. 18, 1980, 3047702
Int. Cl.[3] F23D 13/40
U.S. Cl. 431—354 7 Claims



1. In a burner for the formation and combustion of an ignitable mixture of a liquid fuel and combustion air; said burner having an axis, a fuel chamber fillable with said fuel having porous side walls permeable to said fuel for the through-passage of said fuel and a non-perforated closure plate; and a combustion chamber, said combustion chamber including a flow chamber providing for the inlet of combustion air at one end, means for heating said air, and an outlet for heated combustion air at the opposite end of said flow chamber communicating with the interior of said combustion chamber to form a combustion zone; and means for axially displacing said fuel chamber into and out of said combustion chamber so as to form an advanced and a retracted position, respectively; said porous side walls of the fuel chamber being selectively communicable with the interior of said combustion chamber in response to the axial position of said fuel chamber in said combustion chamber so as to facilitate passage of fuel through said porous side walls into said combustion chamber in said advanced position of said fuel chamber into said combustion chamber for the switching on said burner and to prevent passage of fuel through said porous side walls in said retracted position of said fuel chamber from said combustion chamber for switching off said burner.

4,408,985

METHOD OF FIXING HAZARDOUS SUBSTANCES IN WASTE FOUNDRY SAND

Mark A. Anderson, Rte. 1 Box 275, Graham, Ala. 36263; Robert W. Balliett, 330 Harland Rd., Norwich, Conn. 06360; Paul E. Link, Rte. 1 Box 518-C, Safford, Ariz. 85546, and Donald P. Satchell, P.O. Box 1258, Clifton, Ariz. 85540

Filed Sep. 14, 1981, Ser. No. 301,459
Int. Cl.[3] F27B 14/00; B28B 7/36; B28C 5/06
U.S. Cl. 432—1 7 Claims

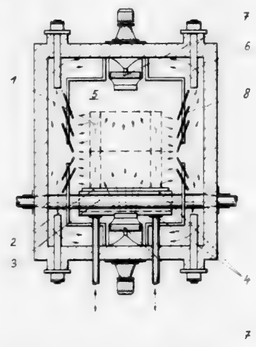
1. A method of fixing hazardous concentrations of lead in waste sand comprising roasting the lead-containing sand at an elevated temperature for a period sufficient to chemically convert at least a portion of the lead to an acetic acid insoluble form.

4,408,986

METHOD FOR THERMAL TREATMENT OF WIRE LASHINGS AND A CONTINUOUS-HEATING FURNACE FOR PERFORMANCE OF THE METHOD

Sorayapour Soraya, Saarlouis; Gundolf Feld, Püttlingen-Köllerbach, and Fredy Wacker, Wadgassen-Differten, all of Fed. Rep. of Germany, assignors to Stahlwerke Rochling-Burbach GmbH, Volklingen, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 301,537
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3035032
Int. Cl.[3] F21C 9/00; F27D 3/00, 7/04; C21D 9/52
U.S. Cl. 432—6 6 Claims



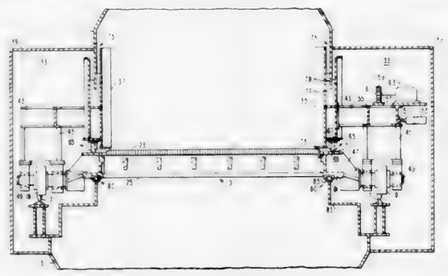
1. In a method for the thermal treatment of horizontal wire rings wherein the rings are stacked one upon the other in a convection oven and hot gases are circulated around the rings, the improvement which comprises operating said oven at a temperature above 650° C., said stacked rings being in the resting state, and blowing the furnace gases simultaneously from points directly above and directly below the stack towards and into the center of the stack whereby flows are formed which impinge upon one another at the center and generate a turbulent flow condition in the center of the stack.

4,408,987

CIRCULAR TRAVELING GRATE MACHINE FOR PROCESS REQUIRING MINIMUM GAS LEAKAGE

John F. Oyler, Pittsburgh, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1982, Ser. No. 340,977
Int. Cl.[3] F27B 9/26; F26D 3/12; C21B 7/16
U.S. Cl. 432—137 10 Claims



1. A continuous traveling grate machine on which a burden is transported from a charging zone to a discharging zone for treatment in a processing zone therebetween by a process requiring minimum gas leakage of processing gas which is maintained at a predetermined pressure, said machine comprising:

a pair of substantially continuous rails defining a generally horizontal circular trackway;

a plurality of individual pallets, each of which is supported on a pair of forward and a pair of rear laterally disposed wheels which ride along said rails;

a plurality of hoods disposed above said pallets;

a plurality of windboxes disposed below said rails a portion of said windboxes and hoods defining said processing zone;

a charging hopper defining said charging zone through which a burden is charged onto said pallets, said burden maintaining a gas seal in said hopper;

a discharging hopper defining said discharge zone in which said burden is removed from said pallets, said hopper including means to at least in part provide a gas seal in said discharging hopper;

transverse sealing means substantially isolating said processing zone from said charging and discharging zones, each of said transverse sealing mean consisting of one of said hoods and one of said windboxes substantially vertically aligned and through which an inert gas is conveyed at a pressure greater than the predetermined pressure in the adjacent processing zone;

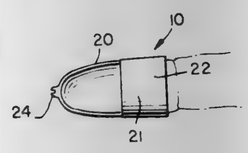
longitudinal sealing means substantially isolating said wheels from said processing zone and defining a tunnel through which said pallet wheels travel when transversing said processing zone, said tunnel being in fluid communication with said charging and discharging zone and having therein an inert gas maintained at a pressure greater than said predetermined pressure such that any gas leakage between said tunnel and said processing zone is from the former into the latter and said pallet wheels are substantially protected from contact with the processing gas during travel along said rails.

4,408,988

ORTHODONTIC APPLIANCE

Laurie M. Kaplan, 10 Monroe Blvd., Long Beach, N.Y. 11561

Filed Sep. 10, 1982, Ser. No. 416,484
Int. Cl.[3] A61C 7/00
U.S. Cl. 433—3 1 Claim



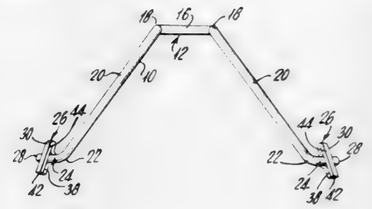
1. An appliance for tucking the ends of twisted wire ends of a ligature wire under an arch wire employed in an orthodontic apparatus, said appliance comprising a finger or thumb mounted structure having a pair of resilient bands engaging a finger or thumb of the user and substantially encircling the same forwardly of the first joint of the said finger or thumb said structure provided with a concave portion at the forward end of said appliance conforming to the convex surface of the first joint of the said finger or thumb of the user of the a flattened portion extending beyond said convex surface at the front end of said appliance, a centrally located notch formed at the forward end of said flattened portion and a plurality of serrations formed on the undersurfaces of said flattened portion, the notch and said serrations formed centrally of said flattened portion for engaging with the twisted wire ends of said wire for tucking the twisted ends of said wire under an arch wire employed in an orthodontic appliance.

4,408,989

ORTHODONTIC PALATAL ARCH WIRES FOR ACCURATE TRANSMITTAL OF CORRECTIONAL FORCES

James D. Cleary, Monrovia, Calif., assignor to Unitek Corporation, Monrovia, Calif.

Filed Feb. 5, 1982, Ser. No. 345,983
Int. Cl.[3] A61C 7/00
U.S. Cl. 433—7 9 Claims



1. An orthodontic palatal arch wire for directional control over a pair of brackets, each of the brackets being mounted on an opposing molar in a patient's mouth and including a receiving unit on the lingual side thereof, comprising in combination:

a resiliently flexible wire having a length at least as great as the palatal distance between the pair of brackets, each end portion of said wire being snugly insertable into said receiving unit;

means disposed intermediate to the length of said wire for creating corrective forces in said end portions of said wire; and

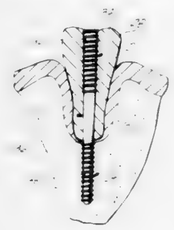
a torquing band transversely mounted on said wire proximate to each end, said torquing band being securable external to and in contact with said receiving unit after insertion so as to bear both forwardly and laterally against the receiving unit for transmitting said corrective forces therebetween.

4,408,990

ENDODONTIC DENTAL IMPLANT

Carl E. Misch, 3646 S. Elder, West Bloomfield, Mich. 48033

Filed Apr. 26, 1982, Ser. No. 372,080
Int. Cl.[3] A61C 5/08
U.S. Cl. 433—224 2 Claims



1. An endodontic implant for insertion through a tooth into the jaw bone of a user comprising:

an elongated post having first and second opposed ends;

the sides of the post tapering inward along the length of the post from a larger diameter first end to a smaller diameter second end;

a plurality of external threads formed on the post adjacent the first end and extending a predetermined distance along the post from the first end to define a first threaded section;

a plurality of external threads formed on the post adjacent the second end and extending a predetermined distance

along the post from the second end to define a second threaded section; and

the first and second threaded sections being spaced apart to define an intermediate, tapered, smooth-sided section on the post;

the lengths of the first and second threaded sections being selected so as to locate the intermediate smooth-sided section within the narrow apex region of the tooth.

4,408,991

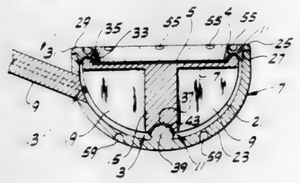
SELF-CLEANING MIRROR

Joseph R. Engel, 835 Hwy. 141, Fenton, Mo. 63026

Filed Dec. 14, 1981, Ser. No. 330,190

Int. Cl.³ A61B *1/24*

U.S. Cl. 433—30 **9 Claims**



8. A self-cleaning mirror as set forth in claim **6** wherein the ring has a series of recesses in its outer face at spaced intervals therearound adapted to receive complementary shaped projections on a first tool of a pair of tools, and said housing member has a plurality of recesses in its outer surface adapted to receive complementary shaped projections on the second tool of the pair, whereby by turning said tools relative to each other the ring may be threaded onto and off of said housing member.

4,408,992

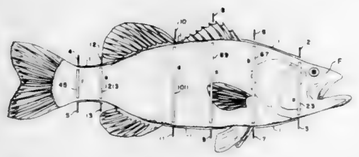
TAXIDERMY FISH BODY INSERT PIECE AND METHOD OF MAKING IT

John R. Rinehart, 3232 McCormick Dr., Janesville, Wis. 53545

Filed May 24, 1982, Ser. No. 381,319

Int. Cl.³ G09B *23/36*

U.S. Cl. 434—296 **4 Claims**



3. A taxidermy lightweight fish body insert piece slightly less in girth than the fish body itself, comprising:

a centerboard piece of substantially the same length as the fish body itself but slightly reduced marginally in width outline from the fish body itself by a predetermined measured amount, the centerboard piece being of fluted corrguated cardboard with the fluting lines substantially normal to the long axis thereof; and

first and second half-body masses of semi-elliptical cross section built up, respectively, on the first and second sides of said centerboard piece, of excelsior string-wrapped thereto, to a half-girth size reduced marginally from that of the fish body itself by said same predetermined measured amount.

4,408,993

CARD HOLDING TEACHING DEVICE

Anne M. Osborne, Rte. 2, Albion, Nebr. 68620

Filed Feb. 22, 1982, Ser. No. 350,984

Int. Cl.³ G09B *1/06*

U.S. Cl. 434—430 **5 Claims**



1. A teaching device comprising: a stiff body having a forward side having a substantially flat forward surface, a card holder formed of a piece of elongated flexible material extending with its elongation substantially parallel to said forward surface, said card holder being disposed adjacent said forward surface and having an elongated card-insertion edge defining a card-insertion side of said card holder, means for attaching said card holder between said body and said holder and in a manner whereby said holder can yield away from said forward surface of said body at the insertion edge of said card holder so that cards may be inserted under said insertion edge by a student, said elongated card holder being formed of a piece of material having its upper elongated edge doubled back upon itself so as to be of double thickness at its upper portion whereby its upper portion is more bulky than portions therebeneath whereby an elongated notch is formed between holder and body, said notch being larger at its uppermost portion so that a card can be inserted thereinto easily.

4,408,994

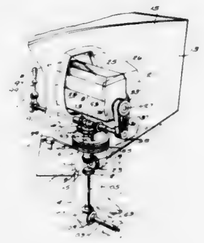
TRANSOM MOUNTED MARINE PROPULSION DEVICE WITH FORE AND AFT CRANKSHAFT AND POWER SHAFT

Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 188,323, Sep. 18, 1980, Pat. No. 4,371,348. This application Mar. 26, 1981, Ser. No. 247,915

Int. Cl.³ B63H *21/26, 21/28*

U.S. Cl. 440—53 **17 Claims**



1. A marine propulsion device comprising a power head adapted to be fixedly mounted to the transom of a boat and including an internal combustion engine having a crankshaft which extends fore and aft and horizontally when said power head is mounted to the boat transom, a power shaft extending below said crankshaft in parallel relation thereto, means operatively connected between said crankshaft and said power shaft for rotating said power shaft in response to rotation of said crankshaft, a lower unit connected to said power head and including a rotatably mounted drive shaft extending perpendicularly to said power shaft, said lower unit further including a propeller shaft, and means including gearing for connecting said drive shaft and said propeller shaft, and a reversing transmission operably connected between said power shaft and said drive shaft for selectively driving said drive shaft in neutral, forward and reverse drive.

4,408,995

PROCESS FOR DYEING OR FINISHING TEXTILE FIBRE MATERIALS WITH FOAMED AQUEOUS LIQUOR CONTAINING ETHYLENE OXIDE-PROPYLENE OXIDE BLOCK CO-POLYMER

Christian Guth, Basel, and Jörg Binz, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 8, 1982, Ser. No. 346,981

Claims priority, application Switzerland, Feb. 11, 1981, 903/81

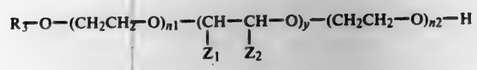
Int. Cl.³ D06L *3/12;* **D06B** *1/14*

U.S. Cl. 8—477 **27 Claims**

1. A process for dyeing or finishing textile material using foam, which process comprises applying to said material an aqueous foam composition which, in addition to containing dye or finishing agent, contains a foamable system comprising water and

(A) an anionic surfactant and

(B) a non-ionic block polymer based on ethylene oxide and propylene oxide units of the formula



wherein R_3 is alkyl or alkenyl each of 8 to 16 carbon atoms, one of Z_1 and Z_2 is hydrogen and the other is methyl, y is 3 to 50, n_1 is 1 or greater, n_2 is zero or greater and the sum n_1+n_2 is 3 to 15,

and subsequently subjecting the textile material to a heat treatment.

4,408,996

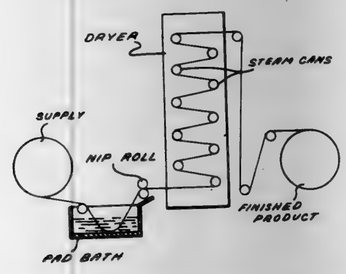
PROCESS FOR DYEING ABSORBENT MICROBIOCIDAL FABRIC AND PRODUCT SO PRODUCED

A. Frank Baldwin, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Oct. 9, 1981, Ser. No. 310,416

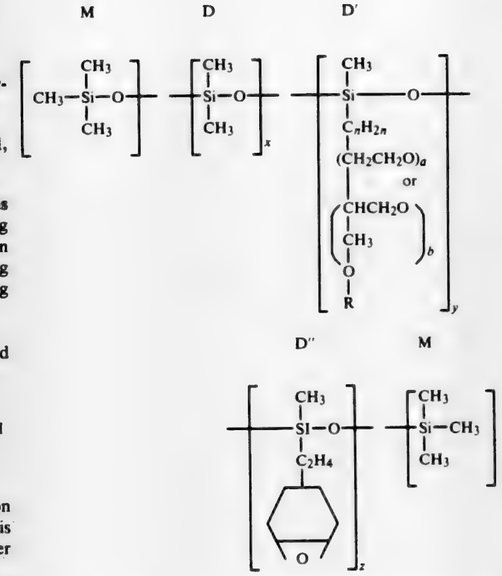
Int. Cl.³ D06P *5/02;* **A01N** *1/02;* **B05D** *3/02;* **A61F** *13/00*

U.S. Cl. 8—490 **6 Claims**

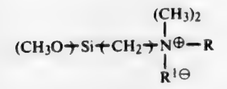


1. A process for making a dyed, absorbent, bioactive wettable medical fabric comprising the steps of:

(a) mixing (1) a wettable hydrophilic coupling amount of an organosilicone terpolymer of the formula:



wherein R is hydrogen or methyl, the sum of a+b is in the range of 5 to 200, x is 10 to 50,000, y is 1 to x and z is 1 to 0.5x provided that the sum of y+z is $\leqq 0.75x$ with (2) a tinctorial amount of a compatible direct dye, and (3) bioactive amount of a bioactive silyl quaternary amine compounds have the formula:



wherein R is an alkyl of 11 to 22 carbon atoms and R^1 is a bromine or chlorine; and

(b) applying the mixture of step (a) to a non-woven cellulose-containing substrate; and

(c) heating the thus coated substrate from step (b) to dry the substrate and fix the dye, microbiocide and hydrophilic coupling agent to said substrate, thereby producing a dyed, bacteriocidal substantially non-leachable and non-flammable finish which is substantive on said substrate.

4,408,997

PROCESS FOR DYEING COTTON WITH REACTIVE DYES IN WEAKLY ALKALINE DYE-BATH(PH 8.0–8.8)

Max Perrig, Arlesheim, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Oct. 28, 1981, Ser. No. 316,704

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040832; Oct. 30, 1980, 3040833

Int. Cl.³ D06P *1/67, 3/66*

U.S. Cl. 8—532 **19 Claims**

1. A process for dyeing a substrate comprising or consisting of cotton fibers which comprises treating the substrate at a temperature of 60° to 80° C. in a dyebath having a pH of 8.0 to 8.8 and containing a reactive dye having a fluorochloropyrimidine, monofluorotriazine, dichlorotriazine, dichloroquinoxaline or methylsulphochloromethylpyrimidine reactive group, 20 to 60 g/l salt and, as the sole alkaline agent, 0.2 to 1 g/l calcined sodium carbonate or the equivalent amount of hydrated sodium carbonate, the total amount of the reactive dye

to be applied to the substrate being present in the dyebath at the commencement of the treatment of the substrate in the dyebath at 60° to 80° C.

4,408,998

PROCESS FOR PREPARING THERMALLY STABLE AMMONIUM NITRATE- CONTAINING GRANULES

Stanislaus M. P. Mutsers, Geleen; Cornelis Hoek, Nieuwstadt, and Gerardus M. C. Wagemans, Haelen, all of Netherlands, assignors to Unie Van Kunstmestfabrieken BV, Utrecht, Netherlands

Filed Jun. 18, 1982, Ser. No. 390,136

Claims priority, application Netherlands, Jun. 19, 1981, 8102959

Int. Cl.³ C06B *1/04*

U.S. Cl. 23—293 A **11 Claims**

1. A process for preparing thermally stable ammonium nitrate-containing granules of high bulk density, high impact resistance, high crushing resistance and little or no tendency to cake from a composition containing a stabilization agent and ammonium nitrate comprising the combination of steps of:

(a) forming a fluidized bed of ammonium nitrate containing seed particles at a bed temperature of between about 95° C. to about 145° C.;

(b) spraying a melt composition composed of ammonium nitrate and containing:

(i) at most about 5% by weight water; and

(ii) about 0.5% to about 5% by weight of a finely divided silica-containing material which is insoluble in and chemically insert to ammonium nitrate

into said seed bed thereby forming ammonium nitrate-containing granules; and

(c) discharging said granules from said bed and recovering said granules, said recovery including the rapid cooling of said granules.

4,408,999

COAL AND OIL SHALE BENEFICIATION PROCESS

Ramachandra A. Nadkarni, and Rollie B. Williams, both of Baytown, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 11, 1981, Ser. No. 262,146

Int. Cl.³ C10L *9/02*; C10G *1/04*

U.S. Cl. 44—1 SR **11 Claims**

1. A process for the beneficiation of carbonaceous solids containing inorganic, ash-forming constituents including silica, alumina and metal-containing compounds which comprises:

(a) mixing said carbonaceous solids with an aqueous inorganic acid to form a slurry;

(b) treating said slurry with electromagnetic radiation having a frequency between about 0.10 MHz and about 10^5 MHz in a treatment zone, whereby said inorganic, ash-forming constituents including silica, alumina and metal-containing compounds reacting with said inorganic acid to form soluble compounds which dissolve in the aqueous portion of said slurry and wherein the power of said electromagnetic radiation is such that no arcing occurs in said treatment zone and substantially none of the carbonaceous material in said carbonaceous solids is destroyed; and

(c) recovering beneficiated carbonaceous solids depleted in said ash-forming constituents including silica, alumina and metal-containing compounds from said treatment zone.

2. A process as defined by claim **1** wherein said carbonaceous solids comprise coal.

3. A process as defined by claim **1** wherein said carbonaceous solids comprise oil shale.

4. A process as defined by claim **1** wherein said carbonaceous solids comprise liquefaction bottoms.

4,409,000

COMBINATIONS OF HYDROXY AMINES AND CARBOXYLIC DISPERSANTS AS FUEL ADDITIVES

William M. LeSuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

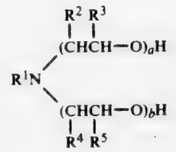
Filed Dec. 14, 1981, Ser. No. 330,549

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—70 **17 Claims**

1. A composition comprising:

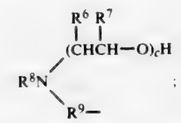
(A) at least one hydroxy amine of the formula



(I)

wherein:

R^1 is an alkyl or alkenyl radical containing from about 8 to about 30 carbon atoms or a radical of the formula



(II)

each of R^2, R^3, R^4, R^5, R^6 and R^7 is hydrogen or a lower alkyl radical;

R^8 is an alkyl or alkenyl radical containing from about 8 to about 30 carbon atoms;

R^9 is an alkylene radical containing from 2 to about 6 carbon atoms; and

each of a, b and c is an integer from 1 to about 75; and

(B) at least one hydrocarbon-soluble carboxylic dispersant characterized by the presence within its molecular structure of:

a substantially saturated hydrocarbon-based radical containing at least about 30 aliphatic carbon atoms, attached to

at least one acyl, acyloxy or acylimidoyl radical, which is also attached through nitrogen to

a polar group.

4,409,001

GASOLINE COMPOSITIONS CONTAINING AMINO ALKANOIC ACIDS AS DETERGENTS

Rodney L. Sung, Fishkill; William M. Sweeney, Wappingers Falls, both of N.Y., and Wheeler C. Crawford, Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jan. 8, 1982, Ser. No. 338,197

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—71 **12 Claims**

1. A motor fuel composition comprising

(a) a major portion of fuel containing a hydrocarbon boiling in the gasoline boiling range; and

(b) a minor effective amount of, as detergent additive, an (alkyl polyoxyalkyl) amino alkanoic acid.

4,409,002

UTILITY TORCH HAVING HEAD MIXER

Roger D. Zwicker, Arlington, Tex., assignor to Victor Equipment Company, Denton, Tex.

Filed Apr. 29, 1982, Ser. No. 373,043

Int. Cl.³ B01F *5/00*

U.S. Cl. 48—180 F **6 Claims**

1. In a torch assembly that includes:

a. a cutting oxygen valve and passageway;

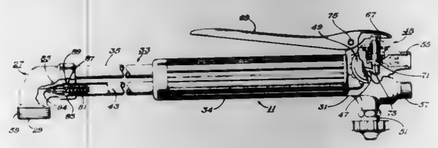
b. a preheat oxygen valve and passageway;

c. a fuel gas valve and passageway; and

d. a head having a tip end for having a tip affixed thereto and having a head passageway for cutting oxygen and a head passageway for mixture of fuel and oxygen;

the improvement comprising:

e. an integral head mixer having within the head an incoming preheat oxygen passageway and an incoming fuel passageway, a mixer insert disposed within said incoming fuel passageway and having engaging seal means for constraining said fuel to flow through said insert; said insert having a centrally disposed bore communicating at its inlet end with said incoming fuel passageway and terminating at its discharge end in a plurality of at least three apertured passageways that extend radially outwardly at respective acute angles with respectively longitudinal axis of the



bore; said apertured passageways terminating downstream of the seal means so as to direct the fuel gas into a surrounding annular space defined by the insert discharge end and the surrounding incoming fuel passageway, and with a connecting conduit between said preheat oxygen passageway and said incoming fuel passageway annular space for having oxygen flowed therethrough for intimate admixing between the fuel and oxygen; said surrounding annular space having an annular area between said insert and the wall of said head passageway through said mixture at the plane of the apertured passageways that is about the same as the total area of the apertured passageways;

whereby said fuel is intimately admixed with said preheat oxygen in a short interval within said head, obviating disastrous and damaging flashbacks.

4,409,003

CARBONITRIDE COATED SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington, and Sergej-Tomislav Buljan, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,381

Int. Cl.³ B24D *11/00*

U.S. Cl. 51—295 **14 Claims**

1. A coated ceramic cutting tool comprising a densified silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of silicon dioxide, aluminum oxide, magnesium oxide, yttrium oxide, hafnium oxide, zirconium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of a material selected from the refractory metal carbonitrides.

4,409,004

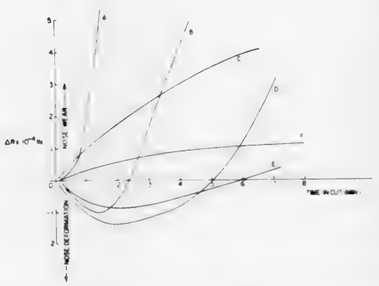
CARBONITRIDE COATED COMPOSITE SILICON NITRIDE CUTTING TOOLS

Vinod K. Sarin, Lexington; Sergej-Tomislav Buljan, Acton, and Charles D'Angelo, Southboro, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 20, 1982, Ser. No. 380,382

Int. Cl.³ B24D *11/00*

U.S. Cl. 51—295 **16 Claims**



1. A coated composite ceramic cutting tool comprising a composite silicon nitride substrate body having at least one adherent coating layer; said substrate body consisting essentially of particles of a refractory material uniformly distributed in a matrix consisting essentially of a first phase of silicon nitride and a refractory second phase comprising silicon nitride and an effective amount of a densification aid selected from the group consisting of yttrium oxide, hafnium oxide, the lanthanide rare earth oxides, and mixtures thereof; said adherent coating layer consisting essentially of a material selected from the refractory metal carbonitrides.

4,409,005

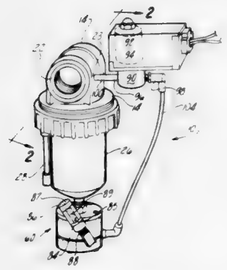
METHOD AND APPARATUS FOR SEPARATING LIQUID AND SOLID CONTAMINANTS FROM A FLOWING GAS

Lorne J. McKendrick, 7724 Merriman Rd., Westland, Mich. 48185

Filed Jul. 6, 1981, Ser. No. 280,880

Int. Cl.³ B01D *50/00*

U.S. Cl. 55—1 **7 Claims**



1. A device for separating solid particulate material and entrained liquid from an airstream comprising:

a housing defining an interior chamber having a bottom portion, said housing having an inlet and an outlet open to said chamber,

means contained within said housing chamber for separating solid particulate matter and entrained liquid from said airstream so that said separated solid particulate matter and said liquid collect in said bottom portion of said chamber,

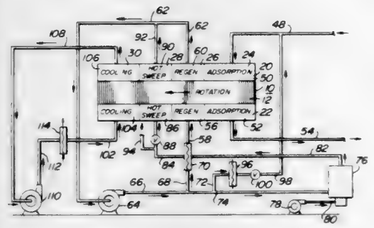
means for periodically purging liquid and solid particulate matter from the bottom portion of said chamber comprising a normally closed dump valve fluidly connected to said bottom portion of said chamber, means for moving said dump valve to an open position comprising an electrically operated valve having an inlet duct fluidly connected to said chamber and an outlet duct fluidly connected to said dump valve and timer means for periodically actuating said electrically operated valve.

4,409,006

REMOVAL AND CONCENTRATION OF ORGANIC VAPORS FROM GAS STREAMS

Manlio M. Mattia, 1208 Waterford Rd., West Chester, Pa. 19380

Filed Dec. 7, 1981, Ser. No. 328,033
Int. Cl.³ B01D *53/08*
U.S. Cl. 55—28 **10 Claims**



1. A process for the removal and concentration of organic vapor from gas streams comprising continuously and simultaneously conducting various steps on different sections both above and below a rotating bed of adsorbent material and sequentially rotating the bed through the steps of:

(a) passing organic vapor-laden gas in a direction normal to said bed through a first section for adsorption of organic vapors and to produce a gas stream having a reduced quantity of organic vapor;

(b) passing a hot, partially inert regenerating gas in a direction normal to said bed through a second section to substantially regenerate said adsorbent material and to provide a partially inert gas stream rich in organic vapor, a portion of which forms a product stream; and

(c) passing a hot inert gas, substantially free of organic vapor, in a direction countercurrent to the flow of said organic vapor-laden gas and normal to said bed through a third section to provide more complete regeneration of said adsorbent material.

4,409,007

PRECIPITATOR RAPPER

Rodney J. Torrey, Erie, Pa.; Dennis Astemborski, Tucson, Ariz.; Marshall A. Carner, Fairview, and Gerald D. Rose, Erie, both of Pa., assignors to Eriez Manufacturing Company, Erie, Pa.

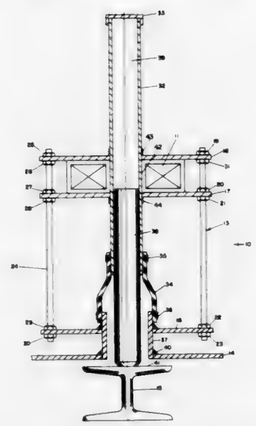
Filed Oct. 19, 1981, Ser. No. 312,909
Int. Cl.³ B03C *3/76*
U.S. Cl. 55—112 **9 Claims**

1. In combination, an electrostatic precipitator having a precipitator frame and a rapper to impact said precipitator frame, said rapper comprising a rapper frame and a first support means for supporting said rapper frame on a top wall of said precipitator,

said rapper frame comprising vertically spaced plates having openings therein and means supporting said plates in vertically spaced relation,

a first solenoid having an opening therein, said solenoid being supported by and sandwiched between said plates with said solenoid opening being in alignment with said openings in said plates, a vertically disposed non-magnetic tube extending through said opening in said solenoid and through said openings in said plates, means for holding said plates in position on said tube,

a hammer reciprocably received in said tube, an opening in said top wall of said precipitator and aligned with said opening in said solenoid and said openings in said plates so as to enable said hammer to impact said frame of said



precipitator, a cap on the upper end of said tube providing access to the upper end of said hammer inside said tube whereby the position of said hammer relative to said tube can be determined,

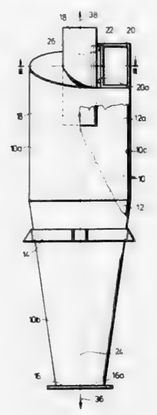
said means for holding said plates in position comprising upper and lower clamps on said tube whereby said tube can be slid up or down relative to said solenoid.

4,409,008

DUST DISPOSAL CYCLONES

Laszlo Solymes, Budapest, Hungary, assignor to Malom-Es Sutoipari Kutatointezet, Budapest, Hungary

Filed Mar. 25, 1981, Ser. No. 247,318
Claims priority, application Hungary, May 29, 1980, 1346/80
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—261 **2 Claims**



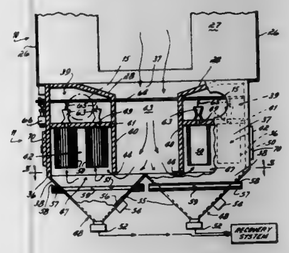
1. In a dust disposal cyclone of circular cross-sectional configuration having a tangential inlet for dust-laden air and an axial outlet for dust-freed air, said outlet protruding into the cyclone; the improvement in which the inlet has a flank facing but spaced from the outlet by a gap defined by and between said flank and said outlet and communicating between the ambient air and the interior of the cyclone, through which gap ambient air is inducted by the dust-laden air that enters through the inlet, and an arcuate baffle between the inducted air and the dust-laden air in the inlet, the baffle being arcuate in the same direction as the outer wall of the cyclone to deflect the inducted air into the same direction in which the dust-laden air from the inlet rotates in the cyclone.

4,409,009

POWDER SPRAY BOOTH

Gunter J. Lissy, Amherst, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 962,507, Nov. 20, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 214,192
Int. Cl.³ B01D *46/36*
U.S. Cl. 55—302 **4 Claims**



1. A powder spray booth and powder recovery/static cartridge filter unit configuration comprising:

booth means providing a controlled area in which to powder coat substrates, defined generally by a ceiling, side and end walls, and a floor;

a powder collection chamber in close proximity to the booth;

means for removing collected powder from the bottom of said powder collection chamber,

a clean air chamber sealed from the booth and from the powder collection chamber, said clean air chamber being provided with a multiplicity of individual openings from the powder collection chamber into said clean air chamber;

static filter means located within said powder collection chamber and operative to effectively prevent powder from entering said clean air chamber, said static filter means comprising a plurality of static filter cartridges,

blower means operative to create a negative pressure in said clean air chamber;

means for cleaning powder from the surface of said filter cartridges by periodically and sequentially reversing air flow through selected filter cartridges while maintaining air flow from said powder collection chamber to said clean air chamber through the other of said filter cartridges so that there is no net interruption of the air flow from the powder collection chamber into the clean air chamber during the cleaning of said selected filter cartridges;

means for preventing a fire within said powder collection chamber from causing an explosion, said explosion prevention means including a substantially unrestricted flow path leading directly from said powder collection chamber into said booth operative to effectively vent any fire created pressure build-up within said powder collection chamber into said booth without the occurrence of an explosion;

means for periodically imparting vibrations to said walls of said powder collection chamber; and

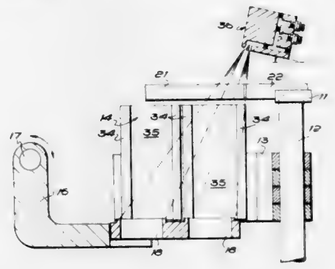
vibration dampening means for isolating said booth and said clean air chamber from vibrations imparted to said powder collection chamber.

4,409,010

METHOD AND APPARATUS FOR GLASS MOULD LUBRICATION

Roy Brown, Dronfield, England, assignor to Graphoidal Developments Limited, England

Filed Jun. 26, 1981, Ser. No. 277,898
Claims priority, application United Kingdom, Jun. 26, 1980, 8020909; Apr. 23, 1981, 8112593
Int. Cl.³ C03B *39/00*
U.S. Cl. 65—26 **9 Claims**



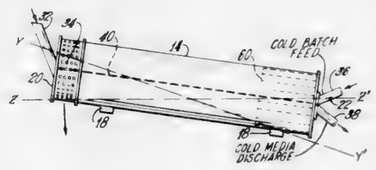
1. A method of intermittently spraying lubricant onto at least one mould of a hollow glassware moulding machine, which mould has a pair of openable halves defining one or more cavities with upright axes extending between first and second ends of the cavities, comprising arranging spray discharge points beyond one of said ends and fixed relative to the open positions of the mould halves, the lubricant being a liquid and being sprayed as droplets entrained in a steam of air or other gas, separately delivering the lubricant and gas to and mixing the lubricant and gas in spray heads which define the discharge points, periodically discharging a quantity of the lubricant generally along the respective axis from said points onto the mould halves while the mould halves are in their open position, continuing the discharge of air after the discharge of liquid lubricant.

4,409,011

PREHEATING GLASS BATCH

Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Bladensburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 181,589, Aug. 27, 1980, Pat. No. 4,319,903. This application Dec. 14, 1981, Ser. No. 330,063
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—27 **3 Claims**



1. A process for producing glass by charging to a melting furnace and melting therein a particulate glass batch, including the steps of:

heating durable heat transfer media, larger in particle size than the glass batch, with exhaust gases from the melting furnace;

introducing the hot media into one end of an inclined container rotatable about an axis having the same inclination as the container;

introducing the particulate glass batch into the other end of the container with the media charging end of the container elevated above the batch charging end;

rotating the container, during rotation the batch and media tumbling and moving over each other in heat transfer relationship;

moving the glass batch in one direction through the rotating container towards the upper end for discharge and moving the hot media in the opposite direction for discharge at the lower end wherein the batch in the container generally flows in a downhill direction towards the upper end for discharge; and

discharging cold media at the lower end of the container through means that allows the media to pass freely through but that prevents the batch from passing.

3. An apparatus for preheating particulate glass batch comprising:

means for heating durable heat transfer media with exhaust gases from a melting furnace;

a container rotatable about an axis, the axis being inclined to the horiziontal;

means for introducing the hot media, larger in particle size than the glass batch, into the elevated end of the container for movement towards the lower end for discharge;

means for introducing particulate glass batch into the lower end of the container for movement towards the elevated end for discharge;

means for rotating the container along the inclined axis;

means associated with the interior of the container for tumbling and moving the particulate glass batch in direct contact with hot media during rotation of the container to heat the glass batch prior to charging to a melting furnace;

means for discharging cold media at the lower end of the container that allows the media to pass freely through but that prevents the batch from passing through; and

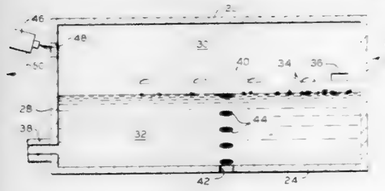
means for discharging hot batch at the upper end of the container wherein an axis drawn from the means for introducing batch to the means for discharging batch extends in a downhill direction towards the means for discharging batch.

4,409,012

METHOD AND APPARATUS FOR MONITORING A GLASS FURNACE

John W. V. Miller, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 16, 1982, Ser. No. 349,133
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—29 **25 Claims**



1. A method of estimating the relative amounts of two materials in a region of the surface of a mixture containing at least the two materials from a digitized video pixel signal representative of the amount of light received from the region of the surface of the mixture, one material being brighter in light intensity than the other material, comprising the steps of:

(a) selecting the video pixel signals from a predetermined area of the surface of the mixture;

(b) generating a histogram based on the total number of said selected pixel signals of equal intensity as a function of a relative light intensity scale; and

(c) determining the areas defined by said generated histogram for each of the materials, the relative amounts of said determined areas being approximately equal to the amounts of the materials in the predetermined area of the surface of the mixture.

19. In an enclosure containing a mixture of two materials, one material appearing to be brighter in light intensity than the other darker material, an apparatus for determining the relative amounts of the materials in a region of the surface of the mixture including means for generating a plurality of digital pixel signals representative of light from points in the region of the surface of the mixture, comprising:

means responsive to the pixel signals for generating output signals representing a histogram based on the total number of the pixel signals of equal intensity as a function of a relative light intensity scale; and

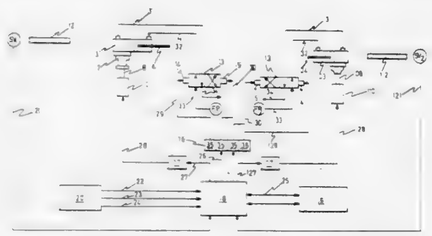
means responsive to said output signals for determining the amount of area defined by the histogram for each of the materials, the amounts of the areas being proportional to the amounts of the associated materials in the region of the surface of the mixture.

4,409,013

90 DEGREE PUSH-OUT FOR GLASSWARE FORMING MACHINES AND ELECTRONIC CONTROL FOR THE SAME

Luis F. Cardenas, and Enrique M. Veazey, both of Monterrey, Mexico, assignors to Vitro Tec Fideicomiso, Monterrey, Mexico

Filed Oct. 26, 1981, Ser. No. 314,796
Claims priority, application Mexico, Oct. 27, 1980, 184491
Int. Cl.³ C03B *9/40*
U.S. Cl. 65—163 **4 Claims**



1. In an electronic control system for an article transfer apparatus for transferring glassware articles from a dead plate of a glassware forming machine to a take-off conveyor and comprising a fluid actuating cylinder and piston assembly mounted for rotation on a vertical shaft between a first position on the dead plate and a second position on the take-off conveyor, ware engaging members mounted on said piston, means for actuating said cylinder and piston assembly between a retracted and an extended position, a stepping motor for rotating said vertical shaft, and control means for sequentially operating said cylinder and piston actuating means and said stepping motor for first extending said ware engaging members to engage ware resting on said dead plate, rotate said extended ware engaging members to deposit the ware on said take-off conveyor with a velocity component and a direction component substantially equal to the velocity and direction of the conveyor, retracting the ware engaging members, and rotating the retracted ware engaging members back to their original position on the dead plate:

means for adjusting the speed of said take-off conveyor as a function of the number of glassware articles handled by the glassware forming machine and of the desired spacing between articles on said conveyor and

a real time clock for controlling the movement of said ware engaging members and said take-off conveyor as a function of the time between glass gobs fed to the glassware forming machines and

a glass gob cut sensor for producing a timing signal to be fed to said real time clock and

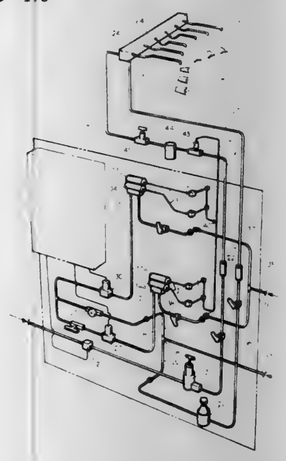
means for calculating the velocity profiles of said ware engaging members and said take-off conveyor as a function of the operator-input information about the desired spacing of the glassware articles on said take-off conveyor.

4,409,014

CONSTANT OIL TO WATER RATIO SHEAR SPRAY SYSTEM

Randle W. Taylor, Sylvania, and Richard G. Davey, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 25, 1981, Ser. No. 324,904
Int. Cl.³ C03B *7/10*
U.S. Cl. 65—170 **11 Claims**



1. In apparatus for spraying an oil-water mixture onto a plurality of individual shear blades of a glass gob feeder wherein water, air and oil supply lines are provided, with the water and air lines being connected to a distributing and mixing block, the improvement comprising a flow meter in said water line, an oil-water ratio controller, an oil injector connected to the water line in advance of the mixing block for injecting oil into the water, means connecting the output of said flow meter to said ratio controller for actuating the oil injector in response to the quantity of water, a plurality of individual chambers in said mixing block each receiving a metered quantity of the oil-water mixture entrained in air, in individual spray nozzle for each shear blade, and means connecting an individual chamber to a spray nozzle whereby uniform oil-water mixtures are provided for each of the plurality of shear blades.

4,409,015

FLOWABLE LIQUID FERTILIZER CONTAINING SUSPENDED WATER INSOLUBLE NITROGEN

Thomas T. Grace, Jr., Lanesville, Ind., assignor to Borden, Inc., Columbus, Ohio

Filed Feb. 11, 1982, Ser. No. 348,040
Int. Cl.³ C05C *9/00*
U.S. Cl. 71—28 **32 Claims**

1. A two stage process for preparing an aqueous dispersion of a urea-formaldehyde condensation product comprising:

in a first stage, reacting together formaldehyde and urea in a molar ratio of formaldehyde to urea in the ratio from about 2.5 to 1 to about 4.7 to 1 in the presence of a condensation catalyst until the methanol tolerance is in the range from about 150% to about 800%, to form an intermediate reaction product, then

in a second stage, reacting said intermediate reaction product with an additional amount of urea such that the overall molar ratio of urea to formaldehyde is in the range from 0.8 to 1 to about 1.7 to 1, at an acid pH and at an elevated temperature not above about 70° C., until the amount of water insoluble nitrogen present in the reaction mixture is in the range from about 15% to about 35% based on the total amount of nitrogen in the system.

30. An aqueous dispersion of a urea-formaldehyde condensation product having a molar ratio of urea to formaldehyde in the range from about 0.8 to 1 to about 1.7 to 1, in which at least 50% of the formaldehyde content of the product is supplied by a condensation product of urea and formaldehyde having a methanol tolerance in the range from about 150% to about 800%, and such that the condensation product is clear and will remain clear and substantially free from precipitated reaction material, upon storage for one year at room temperature, said dispersion being further characterized by having a viscosity in the range from about 150 cps to about 300 cps, as measured on a Brookfield Viscometer Model LVF, spindle **2**, at 30 rpm and 25° C., which viscosity is stable at a temperature in the range from about 50° F. to 90° F. (10° C. to 32° C.) for at least four months when the nitrogen content of the product is in the range from about 17% to about 19% and at least two months when the total nitrogen content of the product is in the range from about 19% to about 25% by weight based on total product.

4,409,016

PROCESS FOR PREPARING THERMALLY STABLE AMMONIUM NITRATE-CONTAINING GRANULES OF HIGH BULK DENSITY

Stanislaus M. P. Mutsers, Geleen; Cornelis Hoek, Nieuwstadt, and Gerardus M. C. Wagemans, Haelen, all of Netherlands, assignors to Unie Van Kunstmestfabrieken, B.V., Utrecht, Netherlands

Filed Jun. 18, 1982, Ser. No. 390,137
Claims priority, application Netherlands, Jun. 19, 1981, 8102958
Int. Cl.³ C05C *1/00*; C01C *1/18*; C01B *21/48*; A01N *25/00*
U.S. Cl. 71—59 **12 Claims**

1. A process for preparing thermally stable ammonium nitrate-containing granules of high bulk density from a composition containing a stabilization agent and ammonium nitrate, comprising the combination of steps of:

(a) forming a fluidized bed of ammonium nitrate seeds kept separated from each other while being contacted by and suspended within a gas current, said fluidized bed being fluidized with air flowing through said bed from bottom to top at a superficial velocity about twice the minimum fluidizaton velocity;

(b) spraying a liquid composition composed of ammonium nitrate and containing:

(i) at most about 15% by weight water,

(ii) about 0.3% to about 3.5% by weight calcium nitrate, and

(iii) about 0.5% to about 5.0% by weight of a thermal stabilization agent wherein said stabilization agent is a finely divided silica-containing material which is insoluble in and chemically inert to ammonium nitrate

into said seed bed while said bed is maintained at a temperature of between about 95° C. to about 145° C. whereby granules are thereby formed and then discharged from said seed bed; and

(c) recovering and rapidly cooling the thus formed granules discharged from said seed bed.

4,409,017

HERBICIDAL ISOQUINOLINOXY- OR ISOQUINOLINAMINO-PHENOXY ALKANE CARBOXYLIC ACID DERIVATIVES

Alexander Serban, Doncaster; Graham J. Bird, North Melbourne, and Lindsay E. Cross, Maribyrnong, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

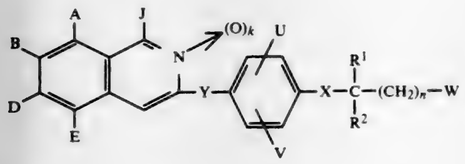
Filed Jun. 16, 1981, Ser. No. 274,164

Claims priority, application Australia, Jul. 1, 1980, PE4317; Dec. 22, 1980, PE7035

Int. Cl.³ A01N *43/42*; C07D *217/22, 217/24*

U.S. Cl. 71—94 **8 Claims**

1. A compound of the formula



wherein:

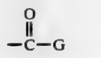
A, D, E, U, V and R^2 are hydrogen;

B is halogen;

J is halogen;

R^1 is methyl;

W is the group



wherein G is selected from the group consisting of hydroxy, C_1 to C_{10} alkoxy, C_2 to C_{10} alkenyloxy, C_2 to C_{10} alkynyloxy, and the group OM wherein M is an alkali metal or alkaline earth metal ion;

X is oxygen;

Y is selected from oxygen and the group NR^6 wherein R^6 is methyl; and

k and n are both 0.

6. A process for severely damaging or killing unwanted plants which process comprises applying to said plants, or to the growth medium of said plants, an effective amount of a compound as defined according to claim **1**.

4,409,018

HEXAHYDROISOINDOL DERIVATIVES, AND THEIR PRODUCTION AND USE

Yasuo Ishida, Suita, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

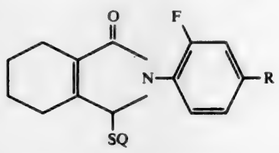
Filed May 28, 1981, Ser. No. 267,681

Claims priority, application Japan, May 30, 1980, 55-72949

Int. Cl.³ A01N *43/38*; C07D *209/46*

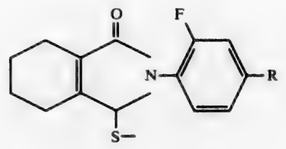
U.S. Cl. 71—96 **21 Claims**

1. A compound represented by the formula



wherein R is a halogen; Q is (1) hydrogen, (2) a straight-chain or branched (C_{1-11}) alkyl group which may be substituted by a hydroxyl group, a cyano group, a (C_{2-4}) alkanoyl group, a benzoyl group or a (C_{1-4}) alkoxycarbonyl group, (3) a benzyl group, (4) a (C_{2-6}) alkenyl group, (5) a phenyl group, (6) R_1S, (7) R_2CO, or (8)

wherein R^1 is selected from a straight-chain or branched (C_{1-11}) alkyl group, a phenyl group which may be substituted by a halogen, or



wherein

R is as defined above;

R_2 is selected from a straight-chain or branched (C_{1-11}) alkyl group which may be substituted by a (C_{1-4}) alkoxy group, or a phenyl group which may be substituted by a halogen or a (C_{1-4}) alkyl group;

R_3 is selected from a straight-chain or branched (C_{1-11}) alkyl group, a (C_{2-6}) alkenyl group, a cyclohexyl group, a benzyl group, or a phenyl group which may be substituted by a halogen or a (C_{1-4}) alkyl group;

X is selected from oxygen or an imino group which may be substituted by a (C_{1-4}) alkyl group; and

Y and Z are each selected from oxygen or sulfur.

15. A herbicidal composition comprising a herbicidally effective amount of the compound of claim **1**, in combination with an inert carrier.

4,409,019

METHOD FOR PRODUCING COBALT METAL POWDER

Clarence D. Vanderpool, and Martin B. MacInnis, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 10, 1982, Ser. No. 448,579

Int. Cl.³ C22B *23/04*

U.S. Cl. 75—0.5 AA **7 Claims**

1. A method of producing cobalt metal powder from a source consisting essentially of cobalt comprising contacting said cobalt source with an aqueous solution of hydrogen iodide and iodine, said iodine being present at a desired concentration and in an amount sufficient to solubilize a portion of said cobalt source and form a solution containing cobalt values, reducing said cobalt values to produce a cobalt metal powder.

4,409,020

RECOVERY OF METALS FROM GRINDING SLUDGES

James L. Holman, Jr., and Leander A. Neumeier, both of Rolla, Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 24, 1983, Ser. No. 460,102

Int. Cl.³ C22C *1/04*; B02F *9/04*

U.S. Cl. 75—0.5 B **4 Claims**

1. A process for recovery of metal values from magnet alloy grinding sludge comprising the sequential steps of:

(1) removing a major portion of sulfur and oil contaminants from the sludge by means of an organic solvent,

(2) drying the desulfurized and deoiled sludge at a temperature of about 90° to 105° C. for a period sufficient to remove substantially all remaining water and solvent, and obtain a dried product,

(3) grinding the dried product for a period sufficient to partially free grinding abrasive material,

(4) subjecting the ground product to sizing and magnetic separation to segregate a majority of the coarser abrasive material in a low-metallics nonmagnetic fraction,

(5) oxidation-roasting of the sludge at a temperature of about 850° to 1,000° C. to selectively remove residual sulfur and carbon, and

(6) subjecting the oxidized sludge to a gaseous hydrogen reduction at a temperature of about 1,050° to 1,2000° C. to reoxidize and recover purified metal values.

4,409,021

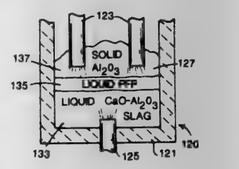
SLAG DECARBONIZATION WITH A PHASE INVERSION

Thomas W. Moore, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 6, 1982, Ser. No. 375,492

Int. Cl.³ C22B *4/02, 21/02*

U.S. Cl. 75—10 R **14 Claims**



1. A batch method for decarbonizing primary furnace product from an aluminum carbide content of up to about 35% to a useful content of about 2% Al_4C_3 by maximizing mass transfer of said aluminum carbide between molten slag and molten primary furnace product in a decarbonization arc furnace which has elevatable electrodes and is operated in the extraction mode, comprising the operation of said decarbonization furnace according to the following steps:

A. providing a greatly increased interfacial area of alumina and said primary furnace product in the presence of a melting point depressant, said providing being accomplished by adding a charge of primary furnace product, as an aluminum/aluminum carbide alloy, and an alumina slag, containing said depressant, to said decarbonization arc furnace for forming a two-layered melt, as an underlying molten slag layer and an overlying layer of alloy melt having a top melt surface;

B. adding a stoichiometric amount of granular alumina to said furnace and onto said top melt surface to form an alumina cover layer, whereby said cover layer insulates said top melt surface from radiant heat and captures aluminum vapors and aluminum oxide vapors emanating therefrom;

C. mechanically agitating said cover layer with sufficient regularity to cause said granular alumina to remain in intimate contact with said top melt surface while continuously supplying electrical power to the electrodes for melting said alumina, whereby:

(1) the melted alumina sinks into said alloy melt and forms a two-phase liquid region within which extraction of aluminum carbide from said alloy takes place across a plurality of interfaces throughout said region, according to the extraction reaction: $Al_4C_3+4Al_2O_3 \rightarrow 3Al_4O_4C$, so that said top melt surface becomes an upper interface which rises within said furnace as said reaction proceeds; and

(2) the unreacted melted alumina and aluminum tetraoxycarbide from said reaction descend to said underlying molten slag layer so that the lower interface between said slag layer and said two-phase liquid region also rises as said reaction proceeds;

D. elevating said electrodes to maintain arcs between said electrodes and said upper interface while said upper interface rises, whereby electrical conditions remain constant within said furnace; and

E. when said alumina is completely melted and said liquid region and said slag layer have separated into purified aluminum floating on a terminal slag pool into which said slag layer and said Al_4O_4C and unreacted Al_2O_3 in said two-phase region have coalesced, employing the following steps:

(1) decreasing power input to said electrodes in order to minimize vaporization from said purified aluminum and oxidation of aluminum along the upper surface thereof, and

(2) tapping said furnace and removing said purified aluminum therefrom.

4,409,022

METHOD OF PRODUCING LOW-SULFUR, REDUCED, IRON ORE PELLETS

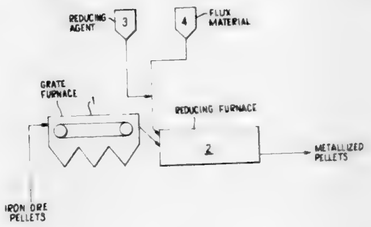
Shinichi Kurozu, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Mar. 3, 1982, Ser. No. 354,337

Claims priority, application Japan, Mar. 9, 1981, 56-33616; Jun. 29, 1981, 56-100986

Int. Cl.³ C21B *13/08*

U.S. Cl. 75—36 **7 Claims**



1. A method of producing pellets of highly reduced iron oxide material, which pellets have a low sulfur content, which comprises: in a reducing furnace, heating a charge mixture of starting pellets of iron oxide material, a desulfurizing agent and a carbonaceous reducing agent of high sulfur content and low reactivity, to an elevated reduction temperature effective to generate a reducing atmosphere of carbon monoxide, and reacting said iron oxide material with said carbon monoxide to reduce said iron oxide material to metallic iron until the metallization of said iron oxide material has reached a value in the range of from 90 to 95 percent whereby to obtain pellets of highly reduced iron oxide; and thereafter maintaining said pellets of highly reduced iron oxide in said reducing furnace, at said reduction temperature and in contact with said reducing atmosphere of carbon monoxide, for at least fifteen minutes whereby to reduce the sulfur content of said pellets of highly reduced iron oxide.

4,409,023

PROCESS FOR DIRECTLY MAKING LIQUID PIG-IRON FROM COARSE IRON ORE

Ralph Weber, Sao Paulo, Brazil; Bernt Rollinger, Baden-Baden, Fed. Rep. of Germany; Rolf Hauk, Baden-Baden, Fed. Rep. of Germany; Michael Nagl, Baden-Baden, Fed. Rep. of Germany, and Bernhard Rinner, Kehl am Rhein, Fed. Rep. of Germany, assignors to Korf-Stahl AG, Fed. Rep. of Germany and Voest-Alpine AG, Austria

Filed Sep. 10, 1981, Ser. No. 300,904

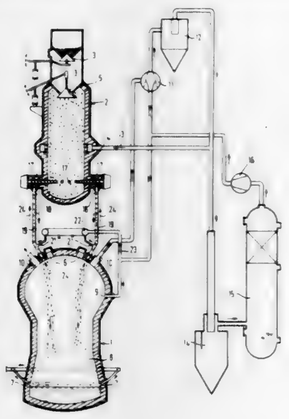
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034539

Int. Cl.³ C21B *13/14*

U.S. Cl. 75—38 **7 Claims**

1. Process for directly making liquid pig-iron from coarse iron ore, in which the ore is charged as loose bulk material into a direct-reduction shaft and there reduced to sponge-iron by the action of a hot reducing gas, after which the hot sponge-iron is transferred by a discharging device directly through at

least one communicating passage into a smelter-gasifier which produces, from coal and a blown-in oxygen-bearing gas, both the heat necessary for melting the sponge-iron and the reduction gas, of which a first part-stream, after cooling to the temperature specified for the reduction of the ore, and after removal of dust, is blown into the reduction zone of the reduction shaft, characterized in that a second part-stream (**24**) of



reduction gas flowing counter-current to the sponge-iron particles is cooled down to a temperature below 950° C. and passed through said communicating passage (**19**) from the smelter-gasifier to the direct reduction shaft (**2**), the flow-resistance in the path of the second part-stream being adjusted such that the volumetric flow-rate of the second part-stream (**24**) is 5 to 30 percent of the total flow of reduction gas entering the direct reduction shaft (**2**).

4,409,024

TOP-AND-BOTTOM BLOWN CONVERTER STEEL MAKING PROCESS

Yoshiei Kato; Tsutomu Nozaki, and Kyoji Nakanishi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

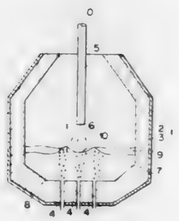
PCT No. PCT/JP81/00239, § 371 Date May 17, 1982, § 102(e) Date May 17, 1982, PCT Pub. No. WO82/01012, PCT Pub. Date Apr. 1, 1982

PCT Filed Sep. 19, 1981, Ser. No. 385,407

Claims priority, application Japan, Sep. 19, 1980, 55-131402

Int. Cl.³ C21C *5/32, 5/34*

U.S. Cl. 75—60 **8 Claims**



1. A top and bottom blown converter steel making process comprising:

blowing an oxidizing gas onto the surface of molten iron in the converter through a lance aligned with the central vetical axis of the converter and disposed above the molten iron surface a distance L and having lance discharge holes with the hole axes at an angle θ_1 to said central vertical axis and each discharge hole having an angle of dispersion θ_2 for bringing the oxidizing gas into direct contact with the molten iron to form a hot spot having a horizontal distance Y between the central vertical axis of the converter and the outermost boundary of the hot spot according to the following formula:

$$Y = L \tan (\theta_1 + \theta_2/2)$$

and

blowing gas into the molten iron through a plurality of tuyeres arranged in the bottom of the converter with the maximum distance X_0 among the distances X between the respective tuyeres and the center of the bottom of the converter being no greater than 1.3 times the distance Y.

4,409,025

HEAT RESISTANT CAST IRON-NICKEL-CHROMIUM ALLOY

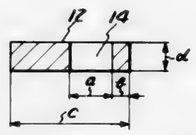
Junichi Sugitani, Hirakata; Teruo Yoshimoto, Suita, and Makoto Takahashi, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Dec. 22, 1981, Ser. No. 333,470

Claims priority, application Japan, Jan. 12, 1981, 56-3605

Int. Cl.³ C22C *30/00*

U.S. Cl. 420—584 **2 Claims**



1. A heat resistant cast iron-nickel-chromium alloy consisting essentially of the following components in the following proportions in terms of % by weight:

C—0.3–0.6,
$O < Si \leqq 2.0$,
$O < Mn \leqq 2.0$,
Cr—20–30,
Ni—30–40,
W—0.5–5.0,
N—0.04–0.15,
B—0.0002–0.004,
Ti—0.04–0.50 and
Al—0.02–0.50,

the balance being substantially Fe.

4,409,026

SPRING STEEL FOR VEHICLES

Yoshiro Yamada, Akashi; Nobuyasu Hatsuoka, Itami, and Shinzo Ashida, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jun. 17, 1981, Ser. No. 274,414

Claims priority, application Japan, Jun. 26, 1980, 55-86955

Int. Cl.³ C22C *38/24, 38/34*

U.S. Cl. 75—124 **6 Claims**

1. A suspension spring steel substantially composed of 0.5–0.7 wt% of C, 1.0–1.8 wt% of Si, 0.1–1.0 wt% of Mn, 0.3–0.55 wt% of Cr, 0.03–0.5 wt% of V, 0.02 to 0.1 wt% of Al and the balance of Fe and normally present impurities.

4,409,027

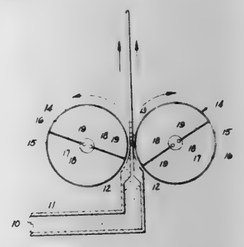
ALLOY STEEL FOR ROLL CASTER SHELL

James N. Cordea, Monroe, Ohio, and Harshad V. Sheth, Rancho Palos Verdes, Calif., assignors to Armco Inc., Middletown, Ohio

Filed Jun. 28, 1982, Ser. No. 393,192

Int. Cl.³ C22C *38/44*

U.S. Cl. 75—128 W **9 Claims**



1. A ferritic alloy steel consisting essentially of, in weight percent, from about 0.53% to about 0.58% carbon, about 0.40% to about 1.0% manganese, 0.10% to about 0.20% silicon, about 0.02% maximum phosphorus, about 0.02% maximum sulfur, about 0.45% to about 0.55% nickel, 1.50% to 3.00% chromium, 0.80% to 1.20% molybdenum, 0.30% to 0.50% vanadium, and balance essentially iron.

4,409,028

PROCESS FOR PRODUCING CAST IRON

William H. Moore, Whitehall Apts.-6E, Whitehall Rd., Chattanooga, Tenn. 37405

Continuation of Ser. No. 88,049, Oct. 24, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,959

Int. Cl.³ C22C *33/08*

U.S. Cl. 75—130 R **11 Claims**

1. A method for controlling the graphite content in an iron melt comprising the steps of adding magnesium to the melt until more than 0.020% by weight of the melt is retained magnesium, bubbling the melt with carbon dioxide until the percentage of retained magnesium in the melt is around 0.005% by weight and then adding a nodularizer to the melt.

4,409,029

CONTAINER FOR ENCLOSING RADIOACTIVE WASTE AND A METHOD FOR TREATING WASTE ENCLOSED IN THE CONTAINER

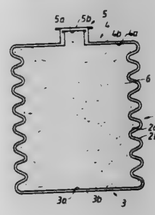
Hans Larker, and Ragnar Tegman, both of Robertsfors, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Nov. 21, 1980, Ser. No. 209,196

Claims priority, application Sweden, May 19, 1980, 8003699

Int. Cl.³ B22F *31/14*; B65D *89/04*

U.S. Cl. 419—10 **9 Claims**



1. A method for converting radioactive particulate and piece-formed material into a solid body comprising enclosing the material in a gas-tight container having a cylindrical corrugated sheath; and consolidating and bonding the material by pressing the container under temperature and pressure conditions sufficient to cause bonding of the material, said consolidating and bonding step including the step of isostatically pressing the container and the material therein at an elevated temperature whereby to convert the enclosed material into a solid body.

4,409,030

MATERIAL FOR DESTROYING CONCRETE STRUCTURES

Keiichi Minegishi; Tokuji Akiba; Hiroshi Harada; Akihiko Takei, and Motoshi Abe, all of Kumagaya, Japan, assignors to Chichibu Cement Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1982, Ser. No. 346,120

Claims priority, application Japan, Feb. 6, 1981, 56-15730

Int. Cl.³ C04B *31/02, 7/35*

U.S. Cl. 106—97 **14 Claims**

1. A destructive material comprising a mixture of 20 to 80 parts by weight of coarse-grained quicklime adjusted to a particle size of from 88 to 3000 microns by pulverizing a quicklime mass having a crystal size of 1–5 microns, said quicklime mass being obtained by calcination of limestone at a temperature of from 1200° to 1500° C., and 20 to 80 parts by weight of cement.

4,409,031

CONTINUOUSLY OPERABLE SUGAR CENTRIFUGAL AND METHOD FOR IMPROVING THE PURITY OF THE PRODUCED SUGAR

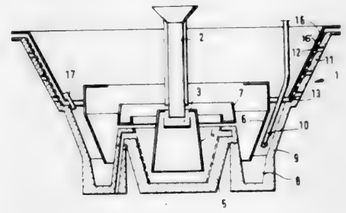
Helmut Schaper, Brunswick, Fed. Rep. of Germany, assignor to Braunschweigische Maschinenbauanstalt AG, Brunswick, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 348,680

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106739

Int. Cl.³ C13F *1/06, 1/10*

U.S. Cl. 127—19 **6 Claims**



1. A continuously operable sugar centrifugal having a rotational axis, comprising massecuite feeding means (**2**), massecuite distributing and accelerating means (**4**), a rotatably supported upwardly flaring frustum-shaped centrifugal basket including on its inside a separating screen (**16'**), said centrifugal basket further comprising a washing stage (**9**) in a narrow diameter basket area and a drying stage (**11**) in a larger diameter basket area, said massecuite feeding means being adapted for supplying massecuite into said centrifugal basket, stationarily arranged wash liquid supply nozzles (**10**) positioned for supplying washing liquid into said washing stage, separate receiving and discharging means for sugar and syrup respectively, said drying stage (**11**) forming, due to its larger diameter, a radially extending step which separates the drying stage (**11**) from said washing stage (**9**), closed surface cover means (**12**) arranged to cover the inside of said drying stage (**11**) and to rotate with said centrifugal basket, said closed surface cover means (**12**) being spaced from the separating screen (**16'**) of the drying stage (**11**) to form a spacing (**16**), said closed surface cover means (**12**) having a shape substantially conforming to the shape of said centrifugal basket, said closed surface cover means (**12**) having a smaller diameter lower edge, said washing

stage (9) having an upper sugar overflow edge adjacent to said radially extending step, said edges forming a sugar slot (13) having a width which is narrower than that of any following sugar discharge opening within the centrifugal, for causing sugar crystals to move from said washing stage substantially radially relative to said rotational axis through said sugar slot (13) and into said spacing (16) for preventing any contaminated wash liquid and wash liquid spray from contacting sugar crystals after having passed through said sugar slot into said spacing (16), said centrifugal comprising further receiving and discharging means, said closed surface cover means (12) being in communication with said further receiving and discharging means for receiving and discharging wash water mist, condensate and sugar lumps into said further receiving means.

4,409,032

ORGANOSOLV DELIGNIFICATION AND SACCHARIFICATION PROCESS FOR LIGNOCELLULOSIC PLANT MATERIALS

Laszlo Paszner, Vancouver, and Pei-Ching Chang, Burnaby, both of Canada, assignors to Thermoform Bau-Und Forschungsgesellschaft, Murten, Switzerland

Continuation-in-part of Ser. No. 135,175, Mar. 28, 1980, abandoned, which is a continuation of Ser. No. 28,447, Apr. 9, 1979, abandoned, which is a continuation of Ser. No. 932,421, Aug. 11, 1978, abandoned. This application Mar. 26, 1981, Ser. No. 248,023

Claims priority, application Canada, Aug. 31, 1977, 285821

Int. Cl.³ C13K *1/02*

U.S. Cl. 127—37 **6 Claims**

1. In a process for the production of carbohydrate hydrolysates of cellulose from a cellulosic material which can contain lignin by treating the material in a pressure vessel with a solvent mixture with water containing a small quantity of a mineral acid selected from the group consisting of hydrochloric, sulfuric and phosphoric acids at an elevated temperature to solubilize the carbohydrate and until sugars are formed by hydrolysis from the solubilized carbohydrate in a liquor the improvement which comprises the steps of:

(a) supplying a solvent mixture containing acetone and water in a volume ratio of acetone to water between 70 to 30 and 60 to 40 and the acid in an amount of between 0.05 and 0.25 percent by weight of the mixture of hydrochloric acid or between 0.15 and 0.25 percent by weight of the mixture of phosphoric or sulfuric acids into the vessel under pressure with the cellulosic material to provide a limited retention time of the solvent mixture in the vessel of seven minutes or less such that sugars are not dehydrated or degraded into non sugars and then removing the solvent mixture as the liquor containing the sugars wherein the liquor removed from the vessel initially contains lignin and is separated from the liquor collected subsequently which contains the sugars;

(b) rapidly cooling the liquor immediately upon removal from the vessel to prevent degradation of the sugars to non sugars;

(c) recovering the sugars from the cooled liquor.

4,409,033

SIMULATED MOVING BED SEPARATION PROCESS FOR HIGH VISCOSITY FEED STREAMS

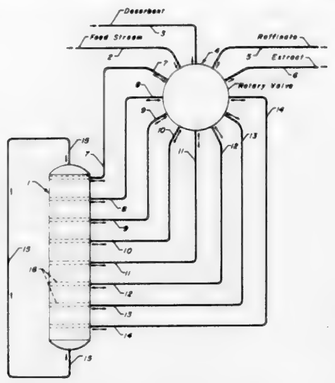
Charles F. LeRoy, San Antonio, Tex., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 18, 1981, Ser. No. 332,401

Int. Cl.³ C13D *3/14*

U.S. Cl. 127—46.2 **13 Claims**

1. In a process for the separation of monosaccharides wherein a feed stream containing a mixture of monosaccharides and a desorbent stream are separately passed into a fixed bed of solid adsorbent at various points through a plurality of conduits which are attached to a flow distribution means to simulate a moving bed of adsorbent, the improvement which comprises locating the fluid distribution means at an elevation



which is above the uppermost point at which one of the conduits communicates with the bed of adsorbent.

4,409,034

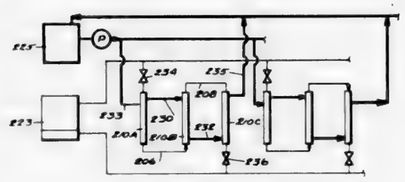
CRYOGENIC CLEANING PROCESS

Roger F. Williams, Louisville, Ky., assignor to Mobile Companies, Inc., Louisville, Ky.

Filed Nov. 24, 1981, Ser. No. 324,530

Int. Cl.³ B08B *7/04, 9/08*

U.S. Cl. 134—4 **11 Claims**



1. In a system for circulating heated fluid through at least first and last conduit channels which are juxtaposed with a container for viscous liquid which is in wetted contact with a wall of the container, a method of removing from said wall at least a major portion of such of said viscous liquid as remains as contaminating material thereon when said container has been emptied, said method comprising the steps of:

(a) preventing the flow of hot fluid into the existing conduit channels;

(b) selectively and removably coupling adjacent conduit channels by utilizing adequate conduits to effect a change of flow from a series flow pattern to a parallel flow pattern within the conduit channels;

(c) flowing cryogenic liquid having a temperature less than about −100° C. in the conduit channels modified according to step (b);

(d) allowing cryogenic liquid to circulate in the conduit channels for a predetermined period of time to effect at least partial solidification of the contaminant material thereby rendering it more adaptable for removal; and

(e) removing the contaminant material treated according to step (d) from the wall.

4,409,035

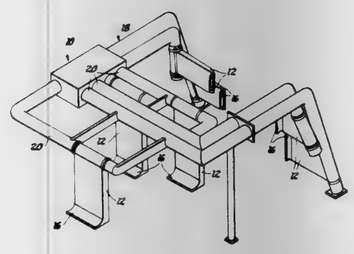
CLAMP FOR VARYING THE HINGING ACTION OF A FLUID STRIPPING BAG

Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455, and David R. Day, 4334 Ocean Dr., Apt. 203, Corpus Christi, Tex. 78012

Filed Jan. 8, 1982, Ser. No. 338,577

Int. Cl.³ B08B *1/00, 13/00*

U.S. Cl. 134—6 **19 Claims**



15. A method of selectively varying the hinging action of a flexible, inflatable fluid-stripping bag (12) including an elongated bag inlet (14) having a predetermined cross-sectional area and a nozzle (16) at one end thereof, said method comprising the steps of: mounting the bag inlet (14) about an opening (24) of a plenum (20) for supplying air to the bag (12) and selectively varying the cross-sectional area of the bag inlet (14) to vary the hinging action of the bag (12) whereby changing the cross-sectional area of the bag inlet (14) changes the resistance to hinging action of the bag (12).

16. A method as set forth in claim 15 further characterized by the steps of disposing an adjustable frame (26) about the periphery of the bag inlet (14) and adjusting the size of the frame (26) to adjustably limit the extent to which the bag inlet (14) opens to determine the cross-sectional area of the bag (12) and securing the frame (26) about the bag inlet (14) and perfecting a seal between the frame (26) and the outer periphery of the opening (24).

4,409,036

ALUMINUM ALLOY SHEET PRODUCT SUITABLE FOR HEAT EXCHANGER FINS AND METHOD

William D. Vernam; Ralph W. Rogers, Jr., and Harry C. Stumpf, all of New Kensington, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 23, 1980, Ser. No. 219,574

Int. Cl.³ C22F *1/04;* **C22C** *21/04*

U.S. Cl. 148—2 **43 Claims**



9. A method of producing a wrought aluminum sheet product for fin stock characterized by a substantially uniform distribution of relatively fine, generally equiaxed constituents comprised mainly of elemental silicon, comprising the steps of:

(a) providing a body of aluminum base alloy consisting essentially of 2 to 13 wt.% si, 0 to 4 wt.% Zn, 0.005 to 2 wt.% Sr, up to 1 wt.% Fe and up to 1 wt.% Cu, the balance essentially aluminum and incidental impurities,

(b) rolling said body at temperatures not higher than 925° F. to provide a sheet product, and

(c) forming said sheet into heat exchanger fins.

4,409,037

ADHESION PROMOTER FOR PRINTED CIRCUITS

Adela Landau, Watertown, Conn., assignor to Macdermid Incorporated, Waterbury, Conn.

Filed Apr. 5, 1982, Ser. No. 365,645

Int. Cl.³ C23C *1/10*

U.S. Cl. 148—6.14 R **13 Claims**



12. A composition for improving the adhesion of copper foil to printed circuit substrates by oxidizing the copper bonding surface, comprising an aqueous solution containing one or more chlorites taken from the group consisting of alkaline earth metal chlorites and alkali metal chlorites at a concentration of from 100 grams per liter to complete saturation, one or more hydroxides taken from the group consisting of sodium and potassium hydroxide at a concentration of from 10 to 25 grams per liter and wherein the ratio of the hydroxide to the chlorite is within the range of from about 1:10 to about 1:20.

4,409,038

METHOD OF PRODUCING AL-LI ALLOYS WITH IMPROVED PROPERTIES AND PRODUCT

John H. Weber, Sloatsburg, N.Y., assignor to Novamet Inc., Wyckoff, N.J.

Filed Jul. 31, 1980, Ser. No. 174,181

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—12.7 A **14 Claims**

1. A method for producing a dispersion-strengthened aluminum-base alloy of improved mechanical and thermal properties comprising degassing and compacting at elevated temperature below liquation temperature a mechanically alloyed powder consisting essentially of aluminum, lithium, oxygen and carbon, and optionally one or more of the group selected from magnesium, copper and iron, the lithium level being at least about 1.7 up to about 3.5 weight %, the dispersoid comprising the carbon and oxygen, and being present in a small but effective amount for increased strength up to about 8 volume %, and the balance, apart from said optional components, essentially aluminum, and subjecting the compacted powder to a solution treatment at a temperature not exceeding the maximum degassing and/or compaction temperature, cooling the solution treated alloy, and aging the alloy at an elevated temperature for a period of time sufficient to permit age hardening of the alloy.

4,409,039

HIGH STABILITY PRINTING LIQUID, INTENDED MORE PARTICULARLY FOR PRINTING BY INK JET

Jean P. Lepesant, and Georges Tantot, both of Paris, France, assignors to Societe IMAJE, Bourg-les-Valence, France

Filed Mar. 18, 1981, Ser. No. 244,909
Claims priority, application France, Mar. 21, 1980, 80 06400
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—20 **24 Claims**

1. A printing liquid useful in jet ink printing processes which require inks which are macroscopically homogeneous and stable over long periods of time, comprising:

a liquid having the structure of a microemulsion comprising a dispersing phase and a dispersed phase, said phases being separated from one another by an interfacial film which isolates the constituents of the two phases in such a way that any danger of flocculation is avoided.

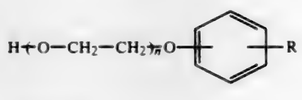
4,409,040

INK FOR USE IN INK-JET PRINTER

Isao Tabayashi, Tokyo; Hiromi Soma, Warabi, and Hiroshi Fukutomi, Urawa, all of Japan, assignors to Dainippon Ink and Chemicals Inc., Tokyo, Japan

Filed Feb. 12, 1982, Ser. No. 348,159
Claims priority, application Japan, Feb. 18, 1981, 56-21432
Int. Cl.³ C09D *11/02*
U.S. Cl. 106—20 **13 Claims**

1. Ink for use in an ink-jet printer, said ink comprising a solution in water of a water-soluble dye, a wetting agent and a compound of the following formula



wherein R represents $-C_mH_{2m+1}$ or $-O-C_mH_{2m+1}$, m represents 0 or an integer of 1 to 6, and n represents an integer of 1 to 10.

4,409,041

AMORPHOUS ALLOYS FOR ELECTROMAGNETIC DEVICES

Amitava Datta, Madison; Lance A. Davis, Morristown; Nicholas J. DeCristofaro, Chatham, and Jordi Marti, Randolph, all of N.J., assignors to Allied Corporation, Morristown, N.J.

Continuation-in-part of Ser. No. 191,475, Sep. 26, 1980. This application Jul. 29, 1981, Ser. No. 286,918
Int. Cl.³ C04B *35/00*
U.S. Cl. 148—31.55 **8 Claims**

1. A magnetic alloy consisting essentially of iron, boron and silicon having at least 85 percent of its structure in the form of an amorphous metal matrix, said alloy having been annealed at a temperature and for a time sufficient to induce precipitation of discrete particles of its constituents in said amorphous metal matrix, said particles having an average size ranging from about 0.05 m to 1 m and an average interparticle spacing of about 1 m to 10 m, and constitute an average volume fraction of said alloy of about 0.01 to 0.3.

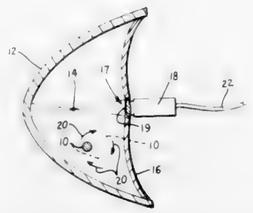
4,409,042

METHOD AND APPARATUS FOR MEASURING THE TEMPERATURE OF MOVING ELONGATED ARTICLES AND APPLICATION THEREOF

Georg C. E. Dornberger, and Robert E. Streich, both of Phoenix, Ariz., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,105
Int. Cl.³ C22F *1/00;* **B21C** *9/00*
U.S. Cl. 148—129 **4 Claims**

2. The method of annealing a metallic wire comprising the steps of passing the wire over two spaced electrodes across which a voltage is applied, within the bounds of a radiant heat reflective wall of substantially parabolic cross-sectional or paraboloidal shape with the path of wire travel offset from the



wall focal axis or point, sensing the temperature of the wire by sensing the magnitude of radiant heat emanating from the wall focal axis or point, and controlling the magnitude of the voltage as a function of sensed wire temperature.

4,409,043

AMORPHOUS TRANSITION METAL-LANTHANIDE ALLOYS

Norman C. Koon, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 23, 1981, Ser. No. 314,326
Int. Cl.³ C22C *19/00*
U.S. Cl. 148—403 **20 Claims**

1. An alloy represented by the formula:

$(M_wX_xB_{(1-w-x)})_{(1-y)}(R_zLa_{(1-z)})_y$ wherein w is from about 0.7 to about 0.9; x is from 0 to about 0.10; y is from about 0.05 to about 0.15; z is from 0 to about 0.95; M is selected from the class consisting of iron, cobalt, an iron-cobalt alloy, an iron-manganese alloy having at least 50 atomic percent iron, an iron-nickel alloy having at least 50 atomic percent iron, an iron-cobalt-manganese alloy having at least 50 atomic percent iron and cobalt, an iron-cobalt-nickel alloy having at least 50 atomic percent iron and cobalt, and an iron-cobalt-manganese-nickel alloy having at least 50 atomic percent iron and cobalt; X is an auxiliary glass former selected from the class consisting of phosphorous, carbon, silicon, aluminum, arsenic, germanium, indium, antimony, bismuth, tin, and mixtures thereof, and R is selected from the group consisting of cerium, praseodymium, neodymium, and mixtures thereof, said alloy having an amorphous microstructure.

4,409,044

WATER-IN-OIL EMULSION EXPLOSIVES AND A METHOD FOR THE PREPARATION OF THE SAME

Dhirendra N. Bhattacharyya, Maharashtra; Srinivasachari Seshan, Giridih; John S. Campbell, Maharastra, and Soumendranath Sen, Giridin, all of India, assignors to Indian Explosives Limited, Calcutta, India

Filed Nov. 18, 1982, Ser. No. 442,670
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **10 Claims**

1. An improved water-in-oil emulsion explosive composition which comprises

(i) 5 to 30% by weight of water;

(ii) 3 to 15% by weight of a water-insoluble, emulsifiable, liquid or liquefiable carbonaceous fuel;

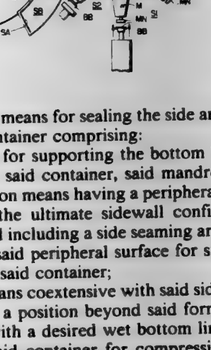
(iii) 20 to 80% by weight of inorganic oxidiser salt;

(iv) optionally 0.02 to 0.5% by weight of gassing agent;

(v) 0.5 to 4% by weight of emulsifier; and

(vi) optionally, water- and/or fuel-soluble thickening agent, flame-quenching coolant and/or metallic particulate fuel characterised in that the composition also contains;

(vii) 0.02 to 2% by weight of a stabiliser selected from the group consisting of organo-sulphur compounds, organic compounds containing quaternary nitrogen, phenolic compounds and substituted derivatives thereof, dihydroxybenzenes, quinones, unsubstituted and substituted



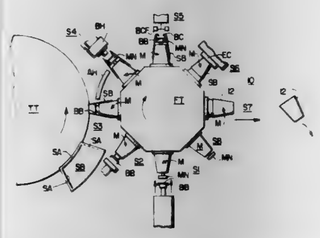
aryl diazo compounds, unsubstituted and substituted aryl amines and salts thereof, unsubstituted and substituted quinolines and mixtures of any two or more of said stabilisers.

4,409,045

METHOD AND APPARATUS FOR SEALING THE SIDEWALL AND BOTTOM SEAM PORTIONS OF TWO-PIECE CONTAINERS DURING MANUFACTURE THEREOF

Charles E. Busse, Jarrettsville, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Jul. 20, 1982, Ser. No. 399,980
Int. Cl.³ B29C *27/00;* **B65B** *7/00*
U.S. Cl. 156—69 **29 Claims**



8. A seaming means for sealing the side and bottom seams of a two-piece container comprising:

mandrel means for supporting the bottom blank and sidewall portions of a said container, said mandrel means including forming section means having a peripheral surface shaped to conform to the ultimate sidewall configuration of a said container and including a side seaming area extending longitudinally of said peripheral surface for supporting a lapped side seam of said container;

seam clamp means coextensive with said side seaming area and extending to a position beyond said forming section means coincident with a desired wet bottom line for said sidewall portion of said container for compressing the said lapped side seam against said side seaming area;

said mandrel means further including tip means mounted for selective movement toward and away from said forming section means and having a peripheral surface shaped to conform to the ultimate bottom blank and sidewall configuration of the bottom end of said container;

said tip means in its closest position to said forming section means having a portion of its peripheral surface coincident with and acting as an extension of said side seaming area for compressing a coextensive portion of said lapped side seam against said seam clamp means and in its most extended position having its peripheral surface symmetrically disposed with respect to said forming section means and conformally disposed with respect to the ultimate shape and location of the bottom most portion of said container to be fabricated on said mandrel means; and

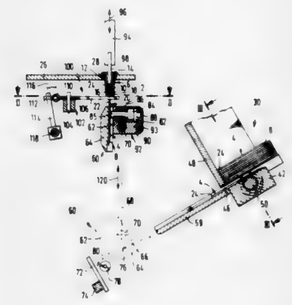
said tip means, in translation from said closest to said most extended position progressively compressing said lapped side seam against said seam clamp means from said forming section means to a wet bottom line.

4,409,046

METHOD OF AND AN APPARATUS FOR PRODUCING DISPOSABLE SYRINGES AND THE DISPOSABLE SYRINGE PRODUCED

Friedrich Holzwarth, Schorndorf, and Gerhard Heinze, Weissach, both of Fed. Rep. of Germany, assignors to SORTIMAT Creuz & Co. GmbH, Winnenden, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 214,879
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1979, 2949553; Dec. 2, 1980, 3045411; Dec. 2, 1980, 3045453
Int. Cl.³ A61M *5/34;* **B29C** *19/06, 27/30*
U.S. Cl. 156—73.6 **29 Claims**



1. In a method for fusing a metallic syringe tube having an inner end and a free end into a plastic fitting by pushing the inner end of the syringe tube into the fitting so that the inner end of the syringe tube contacts the fitting, clamping the syringe tube between a counterelectrode which acts as an abutment for the inner end of the syringe tube and a clamping jaw which engages the free end of the syringe tube, and temporarily applying a resistance heating voltage between the counterelectrode and the free end of the syringe tube projecting from the fitting for heating at least a portion of the syringe tube inner end in contact with the fitting to at least the melting temperature of the plastic forming the fitting, while at the same time displacing the clamping jaw and the counterelectrode relatively toward one another, the improvement wherein said step of applying a resistance heating voltage is carried out by applying such voltage between the counterelectrode and a location on the free end of the syringe tube between the fitting and the clamping jaw such that the voltage is applied along a length of the syringe tube which is shorter than the length of the syringe tube between the clamping jaw and the counterelectrode, and said method further comprises maintaining the length of the syringe tube along which the voltage is applied substantially constant during said step of temporarily applying.

29. In a method for fusing a metallic syringe tube having an inner end and a free end into a plastic fitting by pushing the inner end of the syringe tube into the fitting, clamping the syringe tube between a counterelectrode which acts as an abutment for the inner end of the syringe tube and a clamping jaw which engages the free end of the syringe tube, and temporarily applying a resistance heating voltage between the counterelectrode and the free end of the syringe tube projecting from the fitting, the improvement comprising laterally expand-

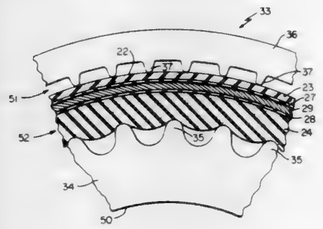
ing the inner end of the syringe tube within the fitting by inserting an expansion mandrel into the syringe tube inner end for securing the tube to the fitting, wherein said step of inserting comprises vibrating the mandrel.

4,409,047

METHOD OF MAKING A TOP TOOTHED ENDLESS POWER TRANSMISSION BELT CONSTRUCTION AND A BELT CONSTRUCTION MADE BY SUCH METHOD

Alden W. Brooks, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 10, 1982, Ser. No. 357,242
Int. Cl.³ B29H *7/22*; F16G *1/00*
U.S. Cl. 156—138 **18 Claims**



1. In a method of making a top toothed endless power transmission belt construction formed mainly of polymeric material and comprising the steps of disposing said material in substantially cylindrical form on a substantially cylindrical drum-like member, disposing a substantially cylindrical toothed member about said disposed material, and compressing at least one of said members toward the other of said members with the pressure of pressurized steam to form top teeth in said material and cure the thus formed material with the heat of said steam into a top toothed belt construction, the improvement comprising the steps of introducing pressurized steam against said other member during part of the time that said one member is being compressed toward said other member by said pressure of said pressurized steam, temporarily releasing said pressure on said one member before said polymeric material has been cured to permit the gas that has been initially heated and thereby expanded in said polymeric material to escape therefrom, and temporarily releasing the pressure against said other member at the same time that said pressure on said one member is released, said step of temporarily releasing the pressure against said other member ending after said step of temporarily releasing the pressure on said one member ends so that when said pressure on said one member is initially reapplied a maximum pressure differential exists across said one member and acts in a direction to compress said one member toward said other member for a period of time before said pressure on said other member is initially reapplied.

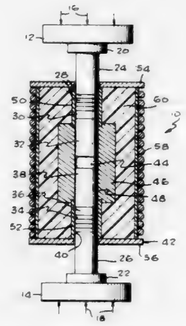
10. In a method of making a top toothed endless power transmission belt construction formed mainly of polymeric material and comprising the steps of disposing said material in substantially cylindrical form on a substantially cylindrical drum-like support member, disposing a substantially cylindrical collapsible toothed matrix means about said disposed material, and compressing said toothed matrix means toward said inner support member with the pressure of pressurized steam applied against said matrix means to form top teeth in said material and cure the thus formed material with the heat of said steam into a top toothed belt construction, the improvement wherein said step of compressing comprises the steps of initially compressing said matrix means toward said inner support member with said pressurized steam for a first period of time that heats the gas in said polymeric material to expand the gas before the curing of said polymeric material, introducing pressurized steam inside said support member during said first period of time, thereafter releasing said pressure on said matrix means and inside said support member for a second period of time to permit said expanded gas to escape from said polymeric material, then again compressing said matrix means toward said inner support member with said pressurized steam for a third period of time to final form said top teeth and cure the thus formed top toothed belt construction, and then again introducing said pressurized steam inside said support member during said third period of time, said step of again introducing said steam inside said support member beginning after said step of again compressing said matrix means so that when said pressure on said matrix means is initially reapplied a maximum pressure differential exists across said matrix means and acts in a direction to compress said matrix means toward said support member for a period of time before said pressure inside said support member is reapplied.

4,409,048

HIGH TEMPERATURE CONSOLIDATION PROCESS

Donald M. Hatch, Huntington Beach, and Richard J. Larsen, Torrance, both of Calif., assignors to Hitco, Newport Beach, Calif.

Filed Mar. 10, 1975, Ser. No. 556,889
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—155 **20 Claims**



1. A method of making a high density carbon-carbon composite comprising the steps of:

forming a laminate of organic resin impregnated layers of carbon material;

at least partially curing the organic resin;

heating the laminate while applying forces to opposite portions of an outer surface thereof through a temperature range to substantially decompose the resin, said heating occurring at a first rate which provides relatively rapid decomposition of the resin without accompanying delamination of the laminate; and

thereafter continuing to heat the laminate at a second rate greater than the first rate and not less than about 1500° F./hr. while applying forces to opposite portions of an outer surface thereof to a temperature higher than said temperature range and at least high enough to provide substantial softening of the laminate.

4,409,049

METHOD AND APPARATUS FOR EFFECTING INTERMITTENT SECUREMENT OF A STRETCHED ELASTIC MEMBER TO A MOVING WEB

Anthony Passafiume, Burbank, and Heinz A. Pieniak, Chicago, both of Ill., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Apr. 13, 1981, Ser. No. 253,419
Int. Cl.³ B32B *31/10*; A61F *13/16*
U.S. Cl. 156—164 **16 Claims**

1. A method for continuously attaching an elastic member to discrete portions of a moving web to impart an elasticized

character to pre-determined portions of the web while preserving the inelastic character of the other portions of the web, said method comprising the steps of:

(a) moving a first substantially inelastic web;

(b) applying a plurality of continuous adhesive lines to one surface of said first moving inelastic web;

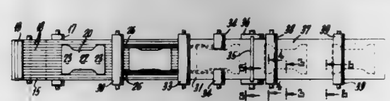
(c) feeding spaced apart absorbent panels, each panel having a narrowed center portion and wider end portions, to the surface of the moving web on which the adhesive has been applied;

(d) feeding a pair of stretched elastic members over at least one adhesive line along the longitudinal edges of said absorbent panel, with the members adjacent the edge of the panel along the narrowed center portion and overlying the panel at its wider end portion;

(e) feeding a second substantially inelastic web to the top surface of the absorbent panel;

(f) laminating the second inelastic web and the first inelastic web together at the edge of the panel to bond the elastic member in place along the narrowed center portion; and

(g) severing the laminate between adjacent absorbent panels whereby the elastic member relaxes in the remaining



unbonded portion to produce a plurality of individual laminated products.

11. Apparatus for continuously attaching an elastic member to discrete portions of a moving web to impart an elasticized character to the outer portions of the web comprising:

(a) means for moving a first inelastic web;

(b) means for continuously applying adhesive to a surface of said first web;

(c) means for feeding shaped absorbent panels having a narrowed center portion and wider end portions in spaced apart relationship to the surface of the first web to which the adhesive is applied;

(d) means for feeding a stretched elastic member over the adhesive along the longitudinal edge of the center portion of the panel and over the wider end portions of said panel;

(e) means for feeding a second web on top of said panel and said elastic member;

(f) means for laminating the second web to the first web adjacent the center portion of the absorbent panel; and

(g) means for severing the first and second webs between adjacent absorbent panels whereby any remaining stretched unadhered portions of the elastic member relax.

4,409,050

METHOD OF MAKING BLADE SUPPORTS

J. Warne Carter, Jr., Burkburnett, and J. Warne Carter, Sr., Wichita Falls, both of Tex., assignors to Carter Wind Power, Wichita Falls, Tex.

Continuation of Ser. No. 139,674, Apr. 14, 1980, abandoned, which is a division of Ser. No. 37,774, May 10, 1979, Pat. No. 4,366,307. This application Dec. 7, 1981, Ser. No. 327,908
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—172 **6 Claims**

1. A method of making a spar for supporting a rotor blade of a wind-driven generator, comprising providing an elongate web, positioning mold pieces against opposite faces of the web to form in conjunction with the web a mold which defines flange spaces along longitudinal edges of the web, then, with the web in the mold, winding filamentary material as a resin impregnated roving over the edges of the web in said spaces, said resin capable of being cured to a hardened state, the winding being conducted lengthwise of the web and being continued for plural turns of the filamentary material around the web perimeter to form flanges along the longitudinal edges of the



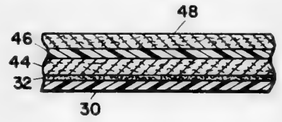
web, curing the resin so as to harden the flanges and bond them to the web, and removing the mold pieces from the web.

4,409,051

METHOD OF JACKETING A BATTERY WITH A SELF-ADHESIVE BATTERY JACKET AND ARTICLE

Frank L. Ciliberti, Jr., Ossining, N.Y., assignor to Duracell Inc., Bethel, Conn.

Filed Oct. 31, 1979, Ser. No. 89,821
Int. Cl.³ B29C *17/02*
U.S. Cl. 156—212 **1 Claim**



1. A method of jacketing a battery, said battery having exterior surfaces and comprising at least one cell, with a jacket, said jacket initially comprising an outer layer, a release layer, and an electrolyte resistant pressure sensitive adhesive layer positioned between said outer layer and said release layer, and said outer layer of said jacket being a laminate comprised of two absorbent layers with an electrolyte impervious layer positioned therebetween and having hinge lines, said jacket being of predetermined shape to substantially conform to the exterior surfaces of said battery to be jacketed; said method consisting essentially of the steps of removing said release layer, pressing a portion of said jacket to an exterior surface of said battery, folding said jacket along a hinge line to bring another portion of said jacket into alignment with another portion of said battery and pressing it into adhering contact therewith, and repeating the last said steps until said jacket is substantially conformed and adhered to said battery.

4,409,052

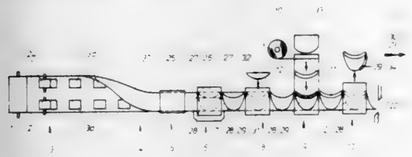
METHOD OF MANUFACTURING A TWO-WING DRESS-SHIELDING ELEMENT

Rudolf von Agris, Aachen-Brand; Gunter Kaiser, Würselen-Broichweiden, and Bernhard Nysten, Aachen, all of Fed. Rep. of Germany, assignors to William Prym-Werke KG, Stolberg, Fed. Rep. of Germany

Filed Apr. 24, 1981, Ser. No. 257,407
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1980, 3016424
Int. Cl.³ B32B *31/14*
U.S. Cl. 156—227 **10 Claims**

1. A method of manufacturing a two-wing one-piece dress-shielding element in which each of two wings is composed of an absorbent layer adapted to lie against the body of a user and a moisture-impermeable layer adapted to lie against a dress and

having adhesive points for attaching to the dress upon removal of protective strips, the method comprising the steps of continuously supplying a web composed of a weldable synthetic plastic foil and a fleece layer for forming at least one of the layers of the dress-shielding element to be manufactured; providing a plurality of working stations for performing a plurality of working steps of manufacturing the dress-shielding element, in succession one after the other, said working steps including applying an unsupported adhesive material provided



with the protective strips onto the web at predetermined locations, longitudinally folding the web so as to form a two-wing web with a longitudinal folding edge, deforming the two-wing web in the region of the longitudinal folding edge to form two tips with a concave edge line therebetween, and punching the web to produce a convex contour line for the webs of the dress-shielding element; and displacing the web between said working stations so as to perform said working steps, whereby the web serves as transporting means for the dress-shielding element to be manufactured from the web.

4,409,053

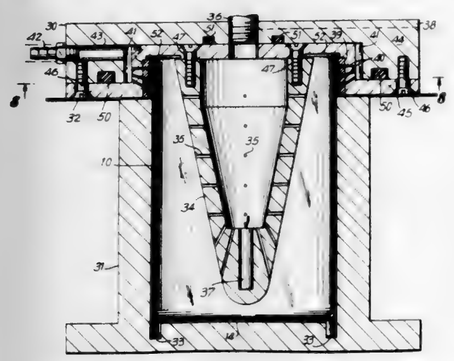
PROCESS FOR MAKING A CONTAINER FOR STORING FOOD

George H. Naugle, Central Valley; Robert L. Gordon, Monroe, and Richard J. Pines, Middletown, all of N.Y., assignors to International Paper Company, New York, N.Y.

Division of Ser. No. 170,582, Jul. 21, 1980, Pat. No. 4,382,767, which is a division of Ser. No. 906,275, May 15, 1978, Pat. No. 4,225,053. This application Aug. 17, 1982, Ser. No. 408,838

Int. Cl.[3] **B29C** *17/04, 27/16*

U.S. Cl. 156—287 **5 Claims**



1. The process for drawing and blow forming plastic into a paperboard outer container and vacuum forming plastic screw threads about the upper portion of said outer container comprising:

(a) positioning in a female mold a paperboard outer container having a circular cross-section at its top and comprising at least one vertical wall so that an upper portion of said paperboard outer container extends outside said female mold;

(b) providing a male mandrel arranged and constructed so that it may engage the female mold;

(c) heating a layer of plastic;

(d) positioning said layer of heated plastic between said female mold and said male mandrel;

(e) drawing said plastic into said paperboard outer container positioned in said female mold whereby a first portion of said plastic abuts said male mandrel and is spaced from the interior of said paperboard outer carton and a second portion of said plastic extends in close proximity about the upper portion of the outside surface of said paperboard outer container;

(f) blow forming the plastic in said paperboard container into substantial abutment with said at least one vertical wall by directing gas from said male mandrel into the interior of said female mold;

(g) vacuum forming plastic screw threads about the upper portion of said outer container by applying a vacuum to said second portion of said plastic.

4,409,054

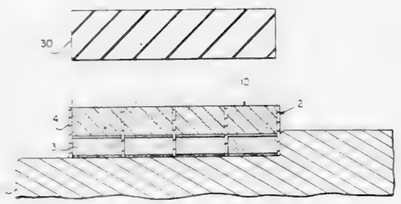
METHOD FOR APPLYING ABRADABLE MATERIAL TO A HONEYCOMB STRUCTURE AND THE PRODUCT THEREOF

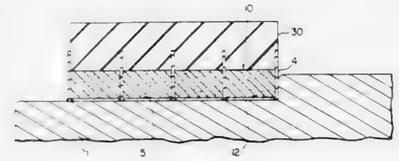
Edward J. Ryan, Wallingford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 14, 1981, Ser. No. 225,074

Int. Cl.[3] **B29C** *19/00;* **B32B** *31/00, 3/12;* **B23K** *35/24*

U.S. Cl. 156—293 **1 Claim**





1. A method for filling a honeycomb structure comprised of a plurality of cells having a predetermined depth with an abradable material including the steps of:

a. providing a composite abradable preform consisting of a layer of powdered material containing a substantial amount of braze alloy, a second layer joined to the first layer comprising a powdered abradable composition, both of said layers also containing a binder and a plasticizer and being flexible and compliant said preform having a thickness which is less than the depth of the honeycomb cells;

b. placing said preform on the honeycomb structure to be filled with the braze containing surface adjacent the honeycomb;

c. forcing the preform into the cells and using a disposable pliable material to force the preform into the cells braze containing surface contacts the bottom of the honeycomb cells heating the filled honeycomb to remove the binder and plasticizer and further heating to melt the braze material so as to bond the abradable material to the honeycomb structure.

4,409,055

ADHESION OF RUBBER TO ARAMID CORDS

Otto C. Elmer, Akron, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 331,698, Dec. 17, 1981, abandoned. This application Jan. 12, 1983, Ser. No. 457,500

Int. Cl.[3] **B29H** *5/02;* **B32B** *27/34;* **C09J** *5/02*

U.S. Cl. 156—307.5 **14 Claims**

1. A method for adhering a poly(p-phenylene terephthalamide) reinforcing element to a rubber compound which comprises (I) treating said element with a composition comprising an aqueous alkaline dispersion of about 10 to 50% by weight of solids consisting essentially of (a) a rubbery vinyl pyridine copolymer and (b) at least one water soluble thermosetting resin prepared from reactants consisting essentially of a compound selected from the group consisting of phenol, resorcinol, the cresols, the xylenols, p-tert butylphenol and p-phenyl phenol and mixtures thereof and of an aldehyde donor selected from the group consisting of formaldehyde, acetaldehyde, furfural, paraformaldehyde and hexamethylenetetramine and mixtures thereof in an amount of from about 3 to 25 parts by weight dry per 100 parts total by weight dry of (a), heating said treated element at a temperature of from about 200° to 600° F. for from about 300 to 5 seconds to remove essentially all of the water from said composition and to provide said element with a heat cured or heat set adhesive, and repeating step (I) at least one more time, to provide said reinforcing element with a dry adhesive in an amount of up to about 20% total by weight (dry) based on the weight of said reinforcing element, and (II) combining said dried and heat cured adhesive containing reinforcing element with an unvulcanized vulcanizable rubber compound and vulcanizing the same.

4,409,056

CURABLE SEALING COMPOSITION

Hideo Takamatsu, and Shobu Minatono, both of Ibaragi, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 227,746, Jan. 23, 1981, abandoned, which is a continuation of Ser. No. 70,612, Aug. 29, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,052

Claims priority, application Japan, Sep. 12, 1978, 53-112673; Sep. 12, 1978, 53-112674

Int. Cl.[3] **C09J** *3/10*

U.S. Cl. 156—334 **4 Claims**

1. A method for sealing contacting surfaces comprising:

applying to said contacting surfaces a curable sealing composition comprising a low molecular weight rubber, a curing agent and optionally, at least one other rubber compounding agent, said low molecular weight rubber being a block copolymer of isoprene and butadiene selected from the group consisting of B—I—B, $(B—I)_n$, and $(B—I)_n—B$, wherein B is a polybutadiene block, I is a polyisoprene block, and n is an integer of 2–10, with a viscosity average molecular weight of 7,000–150,000, said viscosity average molecular weight calculated by the equation:

$$[\eta]=1.21\times10^{-4}Mv\ 0.77$$

where $[\eta]$ is the intrinsic viscosity as measured in toluene at 30° C.

4,409,057

STAPLE SUPPORTING AND REMOVING STRIP

Robert P. Molenda, Stillwater, and George R. Rabuse, Sunfish Lake, both of Minn., assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Jan. 19, 1981, Ser. No. 226,114

Int. Cl.[3] **B32B** *19/00*

U.S. Cl. 156—92 **11 Claims**

1. A staple-supporting strip for use in overlying sheets to be stapled and affording subsequent removal and retention of the staples comprising a narrow elongate strip of tough polymeric material with a thickness of between 0.1 and 0.15 mm (0.004 and 0.006 inch) and having a width dimension of between about 1.5 cm and 2.5 cm (0.5 and 1 inch) and having a length of between 3 cm and 9 cm (1.13 to 3.5 inches), and a band of microsphere structured adhesive means on said strip for temporarily adhering said strip to the surface of a said sheet with no build-up in the adhesive bond, thereby permitting removal of the strip without deleteriously affecting said surface or leaving a residue at any time upon the subsequent removal of the strip.

11. Method of preparing staples for removal from documents comprising the steps of:



placing on the sheets to be stapled a narrow elongate strip of tough polymeric material having a width dimension of between about 1.5 cm and 2.5 cm and having a length between about 3 cm and 9 cm,

pressing the strip against the uppermost sheet to adhere the strip to the sheet by contacting an adhesive coated area of the strip to said uppermost sheet,

placing the legs of a wire staple across the width of the strip and through said strip and the sheets being stapled,

whereby upon grasping an end of a said strip the strip can be peeled from said uppermost sheet and the staple will be drawn out of said sheets.

4,409,058

BAND TYPE STRAPPING MACHINE

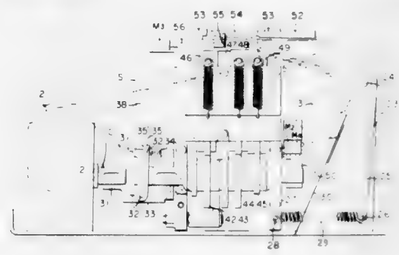
Isaku Suwabe, Mishima, and Motoaki Mori, Yokohama, both of Japan, assignors to Nichiro Kogyo Company, Ltd., Yokohama, Japan

Filed Feb. 17, 1982, Ser. No. 349,461

Claims priority, application Japan, Oct. 7, 1981, 56-149333[U]

Int. Cl.[3] **B32B** *31/00*

U.S. Cl. 156—361 **5 Claims**



1. A band type strapping machine comprising a feeding and tightening roller driven by a motor, an auxiliary roller in contact with the feeding and tightening roller, a cam shaft which is rotated by said motor through a reduction gear and a clutch mechanism and which has cams for respectively actuating a rear gripper, a heater, a press bar and a front gripper, an improvement characterized in that said motor is capble of instantaneous change of normal and reverse rotations and has a large starting torque and an electromagnetic clutch is fitted

to the rotary shaft of said tightening and feeding roller so as to be movable in the axial direction depending upon increase of a band tightening force whereby detection of the tightening force caused by the movement of said electromagnetic clutch is mechanically related to the engagement or disengagement of said clutch mechanism.

4,409,059

REINFORCED STRUCTURES

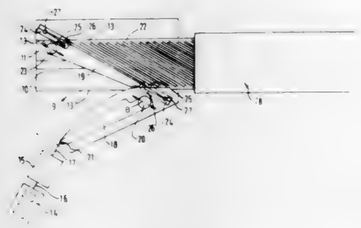
Eric Holroyd, Knutsford, and David J. B. Perkins, Liverpool, both of England, assignors to W & A Bates Limited, London, England

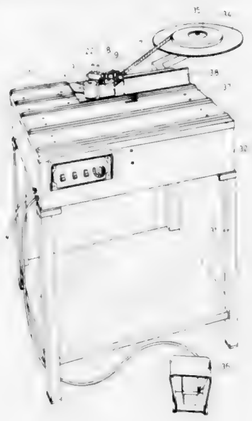
Filed Oct. 9, 1981, Ser. No. 310,394

Claims priority, application United Kingdom, Oct. 16, 1980, 8033331

Int. Cl.³ B29H *17/04, 9/04;* **D04H** *3/05*

U.S. Cl. 156—397 **19 Claims**





1. Apparatus for making a tire breaker fabric comprising an elongate sheet of tire cord fabric embedded in elastomer in which the cords extending across the sheet are formed by one single continuous tire cord which extends back and forth across the sheet so that the edges of the sheet are formed by a series of folded cord edges, the apparatus comprising:

(a) a pair of parallel spaced-apart retaining means;

(b) each retaining means comprising a plurality of longitudinally spaced fixed pegs attached to endless belt means;

(c) a feed unit for one single continuous tire cord;

(d) guide means for guiding said tire cord to and fro between said retaining means;

(e) said guide means being shaped to impart a fold to the tire cord at each retaining means to form a continuous elongate cord assembly the edges of which are formed by a series of folded cord edges;

(f) respective clip means associated with each retaining means to receive and transfer each folded cord edge to a respective peg of the associated retaining means;

(g) stepwise drive means to move said endless belt means in the direction of its length;

(h) means for applying elastomer to said cord assembly to produce tire breaker fabric; and

(i) means for removing said retaining means from said tire breaker fabric.

4,409,060

EDGE BANDING MEANS

Werner J. Janssens, Auckland, New Zealand, assignor to W. J. Janssens Industries (N.Z.) Limited, Auckland, New Zealand

Filed Aug. 7, 1981, Ser. No. 290,922

Claims priority, application New Zealand, Aug. 11, 1980, 194631

Int. Cl.³ B32B *31/10*

U.S. Cl. 156—497 **11 Claims**

1. An edge banding machine comprising a heating means for blowing heated gas onto one surface of a tape to heat the same, a feeding means for feeding the tape past the heating means wherein the direction of travel of the tape is from upstream to downstream, an applying means immediately downstream of the heating means for pressing heated tape onto a surface to which it is to be adhered, and a severing means upstream of the heating means for cutting the tape to the length of the surface to which it is to be adhered, the heating means having a fixed nozzle for directing the gas onto the tape, the downstream edge of said nozzle being rebated to allow some of the gas to travel along the direction of movement of the tape, wherein the machine further comprises a guiding means for supporting the tape by its edges and guiding the tape directly in front of the nozzle, said guiding means being vertically adjustable to accommodate tapes of different widths and comprising a movable barrier which extends across part of the nozzle so that, whenever a tape is fed past the nozzle, the guiding means blocks off that portion of the nozzle which is not covered by the tape, the construction and arrangement being such that, in use, the heated gas issuing through the nozzle is directed towards an empty space when no tape is presented for heating, and when a tape is presented for heating it is interposed into the path of the heated gas, whereby in neither case does the heated gas impinge on moving parts of the machine.

4,409,061

MACHINE FOR TYING PACKAGES

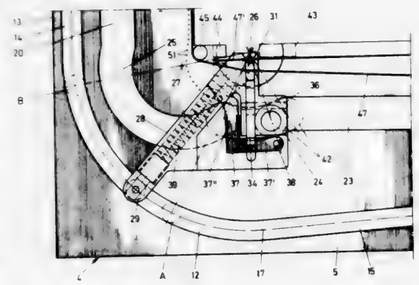
Hans H. Büttner, Obmettmann 13, 4020 Mettmann, Fed. Rep. of Germany

Filed Feb. 17, 1982, Ser. No. 349,543

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110718

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—502 **17 Claims**



1. A machine for the tying of packages having a gripper which grips and places the tying means around the package along a first predetermined path, the gripper being moved by a pull means, such as a chain, along a second predetermined path, the gripper being stopped after placement of the tying means around the package in a basic position near a closing device which connects the tying means and has a holding clamp for the end of the tying means, the improvement wherein

forming a predetermined arcuate section of said second predetermined path with a predetermined center point and locating said basic position of the gripper approximately at said center point.

4,409,062

ROTARY BINDER

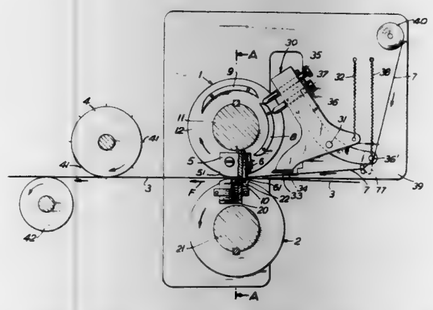
Paolo Conti, Via Neri di Bicci 14, Firenze, Italy

Filed Dec. 9, 1981, Ser. No. 329,027

Claims priority, application Italy, Dec. 10, 1980, 9616 A/80

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—518 **9 Claims**



1. A rotating binder for binding continuous sheets of a form having perforated margins comprising:

rotary means for moving said form along a given axial direction;

a rotary spool of gummed tape;

a first head mounted rotatably above said form and a second head mounted rotatably below said form;

said first and said second heads rotating in said axial direction in synchronism with one another and with said rotary means;

said heads carrying means having a trajectory whose development on said form is equal to an integral multiple of the pitch of the perforation and adapted to fix, cut and tear off a strip of tape obtained from said spool;

means for unwinding said spool before the formation of said strip;

means for stopping said tape before the detachment of said strip;

means for causing the front portion of said strip to pass through one of said perforations in the margin of the form; and

means for bending a tip of said strip and fixing it to the bottom sheet of said form.

4,409,063

APPARATUS AND PROCESS FOR HOT-STAMPING CONTAINERS

Robert Brown, New York, N.Y., assignor to Rheological Systems, Inc., West Babylon, N.Y.

Division of Ser. No. 100,334, Dec. 5, 1979, Pat. No. 4,343,670.

This application Dec. 3, 1981, Ser. No. 327,260

Int. Cl.³ B44C *31/00;* **B32B** *31/00;* **C09J** *5/00*

U.S. Cl. 156—542 **9 Claims**

1. An apparatus for imparting hot die transfer of metal or pigmented metal material from a carrier onto circular plastic containers comprising a stationary die having mounting means providing substantially free universal die movement, spaced mounting means having means providing individual container rotation and for receiving containers thereon intended for die transfer, means for biasing the container against the die to effect linear engagement therebetween, and advancing the container across the face of the die to effect simultaneous rotation of the container and successive transfer of foil received on a flexible tape pressed between confronting surfaces of the die and container respectively and under a control force matrix while the combination of pressure and temperature effects a viscoelastic condition of the surface of the container prior to the transfer of foil.

4,409,064

PROCESS FOR CONCENTRATING SULFURIC ACID IN AN EVAPORATOR

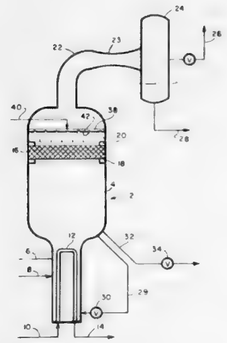
Suresh M. Vora, Whitehall; William J. Mazzafro, Schnecksville; Pierre L. T. Brian, Allentown, and Michael S. K. Chen, Macungie, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of Ser. No. 951,553, Oct. 16, 1978, abandoned.

This application Nov. 9, 1981, Ser. No. 319,157

Int. Cl.³ B01D *1/00;* **C01B** *17/90*

U.S. Cl. 159—47.1 **6 Claims**



1. A process for concentrating sulfuric acid which comprises:

(a) introducing an aqueous feed sulfuric acid into an evaporator;

(b) heating the feed sulfuric acid in said evaporator to a temperature sufficient to evaporate the water and form a vapor rich in water and leave a concentrated bottoms product rich in sulfuric acid;

(c) passing the vapor rich in water through a knitted wire mist eliminator pad to remove droplets from the vapor stream;

(d) scrubbing vaporized sulfuric acid from the vapor stream by spraying water or sulfuric acid through the mist eliminator pad at a rate of from 0.6–2.5 pounds liquid per pound of vapor passing through said mist eliminator pad, said liquid being sprayed substantially uniformly over said pad to provide a wetting rate of 0.10–0.35 gallons per minute per square foot of mist eliminator pad surface area, said mist eliminator pad having a wire diameter of 0.001–0.05 inches, and interfacial area of from 50–200 feet squared per cubic foot, a void space of from 90–99.7% and a thickness of 4–16 inches;

(e) collecting the scrubbed vapor from the mist eliminator pad as an overhead fraction; and

(f) collecting a concentrated sulfuric acid solution as a bottoms fraction.

4,409,065

KRAFT PAPER

Alexander Kasser, Innsbruck, Austria, assignor to Technopulp A.G., Switzerland

Continuation-in-part of Ser. No. 870,235, Jan. 16, 1978, abandoned. This application Jun. 13, 1979, Ser. No. 48,129
Claims priority, application Austria, Jan. 26, 1977, 474/77
Int. Cl.³ D21D *1/00*
U.S. Cl. 162—9 **7 Claims**

1. In a method for the production of kraft paper comprising the steps of preparing the pulp in a conventional manner including beating or refining or treating the pulp in a Kollergang to produce a refined pulp,

the improvement for producing kraft paper for heavy paper bags having increased tensile energy absorption and an elastic stretch exceeding 1.8%, comprising dewatering said refined pulp to a water content of substantially 20% to 60%, processing said dewatered pulp by separate curlation to curl the fibers to an average factor of curl exceeding 1.3, dispersing said curled pulp with water to a curled fiber content of approximately 0.09% to 0.21%, promptly forming a wet web from said pulp before the fibers restraighten, and drying the wet web while maintaining low tension so that the curl of the fiber is maintained.

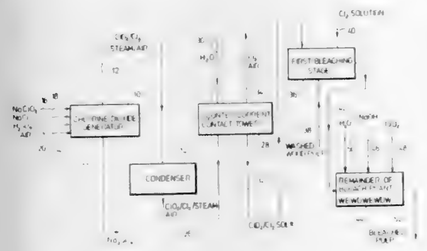
3. Paper sack made of kraft paper according to claim 1 wherein the elastic stretch exceeds 1.8%.

4,409,066

BLEACHING PROCEDURE USING CHLORINE DIOXIDE AND CHLORINE SOLUTIONS

Douglas W. Reeve, and W. Howard Rapson, both of Toronto, Canada, assignors to Erco Industries Limited, Islington, Canada

Continuation-in-part of Ser. No. 98,190, Nov. 22, 1979, Pat. No. 4,325,783, which is a continuation-in-part of Ser. No. 23,845, Mar. 26, 1979, abandoned. This application Mar. 22, 1982, Ser. No. 360,598
The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.
Int. Cl.³ C01B *11/02*; D21C *9/14*
U.S. Cl. 162—88 **14 Claims**



1. A method of bleaching pulp using chlorine dioxide, which comprises:

(a) continuously forming a gaseous mixture of chlorine dioxide, chlorine and steam by:

(i) continuously feeding a sodium chlorate solution to an aqueous acid reaction medium present in a unilocular reaction zone,

(ii) continuously feeding sulphuric acid to said aqueous reaction medium in an amount to maintain the total acid normality of the reaction medium in the range of about 2 to about 4.8 normal,

(iii) continuously feeding sodium chloride, hydrochloric acid or a mixture of sodium chloride and hydrochloric acid to said aqueous reaction medium,

(iv) continuously maintaining said reaction medium at a temperature of about 55° to about 85° C. while maintaining said reaction zone under a subatmospheric pressure of about 80 to about 300 mm Hg to cause the formation of chlorine dioxide and chlorine and the evaporation of water from the reaction medium,

(v) continuously depositing anhydrous neutral sodium sulphate from the reaction medium in said reaction zone once the reaction medium becomes saturated thereby after start up, and

(vi) continuously removing the gaseous mixture of chlorine dioxide, chlorine and steam from the reaction zone;

(b) continuously cooling said gaseous stream to a temperature of about 3° to about 60° C. to cause condensation of at least a substantial proportion of the steam therefrom to provide a chlorine dioxide- and chlorine-containing gas stream;

(c) continuously contacting the latter gas stream with water having a temperature of about 0° to about 22° C. at a flow rate sufficient to form an aqueous solution of chlorine dioxide and chlorine containing chlorine in an amount of 6 to 10% of the available chlorine of the solution, and a gaseous chlorine stream; and

(d) bleaching a cellulosic fibrous material pulp for about 10 to about 60 minutes at a temperature of about 35° to about 70° C. in an aqueous suspension having a consistency of about 2 to about 16% by weight of pulp and containing dissolved organic material in an amount of greater than 2 to about 10% by weight TOC on pulp at an overall equivalent chlorine concentration of about 2 to about 10% by weight of the pulp, by:

(i) subjecting said suspension to a first bleaching step at an acid pH value using at least part of said aqueous solution of chlorine dioxide and chlorine formed in step (c), and

(ii) without an intermediate washing step, subjecting the suspension to a second bleaching step at an acid pH using chlorine solution, formed at least part of said gaseous chlorine stream from step (c), and commencing about 5 seconds to about 10 minutes after commencement of said first bleaching step,

the chlorine dioxide in said aqueous solution of chlorine dioxide and chlorine constituting about 20 to about 90% of the total available chlorine used in said first and second bleaching steps.

4,409,067

QUENCHING METHOD AND APPARATUS

Jimmy B. Smith, Columbia, Tenn., assignor to Peabody Coal Company, St. Louis, Mo.

Filed May 5, 1982, Ser. No. 374,944
Int. Cl.³ C10B *39/04*, *45/00*
U.S. Cl. 201—1 **5 Claims**

1. A method for quenching hot particulate char material, which comprises;

gravity feeding said material from a shaft furnace through a confined space from the top thereof while discharging the material from the bottom of said space at a rate such as to maintain a downwardly moving stack in the space with a gap between the top of the stack of said material and the top of the space,

forming a void in the stack intermediate the top and bottom thereof, which void is at least partly defined by said material,

spraying water at a controlled rate onto material at the top of the stack and onto the material defining said void,

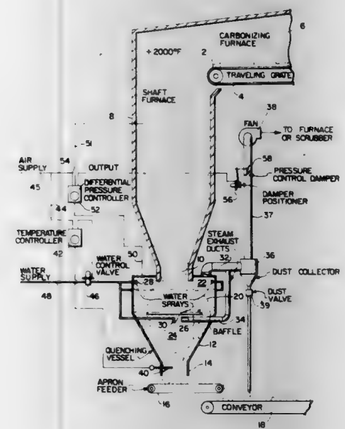
withdrawing steam at a controlled rate from the gap and the void,

sensing the temperature of the material discharging from the bottom of the stack,

sensing the pressure prevailing in the shaft furnace,

sensing the pressure of steam in the gap,

controlling the rate of water sprayed in accordance with the sensed temperature of the discharging material such as to maintain said temperature below a predetermined maximum and controlling the rate of withdrawal of steam from the gap and void in accordance with the sensed pressure in the gap such as to maintain the steam pressure therein



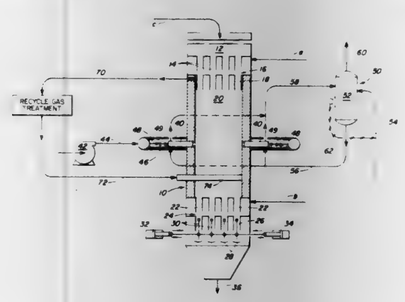
below a predetermined maximum and below the pressure prevailing in the shaft furnace.

4,409,068

INJECTOR FOR CALCINER

Richard L. Davis, Billings, Mont.; Harlan G. Graf, and Don L. Edwards, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 14, 1982, Ser. No. 388,339
Int. Cl.³ C10B *1/04*, *49/06*
U.S. Cl. 202—85 **8 Claims**



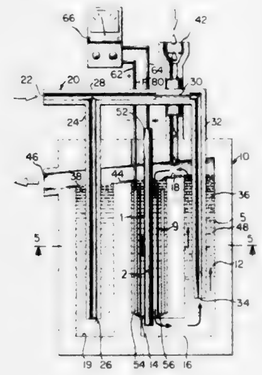
1. In an internally fired, vertical shaft kiln for calcining petroleum coke comprising a vertical shaft kiln having a top and bottom and an outer wall and an inner refractory lining, means for providing green particulate petroleum coke to the top of said shaft kiln to provide a coke bed, means for removing calcined coke from said coke bed at the bottom of said shaft kiln and means for introducing recycle gas and combustion gas to the interior of said shaft kiln at an intermediate level in said coke bed, the improvement which comprises said means for introducing combustion gas comprising at least one tubular combustion gas injector having a longitudinal central orifice and extending through said outer wall and refractory lining and terminating at a point short of the interior surface of said refractory lining, said injector having an annular coolant circulation space disposed therearound and means for providing a coolant to said annular space.

4,409,069

METHOD OF DETERMINING SULFUR DIOXIDE IN GASES AND APPARATUS THEREFOR

Harald Luft, Niederzier, Fed. Rep. of Germany, assignor to Kernforschungsanlange Jülich GmbH, Fed. Rep. of Germany

Filed Feb. 23, 1982, Ser. No. 351,411
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1981, 31088809
Int. Cl.³ G01N *27/50*
U.S. Cl. 204—1 T **10 Claims**



1. An apparatus for polarographic analysis of sulfur dioxide in gases by measurement of the anodic oxidation current due to said sulfur dioxide comprising:

(a) a housing having a first and a second tubular chamber and upper and lower connecting means for interconnecting said chambers at their upper and lower portions respectively,

(b) a measuring electrode within said second chamber,

(c) a non-polarizable copper counter electrode within said second chamber spaced apart from said measuring electrode so as to permit electrolyte to be placed therebetween;

(d) a gas inlet tube within said first chamber having an opening proximate to the bottom part of said chamber for the introduction of gas to be analyzed into said chamber when said housing is filled with electrolyte, the difference of the density of the undissolved gas containing electrolyte in said first chamber and the density of the electrolyte in said second chamber capable of creating a circulation of gas saturated electrolyte in the housing when said housing is charged with electrolyte;

(e) means for connecting a source of electrical potential across said electrodes,

(f) means for measuring the current flowing between said electrodes when the device is charged with electrolyte, gas passed thereinto and potential applied across the electrodes, and

(g) inflow and outflow means for the continued supply of fresh electrolyte to said chambers.

10. Process for measuring the limiting current of sulfur dioxide in a gas containing sulfur dioxide utilizing the apparatus of claim 1 comprising the steps of:

(a) charging a suitable electrolyte to the chambers,

(b) passing the gas to be analyzed into the electrolyte through the gas inlet tube,

(c) measuring the current generated in the cell.

4,409,070

METHOD OF FORMING ARTICLES BY PLATING

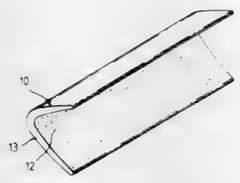
James W. Stevens, Hatfield, England, assignor to British Aerospace Public Limited Company, London, England

Filed May 7, 1982, Ser. No. 376,139

Claims priority, application United Kingdom, May 8, 1981, 81114/63

Int. Cl.³ C25D *1/00, 1/20*

U.S. Cl. 204—4 12 Claims



1. A method of forming an article having a rough surface for being adhesively bonded to a further member which method comprises the steps of

(i) applying a discontinuously surfaced layer of electrically conducting material to the surface of a substrate of electrically conducting curable elastomeric material,

(ii) pressing said layer onto said surface of the substrate so that portions thereof are embedded in said surface,

(iii) electroplating the exposed parts of said layer with a metal, and

(iv) releasing the substrate from the formed article, the portions of the discontinuously surfaced layer which formerly were embedded in the substrate serving to define a roughened adhesive-receptive surface.

4,409,071

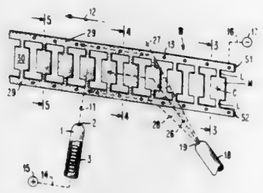
MASKING FOR SELECTIVE ELECTROPLATING JET METHOD

Eric P. Dibble, Endicott, and Thomas E. Lynch, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,034

Int. Cl.³ C25D *5/02, 7/06*

U.S. Cl. 204—15 11 Claims



1. In a method for selectively electroplating a workpiece by a jet of plating solution, the steps comprising:

electroplating a selected region of said workpiece by impinging said jet on said selected region, and

concurrently providing a layer of fluid of low conductivity and in a predetermined fluid state on said workpiece adjacent to said selected region to mask said workpiece adjacent to said selected region from said electroplating solution, and wherein said fluid layer is further contiguous over said selected region in the absence of said impinging jet, and said jet pierces said layer to expose said region for said impinging and said electroplating.

4,409,072

METHOD OF COLLECTING LEAD FROM ASHES CONTAINING LEAD COMPOUNDS

Takeo Oki, Tsushima, and Isao Hiraki, Sakai, both of Japan, assignors to Osaka Lead Refinery Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 316,827, Oct. 30, 1981, abandoned, which is a continuation-in-part of Ser. No. 207,198, Nov. 14, 1980, abandoned. This application Nov. 8, 1982, Ser. No. 439,820

Claims priority, application Japan, Apr. 21, 1979, 54-51032

Int. Cl.³ C25B *1/00;* C25R *1/18*

U.S. Cl. 204—57 1 Claim

1. A method of electrolytically collecting lead from ashes containing lead compounds, comprising:

adding the ashes to an aqueous solution containing 5 to 20 weight percent of caustic soda,

depositing lead at the cathode and lead peroxide at the anode by subjecting the solution to electrolysis in two stage, first at a current density of 120 to 200 mA/cm² without stirring the solution and then at a current density of 20 to 100 mA/cm² with stirring, the temperature being between room temperature and 80° C. in both stages, said cathode being a lead or iron plate not coated or coated with lead or a lead alloy and said anode being a lead or iron plate coated with lead or a lead alloy.

4,409,073

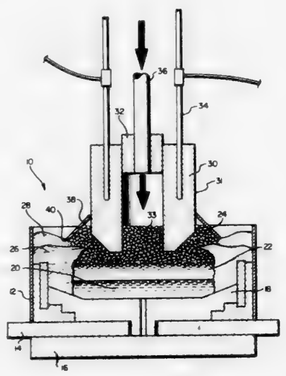
PROCESS FOR THE ELECTROLYTIC REDUCTION OF METALS AND AN IMPROVED PARTICULATE CARBON ELECTRODE FOR THE SAME

William M. Goldberger, Columbus, Ohio, assignor to Superior Graphite Co.

Filed Jun. 30, 1980, Ser. No. 164,803

Int. Cl.³ C25C *3/06, 3/12, 7/02*

U.S. Cl. 204—67 20 Claims



1. An improved process for the electrolytic reduction of molten aluminum from an aluminum compound comprising the steps of:

providing a carbon cathode within a container;

dissolving the aluminum compound in a molten salt electrolyte solvent bath disposed within the container and in electrical contact with the cathode, said molten electrolyte having a higher decomposition potential than the aluminum compound, said molten bath having a lesser density than the reduced molten aluminum;

continuously providing a high purity and highly conductive, particulate, free-flowing, low density carbon material to said molten bath to serve as the anode, said carbon material having a lesser density than the molten bath to float thereon;

placing an electrical connection in contact with the particulate carbon anode;

applying electrical current thereto and collecting reduced molten aluminum at the cathode to form a pool; and

draining accumulated reduced molten aluminum from the pool thereof.

4,409,074

PROCESS FOR ELECTROLYSIS OF AN AQUEOUS ALKALI METAL CHLORIDE SOLUTION

Tokuzo Iijima, Kobe; Yasushi Samejima, Kakogawa; Toshiji Kano, and Yoshio Hatta, both of Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 22, 1981, Ser. No. 256,569

Claims priority, application Japan, Jul. 28, 1980, 55-103804

Int. Cl.³ C25B *1/34, 1/46, 9/00*

U.S. Cl. 204—98 9 Claims

1. A process for electrolysis of an aqueous alkali metal chloride solution using a cation exchange membrane by which an electrolytic cell is partitioned into an anode compartment and a cathode compartment, which comprises effecting the electrolysis while utilizing impact resilience of springs positioned at anodes and exerting positive pressure on the cathode compartment.

4,409,075

METHOD FOR CUTTING A SEMICONDUCTOR CRYSTAL INTO WAFERS

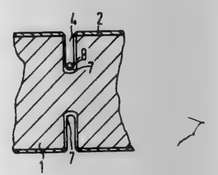
Bernd Kolbesen, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,374

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1980, 3029792

Int. Cl.³ C25F *3/12;* B23P *1/10*

U.S. Cl. 204—129.3 23 Claims



1. An electrolytic-mechanical method of separating a semiconductor crystal, in particular a rod-like semiconductor crystal, into wafers, which comprises coating a semiconductor crystal with a masking layer of non-conducting material interrupted by stripes, immersing the semiconductor crystal with masking layer and stripes in an electrolyte provided with an electrode as a cathode and with the semiconductor crystal biased as an anode to form an electrolyzer, applying an electric current to the electrolyzer to produce oxide layers in the striped regions which are not masked by the masking layer, mechanically removing the oxide layers and separating the semiconductor crystal into a plurality of wafers, wherein a rod-like semiconductor crystal is used and the stripes interrupting the masking layer are arranged, parallel to each other and in ring-fashion, in planes approximately perpendicular to the longitudinal axis of the crystal.

4,409,076

INDIRECT ELECTROCHEMICAL FURAN SYNTHESIS

William C. Seidel, Hockessin, and Dimitri N. Staikos, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours & Company, Wilmington, Del.

Filed Feb. 10, 1982, Ser. No. 347,730

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—130 16 Claims

1. Improved process for preparing a furan compound by oxidizing a diolefin in the presence of copper having an average oxidation state between 1 and 2, wherein the improvement comprises regenerating spent copper by electrolytic oxidation.

4,409,077

ULTRAVIOLET RADIATION CURABLE COATING COMPOSITION

Kazuo Sakiyama, Ibaraki; Mitsuo Kuwata, Osaka, and Masaru Oshiumi, Tokyo, all of Japan, assignors to Sumitomo Chemical Co., Ltd. and Sakata Shokai, Ltd., both of Osaka, Japan

Filed Oct. 19, 1978, Ser. No. 952,797

Claims priority, application Japan, Oct. 25, 1977, 52-128352; Oct. 25, 1977, 52-128353

Int. Cl.³ C08F *2/50;* C08G *12/44*

U.S. Cl. 204—159.15 5 Claims

1. A radiation curable resin composition which comprises (I) a photopolymerization initiator and (II) a radiation curable resin obtained by reaction of (A) an alkoxymethylated melamine selected from the group consisting of methoxymethylmelamines, ethoxymethylmelamines, butoxymethylmelamines, compounds in which different kinds of methoxymethyl, ethoxymethyl or butoxymethyl groups are held on the same melamine nucleus and polymers thereof, (B) an α,β-ethylenically unsaturated compound having at least one hydroxyl group selected from the group consisting of esters of alpha, beta-ethylenically unsaturated carboxylic acids with polyhydric alcohols, and reaction products obtained by reaction of epoxy compounds with hydroxyl group-containing (meth) acrylates, (meth) acrylic acids or itaconic acid and (C) at least one member selected from the group consisting of (1) polyols selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, dipropylene glycol, tripropylene glycol, tetrapropylene glycol, polypropylene glycols, 1,3-propanediol, 1,4-butanediol, 1,3-butanediol, 1,5-pentanediol, neopentyl glycol, 1,6-hexanediol, 1,8-octanediol, glycerin, trimethylolethane, trimethylolpropane, pentaerythritol, sorbitol and the etherification-condensed compounds of said polyols, bisphenols, hydrogenated bisphenols, halogenated bisphenols and resorcinol, (2) polyether polyols obtained by reaction of above-defined polyols with alkylene oxides, and (3) higher fatty acid esters having at least one hydroxyl group.

4,409,078

METHODS AND APPARATUS FOR ELECTROSTATICALLY RESOLVING EMULSIONS

John P. Wagner, Martinsville, and Edward C. Hsu, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 20, 1981, Ser. No. 255,871

Int. Cl.³ B03C *5/00*

U.S. Cl. 204—188 6 Claims

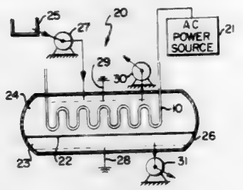
1. A method of electrostatically resolving emulsions containing solids dispersed in liquid into corresponding liquid and solid phases, comprising the steps of:

(a) placing a grounded electrode in an aqueous phase of said emulsion;

(b) placing a current-carrying electrode adjacent an interface of said liquid and solid phases, said current-carrying electrode having an inner support member for supporting an outer flexible plastic tube, said outer flexible plastic tube surrounding said inner support member and being concentrically spaced therefrom so as to provide a space therebetween, and an electrolyte disposed within said

space between said support member and said plastic tube; and

(c) passing an alternating current through said current-carrying electrode, said current having a frequency above 60 Hz and a voltage in an approximate range of from 2 to 100 kV, sufficient to effect the separation of said emulsion into said phases.

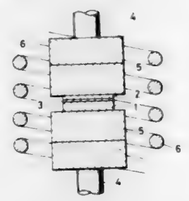


4,409,079

METHOD OF METALLIZING SINTERED CERAMICS

Kunio Miyazaki, Hitachi; Yukio Okosi, Mito; Akira Kumagai, and Hitoshi Suzuki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,499
Claims priority, application Japan, Jun. 24, 1981, 56-98986
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 C **15 Claims**



1. A method for metallizing a sintered ceramic containing a silicon compound which is reactable with manganese at a temperature lower than the melting point of manganese, which comprises forming a manganese-containing metal layer on a desired surface of the ceramic and heating the metal layer to a temperature lower than the melting point of manganese to effect the metallization reaction between silicon atoms of the silicon compound and manganese atoms, wherein prior to the reaction the metal layer is brought into an intimate contact with the surface of the ceramic in a manner that there is substantially no minute gap between the metal layer and the ceramic.

4,409,080

SYSTEM FOR MONITORING A CATHODICALLY PROTECTED STRUCTURE

Carlton M. Slough, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 18, 1981, Ser. No. 274,856
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—196 **2 Claims**

1. In a system having a buried structure being subject to galvanic corrosion,

said structure being under cathodic protection comprising an anode and a DC power supply connected between said structure and said anode for counteracting said galvanic corrosion,

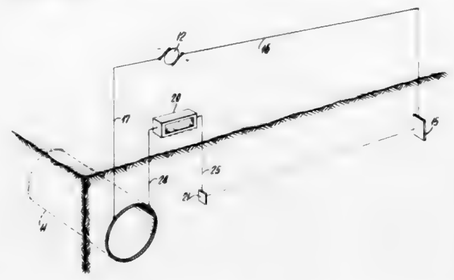
means for monitoring the quantity of current flow between said anode and structure, comprising

a microcoulometer having a precision capillary tube with two columns of mercury separated by an indicating gap of electrolyte,

a target electrode having a predetermined relatively small surface area,

said target electrode being buried spaced from one to fifteen feet from said buried structure, and

a low resistance conductor connecting each of said two columns of mercury with one of said buried structure and said target electrode, respectively.

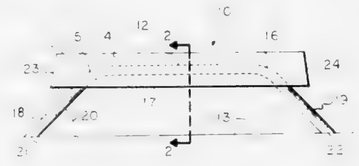


4,409,081

SACRIFICIAL ANODE

Leon J. Terrase, 6000 Brighton Pl., Algiers, La. 70114

Filed Feb. 5, 1982, Ser. No. 346,263
Int. Cl.³ C23F *13/00*
U.S. Cl. 204—197 **3 Claims**



1. Sacrificial anode means comprising:

a. elongated sacrificial anode bar means; and

b. anode core means comprising an elongated member having a straight portion totally imbedded within said anode bar means and having curved end portions also embedded within said anode bar means, said curved end portions protruding from a side of said anode bar means and extending outwardly at an angle with respect to the straight portion of from 30° to 60°, and said curved end portions being mitred at their outer ends for attachment to a supporting structure for the galvanic protection thereof.

4,409,082

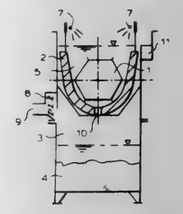
METHOD AND APPARATUS FOR THE GALVANIC DEPOSITION OF METAL ONTO OBJECTS, CLEANING OFF AND RECOVERY OF ADHERENT SURFACE TREATMENT AGENTS

Helmut Goldmann, Rannersdorf, Fed. Rep. of Germany, assignor to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,551
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1981, 3107101
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—213 **17 Claims**

1. Apparatus for the electrolytic deposition of metal onto metallic and appropriately pretreated non-metallic objects, and cleaning these objects of adhering surface treatment agents, as well as recovery of these agents, provided with treatment station, drum installation, anodes, work container, supply bin,

rotating arrangement, dosing and measuring arrangements, electrical attachments as well as connected conduit tubes, comprising two anodes semicircularly disposed around the drum installation in the work container with overflow arrangement, with the work container connected to a supply bin across an opening with fractionating arrangement, which container and bin can be adjusted to a reduced pressure by means of a vacuum arrangement, and with the supply bin connected to the work container over a recirculation conduit.

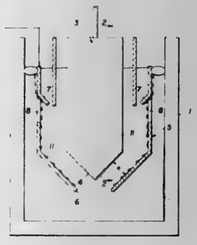


4,409,083

CELL WITH COMPOSITE ANODE FOR ELECTROLYTIC PRODUCTION OF MAGNESIUM

Gary V. Upperman, North Olmsted, Ohio, and James C. Withers, Tucson, Ariz., assignors to Metallurgical, Inc., Lakewood, Ohio

Continuation-in-part of Ser. No. 118,972, Feb. 6, 1980, Pat. No. 4,342,637, Ser. No. 944,987, Sep. 22, 1978, abandoned, Ser. No. 52,578, Jun. 27, 1979, abandoned, and Ser. No. 62,135, Jul. 30, 1979, Pat. No. 4,338,177. This application Dec. 22, 1981, Ser. No. 333,429
Int. Cl.³ C25C *3/04, 7/02, 7/04*
U.S. Cl. 204—245 **11 Claims**



6. An electrolytic cell for the production of a metal comprising in combination,

an electrolyte disposed in the cell, said electrolyte including ions selected from the group consisting of chlorides, fluorides or mixtures thereof,

a cathode immersed in the electrolyte presenting a surface for electrolyte winning of molten metal,

an anode body comprising a mixture of an oxygen containing compound of the metal and an electrically conductive reducing agent which mixture serves as a sole source of the metallic ore and is consummable in the electrolytic process,

said body having at least one active surface positioned in opposed relationship to but at all positions equally spaced from the surface of said cathode for providing an active anode surface at which the metallic oxide may be converted to metal ions recoverable as said molten metal at the opposing surface of said cathode,

longitudinally extending conductor means of higher electrically conductivity than said anodic mixture and being covered on at least one face thereof with said mixture,

said conductor means including at least one laterally extending branch thereof extending through said anodic mixture and having and end thereof positioned at least approximately adjacent said one active surface for providing short low resistant current paths from said one end through the mixture to said active surface, and

means for connecting a source of electrical power to said conductor means and said cathode whereby substantially the entire anodic current flows directly from said power source through said conductor means and at least the mixture adjacent the end of said conductor means and therefrom through the electrolyte to said active surface.

11. An electrolytic cell for the production of magnesium comprising in combination,

a housing having sidewalls and a bottom surface,

an electrolyte in the cell,

said electrolyte including ions selected from the group consisting of chlorides, fluorides or mixtures thereof,

a cathode immersed in the electrolyte presenting a surface for electrolytic winning of molten magnesium,

an anode comprising a particulate mixture of an oxygen containing compound of magnesium and an electrically conductive reducing agent, which mixture serves as a sole source of magnesium ore and is consumable in the electrolytic production of magnesium,

said mixture being immersed in the electrolyte beneath said cathode surface with the upper surface of said mixture providing an active anode surface,

a plurality of conductor means of higher electrically conductivity than said mixture projecting upward from the bottom surface of said cell,

said conductor means extending internally through said mixture with each having an end thereof positioned at least approximately adjacent said upper surface of said mixture, and

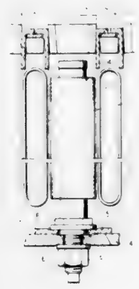
means for connecting a source of electrical power to said conductor means and said cathode.

4,409,084

ELECTROLYTIC CELL FOR ION EXCHANGE MEMBRANE METHOD

Kenzo Yamaguchi, Tokyo; Teruo Ichisaka, and Tadao Ikegami, both of Tamano, all of Japan, assignors to Chlorine Engineers Corp. Ltd., Tokyo, Japan

Filed Aug. 13, 1981, Ser. No. 292,464
Claims priority, application Japan, Aug. 22, 1980, 55/114822
Int. Cl.³ C25B *9/00, 11/03, 13/02, 13/08*
U.S. Cl. 204—257 **7 Claims**



1. An electrolytic cell for the ion exchange membrane method, which comprises:

(a) an electrolytic cell main body;

(b) a lid member completely covering the electrolytic cell main body;

(c) a plurality of porous and hollow tubular cathodes disposed in the electrolytic cell main body;

(d) an electrolytic cell bottom plate having therein a plural-

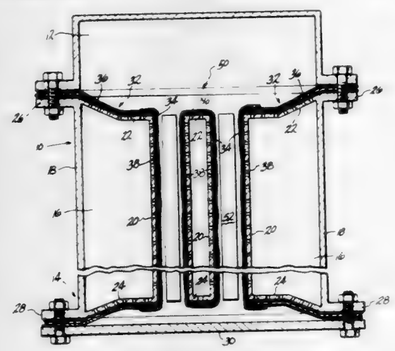
ity of apertures through which an electrically conductive bar can be extended;
(e) a plurality of electrically conductive bars provided with a flange at a lower portion thereof, which are each inserted through the apertures of the electrolytic cell bottom plate into the interior of the electrolytic cell main body and secured to the electrolytic cell bottom plate by the flange;
(f) a plurality of porous anodes which are each connected to the electrically conductive bar and placed vertically in a face-face relation to the cathode, and which are disposed between the cathodes;
(g) a plurality of bag-shaped elements, at least the portions of which facing the anodes and the cathodes are formed by a cation exchange membrane, the bottom of which is provided with at least one aperture through which the electrically conductive bar can be extended, and which have each an open top; and
(h) a partition plate having therein a plurality of openings, which plate is provided on the top of the electrolytic cell main body,
wherein
one or more anodes are in the bag-shaped element,
the bottom of the bag-shaped element is secured to the electrolytic cell bottom plate together with the electrically conductive bar extending through the aperture of the bottom of the bag-shaped element by the flange of the electrically conductive bar so that an anode compartment is defined in the bag-shaped element, and
the opening of the top of the bag-shaped element is secured to the opening of the partition plate by a gasket and a gasket cap.

4,409,085

DIAPHRAGM CELLS EMPLOYING RETICULATE CATHODES

Igor V. Kadija, and Kenneth E. Woodard, Jr., both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 15, 1981, Ser. No. 330,637
Int. Cl.³ C25B *9/00, 11/03, 13/06*
U.S. Cl. 204—257 **10 Claims**



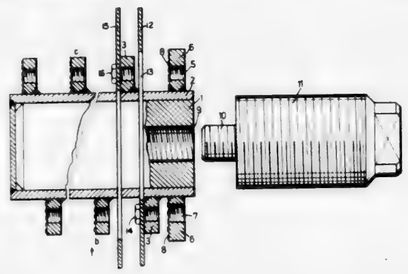
1. An electrolytic diaphragm cell for the electrolysis of an aqueous solution of an alkali metal chloride which comprises:
(a) a cell body;
(b) a porous diaphragm separating said cell body into an anode compartment and a cathode compartment;
(c) said anode compartment containing at least one anode;
(d) said cathode compartment containing at least one cathode, said cathode being comprised of a foraminous metal conductor and a reticulate cathode, said reticulate cathode being comprised of a network of electroconductive filaments having interfilament bonding formed by deposition of an electroconductive metal at contact sites between adjacent filaments, and having a porosity of at least 80 percent, said reticulate cathode being positioned between and in contact with said porous diaphragm and said foraminous metal conductor;
(e) means adapted to supply electric current to said anodes and said cathodes; and
(f) inlets and outlets in said cell body adapted to supply and remove fluids from said cell body.

4,409,086

ELECTROLYTIC CELL

Günther Haas, Oberursel; Ludolf Plass, Kronberg, and Karl Lohrberg, Heusenstamm, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,710
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011643
Int. Cl.³ C25B *9/04, 11/10, 11/04*
U.S. Cl. 204—269 **8 Claims**



1. In an electrolytic apparatus comprising a cell chamber and means for passing an electrolyte therethrough, said cell provided with sets of anode plates, each of which is disposed between two sets of cathode plates and each of which is connected to a current-feeding center pin, said anode plates being mutually staggered electrode plates which protrude into the gaps between plates having the opposite polarity, the improvement wherein said center pin is provided with laterally disposed contact straps, which are spaced apart in the longitudinal direction of the pin, each of said straps having an anode plate secured thereto.

4,409,087

WAFER DETECTION CIRCUITRY FOR HIGH VACUUM USE

Donald L. Quick, Mountain View, Calif., assignor to The Perkin-Elmer Corp., Norwalk, Conn.

Filed May 18, 1982, Ser. No. 379,402
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **6 Claims**

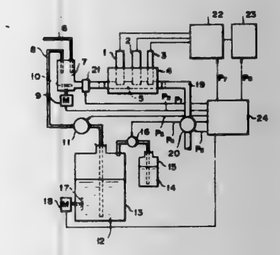
1. In a sputtering system having wafers moving to and from a sputtering chamber, a detector located at a selected position for detecting the presence or absence of wafers at said position in their path of travel in said sputtering system comprising,
transducer means having a pair of sensor plates defining a fixed capacitance and located in the path of travel of said wafers,
current generating means for providing a constant current to said sensor plates which can be sensed as an output current signal from said sensor plates,
the sensor plates being positioned such that a wafer in close proximity thereto changes the output current of said sensor plates, and
current sensing means for sensing said output current and providing an output signal representative of said output current.

4,409,088

REGENERATION METHOD OF ION-SELECTIVE ELECTRODE, AND ION-SELECTIVE ELECTRODE AND ION-CONCENTRATION ANALYZER CONTAINING MEANS ADAPTED TO PRACTICE SAID METHOD

Ken-ichi Kanno, Tokyo; Tetsuya Gatayama, and Masao Koyama, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 23, 1982, Ser. No. 391,133
Claims priority, application Japan, Jun. 30, 1981, 56-100560; Jun. 30, 1981, 56-100561; Jun. 30, 1981, 56-100562; Jun. 30, 1981, 56-100564; Jun. 30, 1981, 56-100650
Int. Cl.³ G01N *27/30*
U.S. Cl. 204—402 **14 Claims**



1. A method for regenerating an ion-selective electrode equipped with an ion-selective membrane which is formed of a high polymer membrane containing an ion-selective material and plasticizer, which method comprises supplying to the ion-selective membrane a regenerating plasticizer which is either identical in every aspects or analogous in effects to the first-mentioned plasticizer and is capable of dissolving the ion-selective material therein and imparting flexibility to the ion-selective membrane.

4. The method according to claim 1, wherein the regenerating plasticizer is supplied to the ion-selective membrane by dispersing in the ion-selective membrane a carrier containing the regenerating plasticizer in a concentration higher than the concentration of the plasticizer still remaining in the ion-selective membrane.

9. An ion-selective electrode for practicing the method of claim 4, equipped with a casing filled with an electrically conductive material, an ion-selective membrane attached to a free end portion of the casing, an inner reference electrode supported within the casing and a lead connected to the internal reference electrode, wherein the ion-selective membrane contains a polymer as its base material, the polymer contains in turn an ion-selective material and plasticizer as well as a carrier containing therein another plasticizer, and the latter plasticizer is present in a concentration higher than the former plasticizer.

4,409,089

COAL LIQUEFACTION AND RESID PROCESSING WITH LIGNIN

Leslie R. Rudnick, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 178,214, Aug. 14, 1980, Pat. No. 4,303,496. This application Nov. 30, 1981, Ser. No. 325,896
Int. Cl.³ C10G *1/00, 1/06, 47/00, 47/02*
U.S. Cl. 208—8 LE **13 Claims**

1. A process for the liquefaction of coal comprising admixing the coal to be subjected to liquefaction with about 1.0% to about 4.0% of lignin based on the weight of the coal; introducing the mixture of coal and lignin to a dissolver wherein said mixture is subjected to temperature of about 600° F. to about 800° F. and pressure of about 50 to about 3000 psig for a period of time ranging from 0.5 to 180 minutes; and, separating light hydrocarbon fractions from a mixture of ash, undissolved coal, deashed coal and high quality coal extracts.

4,409,090

PROCESS FOR RECOVERING PRODUCTS FROM TAR SAND

Francis V. Hanson; Jan D. Miller, and Alex G. Oblad, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Continuation-in-part of Ser. No. 155,257, Jun. 2, 1980, Pat. No. 4,337,143. This application Feb. 1, 1982, Ser. No. 344,324
The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **30 Claims**

28. A process for recovering products from tar sand comprising the steps of:
obtaining a tar sand;
preparing a bitumen-rich concentrate from the tar sand using an alkaline, hot water separation process, said bitumen-rich concentrate comprising from about 35% bitumen and about 65% sand by weight to about 45% bitumen and about 55% sand by weight;
recovering products from the bitumen-rich concentrate by introducing the bitumen-rich concentrate into a fluidized bed while heating the bitumen-rich concentrate in the fluidized bed;
removing a coked sand from the fluidized bed, said coked sand comprising sand having a carbonaceous residue thereon;
recycling at least a portion of the coked sand to the alkaline, hot water separation process;
burning the carbonaceous residue on at least a portion of the coked sand to produce a hot burnt sand;
recycling at least a portion of the hot burnt sand to the bitumen-rich concentrate;
distilling the recovered products;
isolating a fraction formed during distillation within the temperature range of about 140° C. to about 370° C.; and
recycling the isolated fraction to the alkaline, hot water separation process.

4,409,091

ALKALI RECYCLE PROCESS FOR RECOVERY OF HEAVY OILS AND BITUMENS

Michael A. Kessick, Edmonton, Canada, assignor to Research Council of Alberta, Edmonton, Canada

Division of Ser. No. 157,935, Jun. 9, 1980. This application Mar. 3, 1982, Ser. No. 354,220
Claims priority, application United Kingdom, Jun. 8, 1979, 7919999
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE **11 Claims**

1. A process for the recovery of bitumen from oil sands having bitumen associated therewith capable of emulsification with strong sodium hydroxide solution to form a stable oil-in-water emulsion, which comprises:
contacting said oil sand with water containing sodium hydroxide having a concentration of less than about 0.5 wt.% NaOH and in sufficient quantity to provide a pH of the water of at least about 11 so as to form an oil-in-water emulsion from the bitumen content of the oil sand, the amount of sodium hydroxide contacting said bitumen being about 0.05 to about 1.5 wt.% NaOH on bitumen,
separating said oil-in-water emulsion from solid phase sand remaining from said contacting step,
contacting said oil-in-water emulsion with about 0.02 to about 1 wt.% based on bitumen in said oil-in-water emulsion of slaked lime to effect inversion of said oil-in-water emulsion and to recover sodium hydroxide from the bitumen in said oil-in-water emulsion,
separating a water-in-oil emulsion resulting from said emulsion inversion from aqueous sodium hydroxide solution formed in said contacting step,
dewatering said water-in-oil emulsion to recover said bitumen therefrom,

dewatering a clay suspension formed in said oil-in-water emulsion contacting and said water-in-oil emulsion and separating steps to deposit clay particles therefrom and form a recycle aqueous sodium hydroxide stream, and

recycling said recycle aqueous sodium hydroxide stream to said oil sand contacting step to provide part of the water and sodium hydroxide utilized therein.

4,409,092

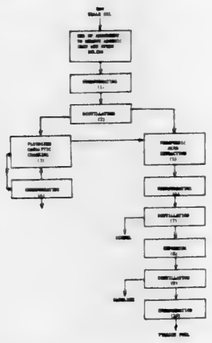
COMBINATION PROCESS FOR UPGRADING OIL PRODUCTS OF COAL, SHALE OIL AND CRUDE OIL TO PRODUCE JET FUELS, DIESEL FUELS AND GASOLINE

Charles A. Johnson, Ashland; Clifford Ward, Louisa; Howard F. Moore, Ashland, and Jr. Hettinger, Russell, all of Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 138,237, Apr. 7, 1980, abandoned. This application Oct. 1, 1981, Ser. No. 307,468

Int. Cl.³ C10G *45/00*; B07B *1/06*

U.S. Cl. 208—89 **19 Claims**



1. A method for treating oil feeds to maximize the production of middle distillate fuels therefrom which comprises,

(a) hydrotreating an oil feed selected from shale oil, coal oil and crude oil comprising sulfur and nitrogen but separated from metal contaminants to remove sulfur and nitrogen therefrom and increase the ratio of basic nitrogen compound to total nitrogen compounds during hydrogen consumption within the range of about 50 to 1200 SCF/B of oil;

(b) distilling the product of step (a) into a first fraction providing an end boiling point in the range of about 600° F. to about 650° F. and a second higher boiling fraction;

(c) catalytically cracking said second higher boiling fraction of step (b) to produce a cracked product of end boiling point within the range of 600° to 650° F.;

(d) contacting said product fractions of steps (b) and (c) with an end boiling point within the range of 600° to 650° F. with an aqueous solution of phosphoric acid whereby basic nitrogen compounds in the oil products are extracted by the phosphoric acid solution;

(e) separating the phosphoric acid solution containing said extracted basic nitrogen compounds from a raffinate oil product,

(f) hydrotreating the raffinate oil product of step (e) to hydrogenate olefins, aromatics and nitrogen compounds therein employing hydrogen consumption conditions within the range recited for step (a),

(g) separating the hydrotreated product of step (f) to recover high boiling diesel fuel fraction from a fraction suitable for producing jet fuels,

(h) passing the fraction suitable for producing jet fuels separated in step (g) to catalytic reforming and recovering an oil product of catalytic reforming reduced in wax forming paraffins but comprising formed aromatics and olefins,

(i) separating gasoline product of said reforming step from higher boiling jet fuel boiling range product, and

(j) hydrotreating a reformed product comprising jet fuel boiling range material of step (i) sufficient to hydrogenate olefins and aromatics therein, and

(k) recovering a hydrogenated product of step (j) suitable for producing jet fuels.

4,409,093

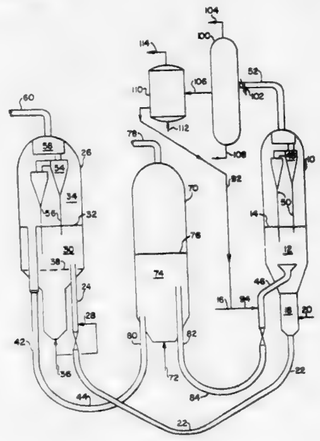
PROCESS FOR REDUCING COKE FORMATION IN HEAVY FEED CATALYTIC CRACKING

Roby Bearden, Jr., and Gordon Stuntz, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 260,191, May 4, 1981, Pat. No. 4,372,841, which is a continuation-in-part of Ser. No. 108,395, Dec. 31, 1979, Pat. No. 4,280,895. This application Jul. 22, 1981, Ser. No. 285,737

Int. Cl.³ C10G *9/16, 11/18*

U.S. Cl. 208—108 **14 Claims**



14. In a hydrocarbon cracking process of the type wherein:

A. hydrocarbon feedstock containing at least two metal contaminants selected from the class consisting of nickel, vanadium and iron is passed into a reaction zone having a cracking catalyst therein at cracking conditions to form cracked hydrocarbon products and wherein coke and metal contaminants are deposited on the catalyst;

B. coke and metal contaminated catalyst is passed from the reaction zone to a regeneration zone maintained under net reducing conditions having a regeneration gas passing therethrough to remove at least a portion of the coke from the catalyst, the improvement which comprises:

i. passing at least 10 weight % of the catalyst from the regeneration zone through a reduction zone maintained at a temperature within the range of about 600° C. to about 850° C. in the presence of hydrogen, carbon monoxide or mixtures thereof to at least partially passivate the metal contaminants on the catalyst; and

ii. passing the catalyst from the reduction zone to the reaction zone without further processing.

4,409,094

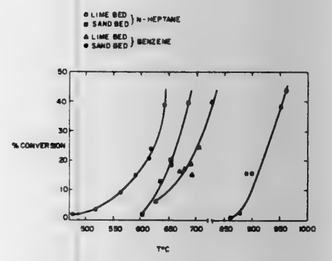
PROCESS FOR DETOXIFYING COAL TARS

John P. Longwell, Cambridge, and William A. Peters, Arlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 8, 1980, Ser. No. 176,580

Int. Cl.³ C10G *11/04*

U.S. Cl. 208—121 **11 Claims**



1. A process for treating hydrocarbon coal tar liquid containing toxic, mutagenic and/or carcinogenic aromatic compounds, said process comprising feeding said coal tar liquid into a reactor vessel, which is maintained at a temperature in the range of from about 400° C. to about 1000° C., where said coal tar liquid is present as a vapor and wherein said coal tar liquid is the only hydrocarbon fed into said reactor for treatment and no external hydrogen is added with the hydrocarbon feed, thermally treating said vapor in a reactor bed consisting essentially of a catalyst wherein said vapor is in intimate contact with said catalyst which consists essentially of calcium oxide or a calcium oxide-containing mineral, thereby removing at least some of said aromatic compounds and rendering said coal tar liquid less hazardous to the health of those handling it.

4,409,095

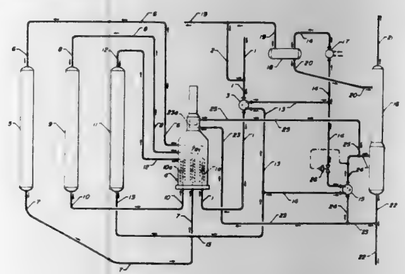
CATALYTIC REFORMING PROCESS

Kenneth D. Peters, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 222,469, Jan. 5, 1981, abandoned. This application Sep. 28, 1982, Ser. No. 426,017

Int. Cl.³ C10G *35/04*

U.S. Cl. 208—134 **5 Claims**



1. A catalytic reforming process comprising the steps of:

(a) heating a mixture of a hydrocarbonaceous feedstock and hydrogen in a radiant heating section of a fired heater and thereafter contacting the heated mixture with a reforming catalyst at reforming conditions to produce a reaction effluent;

(b) subjecting at least a portion of the reaction effluent to a first indirect heat exchange with a portion of a hereinafter specified hydrocarbon reformate;

(c) subjecting at least a portion of the reaction effluent to a second indirect heat exchange with said mixture of hydrocarbonaceous feedstock and hydrogen prior to the heating thereof in the fired heater;

(d) separating the reaction effluent into a hydrogen-rich vapor phase and a substantially liquid hydrocarbon phase and recycling at least a portion of said hydrogen-rich vapor phase for admixture with said hydrocarbonaceous feedstock;

(e) introducing said liquid phase into a stabilizer column, said column being maintained at fractionation conditions sufficient to provide an overhead fraction comprising hydrocarbons normally gaseous at standard temperature and pressure, and a bottom fraction comprising a hydrocarbon reformate;

(f) recovering and reheating a first predetermined amount of the hydrocarbon reformate by indirect heat exchange with hot combustion gases in a convection heating section of the fired heater of step (a) and returning the reheated reformate to the stabilizer column to supply a fixed quantity of heat to the column reboiler;

(g) recovering a second portion of the hydrocarbon reformate and subjecting it to indirect heat exchange with the reaction effluent as set forth in step (b) and returning the second portion to the stabilizer column to provide the balance of the reboiler heat requirement of the column; and,

(h) recovering a third portion of the hydrocarbon reformate as product.

4,409,096

CONTROL SYSTEMS FOR MATERIAL TREATMENT PLANT

Rodney W. O'Brian, Near Burton-on-Trent, England, assignor to Coal Industry (Patents) Ltd., London, England

Filed Jun. 15, 1981, Ser. No. 273,521

Claims priority, application United Kingdom, Jul. 15, 1980, 8023098

Int. Cl.³ B03B *7/00*; G05D *11/02*

U.S. Cl. 209—10 **15 Claims**



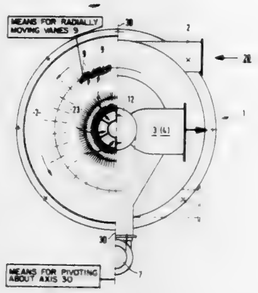
1. Material treatment plant comprising first material treatment means for producing a first treated fraction and a second treated fraction, operation of the first treatment means being controllable to vary one of the treated fractions relative to the other of the treated fractions, further material treatment means for further treating one of the said treated fractions produced by the first treatment means to produce a first further treated fraction and a second further treated fraction, separate storage means for the other of said treated fractions and for one of said further treated fractions, respectively, and a control system comprising sensor means for sensing the amounts of stored material in each of said separate storage means and for deriving signal means indicative of the sensed amounts of stored material, the control system further comprising control means for receiving said derived signal means and for controlling the operation of said first treatment means in accordance with the received signal means.

4,409,097

IMPROVED PIVOTABLE CENTRIFUGAL CLASSIFIER AND METHOD OF CLASSIFYING

Ulrich Barthelmess, Niederstotzingen, Fed. Rep. of Germany, assignor to OMYA GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 16, 1981, Ser. No. 312,028
Int. Cl.³ B07B *7/083*
U.S. Cl. 209—11 **10 Claims**



1. An improved centrifugal classifier, comprising:
a substantially cylindrical housing having an approximately tangential inlet for classifying air;
a vane ring arranged centrally within said housing and spaced radially inwardly from the casing thereof, said vane ring being of approximately the same axial length as said inlet for classifying air;
a classifying rotor arranged for rotation within and spaced radially inwardly from said vane ring, said rotor also being of approximately the same axial length as said inlet for classifying air and comprising a circumferentially and axially extending lamination ring defining radially extending passages leading from the outside diameter of said rotor to an axially extending interior volume in said rotor, said interior volume being open to flow of air and fine granular material passing from said radial passages and defining an inside diameter for said rotor;
an inlet for granular material to be classified, said inlet opening at one end of said classifier into a classifying area located between said vane ring and said lamination ring;
a first outlet for coarse granular material and air, said first outlet opening from said classifying area;
a second outlet for fine granular material and air, said second outlet being located adjacent said interior volume, the diameter of said second outlet corresponding approximately to said inside diameter of said rotor; and
means for pivoting said classifier about a horizontal axis, to vary the residence time of material in said classifying area and thereby vary the percentage of fine granular material removed from material to be classified.

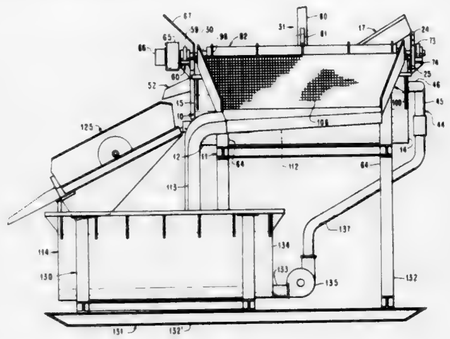
4,409,098

APPARATUS FOR SEPARATING A MATERIAL OF LIGHTER SPECIFIC GRAVITY FROM A MATERIAL OF HEAVIER SPECIFIC GRAVITY

Billy T. Burke, Box 159, Thelma, Ky. 41260

Filed Mar. 29, 1982, Ser. No. 362,676
Int. Cl.³ B03B *5/40*
U.S. Cl. 209—172.5 **15 Claims**

1. An apparatus for separating a material of lighter specific gravity from a material of heavier specific gravity including:
a tank to receive the material to be separated;
said tank having an open upper end, a substantially semi-cylindrical bottom wall, and two end walls;
material introducing means to introduce the material to be separated into said tank through said open upper end at a selected angle;
medium introducing means to introduce a separating medium of a selected specific gravity under pressure into said tank in a substantially horizontal direction through one of said end walls;
the other of said end walls of said tank having opening means therein to control the level of the medium in said tank and to allow the separated material of lighter specific gravity to flow from said tank;
first baffle means extending from said one end wall for a selected distance;



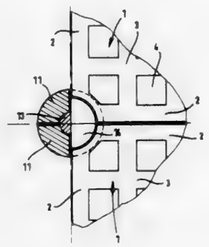
second baffle means extending from said other end wall for a selected distance so as to have its end spaced from the end of said first baffle means, said first baffle means having its exit aligned with the entrance of said second baffle means;
and rotary means to move along said substantially semi-cylindrical bottom wall of said tank to remove the material of heavier specific gravity therefrom.

4,409,099

SIEVE DECK FOR SIFTING MACHINES

Kurt Wolff, Bundesrepublik, Fed. Rep. of Germany, assignor to Steinhaus GmbH, Fed. Rep. of Germany

PCT No. PCT/DE80/00095, § 371 Date Mar. 2, 1981, § 102(e) Date Mar. 2, 1981, PCT Pub. No. WO81/00065, PCT Pub. Date Jan. 22, 1981
PCT Filed Jul. 2, 1980, Ser. No. 243,964
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1979, 2926987
Int. Cl.³ B07B *1/49*
U.S. Cl. 209—399 **5 Claims**



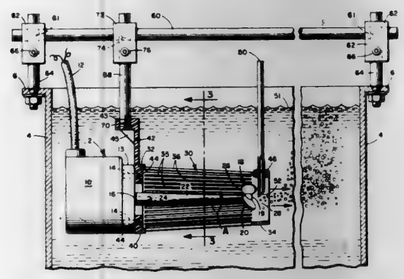
1. A sieve deck for sifting machines, sifting boxes or the like, comprising a support structure and sieve elements releasably disposed thereon and provided with a multiplicity of sieve openings which extend to form a continuous separation face and have the fundamental shape of a polygon, wherein the sieve elements are secured on the support structure at least in the vicinity of their secured corners and are connected with this support structure via spacer elements, whereby the adjoining corners of adjacent sieve elements are supported on one single spacer element, which has a single reception opening on its upper side for centrally securing all the adjacent corners of the respective sieve elements.

4,409,100

LIQUID AERATING DEVICE

Richard B. Rajendren, Belle Plaine, Minn., assignor to Aeration Industries, Inc., Chaska, Minn.

Filed Sep. 17, 1981, Ser. No. 303,019
Int. Cl.³ C02F *1/74;* B01F *3/04*
U.S. Cl. 210—219 **3 Claims**



1. A device for aerating liquids comprising:
a rotary drive motor;
an elongate drive shaft extending from and driven by said motor;
a propeller secured to said drive shaft adjacent its distal end, said propeller having one or more propeller blades configured so that the liquid is drawn into the propeller from a first side thereof and is ejected in a stream from the propeller on a second side thereof;
a hollow draft tube for aspirating air from above the surface of the liquid into the liquid;
an apertured support cage having a length extending between said motor and said propeller so that the entire distance between the motor and the cage is enclosed, said cage including means for supporting said motor at a first end thereof, means for holding said draft tube adjacent a second end thereof with the upper end of the draft tube above the upper level of the liquid and the lower end of the draft tube djacent the second side of said propeller, and apertures located substantially along its entire length and periphery whereby liquid is drawn to the first side of said propeller from an area extending substantially between said motor and sid propeller.

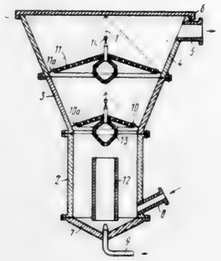
4,409,101

FLUIDIZED BED APPARATUS

Zufar G. Salikhov; Vasily A. Ivanov; Viktor P. Vyatchinov, all of Moscow; Vladimir I. Maltsev, UST-Kamenogorski; Sergei S. Grozdev, Moscow, and Nikolai V. Khodov, Ordzhonikidze, all of U.S.S.R., assignors to Moskousky Institut Stali I Splavov, Moscow, U.S.S.R.

Filed Nov. 16, 1981, Ser. No. 321,917
Int. Cl.³ B01D *53/12*
U.S. Cl. 210—266 **9 Claims**

1. A fluidized bed apparatus with a vertical longitudinal axis, comprising: a receptacle for coarser fractions associated with an inlet pipe for compressed gas and an inlet pipe for an initial product to be treated in a fluidized bed; a receptacle for medium fractions having an upwardly flaring frustoconical shape; a receptacle for fine fractions having and upwardly flaring frustoconical shape, associated with an outlet pipe for the treated product; said receptacle for coarser fractions, said receptacle for medium fractions and said receptacle for fine fractions being arranged along the certical longitudinal axis of said fluidized bed apparatus in fluid communication with one another; a grate extending transversely to the vertical longitudinal axis of said fluidized bed apparatus in said receptacle for fine fractions and being attached by means of resilient elements to walls of said receptacle for fine fractions; a source of compressed gas communicating with a respective inlet pipe; a source of the initial product communicating with a respective inlet pipe.

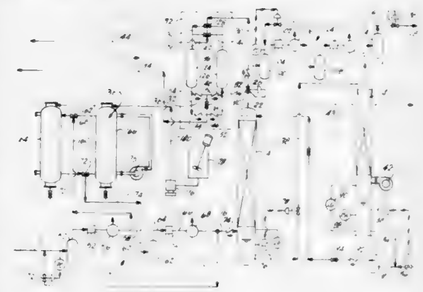


4,409,102

PROCESS FOR REMOVING CONTAMINANTS FROM A STREAM OF METHANE GAS

Milton R. Tanner, Whittier, Calif., assignor to Central Plants, Inc., Culver City, Calif.

Filed Nov. 27, 1981, Ser. No. 325,327
Int. Cl.³ C02F *11/04;* B01D *53/26*
U.S. Cl. 210—603 **14 Claims**



1. A process for removing contaminants of hydrogen sulfide and carbon dioxide from a low pressure, methane containing feed stream from an anaerobic process comprising:
(a) compressing the feed stream to an intermediate pressure;
(b) removing substantially all the hydrogen sulfide from the feed stream at the intermediate pressure;
(c) compressing the feed stream after the hydrogen sulfide removal step to an absorption pressure that is greater than the intermediate pressure;
(d) absorbing substantially all the carbon dioxide in the stream at the absorption pressure in water in an absorber to produce a treated gas stream;
(e) stripping the carbon dioxide from the water at a pressure lower than the absorption pressure; and
(f) recycling the water into the absorber to absorb further carbon dioxide.

12. A process for purifying a feed gas stream of methane, hydrogen sulfide and carbon dioxide by removal of the hydrogen sulfide and carbon dioxide, comprising the steps of:
(a) compressing the feed gas stream to an intermediate pressure;
(b) removing a substantial portion of the hydrogen sulfide from the feed gas stream at the intermediate pressure;
(c) compressing the feed gas stream after the hydrogen

sulfide removal step to an absorption pressure that is greater than the intermediate pressure;
(d) absorbing the carbon dioxide from the feed gas stream in an absorber at the absorber pressure in water from a water treatment facility to obtain a treated gas stream;
(e) passing the water with the absorbed hydrogen sulfide and carbon dioxide to the water treatment facility; and
(f) compressing the treated gas stream to a pressure suitable for introduction into high pressure storage tanks.

4,409,103

METHOD FOR THE PREPARATION OF CALCIUM HEPARINATE

Pietro Cremonesi, and Giancarlo Sportoletti, both of Milan, Italy, assignors to Italfarmaco S.p.A., Milan, Italy

Filed Aug. 11, 1980, Ser. No. 176,861
Claims priority, application Italy, Feb. 29, 1980, 20313 A/80
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—638 **4 Claims**

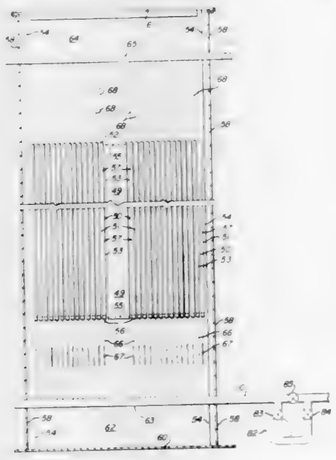
1. A process for the preparation of the calcium salt of heparin containing an amount of sodium by weight not in excess of 0.1% and containing an amount of calcium by weight not less than 9.5% which comprises subjecting a solution of sodium heparinate to ultrafiltration in the presence of a soluble calcium salt by means of a semi-permeable membrane which has a molecular nominal cut-off at less than 5000 Dalton, and wherein the fraction of the solution which has not gone through and which contains heparin is maintained at a constant concentration of heparin through continuous addition of a solution of calcium salt of concentration between 0.05 and 2 molar in calcium ions, and isolating said calcium heparinate with anticoagulant activity essentially equal to the anticoagulant activity of said sodium heparinate.

4,409,104

METHOD OF REGENERATING MOLECULAR SIEVE MATERIAL

Leonard E. Schroder; Leonard D. Schroder, both of Schroder Farms, Campo, Colo. 81029; and Billy D. Schroder, deceased, late of Campo, Colo., by Beverly Schroder, personal representative, Schroder Farms, Campo, Colo. 81029

Filed Mar. 30, 1981, Ser. No. 249,164
Int. Cl.³ B01J *20/34*
U.S. Cl. 210—673 **10 Claims**



1. A method of removing water from a normally liquid fluid by a molecular sieve material and regenerating said molecular sieve material, comprising:
placing said material within a series of first concentric, elongated, cylindrical spaces of limited thickness and separated by a series of second cylindrical spaces interposed between said first cylindrical spaces, with said second cylindrical spaces having a lesser thickness than the first cylindrical spaces;
passing said normally liquid fluid through said material while preventing any flow of said liquid fluid from said first cylindrical spaces into said second cylindrical spaces, until said molecular sieve material becomes sufficiently saturated with water that its ability to remove water is impaired;
passing a heated gas through said second cylindrical spaces while preventing any flow of said gas from said second cylindrical spaces to said first cylindrical spaces, in order to regenerate said molecular sieve material after passage of said normally liquid fluid is discontinued; and
similarly passing a cool gas through said second cylindrical spaces when sufficient water adsorbed by said molecular sieve material has been driven off to resume circulation of said normally liquid fluid through said molecular sieve material, in order to cool said molecular sieve material to a temperature permitting resumption of removal of water from said normally liquid fluid.

4,409,105

DRIED, STERILIZED, GAMMA-GLOBULIN-FIXED COLUMN AND A PROCESS FOR PREPARING THE SAME

Hiroshi Hayashi; Takao Kiyota, both of Fuji, and Mitsuru Shibukawa, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 20, 1981, Ser. No. 323,338
Claims priority, application Japan, Dec. 18, 1980, 55-178110
Int. Cl.³ B01J *8/02*
U.S. Cl. 210—679 **12 Claims**



5. A process for preparing a dried, sterilized γ-globulin-fixed column which comprises subjecting carrier resin having γ-globulin borne thereby and fixed thereto to drying treatment and then to sterilization with ethylene oxide gas or propylene oxide gas.

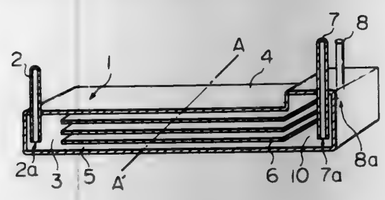
4,409,106

APPARATUS AND METHOD FOR SEPARATING BLOOD COMPONENTS

Tadaaki Furuta, and Shuusaku Tabata, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 19, 1982, Ser. No. 369,439
Claims priority, application Japan, Sep. 8, 1981, 56-141216; Sep. 8, 1981, 56-141217; Nov. 26, 1981, 56-188320
Int. Cl.³ B01D *21/01*
U.S. Cl. 210—732 **12 Claims**

9. A method for separating blood components by means of sedimentation action due to gravitational force, comprising the steps of:
continuously passing blood to be separated through a blood flow channel comprising at least two flat empty spaces having a thickness of not more than 20 mm, said blood containing an added water-soluble polymer, while the blood flow channel is filled up;



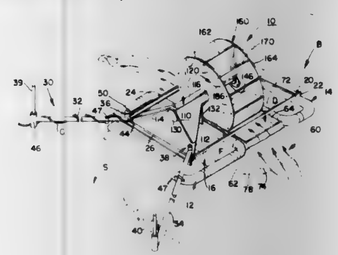
separating the blood flow into multiple streams of the separated blood component layers; and
collecting the desired blood component layer or layers.

4,409,107

METHOD AND APPARATUS FOR AERATING BODIES OF WATER

Charles D. Busch, Rte. 3, Box 188, Lafayette, Ala. 36862, assignor to Charles D. Busch, Lafayette, Ala.

Filed Dec. 21, 1979, Ser. No. 106,266
Int. Cl.³ C02F *1/72, 7/00*
U.S. Cl. 210—758 **15 Claims**



13. A method of aerating a body of water such as a catfish pond, or the like, comprising the steps of:
using a paddlewheel, stirring water in a body of water near the surface of such water;
moving the stirring water from just below the surface of the water generally upward then moving that water in a generally horizontal direction at or near the surface so that oxygen-deficient deep water is moved to the surface to be mixed with oxygen-rich surface water while essentially no water is removed from the body of water; and
rotating the paddlewheel slowly enough so that water is stirred with essentially no splashing, bubbling or spraying.

4,409,108

LUBRICATING COMPOSITION FOR WELL FLUIDS

Leroy L. Carney, New Caney; Royal E. Loftin, Houston; Thomas E. Anderson, Houston, and Guillermo Vasquez, Houston, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Jun. 2, 1980, Ser. No. 155,885
Int. Cl.³ C09K *7/02*
U.S. Cl. 252—8.5 C **12 Claims**

1. A composition for reducing the frictional resistance developed in an aqueous fluid between the surface of a moving metal article and an adjacent surface, said composition consisting essentially of:
an odor masking agent, a mixture of substantially equal amounts of glycerol monooleate and glycerol dioleate, and an alcohol or mixture of alcohols having 7 to 10 carbon atoms;
wherein the concentration of said odor masking agent in said composition is up to about 5 percent by weight of said composition, the concentration of said oleate mixture in said composition is in the range of from about 5 to about 60 percent by weight of said composition and the concentration of said alcohol in said composition is in the range of from about 10 to about 90 percent by weight of said composition.

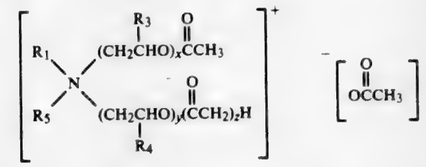
4,409,109

FABRIC SOFTENING COMPOUNDS AND METHOD

James M. Richmond, Naperville, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 54,341, Jul. 2, 1979, abandoned. This application Jul. 16, 1982, Ser. No. 399,035
Int. Cl.³ D06M *13/46*
U.S. Cl. 252—8.8 **3 Claims**

1. A solution comprising from about 50 to about 75 percent, by weight, of a compound of the formula



wherein R_1 is selected from the group consisting of alkyl and alkenyl groups containing from about 8 to about 22 carbon atoms, R_3 and R_4 are independently selected from the group consisting of hydrogen and methyl, R_5 is selected from the group consisting of hydrogen and alkyl and alkenyl groups containing from about 8 to about 22 carbon atoms, x and y are independently integers from 1 to about 20, and z is 0 or 1.

4,409,110

ENHANCED OIL DISPLACEMENT PROCESSES AND COMPOSITIONS

John K. Borchardt, and David L. Brown, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 6, 1981, Ser. No. 222,837
Int. Cl.³ E21B *43/22*
U.S. Cl. 252—8.55 D **13 Claims**

1. A process of polymer augmented treatment of a porous, permeable subterranean formation subject to water flooding techniques in connection with the recovery of hydrocarbons comprising injecting into said formation via an injection well an aqueous mixture of at least two types of water soluble polymers wherein the first polymer is a nonionic synthetic water soluble aqueous fluid viscosifier having a molecular weight of about 0.5 million–30 million and the second polymer is a cationic organic polymer which contains cationic atoms of nitrogen, sulfur, phosphorus or combinations thereof wherein the polymer has a molecular weight of about 800–6,000,000 and is adsorbed by the formation leaving a viscous aqueous fluid containing said first viscosifying polymer and the remaining aqueous fluid has a higher viscosity than the aqueous fluid containing both polymers.

4,409,111

ANTI-GALLING LUBRICATIVE COMPOSITION

Mark Holmes, Quaker Hill, and Elliott Frauenglass, Newington, both of Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Apr. 12, 1982, Ser. No. 367,695
Int. Cl.³ C10M *3/48, 3/22*
U.S. Cl. 252—30 **6 Claims**

1. A preapplied, lubricating composition consisting essentially of a dispersion or suspension of graphite powder or a metal powder selected from the group consisting of nickel, copper or aluminum, or any mixture of the foregoing, in an aqueous solution of a polymeric binder.

4,409,112

LUBRICANT, SLOW SPEED, HIGH LOAD

Charles W. Urmy, Jr., Irving, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Dec. 23, 1981, Ser. No. 333,968
Int. Cl.³ C10M *1/10, 1/28*
U.S. Cl. 252—33.4 **19 Claims**

1. A heavy duty lubricating composition comprising a solution or mixture including:
a carrier fluid;
a metal lignosulfonate dissolved or dispersed therein;
an alkali metal fluoantimonite; and,
a nonionic homopolymer of ethylene oxide having a molecular weight of 400,000 to 5,000,000.

4,409,113

SYNTHETIC HOT FORGING LUBRICANTS AND PROCESS

Jerome W. Bertell, South Holland, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 2, 1981, Ser. No. 317,206
Int. Cl.³ C10M *3/18*
U.S. Cl. 252—42 **18 Claims**

1. A hot forging lubricant comprising an aqueous composition containing from about 0.5 to 35 percent by weight of composition of a dialkali metal salt of a phthalic acid and from about 0.005 to 25.0 percent by weight of composition of a thickening agent.

9. A hot forming lubricant comprising an aqueous composition containing conventional aqueous lubricant additives, the improvement comprising including in the composition from about 0.5 to 35 percent by weight of composition of a dialkali metal salt of a phthalic acid and from about 0.005 to 25.0 percent by weight of composition of a thickening agent.

16. A hot forging process for metals comprising applying to hot forging dies an aqueous lubricant composition containing from about 0.1 to 35 percent by weight of composition of a dialkali metal salt of a phthalic acid and from about 0.005 to 25.0 percent by weight of composition of a thickening agent, placing the metal between the dies, closing the dies under pressure, opening the dies and removing the forged metal.

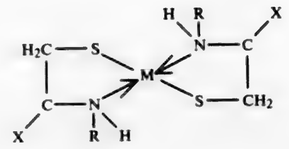
4,409,114

HYDROGEN SULFIDE SUPPRESSANT ADDITIVE FOR FUNCTIONAL FLUIDS

Stanley J. Brois, Westfield; Antonio Gutierrez, Mercerville, and Jack Ryer, East Brunswick, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1982, Ser. No. 405,266
Int. Cl.³ C10M *3/32, 3/48*
U.S. Cl. 252—75 **10 Claims**

1. A functional fluid composition comprising a major amount of a synthetic or mineral oil of lubricating viscosity containing an oil-soluble additive in an amount effective to suppress the tendency of the fluid composition at elevated temperatures to form hydrogen sulfide, the additive being a compound of the formula



wherein R is a C_{10}–C_{24} alkyl, M is a metal of the group of zinc, iron, copper, nickel, molybdenum and chromium and X is $—H_2$ or $=O$.

4,409,115

ETCHING SOLUTION FOR ETCHING OF PHOTOPOLYMERIC FILMS

Manfred A. J. Sondergeld, Mulheim, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Sep. 20, 1982, Ser. No. 420,480
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150637
Int. Cl.³ C09K *13/02*
U.S. Cl. 252—79.1 **4 Claims**

1. An etching solution for dot etching photopolymerized materials which comprise an organic polymeric binder having alkali soluble groups, a polymer of an ethylenically unsaturated monomeric compound, and a photoinitiator or photoinitiator system, the photopolymerized material having an optical density in the actinic region of the spectrum of at least 1.0, the improvement wherein the etching solution contains as the etching agent a water-soluble salt of a water-insoluble polymeric polycarboxylic acid whose acid strength is the same or less than that of the organic polymeric binder present in the photopolymerized material.

4,409,116

WINDSHIELD WIPER CLEANING PRODUCT

Richard Lodico, 20 Track Rd., Reading, Mass. 01867

Filed Aug. 18, 1982, Ser. No. 409,330
Int. Cl.³ C11D *17/00*
U.S. Cl. 252—91 **6 Claims**



1. A product for cleaning windshield wiper blades comprising a single use packaged cleansing unit comprising a sheet of liquid absorbant material impregnated with a windshield wiper cleaning liquid,
said sheet of material being enclosed in a sealed, tearable, gas-tight envelope,
said windshield wiper cleaning liquid comprising
an aqueous solution of ammonium hydroxide which has a concentration between 0.1 N and 3 N, said ammonium hydroxide solution comprising between 10% and 50% of said liquid, by volume,
acetone, said acetone comprising between 30% and 80% of said liquid, by volume, and
an alcohol having between one and five carbon atoms, inclusive, said alcohol comprising between 2% and 50% of said liquid, by volume.

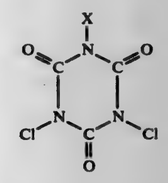
4,409,117

DETERGENT COMPOSITIONS STABLE TO CHLORINE SEPARATION, AND AGENTS FOR PRODUCING SAME

Krister Holmberg, Mölndal, and Ingvar Nilsson, Kungälv, both of Sweden, assignors to EKA AB, Surte, Sweden

Filed Dec. 17, 1980, Ser. No. 217,527
Int. Cl.³ C11D *3/395, 7/26, 7/56, 17/06*
U.S. Cl. 252—99 **8 Claims**

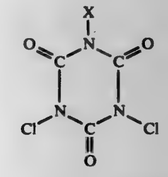
1. A detergent composition comprising alkali metal phosphate, alkali metal silicate, a surfactant, a chlorinated triazine trione of the formula



(I)

wherein X is Cl, Na or K, or when X is Na, the dihydrate thereof, and optionally conventional additives, characterized in that the chlorinated triazine trione of formula (I) is in the form of granules having a particle size of from 0.5 to 5 mm., said granules being coated with a hydrophobic layer consisting essentially of a thin layer of a diester selected from the group consisting of the diester of phthalic acid or adipinic acid with an alcohol having 4–18 carbon atoms, said diester being employed in an amount of 3–9% by weight, calculated on the amount of the chlorinated triazine trione of formula (I).

6. An agent for producing a detergent composition, characterized in that the agent comprises granules of chlorinated triazine trione of the formula



(I)

wherein X is Cl, Na or K, or the dihydrate of the triazine trione of formula (I) when X is Na, said granules having a particle size of from 0.5–5 mm., said granules being coated with a thin hydrophobic layer of a diester selected from the group consisting of the diester of phthalic acid or adipinic acid with an alcohol having 4–18 carbon atoms, said diester being employed in an amount of 3–9% by weight, calculated on the amount of the chlorinated triazine trione of formula (I).

4,409,118

TABLET FORMING CLEANSER COMPOSITION AND METHOD OF PREPARATION

Anthony B. J. Eoga, Boonton, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 297,892, Aug. 31, 1981, Pat. No. 4,362,639, which is a continuation-in-part of Ser. No. 251,030, Apr. 3, 1981. This application May 20, 1982, Ser. No. 380,157
Int. Cl.³ C11D *7/14, 7/16, 7/18, 7/30*
U.S. Cl. 252—99 **37 Claims**

1. An effervescent cleansing composition in tablet form comprising:
A. a phosphate salt in an amount of from about 20% to about 45% by weight;
B. a silicate salt in an amount of up to about 20% by weight; and
C. at least one perborate salt in an amount of at least 50% by weight:
wherein at least a portion of said perborate salt is present in a compacted, granulated mixture in an amount effective to facilitate compaction without substantially sticking to tablet forming equipment and with suitable dimensional stability without prolonged disintegration time when placed in solution, said granulated mixture containing from about 0.01% to about 0.70% by weight of said granulated mixture of a polymeric fluorocarbon.

4,409,119

PROCESS FOR REGENERATING CLEANING SOLUTIONS

Helga Bürger, Erkrath, and Christian Rossmann, Langenfeld, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft Auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,289
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137340
Int. Cl.³ C11D *7/02, 7/14*
U.S. Cl. 252—156 **8 Claims**

1. A process for regenerating an alkaline or neutral aqueous degreasing and cleaning solution containing at least 1 g/l of a phosphate or a silicate, or a mixture thereof, and wherein said solution is contaminated with emulsified mineral oil, natural oil, or a mixture thereof, comprising adding to said contaminated solution either (1) from about 0.3 to about 2 g/l of calcium ions, (2) from about 0.2 to about 1.2 g/l of magnesium ions, or (3) a mixture of calcium ions and magnesium ions chemically equivalent to from about 0.3 to about 2 g/l of calcium ions.

4,409,120

PROCESS FOR FORMING OIL-SOLUBLE PRODUCT

Michael K. Martin, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 332,692, Dec. 21, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,191
Int. Cl.³ C08F *8/04*
U.S. Cl. 525—280 **11 Claims**

1. A process for preparing an oil-soluble, star-shaped product, said process comprising:
a. solution polymerizing one or more conjugated diene monomers and optionally one or more monoalkenyl arene monomers under polymerization conditions at a temperature between about −75° C. to +150° C. with an organomonolithium compound, therein forming living polymeric arms;
b. contacting said living polymeric arms with a polyalkenyl aromatic coupling agent at a temperature between about 0° C. and about +150° C., therein forming a coupled polymer having a poly(polyalkenyl aromatic) nucleus and attached polymeric arms;
c. contacting said coupled polymer with a nitrogen containing polar compound monomer therein attaching poly(nitrogen containing polar compound) arms to said nucleus; and
d. contacting the resulting polymer with a reactant selected from the group consisting of hydrazine and p-toluenesulfonylhydrazide at a temperature between about 50° C. and about 150° C., therein forming N_2H_2, which reduces by hydrogenation at least about 80% of the aliphatic unsaturation of said polymeric arms.

4,409,121

CORROSION INHIBITORS

Edwin J. Latos, Chicago, and John C. Payne, Glendale Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 170,375, Jul. 21, 1980, abandoned. This application Jun. 28, 1982, Ser. No. 392,869

Int. Cl.[3] **C23F** *11/16, 11/14, 11/12, 11/18*

U.S. Cl. 252—389 A **10 Claims**

1. Composition for the prevention of corrosion comprising a mixture of a phosphate compound, a salt of a metal selected from the group consisting of molybdenum, tungsten and chromium, a phosphonate compound selected from the group consisting of nitrilotris(methylene)triphosphonic acid and 1-hydroxyethylidene-1,1-diphosphonic acid, and an aryl triazole.

4,409,122

CATALYST REACTIVATION

Engelina C. Kleuskens, Stein; Johannes G. H. Maessen, Roermond, and Theodorus J. van de Mond, Geleen, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Jan. 27, 1982, Ser. No. 343,362

Claims priority, application Netherlands, Jan. 27, 1981, 8100364

Int. Cl.[3] **B01J** *27/30;* **C07C** *120/14, 121/32;* **B01J** *27/02*

U.S. Cl. 502—20 **8 Claims**

1. A process for the reactivation of a spent oxidic catalyst, which is suitable for oxidation, ammoxidation and/or oxidative dehydrogenation of olefines, which catalyst contains a tellurium oxide and as principal active components antimony and/or iron oxides, said process consisting essentially in mixing the spent catalyst with a solid particulate tellurium compound or with a particulate, solid carrier material containing a tellurium compound, in an amount sufficient to raise the tellurium content, calculated as metal, of the reactivated catalyst to a value between 90% and 500% by weight of the tellurium content of the original, fresh catalyst.

2. Process according to claim 1, wherein said oxidic catalyst is on a solid particulate carrier material.

3. Process according to claim 1, wherein said value is from 90% to 200%.

4,409,123

SULFUR SORBENT REGENERATION PROCESS

William C. Hecker, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1982, Ser. No. 362,755

Int. Cl.[3] **B01J** *23/94, 23/92;* **C10G** *29/16, 29/04*

U.S. Cl. 502—38 **7 Claims**

1. A process for regenerating a spent copper-inorganic porous carrier composite sorbent for removing thiol compounds from hydrocarbons comprising:

(a) contacting the spent sorbent with an oxidizing gas at a temperature in the range of 300° C. to 700° C. and for a time sufficient to convert the sulfur in the sorbent to a sulfate form; and

(b) purging the oxidized sorbent with a nonreducing inert gas at an elevated temperature of at least about 500° C. and for a time sufficient to convert substantially all of said sulfate form to sulfur dioxide whereby the sulfur content of the sorbent is reduced substantially, said elevated temperature being below that which would cause a deleterious change in the sorbent, said purging with an inert gas being performed after step (a) without an intervening step in which the oxidized sorbent is contacted with a reducing gas.

6. The process of claim 1 wherein the inert gas is nitrogen.

7. The process of claim 1 wherein the temperature of step(a) is in the range of about 450° C. to about 650° C., the inert gas is nitrogen, the elevated temperature is in the range of about 550° C. to 700° C., and the sulfur content is reduced to below about one percent by weight.

4,409,124

PROCESS FOR REGENERATING SULFUR SORBENT BY OXIDATION AND LEACHING

Richard C. Robinson, San Rafael, and William C. Hecker, Albany, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1982, Ser. No. 362,754

Int. Cl.[3] **B01J** *23/94, 23/92;* **C10G** *29/16, 29/04*

U.S. Cl. 502—5 **7 Claims**

1. A process for regenerating a spent copper-inorganic porous carrier composite sorbent for removing thiol compounds from hydrocarbons in which the copper component of the sorbent constitutes about 5% to 50% by weight of copper calculated as copper metal comprising:

(a) contacting the spent sorbent with an oxidizing gas at a temperature of 350° C. to 700° C. for a time sufficient to convert the sulfur in the sorbent to a sulfate form; and

(b) directly after step (a) contacting the oxidized sorbent with a liquid solvent for said sulfate form whereby a substantial portion of said sulfate form is extracted from the oxidized sorbent by the solvent.

4,409,125

PROCESS FOR PRODUCING ACTIVATED FIBROUS CARBON

Hiroshi Nishino, Osaka; Masayuki Suzuki, Kyoto, and Hideo Hirota, Sennan, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP79/00160, § 371 Date Feb. 22, 1980, § 102(e) Date Jul. 2, 1979

PCT Filed Jun. 22, 1979, Ser. No. 266,012

Claims priority, application Japan, Jun. 22, 1978, 53/76039; Jul. 10, 1978, 53/84231

Int. Cl.[3] **C01B** *31/12;* **B01J** *20/20;* **D01F** *9/12*

U.S. Cl. 502—180 **3 Claims**

1. A process for producing activated fibrous carbon, which comprises carbonizing vegetable fibers in the presence of at least one member selected from the group consisting of ammonium salts of inorganic acids, nitric acid and boric acid and then activating the carbonized material, in the presence of 30 to 200 parts by weight of zinc chloride on the basis of 100 parts by weight of the carbonized material, in an atmosphere of nitrogen gas or a combustion gas from heavy oil, light oil or kerosene, at 350° C. to 750° C. for 0.25 to 2 hours.

2. A process as claimed in claim 1, wherein the carbonization temperature is at about 250° to 450° C.

3. A process as claimed in claim 1 wherein the ammonium salt of inorganic acid is ammonium chloride.

4,409,126

ULTRA HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Randall S. Shipley, Alvin, and Donald F. Birkelbach, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 22, 1981, Ser. No. 313,868

Int. Cl.[3] **C08F** *4/64*

U.S. Cl. 502—169 **10 Claims**

1. A hydrocarbon soluble reaction product or complex formed from the admixture at a temperature and time sufficient to provide a color change of

(a) at least one transition metal compound represented by the empirical formulae $Tm(OR)_yX_{x-y}$ or $Tm(OR)_{x-2}O$ wherein Tm is a transition metal selected from groups IVB, VB or VIB; each R is independently a hydrocarbyl group, having from 1 to about 20 carbon atoms; each X is independently a halogen; x has a value equal to the valence of Tm and y has a value from 1 to the valence of Tm; and

(b) at least one organometal compound represented by the empirical formula MR_xX_y; wherein M is a metal selected from magnesium, aluminum, boron, lithium or mixtures thereof; R is an alkyl group having from 1 to about 20 carbon atoms; X is a halogen, x has a value of from 1 to the valence of metal M; the value of x+y is equal to the valence of M; the quantities of (a) and (b) employed being that which provides a ratio of Q:Tm of from about 0.1:1 to about 2:1; and wherein Q has a value corresponding to the value of x divided by the valence of M times the number of moles of MR_xX_y.

4,409,127

ATTRITION RESISTANT METAL/OXYGEN COMPOSITIONS AND A PROCESS FOR THEIR PREPARATION

Robert A. Keppel, Seabrook, Tex.; Samuel J. Tremont, Manchester, Mo.; Emerson H. Lee, and George D. Davis, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1981, Ser. No. 335,785

Int. Cl.[3] **B01J** *21/04, 23/14, 23/18, 23/84*

U.S. Cl. 502—205 **41 Claims**

1. An attrition resistant metal/oxygen composition which comprises the infusion and reaction product of:

(a) 35 to 80 mole percent of an alumina existing in a crystal form selected from the group consisting of γ, δ, η, and χ crystal forms, and mixtures thereof, or that can be transformed by heat to such crystal forms, and characterized by

(i) a mean particle size from about 10 μm to about 200 μm,

(ii) a fractional porosity of at least 0.2,

(iii) a surface area of at least 150 m^2/g, and

(iv) a pore diameter such that at least 10 percent of the pores are less than 55 A, and

(b) 20 to 65 mole percent of at least one metal oxide, or compound convertible by heat to such metal oxide, having a maximum mean particle size of about 100 μm, with the proviso that the alumina/metal oxide mean particle size ratio is at least 2, which metal oxide is susceptible of undergoing infusion and reaction with the alumina upon being subjected to temperatures of at least 0.4 T_m for a time sufficient to cause infusion and reaction between the metal oxide and the alumina, wherein T_m is the melting point in °K. of the alumina wherein the composition is represented by the empirical formula selected from the group consisting of $Pb_{10}Sb_3Bi_2O_x(Al_2O_3)_{7\text{-}28}$, $Bi_{15\text{-}30}K_{4\text{-}5}Zr_{1\text{-}2}O_x(Al_2O_3)_{16\text{-}29}$, $(PbO_x)_3(Al_2O_3)_4$, $Pb_5BiO_x(Al_2O_3)_{18}$, $Pb_{10}Sb_3Bi_2KO_x(Al_2O_3)_{19}$, $Bi_{15}Ca_5ZrO_x(Al_2O_3)_{16}$, $Bi_5Fe_5Ca_5BO_x(Al_2O_3)_8$, and $Bi_2Fe_2Ca_2O_x(Al_2O_3)_3$.

4,409,128

OXIDATION CATALYST, ESPECIALLY FOR THE PREPARATION OF METHACRYLIC ACID BY GAS PHASE OXIDATION OF METHACROLEIN

Richard Krabetz, Kirchheim; Franz Merger, Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,633

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030243

Int. Cl.[3] **B01J** *27/14*

U.S. Cl. 502—211 **1 Claim**

1. An oxidation catalyst wherein the catalytically active component has the general formula

$$Mo_{12}P_aRh_bCu_cV_dCs_eX_fY_gZ_hO_x,$$

where X is Cr and/or Fe, Y is Nb, Z is Na, Li, K and/or Rb, a is 0.1–4, b is 0.001–1, c is 0.05–2, d is 0.05–4, e is 0.1–5, f is 0–2, g is 0–3 and h is 0–2, and x is the number of oxygen atoms required to saturate the valencies of the other constituents.

4,409,129

METHOD OF MANUFACTURING CATALYST

Seizi Takeuchi, Hitachiota, and Shimpei Matsuda, Tokai, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP81/00044, § 371 Date Oct. 19, 1981, § 102(e) Date Oct. 19, 1981, PCT Pub. No. WO81/02532, PCT Pub. Date Sep. 17, 1981

PCT Filed Mar. 4, 1981, Ser. No. 314,051

Claims priority, application Japan, Mar. 5, 1980, 55-26689

Int. Cl.[3] **B01J** *21/18, 23/42, 23/44, 23/46*

U.S. Cl. 502—185 **8 Claims**

1. A method of manufacturing a catalyst supported by a carrier, which comprises the step of reducing a solution containing a platinum ion and at least one metal ion having an oxidation-reduction potential different from that of platinum to precipitate metal particles onto a carrier and the step of dissolving out particles of the at least metal having an oxidation-reduction potential different from that of platinum from the precipitated metal particles obtained by the reduction to form a catalyst supported by said carrier; the metal ion having an oxidation-reduction potential different from that of platinum being a metal ion having a reduction potential lower than that of platinum.

4,409,130

PROCESS FOR IMPROVING THE STABILITY OF CATALYSTS FOR THE CATALYTIC HYDROTREATMENT OF PETROLEUM CUTS

Jacques Bousquet, 2 Rue de la Carriere, 69540 Iricny; Claude Gueguen, Le Cayet, 38780 Septeme Pont l'Eveque, and Daniel Vautier, 28 Rue des Fleurs, 69360 Serezin du Rhone, all of France

Division of Ser. No. 258,321, Apr. 28, 1981, Pat. No. 4,363,719. This application Jan. 28, 1982, Ser. No. 343,454

Claims priority, application France, May 8, 1980, 80 10307

Int. Cl.[3] **B01J** *21/12*

U.S. Cl. 502—211 **7 Claims**

1. A process for preparing a catalyst composition which comprises 5-90% of a catalyst containing a metal from each of Group VI and Group VIII of the Periodic Table on a non-acid or weak acid oxide support and 95-10% of a catalyst containing a metal from each of Group VI and Group VIII of the Periodic Table on a silica-alumina support having a silica content greater than 5% by weight, said process comprising forming said first catalyst by impregnating said non-acid or weak acid oxide support with said metal, calcining said impregnated catalyst and sulfurizing said calcined catalyst, forming said second catalyst by impregnating said silica-alumina support with said metal, calcining said second impregnated catalyst and sulfurizing said second calcined catalyst, and combining said first and second catalyst.

4. The catalyst composition of claim 1 wherein said metal is selected from the group consisting of cobalt, nickel and molybdenum.

4,409,131

PREPARATION OF COMO AND NIMO CATALYST USING COBALT OR NICKEL COMPLEXES THAT ARE STABLE IN BASIC SOLUTION

John A. Fetchin, Stamford, Conn., assignor to Maine, Stamford, Conn.

Filed Feb. 22, 1982, Ser. No. 350,676

Int. Cl.[3] **B01J** *21/12, 23/85, 21/04*

U.S. Cl. 502—263 **9 Claims**

1. A stable, basic impregnating solution comprising a basic molybdate salt and a basic salt of an anionic complex of cobalt or nickel complexed with a carboxylic acid selected from acetic acid, tartaric acid, succinic acid and citric acid in amounts to provide at least three available proton sites per

cobalt or nickel atom in said complex, both of said salts being dissolved in a single basic aqueous solution.

5. A method of making a catalyst comprising cobalt or nickel and molybdenum on catalyst support, said method comprising impregnating a porous catalyst support with a solution defined by claim 1 and then drying and calcining the impregnated support.

9. A catalyst made by the method defined by claim 5 wherein the catalyst support is porous alumina, or silica alumina.

4,409,132

ORGANOPHOSPHORUS-TREATED ZEOLITE CATALYSTS FOR PARA-SELECTIVE AROMATICS CONVERSION

Nancy P. Forbus, Princeton, and Warren W. Kaeding, Westfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 18, 1982, Ser. No. 359,560
Int. Cl.³ B01J *29/06, 27/18*
U.S. Cl. 502—62 **11 Claims**

1. A method for treating a chemically modified zeolite catalyst useful for promoting the para-selective conversion of aromatic compounds to dialkyl substituted benzene materials, said catalyst comprising both a crystalline zeolite material having a constraint index within the approximate range of 1 to 12 and a silica/alumina mole ratio of at least 12 and a minor proportion of one or more difficultly reducible oxides, said method comprising contacting said catalyst with a vapor phase organophosphorus reagent selected from C_{1-4} alkyl phosphite esters and C_{1-4} alkyl phosphate esters, at a temperature of 100° C. to 300° C. and for a period of time and under conditions sufficient to either enhance para-selectivity of said catalyst or to reduce the susceptibility of said catalyst to deselectivation by contact with moisture.

3. A method according to claim 1 wherein the difficultly reducible oxide is magnesium oxide and the organophosphorus reagent is selected from $(R_1O)(R_2O)(R_3O)P$ and $(R_1O)(R_2O)(R_3O)P{=}O$, wherein R_1, R_2 and R_3 are each lower alkyl containing 1 to 4 carbon atoms.

10. A catalyst composition prepared in accordance with the method of claim 1, 2, 3, 4, 5, 6, 7, 8 or 9.

4,409,133

ATTRITION RESISTANT BISMUTH-CONTAINING METAL/OXYGEN COMPOSITIONS AND A PROCESS FOR THEIR PREPARATION

Samuel J. Tremont, Manchester, Mo.; Robert A. Keppel, Seabrook, Tex.; Emerson H. Lee, and George D. Davis, both of Creve Coeur, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 30, 1981, Ser. No. 335,786
Int. Cl.³ B01J *21/04, 23/18*
U.S. Cl. 502—354 **29 Claims**

1. An attrition resistant bismuth-containing metal/oxygen composition which comprises the infusion and reaction product of:

(a) 35 to 80 mole percent of an alumina existing in a crystal form selected from the group consisting of γ, δ, η, and χ crystal forms, and mixtures thereof, or that can be transformed by heat to such crystal forms, and characterized by
  (i) a mean particle size from about 10 μm to about 200 μm,
  (ii) a fractional porosity of at least 0.2,
  (iii) a surface area of at least 150 m^2/g, and
  (iv) a pore diameter such that at least 10 percent of the pores are less than 55 Å, and

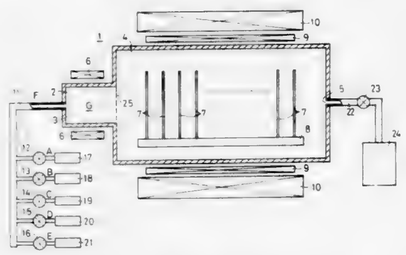
(b) 20 to 65 mole percent of at least one bismuth oxide, or compound convertible by heat to such bismuth oxide, having a maximum mean particle size of about 100 μm, with the proviso that the alumina/bismuth oxide mean particle size ratio is at least 2, which bismuth oxide is susceptible of undergoing infusion and reaction with the alumina upon being subjected to temperatures of at least 0.4 T_m for a time sufficient to cause infusion and reaction between the bismuth oxide and the alumina, wherein T_m is the melting point in °K. of the alumina which composition exhibits a surface area of less than 5 m^2/g.

4,409,134

PHOTOELECTRIC CONVERSION SEMICONDUCTOR AND MANUFACTURING METHOD THEREOF

Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,609
Claims priority, application Japan, Mar. 3, 1980, 55-26388
Int. Cl.³ H01C *13/00*
U.S. Cl. 252—501.1 **3 Claims**



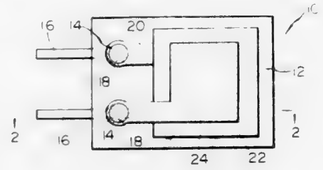
1. A photoelectric conversion semiconductor which is formed of a mixture of a microcrystalline semiconductor and a non-crystalline semiconductor and in which the mixture is doped with a dangling bond neutralizer and the microcrystalline semiconductor has a lattice strain; the microcrystalline semiconductor is 5 to 200 A in particle size and dispersed in the non-crystalline semiconductor; the dangling bond neutralizer is hydrogen, chlorine or fluorine; the microcrystalline semiconductor and the non-crystalline semiconductor are each formed by silicon, germanium, Si_3N_{4-x} $(0<x<4)$, SiC_x $(0<x<1)$, Si_xGe_{1-x} $(0<x<1)$, GaAs, BP or InP.

4,409,135

PASTE CONTAINING ELECTRICALLY CONDUCTING POWDER TO FORM CONDUCTING SOLID FILLER IN CAVITY IN CERAMIC SUBSTRATE

Yoshio Akimune, Yokohama, and Satoshi Ambe, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1981, Ser. No. 247,943
Claims priority, application Japan, Apr. 25, 1980, 55-54254
Int. Cl.³ H01B *1/02*
U.S. Cl. 252—514 **12 Claims**



1. A paste for forming an electrically conducting solid filler for a cavity in a substrate comprised of a ceramic material, of a device having at least two electrically conducting parts separately fixed to the substrate such that the solid filler provides an electrical connection between the conducting parts, the paste comprising:

an electrically conducting powder mixture comprising a platinum powder and a ceramic material powder selected from the group consisting of an alumina powder and a zirconia powder, the proportion of said platinum powder to said ceramic material powder being in the range from 51:49 to 78:22 by volume, the specific surface area of said powder mixture being in the range from 1.0 to 10.0 m^2/g; and

an organic liquid vehicle, the proportion of said powder mixture to said vehicle being in the range from 70:30 to 50:50 by weight.

4,409,136

MOLECULAR SIEVE ZEOLITE-BUILT DETERGENT PASTE

Bao-ding Cheng, Kendall Park, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 764,145, Jan. 31, 1977, abandoned, which is a continuation of Ser. No. 503,745, Sep. 6, 1974, abandoned. This application Apr. 23, 1982, Ser. No. 371,261
Int. Cl.³ C02F *1/42*; C11D *1/83, 3/12, 17/08*
U.S. Cl. 252—540 **1 Claim**

1. A stable, homogeneous paste detergent comprising:

(a) about 24% of a synthetic nonionic detergent formed by the condensation of a linear C_{12}–C_{15} primary alcohol with about 7 ethylene oxide residues;

(b) about 8% of sodium silicate having an $Na_2O{:}SiO_2$ ratio of about 1:2.35;

(c) about 24% by weight based on the anhydrous weight of a type A zeolite having a moisture content of about 21% and an average particle diameter of 6.4 microns;

(d) about 0.2% of sodium carboxymethyl cellulose;

(e) about 34.7% of deionized water; and

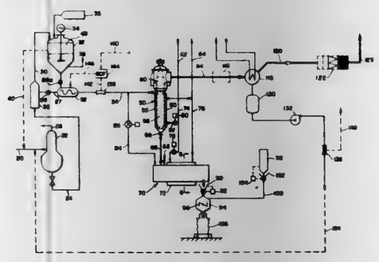
(f) about 9.1% of linear sodium dodecyl benzene sulfonate.

4,409,137

SOLIDIFICATION OF RADIOACTIVE WASTE EFFLUENTS

Leo M. Mergan, Uccle, and Jean-Pierre Cordier, Braine-Le-Comte, both of Belgium, assignors to Belgonucleaire, Brussels

Continuation-in-part of Ser. No. 138,796, Apr. 9, 1980, abandoned, Continuation-in-part of Ser. No. 194,102, Oct. 6, 1980, abandoned. This application Mar. 25, 1981, Ser. No. 247,446
Int. Cl.³ C09K *3/00, 11/04*
U.S. Cl. 252—632 **45 Claims**



1. A process for enveloping a radioactive waste liquid containing solids, said process comprising the steps of:

chemically treating said waste liquid by adding at least one chemical reagent to adjust the pH of said liquid to greater than 7.0;

concentrating said solids using a thin-film evaporator having a heated wall and means for distributing said waste liquid as a film on said wall to remove a portion of the moisture from said waste liquid and form a liquid concentrate containing a greater concentration of solids than in said waste liquid;

drying said concentrate in a mixing apparatus having a heated wall and rotor means for contacting said heated wall with said concentrate to remove the remaining liquid from said waste and form a solid waste residue, said rotor means including mixing means for shearing said solid waste residue so as to form dry particles and advancing means for engaging said dry particle to positively advance said dry particles toward an outlet of said mixing apparatus; and,

enveloping said dry particles of waste material in a second material.

40. An apparatus for enveloping radioactive waste liquid containing solids comprising:

means for treating said waste with at least one chemical reagent to adjust the pH of said liquid to greater than 7.0;

thin-film evaporator means for concentrating said waste liquid, said thin-film evaporator means having a heated wall and rotor means for distributing said waste liquid as a thin-film on said wall so as to evaporate moisture from said waste and form a liquid concentrate containing a greater concentration of solids than in said waste liquid;

a heated mixing apparatus having a heated wall for drying said concentrate and rotor means for contacting said heated wall with said concentrate to remove the remaining liquid from said waste and form a solid waste residue, said rotor means including a plurality of mixing paddles for shearing said solid waste residue between said paddles and said heated wall and between different paddles so as to form dry particles, and advancing means for engaging said dry particles to positively advance said dry particles toward an outlet of said mixing apparatus;

means for discharging said concentrate from said thin-film evaporator to said mixing apparatus;

means for causing said waste liquid to pass through said thin-film evaporator and said concentrate to be discharged to said mixing apparatus so that the concentrate received by said mixing apparatus contains at least 30 weight percent moisture; and,

means for enveloping said dry particles of waste solids in a second material.

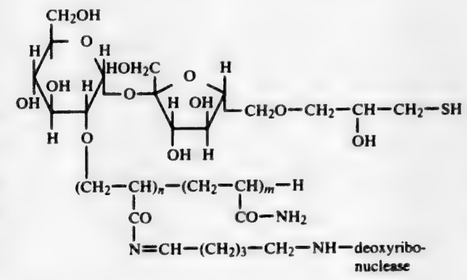
4,409,138

NON-ABSORBABLE COMPOUNDS OF MUCOLYTIC ACTIVITY, THE PROCESS FOR THEIR PREPARATION, AND THERAPEUTIC COMPOSITIONS WHICH CONTAIN THEM AS ACTIVE PRINCIPLE

Javier E. Maltz, Buenos Aires, Argentina, assignor to Etablissement Texcontor, Vaduz, Liechtenstein

Filed Sep. 5, 1980, Ser. No. 184,249
Claims priority, application Italy, Jul. 1, 1980, 23161 A/80
Int. Cl.³ C07G *7/00*; C08B *37/00*; A61K *37/02*
U.S. Cl. 260—112 R **2 Claims**

1. A compound having mucolytic activity while not being absorbed by tissues of the formula



wherein n+m is 500.

4,409,139

GONADOSTATIN

Nicholas C. Ling, San Diego; Roger C. L. Guillemin, La Jolla; Shao-Yao Ying, San Diego, and Frederick S. Esch, Oceanside, all of Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Aug. 10, 1981, Ser. No. 291,294

Int. Cl.³ C07G *15/00*

U.S. Cl. 260—112 R **5 Claims**

1. A method of deriving substantially pure gonadostatin, a proteinaceous mammalian gonadal substance characterized by its selective inhibition of LRF-stimulated pituitary secretions of LH and FSH in dosages below a threshold level and general stimulation of pituitary hormone secretion in dosages above a threshold level, the method comprising:

obtaining a mammalian gonadal secretion;

initially separating the components of said secretion according to molecular weight by gel filtration and obtaining a partially purified material containing eluate fractions which deomonstrate gonadostatin activity;

further separating components of said partially purified material by partition chromatography with a two-phase 1-butanol, pyridine, acetic acid, water eluent system to obtain further purified material; and

additionally purifying said further purified material by reverse phase high performance liquid chromatography with a formic acid, pyridine, 1-propanol, water eluent system of increasing 1-propanol concentration to obtain a substantially purified substance which demonstrates activity in inhibiting the LRF-stimulated secretion of LH and FSH by the pituitary.

4,409,140

SUBSTRATES AND METHOD FOR DETERMINING ENZYMES

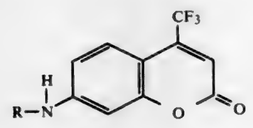
Robert E. Smith, 574 Escondido Cir., Livermore, Calif. 94550, and Eugene R. Bissell, 101 Via Lucia, Alamo, Calif. 94507

Division of Ser. No. 32,444, Apr. 23, 1979, Pat. No. 4,294,923. This application Jun. 15, 1981, Ser. No. 273,518

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **9 Claims**

1. A proteolytic enzyme substrate of the formula



wherein R is an amino acid, a peptide, an amino acid which has been reacted with a blocking group, or a peptide, the terminal amino acid of which has been reacted with a blocking group; and R is releaseable therefrom by enzymatic hydrolysis to form a measureable amount of 7-amino-4-trifluoromethylcoumarin.

4,409,141

PEPTIDES FOR ASSAYING HUMAN PARATHYROID HORMONE

Toshiharu Noda, Houston, Tex.; Kaoru Morita, Shizuoka; Sadami Kobari, Mishima; Nobuaki Nakagawa, Shizuoka; Susumu Watanabe, Shizuoka; Shigeo Katsuragi, Shizuoka; Kunio Ohyama, Shizuoka, and Masahiko Taniuchi, Mishima, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 29, 1981, Ser. No. 335,401

Claims priority, application Japan, Dec. 29, 1980, 55-187686; Apr. 16, 1981, 56-057691; Sep. 25, 1981, 56-152377

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **1 Claim**

1. A peptide of the formula

R—Lys—Lys—Glu—Asp—Asn—Val—Leu—Val—Glu—Ser—His—Glu—Lys—Ser—Leu—Gly—Glu—Ala—Asp—Lys—Ala—Asp—Val—Asp—Val—Leu—Thr—Lys—Ala—Lys—Ser—Gln—Oh [I]

wherein R is H, H—Tyr— or R_1—Pro—Arg—, R_1 is H, H—Tyr— or R_2—Ala—Gly—Ser—Gln—Arg—, and R_2 is H, H—Cys— or H—Tyr—, or a salt thereof.

4,409,142

DISAZO COMPOUNDS HAVING A 5-AMINO OR HYDROXY-3-CARBOXY OR METHYL-1-SUBSTITUTED PHENYLPHYRAZOLE COUPLING COMPONENT RADICAL

Heinz Wicki, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

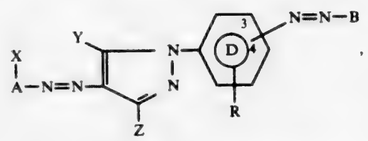
Continuation-in-part of Ser. No. 144,380, Apr. 28, 1980, Pat. No. 4,374,064. This application Apr. 13, 1981, Ser. No. 253,684

Claims priority, application Switzerland, May 2, 1979, 4117/79

Int. Cl.³ C09B *31/06, 31/10, 31/14*

U.S. Cl. 260—160 **28 Claims**

1. A disazo compound of the formula



(I)

or a salt thereof each cation of which is non-chromophoric, wherein

A-X is the radical of a diazo component,

wherein X is a metallizable group or a substituent convertible to a metallizable group, with the proviso that X is ortho to the —N=N— radical,

B is the radical of a coupling component of the heterocyclic series or the non-cyclic active methylene radical-containing series, with the proviso that the —N=N—B group is in the 3- or 4-position of Ring D,

R is hydrogen, halo, methyl or sulfo,

Y is —OH or —NH_2, and

Z is methyl or carboxy,

wherein each halo is independently fluoro, chloro, bromo or iodo, with the provisos that (i) the disazo compound contains at least one water-solubilizing group in addition to any water-solubilizing group as X or Y and (ii) the disazo compound may be in salt form only if it contains at least one sulfo or carboxy group.

4,409,143

MONOAZO DYES CONTAINING PHOSPHAMIC ACID DIESTER GROUPS

John Lenoir, and Gerald Jan, both of Fribourg, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

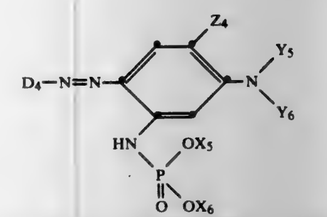
Filed Apr. 28, 1981, Ser. No. 258,245

Claims priority, application Switzerland, Apr. 30, 1980, 3341/80

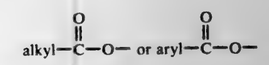
Int. Cl.³ C09B *29/085, 29/09, 29/26; G03C 1/10*

U.S. Cl. 260—205 **8 Claims**

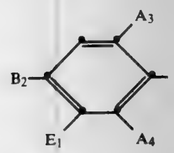
1. An azo dye of the formula



in which X_5 and X_6 independently of one another are alkyl having 1 to 12 carbon atoms, which is unsubstituted or substituted by hydroxyl, methoxy, ethoxy, cyano, fluorine, chlorine or bromine, or are phenyl or benzyl, Y_5 is hydrogen or alkyl having 1 to 5 carbon atoms which is unsubstituted or substituted by alkoxy having 1 to 4 carbon atoms, Y_6 is hydrogen or alkyl having 1 to 8 carbon atoms which is unsubstituted or substituted by methoxy, phenyl, hydroxyl, fluorine, chlorine, bromine, carbalkoxy having 2 to 6 carbon atoms, a radical of the formula



where the alkyl moiety contains 1 to 6 carbon atoms and the aryl moiety is phenyl which is unsubstituted or substituted by chlorine, bromine, cyano or nitro, or cyano or is phenyl which is unsubstituted or substituted by alkyl or alkoxy each having 1 to 5 carbon atoms, or by chlorine, or Y_5 together with Y_6 stands for the atoms required to complete a pyrrolidine ring which is unsubstituted or substituted by carbalkoxy having 2 to 5 carbon atoms, Z_4 is hydrogen, alkyl or alkoxy each having 1 to 4 carbon atoms, or alkoxy having 1 or 2 carbon atoms which is substituted by methoxy or ethoxy, or Z_4 is chlorine, bromine, cyano or carbalkoxy having 2 to 5 carbon atoms, or stands for the atoms which together with Y_5 form a methyl-substituted piperidine ring, D_4 is thiaziazolyl which is unsubstituted or substituted by chlorine or phenyl or imidazolyl which is unsubstituted or substituted by cyano, and in which at least one of the nitrogen atoms is unsubstituted or substituted by —$C_2H_4OC_6H_5$, or is benzthiazolyl or benzisothiazolyl which are both unsubstituted or substituted by nitro groups, or thienyl which is unsubstituted or substituted by methyl or carbethoxy or methyl and carbethoxy, or is a radical of the formula



in which A_3 and A_4 independently of one another are hydrogen, alkyl having 1 to 4 carbon atoms, carbalkoxy having 2 to 5 carbon atoms, carbalkoxyethoxy having 1 to 4 carbon atoms in the alkoxy moiety, trifluoromethyl, cyano, nitro, alkylsulfone having 1 to 5 carbon atoms or halogen, B_2 is hydrogen or alkyl having 1 to 4 carbon atoms which are unsubstituted or substituted by cyano, nitro, chlorine, trifluoromethyl, bromine, acetyl, benzoyl, carbmethoxy, carbethoxy, methoxy, ethoxy or cyano- or carbethoxy- or cyano- and carbethoxy substituted vinyl, or is alkoxy having 1 or 2 carbon atoms or is alkenyl having 2 to 4 carbon atoms which are unsubstituted or substituted by cyano, nitro, chlorine, trifluoromethyl, bromine, acetyl, benzoyl, carbmethoxy, carbethoxy, methoxy, ethoxy or cyano- or carbethoxy- or cyano- and carbethoxy-substituted vinyl, or is T_2—CO—, in which T_2 is methyl or phenyl, or B_2 is carbalkoxy having 2 to 5 carbon atoms, alkylsulfone having 1 to 6 carbon atoms, phenylsulfone, N-alkyl-substituted or N,N-dialkyl-substituted sulfonamido, in which each alkyl moiety has 1 or 2 carbon atoms and is unsubstituted or methoxy-substituted, cyano, nitro or halogen, and E_1 is hydrogen, alkyl having 1 to 4 carbon atoms or cyano, nitro, chlorine, trifluoromethyl, bromine, acetyl, benzoyl, carbmethoxy, carbethoxy, methoxy, ethoxy or cyano- or carbethoxy- or cyano- and carbethoxy-substituted vinyl, or stands for the atoms which together with B_2 form a propylene or imido group, in which the nitrogen atom is alkoxyalkyl-substituted, the alkoxy and alkyl moieties each having 1 to 4 carbon atoms.

4,409,144

XERONINE, A NEW ALKALOID, USEFUL IN MEDICAL, FOOD AND INDUSTRIAL FIELDS

Ralph M. Heinicke, Honolulu, Hi., assignor to Research Corporation of the University of Hawaii, Honolulu, Hi.

Continuation-in-part of Ser. No. 870,919, Jan. 19, 1978, abandoned. This application Dec. 11, 1981, Ser. No. 329,953

Int. Cl.³ C07G *17/00;* C07C *103/52;* A61K *37/48;* C12N *9/48, 9/50*

U.S. Cl. 260—236.5 **17 Claims**

1. A new composition of matter called xeronine formed by the process comprising obtaining source materials selected from the group consisting of plant, bacteria and animal alkaloid producing lipophilic extracts, combining lysozymes with the extracts to produce a mixture, controlling the concentration level of free calcium ions in the mixture to produce an optimum concentration level which activates the lysozymes, and controlling the pH of the mixture to the range of about 3.5–5.0 to react the extracts with the activated lysozymes to produce the active substance xeronine.

4,409,145

PROCESS FOR PREPARING 4-PHENYL-1,3-BENZODIAZEPINES

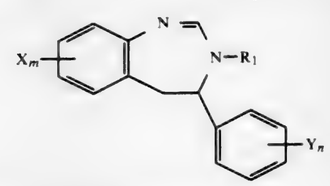
Lawrence L. Martin, Lebanon, N.J.; Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, and Charles A. Crichlow, Piscataway, N.J., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Division of Ser. No. 91,062, Nov. 5, 1979, Pat. No. 4,309,424, which is a continuation-in-part of Ser. No. 948,896, Oct. 5, 1978, abandoned. This application Sep. 8, 1981, Ser. No. 299,867

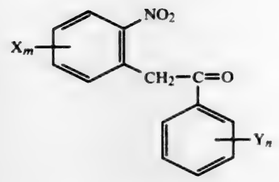
Int. Cl.³ C07D *243/03*

U.S. Cl. 260—239 BD **2 Claims**

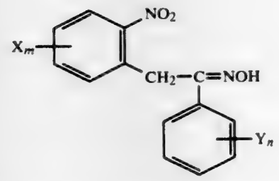
1. A method for preparing a compound of the formula



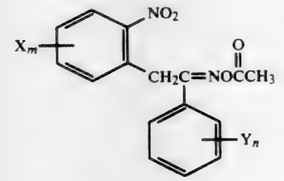
in which R_1 is hydrogen, alkyl of from 1 to 5 carbon atoms, cycloalkylalkyl of from 4 to 8 carbon atoms or aralkyl having from 1 to 5 carbons in the alkyl moiety, and the aryl moiety of the aralkyl group being phenyl or phenyl substituted with one or more chloro, bromo, fluoro, methoxy, alkyl of 1 to 5 carbon atoms, hydroxy or trifluoromethyl groups, X and Y are the same or different and each can be hydrogen, chlorine, bromine, fluorine, methoxy, alkyl of from 1 to 3 carbon atoms, hydroxy, or trifluoromethyl; m is the integer 1 or 2; n is the integer 1, 2 or 3; and the optical antipodes thereof; or a physiologically acceptable salt thereof, which comprises converting an acetophenone of the formula



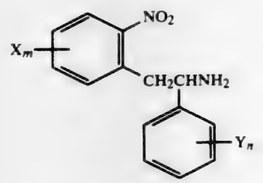
to the corresponding oxime of the formula



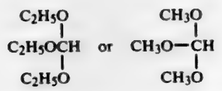
esterifying said oxime with acetic anhydride to provide the corresponding acetate of the formula



reducing said acetate with a reducing agent which is compatible with the nitro group to provide the corresponding 2-nitro-α-phenylphenethylamine of the formula



reducing said 2-nitro-α-phenylphenethylamine to provide the corresponding 2-amino-α-phenylphenethylamine; and cyclizing said 2-amino-α-phenylphenethylamine with a compound of the formula



in the presence of an acid catalyst at a temperature of from about 25° C. to reflux of the reaction mixture.

4,409,146

SUBSTITUTED CAPROLACTAM DERIVATIVES AS ANTIHYPERTENSIVES

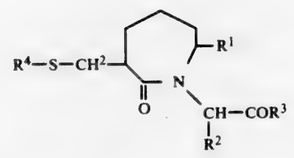
Eugene D. Thorsett, Fanwood, and Elbert E. Harris, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 294,863, Aug. 25, 1981, abandoned, which is a continuation-in-part of Ser. No. 194,692, Oct. 6, 1980, abandoned. This application Jul. 2, 1982, Ser. No. 394,972

Int. Cl.³ C07D *223/10*

U.S. Cl. 260—239.3 R **8 Claims**

1. A compound of the formula:



I

wherein:

R^1 is hydrogen, loweralkyl, unsubstituted cycloalkyl having 3 to 10 carbon atoms, amino loweralkyl, alkylamino loweralkyl, hydroxyalkyl, dialkylamino loweralkyl, arloweralkyl, aryl, substituted aryl wherein the substituent is halo, alkyl, aminoalkyl, or alkoxy;

R^2 is hydrogen or loweralkyl;

R^3 is hydroxyl, loweralkoxy, or aralkyloxy;

R^4 is hydrogen or loweralkanoyl; and,

the pharmaceutically acceptable salts thereof: wherein in said R^1, R^2, R^3 and R^4 groups, said alkyl groups have 1 to 12 carbon atoms; said loweralkyl groups have 1 to 8 carbon atoms; said aryl and said ar prefix denote unsubstituted aromatic ring(s) having 6 to 12 carbon atoms.

4,409,147

CARBAPENEM COMPOUNDS AND THEIR PRODUCTION

Mitsuko Asai, Takatsuki; Susumu Shinagawa, Higashiosaka, and Akira Imada, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

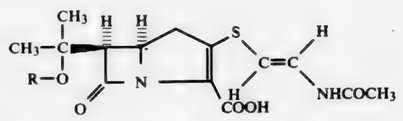
Filed Feb. 20, 1981, Ser. No. 236,310

Claims priority, application Japan, Mar. 10, 1980, 55-30701; Mar. 10, 1980, 55-30702

Int. Cl.³ C07D *487/04*

U.S. Cl. 260—245.2 T **2 Claims**

1. A compound of the formula:



wherein R is —SO_3H, or a physiologically acceptable salt thereof.

4,409,148

PROCESS FOR THE REDUCTION OF UNSATURATED CARBOXYLIC ACIDS

Gail M. Qualeatti, Palatine, and Dalia Germanas, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 9, 1981, Ser. No. 329,356

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ C11C *3/12*

U.S. Cl. 260—409 **12 Claims**

1. A process for the reduction of an unsaturated carboxylic acid which comprises treating said acid in a reaction system in the presence of hydrogen and a reducing catalyst system comprising from about 0.1 to about 2.0 percent by weight rhenium composited on a solid support and from about 1.0% to about 5.0% by weight of said catalyst of a phosphorous-containing modifier selected from the group consisting of phosphorous acids and phosphorous salts at treatment conditions, and recovering the resultant unsaturated alcohol, ester or alcohol and ester reaction product.

4,409,149

PROCESS FOR PRODUCING CATALYST PRECURSORS

Ernst Billig, Charleston, and David R. Bryant, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1981, Ser. No. 278,897

Int. Cl.³ C07F *15/00*

U.S. Cl. 260—429 R **16 Claims**

1. A process for preparing rhodium (I) carbonyltriorganophosphorus mono-β-ketoenolate complexes which comprises reacting (a) a halocarbonylbis(triorganophosphorus) rhodium (I) complex, (b) a β-ketoenolate source, and (c) an oxygen transfer agent, wherein the amount of β-ketoenolate source employed is at least one mole equivalent per mole equivalent of the halocarbonylbis(triorganophosphorus) rhodium (I) complex and wherein the oxygen transfer agent is present in a quantity equal to or exceeding one mole equivalent per mole equivalent of the halocarbonylbis(triorganophosphorus) rhodium (I) complex.

4,409,150

PREPARATION OF CYANOBENZYL CYCLOPROPANE CARBOXYLATES

Derek A. Wood, Sittingbourne, England, assignor to Shell Internationale Research Maatschappij B.V., Netherlands

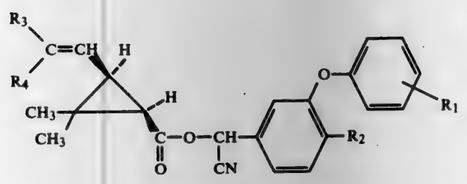
Filed May 7, 1982, Ser. No. 375,998

Claims priority, application United Kingdom, May 26, 1981, 8116033

Int. Cl.³ C07C *121/75*

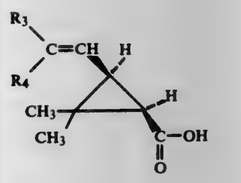
U.S. Cl. 260—465 D **6 Claims**

1. A method for preparing a pyrethroid insecticide of general formula:



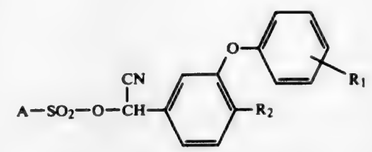
(I)

wherein the two hydrogen atoms on the cyclopropane ring are in the cis-configuration, characterised in that an acid of formula



(II)

is neutralised with a water-soluble base and then reacted in the presence of a phase-transfer catalyst with a solution in a substantially water-immiscible organic solvent of an alpha-cyanobenzyl aryl sulphonate of formula:



(III)

the substituents in the formulae having the following meanings; A represents an optionally substituted aryl group; each of R_1 and R_2 independently represents a hydrogen or halogen atom; and each of R_3 and R_4 independently represents a chlorine or bromine atom or a methyl group.

4,409,151

N,N-DIMETHYLENE PHOSPHONIC ACIDS OF ALKYLENE DIAMINES

Derek Redmore, Webster Groves, and William S. Paley, Maryland Heights, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 201,866, Oct. 29, 1980, Pat. No. 4,330,487. This application Dec. 28, 1981, Ser. No. 334,847

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.5 E **3 Claims**

1. A process of preparing an N,N-dimethylene phosphonic acid of the formula

$$NH_2(CH_2)_nN(CH_2PO_3H_2)_2$$

where n=2-20, which comprises reacting in aqueous solution one mole of a diamine of the formula

$$NH_2(CH_2)_nNH_2$$

where n has the aforesaid value, with essentially two equivalents each, based on nitrogen-bonded hydrogen, of formaldehyde and phosphorous acid, at a pH of less than 2 and a temperature from 80° to 150° C., the formaldehyde and phosphorous acid being added in either order or together to the diamine.

4,409,152

CONTINUOUS HIGH PRESSURE PROCESS FOR PREPARING PHENYLPHOSPHONOUS DICHLORIDE

Lawrence F. Humphrey, Yonkers, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 30, 1981, Ser. No. 307,034

Int. Cl.³ C07F *9/48*

U.S. Cl. 260—543 P **7 Claims**

1. A continuous process for preparing phenylphosphonous dichloride having negligible amounts of polychlorinated biphenyl which comprises continuously reacting white or yellow phosphorous with phosphorus trichloride and monochlorobenzene at a temperature ranging from about 275° C. to about 400° C., a pressure ranging from about 40 atm to about 80 atm and in the presence of a stoichiometric excess of from at least about 50% of monochlorobenzene.

4,409,153

O-(2-ARYL-3-OXO-1-CYCLOHEXENYL) PHOSPHATES

Leonard E. Hodakowski, St. Albans, W. Va., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 134,865, Mar. 28, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,419

Int. Cl.³ C07F *9/177*; A01N *57/12*

U.S. Cl. 260—946 **5 Claims**

1. O-[2-(2'methylphenyl)-5,5-dimethyl-3-oxo-1-cyclohexenyl]-O-ethyl-S-n-propyl thiophosphate.

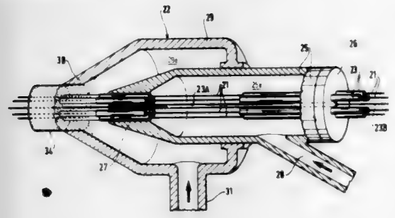
2. O-[2-(2'-methylphenyl)-5,5-dimethyl-3-oxo-1-cyclohexenyl]-O-ethyl-S-n-butylthiophosphate.
3. O-[2-(2',4'-dimethylphenyl)-5,5-dimethyl-3-oxo-1-cyclohexenyl]-O-ethyl-S-n-propyl thiophosphate.
4. O-[2-(2',4'-dichlorophenyl)-5,5-dimethyl-3-oxo-1-cyclohexenyl]-O-ethyl-S-n-propyl thiophosphate.
5. O-[2-(2'-methyl-4'-chlorophenyl)-5,5-dimethyl-3-oxo-1-cyclohexenyl]-O-ethyl-S-n-propyl thiophosphate.

4,409,154

METHOD AND APPARATUS FOR MANUFACTURING A WATERTIGHT OPTICAL FIBER CABLE

Bernard Grenat, La Mulatiere, France, assignor to Societe Anonyme dite Compagnie Lyonnaise de Transmissions Optiques, Clichy, France

Filed Feb. 4, 1981, Ser. No. 231,527
Claims priority, application France, Feb. 6, 1980, 80 02563
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.5 **4 Claims**



1. A method of manufacturing an optical fiber cable of the type which comprises at least one tubular cylindrical structure of plastic material having a plurality of longitudinal bores housing individual optical fibers and filled with a viscous substance, said method comprising the steps of:

passing the optical fibers through respective tubes which each have a gap of some length;

injecting a viscous substance under pressure into said tubes through said gaps so that said viscous substance fills the tubes around the optical fibers;

causing the optical fibers coated with said viscous substance to protrude beyond the ends of said tubes;

simultaneously extruding a thermoplastic material around the coated optical fibers through an annular orifice and under sufficient pressure to completely cover said optical fibers with their respective coatings of viscous substance;

maintaining the relative pressure of injection of the viscous substance and that of the extrusion of said thermoplastic material to prevent radial expansion of the thermoplastic material when it leaves the annular orifice before it is cooled; and

rapidly cooling the cylindrical structure thus obtained such that the extruded thermoplastic material cools to solidification prior to said viscous substance and constitutes a uniform body occupying the space between the optical fibers and their coatings of viscous substance, and wherein there are no voids within the viscous substance between the thermoplastic material and said optical fibers.

3. Apparatus for manufacturing an optical fiber cable of the type which comprises at least one tubular cylindrical structure of plastic material having a plurality of longitudinal bores housing individual optical fibers and filled with a viscous substance, said apparatus comprising:

an inner cylindrical chamber having an upstream end plate and a conical downstream end which forms a nozzle;

optical fiber guide tubes extending parallel to the axis of the inner cylindrical chamber and passing through said upstream end plate and through said conical downstream end, and wherein the portions of said guide tubes within said inner cylindrical chamber include openings such that they can be filled with a viscous substance under pressure from said inner cylindrical chamber;

a pipe for supplying the viscous substance under pressure to said inner cylindrical chamber, said pipe communicating with said inner cylindrical chamber;

an outer cylindrical chamber surrounding said inner cylindrical chamber and being spaced therefrom for supplying a melted thermoplastic substance under pressure, the downstream end of said outer chamber ending in a conical die surrounding said nozzle of said inner cylindrical chamber; and

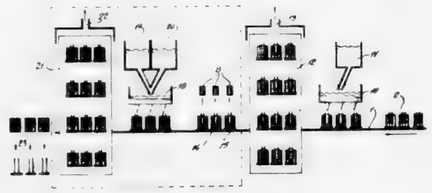
a pipe for supplying a thermoplastic substance under pressure, said pipe communicating with said outer chamber.

4,409,155

EXPLOSIVE BOOSTER MANUFACTURE

Joseph R. Bonnycastle, St. Bruno; Alfred G. Michaud, and Edward K. Rowley, both of Beloeil, all of Canada, assignors to C-I-L Inc., North York, Canada

Filed Dec. 18, 1980, Ser. No. 217,856
Claims priority, application Canada, Feb. 4, 1980, 345004
Int. Cl.³ C06B *21/00*
U.S. Cl. 264—3 R **5 Claims**



1. A semi-automatic, semi-continuous method for manufacturing a cast high explosive booster which comprises the consecutive steps of:

(a) preparing an assembly consisting of a base plate, a tubular shell removably secured to said base plate and one or more operative pins removably secured to said base plate within the confines of said tubular shell;

(b) advancing said assembly to an inspection and indexing station where leakproof mounting of the said tubular shell on the said base plate is provided;

(c) advancing the said assembly to a molten explosives dispensing station;

(d) filling the said tubular shell with molten explosives;

(e) advancing the said assembly and filled tubular shell to a cooling station;

(f) advancing the said cooled tubular shell and assembly to a disassembly station where the said pins and the said base plate are separated from the said filled tubular shell; and

(g) advancing the said filled, cooled shell to a packaging station.

4,409,156

PROCESS FOR PRODUCING MICROCAPSULES

Yoshiyuki Hoshi, and Takayuki Hayashi, both Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 2, 1980, Ser. No. 193,059
Claims priority, application Japan, Oct. 2, 1979, 54-126968
Int. Cl.³ B01J *13/02*
U.S. Cl. 264—4.33 **10 Claims**

1. A process for producing microcapsules consisting essentially of the steps of: (a) preparing a solution of melamine and formaldehyde prepolymer, (b) preparing a solution of a styrene-sulfonic acid polymer, (c) dispersing a core material in said styrene-sulfonic acid polymer solution, (d) mixing said melamine-formaldehyde prepolymer solution and said styrene-sulfonic acid polymer solution, (e) heating said solutions to form microcapsules having melamine-formaldehyde members wherein the ratio of styrene-sulfonic acid polymer to melamine in the capsule production system is about 0.2 to 20.

4,409,157

METHOD FOR IMPROVED DECOMPOSITION OF METAL NITRATE SOLUTIONS

Paul A. Haas, and William B. Stines, both of Knoxville, Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jan. 21, 1981, Ser. No. 226,576
Int. Cl.³ G21C *21/00*
U.S. Cl. 264—0.5 **2 Claims**



1. A method for co-conversion of an aqueous solution containing heavy metal nitrates, selected from the group consisting of uranium, plutonium, thorium, and their combinations, to produce the corresponding metal oxide in a substantially anhydrous state which is capable of directly producing loadable quality nuclear fuel pellets comprising the step of contacting said solution with ammonium nitrate for sufficient time at a temperature in the range of about 300° to 800° C. and in an amount sufficient to provide a molar ratio of ammonium nitrate to total heavy metal in the solution of about 0.5 to 5.0 for effecting the production of metal oxides having a B.E.T. (N_2 absorption) surface area of 5–15 m^2/g, a predominant (50 to 90%) average particle size of 10 microns or less, and a sinterability to a metal oxide of 91 ±3% of the corresponding theoretical crystal density.

4,409,158

SPRAY DRYING METHOD OF PREPARING HOLLOW FIBERS

Bruce D. Spivak, Norristown, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Division of Ser. No. 227,130, Jan. 22, 1981, Pat. No. 4,361,624.
This application Apr. 2, 1982, Ser. No. 365,061
Int. Cl.³ B29C *6/00;*
U.S. Cl. 264—8 **3 Claims**

1. The process for preparing hollow fibers of more than about 100 microns in length by spray drying, comprising the steps of:

a. Preparing an aqueous solution of sodium silicate and a "polysalt," said solution having a viscosity of 300 cp or more;

b. Subjecting said solution to spray or centrifugal force, thereby forming fibers that are at least 5 times longer than their diameter, in a spray dryer.

c. Maintaining the spray dryer at an inlet temperature of 175° to 500° C. and an outlet temperature of 100° to 300° C.; and

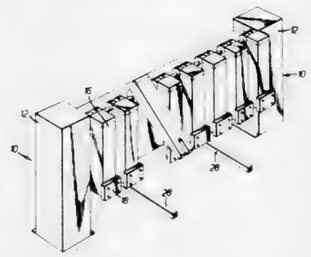
d. Recovering the desired product.

4,409,159

MOULDING REINFORCED CONCRETE ARTICLES

Ian C. N. W. Parkins, Peterborough, England, assignor to Dow Mac Concrete Limited, Stamford, England

Filed Jun. 23, 1981, Ser. No. 276,267
Claims priority, application United Kingdom, Jun. 26, 1980, 8020925
Int. Cl.³ B28B *7/04, 23/06, 7/38*
U.S. Cl. 264—39 **12 Claims**



1. A method of manufacturing pre-stressed reinforced concrete articles comprising the steps of

(a) arranging and tensioning elongate reinforcing members in a casting bed lying between two abutment assemblies each said assembly including clamping means serving to hold the reinforcing members, the clamping means of one said assembly being pivotally displaceable to an inoperative position;

(b) moving a plurality of open-ended moulds through said one abutment assembly in the length direction of the reinforcing members on to the casting bed with the reinforcing members lying within the cross-section of the moulds;

(c) closing off the ends of the moulds;

(d) filling the moulds with concrete and allowing the concrete to cure to a degree sufficient to accommodate the tension in the reinforcing members;

(e) releasing the reinforcing members from the clamping means of both assemblies;

(f) pivotally displacing the clamping means of said one assembly to the inoperative position;

(g) removing the moulds in the length direction of the reinforcing members from the casting bed;

(h) severing the reinforcing members at locations between adjacent end-to-end moulds; and

(i) de-moulding the pre-stressed concrete articles.

3. A method according to claim 1 wherein the moulds are cleaned and greased at a location remote from the casting bed.

4,409,160

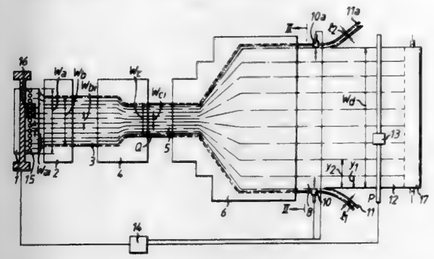
METHOD FOR CONTROLLING THE THICKNESS OF A FILM PRODUCT

Nobuhiko Kogo; Yoshimitsu Tsutsui; Koji Kato, and Hisao Kishigami, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1981, Ser. No. 238,358
Claims priority, application Japan, Feb. 28, 1980, 55-24457; Feb. 28, 1980, 55-24458; Mar. 21, 1980, 55-34898
Int. Cl.³ G05D *5/03;* B29F *3/00*
U.S. Cl. 264—40.1 **2 Claims**

1. A method for automatically controlling the thickness of extruded biaxially elongated films characterised in that a correlation between positions along the widthwise direction of a film sheet and positions of die manipulation bolts of an extrusion die is obtained, and initially, a profile of the film sheet prior to lateral elongation is converged into a tolerable range; therafter, the thickness of the film sheet after lateral elongation

is measured, and if there are thickness deviations outside the tolerable range, a thickness regulation is effected by transmit-



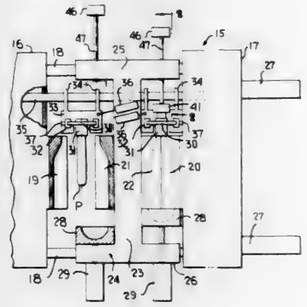
ting a signal corresponding to the thickness deviations to appropriate die manipulation bolts.

4,409,161

BLOW MOLDING METHOD

Ieuan L. Harry; Suppayan M. Krishnakumar, both of Nashua; Walter R. Jolly, Merrimack; Martin H. Beck, Brookline, all of N.H., and John F. E. Pocock, New Isenburg, Fed. Rep. of Germany, assignors to The Continental Group, Inc., Stamford, Conn.

Filed Nov. 13, 1981, Ser. No. 321,152
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—40.1 **10 Claims**



1. A method of blow molding a preform within a split blow mold into a blown article, said method comprising the steps of placing a preform between a pair of open blow mold halves, then introducing a stretch rod into the preform and advancing a blow head to a position adjacent the preform, next initiating closing of the blow mold and advancing the stretch rod to effect axial stretching of the preform and seating the blow head on the preform in sealed relation, thereafter clamping closed the blow mold halves together at a preselected force, and then introducing a high pressure blow medium into the preform and effecting complete blow molding of the preform to the configuration of the blow mold.

4,409,162

PROCESS FOR PRODUCING ACRYLONITRILE SEPARATION MEMBRANES IN FIBROUS FORM

Seiji Takao, Okayama, Japan, assignor to Japan Exlan Company Limited, Japan

Continuation of Ser. No. 22,367, Mar. 20, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 195,058
Claims priority, application Japan, Apr. 3, 1978, 53-39334; Apr. 5, 1978, 53-40582
Int. Cl.³ B29D *27/04*; B01D *31/00*
U.S. Cl. 264—41 **8 Claims**

1. A process for producing acrylonitrilic hollow fiber, which comprises dissolving an acrylonitrile polymer in formamide-containing dimethylformamide to prepare an acrylonitrile polymer solution containing more than 80 wt.% of acrylonitrile units, the molecular weight of said acrylonitrile polymer expressed by [η] as measured in DMF at 30° C., being 0.4–4 and the concentration of said acrylonitrile polymer in said solution being from 10 to 35 wt.% based on the weight of said solution; shaping said polymer solution into a hollow fibrous product while maintaining the temperature of the solution at a temperature above the gellation temperature, determining the gellation temperature by the following procedure: pouring about 150 to 180 g of a sample solution into a beaker which is about 5.5 cm in diameter and about 11 cm in height; dipping said beaker into a temperature-controlled water bath maintained at the same temperature level as the dissolution temperature, then lowering the temperature of the solution at the rate of about 10° C./hour, accompanied by lowering the temperature of the water bath, and at a given point in time during this temperature lowering, placing a glass rod which is 3 mm in outer diameter and 2.5 g in weight, vertically on the surface of the solution while being supported lightly at its upper portion by a ring-shaped holder, then permitting the glass rod to penetrate into the solution under the action of its own weight and sinking, measuring the time elapsed until a sinking depth of 5 cm is attained, and employing the solution temperature at which the time elapsed first exceeds 5 seconds as the gellation temperature of the solution; bringing the surface layer of the hollow fibrous product into contact with an aqueous solution, at a temperature below 10° C., containing more than 30 wt.% of a water-soluble solvent compatible with the mixed solvent, said aqueous solution being referred to as solvent removal treatment medium A, immediately or after bringing it into contact with an inert atmosphere; bringing the core of the hollow fibrous product immediately into contact with an aqueous solution, at a temperature above 10° C., containing less than 30 wt.% of a water-soluble solvent compatible with said mixed solvent or an inert medium, said aqueous solution or said inert medium being referred to as solvent removal treatment medium B, or bringing it into contact with said solution after bringing it into contact with an inert atmosphere, thereby removing the solvent; and then stretching the solidified fiber thus obtained.

4,409,163

METHOD FOR MOLDING A COMPOSITE FOAMED RESIN PULL STRAP

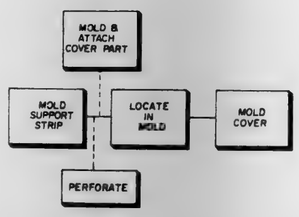
Dick T. Van Manen, Canandaigua, N.Y., assignor to Voplex Corporation, Pittsford, N.Y.

Filed Nov. 28, 1980, Ser. No. 211,431
Int. Cl.³ B29D *27/04*
U.S. Cl. 264—45.5 **10 Claims**

1. A method of molding a pull strap handle having a strong and resilient support element formed as a flat, thin strip with two face sides, a region of said element between the ends of said element being enclosed within a cover formed to provide a firm side on one face side of said element and a soft side on an opposite face side of said element, said molding method comprising:

a. molding said firm side of said cover of a resin material;
b. attaching said firm side of said cover to said one face side of said support element;

c. locating said support element and said attached firm side of said cover in a mold from which the free ends of said support element extend, said mold having a cavity arranged adjacent said opposite face side of said element; and



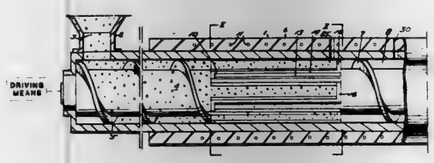
d. forming said soft side of said cover of a self-skinning foamed resin material molded to the shape of said cavity and bonded to said support element and said firm side of said cover.

4,409,164

PROCESS OF MAKING PRODUCTS CONSISTING OF FOAMED AND/OR CROSS-LINKED SYNTHETIC POLYMERS

Albert J. H. Brasz, Born, Netherlands, and Hermanus A. Wallink, Selfkant, Fed. Rep. of Germany, assignors to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 25, 1981, Ser. No. 247,546
Claims priority, application Netherlands, Mar. 25, 1980, 8001732
Int. Cl.³ B29D *27/00*; B29F *3/02*
U.S. Cl. 264—50 **12 Claims**



1. In processes for the formation by extrusion of synthetic polymer products containing foaming and/or cross-linking agents using an extrusion machine equipped with screw means for effecting at least partial distribution of the foaming and/or cross-linking agents in the polymer composition during the extrusion process, the improvement consisting essentially in enhancing the rate of production of said foamable or cross-linkable products at a given extrusion exit temperature by providing and utilizing a modified screw means in the melting zone of the extrusion machine said modified screw means having a melting torpedo device incorporated therein, and extruding the said polymer composition at an extrusion rate higher than the maximum rate at which useful products can otherwise be obtained under otherwise equal conditions as regards the use of extrusion machines equipped with unmodified screw means, polymer material, foaming and/or cross-linking agents, and the exit temperatures employed.

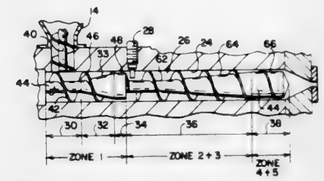
6. Process according to claim **1**, wherein in a direct foaming process a physically active foaming agent is used.

4,409,165

METHOD AND APPARATUS FOR EXTRUDING A CELLULAR PRODUCT

Hueng T. Kim, Avon Lake, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jun. 18, 1981, Ser. No. 274,921
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—53 **10 Claims**



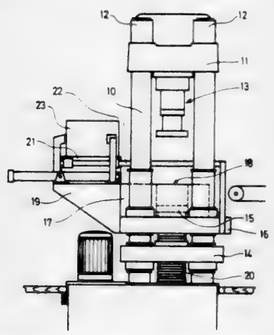
1. A method for extruding a cellular polymeric resin comprising the steps of charging a particulate polymeric resin into an extruder having disposed therein an elongated screw, conveying said particulate resin through the extruder, densifying said particulate resin in a compaction section, forming a continually moving barrier in the form of a cylindrical plug of a uniform thickness of said densified resin that is substantially impervious to a blowing agent at a location downstream of the compaction section, injecting a blowing agent downstream of the barrier into said solid particulate resin, mixing said solid particulate resin and said blowing agent, melting said mixture of said resin and said blowing agent, and extruding said molten mixture into a zone of lower pressure whereupon the blowing agent expands within said molten resin to form a cellular product.

4,409,166

METHOD OF PRODUCING FIREPROOF BRICKS

Willy Vogt, Zurich, Switzerland, assignor to Bucher-Guyer AG, Zurich, Switzerland

Filed Apr. 2, 1981, Ser. No. 250,233
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3014068
Int. Cl.³ B28B *1/08*; B29C *11/00*
U.S. Cl. 264—72 **5 Claims**



1. In a method for the manufacture of bricks with the aid of a mold, normally open on top, ceramic material introducible into said mold, and a piston disposed above said mold, movable with respect to said mold, and forming a cover surface of said mold when entering the top of the mold,

the steps comprising:

exerting a quasi-static pressure by said piston on said ceramic material, and

applying a very rapidly increasing impact pressure on said

ceramic material, said impact pressure being superimposed upon said piston.

4,409,167

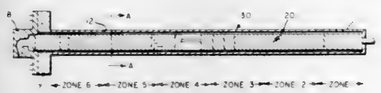
PROCESS FOR EXTRUDING A MODIFIED HIGH MOLECULAR WEIGHT POLY(ETHYLENE TEREPHTHALATE) RESIN

Robert J. Kolouch, Vienna, W. Va., and Rudolph H. Michel, Wilmington, Del., assignors to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 224,673, Jan. 13, 1981, abandoned. This application Dec. 21, 1981, Ser. No. 332,768

Int. Cl.³ B29B *1/10*

U.S. Cl. 264—102 **13 Claims**



1. A process for extruding a bubble-free article from a polymeric composition selected from the class consisting of:

(a) poly(ethylene terephthalate) resin;

(b) a uniform blend of poly(ethylene terephthalate) resin with a compatible polymer, the amount of the compatible polymer being at most about 10 weight percent of the blend; and

(c) a uniform blend of a poly(ethylene terephthalate) resin with an incompatible polymer and a compatibilizing agent, the total amount of the incompatible polymer and compatibilizing agent being at most about 20 weight percent of the blend;

said process comprising:

(1) premixing an organic diisocyanate with said polymeric composition or individual components of said composition, in any order, the amount of said diisocyanate being sufficient to increase the melt viscosity of said polymeric composition to the desired level without causing excessive crosslinking;

(2) introducing the premix of step (1) into the feed section of a twin-screw extruder having a cold feed section, a hot plastication zone, a kneading zone maintained at an average temperature of about 280° to 320° C., a venting zone maintained at an average temperature of about 280° to 320° C. and at a pressure of less than about 1.33 kPa, a metering zone maintained at an average temperature of about 260° to 280° C., and an extrusion due maintained at an average temperature of about 255° to 265° C., all the temperatures being wall temperatures; and

(3) operating the extruder at about 30–120 rpm and at a pressure of about 350 kPa or less to recover the extruded article from the die.

4,409,168

METHOD OF FORMING COMPONENTS FOR A HIGH-TEMPERATURE SECONDARY ELECTROCHEMICAL CELL

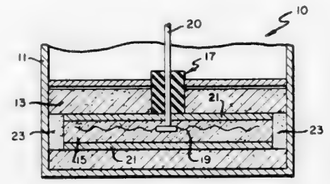
Franklin C. Mrazek, Hickory Hills, and James E. Battles, Oak Forest, both of Ill., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,251

Int. Cl.³ H01M *2/16*

U.S. Cl. 264—104 **15 Claims**

1. A method of forming a component for a high-temperature secondary electrochemical cell, said component being one of the group of secondary electrochemical cell components selected from a positive electrode, a negative electrode, and an electrically insulative porous separator, wherein said positive electrode including as positive electrode-active material, a sulfide selected from the group consisting of lithium sulfides, iron sulfides, nickel sulfides, copper sulfides and cobalt sulfides, said negative electrode including as negative electrode-active material, an alloy of aluminum and said electrically insulating porous separator being between said electrodes, the improvement comprising forming a slurry of solid particles dispersed in a molten electrolyte including alkali metal salt at a temperature above its melting point, said solid particles being selected from the group consisting of said positive-electrode-active material, said negative-electrode-active material and



electrically insulating ceramics which are substantially insoluble in said electrolyte and sulfide compatable, casting said slurry into a form having the shape of one of said secondary electrochemical cell components and smoothing the exposed surface of the slurry, cooling said cast slurry to form a solid, and removing said secondary electrochemical cell component.

4,409,169

METHOD FOR MANUFACTURING DISK-SHAPED INFORMATION CARRIERS

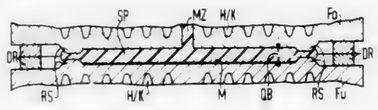
Dieter Bartholdsten, Hanover; Hermann Koop, Ronnenberg; Erhard Schrode, Lehrte, and Adelbert Zielasek, Burgwedel, all of Fed. Rep. of Germany, assignors to Polygram GmbH, Hamburg, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,618

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1980, 3028947

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—107 **12 Claims**



1. In a method for manufacturing disk-shaped information carriers with a high storage density which can be optically read out, of the type manufactured out of transparent synthetics employing a molding press equipped with at least one pressing matrix, the press havng a compression form comprised of separable mold halves which can be moved towards one another and both of which have means for heating and cooling during the pressing cycle, wherein the improvement comprises: said mold halves each being provided with an annular ridge, the ridges lying opposite one another so as to form a squeezing gap when the mold is closed and serving as an outer boundary for the hollow space of the mold at which material can flow through the gap;

preheating the transparent synthetic material to a temperature significantly greater than the initial pressing temperature of the compression form;

injecting an excess of the preheated material than is required for the finished product into the compression form via a central aperture in one of the mold halves so as to form a lump of material;

pressing the lump of material by closing the compression form to obtain a squeezing gap width with a magnitude equal to several tenths of the thickness of the finished storage disk, said squeezing gap maintaining a pressure in the pressed material while permitting excess material to

squeeze therethrough, said pressing step being initiated prior to the termination of the injecting step;

cooling the compression form, said cooling step being initiated prior to the termination of the pressing step; and

the pressing and cooling steps chronologically proceeding in an internal sequence which approximates an exponential function so that along with the use of the squeezing gap condensation bubbles and double diffraction effects due to frictional and shearing forces are substantially avoided.

4,409,170

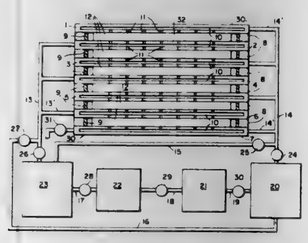
PRODUCTION OF COMPOSITE PRODUCTS BY CONSOLIDATION USING PRESSURE AND CONVECTION HEATING

John Stofko, St. Charles, Ill., assignor to John Jansky, France

Filed Dec. 31, 1981, Ser. No. 336,481

Int. Cl.³ D04H *1/16*

U.S. Cl. 264—113 **18 Claims**



1. In a method of forming a product of low to medium density by consolidation of fibrous, particulate or laminar materials in the presence of a bonding agent, under heat and pressure, the improvement wherein

said materials are pressed in a closed, sealed press and heated substantially entirely by the direct passage thereinto of a fluid heat carrier at superatmospheric pressure and having a temperature sufficient to plasticize said materials and to heat the bonding agent to a temperature at which consolidation of said materials occurs, said heating being carried out for a time sufficient to effect complete consolidation of said materials, said heat carrier being distributed uniformly to said materials through one side thereof or through opposite sides, and (1) passed out therefrom also along one or opposite sides, or (2) said fluid heat carrier being left within said materials for a time sufficient to permit it to expand therein to atmospheric pressure.

4,409,171

METHOD OF DENSIFYING POWDERS

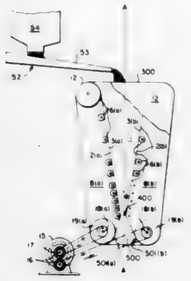
Gonzalo S. Leon; John E. Fraize, both of Sudbury, Mass., and Richard C. Fortier, University City, Mo., assignors to Cabot Corporation, Boston, Mass.

Division of Ser. No. 211,379, Nov. 28, 1980, Pat. No. 4,325,686. This application Apr. 19, 1982, Ser. No. 369,941

Int. Cl.³ B29J *5/00*

U.S. Cl. 264—120 **9 Claims**

1. A method for densifying powder materials which comprises: providing an enclosed convergent densifying zone having a divergent feed end, a convergent discharge end and an angle of convergency, θ, said zone being defined by a pair of opposed gas-permeable belts supported spanwise by a plurality of spaced apart support rolls arranged in opposed parallel pairs, each said pair of rolls having a gap therebetween defining a distinct densifying station; driving said belts toward the convergent discharge end of said zone at essentially equal speeds; feeding powder material to be densified into the divergent feed end of said zone at a rate sufficient to provide and maintain an essentially complete fill thereof and recovering



densified powder material product discharged from the convergent discharge end of said zone.

4,409,172

DEVICE AND METHOD FOR FABRICATING MULTI-LAYER TUBING USING A FREELY SUSPENDED MANDREL

Robert S. Ward, Jr., Lafayette, and Donald R. Beckham, Livermore, both of Calif., assignors to Thoratec Laboratories Corporation, Berkeley, Calif.

Filed Feb. 13, 1981, Ser. No. 234,120

Int. Cl.³ B29F *3/00*; B29C *1/00*

U.S. Cl. 264—209.2 **18 Claims**



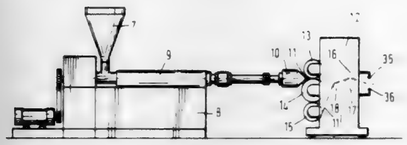
4. A method for fabricating tubing comprising positioning an elongated mandrel vertically within and through a reservoir having an opening in the bottom thereof and forming an annular opening therebetween, maintaining said mandrel and reservoir free for lateral movement relative to each other in all directions, placing a tubing material in said reservoir and permitting said tubing material to pass through said annular opening to form said tubing.

4,409,173

PROCESS AND APPARATUS FOR THE MANUFACTURE OF OBJECTS OF CRYSTALLINE POLYSTYRENE

Pietro Padovani, Verona, Italy, assignor to O.M.V. SpA, Italy

Filed Nov. 9, 1981, Ser. No. 319,242
Claims priority, application Italy, Nov. 17, 1980, 84970 A/80
Int. Cl.³ D01D *5/12*
U.S. Cl. 264—210.2 **11 Claims**



1. A process for the manufacture of objects, such as cups, containers or other packaging, of crystalline polystyrene comprising the steps of:

heating particulate crystalline polystyrene to form molten material,

continuously extruding said molten crystalline polystyrene through a die having an outlet with an adjustable profile to form a sheet,

rolling and stabilizing said sheet,

heating both edges of the sheet,

drawing the sheet by applying lateral guides to the heated edges,

passing the drawn sheet through a heating device to heat both surfaces and through a subsequent forming device to form said objects,

removing the objects so obtained from the press component of the forming device and

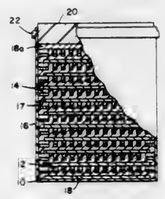
grinding up the waste.

4,409,174

METHOD FOR BATCH PRODUCTION OF ISOSTATICALLY PRESSED CALCIUM POWDER DISCS

Albert Toy, Gardena; Louis L. Constantino, Placentia, and Donald B. Evans, Redondo Beach, all of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 24, 1981, Ser. No. 334,099
Int. Cl.³ B28B *3/00*
U.S. Cl. 264—313 **5 Claims**



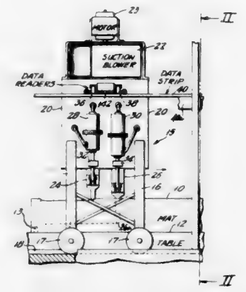
1. A method for batch production of low cost isostatically pressed powder calcium discs comprising placing one at a time a multiplicity of molds with calcium powder thereon in a bag of flexible material until said bag is filled with a stack of said molds one on top of the other and contiguous, sealing said bag with a top cap, isostatically pressing said bag with said molds contained therein to isostatically press the powder calcium on said molds, removing said molds with the isostatically pressed calcium disc thereon from said bag and subsequently removing the formed discs from said molds.

4,409,175

METHOD OF PRESHAPING A PREFORMED LIGNOCELLULOSIC MAT FOR MOLDING INTO A STRUCTURAL MEMBER

Georg Bjorhaag, Amal, Sweden, assignor to Byggnads AB Hammaren, Bromma, Sweden

Filed Sep. 16, 1980, Ser. No. 187,765
Int. Cl.³ B29J *5/00*
U.S. Cl. 264—517 **12 Claims**



1. A method of preshaping a preformed lignocellulosic mat and then pressure-molding the same in a mold to produce a structural member, comprising the steps of:

making a mat of a mixture of lignocellulosic particles and a hardenable binder, in which mixture said particles are coated with said binder, by compacting a layer of said mixture on a flat bed to an extent barely sufficient to provide enough coherence for transfer thereof to a component of said mold without substantial risk of disintegration of the mat;

trimming the mat in its thickness by insertion, into one surface thereof, of a movable tubular extremity of at least one suction device to pull particles by suction into said at least one suction device in order to reduce the thickness of the mat at predetermined locations to a predetermined extent;

placing the trimmed mat in a component of said mold in a molding press in a predetermined position of said mat relative to said mold; and

then pressure molding a structural component from the trimmed mat in said molding press and curing the same by hardening said binder and thereby firmly bonding said particles.

4,409,176

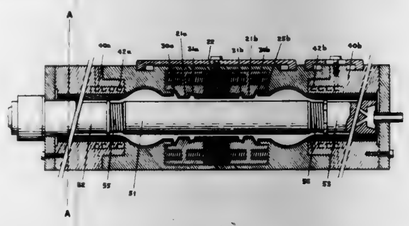
METHOD FOR MOULDING AN ARTICLE FROM PLASTIC MATERIAL

Kjell M. Jakobsen, Skanör; Claes T. Nilsson, Löddeköpinge, and Lars G. Larsson, Höör, all of Sweden, assignors to PLM Aktiebolag, Malmo, Sweden

Filed Oct. 14, 1980, Ser. No. 196,374
Claims priority, application Sweden, Jan. 30, 1980, 80007222
Int. Cl.³ B29C *17/07*
U.S. Cl. 264—527 **14 Claims**

1. A method of molding an article from a tube-shaped parison comprising introducing a parison of thermoplastic material having an oriented portion which is of relatively high strength and resistant to stretching into a mold having a wall with a cylindrical mold surface provided with a plurality of axially spaced recesses therein, applying internal pressure to the parison to bring a plurality of regions of the oriented portion of the parison into contact with the cylindrical mold surface in axially spaced regions of the mold adjoining said recesses such that the parison extends across the recesses without entering into contact with the mold wall at said recesses, and relatively displacing said axially spaced regions of said mold in axial direction to axially shift the plurality of axially spaced regions

of the parison while concurrently applying the internal pressure to said parison and reducing the axial extent of said recesses to a final position in which said recesses are of ring-shape with a defined cross-sectional profile, the relative axial displacement of said regions of the mold in combination with the reduction of the axial extent of the recesses and the internal pressure applied to the parison causing said regions of the



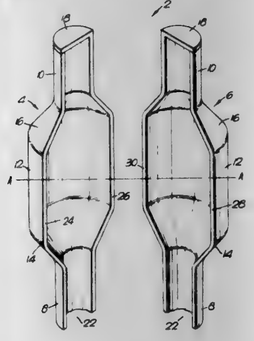
parison in contact with the mold under the application of internal pressure to be correspondingly relatively axially displaced with said regions of the mold while the regions of the oriented portion of the parison extending across said recesses are deformed into said recesses under said internal pressure without substantial stretching and reduction in wall thickness to assume the shape of said recesses in said final position and form a ring-shaped profile on said article.

4,409,177

METHOD OF FORMING A WRAPAROUND CLOSURE ARTICLE

Jorgen Berth; Erling Hansen, both of Los Altos; Malcolm D. Heaven, Cupertino, all of Calif., and Tommy Petersen, Ishoej, Denmark, assignors to Raychem A/S, Glostrup, Denmark

Filed Oct. 1, 1981, Ser. No. 307,451
Int. Cl.³ B23B *1/00*
U.S. Cl. 264—531 **12 Claims**



1. A method of forming a wraparound closure article comprising a longitudinally-slit, generally tubular body potion having upstanding closure means adjacent the longitudinal slit, which method comprises:

(a) positioning a hollow elongate parison of polymeric material within an open split-mould such that on closing the mould at least one longitudinal edge portion of the parison is held between two parts of the mould to form the upstanding closure means;

(b) closing the mould;

(c) expanding the hollow parison into contact with the mould by differential pressure to form the body portion; and

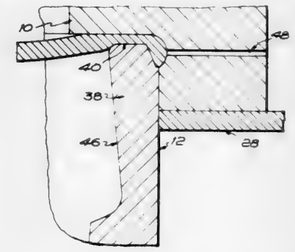
(d) slitting the article along the or each longitudinal edge portion.

4,409,178

FORMATION OF BEADED EDGES ON PLASTICS MATERIALS ARTICLES

Peter Ward, Leeds, England, assignor to Plastona (John Waddington) Ltd, England

Continuation of Ser. No. 41,198, May 21, 1979, abandoned. This application Nov. 7, 1980, Ser. No. 204,814
Claims priority, application United Kingdom, May 31, 1978, 24809/78
Int. Cl.³ B29C *17/04, 17/10*
U.S. Cl. 264—544 **9 Claims**



1. A method of producing an article with a beaded edge from a heated plastics sheet material wherein the article is formed in a mold, the method including the steps of:

(a) locating the heated plastics sheet material between spaced complimentary male and female mold parts of the mold in which the article is formed;

(b) bringing the mold parts together and severing from the sheet by such action a flat blank of the plastics sheet material from which the whole article is produced;

(c) continuing the movement together of the mold parts after said severing with the blank still in flat form until the blank engages the base of the female mould part when the female and male mould parts squeeze the blank on opposite sides in a continuous annular edge region of said severed portion adjacent the line along which the said blank was severed from the remainder by means of faces of the mold parts which are directly opposite in the direction of movement together of the mold parts so that the plastics material where squeezed is reduced in thickness and the displaced material is displaced outwardly into a bead cavity defined by the mold and located outwardly of the said edge region;

(d) continuing to squeeze the sheet material until the bead cavity is completely filled with displaced plastics material so that the said bead will have a pre-determined cross-sectional shape; and

(e) forming the article in the mold.

4,409,179

PRESSURIZED CORE SHROUD FOR ALIGNING A NUCLEAR REACTOR CORE

Joseph M. Burger, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 8, 1980, Ser. No. 214,162
Int. Cl.³ G21C *5/08*
U.S. Cl. 376—302 **12 Claims**

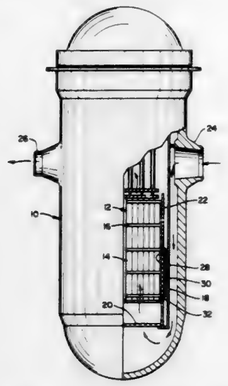
1. A core alignment shroud for insertion in a nuclear reactor vessel, the reactor vessel having means for introducing a flow of coolant through the reactor core, comprising:

an elongated, hollow frame for mounting in the vessel, the frame having an inner surface closely conforming in shape to the lateral perimeter of the core;

a flexible panel sealingly attached along its edges to the inner surface of the frame to form a chamber therebetween;

conduit means having a first end opening into the chamber and a second end adapted for fluid communication with the reactor coolant at a location upstream of the core,

such that when the shroud is in the vessel and reactor coolant is flowing, the pressure of the fluid upstream of the core is higher than the pressure acting on the outer



surface of the panel creating a pressure differential across the panel which deflects the panel inwardly against the core.

4,409,180

PROCESS FOR MANUFACTURING RARE EARTH INTERMETALLIC HYDRIDABLE COMPOUNDS

Gary D. Sandrock, Ringwood, N.J.; Ernest L. Huston, Tuxedo Park, N.Y., and James Liu, Ramsey, N.J., assignors to MPD Technology Corporation, Wyckoff, N.J.

Filed May 26, 1982, Ser. No. 382,171
Int. Cl.³ C22C *19/03*
U.S. Cl. 420—455 **2 Claims**

1. In the manufacture of intermetallic hydridable compounds of the RB_x type having a predictable plateau pressure where R is at least 2 members of the group of rare earth metals consisting of cerium, neodynmium, praseodymium and lanthanum and no single element of said group comprises greater than 0.95R, where B is nickel and where x is a number from 4.5 to 5.5, the improvement comprising formulating and alloying along with a stoichiometric quantity of nickel, rare earth elements together in weight fractions in accordance with the following equation

$$P_{25}=\exp(10.60-5.70X_{Ce}-10.03X_{La}-8.46X_{Pr}-7.40X_{Nd})$$

X being the weight fraction of a given element and

$$X_{Ce}+X_{La}+X_{Pr}+X_{Nd}=1$$

to provide an intermetallic compound having a desorption plateau pressure in atmospheres at 25° C. aproximately as given by the equation.

4,409,181

BRAZING COMPOSITIONS

Brian C. Coad, San Francisco, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Aug. 24, 1981, Ser. No. 295,926
Int. Cl.³ C22C *5/08, 28/00, 30/02*
U.S. Cl. 420—502 **4 Claims**

1. A brazing material consisting essentially of a foil having a composition consisting essentially of

(a) from about 50% to about 99% by weight of a brazing alloy consisting essentially of from about 25% to about 40% by weight of copper, from 0 to about 25% by weight of a metal selected from the group consisting of Zn, In, Cd, Sn and mixtures thereof, balance silver

(b) from about 1% to about 50% by weight of an additive that is insoluble in said brazing alloy selected from the group consisting of

(1) molybdenum

(2) mixtures of molybdenum and a metal selected from Fe, Co, W and mixtures thereof,

(3) mixtures of tungsten and a metal selected from Fe, Co and mixtures thereof,

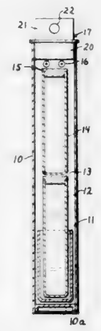
wherein said additive has a density of from about 95% to about 105% of the density of said brazing alloy.

4,409,182

COLORIMETER TEST KIT APPARATUS

F. Sutherland Macklem, 468 Main St., New Canaan, Conn. 06840

Filed Jun. 23, 1980, Ser. No. 162,044
Int. Cl.³ G01N *21/78, 21/80*
U.S. Cl. 422—61 **8 Claims**



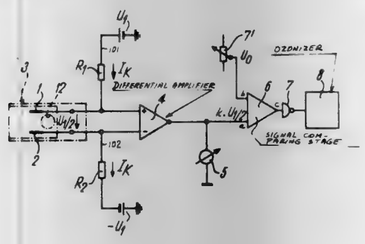
1. A colorimetric test kit apparatus comprising a color tube which includes a transparent plastic tubular container having one end closed and leak proof, said tube being provided with an array of non-opaque color windows on its surface, the color of the color windows being selected to at least approximately match the colorimetric response of a measured sample of fluid under test, which color tube can be filled with the fluid under test so as to correct the color of the color windows for any initial coloration of the fluid under test; at least one transparent plastic tubular sample container marked with a sample level line to be used as a sampler vial to provide an accurately measured sample of the fluid under test; at least one hermetically sealed tubular reagent vial containing a chemical reagent; puncturing means for opening said vial to provide a hole of predetermined size to convert it to a dropper to dispense said chemical reagent drop by drop into the measured sample in the sampler vial to develop a colored sample which can be held adjacent to one color window at a time to find the best color match; said tubular reagent vial being disposed in said sampler vial and said sampler vial being disposed in said color tube in a nesting arrangement so that said color tube becomes a holder for the complete test kit when not in use; and removable cap or plug means for closing said color tube, said cap or plug being of a form and size such that the complete test kit can be positioned by hanging closely alongside similar kits to present a conveniently accessible array of colorimetric test kits such as may be required in analyzing a given fluid.

4,409,183

APPARATUS FOR ASCERTAINING THE QUANTITY OF OZONE IN WATER

Bertram Fischer, Wolfmadenstrasse 67, D-7000 Stuttgart 80, Fed. Rep. of Germany

Filed Jul. 10, 1980, Ser. No. 168,403
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928324
Int. Cl.³ G01N *27/26, 27/30*
U.S. Cl. 422—68 **12 Claims**



1. Apparatus for use in ascertaining the quantity of ozone in water, comprising spaced-apart water-immersible first and second electrodes each of which consists of an alloy the predominant metal of which is gold; means for establishing through each of said electrodes a constant flow of electric current in the range of 0.1 to 1 microampere, including means for applying to said electrodes voltages of identical absolute value but opposite polarity; means for measuring the potential difference between said electrodes, including a differential amplifier having output means for the transmission of first signals denoting the measured potential difference; means connecting said measuring means with said electrodes; a source of reference signals denoting a voltage which is indicative of an acceptable quantity of ozone in the water; means for comparing the signals from said amplifier and said source, said comparing means having first and second inputs, and an output arranged to transmit signals denoting the difference between the characteristics of signals received at said first and second inputs; ozonizer means arranged to supply ozone to the water at a rate which is a function of the characteristics of signals at said output of said comparing means; means connecting said output means of said amplifier with said first input; means connecting said source with said second input; and means connecting said output of said comparing means with said ozonizer means.

4,409,184

PARAFFIN WRINKLE AND BUBBLE REMOVER APPARATUS

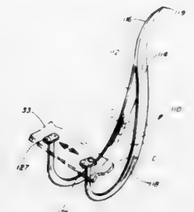
William Giroir, 3001 B Independence St., Metairie, La. 70002

Division of Ser. No. 181,967, Aug. 28, 1980, Pat. No. 4,357,302.
This application Feb. 16, 1982, Ser. No. 348,746
Int. Cl.³ B01L *9/00*
U.S. Cl. 422—99 **3 Claims**

1. A hand held apparatus for removing wrinkles and bubbles in a thin paraffin ribbon, said hand held apparatus having a substantially J-shape and comprising:

a. a pair of normally flexible handles integrally connected together at one end portion of the hand held apparatus and each of said handles integrally connected to an arcuate portion, the arcuate portions providing support to spreader pad portions movable with respect to one another responsive to a flexing of said handles, with said arcuate portions extending downwardly from said handles and then arcing upwardly to support said spreader pad portions;

b. each spreader pad portion being connected to and disposed at the end of each of the arcuate support portions which is not connected to the handles, in such a manner that its top surface is perpendicular to the longitudinal axis of said handle and substantially spaced apart from said handle, wherein each spreader pad portion has a top surface capable of frictionally engaging and supporting, for



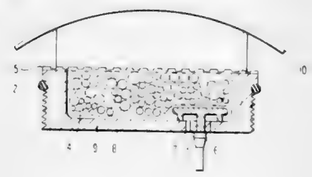
spreading, a portion of said paraffin ribbon, and where the top surfaces of the spreader pad portions are alligned such that they can spread said ribbon upon flexing of said handles.

4,409,185

SAFETY DEVICE FOR PACKAGINGS WHICH CONTAIN HYDROGEN EMITTING PYROPHORIC METALLIC CATALYSTS

Helmfried Krause, Rodenbach; Hubertus Wobbermin, Frankfurt, both of Fed. Rep. of Germany, and Edgar Geigle, deceased, late of Alzenau, Fed. Rep. of Germany by Brigitte Geigle, legal representative, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,140
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039528
Int. Cl.³ G05B *9/00*
U.S. Cl. 422—113 **11 Claims**

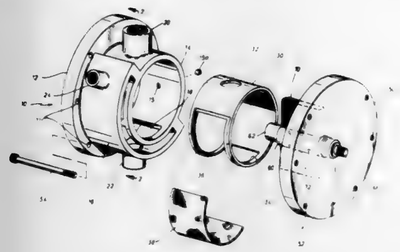


1. A safety device for packagings which contain hydrogen emitting pyrophoric metallic catalysts, comprising a hollow, upwardly open stopper (1) containing a cavity provided with sealing means (2) in the bottom (8) of which is arranged valve means (3) for pressure relief, comprising

a mushroom-shaped valve insert of elastic material (6), having a stem and a cap, the stem of which is passed through a bore opening in the stopper bottom (8) and has, beneath the stopper bottom, a thickening constructed as a stop which builds up stress, and the cap of which covers at least one gas throughflow opening (7) at the upper side of the stopper bottom, the distance between the thickening and the cap shoulder being somewhat smaller than the thickness of the stopper bottom,

wherein said cavity of the stopper is filled with a catalyst (4) for recombination of hydrogen and oxygen from the air and is closed by a gas-permeable cover (5) connected to the upper edge of the stopper.

4,409,186
CATALYST PARTICLE SIZING APPARATUS
William A. Gibson, and Ting C. Ho, both of Orange, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Feb. 11, 1982, Ser. No. 347,838
Int. Cl.³ C08F *4/00*
U.S. Cl. 422—131 **2 Claims**

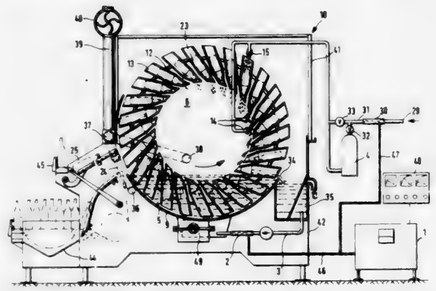


1. A particle sizing apparatus including in combination:
(a) a cylindrical housing whose faces lie in the plane of gravity,
(b) an arcuate opening cut into the lower surface of the cylindrical housing,
(c) a fine mesh screen which overlaps the arcuate opening,
(d) a hemicylindrical housing whose faces lie in the plane of gravity attached to the lower section of the cylindrical housing, and defining a cavity in communication therewith, the depth of the hemicylindrical housing being equal to the depth of the cylindrical housing,
(e) an inlet in the top center surface of the cylindrical housing,
(f) an outlet port in the bottom surface of the hemicylindrical housing,
(g) a first face plate which overlaps and seals one face of each of the cylindrical housing and the hemicylindrical housing,
(h) a second face plate which overlaps and seals the second face of each of the cylindrical housing and the hemicylindrical housing,
(i) a shaft mounted axially within the cylindrical housing and rotatable therein,
(j) brushes mounted on the shaft and extending to contact the entire inner surface of the cylindrical housing and the fine mesh screen fitted therein, and
(k) means for rotating the shaft of.

4,409,187
SEALING AGENT AND LUBRICANT FOR MEDIUM-PRESSURE AND HIGH-PRESSURE AUTOCLAVES
Armin Köhler, Dormagen; Herbert Schuster, Cologne, and Rudi Renner, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Mar. 6, 1981, Ser. No. 241,148
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011083
Int. Cl.³ B01J *3/00*; C10M *3/16*
U.S. Cl. 422—135 **6 Claims**

1. In an autoclave containing a stuffing box, which stuffing box contains a sealing agent and/or lubricant the improvement wherein said sealing agent or lubricant is a polyether-polyol which has an average OH-functionality of 5.0 to 7.0 and an average OH number of 250 to 500 and a molecular weight of 600 to 12,000 and a viscosity of 3 to 22 Pas at 25° C. prepared by reacting a mixture of sucrose and at least one other starting molecule chosen from the group comprising:
(a) polyhydric alcohols with an OH-functionality of less than 8,
(b) monoamines or polyamines which contain at least 2 hydrogen atoms bonded to the amino nitrogen and
(c) water, with ethylene oxide and/or propylene oxide.

4,409,188
CONTAINER STERILIZATION
Helmut Silberzahn, Hauptstrasse 72, Mosbach, Baden, Fed. Rep. of Germany D-6950
Filed Sep. 2, 1981, Ser. No. 298,625
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033043
Int. Cl.³ A61L *2/00*
U.S. Cl. 422—303 **7 Claims**

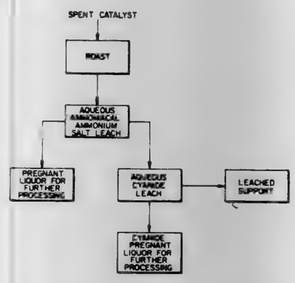


1. An apparatus for sterilizing containers comprising:
a fluid-tight housing having a container inlet and a container outlet;
a plurality of container immersion cells axially mounted for rotation within said housing and at an oblique angle;
an immersion bath within said housing containing a fluid sterilizing agent comprising ozone and water;
a collector adjoining said bath within said housing for receiving excess fluid from said immersion bath, and
means for variable enrichment of the gaseous ozone in said immersion bath, said means comprising at least one spray nozzle for spraying a mixture of ozone and fresh water into the area of said container immersion cells and at least one inlet to said immersion bath for supplying a mixture of ozone and said fluid from said collector.

4,409,189
RECOVERY OF TUNGSTEN FROM BRINES
S. Ralph Borrowman, Bountiful; Paulette B. Altringer, Summit Park, and Parkman T. Brooks, Salt Lake City, all of Utah, assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.
Filed Jul. 13, 1982, Ser. No. 397,735
Int. Cl.³ C01G *41/00*
U.S. Cl. 423—54 **6 Claims**

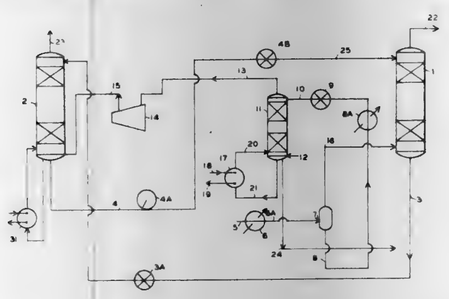
1. A process for recovery of tungsten from alkaline brines containing boron, arsenic and sulfur impurities comprising:
(a) contacting the brine with a resin consisting essentially of a copolymer of 8-hydroxyquinoline, resorcinol and formaldehyde to load the resin with tungsten and a portion of said impurities;
(b) contacting the loaded resin with an aqueous solution of ammonium chloride, in a concentration of about 0.1 to 2 normal, and ammonium hydroxide in an amount sufficient to provide a pH of about 7.5 to 9.5 to selectively remove boron, arsenic and sulfur values, and thereafter
(c) contacting the loaded resin with water or an alkaline aqueous solution to remove tungsten.

4,409,190
EXTRACTING COBALT FROM SPENT HYDROPROCESSING CATALYSTS WITH CYANIDE
Dean A. Van Leirsburg, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Sep. 24, 1982, Ser. No. 422,815
Int. Cl.³ C22B *3/00*; C01G *51/00*
U.S. Cl. 423—150 **3 Claims**



1. A process to leach cobalt from spent catalysts, comprising:
(a) roasting said spent catalysts at between 400° C. and 600° C.;
(b) contacting said roasted catalysts with an aqueous ammonia and ammonium salt leach solution forming pregnant liquor and residual catalyst; and
(c) contacting said residual catalyst with a cyanide ion containing second leach solution forming a second pregnant liquor.

4,409,191
INTEGRATED CYCLIC SCRUBBING AND CONDENSATE STRIPPING PROCESS FOR THE REMOVAL OF GASEOUS IMPURITIES FROM GASEOUS MIXTURES
Robert M. Osman, Parsippany, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.
Filed Jan. 4, 1982, Ser. No. 336,638
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—220 **7 Claims**



1. In a cyclic process for the removal of acid gases from a feed gas stream comprising a hot, steam-containing gas mixture by means of an aqueous alkaline scrubbing solution which is continuously recycled between an absorber in which said acid gases are absorbed by said scrubbing solution and a regenerator in which said acid gases are desorbed by steam-stripping, said hot steam containing gas mixture having at least a portion of the steam content therein condensed and separated from the gas mixture, prior to said gas mixture entering the absorber to form a process condensate having gaseous impurities dissolved therein, the improvement comprising:
(a) subjecting said process condensate to a pressure lower than the pressure at which scrubbing solution regeneration takes place;
(b) subsequently heating the process condensate resulting from, and at the pressure of, step (a) with at least one fluid having a temperature sufficient to boil said process condensate to strip said process condensate of at least a portion of the gaseous impurities dissolved therein and to yield a vaporous mixture comprising steam and said stripped gaseous impurities;
(c) separating said vaporous mixture of step (b) from the stripped process condensate and compressing the vaporous mixture to a pressure at least equal to the pressure at which scrubbing solution regeneration takes place;
(d) introducing said compressed vaporous mixture into the regenerator to assist in said steam stripping.

4,409,192
GAS SCRUBBING METHODS
Frederick W. Lichtner, Richboro, and Jean T. Rose, Fairless Hills, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.
Filed Apr. 26, 1982, Ser. No. 371,403
Int. Cl.³ C01B *17/00*
U.S. Cl. 423—242 **11 Claims**

1. In a process for scrubbing flue gases containing sulfur dioxide for the removal thereof which comprises (1) contacting the flue gases with an aqueous medium containing a material which will react with the sulfur dioxide to form either calcium sulfate or calcium sulfite or both; and (2) separating the insoluble either calcium sulfate or calcium sulfite or both from the aqueous medium, the improvement being adding to said aqueous medium prior to contact with the gas from about 0.5 to 300 parts per million of a combination of
i. a water soluble sulfonated polystyrene, and
ii. a compound having the formula: $(X)_2N—R—N(X)_2$, wherein R is a lower alkylene of from 1 to 7 carbon atoms, X is hydrogen or the group $—CH_2PO_3M_2$, where M is a water-soluble cation, the compound further characterized in that at least one and preferably all X's are $—CH_2PO_3M_2$.

4,409,193
PROCESS FOR PREPARING CUBIC BORON NITRIDE
Tadao Sato; Tadashi Endo; Osamu Fukunaga, all of Sakura, and Minoru Iwata, Matsudo, all of Japan, assignors to National Institute for Researches in Inorganic Materials, Ibaraki, Japan
Filed Mar. 3, 1982, Ser. No. 354,354
Claims priority, application Japan, Mar. 6, 1981, 56-32139; Mar. 20, 1981, 56-40563
Int. Cl.³ C01B *21/06*
U.S. Cl. 423—290 **10 Claims**

1. A process for preparing cubic boron nitride which comprises heating hexagonal boron nitride and magnesium boron nitride at a temperature of at least 1350° C. under pressure at which the cubic boron nitride is thermodynamically stable, said magnesium boron nitride having lattice spacings obtained from the major x-ray diffraction lines thereof as designated in Table 2 of the specification.

4,409,194
METHOD OF SEPARATING MAGNESIUM FROM WET PROCESS SUPERPHOSPHORIC ACID
Alfred W. Petersen, Salt Lake City, Utah, assignor to Stauffer Chemical Company, Westport, Conn.
Continuation of Ser. No. 969,746, Dec. 14, 1978, abandoned. This application Jan. 21, 1980, Ser. No. 113,981
Int. Cl.³ C01B *25/16*
U.S. Cl. 423—321 R **2 Claims**

1. A process for separating soluble magnesium from wet process superphosphoric acid containing (1) about 62 to about 72 percent by weight P_2O_5 with about 10 to about 45 percent

of the P_2O_5 in polyphosphate form, and (2) about 0.5 to about 3.0 pecent by weight MgO comprising the steps of aging said acid from about 4 to about 180 hours at a temperature of about 85° to about 180° C. with intermittent agitation of about 0.4 to about 50 percent of the aging time period followed by the step of filtering the aged superphosphoric acid at a temperature of about 85° to about 180° C.

4,409,195

PURIFICATION OF SILICON SOURCE MATERIALS

Robert D. Darnell, and William M. Ingle, both of Phoenix, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 273,519, Jun. 15, 1981, Pat. No. 4,374,110. This application Aug. 19, 1982, Ser. No. 409,391

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ C01B *33/107*

U.S. Cl. 423—342 **11 Claims**

1. A process for removing dopant impurity including one or more of boron, phosphorous, arsenic and aluminum in the form of chlorides, hydrides, or intermediate compounds containing both hydrogen and chlorine from a silicon source material including trichlorosilane or dichlorosilane which comprises the steps of: heating said material in gaseous form to a temperature between about 170° C. and about 500° C. with oxygen to form impurity containing siloxane complexes; and separating said complexes from said source material.

4,409,196

SYNTHESIS GAS FOR AMMONIA PRODUCTION

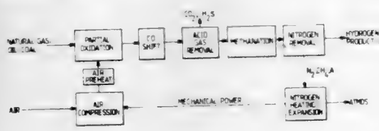
Geoffrey F. Skinner, Maidenhead, and Wieslaw M. Kowal, Henley, both of England, assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Continuation-in-part of Ser. No. 138,625, Apr. 8, 1980, abandoned. This application Feb. 5, 1981, Ser. No. 231,816

Claims priority, application United Kingdom, Apr. 24, 1979, 7914200; Apr. 23, 1980, 8013446

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **11 Claims**



1. A process for producing a feed gas stream for the synthesis of ammonia which comprises:

(a) partially oxidising a substance selected from the group consisting of oil, coal, natural gas or any combination thereof in the presence of air at a pressure of 15 to 150 bar and at a temperature of 300° to 2000° C. to produce a raw gas stream containing hydrogen and nitrogen with a stoichiometric excess of nitrogen of at least 200 mole percent based upon that needed for ammonia synthesis, together with carbon oxides, methane and hydrogen sulphide if sulphur was present in the oil, coal or gas,

(b) treating the raw gas stream from step (a) to remove substantially all component gases other than hydrogen and nitrogen,

(c) drying the raw gas stream from step (b) if water is present,

(d) subjecting the raw gas stream from step (c) at a pressure of 15 to 100 bar to a separation stage to separate (1) a hydrogen-nitrogen feed gas stream at a pressure of 15 to 100 bar, said feed gas stream having a predetermined nitrogen:hydrogen ratio suitable for ammonia synthesis, and (2) a nitrogen-rich gas stream at a pressure of 5 to 50 bar,

(e) injecting said hydrogen-nitrogen feed gas stream from step (d) into a reactor for ammonia synthesis,

(f) heating said nitrogen-rich gas stream from step (d), still at a pressure of 5 to 50 bar, to a temperature of 500° to 2000° C., and

(g) expanding said high pressure nitrogen-rich gas stream from step (f) in a turbine to generate power.

4,409,197

PROCESS FOR PRODUCING SODIUM PERCARBONATE

Junichiro Sugano, Nagoya; Tomoyuki Yui, Yokkaichi; Yoshitugu Minamikawa, Yokkaichi; Tsuneo Fujimoto, Yokkaichi, and Minoru Kubota, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Oct. 27, 1981, Ser. No. 315,645

Claims priority, application Japan, Oct. 27, 1980, 55-150502

Int. Cl.³ C01B *31/00, 15/30*

U.S. Cl. 423—415 P **4 Claims**

1. A process for the continuous production of sodium percarbonate which consists essentially of reacting sodium carbonate with hydrogen peroxide in a working solution of sodium carbonate, hydrogen peroxide and water, said reaction being carried out in the presence of two stabilizers, one selected from the group consisting of N, N, N',N'-tetra(phosphonomethyl)diaminoalkane of the following formula

$$[(OH)_2PCH_2\frac{O}{}N-R-N\frac{O}{}CH_2P(OH)_2]_2 \quad (A)$$

wherein R is either

$$-CH-(CH_2)_n- \text{ or } -CH-(CH_2)_n-CH-,$$

and n is 0 or 1 to 4, mixtures thereof and the other salt selected from the group consisting of phosphates, silicates and magnesium salts and mixtures thereof, wherein said N,N,N',N'-tetra(-phosphonomethyl)diaminoalkane is present in an amount of at least 100 ppm based on the working solution and wherein the phosphate, silicate or magnesium salt are added in amounts of 0.1 to 2.0% by weight, 0.5 to 5.0% by weight, or 0.1 to 1.0% by weight, respectively, based on the weight of the sodium carbonate reactant.

4,409,198

PROCESS FOR THE PRODUCTION OF COPPER (II) CHLORIDE FROM COPPER (II) OXYCHLORIDE USING TERTIARY AMINE HYDROCHLORIDES

Alfred Coenen, Maria Laach; Manfred Schroeder, and Guenter Prominski, both of Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls, AG, Marl, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 405,009

Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130810

Int. Cl.³ C01G *3/05*

U.S. Cl. 423—462 **10 Claims**

1. A process for preparing copper(II) chloride from copper-(II) oxychloride, comprising reacting an aqueous slurry of copper(II) oxychloride with the hydrochloride of a tertiary amine in an organic nonpolar solvent,

wherein the tertiary amine has 12–40 carbon atoms in total, contains at most one methyl group directly linked to the nitrogen atom and has a dissociation constant K_a of the equilibrium rection

$$NR_3H\oplus + H_2O \rightleftharpoons NR_3 + H_3O\oplus$$

which is $10^{-3.5}$ to $10^{-8.5}$.

10. A cyclic oxychlorination process comprising

chlorinating a compound by reaction with $Cu(II)Cl_2$, thereby converting the latter to Cu(I)Cl;

reacting the resultant Cu(I)Cl with oxygen to form $Cu_2(II)OCl_2$; and

reacting the latter with the hydrochloride of a tertiary amine in accordance with claim 1 to regenerate $Cu(II)Cl_2$.

4,409,199

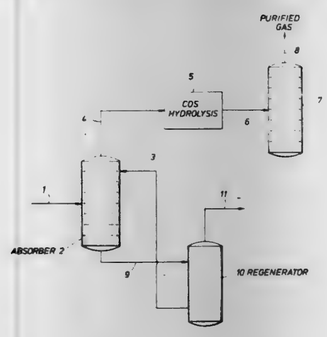
REMOVAL OF H_2S AND COS

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 14, 1981, Ser. No. 330,048

Int. Cl.³ B01D *53/34;* **C01B** *17/04*

U.S. Cl. 423—573 G **13 Claims**



1. A process for the removal of H_2S and COS from a sour gaseous stream containing H_2S and COS comprising:

a. contacting the sour gaseous stream in an absorption zone with an aqueous absorbent under conditions to absorb the bulk of the H_2S, and producing a product gas stream containing a reduced H_2S concentration and COS, and a loaded absorbent mixture;

b. contacting the product gas stream containing COS with a catalyst for the hydrolysis of COS, in the presence of water, and under conditions to react COS and water, and producing a gas stream containing CO_2 and H_2S;

c. removing H_2S from the gas stream by contacting the gas stream in a first contact zone with an aqueous oxidizing reactant solution which comprises an effective amount of an oxidizing reactant, at a temperature below the melting point of sulfur, and producing a purified gaseous stream and a reactant solution containing sulfur and reduced reactant;

d. concomitantly removing loaded absorbent mixture from the absorption zone, and regenerating the loaded absorbent to produce an acid gas stream comprising H_2S, and a regenerated absorbent;

e. and returning regenerated absorbent to the absorption zone.

4,409,200

REVERSE TRANSCRIPTASE FROM HUMAN MILK, METHOD FOR ITS PURIFICATION, AND ITS USE IN THE DETECTION OF BREAST CANCER

William F. Feller, Bethesda; Judith A. Kantor; Jack G. Chirikjian, both of Rockville, all of Md., and Terence M. Phillips, Washington, D.C., assignors to Research Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,326

Int. Cl.³ G01N *33/56, 33/58*

U.S. Cl. 436—516 **24 Claims**

1. A method for diagnosing mammalian breast cancer by detecting, in a physiological fluid of said mammal, antibodies having immuno-reactivity towards human reverse transcriptase, which comprises:

mixing a sample of said fluid containing said antibodies with an excess of reverse transcriptase substantially purified having a molecular weight of about 70,000 and a sedimentation coefficient on a glycerol gradient of between 5 and 5.5 S, and being capable of binding to said antibody and of forming a complex therewith, and;

detecting said complex.

4,409,201

PRESSURE-RESISTANT MICROCAPSULES WITH A POLYAMIDE SHELL AND A POLYURETHANE-POLYUREA INNER MASS AND PROCESS FOR THEIR MANUFACTURE

Rudolf Heinrich, Kelkheim; Heinz Frensch, Frankfurt am Main, and Konrad Albrecht, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 29, 1981, Ser. No. 268,386

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020781

Int. Cl.³ A61K *9/50, 9/58;* **B01J** *13/02*

U.S. Cl. 424—32 **18 Claims**

1. A pressure-resistant microcapsule comprising a single shell consisting essentially of a polyamide, a structured mass of a polyurethane-polyurea polymer occupying the volume within said shell, and an encapsulated water-immiscible liquid phase.

4. A microcapsule as in claim 1 wherein said encapsulated liquid phase comprises a pesticidally active compound.

4,409,202

BREATH FRESHENER COMPOSITION AND METHOD

Frank Witzel, Spring Valley; Mario A. DiNolfo, Ossining, both of N.Y.; Burton Rodney, Lawrenceville, N.J., and Donald A. M. Mackay, Pleasantville, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Division of Ser. No. 137,944, Apr. 7, 1980, Pat. No. 4,303,648. This application Jul. 16, 1981, Ser. No. 283,772

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ A61K *33/06, 33/08, 33/10*

U.S. Cl. 424—49 **11 Claims**

1. A breath freshener candy composition consisting essentially of a combination of vegetable oil and a substrate comprising magnesium hydroxide or the basic hydrated form of magnesium carbonate, dispersed in a non-toxic candy carrier, said vegetable oil being present in the weight ratio to the substrate of within the range of from about 0.1:1 to about 0.35:1.

4,409,203

NON-NITROCELLULOSE NON-FORMALDEHYDE OR FORMALDEHYDE RESIN NAIL POLISH EMPLOYING AN ACRYLATE RESIN AS THE FILM FORMER

Harry W. Gordon, and Nanette R. Avila, both of New York, N.Y., assignors to Del Laboratories, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 132,504, Mar. 21, 1980, abandoned. This application May 13, 1982, Ser. No. 377,620

Int. Cl.³ A61K *7/04*

U.S. Cl. 424—61 **7 Claims**

1. A liquid nail polish for application to human nails, said polish constituting a liquid composition consisting essentially of: from about 10% to about 25% of a methacrylate homopolymer having a molecular weight of about 25,000 as the principal film-forming constituent, selected from the group consisting of methyl methacrylate, ethyl methacrylate, butyl methacrylate and isobutyl methacrylate homopolymers, from about 0.5% to about 6.0% of cellulose acetate proprionate, from about 2% to about 6% of acetyl tributyl citrate, from about 2% to about 6% of a mixture of sucrose esters, and from about 0% to about 3% of camphor, all the foregoing percentages being based upon the weight of the liquid nail polish, said polish being free of nitrocellulose and of formaldehyde and formaldehyde resins, said polish also including an organic volatile solvent in which the homopolymer is dissolved, selected from the group consist-

ing of isopropyl alcohol, ethyl acetate, butyl acetate, methyl ethyl ketone, acetone, amyl acetate, methyl acetate, ethanol, Cellosolve, toluene, xylene and mixtures thereof, and being essentially water free.

4,409,204

MEANS FOR THE AFTERTREATMENT OF PERMANENTLY DEFORMED HAIR

Günther Lang, Niederbeerbach, and Theodor Wajaroff, Darmstadt, both of Fed. Rep. of Germany, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Mar. 19, 1980, Ser. No. 131,866

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912427

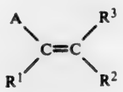
Int. Cl.³ A61K *7/06, 7/09, 7/11*

U.S. Cl. 424—70 **6 Claims**

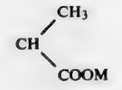
1. A composition for the aftertreatment of permanently deformed hair comprising

A. from about 0.1 to 10.0 weight percent of glyoxylic acid,

B. from about 0.1 to 10.0 weight percent of at least one organic compound having an aliphatic multiple carbon-carbon bond selected from the group consisting of (a) a compound of the formula



in which R^1, R^2 and R^3 are independently H, CN, COOM with M being H, Li, Na, K and NH_4, COOR′ with R′ being C_6H_5, C_1–C_6 alkyl, CONR′$_2$, and

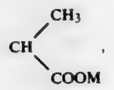


and wherein A represents COOM and CH_2COOM, M having the meaning noted above, provided that A signifies CH_2COOM only when at least one of R^1, R^2 and R^3 is CN, COOM, COOR′ and CONR′$_2$ and

(b) a compound with an activated triple bond of the formula



in which R^4 is H, CN, COOM with M being H, Li, Na, K and NH_4, COOR′ with R′ being C_6H_5, C_1–C_6 alkyl, CONR′$_2$, and



and wherein A represents COOM and CH_2COOM, M having the meaning noted above, provided that A signifies CH_2COOM only when R^4 is CN, COOM, COOR′, CONR′$_2$ and

C. water.

4,409,205

OPHTHALMIC SOLUTION

Charles D. Shively, Highland Park, Ill., assignor to Cooper Laboratories, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 17,372, Mar. 5, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,853

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 **9 Claims**

1. An ophthalmic solution for use in normalizing irregularly structured tear films in mammalian eyes having an ionic salt ion content within the range of from about 0.01% to about 0.75% expressed as sodium chloride equivalents, and a viscosity within the range of from about 1 cps to 150 cps at 23° C., comprising an aqueous solution of a water soluble non-ionic synthetic polymer having a molecular weight within the range of from about 300 to about 250,000 and selected from the group consisting of polyvinyl alcohol, polyethylene glycol and mixtures thereof, and from about 0.1 to about 5.0% of a non-ionic tonicity adjusting agent selected from the group consisting of mannitol, sorbitol, dextrose, sucrose, urea, glycerol and mixtures thereof.

4,409,206

TRANSDERMAL RELEASE SYSTEM FOR PHARMACEUTICAL PREPARATION

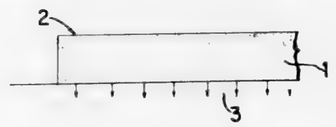
Herbert Stricker, Stettiner, Fed. Rep. of Germany, assignor to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Continuation of Ser. No. 145,839, May 1, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,882

Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920500

Int. Cl.³ A61K *31/78, 9/70;* **A61L** *15/03*

U.S. Cl. 424—81 **24 Claims**



1. A method for preparing a pharmaceutical preparation for transdermal application which comprises the steps of:

(a) pouring unto a flat, contained surface a polyacrylate dispersion or suspension comprising (i) from about 10 to 80% by weight of skin-compatible polyacrylate material selected from the group consisting of polymers or copolymers of acrylic acid, methacrylic acid, acrylic acid and methacrylic acid, alkyl esters thereof, and acrylonitrile, (ii) from about 20 to 90% by weight of water or a suitable solvent, and (iii) from 0 to about 30% by weight of hydrophilic substance selected from the group consisting of polyethylene glycol, glycerin, sorbitol, and mixtures thereof;

(b) allowing the water or organic solvent to evaporate from the polyacrylate dispersion or suspension of step (a) to form a dry polyacrylate film;

(c) contacting one or both surfaces of the polyacrylate film from step (b) one or more times with an organic solution or suspension of a pharmaceutically active substance selected from the group consisting of antihypertonics, tranquilizers, coronary drugs, migraine drugs, corticoids, contraceptives, analgesics, antirheumatics, and anticholinergics; and

(d) allowing the organic solvent or suspension agent to evaporate from the polyacrylate film of step (c) to form a polyacrylate film comprising pharmaceutically active substance in amorphous form,

the resulting polyacrylate film having a thickness of from about 10 to 500 μm.

4,409,207

DERIVATIVES OF CLAVULANIC ACID, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Brian C. Gasson, Redhill, England, assignor to Beecham Group Limited, England

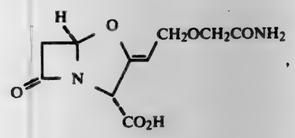
Division of Ser. No. 973,749, Dec. 26, 1978, Pat. No. 4,314,941. This application May 11, 1981, Ser. No. 262,119

Claims priority, application United Kingdom, Jan. 26, 1978, 03129/78

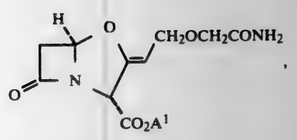
Int. Cl.³ A61K *35/00*

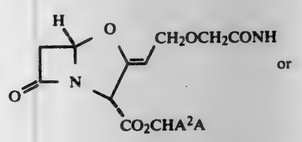
U.S. Cl. 424—114 **38 Claims**

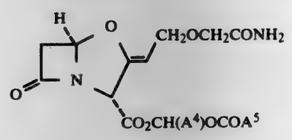
1. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises a synergistically effective amount of a compound of the formula (I):


(I)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof of the formula (II), (III) or (IV):


(II)


(III)


(IV)

wherein A^1 is alkyl of up to 4 carbon atoms, alkenyl of up to 4 carbon atoms, alkynyl of up to 4 carbon atoms or alkyl of up to 4 carbon atoms mono-substituted by halogen, hydroxyl, alkoxyl or alkanoyloxy of up to 4 carbon atoms, acetyl or benzoyl; A^2 is hydrogen, phenyl, chlorophenyl, methoxyphenyl, bromophenyl or nitrophenyl; A^3 is phenyl, chlorophenyl, methoxyphenyl, bromophenyl or nitrophenyl; A^4 is hydrogen or methyl; and A^5 is alkyl or alkoxyl of up to 4 carbon atoms, phenyl or benzyl, or A^4 is attached to A^5 to form a phenyl ring, and an antibacterially effective amount of a penicillin, in combination with a pharmaceutically acceptable carrier.

4,409,208

GNRH ANTAGONISTS

Jean E. F. Rivier, and Wylie W. Vale, Jr., both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 140,487, Apr. 15, 1980, Pat. No. 4,292,313, and Ser. No. 182,594, Aug. 29, 1980, abandoned. This application Apr. 21, 1981, Ser. No. 256,063

The portion of the term of this patent subsequent to Sep. 29, 1998, has been disclaimed.

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **16 Claims**

1. A peptide or a nontoxic salt thereof, said peptide having the formula:

$$X\text{-}R_1\text{-}R_2\text{-}R_3\text{-Ser-Tyr-}R_4\text{-}R_5\text{-Arg-Pro-}R_6$$

wherein X is hydrogen or an acyl group having 7 or less carbon atoms; R_1 is dehydro Pro or dehydro D-Pro; R_2 is D-Phe, Cl-D-Phe, dichloro-D-Phe, CF_3-D-Phe, F-D-Phe, difluoro-D-Phe, AcNH-D-Phe, NO_2-D-Phe, dinitro-D-Phe, Br-D-Phe, dibromo-D-Phe, CH_3-S-D-Phe, OCH_3-D-Phe or CH_3-D-Phe; R_3 is D-Trp or β-(naphthyl)-D-Ala; R_4 is selected from the group consisting of β-(naphthyl)-D-Ala, D-Trp, imBzl-D-His, D-Leu and D-Ser(O-tBut); R_5 is Leu or N^{α}Me-Leu; and R_6 is Gly-NH_2 or $NHCH_2CH_3$; provided however that either R_3 or R_4 is β-(naphthyl)-D-Ala.

4,409,209

NOVEL PHOSPHORYLMURAMYL PEPTIDES AND PROCESSES FOR THE MANUFACTURE THEREOF

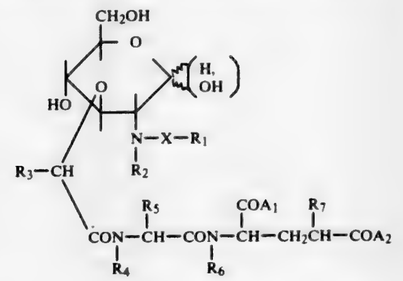
Gerhard Baschang, Bettingen, Switzerland; Lajos Tarcsay, Grenzach-Wyhlen; Albert Hartmann, Grenzach, both of Fed. Rep. of Germany, and Jaroslav Stanek, Birsfelden, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 194,104, Oct. 6, 1980, Pat. No. 4,323,560. This application Dec. 4, 1981, Ser. No. 327,381

Int. Cl.³ A61K *37/00*

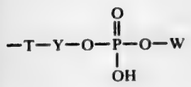
U.S. Cl. 424—177 **27 Claims**

1. Pharmaceutical preparation with antiobiotic activity for parenteral or enteral administration which contains an antibiotically effective combination of at least one antibiotic and an amount sufficient to enhance the activity of said antibiotic of at least one phosphorylmuramyl peptide of the formula


(I)

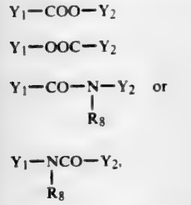
wherein X represents carbonyl, R_1 represents lower alkyl unsubstituted or substituted by hydroxy, lower alkoxy or halogen, or represents phenyl unsubstituted or substituted by hydroxy, lower alkoxy, lower alkyl or halogen, R_2, R_4 or R_6 independently of one another represent hydrogen or lower alkyl, R_3 represents hydrogen or lower alkyl, R_5 represents hydrogen, lower alkyl having from 1 to 3 carbon atoms unsubstituted or substituted by hydroxy, lower alkoxy, mercapto, lower alkylthio, amino or halogen, or represents cycloalkyl or cycloalkyl-lower alkyl in which the lower alkyl radical contains from 1 to 3 carbon atoms, and in each of which the cycloalkyl radical contains from 4 to 6 carbon atoms, phenyl or phenyl-lower alkyl having from 1 to 3 carbon atoms in the

lower alkyl radical and each unsubstituted or substituted by hydroxy, lower alkoxy or halogen, or heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical, and each containing one or two nitrogen atoms and having 5 or 6 ring members, or R_4 and R_5 together alternatively represent alkylene having 3 to 4 carbon atoms, R_7 represents hydrogen, and one of the radicals A_1 and A_2 represents a radical of the formula



(II)

in which T represents HN or O, Y represents lower alkylene which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, lower alkanoylthio, amino-lower alkyl, mono- or di- lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, aminocarbonyl, lower alkyl, cycloalkyl having 5 or 6 carbon atoms, a phenyl or a phenyl-lower alkyl radical, or by heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical and each containing one or two nitrogen atoms and having 5 or 6 ring members or a radical of one of the formulae



(IIIa)

(IIIb)

(IIIc)

(IIId)

in which Y_1 and Y_2 each represents lower alkylene which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, mercapto, lower alkylthio, lower alkanoylthio, amino-lower alkyl, mono- or di-lower alkylamino-lower alkyl, lower alkanoylamino-lower alkyl, aminocarbonyl, lower alkyl, cycloalkyl having 5 or 6 carbon atoms, a phenyl or a phenyl-lower alkyl radical, or by heterocyclyl or heterocyclyl-lower alkyl having from 1 to 3 carbon atoms in the lower alkyl radical and each containing one or two nitrogen atoms and having 5 or 6 ring members and R_8 represents hydrogen, W represents an alkyl or alkenyl group having from 7 to 30 carbon atoms which is unsubstituted or substituted by hydroxy, lower alkoxy, lower alkanoyloxy, halogen, amino, lower alkylamino, lower alkanoylamino or oxo or represents a cycloalkyl or cycloalkenyl radical having from 10 to 30 carbon atoms which is unsubstituted or substituted by one or more alkyl radicals having from 1 to 8 carbon atoms, and the other of the radicals A_1 and A_2 represents hydroxy, lower alkoxy, amino or lower alkylamino, or represents aminocarbonyl-lower alkylamino unsubstituted or substituted in the lower alkyl radical by hydroxy, carboxy or amino groups, or a pharmaceutically acceptable salt thereof together with a significant amount of a pharmaceutically acceptable carrier.

4,409,210

ANTIBIOTIC COMPOUND

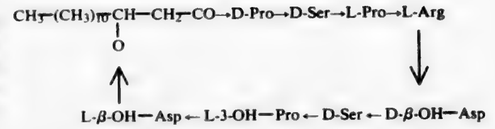
Hiroshi Kawaguchi, Tokyo; Masataka Konishi, Yokohama; Koko Sugawara, Wako, and Koji Tomita, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Jan. 15, 1982, Ser. No. 339,355

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. The peptide antibiotic compound Bu-2517 of the formula



or a pharmaceutically acceptable salt thereof, wherein Pro represents proline, Ser represents serine, Arg represents arginine, β-OH-Asp represents threo-β-hydroxyaspartic acid and 3-OH-Pro represents trans-3-hydroxyproline.

4,409,211

SYSTEMIC CONTROL OF INSECT INFESTATIONS IN ANIMALS BY USE OF O,O-DIMETHYL-2,2,2-TRICHLORO-2-(TETRAHYDROPYRANYL-2-OXY)ETHYLPHOSPHONATE

Ashley H. Freiberg, Santa Clara, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation-in-part of Ser. No. 220,941, Dec. 29, 1980, Pat. No. 4,320,123. This application Mar. 15, 1982, Ser. No. 356,531

Int. Cl.³ A61K *31/665;* **C07D** *309/06*

U.S. Cl. 424—203 **4 Claims**

1. A method of killig insect larvae in an animal having an opening infested with said larvae comprising administering an insecticide effective amount of O,O-dimethyi-2,2,2-trichloro-1-(pyranyl-2-oxy)ethylphosphonate to said animal at a site remote from the infested opening.

4,409,212

METHOD OF PREVENTING AND TREATING CEREBRAL INSUFFICIENCY

Cesare Mondadori, Don Mills, Canada, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

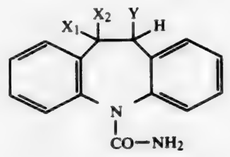
Filed Apr. 9, 1982, Ser. No. 366,792

Claims priority, application Switzerland, Apr. 16, 1981, 2565/81

Int. Cl.³ A61K *31/33*

U.S. Cl. 424—244 **8 Claims**

1. A method of preventing or treating imparied memory conditions comprising administering to a human being in need of such treatment, orally or rectally, a prophylactic or a therapeutically effective amount of a compound of the general formula



wherein X_1 is hydrogen, halogen having an atomic number up to 35, or is cyano, and X_2 and Y together are an additional bond, or X_1 and X_2 together are the oxo radical and Y is hydrogen, or X_1 is hydroxy and X_2 and Y are hydrogen.

4,409,213

PROSTANOID COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS

Eric W. Collington, Welwyn; Harry Finch, Hitchin; Roger F. Newton, Melbourn, and Christopher J. Wallis, Royston, all of England, assignors to Glaxo Group Limited, England

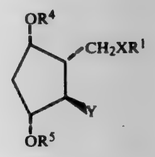
Continuation of Ser. No. 232,363, Feb. 6, 1981, abandoned, which is a division of Ser. No. 56,416, Jul. 10, 1979, Pat. No. 4,265,891. This application Nov. 10, 1982, Ser. No. 440,622

Claims priority, application United Kingdom, Jul. 11, 1978, 29403/78

Int. Cl.³ A61K *31/55, 31/557;* **C07D** *223/00, 295/14*

U.S. Cl. 424—244 **7 Claims**

1. Prostanoids of the general formula (1)



X is cis or trans —CH=CH— or $(CH_2)_2$—;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^{10}$ where R^{10} is a hydrogen atom, C_{1-6} alkyl or C_{7-10} phenalkyl;

Y represents (i) —NR^2R^3 where R^2 and R^3 are the same or different and are each a hydrogen atom, phenalkyl having C_{1-7} alkyl portion or C_{1-10} alkyl, both alkyls being optionally substituted by one or more substituents —OR^7 (where R^7 is a hydrogen atom, C_{1-7} alkyl, phenyl or phenyalkyl having a C_{1-4} alkyl portion) or —NR^8R^9 (where R^8 and R^9 are the same or different and are each a hydrogen atom or C_{1-4} alkyl, or where —NR^8R^9 is a saturated heterocyclic amino group as defined below for Y); any phenyl group in R^2 or R^3 being optionally substituted by one or more C_{1-4} alkyl or trifluoromethyl groups; always provided that the total numbers of carbon atoms in the group —NR^2R^3 does not exceed 15;

or (ii) a saturated heterocyclic amino group selected from the group consisting of pyrrolidino, piperdino, morpholino, piperazino, thiamorpholino, 1-dioxothiamorpholino, homomorpholino, hexamethyleneimino, piperazino substituted at the second nitrogen atom by C_{1-7} alkyl or phenalkyl having a C_{1-4} alkyl portion, and piperidino which contains in the ring the group C(OH)R^6 (where R^6 is a hydrogen atom, C_{1-7} alkyl, phenyl, or phenalkyl having a C_{1-4} alkyl portion) and any of said groups substituted on the ring by one or more C_{1-4} alkyl groups;

R^4 is a hydrogen atom, C_{1-6} alkyl (optionally interrupted by one or two oxygen atoms), C_{3-6} alkenyl, C_{2-4} alkanoyl, phenalkanoyl having a C_{2-4} alkanoyl portion, phenyl or aralkyl selected from the group consisting of benzyhydryl, naphthyl (C_{1-3}) alkyl and phen(C_{1-3}) alkyl and any one of said aryl groups substituted by one or more halogen, hydroxy, C_{1-6} alkyl C_{1-6} alkoxy, C_{1-4} hydroxyalkoxy, trifluoromethyl, cyano, phenyl, phenoxy, C_{5-7} cycloalkyl, phenalkoxy dimethylaminomethyl, carboxamido (—$CONH_2$), thiocarboxamido (—$CSNH_2$), C_{1-4} alkanoyl or —NR^8R^9 groups as defined above);

R^5 is as defined above for R^4, excluding phenyl;

and the physiologically acceptable salts thereof; provided that when both R^4 and R^5 are hydrogen atoms and Y is the group —NR^2R^3 in which R^2 is a hydrogen atom or C_{1-4} alkyl, R^3 is not an alkyl group which is only substituted by a hydroxy group.

7. A pharmaceutical composition comprising bronchodilating or blood platelet aggregation-inhibiting effective amount of a compound as claimed in claim **1** and one or more pharmaceutical carriers.

4,409,214

7-ACYLAMINO-3-VINYLCEPHALOSPORANIC ACID DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Takao Takaya, Kawanishi; Hisashi Takasugi, Osaka; Takashi Masugi, Ikeda; Hideaki Yamanaka, Hirakata, and Kohji Kawabata, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical, Co., Ltd., Osaka, Japan

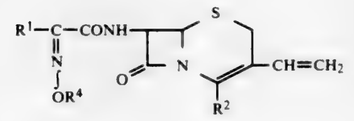
Filed Nov. 10, 1980, Ser. No. 205,334

Claims priority, application United Kingdom, Nov. 19, 1979, 7939985; Feb. 8, 1980, 8004335; Apr. 21, 1980, 8012991; Jul. 14, 1980, 8022920

Int. Cl.³ A61K *31/545;* **C07D** *501/34*

U.S. Cl. 424—246 **12 Claims**

1. A compound of the formula:



in which

R^1 is 2-aminothiazol-4-yl or 2-acylaminothiazol-4-yl,

R^2 is carboxy or a protected carboxy group, and

R^4 is lower alkyl substituted by carboxy or a protected carboxy group,

and a pharmaceutically acceptable salt thereof.

7. A compound of claim **1**, in which

R^2 is mono- or di- or triphenyl(lower)alkoxycarbonyl, or lower alkanoyloxy(lower)alkoxycarbonyl.

4,409,215

7-ACYLAMINO-3-SUBSTITUTED CEPHALOSPORANIC ACID DERIVATIVES AND PROCESSES FOR THE PREPARATION THEREOF

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohama-nishi; Takashi Masugi, Ikeda; Hideaki Yamanaka, Hirakata, and Kohji Kawabata, Sumiyoshi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

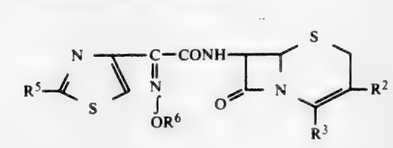
Filed Nov. 14, 1980, Ser. No. 206,831

Claims priority, application United Kingdom, Nov. 19, 1979, 7939985; Feb. 8, 1980, 8004335; Apr. 21, 1980, 8012991

Int. Cl.³ A61K *31/545;* **C07D** *501/20*

U.S. Cl. 424—246 **6 Claims**

1. A compound of the formula:



in which

R^5 is amino or a protected amino group,

R^2 is methoxymethyl,

R^3 is carboxy or a protected carboxy group, and

R^6 is lower alkyl, and a pharmaceutically acceptable salt thereof.

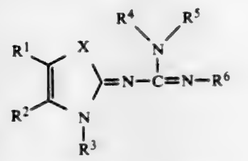
6. A method for treating an infectious disease caused by pathogenic microorganisms, which comprises administering an antimicrobially effective amount of a compound of the claim **1** to infected human being and animals.

4,409,216
METHOD OF TREATING DIABETES USING OXAZOLINE OR THIAZOLINE COMPOUNDS

Barrie C. C. Cantello, Redhill, England, assignor to Beecham Group Limited, England

Filed Apr. 11, 1980, Ser. No. 139,284
Claims priority, application United Kingdom, Apr. 20, 1979, 7913864
Int. Cl.³ A61K *31/42, 31/425, 31/535, 31/54*
U.S. Cl. 424—246 **2 Claims**

1. A method for the treatment of diabetes in humans which comprises administering to the humans a therapeutically effective amount of an active compound of formula (II) or a pharmaceutically acceptable acid addition salt thereof:



(II)

wherein X represents oxygen or sulphur; R^1 and R^2 are the same or different and represent hydrogen, halogen, C_{1-6} alkyl, phenyl, benzyl, C_{3-6} cycloalkyl, carbo-C_{1-6} alkoxy or carboxy or R^1 and R^2 represent the remaining members of a benzene ring; R^3 represents C_{1-6} alkyl, phenyl or benzyl; R^4 represents C_{1-6} alkyl; R^5 represents C_{1-6} alkyl, phenyl optionally substituted with up to 3 groups selected from halogen, C_{1-6} alkyl, and C_{1-6} alkoxy; or benzyl optionally substituted with up to 3 groups selected from halogen, C_{1-6} alkyl and C_{1-6} alkoxy; or R^4 and R^5 together represent the remaining members of a 5- or 6-membered ring optionally containing an oxygen, sulphur or additional nitrogen atom and being optionally substituted with C_{1-6} alkyl; and R^6 represents C_{1-6} alkyl, phenyl, optionally substituted with up to 3 groups selected from halogen, nitro-, amino-, trifluoromethyl, C_{1-6} alkyl and C_{1-6} alkoxy; or benzyl optionally substituted with up to 3 groups selected from halogen, C_{1-6} alkyl and C_{1-6} alkoxy.

4,409,217
CEPHEM COMPOUNDS

Takao Takaya, Kawanishi; Hisashi Takasugi, Kohamanishi; Toshiyuki Chiba, and Kiyoshi Tsuji, both of Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 886,340, Mar. 14, 1978. This application Sep. 26, 1980, Ser. No. 190,970
Int. Cl.³ A61K *31/545;* **C07D** *501/59*
U.S. Cl. 424—246 **3 Claims**

1. A compound selected from the group consisting of:
4-nitrobenzyl 7-[2-(tert-butoxycarbonylmethoxyimino)-2-(2-formamidothiazol-4-yl)acetamido]-3-chloro-3-cephem-4-carboxylate (syn isomer),
7-[2-(tert-butoxycarbonylmethoxyimino-2-(2-formamido-thiazol-4-yl)-acetamido]-3-chloro-3-cephem-4-carboxylic acid (syn isomer),
7-[2-(tert-butoxycarbonylmethoxyimino)-2-(2-aminothiazol-4-yl)-acetamino]-3-chloro-3-cephem-4-carboxylic acid (syn isomer), and
7-[2-carboxymethoxyimino-2-(2-aminothiazol-4-yl)acetamido]-3-chloro-3-cephem-4-carboxylic acid (syn isomer).

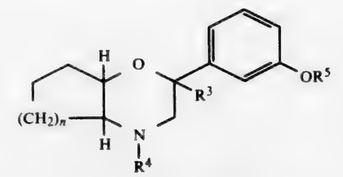
3. A pharmaceutical composition comprising an antimicrobially effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,409,218
ANALGESIC METHOD

Alan C. White, Windsor, and Gerald Bradley, Weybridge, both of England, assignors to John Wyeth and Brother Limited, Maidenhead, England

Filed Mar. 11, 1982, Ser. No. 357,027
Claims priority, application United Kingdom, Mar. 27, 1981, 8109713
Int. Cl.³ A61K *31/535*
U.S. Cl. 424—248.55 **1 Claim**

1. A method of treating a mammal in need of an analgesic which comprises administering to said mammal an analgesically effective amount of a 2R*,4aS*,8aS* morpholine derivative of the formula



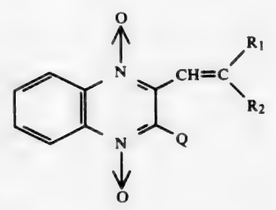
or a pharmaceutically acceptable acid addition salt thereof, wherein n represents 1, 2 or 3; R^3 is alkyl of 1 to 10 carbon atoms; R^4 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, aryl(lower)alkyl, 2-tetrahydrofurylmethyl or cyclo(lower-)alkylmethyl; and OR^5 is hydroxy or acyloxy.

4,409,219
QUINOXALINE-1,4-DIOXIDE FODDER SUPPLIMENTS

Pal Benko; Daniel Bozsing; Jamos Gundel, and Karoly Magyar, all of Budapest, Hungary, assignors to Egyt Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed May 22, 1981, Ser. No. 266,300
Claims priority, application Hungary, May 23, 1980, 1298/80
Int. Cl.³ C07D *403/12, 403/6, 341/12;* **A61K** *31/495*
U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula (I)



(I)

wherein
Q is hydrogen or methyl;
R_1 is hydrogen, cyano, lower alkanoyl, nitro or halogen;
R_2 is cyano, lower alkanoyl, or a group of the formula $—COOR_3$, $—CONR_4R_5$, or $—CONHNR_4R_5$;
R_3 is hydrogen, C_1 to C_{18} alkyl, C_6 to C_{10} aryl, or C_6 to C_{10}aryl-($C_1$to C_4alkyl) which latter can be substituted with a halogen or a hydroxy group, and the aromatic ring of the said aryl groups can contain 1 to 3 substituents selected from the group consisting of lower alkyl or alkoxy, amino, nitro, halogen and hydroxy;
R_4 is hydrogen, C_1–C_{18}alkyl, lower alkenyl, lower alkynyl, lower cycloalkyl, C_6 to C_{10} aryl, C_6 to C_{10}aryl-(C_1 to C_4alkyl) which can be substituted by a halogen or a hydroxy group, and the aromatic ring of said aryl groups can contain 1 to 3 substituents selected from the group consisting of lower alkoxy, lower alkyl, amino, nitro, halogen, and hydroxy, a lower alkylcarbonyl, a lower alkylsulfonyl, or a C_6 to C_{10} arylsulfonyl group which can be substituted by an amino or a lower alkyl group, or a mono- or bicyclic heterocyclic sulfonyl group wherein the heterocyclic group is selected from the group consisting of pyridyl, thiazolyl, isothiazolyl, pyrimidinyl, pyridazinyl, pyrazinyl, furyl, imidazolyl, oxazolyl, quinolyl, and isoquinolyl and wherein the heterocyclic group is unsubstituted or substituted by lower alkyl, halogen, hydroxy, lower alkoxy, nitro or amino;
R_5 is hydrogen, hydroxyethyl, dodecyl, 1,1-dimethyl-propyn-2-yl, phenyl, 3,4,5-trimethoxy-phenyl, 2,6-dimeth-yl-phenyl, 2-pyridyl, p-amino-phenylsulfonyl, or me-thoxycarbonyl; or
R_4 and R_5 together with the adjacent nitrogen atom form a pyrolidino, piperidino, morpholino, piperazino, N-methyl-piperazino, N-ethyl-piperazino, N-phenyl-piperazino, or N-benzyl-piperazinc, or in the case wherein R_2 is carboxy, a pharmaceutically acceptable basic carboxylate salt thereof, but when Q is hydrogen and R_2 is carboxy, R_1 is different from hydrogen.

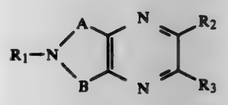
6. An antimicrobial or weight-gain increasing veterinary composition containing a compound as defined in claim 1, together with a suitable insert, solid or liquid carrier or diluent.

4,409,220
FUSED-RING AMINO-PYRAZINES AS BRADYCARDIAC AGENTS

Rudolf Hurnaus; Gerhart Griss, both of Biberach; Robert Sauter, Laupheim; Wolfgang Grell, Biberach, all of Fed. Rep. of Germany; Walter Kobinger, and Ludwig Pichler, both of Vienna, Austria, assignors to Dr. Karl Thomae Gesellschaft mit beschrinkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 297,024
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1980, 3032994
Int. Cl.³ C07D *471/04, 487/04;* **A61K** *31/495, 31/55*
U.S. Cl. 424—250 **6 Claims**

1. A compound of the formula



wherein
one of A and B is methylene or (alkyl of 1 to 3 carbon atoms)—methylene, and the other is ethylene or (alkyl of 1 to 3 carbon atoms)—ethylene.
R_1 is hydrogen, alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, alkenyl of 3 to 6 carbon atoms, phenyl-(alkyl of 1 to 3 carbon atoms), halophenyl-(alkyl of 1 to 3 carbon atoms), alkanoyl of 1 to 3 carbon atoms, phenyl-(alkanoyl of 1 to 3 carbon atoms), halophenyl-(alkanoyl of 1 to 3 carbon atoms), alkoxycarbonyl of 2 to 4 carbon atoms, aralkoxycarbonyl of 8 to 10 carbon atoms or phenyl;
one of R_2 and R_3 is amino and the other is hydrogen, chlorine, bromine, alkyl of 1 to 3 carbon atoms, alkoxy of 1 to 3 carbon atoms, alkoxycarbonyl of 2 to 4 carbon atoms, phenyl or halophenyl;
or a non-toxic, pharmacologically acceptable acid addition salt thereof.

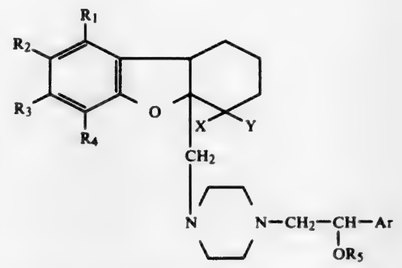
5. A bradycardiac pharmaceutical dosage unit composition consisting essentially of an inert pharmaceutical carrier and an effective bradycardiac amount of a compound of claim 1.

4,409,221
1,2,3,4,4A,9B-HEXAHYDRO-4A-PIPERAZINYLMETHYL-4-DIBENZOFURANONE OR -DIBENZOFURANOL DERIVATIVES

Michel Combourieu; Jean-Claude Laigle, both of Aurillac, and Norbert Busch, Manzat, all of France, assignors to Riom Laboratories - Cerm S.A., Riom, France

Filed Jun. 9, 1982, Ser. No. 386,621
Claims priority, application France, Jun. 12, 1981, 81 11672
Int. Cl.³ A61K *31/495;* **C07D** *405/00, 405/06, 307/81*
U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula:



and pharmaceutically acceptable salts thereof, in which R_1, R_2, R_3 and R_4 are identical or different and represent hydrogen, halogen, lower alkyl or alkoxy or trifluoromethyl; R_5 represents hydrogen or lower alkyl, X represents hydrogen and Y represents hydroxy or X and Y together represent oxygen, and Ar represents an optionally substituted aromatic moiety, selected from the group consisting of phenyl or pyridyl optionally substituted with alkyl (1–4 C), alkoxy (1–4 C) or halogen.

4,409,222
PINACIDIL-DIURETIC PREPARATION FOR TREATING HYPERTENSION OR CONGESTIVE HEART FAILURE

Edoardo Arrigoni-Martelli, Birkerod, Denmark, assignor to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiski Fabrik Produktionsaktieselskab), Ballerup, Denmark

Filed Mar. 31, 1982, Ser. No. 363,934
Claims priority, application United Kingdom, Apr. 15, 1981, 8111986
Int. Cl.³ A61K *31/505, 31/44*
U.S. Cl. 424—251 **14 Claims**

1. A pharmaceutical preparation for treating hypertension or congestive heart failure consisting essentially of an effective amount of a mixture of N''-cyano-N-4-pyridyl-N'-1,2,2-trimethylpropylguanidine and a diuretic, the two active components being used as such or, if appropriate, in the form of atoxic salts thereof.

13. A method for the treatment of hypertension or congestive heart failure in mammals, including man, comprising simultaneous administration to a host suffering from said illness a therapeutically acceptable amount of N''-cyano-N-4-pyridyl-N'-1,2,2-trimethylpropylguanidine and a therapeutically acceptable amount of a diuretic as specified in claim 1.

4,409,223
ANXIOLYTIC METHOD

Leslie A. Riblet, 832 Walnut, Mt. Vernon, Ind. 47620, and Michael S. Eison, 5487 Eden Dr., Evansville, both of Ind. 47715

Filed Aug. 6, 1982, Ser. No. 405,785
Int. Cl.³ A61K *31/495, 31/505*
U.S. Cl. 424—251 **3 Claims**

1. The process for ameliorating an anxiety state in a mammal in need of such treatment comprising systemic administration to said mammal of an effective but non-toxic anxiolytic dose of

1-(2-pyrimidinyl)piperazine or a pharmaceutically acceptable acid addition salt thereof.

4,409,224

PYRIMIDO[1,6-A]INDOLE DERIVATIVES

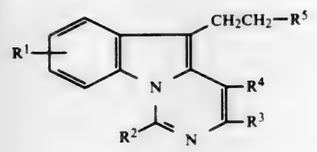
Ivo L. Jirkovsky, Montreal, Canada, assignor to American Home Products Corp., New York, N.Y.

Division of Ser. No. 941,816, Sep. 11, 1978, Pat. No. 4,307,234. This application Jul. 13, 1981, Ser. No. 282,575

Int. Cl.[3] **A61K** *505/00;* **C07D** *487/04, 491/14, 521/00*

U.S. Cl. 424—251 **35 Claims**

1. A compound of formula I



(1)

in which R^1 is hydrogen; R^2 is lower alkyl, cyclo(lower)alkyl,-pyrrolidin-1-ylmethyl or a radical of formula $—NR^6R^7$ wherein R^6 and R^7 each is lower alkyl; R^3 is hydrogen, lower alkyl or [4-(pyrrolidin-1-yl)-1,4-dioxobutyl]amino; R^4 is lower alkyl; and R^5 is bromo, chloro, lower alkoxy, 1-pyrrolidinylt-hloxomethylthio, 4,5-dihydro-1H-imidazol-2-ylthio, or a radical of formula $—NR^{14}R^{15}$ wherein R^{14} is lower alkyl and R^{15} is lower alkyl, or hydroxy(lower)alkyl, or R^{14} and R^{15} together form a chain of formula $—CH_2CH=CH—(CH_2)_2—$, $—(CH_2-)_2—O—(CH_2)_2—$, $—(CH_2)_4—$, $—(CH_2)_5—$, $(CH_2)_6—$, $—(CH_2)_2—NR^{16}—(CH_2)_2—$ wherein R^{16} is lower alkyl or 4-(lower alkoxy)phenyl, $—(CH_2)_2—CHR^{17}—(CH_2)_2—$ wherein R^{17} is benzoylamino, $CH_2CHR^{18}OCHR^{19}CH_2$ wherein R^{18} and R^{19} each is lower alkyl, or $—CH=N—CH=CH—$, or a therapeutically acceptable acid addition salt thereof.

30. A method of treating hypertension in a mammal, which comprises administering to said mammal an effective antihypertensive amount of a compound of formula I, or a therapeutically acceptable acid addition salt thereof, as claimed in claim **1**.

4,409,225

SUBSTITUTED BENZAMIDES

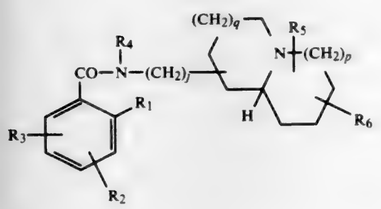
Michael S. Hadley, Sawbridgeworth, England, assignor to Beecham Group Limited, England

Filed Mar. 16, 1981, Ser. No. 243,762

Int. Cl.[3] **A61K** *31/435;* **C07D** *455/02*

U.S. Cl. 424—256 **8 Claims**

1. A compound of formula (I) and pharmaceutically acceptable salts thereof:



(I)

wherein:

R_1 is a C_{1-6} alkoxy group;

R_2 and R_3 are the same or different and are hydrogen. halogen, CF_3, C_{1-7} acyl, C_{1-7} acylamino, C_{1-6} alkyl-$S(O)_n$ wherein n is 0, 1 or 2, nitro, or amino, aminocarbonyl or aminosulphonyl optionally substituted by one or two C_{1-6} alkyl groups;

or R_1 and R_2 taken together are methylendioxy or ethylenedioxy in which case R_3 is any one of the groups given for R_1 and R_2 above;

R_4 is hydrogen or C_{1-6} alkyl;

R_5 is hydrogen, C_{1-6} alkyl, phenyl or phenyl-C_{1-6} alkyl, either of which phenyl moieties may be substituted by C_{1-6} alkyl, C_{1-6} alkoxy, CF_3 or halogen, and R_6 is hydrogen; and

j is 1 to 4; and

p is 1 and q is 1.

5. 4-Amino-5-chloro-2-methoxy-N-(3-quinolizidinylmethyl)-benzamide.

7. A pharmaceutical composition useful for treatment of disorders related to impaired gastric emptying, comprising a gastric emptying effective amount of a compound according to claim **1** and a pharmaceutically acceptable carrier.

8. A method of treating disorders related to impaired gastric emptying in humans and animals, which comprises administering to a human or animal in need thereof a gastric emptying effective amount of a compound according to claim **1**.

4,409,226

IMIDAZO[1,5-A]PYRIDINES

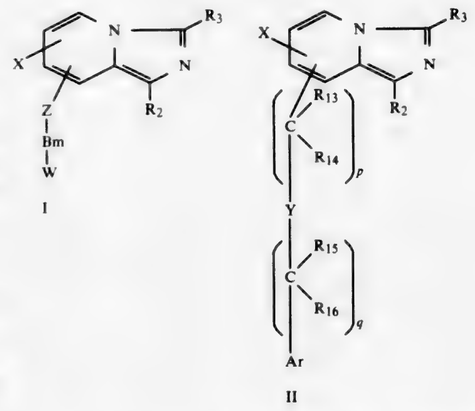
James A. Bristol, Ann Arbor, Mich., and Raymond G. Lovey, West Caldwell, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 5, 1981, Ser. No. 308,349

Int. Cl.[3] **A61K** *31/44;* **C07D** *471/04*

U.S. Cl. 424—256 **29 Claims**

1. A compound represented by the formulas:

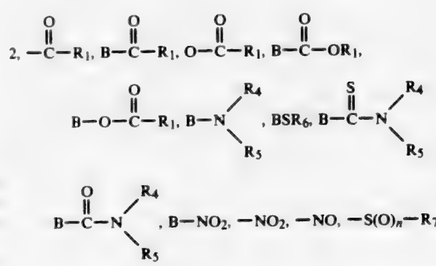


I

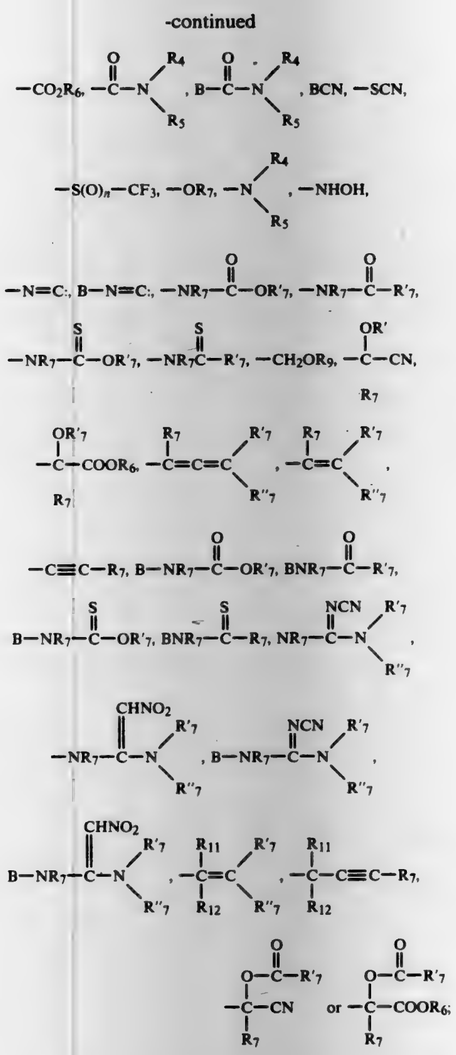
II

the 5,6,7,8-tetrahydro, and perhydro derivatives thereof, and the pharmaceutically acceptable salts thereof, wherein:

R_2 and R_3 each independently represent hydrogen, lower alkyl, trifluoromethyl, B-CF_3, B-Ar, carbocyclic aryl, pyridyl, halogen, B-halogen, B-OR_8, B-$S(O)_n$-lower alkyl, wherein (n) is 0,1, or

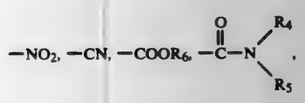


-continued



or a straight- or branched-chain alkenyl or alkynyl group having 2 to 6 bridging carbon atoms and aryl substituted derivatives thereof;

X represents hydrogen, lower alkyl, halogen, hydroxy, lower alkoxy, trifluoromethyl,



wherein n is zero, one or two with the proviso that when R_1 represents



n represents two;

Z represents O, S, SO, SO_2, NR_6, or a bond connecting B to the 5-, 6-, 7-, or 8-position of the imidazo [1,5-a]pyridine nucleus;

B represents a straight-or branched-chain lower alkylene moiety;

B_m represents a straight-or branched-chain lower alkylene moiety and, when Z is a bond connecting B_m and the imidazo[1,5-1]pyridine nucleus, the $—OR_7$ derivatives thereof or the $\alpha(\beta)$-or $\beta(\gamma)$-unsaturated derivatives thereof;

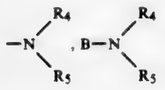
m is 1 to 10 with the proviso that when W is Ar, the number of bridging carbons between Z and W is no greater than 5;

W represents Ar wherein Ar represents phenyl, pyridyl, thienyl, imidazolyl, furanyl or X'-, Y'-, Z'-substituted-phenyl wherein each of X', Y', and Z' independently are as hereinabove defined for X; and when m is 1 to 3, W represents alkenyl, alkynyl, Z^1R_6 or Z^1COR_6 wherein Z^1 is S, SO, or SO_2;

Y represents O, S, SO, SO_2 or NR_6;

where in the above definitions:

R_1 represents Ar, lower alkyl,



or Ar-loweralkyl;

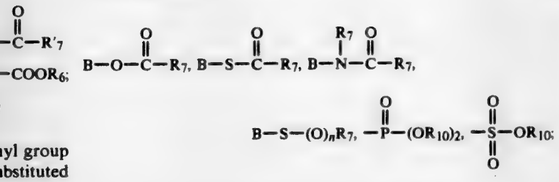
R_4 and R_5 each independently represent hydrogen, lower alkyl, Ar, Ar-loweralkyl, loweralkoxyloweralkyl, trifluoromethylloweralkyl, or when taken together with the nitrogen atoms to which they are attached form a 4–7 membered cyclic amino or a morpholino group;

R_6 represents hydrogen, C_1- to C_{12}-alkyl, aryl or an aralkyl group having up to 12 carbon atoms:

R_7, R' and R'' represent hydrogen or loweralkyl;

R_8 represents hydrogen, loweralkyl, loweralkoxyloweralkyl, trifluoromethylloweralkyl, Ar-loweralkyl, or Ar;

R_9 represents



R_{10} represents H, alkali metal or lower alkyl;

R_{11} and R_{12} each represents hydrogen or lower alkyl or together represent oxygen;

R_{13} and R_{14} each represent H, alkyl, aryl, or together represent —O— or —S—;

R_{15} and R_{16} each represent H, alkyl, aryl, or together represent —O— or —S—, provided that when R_{13} and R_{14} together represent —O— or —S—, R_{15} and R_{16} do not represent —O— or —S—;

p and q are each independently 0, 1 or 2 provided that when one of p and q is zero, the other is not zero; wherein for all variables other than W, Ar represents carbocyclic aryl.

18. A method for the treatment of the symptoms of peptic ulcer disease in mammals, which comprises administering to a mammal having peptic ulcer disease a therapeutically effective quantity of a compound of claim **1**.

4,409,227

4-((HETEROCYCLO)THIO)METHYL)BENZOIC ACIDS, ESTERS AND AMIDES AND THEIR PHARMACEUTICAL USE

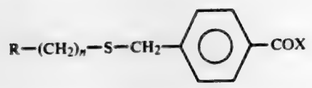
Donald P. Matthews, Indianapolis, Ind., assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 65,390, Aug. 9, 1979, Pat. No. 4,325,959. This application Mar. 9, 1982, Ser. No. 355,788

Int. Cl.³ A61K *31/44;* **C07D** *213/70*

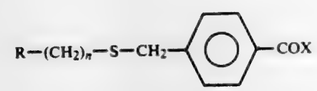
U.S. Cl. 424—263 **42 Claims**

1. A compound of the formula:



wherein R represents a substituted or unsubstituted heterocyclic moiety selected from the group consisting essentially of pyridinyl, thienyl, and 1,3,4-oxadiazolyl, said optional substitution on the heterocyclic ring being selected from a lower alkyl, halo, or hydroxy; X represents amino or an —OR^1 moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the integer 0, 1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

14. A method for treating hyperglycemia in a mammal which comprises administering internally to a mammal an effective hypoglycemic amount of a compound of the formula:



wherein R represents a substituted or unsubstituted heterocyclic moiety selected from the group consisting essentially of pyridinyl, thienyl, and 1,3,4-oxadiazolyl, said optional substitution on the heterocyclic ring being selected from a lower alkyl, halo, or hydroxy; X represents amino or an —OR^1 moiety wherein R^1 represents hydrogen or lower alkyl; and n represents the integer 0, 1, 2 or 3 or a pharmaceutically-acceptable salt of the acid.

4,409,228

ANDREXIANT AMINOPIPERIDINES INTERMEDIATES THERETO AND DRUGS CONTAINING SAME

Dino Nisato, Pavia, and Paolo Carminati, Milan, both of Italy, assignors to Sanofi, France

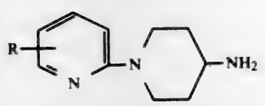
Continuation of Ser. No. 159,603, Jun. 16, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 327,022

Claims priority, application France, Jun. 21, 1979, 79 15974

Int. Cl.³ A61K *31/445;* **C07D** *401/04*

U.S. Cl. 424—267 **11 Claims**

1. 4-amino-1-(2-pyridyl)piperidine of the formula:



in which R represents chlorine; bromine; a trifuluoromethyl group; a trifluoromethoxy group; a 2,2,2-trifluoroethoxy group; a lower alkylthio group; a trifluoromethylthio group; a phenoxy group; a phenoxy group substituted in the phenyl ring by a halogen, a trifluoromethyl group, a lower alkyl group, a lower alkoxy group, a lower alkylthio group or a cyano group; a phenylthio group; a phenylthio group substituted in the phenyl ring by a halogen, a trifluoromethyl group, a lower alkyl group, a lower alkoxy group, a lower alkylthio group or a cyano group; or a pharmaceutically acceptable salt thereof.

8. An anorectic pharmaceutical composition in dosage unit form comprising from 0.5 to 250 mg per dosage unit of a compound as claimed in claims 1 or 6 in admixture with a pharmaceutical carrier.

4,409,229

ANTIDEPRESSIVE AND TRANQUILIZING SUBSTITUTED 1,3-DIHYDROSPIRO[BENZO(C)THIOPHENE]S

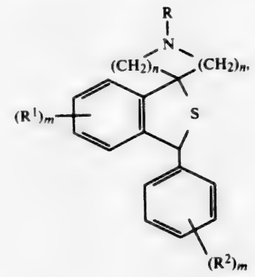
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals, Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 165,344, Jul. 2, 1980, abandoned, which is a continuation of Ser. No. 948,908, Oct. 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 857,177, Dec. 2, 1977, abandoned. This application Oct. 20, 1981, Ser. No. 313,169

Int. Cl.³ A61K *31/445, 31/40;* **C07D** *495/10*

U.S. Cl. 424—267 **37 Claims**

1. A compound of the formula



or an optical antipode or pharmaceutically acceptable salt thereof in which R is hydrogen, loweralkyl, cycloalkylloweralkyl wherein the cycloalkyl portion contains from 3 to 6 carbon atoms, loweralkenyl, phenylloweralkyl, diphenylloweralkyl, or phenoxyloweralkyl; R^1 and R^2 are the same or different and each can be hydrogen, loweralkyl, loweralkoxy, trifluoromethyl, chlorine, bromine, fluorine, hydroxy, methylenedioxy or loweralkylthio, m, n and n′ are integers from 1to 3; and the sum of n and n′ is 3 or 4.

34. A method of treating depression which comprises administering to a patient an antidepressive amount of a compound defined in claim 1.

4,409,230

PHARMACEUTICAL COMPOSITIONS AND METHODS EMPLOYING 8-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-1-PHENYL-1,3,8-TRIAZASPIRO-[4.5]DECAN-4-ONE AND DERIVATIVES THEREOF

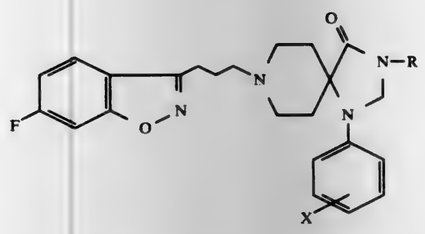
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 366,246, Apr. 9, 1982, Pat. No. 4,374,245. This application Nov. 17, 1982, Ser. No. 442,340

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 **4 Claims**

1. A method of treating psychoses comprising administering to a mammal in need of psychoses treatment a psychoses treating effective amount of a compound of the formula



wherein R is hydrogen or loweralkyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipods thereof, or pharmaceutically acceptable acid addition salts thereof.

4,409,231

SUBSTITUTED ARYLOXYAMINO PROPANOLS, AND PROCESS FOR THEIR USE

Wolfgang Stenzel, and Erich Cohnen, both of Hamburg, Fed. Rep. of Germany, assignors to Beiersdorf Aktiengeselischaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 30, 1980, Ser. No. 164,214

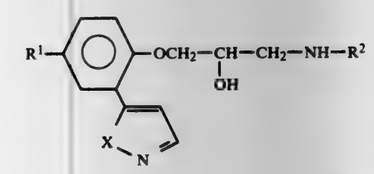
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2926517

Int. Cl.³ A01N *31/415, 31/42;* **C07D** *263/32, 231/12*

U.S. Cl. 424—272 **9 Claims**

1. A compound of the formula

(I)



wherein X is selected from oxygen and an NH group, R^1 is selected from hydrogen, amino and acylamino having 1 to 8 carbon atoms, and R^2 is selected from isopropyl, tertiarybutyl, and 2-(3,4-dimethoxyphenethyl), and pharmaceutically acceptable acid addition salts thereof.

7. A method for lowering the blood pressure of a warm blooded animal comprising administering to said animal a therapeutically effective amount of the compound of claim 1.

4,409,232

SUBSTITUTED OXADIAZOLES, METHOD FOR THE PRODUCTION THEREOF, COMPOSITIONS CONTAINING THEM AND METHOD OF USE THEREOF

Erich Cohnen, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,952

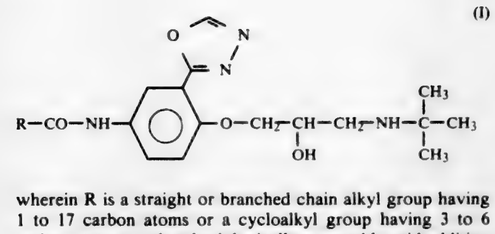
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030530

Int. Cl.³ C07D *271/10;* **A61K** *31/41*

U.S. Cl. 424—272 **12 Claims**

1. A compound of Formula I

(I)



wherein R is a straight or branched chain alkyl group having 1 to 17 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, or the physiologically acceptable acid addition salts thereof.

9. A method of treating angina pectoris, hypertension, or arrythmia comprising administering an amount of a compound of claim 1 effective against said angina pectoris, hypertension, or arrythmia, to a warm blooded animal.

4,409,233

HIGHLY CONCENTRATED PREPARATIONS OF DOPA COMPOUNDS

Kazuhiro Tsukada, and Wataru Kato, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

PCT No. PCT/JP79/00174, § 371 Date Mar. 4, 1980, § 102(e) Date Sep. 17, 1979

PCT Filed Jul. 2, 1979, Ser. No. 262,065

Claims priority, application Japan, Jul. 4, 1978, 53-81285

Int. Cl.³ A01N *37/13*

U.S. Cl. 424—273 R **16 Claims**

1. A highly concentrated aqueous composition of a dopa which comprises a dopa and at least one amino acid selected from the group consisting of methionine, proline, hydroxyproline, serine, threonine, valine, arginine, lysine, histidine and ornithine, said composition having a concentration of said amino acid of 1–300 mg per ml of said aqueous composition.

16. A freeze-dried composition of a dopa which comprises a dopa and at least one amino acid selected from the group consisting of methionine, proline, hydroxyproline, serine, threonine, valine, arginine, lysine, histidine and ornithine, said composition having been prepared by freeze-drying a concentrated aqueous composition comprising said dopa and said amino acid in an amount of 1–300 mg per ml of said aqueous composition.

4,409,234

PYRAZOLOINDAZOLE DERIVATIVES AND BRONCHODILATING COMPOSITION

Yasuo Fujimura, Saitama; Sadao Tanaka, Tokyo; Isao Matsunaga, Tokyo; Yasuyuki Shiraki, Tokyo; Yugo Ikeda, Sayama; Tamotsu Yamazaki, Tokorozawa; Yasuhiro Ohba, Kawasaki; Shun-ichi Hata, Yokohama; Minoru Shindo, Tokyo, and Kazushige Sakai, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

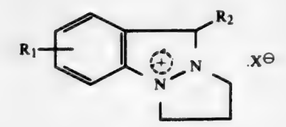
Continuation of Ser. No. 165,943, Jul. 3, 1980, abandoned. This application Jun. 3, 1982, Ser. No. 384,861

Claims priority, application Japan, Jul. 16, 1979, 54-89311

Int. Cl.³ C07D *487/04;* **A61K** *31/415*

U.S. Cl. 424—273 N **23 Claims**

1. A compound represented by the formula



wherein R_1 is a hydrogen atom, halogen atom, a hydroxyl group, a lower alkyl group, a lower alkoxyl group or benzyloxy group; R_2 is a hydrogen atom, a halogen atom, a lower

alkyl group or phenyl group (provided R_1 and R_2 are not hydrogen at the same time); and $X^{\ominus}$ is a halide ion, a hydroxide ion, a methanesulfonate ion, a p-toluenesulfonate ion, a sulfate ion, a nitrate ion, a carbonate ion, an acetate ion, a benzoate ion or a salicylate ion.

23. A bronchodilating composition comprising an amount effective for bronchodilation of a compound according to claim **1** and a pharmaceutically acceptable carrier.

4,409,235

SUBSTITUTED 7-(2,6-DIBROMO-4-METHYL-PHENYL)-2,3-DIHYDRO-IMIDAZO[1,2-A]IMIDAZOLES, COMPOSITIONS AND USE

Helmut Stähle; Herbert Köppe; Werner Kummer, all of Ingelheim am Rhein, Fed. Rep. of Germany; Walter Kobinger, Vienna, Austria; Christian Lillie, Vienna, Austria, and Ludwig Pichler, Vienna, Austria, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Fed. Rep. of Germany

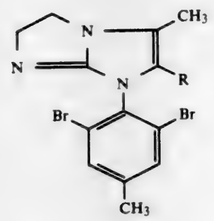
Continuation of Ser. No. 317,014, Nov. 2, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,538

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1980, 3042636

Int. Cl.[3] **A61K** *31/415;* **C07D** *487/04*

U.S. Cl. 424—273 R **5 Claims**

1. A compound of the formula



wherein R is hydrogen or methyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of lowering the heart rate of a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said warm-blooded animal an effective bradycardiac amount of a compound of claim **1**.

4,409,236

N-SUBSTITUTED AZIRIDINE-2-CARBOXYLIC ACID DERIVATIVES AND IMMUNO-STIMULATION COMPOSITION AND METHOD

Elmar Bosies, Weinheim; Herbert Berger, Mannheim; Wolfgang Kampe, Heddesheim; Uwe Bicker, Mannheim, and Alfred Grafe, Mörlenbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Division of Ser. No. 59,863, Jul. 23, 1979, Pat. No. 4,321,194. This application Jun. 1, 1981, Ser. No. 268,964

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833986

Int. Cl.[3] **A61K** *31/395;* **C07D** *203/08, 333/30*

U.S. Cl. 424—275 **4 Claims**

1. A 2-cyanoaziridine derivative of the formula



wherein

R' is a methyl, ethyl or n-propyl residue, substituted by a thienyl radical, the thienyl radical being optionally substituted by one carboxyl, methoxycarbonyl, ethoxycarbonyl or n-propoxycarbonyl,

or a pharmacologically acceptable salt thereof.

4. A method of stimulating an immune response in a patient which comprises administering to the patient an immunostimulating effective amount of an aziridine-2-carboxylic acid derivative or salt thereof according to claim **1**.

4,409,237

PHARMACEUTICAL COMPOSITIONS CONTAINING SODIUM CHROMOGLYCATE AND β2 SELECTIVE BRONCHODILATORS

Hugh Cairns; Peter M. Greenhalgh, both of Loughborough, and Brian Howlett, Leicester, all of England, assignors to Fisons Limited, Ipswich, England

Filed Apr. 21, 1981, Ser. No. 256,021

Claims priority, application United Kingdom, Apr. 30, 1980, 8014197; Feb. 19, 1981, 8105306

Int. Cl.[3] **A61K** *31/35*

U.S. Cl. 424—283 **12 Claims**

1. A pharmaceutical mixture comprising

(a) a therapeutically effective amount of one or more of 1,3-bis(2-carboxychromon-5-yloxy)propan-2-ol, or a pharmaceutically acceptable salt thereof, as active ingredient A, in combination with

(b) a therapeutically effective amount of one or more β2 selective bronchodilators, or a pharmaceutically acceptable salt thereof, in solid form, as active ingredient B.

4,409,238

INSECTICIDES AND INSECTICIDAL COMPOSITIONS

Fumio Mori, Kurashiki, and Yoshiaki Omura, Okayama, both of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

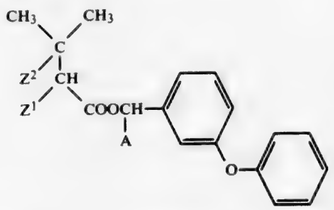
Continuation of Ser. No. 885,380, Mar. 10, 1979. This application Dec. 26, 1979, Ser. No. 107,390

Claims priority, application Japan, Mar. 11, 1977, 52-27510; Mar. 23, 1977, 52-32863; Apr. 5, 1977, 52-39237; Apr. 11, 1977, 52-41813

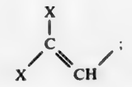
Int. Cl.[3] **A01N** *9/20, 9/24;* **C07C** *69/65, 121/75*

U.S. Cl. 424—304 **53 Claims**

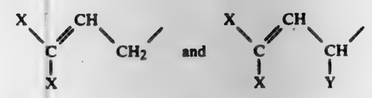
1. An insecticidal composition comprising (i) an insecticidally effective amount of an isovalerate having the structural formula:



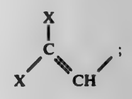
wherein Z^1 is a member selected from the group consisting of hydrogen and



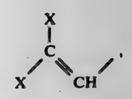
Z^2 is a member selected from the group consisting of



when Z^1 is hydrogen, and hydrogen when Z^1 is



A, when Z^1 is



is a member selected from the group consisting of cyano and ethynyl, and when Z^1 is hydrogen, is a member selected from the group consisting of hydrogen, cyano and ethynyl; and X and Y which may be the same or different are each a member selected from the group consisting of chlorine and bromine, and (ii) an inert carrier therefor.

4,409,239

PROPYLENE GLYCOL DIESTER SOLUTIONS OF PGE-TYPE COMPOUNDS

Cheng-Der Yu, Mountain View, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 21, 1982, Ser. No. 341,403

Int. Cl.[3] **A61K** *31/215, 31/19*

U.S. Cl. 424—305 **33 Claims**

1. A stable pharmaceutical composition of a PGE or PGE-type compound comprising a solution of said compound in a solvent comprising at least propylene glycol diester of short chain fatty acid.

14. A method for preparing a stable soft-shell gelatin composition of PGE or PGE-type compounds which comprises dissolving at least one of said compounds in a solvent comprising at least one propylene glycol diester of a short chain fatty acid and adding the mixture to a soft-shelled gelatin capsule.

4,409,240

DERIVATIVES OF DIHYDROXYBENZOIC ACID AND PHARMACEUTICAL COMPOSITION THEREOF

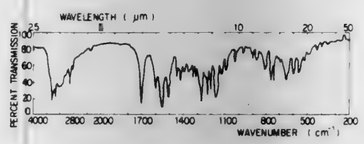
Hitoshi Takita; Yutaka Mukaida; Sakuo Noda, and Hidetoshi Kobayashi, all of Tokyo, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 349,372

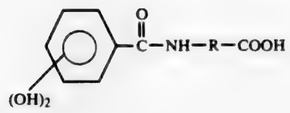
Claims priority, application Japan, Feb. 24, 1981, 56-25991

Int. Cl.[3] **A61K** *31/195;* **C07C** *101/30*

U.S. Cl. 424—319 **5 Claims**

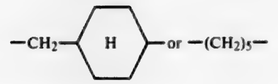


1. A derivative of dihydroxybenzoic acid represented by the formula (I):



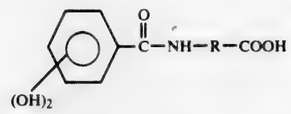
(I)

wherein R represents



or a salt or an ester thereof.

5. A pharmaceutical composition in dosage unit form comprising a therapeutically effective amount of a derivative of dihydroxybenzoic acid represented by the formula (I):



(I)

wherein R is as defined in claim **1**, or a salt or an ester thereof, and a pharmaceutically acceptable carrier.

4,409,241

METHOD OF TREATING ANXIETY WITH 2'-(ORTHOCHLOROBENZOYL)-4'-CHLORO-GLYCYLANILIDES, AND COMPOSITIONS THEREOF

Gilbert Mouzin; Henri Cousse, and Antoine Stenger, all of Castres, France, assignors to Pierre Fabre S.A., Paris, France

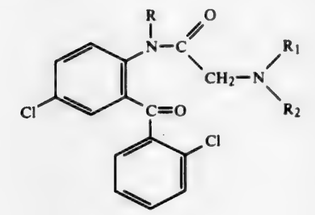
Division of Ser. No. 312,529, Oct. 19, 1981, Pat. No. 4,370,347, which is a division of Ser. No. 76,841, Sep. 19, 1979. This application Sep. 20, 1982, Ser. No. 419,974

Claims priority, application France, Sep. 25, 1978, 78 27401

Int. Cl.[3] **A61K** *31/16, 31/205*

U.S. Cl. 424—324 **18 Claims**

1. A pharmaceutical composition, suitable for use in the treatment of anxious states, comprising a 2'-(ortho-chlorobenzoyl)-4'-chloroglycylanilide selected from compounds having the formula I:



(I)

in which:

R represents hydrogen or lower-alkyl;

R_1 and R_2 may be identical or different and are selected from hydrogen, lower-alkyl, lower-alkenyl, and lower-alkynyl, and cycloalkyl having three to six ring members, inclusive, with the proviso that, when one of R_1 and R_2 represents hydrogen the other is not lower alkyl; and with the further proviso that R_1 and R_2 cannot simultaneously represent either hydrogen or lower-alkyl,

and a pharmaceutically acceptable inorganic or organic acid addition salt thereof, in an amount effective for said purpose, in association with a pharmaceutical carrier.

4,409,242

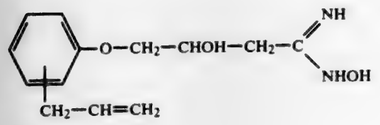
4-PHENOXY-3-HYDROXY-BUTYRAMIDOXIME DERIVATIVES

Louis Lafon, Paris, France, assignor to Laboratoire L. Lafon, Maisons-Alfort, France

Filed Mar. 19, 1982, Ser. No. 360,057
Claims priority, application France, Mar. 31, 1981, 81 06469
Int. Cl.³ A61K *31/155;* **C07C** *131/00*
U.S. Cl. 424—326 **3 Claims**

1. A new 4-phenoxy-3-hydroxybutyramidoxime derivative selected from the group consisting of:

(i) 4-(allylphenoxy)-3-hydroxy-butyramidoximes of the general formula:



(I)

and,

(ii) addition salts thereof.

3. A therapeutical composition comprising, in association with a physiologically acceptable excipient, a pharmaceutically effective amount of a compound according to claim 1 as antiarrythmic agent.

4,409,243

TREATMENT OF AUTO-IMMUNE AND INFLAMMATORY DISEASES

Julian Lieb, 41 Village La., Bethany, Conn. 06525

Filed Nov. 9, 1981, Ser. No. 319,651
Int. Cl.³ A61K *31/15, 31/42, 31/44, 31/135*
U.S. Cl. 424—330 **1 Claim**

1. A method for the treatment of arthritis in a subject, which method comprises administering to the subject an effective amount therefor of a monoamine oxidase inhibiting drug selected from the group consisting of mebanazine, and tranylcypromine.

4,409,244

CHEWING GUM CONTAINING FRUCTOSE SYRUP

Subraman R. Cherukuri; Dominick R. Friello, both of Danbury; Walter Hopkins, Greenwich, all of Conn.; Ellery Parker, Johnstown, and Donald A. M. Mackay, Pleasantville, both of N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 217,625, Dec. 18, 1980, abandoned. This application Aug. 13, 1982, Ser. No. 407,686
Int. Cl.³ A23G *3/30*
U.S. Cl. 426—5 **5 Claims**

1. A chewing gum having good shelf-life, is easy to remove from its wrapper and is free of corn syrup, said chewing gum consisting essentially of particles of gum base, a first portion of sugar dispersed and trapped in said particles of gum base, a second portion of sugar mixed with said particles of gum base containing said first portion of sugar, and pure fructose syrup which contains from about 25 to about 90% by weight fructose solids, the total amount of sugar being within the range of from about 30 to about 80% by weight of said chewing gum, and from about 8 to about 30% by weight of said chewing gum being pure fructose syrup which serves as a humectant admixed with said particles of sugar containing gum base.

4,409,245

PROTECTION OF MICROORGANISMS AGAINST BACTERIOPHAGE VIRUS ATTACKS

Erich Wolf, Overath; Andreas Lembke, Eutin-Sielbeck, and Rolf Deininger, Cologne, all of Fed. Rep. of Germany, assignors to Chimicasa GmbH, Chur, Switzerland

Continuation-in-part of Ser. No. 5,761, Jan. 23, 1979, abandoned. This application Sep. 28, 1981, Ser. No. 306,409
Claims priority, application Luxembourg, Jan. 27, 1978, 78955; Jan. 2, 1979, 80748
Int. Cl.³ A23C *9/12, 9/123, 9/13;* **C12N** *1/04*
U.S. Cl. 426—9 **4 Claims**

1. A method for protecting a living culture of microorganisms selected from the group consisting of streptococcus lactis, streptococcus cremeris and streptococcus diacetylicatis from attack by phage viruses comprising adding to the microorganism culture a terpene capable of demonstrating a viricidal activity against phage viruses in an amount effective to obtain such viricidal activity but ineffective to cause toxic effect in the microorganisms, wherein said terpene is selected from the group consisting of black pepper oil, cinnamon flower oil, cardamom oil, linallyl acetate, cinnamic adehyde, safrol, carvon, cis/trans citral and combinations thereof.

4,409,246

YEAST STRAIN FOR FERMENTING HIGH PLATO VALUE WORTS

Graham G. Stewart; Thomas E. Goring, and Ingeborg Russell, all of London, Canada, assignors to Labatt Brewing Company Limited, London, Canada

Filed Jul. 22, 1981, Ser. No. 285,854
Int. Cl.³ C12C *11/04;* **C12N** *1/18*
U.S. Cl. 426—16 **9 Claims**

1. In a brewing process wherein a malt wort is prepared; fermented with brewers' yeast; and, following completion of the fermentation, finished to the desired alcoholic brewery beverage; the improvement comprising fermenting said wort having a Plato value of about 14.5 or greater with a strain of the species *Saccharomyces cerevisiae* brewers' yeast having the NCYC No. 962.

7. A biologically pure culture of a brewer's yeast strain of the species *Saccharomyces cerevisiae* having the NCYC No. 962, said strain having the ability to ferment high Plato value worts of 14.5 or greater and the ability of flocculate to the bottom of the fermentation vessel when attenuation is substantially complete.

4,409,247

PROCESS FOR HYDROLYZING LACTOSE WITH IMMOBILIZED LACTOSE

Jean-Luc A. G. Baret, Moret, and Luc A. Dohan, Fontainebleau, both of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Jun. 3, 1981, Ser. No. 269,945
Claims priority, application France, Jun. 6, 1980, 80 12616
Int. Cl.³ A23C *21/02;* **C12N** *11/14*
U.S. Cl. 426—41 **14 Claims**

1. A process for treating whey whereby at least a portion of the lactose contained therein is hydrolyzed into glucose and galactose by means of an immobilized lactase, which process comprises the steps of:

A. heating the whey to a temperature of from about 45° to about 90° C. for at least about 15 seconds;

B. centrifuging the heated whey while it is still warm;

C. contacting the centrifuged whey with an immobilized lactase under conditions sufficient to hydrolyze at least a portion of the lactose contained therein into glucose and galatose;

D. cleaning the immobilized lactase by contacting the immobilized lactase with a solution of a protease which removes protein coating the immobilized lactase without significant deleterious effects on the enzymatic activity of the immobilized lactase; and

E. disinfecting the immobilized lactase by contacting the immobilized lactase with a disinfecting solution which substantially kills the contaminating microorganisms without significant deleterious effects on the immobilized lactase; wherein the lactase is immobilized on an inorganic support.

4,409,248

HEAT-GELLING AND FOAM-STABILIZING ENZYMATICALLY MODIFIED VEGETABLE ISOLATES

William F. Lehnhardt, and Frank T. Orthoefer, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Filed Aug. 10, 1981, Ser. No. 291,671
Int. Cl.³ A23J *3/00, 3/00;* **C12P** *21/06*
U.S. Cl. 426—46 **42 Claims**

12. A method for providing a heat-gelling, enzymatically modified vegetable glycoprotein composition containing (on a weight basis) 7S glycoprotein as the major protein component of said composition, said method comprising enzymatically treating an aqueous vegetable solution which on a total protein weight basis contains 7S glycoprotein as the major vegetable protein component with proteinase to partially hydrolyze the glycoprotein into glycoprotein aggregates of an average molecular weight within the 200,000 to 300,000 molecular weight range in which the glycoprotein aggregates consisting essentially of a plurality of enzymatically modified glycoprotein subunits of an average molecular weight less than that of the unhydrolyzed glycoprotein subunit precursor source material for said enzymatically modified protein composition and, the enzymatically modified glycoprotein subunits are characterized as having an average electrophoretic migration value less than that of the unhydrolyzed subunits precursor source material for said composition, and said composition is being further characterized as forming a solid, opaque gel when an aqueous solution adjusted to 0.1 M sodium chloride concentration and pH 5.75 and containing 15 protein grams of said composition for each 100 ml of water is heated at 85° C. for 15 minutes.

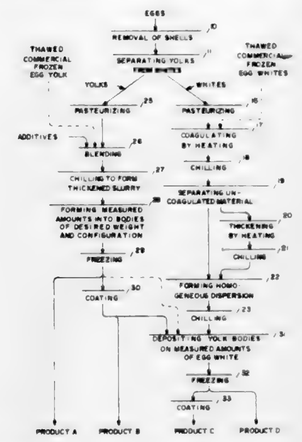
4,409,249

EGG PRODUCT AND PROCESS OF MANUFACTURE

John H. Forkner, 2116 Mayfair Dr. West, Fresno, Calif. 93703

Continuation of Ser. No. 183,252, Sep. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 59,684, Jul. 23, 1979, abandoned, and a continuation-in-part of Ser. No. 83,116, Oct. 9, 1979, abandoned. This application Mar. 12, 1982, Ser. No. 357,821
Int. Cl.³ A23B *5/04;* **A23L** *1/32*
U.S. Cl. 426—100 **45 Claims**

1. A process for producing an egg product from raw egg white separated from egg yolk comprising the steps of heating the egg white to effect preliminary coagulation thereof, subjecting a portion of the coagulated egg white to processing together with an uncoagulated egg white portion, the processing including applying high energy agitation to said coagulated



and uncoagulated portions to form a homogeneous aerated dispersion, and then freezing the dispersion.

4,409,250

METHOD FOR PREPARING SUGAR COATED, PUFFED SNACKS UPON MICROWAVE HEATING

Glenn J. Van Hulle, Brooklyn Park; Charles A. Anker, and Dean E. Franssell, both of Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 29, 1979, Ser. No. 43,572
Int. Cl.³ A21D *2/18, 2/36, 8/02, 8/06*
U.S. Cl. 426—242 **4 Claims**

1. A process for preparing a sugary coated snack product by microwave heating, comprising the steps of:

A. forming a gelatinized starch-containing dough having a moisture content of about 12% to 25% by weight;

B. shaping the dough into a plurality of discrete pieces;

C. partially drying said pieces at a temperature of about 70° F. to 200° F. and at a relative humidity of at least 35% for a period of time sufficient to reduce the moisture content of the pieces to between about 5% to 15%;

D. dispersing the partially dried pieces throughout a puffing medium consisting essentially of, from about 40% to 95% by weight of the puffing medium, a nutritive carbohydrate sweetening agent and from about 5% to 10% by weight moisture, wherein the puffing medium is substantially free of protein sources and wherein the weight ratio of puffing medium to the pieces is about 0.1:1 to 4:1, to form a puffing medium/piece matrix; thereafter

E. microwave heating the matrix for about 1–4 minutes to form a plurality of puffed pieces enrobed in a sugar coating; and,

F. cooling to room temperature to harden the sugar coating on the puffed pieces.

4,409,251

CONTROLLABLY MOISTURIZED MOLD RESISTANT CELLULOSIC FOOD CASINGS

Thomas E. Higgins, Riverside, Ill., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 25, 1982, Ser. No. 361,878
Int. Cl.³ B65B *55/00;* **A23L** *1/31;* **F16L** *11/00*
U.S. Cl. 426—413 **10 Claims**

1. In an improved large size tubular cellulosic food casing controllably premoisturized to an extent that it can be stuffed without the addition of further moisture prior to stuffing, and

having a moisture content of between about 17 and about 30 weight percent, based on the total weight of said casing, the improvement comprising the glycerine content in the casing being at least about 40 weight percent based on the total weight of dry cellulose in said casing, with the proviso that said glycerine content is sufficient to maintain the water activity in the casing at not greater than 0.80.

9. In a process for preparing an encased food product having a stuffed diameter of not less than about 50 millimeters, wherein a large sized tubular cellulosic food casing having fibrous web embedded in its wall is provided, having a preadjusted moisture content of between about 17 and about 30 weight percent moisture based on the total weight of casing to impart to said casing sufficient extensibility and flexibility for the casing to be stuffed with a foodstuff without the addition of further moisture, and wherein said casing is stuffed with said foodstuff to form said encased food product,

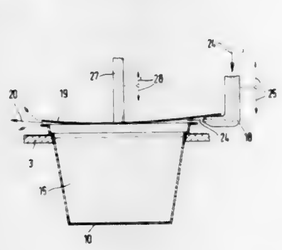
the improvement comprising incorporating into said casing a sufficient amount of glycerine such that the casing glycerine content is at least about 40 weight percent based on the weight of dry cellulose in the casing, with the proviso that said glycerine content is sufficient to maintain the water activity in the casing at no greater than 0.80, and stuffing said casing to form said encased food product without adding further moisture to said casing prior to said stuffing.

4,409,252

PROCEDURE FOR PACKAGING OF FOOD UNDER PROTECTIVE GAS IN SYNTHETIC CONTAINERS WITH FLEXIBLE TOPS

Guido Buschkens, Krefeld, and Peter Nobis, Neuss, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 12, 1982, Ser. No. 367,329
Int. Cl.³ B65B *31/04, 31/06*
U.S. Cl. 426—396 **6 Claims**



1. In a procedure for packaging of food under protective gas in synthetic material containers with flexible lids sealed to the rims of the containers where the packaging steps include product filling, protective gas flushing, lid application, and lid sealing; the improvement being in that the packaging steps are performed in the sequence of product filling and then lid application and then flushing with protective gas and then sealing of the lids, the packaging steps being performed to the container while the container is mounted to a movable conveyor, the lid, relative to the movement of the conveyor having upstream and downstream portions and side portions intermediate thereof, the lid application step comprising placing the lid on the container rim so that the lid lies flat on the container, securing the flat-oriented lid to the container at selected spots on the rim thereof intermediate the upstream and downstream portions of the lid, the upstream portion of the lid having a tear-off tongue projecting beyond the container rim, the protective flushing gas step comprising placing a protective flushing gas nozzle beneath the tear-off tongue, raising the nozzle to lift the tear-off and create flow communication between the nozzle and the container head space while the container is stationary, blowing the protective flushing gas through the nozzle and into the head space, utilizing the escaping air from the head space to raise the lid at an unsecured location remote from the tear-off tongue, lowering the nozzle and moving the nozzle sideways out of the path of movement of the container to permit the lid to return to its flat condition, and moving the container to the lid sealing station.

4. In a procedure for packaging a food under protective gas in synthetic material containers with flexible lids sealed to the rims of the containers where the packaging steps include product filling, protective gas flushing, lid application, and lid sealing; the improvement being in that the packaging steps are performed in the sequence of product filling and then lid application and then flushing with protective gas and then sealing of the lids, the packaging steps being performed to the container while the container is mounted to a movable conveyor, the lid, relative to the movement of the conveyor, having upstream and downstream ends and side portions intermediate thereof, the lid having a tear-off tongue located at one of the side portions and projecting beyond the rim of the container, the lid application step comprising placing the lid on the container rim so that the lid lies flat on the container, securing the flat-oriented lid to the container at one of the ends of the lid, the protective gas flushing step comprising positioning a fixed wedge in the path of motion of the container located to have the narrow end of the wedge slide beneath the tear-off tongue of the lid, raising the tear-off tongue away from the container as the tear-off tongue slides upwardly along the wedge to expose the head space of the container to the thick end of the wedge, the thick end of the wedge having a bore in flow communication with a protective flushing gas nozzle, blowing the protective gas from the nozzle and through the bore into the head space of the container, utilizing the escaping air from the head space to raise the lid at an unsecured location remote from the tear-off tongue, and permitting the lid to return to its flat condition as the container moves away from the wedge and to the lid sealing station.

4,409,253

RECOVERY OF NONCAFFEINE SOLUBLES IN AN EXTRACT DECAFFEINATION PROCESS

Lowen R. Morrison, Jr., Hamilton, Ohio; Melisse N. Elder, Villa Hills, Ky., and John H. Phillips, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 240,730, Mar. 5, 1981, abandoned. This application Aug. 26, 1982, Ser. No. 411,752
Int. Cl.³ A23F *5/22*
U.S. Cl. 426—424 **22 Claims**



1. A decaffeination process which recovers 90% or more of the caffeine from a coffee extract, which comprises the steps of:

(a) contacting roast coffee extract with ethyl acetate solvent to form decaffeinated extract and a caffeine-containing solvent phase;
(b) contacting the caffeine-containing solvent phase with water to form an aqueous caffeine-containing phase and a decaffeinated solvent phase;
(c) crystallizing caffeine in the aqueous phase by cooling the aqueous phase, concentrating the aqueous phase, or a combination thereof;
(d) separating the crystallized caffeine from the residual aqueous phase; and
(e) recovering noncaffeine solubles from the residual aqueous phase in an amount of about 80% or more based on the non-caffeine solubles present in the aqueous caffeine-containing phase of step (b), by adding the residual aqueous phase to the coffee extract of step (a).

4,409,254

PROCESS FOR CONCENTRATING AND ISOLATING A BEET COLORANT

Torunn A. Garin, Bronxville, and Gerald J. Vogel, Tarrytown, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,568
Int. Cl.³ A23L *1/27, 1/277*
U.S. Cl. 426—540 **11 Claims**

1. A process for the concentration and isolation of betanin pigment from an aqueous extract of a plant containing betanin comprising the steps of lowering the pH of said aqueous extract to 1.5 to about 2.7, contacting the pH-adjusted extract with a nonionic adsorbent so that the betanin pigment concentrates on the adsorbent, eluting the adsorbent to remove the betanin pigment from the adsorbent to an eluting agent, and separating the pigment from the eluting agent.

4,409,255

COLD WATER SOLUBLE GELATIN AND PROCESS

Robert L. Danielson, and Peter M. Bosco, both of Brookfield Center, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Feb. 22, 1982, Ser. No. 350,559
Int. Cl.³ A23L *1/04;* **A23J** *1/10, 3/00*
U.S. Cl. 426—576 **21 Claims**

1. A process for preparing a cold water soluble gelatin product, comprising: preparing an aqueous solution comprising gelatin, sugar containing corn syrup solids and maltodextrin, the ratio of sugar to gelatin being in the range of from about 3:1 to about 7:1, acid and an amount of surface-active agent effective to increase dispersibility in the final product, and drying the solution.

4,409,256

SOYMILK PROCESS

Lawrence A. Johnson, College Station, Tex.; William J. Hoover, and Charles W. Deyoe, both of Manhattan, Kans., assignors to The Edlong Corporation, Elk Grove Village, Ill.

Filed Mar. 13, 1981, Ser. No. 249,717
Int. Cl.³ A23L *1/20, 2/38*
U.S. Cl. 426—598 **6 Claims**

3. A process for the manufacture of a soybean product from whole soybeans, said product consisting essentially of at least 70% or more of the whole soybean solids in a stable dispersion and containing trypsin inhibitor activity less than 10 percent than that found in whole soybeans with reference to total solids in said product, said process comprising:

(a) dry comminuting whole soybeans at room temperature;
(b) adding water to the dry comminuted soybeans to form an aqueous slurry containing substantially 10 to 25 percent by weight of said comminuted soybeans at room temperature;
(c) quickly subjecting said slurry, shortly after formation, to steam infusion to minimize oxidation of the slurry, providing extreme turbulence and high shear to heat said slurry from room temperature to within a range of substantially 270° F. (121° C.) to 310° F. (154° C.) at a rate of at least substantially 30° F. (11.4° C. per second while confining said slurry within a vessel and holding said heated slurry for a time within a range of substantially 15–270 seconds, the time and temperature being inversely related;
(d) rapidly cooling said slurry after heating to below the browning temperature of the slurry; and without further grinding constituting a soybean product in a stable dispersion.

4,409,257

HOMOGENEOUS, FREE-FLOWING LIQUID BLACK PEPPER OLEORESIN COMPOSITION

G. Duane Deline, Glen Arm, Md., assignor to McCormick & Company, Inc., Hunt Valley, Md.

Filed May 25, 1982, Ser. No. 381,756
Int. Cl.³ A23L *1/221*
U.S. Cl. 426—651 **8 Claims**

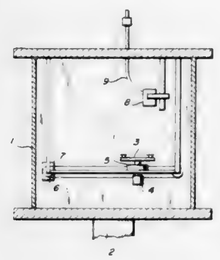
1. A homogeneous, free-flowing, liquid oleoresin composition consisting essentially of 20 to 60 weight percent black pepper oleoresin, 20 to 50 weight percent benzyl alcohol and 0 to 50 weight percent food grade emulsifiers and/or diluents.

4,409,258

TREATMENT PROCESS FOR RENDERING CORNEAL CONTACT LENSES HYDROPHILIC

Bernard Feurer, Saint Orens de Gameville, and Philippe Baronet, Toulouse, both of France, assignors to Alcon Pharmaceuticals Limited, Cham, Switzerland

Filed May 5, 1981, Ser. No. 260,674
Claims priority, application France, May 29, 1980, 80 12169
Int. Cl.³ G02B *1/12, 1/04*
U.S. Cl. 427—38 **9 Claims**



1. A process for treating contact lenses made of polymers or mixtures of polymers, said process rendering said lenses hydrophilic or increasing their hydropilic nature at their surface and to a given depth, said process comprising: producing an electric field between a cathode and an anode; subjecting a gas from the group consisting of nitrogen, oxygen, and compounds thereof to the electric field, the gas being supplied between the anode and the cathode at a pressure between 10^{-4} and 10^{-3} millibars; causing at least a part of the positive ions accelerated by the cathode to traverse the cathode in a narrow beam thereby generating a narrow beam of positive ions identical in nature and having substantially the same kinetic energy; bombarding each lens at a position removed from between the cathode and the anode with the positive ion beam by having the positive ion beam sweep over the lens so as to expose the surface of the lens uniformly to the beam whereby each point of the surface receives substantially the same amount of ions at the same incident energy thereby achieving homogeneous treatment of the lens surface and to a given depth within the lens; and, thereafter hydrating each contact lens.

4,409,259

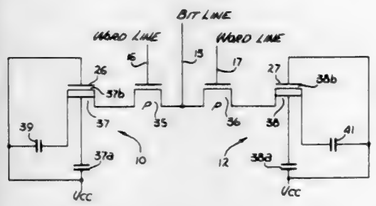
MOS DYNAMIC RAM CELL AND METHOD OF FABRICATION

Mark T. Bohr, Beaverton; Kenneth K. Yu, Portland; Ronald J. C. Chwang, Beaverton, and C. Neil Berglund, Lake Oswego, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Division of Ser. No. 182,870, Sep. 2, 1980, Pat. No. 4,364,075. This application Jul. 29, 1982, Ser. No. 403,116

Int. Cl.³ H01L *29/78, 27/02;* **B05D** *5/12*

U.S. Cl. 427—38 **4 Claims**



1. A process for forming a pair of storage capacitors in an n-type well for use in dynamic memory cells, comprising the steps of:

forming a p-type region in said well;

forming a polysilicon layer over said p-type region, said layer being doped with an n-type dopant and contacting said p-type region at a predetermined area;

driving said n-type dopant from said polysilicon layer at said predetermined area through said p-type region so as to separate said p-type region into a first and a second p-type region separated by an n-type region;

whereby two storage capacitors are formed.

4,409,260

PROCESS FOR LOW-TEMPERATURE SURFACE LAYER OXIDATION OF A SEMICONDUCTOR SUBSTRATE

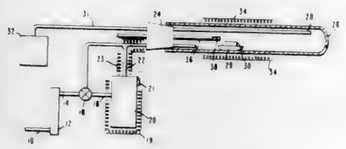
Ricardo C. Pastor, Manhattan Beach; Remedios K. Chew, Long Beach, and Luisa E. Gorre, Oxnard, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation-in-part of Ser. No. 230,243, Feb. 21, 1981, abandoned, which is a continuation of Ser. No. 66,606, Aug. 15, 1979, Pat. No. 4,267,205. This application Jun. 28, 1982, Ser. No. 392,499

The portion of the term of this patent subsequent to May 12, 1998, has been disclaimed.

Int. Cl.³ H01L *21/316*

U.S. Cl. 427—82 **8 Claims**



1. A process for forming a coherent, uniform oxide layer on the surface of a selected semiconductor material which comprises:

(a) providing a wafer of said semiconductor material; and

(b) heating said wafer to a temperature of about 750° C. or lower in the presence of a selected oxygen-containing precursor and a chosen gas phase halogen-containing molecular reactant capable of reacting with said oxygen-containing precursor at said temperature to form atomic oxygen, for a period of time sufficient to enable said atomic oxygen to react with the surface atoms of said wafer and thereby form said coherent, uniform oxide layer, said temperature being sufficiently low to avoid adverse effects on said wafer.

4,409,261

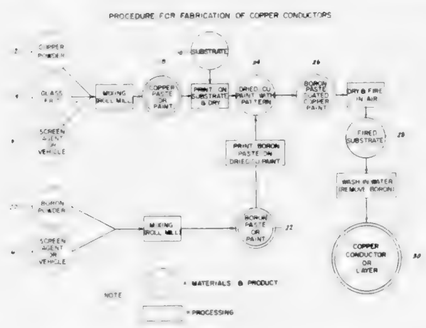
PROCESS FOR AIR FIRING OXIDIZABLE CONDUCTORS

Charles Y. Kuo, Elkhart, Ind., assignor to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 119,202, Feb. 7, 1980. This application Nov. 18, 1981, Ser. No. 322,413

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—96 **15 Claims**



1. A method of forming a thick film electrical conductor on a non-conductive substrate wherein the resistance is less than one ohm per square, comprising the steps of intimately mixing a copper powder, glass frit and vehicle to form a printable mixture, printing the mixture on a non-conductive substrate and thereafter drying the mixture, preparing a combination of boron powder and vehicle which are intimately mixed together and applying the boron powder-vehicle mixture over the entire surface of the previously printed and dried mixture, drying the boron powder-vehicle mixture, firing the boron on top of the printed copper powder and glass frit mixture, and finally washing with water to remove the boron and boron oxide from the surface of the substrate and overlying printed surface.

4,409,262

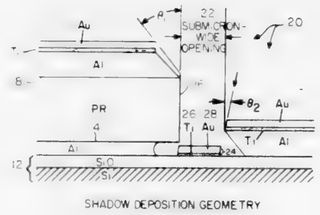
FABRICATION OF SUBMICRON-WIDE LINES WITH SHADOW DEPOSITIONS

Edward C. Jelks, Dallas, Tex., and George L. Kerber, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 1, 1982, Ser. No. 344,341

Int. Cl.³ B05D *5/12*

U.S. Cl. 427—99 **1 Claim**



1. A method of fabricating elongate conductive lines of submicron width on a silicon oxide-on-silicon substrate carried on a copper heatsink comprising the steps of:

depositing a first layer of aluminum to a thickness of 1000 A upon the substrate;

spinning a photoresist layer on the aluminum layer to provide an evenly distributed photoresist layer in a prearranged pattern;

etching the aluminum layer with a mixture of two parts phosphoric acid, one part acetic acid and one part deionized water to undercut the photoresist edge;

depositing a second layer of aluminum at an angle θ_1 to an edge of the photoresist layer, thereby defining an elongate submicron-wide opening to the underlying substrate;

depositing a titanium layer on the substrate and a gold layer on the titanium layer for the elongate conductive lines onto the substrate at an angle of θ_2 through the elongate submicron-wide opening; and

removing undesired material surrounding the elongate conductive lines by dissolving the photoresist layer in hot acetone followed by stripping the remaining portions of said first layer of aluminum and said second layer of aluminum with etchant.

4,409,263

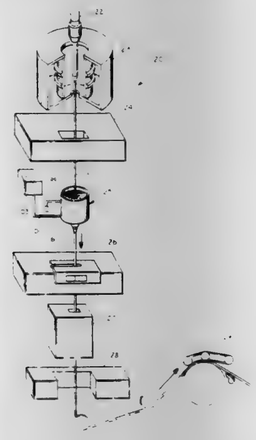
METHODS OF AND APPARATUS FOR COATING LIGHTGUIDE FIBER

Charles J. Aloisio, Jr.; Terrence A. Lenahan, both of Chamblee; James V. Smith, Jr., Decatur, and Carl R. Taylor, Lawrenceville, all of Ga., assignors to Western Electric Co., Inc., New York, N.Y. and Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Jan. 27, 1982, Ser. No. 343,134

Int. Cl.³ G02B *5/14, 1/10;* **B05C** *3/12*

U.S. Cl. 427—163 **27 Claims**



1. A method of coating an elongated material to provide a substantially bubble-free covering, said method including the steps of:

advancing the elongated material through a continuum of liquid coating material, which extends from a free surface in a reservoir through first and second dies at opposite ends of a chamber, at a velocity which causes air to become entrained in the coating material, the advancing of the elongated material being in a direction from the reservoir to the second die and causing a pressure gradient to be established between portions of the first die and between the chamber and the second die with the pressure decreasing from an exit orifice of the first die to the free surface and increasing from within the chamber to a location prior to the exit orifice of the second die; and

flowing coating material into the chamber at a pressure which sufficiently enhances the pressure gradient between the portions of the first die and which establishes sufficient volumetric flow of the coating material from the chamber into the reservoir to cause the removal of bubbles from the elongated material and to cause the coating material in the chamber and on the coated elongated material to be substantially bubble-free.

4,409,264

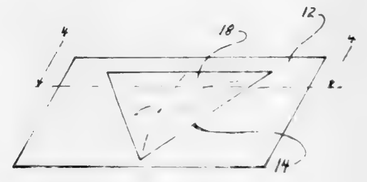
BOSS FORMATION USING LOW SURFACE ENERGY DAMS

Kenneth B. Gilleo, and Willard H. Kreibich, both of Sparta, Wis., assignors to Northern Engraving Corporation, Sparta, Wis.

Filed Apr. 1, 1981, Ser. No. 250,070

Int. Cl.³ B05D *1/36, 5/00, 3/06*

U.S. Cl. 427—265 **22 Claims**



1. A method for forming an elevated boss on an article surface having a surface energy greater than 30 dynes per centimeter including the steps of

(a) forming on the article surface a continuous, raised retaining means defining a boundary enclosing a pattern area, at least a portion of the retaining means being formed by applying a continuous strip of a liquid boundary-forming composition containing a low surface energy compound having a surface energy of about 5 to about 20 dynes per centimeter;

(b) introducing a liquid resin into the pattern area in a quantity sufficient to completely cover the pattern area at a depth greater than the height of the retaining means without flowing over the retaining means, the liquid resin being solidifiable at a temperature below the deformation temperature of the article surface and below the decomposition temperature of the boundary-forming composition and having reaction and solubility rates with the article surface and the boundary-forming composition which are sufficiently low to prevent significant weakening or destruction of the article surface or the retaining means prior to and during solidification of the liquid resin; and

(c) solidifying the liquid resin while maintaining the pattern area in an essentially horizontal plane.

4,409,265

METHOD AND APPARATUS FOR THE ONE-SIDED COATING OF CONTINUOUS METAL STRIP

Klaus Frommann, Dusseldorf, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 13, 1982, Ser. No. 339,177

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101760

Int. Cl.³ B05D *3/12, 1/18, 1/28;* **B05C** *1/00*

U.S. Cl. 427—271 **10 Claims**

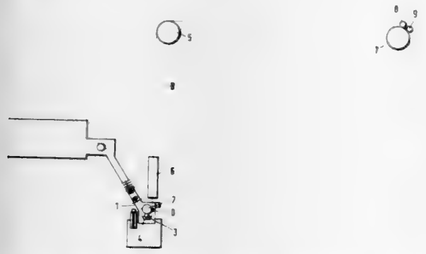
1. A method for the one-sided coating of a continuous metal strip, comprising the steps of:

(a) maintaining a vessel of liquid coating material;

(b) directing a metal strip about a horizontally rotating guide roller located above said vessel of liquid coating material;

(c) rotating a feed roller, parallel to said guide roller, and

displaced into said vessel by at least half of its circumference;
(d) transferring liquid coating material from said feed roller to one side of said metal strip by rotating said feed roller in the same direction of rotation as said guide roller;
(e) performing said steps (a)–(d) in an inert atmosphere at an elevated temperature;
(f) the temperature of said inert atmosphere being such that said continuous metal strip leaves said inert atmosphere at a temperature of about 400° C.;



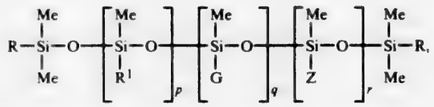
(g) controlling the desired coating thickness by use of a metering device; wherein the improvement is characterized by the steps of
(h) cooling said metal strip to a temperature of about 100° C. by causing it to travel a distance from said inert atmosphere; and then
(i) mechanically removing on oxide layer from the uncoated side of said metal strip.

4,409,266
PROCESS FOR THE SHATTERPROOF COATING OF GLASS SURFACES
Wolfhart Wieczorrek, Cologne, and Gerhard Mennicken, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany
Filed Apr. 30, 1982, Ser. No. 373,370
Claims priority, application Fed. Rep. of Germany, May 14, 1981, 3119151
Int. Cl.³ B05D *3/04, 3/10*
U.S. Cl. 427—302 **13 Claims**

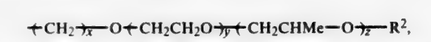
1. A process for coating glass surfaces to render them shatterproof which comprises
(a) applying a physically drying priming lacquer which comprises
(i) a silane adhesion promoter,
(ii) a polyurethane polyurea binder which has a linear molecular structure and which is soluble in lacquer solvents,
(iii) at least one catalyst which accelerates the isocyanate-addition reaction, and
(iv) at least one solvent,
(b) drying the priming lacquer,
(c) coating the dried priming lacquer with a solvent-free or substantially solvent-free coating composition containing a two-component polyurethane binder comprising an isocyanate-reactive component and an isocyanate-containing component, and
(d) reacting the two-component polyurethane binder to harden the coating composition.

4,409,267
METHOD FOR THE FINISHING TREATMENT OF FABRIC MATERIALS
Shoji Ichinohe, and Katsusuke Kasahara, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Apr. 8, 1982, Ser. No. 366,761
Claims priority, application Japan, Apr. 15, 1981, 56-56580
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—387 **1 Claim**

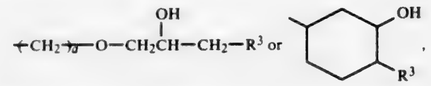
1. A method for the finishing treatment of a fabric material which comprises soaking the fabric material with a liquid composition comprising, as the effective ingredient thereof, an organopolysiloxane represented by the general formula



in which Me is a methyl group, R^1 is a hydrogen atom or a monovalent hydrocarbon group having from 1 to 14 carbon atoms, G is a polyoxyalkylene group represented by the general formula



R^2 being a hydrogen atom or a monovalent hydrocarbon group having from 1 to 20 carbon atoms, x being a number of 0, 1, 2 or 3 and y and z each being zero or a positive integer not exceeding 200 with the proviso that y+z cannot be equal to zero, Z is an amino-containing group represented by the general formula



a being zero or 3 and R^3 being a substituted or unsubstituted amino group, R is a group selected from R^1, G and Z, and p, q and r are each a positive integer not exceeding 800, and drying the fabric material wet with the liquid composition.

4,409,268
LIQUID CRYSTAL DISPLAY PANELS AND PROCESS FOR THEIR PRODUCTION
Hiroshi Inoue, and Nobuo Tooyama, both of Ena, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
PCT No. PCT/JP80/00045, § 371 Date Nov. 5, 1980, § 102(e) Date Nov. 5, 1980, PCT Pub. No. WO80/02079, PCT Pub. Date Oct. 2, 1980
PCT Filed Mar. 17, 1980, Ser. No. 212,731
Claims priority, application Japan, Jul. 13, 1979, 54-89665; Jul. 19, 1979, 54-32000; Oct. 12, 1979, 54-131985; Oct. 26, 1979, 54-139052
Int. Cl.³ G09K *3/34*
U.S. Cl. 428—1 **17 Claims**

1. In a liquid crystal display panel in which a plastic film provided with a transparent conductive film is used as a panel substrate, the improvement of a liquid crystal display panel which is characterized by an orientation treated film on said substrate which is formed from a reaction product of a saturated polyester and a reinforcing additive which is one or more components selected from the group consisting of a reactive titanium compound, an isocyanate compound, an acid anhydride and a melamine resin.

4,409,269
FRAMED WOOD BLOCK FACING
Harlis Gardner, Rte. 2, Box 401, Raymond, Wash. 98577
Filed Mar. 12, 1982, Ser. No. 357,384
Int. Cl.³ B32B *3/14, 3/02*
U.S. Cl. 428—50 **2 Claims**

1. A decorative facing comprising: a backing; several individual rectangular wood blocks of substantially uniform thickness and width and secured to said backing in several substantially straight, parallel, uniformly spaced rows with their lengths extending lengthwise of said rows, each of said rows having a plurality of said blocks with the adjacent ends of adjacent blocks spaced apart uniformly lengthwise of such row so that the distance between the adjacent ends of adjacent blocks is substantially equal to the distance between adjacent blocks in adjacent rows transversely of such rows; first elongated wood strips interposed between adjacent rows of blocks, having faces adjacent to and secured to the backing, of a width substantially equal to the distance between adjacent rows of blocks and of a length at least as great as the combined lengths of a plurality of the blocks in at least one of such adjacent rows so as to extend unbrokenly in a direction lengthwise of and alongside a plurality of the blocks in such one adjacent row; and second elongated wood strips interposed between the adjacent ends of adjacent blocks in one of the rows, having faces adjacent to and secured to the backing, of a width substantially equal to the distance between such adjacent block ends and extending transversely of such row between adjacent first strips bordering such row; said first and second strips framing said blocks and maintaining alignment of said blocks, and the faces of said strips and said blocks remote from said backing being exposed to view.

4,409,270
METHOD FOR REPAIRING GLASS FIBER REINFORCED PLASTIC PARTS AND PRODUCT
Dolan D. Faber, Akron; Richard G. Holmes, Wadsworth, and Joseph J. Varano, Hartville, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio
Filed Apr. 22, 1982, Ser. No. 370,873
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—63 **16 Claims**



1. A method for repairing a surface defect in a thermoset fiberglass reinforced polyester resin or vinyl ester resin molding comprising
(I) filling said defect with an excess amount of a thermosetting electrically conductive repair material,
(II) applying to said repair material heat at a temperature of from about 280° F. to 415° F. and pressure at from about 25 to 50 psi, or from about 36 to 50 psi, for a period of time sufficient to cure said repair material without substantial shrinkage,
(III) withdrawing the heat and pressure from the part and allowing the part to cool to room temperature and
(IV) finishing said part in the area of said defect to remove excess repair material and to return the part to its original contour, said repair material consisting essentially of
(a) a polymerizable epoxy based oligomer having at least two acrylate groups in an amount of 100 parts by weight,
(b) a copolymerizable ethylenically unsaturated monomer in an amount of from about 80 to 150 parts by weight,
(c) a zinc salt of a fatty acid having at least 10 carbon atoms in an amount of from about 0.2 to 5 parts by weight,
(d) an accelerator for an organic free radical peroxide initiator in an amount of from about 0.05 to 2 parts by weight,
(e) polyvinyl acetate in an amount of from about 30 to 80 parts by weight,
(f) a copolymerizable monoethylenically unsaturated compound having a —CO— group and a $—NH_2$, —NH— and/or —OH group in an amount of from about 20 to 120 parts by weight,
(g) a copolymerizable liquid acrylate compound having from 2 to 4 vinyl groups, being free of urethane, cycloaliphatic and aromatic groups and having an average molecular weight of up to about 1500 in an amount of from about 20 to 120 parts by weight,
(h) a calcium salt of a fatty acid having at least 10 carbon atoms in an amount of from about 0.2 to 5 parts by weight,
(i) an inorganic filler in an amount of from about 50 to 150 parts by weight,
(j) a conductive carbon black in an amount of from about 5 to 20 parts by weight and
(k) an organic free radical peroxide initiator in an amount of up to about 5%, or up to about 2%, by weight based on the weight of said ethylenically unsaturated materials,

said polymerizable and copolymerizable materials (a), (b), (f) and (g) being different from each other.

4,409,271
LIGHTWEIGHT CONSTRUCTION ELEMENT
Harald Pehr, Gödersdorf, Austria, assignor to Pehr Holding Gesellschaft, Villach, Austria
Filed Dec. 16, 1981, Ser. No. 331,220
Claims priority, application Austria, Dec. 16, 1980, 6114/80
Int. Cl.³ B32B *3/06, 33/00*
U.S. Cl. 428—71 **8 Claims**

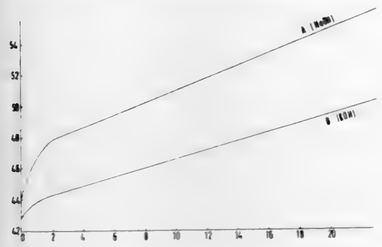


1. A lightweight construction element comprising:
an untrimmed velvet fabric comprising;
a first fabric web; and
a second fabric web separated from said first fabric web and peripherally secured thereto;
a plurality of pile yarns linking said first fabric web to said second fabric web at a predetermined distance; and
an airtight pressure resistant coating provided on said first fabric web and on said second fabric web such that an airtight internal chamber is formed having said plurality of pile yarns disposed therein.

4,409,272
PROCESS FOR THE MANUFACTURE OF COLOR DEVELOPING MATERIAL AND PRODUCT
Graeme McGibbon, Knebworth, England, assignor to The Wiggins Teape Group Limited, Hampshire, England
Continuation of Ser. No. 151,249, May 19, 1980, abandoned. This application May 13, 1982, Ser. No. 378,013
Claims priority, application United Kingdom, May 22, 1979, 7917814
Int. Cl.³ B32B *5/00, 7/00, 21/04*
U.S. Cl. 428—98 **11 Claims**

1. A process for the manufacture of colour developing material, comprising the steps of dispersing a colour developing reactant consisting essentially of an acidwashed dioctahedral montmorillonite colour developing clay in an aqueous medium, adjusting the pH of the dispersion to an alkaline value by

adding an alkaline potassium compound to the aqueous medium before, during or after dispersion of the clay in the aqueous medium, the particle size of the clay being substantially unaltered whilst the clay is in the presence of the alkaline potassium compound, coating the dispersion on to a web of



sheet material, and drying the thus-coated web whereby the ageing rate of the colour developing material is less than that obtained using a like alkaline sodium compound at the same pH.

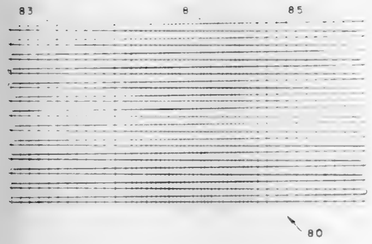
11. Colour developing material manufactured by a process as claimed in claim 1.

4,409,273

SCRIM FABRIC AND PRODUCT

Edward W. Weitzel, Greenville, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Dec. 22, 1980, Ser. No. 218,736
Int. Cl.³ B32B *5/12*
U.S. Cl. 428—109 **1 Claim**



1. A non-woven synthetic fabric comprising: a plurality of polyester fill yarns, a plurality of polyester warp yarns extending over and adhered to the fill yarns in a direction substantially perpendicular thereto, a plurality of polyester warp yarns extending under and adhered to the fill yarns and the warp yarns extending over the fill yarns, the end count of the warp yarns in the center of the fabric being at least twice the end count of the warp yarns at the extremities of the fabric.

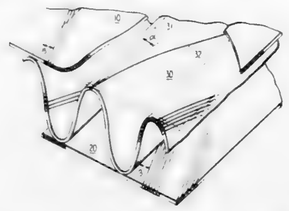
4,409,274

COMPOSITE MATERIAL

Christopher R. Chaplin, Reading; James E. Gordon, Oxfordshire, and Giorgio Jeronimidis, Reading, all of England, assignors to Westvaco Corporation, New York, N.Y.

Filed Feb. 24, 1982, Ser. No. 351,777
Int. Cl.³ B32B *3/28, 5/08, 5/22*
U.S. Cl. 428—112 **17 Claims**

1. A composite structural material assembly comprising two planar face sheets separated by at least one, corrugated sheet having an indulating surface, said face sheets being attached to said corrugated sheet along respective corrugated flute ridge lines, the improvement comprising oriented structural fiber integrally attached to said corrugated sheet so as to follow the



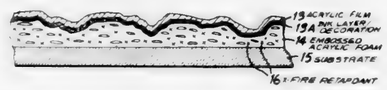
undulating surface of said corrugated sheet at an approximate orientation angle of 15° with said ridge lines.

4,409,275

DECORATIVE LAMINATE

Joseph J. Samowich, 33 Greenwich Ave., New York, N.Y. 10014

Continuation-in-part of Ser. No. 537,445, Dec. 30, 1974, Pat. No. 4,329,386. This application Mar. 10, 1982, Ser. No. 356,656
Int. Cl.³ B32B *3/10, 5/20, 5/22*
U.S. Cl. 428—138 **27 Claims**



1. A laminate comprising:
(a) an intermediate layer of cross-linked thermoset resilient foamed emulsion adhered to;
(b) a substrate
(c) said intermediate layer (a) being self-bonded to the substrate (b)
(d) at least one active compound added to said intermediate layer;
(e) barrier means for substantially preventing ambient elements and said at least one active compound from reacting, said barrier means comprising a plastic surface film of a cross-linked thermoset emulsion self bonded to said intermediate layer;
(f) whereby, said at least one active compound will react to ambient elements only upon said barrier means being at least partially opened to expose a least a portion of said intermediate layer.

4,409,276

METAL ARTICLE HAVING THREE-DIMENSIONAL WOOD GRAIN AND STAINABLE COATING

Lawrence R. Martinelli, Arlington Heights, and Geronimo E. Lat, Skokie, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Filed Jan. 11, 1982, Ser. No. 338,771
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—142 **12 Claims**

1. A metal article having an integral, three-dimensional, simulated wood grain in its surface provided by forming a multitude of grooves in said surface, and applying a stainable, substantially colorless, translucent coating over said simulated wood grain, said coating comprising an acrylic resin and an

extender pigment having an average particle size of about 5 to about 7 microns and a hardness on the Moh scale of no more



than about 4, the ratio of extender pigment to resin is from about 1.5:1 to about 3.6:1 by weight.

4,409,277

VISUAL INFORMATION CARRIER COMPRISING A FLEXIBLE PLASTIC SHEET

Wolfgang Michel, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft. Frankfurt am Main, Fed. Reg. of Germany

Filed Nov. 9, 1981, Ser. No. 319,293
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1980, 8031841[U]
Int. Cl.³ B32B *3/30;* **G01D** *15/34*
U.S. Cl. 428—156 **17 Claims**

1. A visual information carrier comprising a single-layer, flexible, transparent, synthetic polymer sheet having a fluorescent dye dispersed therein; said sheet being free from white fracture and having on at least one surface thereof a transparent profiled structure produced by deformation of the sheet; said profiled structure presenting a contrasting visual appearance in comparison to unprofiled regions of said sheet.

4,409,278

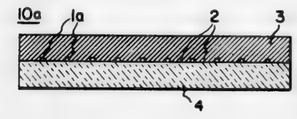
BLISTER-FREE DIRECT BONDING OF METALS TO CERAMICS AND METALS

Eric P. Jochym, Baldwinsville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 16, 1981, Ser. No. 254,840
Int. Cl.³ B23K *1/12*
U.S. Cl. 428—163 **32 Claims**

1. A large area, blister-free assembly formed by direct bonding a metal to a substrate comprising:
a first substrate having two major surfaces; and
a first metallic sheet direct bonded to one of the major surfaces of said first substrate and having a thickness of less than about 0.010 inch, the interface between said first metallic sheet and said first substrate including an eutectic composition, at least one of the surfaces forming said interface including therein a first plurality of channels providing means for venting gases from said interface during the direct bonding operation.

19. In a method for direct bonding a metal sheet to a substrate wherein said metal sheet has a thickness of less than about 0.010 inch, said method being of the type employing a bonding agent compatible with said substrate so as to form an eutectic with said metal sheet, said eutectic consisting predominantly of said metal sheet and exhibiting an eutectic tempera-



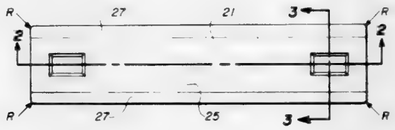
ture lower than the melting point of said metal sheet such that heating said metal sheet having an eutectic formed thereon, while said metal sheet is in close contact with said substrate, to at least the eutectic temperature but below the melting point of said metal sheet causes said eutectic to wet said substrate and form a direct bond therewith upon cooling, the improvement comprising the step of:
forming a plurality of channels in at least one of the surfaces forming said direct bond, said channels providing means for venting gases from the interface between said metal sheet and said substrate.

4,409,279

GLASS SUPPORT ROD FOR USE IN ELECTRON-GUN MOUNT ASSEMBLIES

John R. Hale, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,436
Int. Cl.³ B32B *23/02*
U.S. Cl. 428—192 **5 Claims**



1. For use in an electron-gun mount assembly, a glass support bead comprising a generally rectangular glass body with flat ends, at least two opposite edges at said ends having radii of at least about 0.375 millimeter (15 mils).

4,409,280

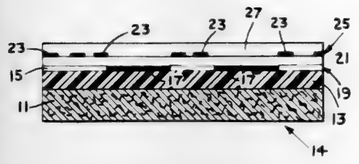
DECORATIVE SURFACE COVERINGS

John W. Wiley, Woodstown; Charles H. Brower, Salem, both of N.J., and David Wang, Wilmington, Del., assignors to Mannington Mills, Salem, N.J.

Filed Sep. 21, 1981, Ser. No. 304,164
Int. Cl.³ B32B *3/00, 7/14*
U.S. Cl. 428—203 **7 Claims**

1. A surface covering, which comprises:
(a) a backing sheet material;
(b) an expanded resinous layer disposed on said backing sheet material;
(c) a first printed design on said expanded resinous layer;
(d) a first substantially translucent or transparent layer overlying said first printed design;
(e) a second printed design of an ink containing decorative

particles selectively deposited on said first substantially translucent or transparent layer; and



(f) a second substantially translucent layer overlying said second printed design.

4,409,281

MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1981, Ser. No. 255,133
Claims priority, application Japan, Apr. 21, 1980, 55-52740
Int. Cl.³ G11B *5/70*; B32B *7/02*
U.S. Cl. 428—212 **4 Claims**

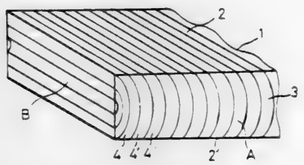
1. A magnetic recording recording medium comprising a first layer comprised in a magnetic iron oxide powder dispersed in a binder formed on a non-magnetic support having a coercive force of from 200 to 700 oersteds, a second layer formed on the first layer comprising a ferromagnetic metal powder dispersed in a binder and having a greater coercive force than that of the first layer of from 600 to 1300 oersteds, and a third layer comprising a thin ferromagnetic metal film formed on the second layer in a thickness of from 0.01μ to 0.5μ and having a coercive force greater than 400 oersteds.

4,409,282

NONWOVEN FABRICS

Shigeo Fujii; Tokuzo Ikeda; Takashi Mikami, and Shuji Okano, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 203,770, Nov. 3, 1980, abandoned, which is a continuation-in-part of Ser. No. 167,637, Dec. 21, 1979, Pat. No. 4,375,446, and Ser. No. 167,638, Dec. 21, 1979, abandoned. This application Jul. 22, 1982, Ser. No. 401,289
Claims priority, application Japan, May 1, 1978, 53/50745; Nov. 1, 1979, 54/140439
Int. Cl.³ B32B *7/04*
U.S. Cl. 428—219 **5 Claims**



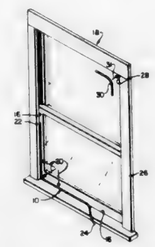
1. A nonwoven fabric consisting essentially of stacked and intertwined long fibers forming thin intertwined layers extending between one surface of said fabric or part thereof, and another surface of said fabric or part thereof.

4,409,283

FORMABLE VISCID CAULKING MEMBER AND METHOD OF MAKING SAME

Donald E. Boyle, Jr., 11 Sullivan Rd., West Quincy, Mass. 02169

Filed Jan. 25, 1982, Ser. No. 342,133
Int. Cl.³ B65D *53/06, 53/08*
U.S. Cl. 428—272 **11 Claims**



1. A formable viscid caulking member comprising: a viscid medium including 40% to 90% microcrystalline wax and, complementarily, from 60% to 10% refined scale wax; and a flexible multifilament member saturated with said viscid medium.

6. A method for making a formable viscid caulking member comprising:

immersing a length of flexible, multifilament member in a heated liquid viscid medium including a microcrystalline wax and a substance selected from the group consisting of refined scale wax, aliphatic hydrocarbon resins, homopolymers, copolymers, natural resins and natural fillers and allowing said multifilament member to reside therein in a relaxed condition to saturate said multifilament member with viscid medium;

withdrawing said saturated multifilament member from said heated liquid viscid medium;

solidifying said saturated multifilament member; and

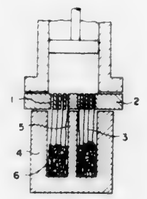
winding the solidified saturated multifilament member on a spool.

4,409,284

POROUS MOLDINGS MADE OF ACCUMULATED MASS OF STRINGY OR THREADY EXTRUDATES

Morihiko Sugino, Kamakura, and Eiji Saura, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 13, 1981, Ser. No. 282,594
Claims priority, application Japan, Jul. 15, 1980, 55-97101; Jul. 15, 1980, 55-97102; Jan. 20, 1981, 56-7598
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—304.4 **13 Claims**



1. A porous molding produced by a process which comprises providing a mixture of at least one material selected from the group consisting of porous inorganic materials and organic materials capable of being carbonized and at least one binder therefor, forming an accumulated mass of thready extrudates

of said mixture, and drying and sintering said accumulated mass, said porous molding having fine pores present in said thready extrudates themselves and voids established among said thready extrudates and formed by putting extrudates on themselves; wherein said thready extrudate has a sectional area of below 8 mm^2; and wherein the porosity of said porous molding is above 0.2 cc/g when determined from a reduction in volume of mercury by immersing said porous molding in mercury after degassing and applying a pressure to the mercury.

4,409,285

SURFACE-MODIFYING COATING COMPOSITIONS

Martin S. Swerdlow, New Barnet, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 3, 1981, Ser. No. 317,851
Claims priority, application United Kingdom, Nov. 10, 1980, 8036086
Int. Cl.³ A32B *5/22, 13/12*
U.S. Cl. 428—332 **1 Claim**

1. An optical surface, on which the undesirable effects of surface misting and light reflection are reduced, which comprises a substrate having a coated layer comprising silica and/or alumina particles and a polymeric binder wherein at least some of the particles protrude from the surface of the polymeric in the coated layer, said particles comprising a small particle size component having an average particle size in the range 7 to 50 nm and present in an amount from 20 to 98% by weight and a large particle size component having an average particle size in the range 75 to 150 nm and present in an amount from 5 to 65% by weight.

4,409,286

COMPOSITE THERMOPLASTIC FILMS AND A PROCESS FOR THEIR PREPARATION

Jean-Claude Decroix, Arras, France, assignor to Societe Chimique des Charbonnages-CDF Chimie, Paris, France

Filed May 17, 1982, Ser. No. 378,903
Claims priority, application France, May 15, 1981, 81 09684
Int. Cl.³ B32B *27/10, 27/08*; B28B *3/20*
U.S. Cl. 428—332 **8 Claims**

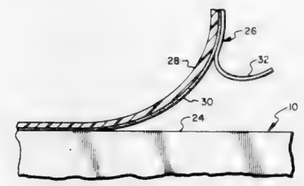
1. A composite film consisting essentially of at least one layer of a thermoplastic film having a thickness of from 25 to 3,000 μm and selected from the group consisting of low density polyethylene, polypropylene, polybutene, polyamide, polystyrene and polyvinyl chloride and a layer of a terpolymer film comprising from 88 to 98.7 mol% of units derived from ethylene, from 1 to 10 mol% of units derived from an ester selected from the group consisting of alkyl acrylates and alkyl methacrylates, the alkyl group having from 1 to 6 carbon atoms, and from 0.3 to 3 mol% of units derived from maleic anhydride.

4,409,287

SKI PROTECTIVE DEVICE

Thomas B. Harrison, 534 Highland Blvd., Richardson, Tex. 75081

Filed Jun. 9, 1981, Ser. No. 271,833
Int. Cl.³ A63C *5/00*
U.S. Cl. 428—343 **2 Claims**



1. A protective covering for use on the upper surface of a snow ski comprising a sheet of a plasticized mixture of ionomer resin and polyethylene resin, and a layer of pressure-sensitive adhesive resin bonded to one side of said plasticized sheet.

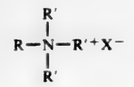
4,409,288

EPOXY RESIN EMULSION FINISHES FOR CARBON FIBERS

Raymond G. Spain, Huntington Beach, Calif., assignor to Hitco, Irving, Calif.

Filed Apr. 28, 1982, Ser. No. 372,673
Int. Cl.³ B32B *9/00*; D02G *3/00*
U.S. Cl. 428—367 **16 Claims**

1. In a method of treating carbon fibers to provide an epoxy resin finish thereon in which an aqueous emulsion of an epoxy resin is applied to said fibers and said fibers are thereafter dried, the improvement which comprises using an effective amount of a two component emulsifying system in said epoxy resin emulsion, one of said emulsifying components being a long chain aliphatic alcohol containing from eight to 18 carbon atoms, the other emulsifying component being a quaternary ammonium salt having the formula:



wherein R is an aliphatic radical containing from 12 to 18 carbon atoms, or a mixture of such radicals, each R′ may be the same or different radicals selected from methyl and ethyl, and X is bromine or chlorine.

4,409,289

CELLULOSE-ACRYLONITRILE POLYMER SOLUTIONS, ARTICLES, AND METHODS OF MAKING SAME

Jacques Menault, Charbonnieres-les-Bains, and Henry Rodier, Sainte-Foy-les-Lyon, both of France, assignors to Rhone-Poulenc-Textile, Paris, France

Division of Ser. No. 147,221, May 6, 1980, Pat. No. 4,377,648. This application Sep. 14, 1982, Ser. No. 418,184
Claims priority, application France, May 14, 1979, 79 12383; Mar. 13, 1980, 80 05963
Int. Cl.³ B32B *23/02, 27/02*; D01D *5/06, 5/12*
U.S. Cl. 428—374 **8 Claims**

1. Fibres, filaments and yarns based on cellulose and an acrylonitrile polymer, wherein the weight ratio of cellulose/acrylonitrile polymer is between 0.1 and 1, each constituent is in the form of a continuous three-dimensional system of which the fibrils, which are orientated approximately along the axis of

the fibre, are closely interwoven, and the cellulose is in the form of macromolecules which are partially involved in a three-dimensional crystal lattice characteristic of cellulose II.

4. Process for the production of yarns and fibres comprising extruding a solution consisting essentially of (a) cellulose having a degree of polymerisation of at least 200, (b) an acrylonitrile polymer, (c) dimethylsulphoxide and (d) formaldehyde.

the weight ratio of cellulose/acrylic polymer being between 0.1 and 1,

the weight ratio of formaldehyde/cellulose being between 0.2 and 2 and

the total polymer concentration being between 18 and 30% by weight

into a coagulating bath consisting essentially of 25 to 80% by volume of water and 75 to 20% by volume of dimethylsulphoxide, said bath being maintained at a temperature between 0° and 40° C., the filaments are thereafter orientated, and the filaments are at least substantially freed of solvent.

4,409,290

ADHESION OF RUBBER TO GLASS FIBERS

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 331,549, Dec. 17, 1981, Pat. No. 4,355,131, which is a continuation-in-part of Ser. No. 228,844, Jan. 26, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,781

Int. Cl.³ B32B *17/04*

U.S. Cl. 428—378 **12 Claims**

1. A bonded composite material comprising a glass fiber reinforcing element embedded in a vulcanized rubber, said element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition comprising (a) 100 parts by weight of a rubbery graft compolymer of a seed of (1) a polymer of an acrylate monomer, said polymer having a glass transition temperature of not above about −20° C., said polymer optionally additionally containing copolymerized with said acrylate monomer a very minor amount by weight of a crosslinking polyunsaturated monomer, and a shell of (2) a copolymer of a vinyl pyridine monomer having from 7 to 9 carbon atoms and a conjugated diene monomer having from 4 to 6 carbon atoms, wherein in said graft copolymer the total amount of said monomers forming said graft copolymer is from about 8 to 20% by weight of said acrylate monomer, from 3 to 20% by weight of said vinyl pyridine monomer and from 60 to 89% by weight of said conjugated diene monomer and (b) from about 3 to 15 parts by weight of a water soluble thermosetting phenolic-aldehyde resin, said composition forming a bond between said element and said rubber.

4,409,291

MAGNETIC RECORDING MEDIUM

Hiroshi Ogawa; Akira Kasuga; Yasuo Tamai, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1981, Ser. No. 247,573

Claims priority, application Japan, Mar. 26, 1980, 55-38405

Int. Cl.³ H01F *10/02;* **B32B** *27/40*

U.S. Cl. 428—425.9 **10 Claims**

1. A magnetic recording medium, comprising:

a non-magnetic support; and

a magnetic layer formed on a surface of said non-magnetic support, said layer comprising fine ferromagnetic particles dispersed in a binder, said binder comprised of:

a polyester polyurethane in an amount of at least 5 wt%, said polyester polyurethane prepared by reacting poly(1,6-hexane adipate) with 4,4-diphenylmethane diisocyanate; and

a vinyl chloride acetate resin selected from the group consisting of vinyl chloride/vinyl acetate copolymer, vinyl chloride/vinyl acetate/vinyl alcohol copolymer and vinyl chloride/vinyl acetate/maleic anhydride copolymer.

4,409,292

VITREOUS MATERIAL AND SEMICONDUCTOR COMPONENT INCORPORATING SAME

Jean-Paul Parant, Arpajon, France, assignor to Societe Anonyme dite Compagnie General d'Electricite, Arpajon, France

Filed Jul. 9, 1982, Ser. No. 396,950

Claims priority, application France, Jul. 9, 1981, 81 13497

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—428 **2 Claims**

2. A semiconductor component comprising a silicon part and a layer of a vitreous material adhering to an outer surface of said part, said vitreous material comprising, by weight:

30% to 40% zinc oxide ZnO,

15% to 30% lead oxide PbO,

20% to 40% boron oxide B_2O_3,

5% to 20% silicon dioxide SiO_2,

2% to 10% aluminum titanate Al_2TiO_5, and

0% to 5% bismuth oxide Bi_2O_3.

4,409,293

WOOD COMPOSITES OF LOW FORMALDEHYDE EMISSION

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Filed Sep. 10, 1982, Ser. No. 416,574

Int. Cl.³ B32B *27/42*

U.S. Cl. 428—524 **31 Claims**

1. A process for bonding lignocellulosic material under heat and pressure, where the bonded lignocellulosic material is characterized by a low emission of formaldehyde, which comprises

applying a binder to said lignocellulosic material, said binder comprising a urea-formaldehyde base resin having a molar ratio of formaldehyde to urea of 1.0:1–1.2:1, said base resin having essentially no free formaldehyde and said base resin when cured containing substantially more methylene groups than methylene ether groups,

consolidating said lignocellulosic material and curing the binder.

9. An improved pressed composite of lignocellulosic material bound together by a urea-formaldehyde binder, which composite is characterized by reduced emission of formaldehyde, wherein the improvement comprises using as said binder a urea-formaldehyde base resin having a molar ratio of formaldehyde to urea of 1.0:1–1.2:1, said base resin having no free formaldehyde and said base resin when cured contains substantially more methylene groups then methylene ether groups.

17. A process for adhesively securing a first item to a second using a curable urea-formaldehyde resin, comprising

disposing between a first item and a second item a curable urea-formaldehyde resin having a molar ratio of formaldehyde to urea of 1.0:1–1.2:1, said resin containing essentially no free formaldehyde and being curable to a structure containing substantially more methylene groups than methylene ether groups, and then

curing said resin to bind said items together.

4,409,294

SLIDING MEMBER FOR USE IN AN INTERNAL COMBUSTION ENGINE

Takeshi Hiraoka, Ageo; Yoshikatsu Nakamura, Omiya, and Osamu Kawamura, Urawa, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

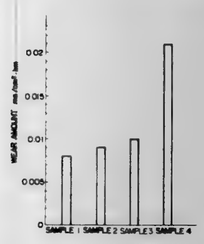
Filed May 21, 1981, Ser. No. 265,927

Claims priority, application Japan, May 29, 1980, 55/70831

Int. Cl.³ B22F *9/00*

U.S. Cl. 428—553 **1 Claim**

1. A sliding member for use in an internal combustion engine, said member having a sliding surface formed by flame-spraying a mixture of (a) 50 to 97% of high carbon ferrochromium and (b) 3 to 50% by weight of high-carbon iron containing at least 0.6% by weight carbon.



4,409,295

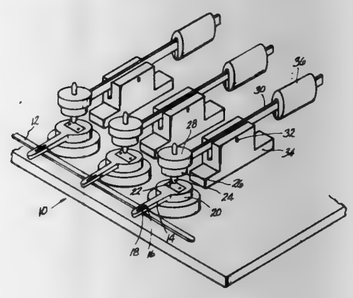
ELECTRICAL CONNECTOR MATERIAL

Edward F. Smith, III, Madison, and F. Dennis Gyurina, West Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 21, 1982, Ser. No. 341,354

Int. Cl.³ B32F *15/04;* **H01H** *1/02*

U.S. Cl. 428—591 **10 Claims**



1. A static electrical connector arrangement, comprising:

a first element having a first contact surface thereon, said first element comprising a first metal substrate having a copper base alloy comprising from about 2 to about 12% aluminum, about 0.001 to about 3% silicon, and the balance essentially copper;

a second element having a second contact surface thereon, said second contact surface being a gold or gold base alloy; and

means for pressing said first contact surface against said second contact surface whereby substantial elimination of fretting debris buildup between the contact surfaces is achieved.

4,409,296

RAPIDLY CAST ALLOY STRIP HAVING DISSIMILAR PORTIONS

Brian L. Ward, Woking, England, assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

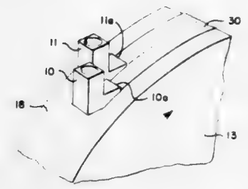
Filed Oct. 22, 1980, Ser. No. 199,149

Claims priority, application United Kingdom, May 9, 1979, 7916035

Int. Cl.³ B32B *15/00*

U.S. Cl. 428—610 **21 Claims**

1. A rapidly quenched, thin cast metallic strip having an upper face and a lower face; said strip comprising a plurality of rapidly quenched, cast metallic dissimilar portions of at least two different compositions cast edge-to-edge, each portion having contacted a casting surface and metallurgically alloy-bonded during casting to an adjacent portions along the edges of said dissimilar portions of said strip; said strip having the metallurgical bond formed at a transition zone between portions having a width of less than five times the average thickness of the bonded portions and extending through the strip thickness from one face to the other face of the strip.



4,409,297

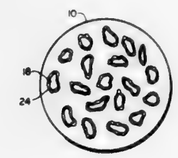
COMPOSITE SUPERCONDUCTORS

David G. Howe, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1981, Ser. No. 263,664

Int. Cl.³ B32B *15/20*

U.S. Cl. 428—614 **15 Claims**



1. A composite superconductor comprising:

a first reactant alloy selected from the class consisting of Cu-aGa wherein a is from about 0.4 to about 22 at. %, Cu-bGa-cAl wherein b is from about 0.4 to about 20 at. % and c is from about 0.1 to about 6, Cu-dSn wherein d is from about 1 to about 11, and Cu-eSi wherein e is from about 0.5 to about 14;

a second reactant alloy of a ternary alloy selected from the class consisting of Nb-fSn-yX, V-gGa-yX, and V-hSi-yX wherein X is selected from the class consisting of yttrium, tellurium, cerium, lanthanium, erbium, gadolinium, and mixtures thereof, f is from about 0.1 to about 12, g is from about 0.4 to about 12.5, h is from about 0.5 to 9, and y is an amount up to 300 percent of the solubility limit of X in said alloy; and

a continuous intermediate layer of an intermetallic A-15 compound between said first and second alloys, said layer being produced by a solid state reaction between said alloys.

4,409,298

CASTABLE METAL COMPOSITE FRICTION MATERIALS

Clarence E. Albertson, Villa Park; John A. Horwath, Palatine, both of Ill., and Duane W. Lashua, Brillion, Wis., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jul. 21, 1982, Ser. No. 400,318

Int. Cl.³ B22D *19/00*

U.S. Cl. 428—614 **3 Claims**

1. A metal composite friction material having an average dynamic coefficient of friction greater than 0.2 comprising

from 99 to 85 wt% of a metal matrix and correspondingly from about 1 to about 15 wt% of at least one solid particulate component having a surface composition which is not wet by the metal matrix when liquid, said metal matrix formed of an alloy of aluminum containing no more than 80 wt% aluminum and selected from the group consisting of aluminum-silicon alloy, aluminum-silicon-zinc alloy and aluminum-zinc alloy, and said solid particulate component being homogeneously dispersed within said metal matrix.

4,409,299

MAGNETIC RECORDING MEDIUM

Chiaki Mizuno; Yasuo Tamai, and Akira Kasuga, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 2, 1982, Ser. No. 353,789
Claims priority, application Japan, Mar. 2, 1981, 56-29549
Int. Cl.³ G11B *5/70*; H01F *10/02*; B32B *27/30*
U.S. Cl. 428—694 **17 Claims**

1. A magnetic recording medium, comprising:
a non-magnetic flexible support base;
a magnetic recording layer formed on a surface of said support base, the layer comprised mainly of fine ferromagnetic particles and a binder, the binder comprised of:
a vinyl chloride/vinyl acetate/vinyl alcohol copolymer; and
a vinyl chloride/vinylidene chloride copolymer.

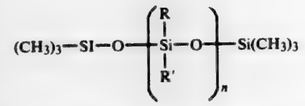
4,409,300

MAGNETIC RECORDING MEDIUM

Takehisa Ohkawa, Usuda, and Kuniichi Yoda, Saku, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 364,055
Claims priority, application Japan, Apr. 1, 1981, 56-47315
Int. Cl.³ G11B *5/70*; H01F *10/02*
U.S. Cl. 428—695 **9 Claims**

1. A magnetic recording medium comprising a base material and a magnetic coating layer thereon comprised of a magnetic material dispersed in a binder, characterized in that the magnetic coating layer contains a highly viscous silicone oil having a viscosity of 100,000 centistokes or more in combination with a sorbitan fatty acid ester, said silicone oil being represented by the general formula:



wherein R is CH_3, R' is CH_3, C_6H_5 or F and n is a number which determines the viscosity of said silicone oil; and wherein said silicone oil is used in an amount of from 0.2 to 2 percent by weight, and the sorbitan fatty acid ester is used in an amount of from 0.5 to 4 percent by weight, each based on the weight of the binder.

4,409,301

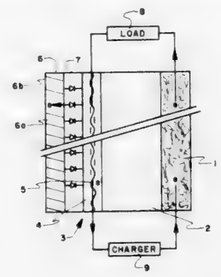
BIFUNCTIONAL GAS DIFFUSION ELECTRODE

Herman F. Angerer, Biel-Benken, and Nenad R. Tomov, Geneva, both of Switzerland, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Dec. 21, 1981, Ser. No. 332,519
Int. Cl.³ H01M *4/00*
U.S. Cl. 429—27 **11 Claims**

1. A composite bifunctional porous gas-diffusion electrode operative alternately for gas consumption and gas evolution, comprising a gas-side layer operative for gas consumption, an electrolyte-side layer operative for gas evolution and current-collection means associated with the electrolyte-side layer, characterized in that it comprises an intermediate rectifying layer of semi-conducting material between the gas-side layer and the electrolyte-side layer.

11. A secondary metal-gas battery comprising a metal electrode, a porous gas-diffusion bifunctional electrode having a gas-side layer operative during discharge for gas consumption, an electrolyte-side layer operative during charging for gas evolution and current-collection means associated with the



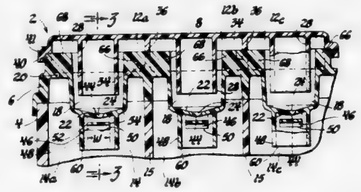
electrolyte-side layer, electrolyte between the metal electrode and the electrolyte-side of the bifunctional electrode, and means for supplying gas to the gas-side layer of the bifunctional electrode, characterized in that the bifunctional electrode comprises an intermediate rectifying layer of semiconducting material between the gas-side layer and the electrolyte-side layer.

4,409,302

VENTING SYSTEM FOR ELECTRIC STORAGE BATTERY

David T. Poe, Yorktown, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 24, 1981, Ser. No. 305,096
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—88 **5 Claims**



1. In an electric storage battery having a venting system for relieving gases from the innards of the battery including an electrolyte trapping chamber defined in part by a floor sloping toward an electrolyte drainage aperture at the low point of the floor and proximate the electrolyte level within the battery, the improvement comprising: a rim defining said aperture and a tongue-like drip tab depending at an acute angle from the underside of said rim so as to extend beneath said aperture and promote the running off of electrolyte from said floor back to said innards which electrolyte, but for the tab, would otherwise accumulate on said floor and plug said aperture.

4,409,303

CATALYTIC CATHODE FOR PRIMARY AND SECONDARY FLUID CATHODE DEPOLARIZED CELLS

William L. Bowden, Nashua, N.H., assignor to Duracell Inc., Bethel, Conn.

Filed Mar. 4, 1982, Ser. No. 354,689
Int. Cl.³ H01M *4/36*
U.S. Cl. 429—105 **9 Claims**

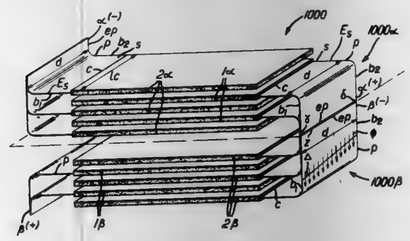
1. A non-aqueous electrochemical cell comprising an active metal anode, an electrolyte salt dissolved in a fluid cathode depolarizer and a catalytic cathode comprised of at least one graphite intercalated metal halide.

4,409,304

ELECTROCHEMICAL DEVICE COMPRISING AT LEAST TWO CELLS CONNECTED IN ELECTRICAL SERIES

Francois Gerard, and Jean-Yves Machat, both of Clermont-Ferrand, France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Feb. 25, 1982, Ser. No. 352,368
Claims priority, application France, Feb. 27, 1981, 81 04155
Int. Cl.³ H01M *2/24*
U.S. Cl. 429—158 **17 Claims**



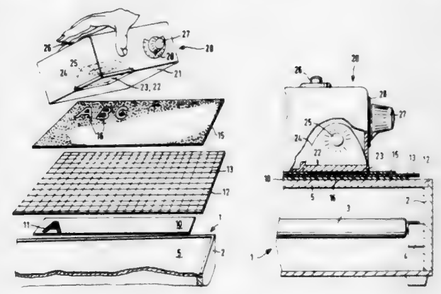
1. An electrochemical device comprising at least two cells, each cell comprising at least one positive electrode and at least one negative electrode in the form of plates, characterized by the following features:
(a) each plate is joined on at least one side to a current outlet which in turn is joined to an electron-conductive extension which is formed of blades or has blades, said blades being distributed substantially over the entire distance between the extreme edges of the corresponding assembly;
(b) the extension corresponding to each plate abuts at its so-called "free" end at a terminal, called the "cell terminal", of the same polarity as the plate, or, at least in part, constitutes such a terminal at its "free" end, each cell thus having at least one positive terminal and at least one negative terminal, at least one side of the device having terminals of opposite signs by crisscrossing of blades of opposite signs, the device having means for avoiding electrical contact at the places where the blades cross one another;
(c) the electrical junction between each plate and its outlet is effected substantially over the entire corresponding side of the plate;
(d) each outlet and the corresponding extension form an assembly located outside of the plate; the distance between the extreme edges of this assembly is substantially equal to the length of the corresponding side of said plate, from said plate up to the "free" end of the corresponding extension, these extreme edges abutting at said plate;
(e) the two cells are connected in electrical series by at least two terminals of the cells; the electrical junction between these two terminals is effected substantially over said entire distance between extreme edges in the case of each extension which abuts at one of these terminals or which, at least in part, constitutes by its "free" end one of these terminals.

4,409,305

METHOD FOR PRODUCING CHARACTERS AND OTHER REPRESENTATIONS, IN PARTICULAR TITLE SET, ON A PHOTO MATERIAL

Fred A. Goetschi, Haus zum Anker, CH-6354 Vitznau, Switzerland

Filed Mar. 19, 1981, Ser. No. 245,516
Claims priority, application European Pat. Off., Sep. 23, 1980, 80 105 701.9
Int. Cl.³ G03C *5/08, 5/18*
U.S. Cl. 430—22 **10 Claims**



1. A method of photographically producing characters or other representations under daylight conditions, such as title set, utilizing photomaterial in sheet form which is generally insensitive with respect to daylight or blue light and having a predetermined sensitivety with respect to short-wave light, in conjunction with a suitable developer liquid, a transparent cover film which is non-transmissive with respect to said developer liquid and a record carrier film which has at least one transparent region in the form of a character, symbol, picture, photo or other like representation surrounded by a ground which is opaque with respect to short-wave light to thereby provide a photostenciling implement, including the steps of:
(a) wetting said photomaterial with said developing liquid,
(b) covering said wetted photomaterial with said transparent cover film,
(c) relatively positioning said record carrier film and said transparent cover film such that said one transparent region is juxtaposed to where its projected image is to be produced on said photomaterial,
(d) irradiating said one transparent region with short-wave light so as to activate the photomaterial in the area juxtaposed to said one transparent region to thereby provide a corresponding image on the photomaterial which becomes immediately visible to the naked eye in daylight conditions.

4,409,306

METHOD OF PREPARING A PHOSPHOR SUSPENSION

Volker Gerstle, Wendlingen; Gerhard Mauz, Köngen, and Rolf Zondler, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 2, 1982, Ser. No. 355,018
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1981, 3110476
Int. Cl.³ G03C *1/66*
U.S. Cl. 430—28 **5 Claims**

1. Method of preparing a phosphor suspension by mixing a photosensitive material, a photosensitizer, and a phosphor for the purpose of forming a photosensitive film, characterized in that the photosensitizer in the suspension is a chromic-acid solution.

4,409,307

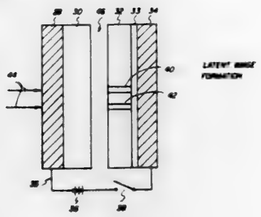
ELECTRICALLY ACTIVE INORGANIC INTERLAYER FOR ELECTRICALLY ACTIVATABLE RECORDING

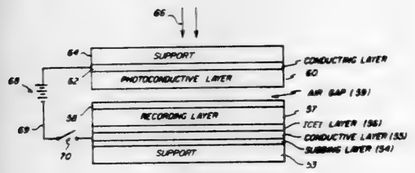
Mark Lelental, Rochester; Arthur A. Rasch, Webster, and David P. Sullivan, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,770

Int. Cl.³ G03G *13/00, 13/22*

U.S. Cl. 430—31 **25 Claims**





1. In an electrically activatable recording element comprising an electrically conductive support bearing
(a) a first layer, and, contiguous to the first layer,
(b) an electrically activatable recording layer,
the improvement wherein
said first layer (a) is an inorganic electrically active conductive layer consisting essentially of a compound selected from the group consisting of silver chloride, silver bromide, silver iodide, transition metal bromides and chlorides, alkali metal chlorides, bromides and iodides, and combinations thereof capable upon electrically activated exposure and processing of said element of enhancing image formation in said electrically activatable recording layer.

22. A dry electrically activatable recording process for producing a dye image and a silver image in an electrically activatable recording element comprising, in sequence:
(a) an electrically conductive layer,
(b) a photoconductive layer,
(c) an electrically activatable recording layer separated from (b) by either (i) an air gap of up to 20 microns or (ii) an electrically conductive polymeric layer, and comprising, in an electrically conductive binder,
(A) a dye-forming coupler, and
(B) an oxidation-reduction combination comprising
(1) an organic silver salt oxidizing agent with
(2) a reducing agent for the organic silver salt oxidizing agent, wherein the reducing agent in its oxidized form, forms a dye with the dye-forming coupler,
(d) an electrically active conductive layer consisting of a compound selected from the group consisting of silver chlorides, silver bromides, silver iodides, transition metal bromides and chlorides, alkali metal chlorides, bromides and iodides, and combinations thereof, on
(e) an electrically conductive support,
said process comprising the steps:
(I) imagewise altering the conductivity of said photoconductive layer in accord with an image to be recorded,
(II) applying an electrical potential across said photoconductive layer and said recording layer of a magnitude and for a time sufficient to produce a latent image in the recording layer corresponding to the image to be recorded; and,
(III) heating said recording layer substantially uniformly at a temperature and for a time sufficient to produce a dye image and a silver image in said recording layer.

4,409,308

PHOTOCONDUCTIVE MEMBER WITH TWO AMORPHOUS SILICON LAYERS

Isamu Shimizu, Yokohama; Shigeru Shirai, Yamato, and Eiichi Inoue, Tokyo, all of Japan, assignors to Canon Kabuskiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1981, Ser. No. 308,238

Claims priority, application Japan, Oct. 3, 1980, 55-138980; Oct. 3, 1980, 55-138981; Oct. 8, 1980, 55-140960; Oct. 8, 1980, 55-140961; Oct. 8, 1980, 55-140962

Int. Cl.³ G03G *5/14, 5/04*

U.S. Cl. 430—60 **98 Claims**

1. A photoconductive member comprising:
a support, a photoconductive layer constituted of an amorphous material containing silicon atoms as matrix and containing hydrogen atoms or halogen atoms, and an intermediate layer provided between them, side intermediate layer having a function to bar penetration of carriers from the said of the support into the photoconductive layer and to permit passage from the photoconductive layer to the support of photocarriers generated in the photoconductive layer by projection of electromagnetic waves and movement of the photocarriers toward the side of the support, and said intermediate layer being constituted of an amorphous material containing silicon atoms and oxygen atoms as constituents.

4,409,309

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT

Kozo Oka, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,865

Claims priority, application Japan, Jul. 31, 1980, 55-104317; Feb. 3, 1981, 56-13779

Int. Cl.³ G03G *5/08, 5/06*

U.S. Cl. 430—65 **21 Claims**

1. An electrophotographic light-sensitive element comprising an electrically conductive support having provided thereon, in sequence, a photoconductive layer and a protective layer, wherein said protective layer has a thickness of from 1 to 30 μm and contains a powder of a metal oxide having a volume intrinsic resistance of 10^{11} Ω·cm or less in an amount of from 10 to 40% by weight based on the total weight of the protective layer and a mean particle size of 0.3 μm or less dispersed in a binder resin, said protective layer being substantially transparent in wavelength regions of light to which said photoconductive layer is sensitive.

4,409,310

SURFACE DOPED INORGANIC ELECTROPHOTOGRAPHIC PHOTOSENSITIVE PARTICLES IN BINDER

Kazumi Okano, Fuchu; Yuji Nishigaki, Yokohama, and Massnao Kasai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 188,122, Sep. 17, 1980, abandoned. This application Feb. 17, 1982, Ser. No. 349,657

Claims priority, application Japan, Sep. 20, 1979, 54-121504

The portion of the term of this patent subsequent to Feb. 23, 1999, has been disclaimed.

Int. Cl.³ G03G *5/087, 5/09*

U.S. Cl. 430—95 **5 Claims**

1. An electrophotographic photosensitive member which comprises a photoconductive layer comprising a binder having dispersed therein inorganic photoconductive particles on the surface of which a water insoluble compound of a metal element of Group VII of the Periodic Table is deposited by reacting a water soluble compound of a metal element of Group VIII of the Periodic Table with a reagent which is capable of producing said water insoluble compound in the presence of said inorganic photoconductive particles.

4,409,311

PHOTOSENSITIVE MEMBER

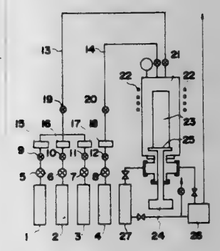
Takao Kawamura, Senboku Seiwadai Koporasu 717-Go, 398-1, Tsujino, Sakai-Shi, Osaka-Fu, and Yoshida Masazumi, Amagasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha; Takao Kawamura and Kyoto Ceramic Co., Ltd., all of, Japan

Filed Mar. 8, 1982, Ser. No. 355,377

Claims priority, application Japan, Mar. 25, 1981, 56-44498; Mar. 25, 1981, 56-44499

Int. Cl.³ H01L *45/00;* B05P *5/12*

U.S. Cl. 430—95 **5 Claims**



1. A photosensitive member which comprises an amorphous silicon photoconductive layer containing about 10 to 40 atomic % of hydrogen, 10^{-5} to 4×10^{-2} atomic % of oxygen and about 10 to 20,000 ppm of Group IIIA impurity of the Periodic Table, said photoconductive layer exhibiting infrared absorption peaks between wavenumber of 2000 cm^{-1} where Si-H bonds are predominant and wavenumber of 2090 cm^{-1} where Si-H_2 bonds are predominant and wherein the ratio of infrared absorption coefficient peak at wavenumber 2090 cm^{-1} to that of peak at wavenumber 2000 cm^{-1} is within the range of 0.2 to 1.7.

4,409,312

DRY DEVELOPER FOR ELECTROSTATIC IMAGE WITH AL OR TI ALKOXIDE

Toshimitsu Ikeda, Himeji; Nobuyasu Honda, Tenri, and Tetsuya Nakano, Osaka, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Feb. 23, 1982, Ser. No. 351,445

Claims priority, application Japan, Feb. 23, 1981, 56-24264

Int. Cl.³ G03G *9/08, 9/14*

U.S. Cl. 430—110 **12 Claims**

1. A dry developer for an electrostatic image, which comprises molded particles of a dispersion of a binder medium, a wax and a pigment, wherein a combination or partial reaction product of (A) a copolymer of an olefin with a polar group-containing, ethylenically unsaturated monomer and (B) a metal alkoxide of aluminum or titanium is incorporated as a cross-linking agent into said molded particles and wherein 1 to 25 parts by weight of the copolymer (A) and 0.2 to 5 parts by weight of the metal alkoxide (B) are contained per 100 parts by weight of the sum of the binder resin and the wax.

4,409,313

POWDER DEPOSITION TO FORM PATTERN ON LIGHT IMAGED PHOTOSENSITIVE DIAZONIUM SALT COATING HAVING SALT OF AROMATIC AMINE

Hajime Morishita, Tokyo; Takahiro Kohashi, Hachioji; Saburo Nonogaki; Motoo Akagi, both of Tokyo; Nobuaki Hayashi, and Shoichi Uchino, both of Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

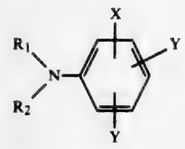
Division of Ser. No. 279,849, Jul. 2, 1981, Pat. No. 4,377,630. This application Sep. 29, 1982, Ser. No. 427,586

Claims priority, application Japan, Jul. 4, 1980, 55-90650; Jun. 5, 1981, 56-85719

Int. Cl.³ G03C *5/34;* H01J *9/227*

U.S. Cl. 430—144 **12 Claims**

1. A process for forming a pattern of powder coat layer comprising the steps of coating a substrate with a photosensitive composition containing an aromatic diazonium salt which gets sticky upon exposure to light and a salt of a compound represented by the general formula:



(wherein R_1 and R_2 each represents a straight chain alkyl group, and X, Y and Z each represents H, a straight chain alkyl group or an alkoxy group, but two or more of X, Y and Z can not be H at the same time) to form a thin coat layer on said substrate, subjecting said thin layer to pattern light exposure to make the exposed part sticky, and contacting the powder particles with the exposed thin layer to have the powder deposited on the exposed part.

4,409,314

LIGHT-SENSITIVE COMPOUNDS, LIGHT-SENSITIVE MIXTURE, AND LIGHT-SENSITIVE COPYING MATERIAL PREPARED THEREFROM

Gerhard Buhr, Koenigstein; Hans Ruckert, and Paul Stahlhofen, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 20, 1981, Ser. No. 313,154

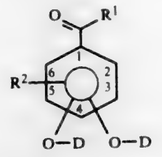
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1980, 3040157

Int. Cl.³ G03C *1/60, 1/54;* C07C *113/00*

U.S. Cl. 430—192 **15 Claims**

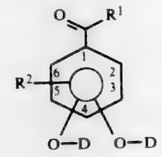
1. A light-sensitive mixture which contains a water-insoluble resinous binder, which is soluble or swellable in aqueous-alka-

line solutions, and a 1,2-naphthoquinone-2-diazide-sulfonic acid ester of a dihydroxyacylophenone or of a dihydroxybenzoic acid ester, wherein the sulfonic acid ester corresponds to the formula I



in which R^1 is an alkyl radical having 4 to 17 carbon atoms or an alkoxy radical having 4 to 17 carbon atoms, the carbon chain of which can be interrupted by ether oxygen atoms, R^2 is a hydrogen atom, an alkyl radical having 1 to 3 carbon atoms, or a chlorine or bromine atom, and D is a 1,2-naphthoquinone-2-diazide-sulfonyl radical.

10. A 1,2-naphthoquinone-2-diazide-sulfonic acid ester of a dihydroxyacylophenone or of a dihydroxybenzoic acid ester, wherein the sulfonic acid ester corresponds to the formula I



in which R^1 is an alkyl radical having 4 to 17 carbon atoms or an alkoxy radical having 4 to 17 carbon atoms, the carbon chain of which can be interrupted by ether oxygen atoms, R^2 is a hydrogen atom, an alkyl radical having 1–3 carbon atoms, or a chlorine or bromine atom and D is a 1,2-naphthoquinone-2-diazide-sulfonyl radical.

4,409,315

REDUCING POST-PROCESS D_{min} INCREASE IN POSITIVE REDOX DYE-RELEASING IMAGE TRANSFER SYSTEMS USING OXIDANTS IN COVER SHEETS

Eugene A. Armour; Richard P. Henzel, and Rowland G. Mowrey, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1982, Ser. No. 392,508
Int. Cl.³ G03C *1/40, 5/54*
U.S. Cl. 430—214 **26 Claims**

1. In a photographic assemblage to be processed with an electron transfer agent, said assemblage comprising:

(a) a photographic element comprising a support having thereon a dye image-receiving layer and at least one photosensitive silver halide emulsion layer having associated therewith a nondiffusible, positive-working, redox dye-releaser capable of releasing a diffusible dye upon reduction; and

(b) a transparent cover sheet located over the layer outermost from said support;

the improvement wherein said cover sheet contains an oxidant having an electrode potential of from about −200 mV up to about +1000 mV versus a saturated calomel electrode at a pH of about 5 to about 6, said oxidant being capable of oxidizing said electron transfer agent, and the reduced form of said oxidant being incapable of reducing said positive-working redox dye-releaser.

4,409,316

RESISTIVELY HEATABLE PHOTOTHERMOGRAPHIC ELEMENT WITH STRIPPABLE LAYER

Jeanine I. Zeller-Pendrey, Woodbury; Mark C. Skinner, Afton Township, Washington County, and David A. Morgan, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 26, 1982, Ser. No. 352,648
Int. Cl.³ G03C *1/90, 1/84, 1/02*
U.S. Cl. 430—263 **8 Claims**

1. A photothermographic element comprising a support base having on one surface thereof a photothermographically imageable layer and adhered to the opposite surface of said support base a strippable layer having a resistance of between 60 and 1,500 ohms per square.

7. The element of claims **1**, **2** or **5** wherein said support base is a transparent polyethylene terephthalate polymeric resin layer and said strippable layer comprises a mixture of cellulose acetate and cellulose acetate propionate.

4,409,317

RADIATION SENSITIVE COATING COMPOSITION

Hiroshi Shiraishi, Hachioji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,878
Claims priority, application Japan, Sep. 24, 1981, 56/149420
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—270 **8 Claims**

1. A radiation sensitive coating composition comprising

(a) at least one alkali soluble resin selected from the group consisting of phenolic resins, poly(p-vinylphenol) and halogenated poly(p-vinylphenol)s,

(b) poly(2-methylpentene-1-sulfone), and

(c) isoamyl acetate or a mixture of 90 to 99.9% by volume of isoamyl acetate and 0.1 to 10% by volume of one or more solvents compatible with isoamyl acetate.

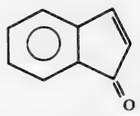
4,409,318

PHOTOSENSITIVE ELEMENT CONTAINING A POLYMER OF AN INDENONE BASED COMPOUND AND A METHACRYLATE COMPOUND

Edwin A. Chandross, Berkeley Heights, and Ray L. Hartless, Lopatcong Township, Warren County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 259,534, May 1, 1980, Pat. No. 4,363,867.
This application Aug. 19, 1982, Ser. No. 409,408
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—271 **8 Claims**

1. A photosensitive body comprising a substrate in contact with a photosensitive material, said photosensitive material comprising an organic polymer characterized in that said polymer is formed from the monomers comprising (1) an indenone based compound represented by the formula



and (2) a methacrylate compound represented by the formula



where X is chosen from the group consisting of nitriles, alkyl esters, and carboxylic acid functional groups.

4,409,319

ELECTRON BEAM EXPOSED POSITIVE RESIST MASK PROCESS

James J. Colacino, Stromville, NY, and Ronald A. Leone, Satellite Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,695
Int. Cl.³ G03C *5/04*
U.S. Cl. 430—296 **11 Claims**



1. A method for forming a pattern of openings in an alkali soluble and a photosensitive diazo benzophenone positive resist system, comprising:

forming an adhesion promoter layer on a substrate wherein said adhesion promoter comprises a partially cyclized poly-cis-isoprene photoresist heating said adhesion promoter layer to desensitize it;

forming a layer of said resist system on and over said adhesion promoter layer;

exposing said resist with an electron beam in a predetermined pattern of said openings;

developing said exposed resist system in an alkaline medium at a temperature in the range of about 13° to 15° C.;

determining the time for completion of development of at least one of said openings over a dedicated portion of said substrate, and continuing the development of said resist system for an additional 10 to 100% of said time; and

heating said developed resist pattern over a period of about 20 to about 60 minutes to a final temperature of about 120 to 160±5° C., and baking said resist at said final temperature for a time in the range of about 10 to about 20 minutes, wherein the last said heating is performed in a stepwise manner, with the first bake at a temperature of about 80 to 90±5° C. for about 10 to about 20 minutes, a second bake at a temperature of about 100° to about 120° C. for about 10 to about 20 minutes, and a bake at said final temperature for about 10 to about 20 minutes.

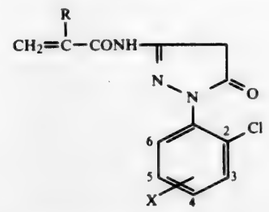
4,409,320

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Morio Yagihara; Tsumoru Hirano; Keiji Mihayashi, and Takashi Ozawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 10, 1982, Ser. No. 377,271
Claims priority, application Japan, May 8, 1981, 56-68979
Int. Cl.³ G03C *7/00, 1/40*
U.S. Cl. 430—381 **16 Claims**

16. A method of forming a color image comprising developing an imagewise exposed silver halide color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing a magenta color image forming polymer coupler latex which is capable of forming a dye upon coupling with an oxidation product of an aromatic primary amine developing agent and which is a polymer or copolymer having a repeating unit derived from a monomer represented by the following general formula (I)



(I)

wherein R represents a hydrogen atom, a lower alkyl group containing from 1 to 4 carbon atoms or a chlorine atom; and X represents a halogen atom, an acylamino group, a carbamoyl group, a sulfonyl group, a sulfonamido group, a sulfamoyl group, a cyano group, or an alkoxycarbonyl group and which is present at the 4-position or 5-position of the phenyl group; wherein said developing is conducted using an alkaline aqueous solution containing an aromatic primary amine developing agent.

4,409,321

METHOD FOR THE REPRODUCTION OF COLOR IMAGE

Kaoru Onodera, Odawara; Toshifumi Iijima, Kokubunji, and Wataru Fujimastu, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 22, 1982, Ser. No. 341,691
Claims priority, application Japan, Jan. 22, 1981, 56-8702
Int. Cl.³ G03C *7/16*
U.S. Cl. 430—383 **7 Claims**

1. A method for the reproduction of a color image which comprises the formation of a dye image on a photographic light-sensitive material, said formation of a dye image being carried out in the manner that a photographic light-sensitive material for camera-exposure use is imagewisely exposed and processed to form a dye image, and through said photographic light-sensitive material having said image, an exposure is made on a photographic printing light-sensitive material and said exposed photographic printing light-sensitive material is then processed in an alkaline activator solution to thereby form a dye image thereon,

said photographic light-sensitive material for camera-exposure use comprising a transparent support provided thereon with a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a blue-sensitive silver halide emulsion layer, said emulsion layers each comprising one of three different couplers selected from nondiffusible couplers capable of forming, by the coupling reaction with the oxidized product of a silver halide developing agent, compounds having spectral absorption maximum wavelength in the wavelength region longer than 340 nm, the spectral absorption maximum wavelength of said compounds being at least 30 nm spaced apart from one another, said blue-sensitive silver halide emulsion layer comprising a coupler capable of forming said compound having the highest molecular extinction coefficient among said three different couplers and said green-sensitive silver halide emulsion layer comprising a coupler capable of forming said compound having the lowest molecular extinction coefficient among said three different couplers, and

said photographic printing light-sensitive material comprising a support provided thereon with three different light-sensitive silver halide emulsion layers having the respective spectral sensitivity thereof corresponding to the respective absorption maximum wavelength of said compounds formed in said photographic light-sensitive material for camera-exposure use, said silver halide emulsion

layers each comprising one of three nondiffusible yellow, magenta, and cyan coupler, and containing a color developing agent and/or the precursor thereof.

4,409,322

SILVER HALIDE PHOTOSENSITIVE MATERIAL

Atsuo Ezaki, and Takeshi Murakami, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 10, 1981, Ser. No. 329,292
Claims priority, application Japan, Dec. 19, 1980, 55-181029
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—523 **6 Claims**

1. A silver halide photographic material comprising a support, a silver halide emulsion layer and a protective layer on one side of said support, and a non-photosensitive back layer on the other side of said support wherein silver halide is present in said silver halide emulsion layer in an amount not greater than 30 mg/dm² based on the amount of silver, and a first matting agent in said protective layer and a substantially spherical matting agent in said back layer,

wherein said first matting agent comprising a fine powder of an inorganic compound selected from the group consisting of barium sulphate, desensitized silver halide, zinc dust, manganese colloid, titanium dioxide, silicon dioxide, magnesium oxide and calcium carbonate or a an organic high molecular weight compound selected from the group consisting of polytetrafluoroethylene, cellulose acetate, polystyrene, polymethylstyrene, polymethylmethacrylate, polypropylmethacrylate, polymethylacrylate, butyl polyacrylate and polyethylenecarbonate, and

wherein said spherical matting agent is an organic high molecular weight compound obtained by suspension polymerization thereof.

4,409,323

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Ryosuke Sato, Hino; Yuji Hotta, and Katsumi Matsuura, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1981, Ser. No. 234,442
Claims priority, application Japan, Feb. 15, 1980, 55-17644
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—544 **9 Claims**

1. A photographic material comprising a light sensitive silver halide emulsion layer provided on a support, said material containing a compound represented by the formula:

A-TIME-PUG,

wherein A is a coupler group capable of a coupling reaction with an oxidized color developing agent, PUG is a photographically useful group, and TIME is a timing group joining said coupler and said photographically useful group and further wherein said timing group is cleavable from said coupler group on reaction of said coupler group with said oxidized color developing agent and further wherein the resulting cleaved timing and photographically useful group entity-TIME-PUG is able to undergo electron transfer along a conjugated system therein to cleave the PUG after the group-TIME-PUG is cleaved from said coupler group A and further wherein one end of TIME is connected with PUG through a methylene group contained in TIME and substituted by R1 and R2, wherein R1 and R2 are individually a hydrogen atom, an alkyl group or an aryl group and wherein the other end of TIME is connected to A at the coupling site of A through an O, S or N atom contained in TIME.

4,409,324

MULTILAYER COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Takatoshi Ishikawa; Akio Mitsui; Masakazu Morigaki, and Takashi Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

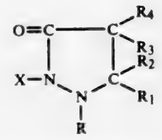
Filed Sep. 21, 1982, Ser. No. 420,665
Claims priority, application Japan, Sep. 21, 1981, 56-149078
Int. Cl.³ G03C *1/40*
U.S. Cl. 430—546 **8 Claims**

1. A multi-layered color photographic sensitive material, comprising:

a support base;

a silver halide emulsion layer; and

a layer containing a high boiling solvent and an oil-soluble coupler, wherein the volume ratio of solvent to coupler is ½ or less, and a compound represented by the general formula (I):



(I)

wherein X is a hydrogen atom or an acetyl group, R is an aryl group, and R_1, R_2, R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an alkyl group or an aryl group.

4,409,325

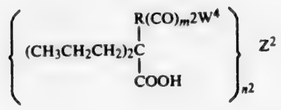
VALPROATE CONJUGATION USING DICARBONYLS

Danton K. Leung, San Jose, and Prithipal Singh, Santa Clara, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 168,867, Jul. 14, 1980, Pat. No. 4,323,507, which is a division of Ser. No. 11,254, Feb. 12, 1979, Pat. No. 4,238,389. This application Dec. 21, 1981, Ser. No. 332,630
Int. Cl.³ G01N *33/54*; C12N *9/96*; A61K *39/00*
U.S. Cl. 435—7 **2 Claims**

1. Method for determining the presence of valproate in a physiological fluid which comprises combining in an aqueous assay medium a sample of said physiological fluid,

antibodies prepared in response to an antigen of the formula:



wherein:

R is an alkylene group of from 1 to 6 carbon atoms;

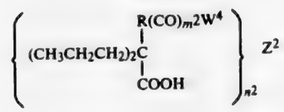
m^2 is 0 or 1;

Z^2 is a poly(amino acid);

n^2 is at least 1 and not greater than the molecular weight of Z^2 divided by 500; and

when m^2 is 0, W^4 is methylene bonded to amino groups of Z^2 and when m^2 is 1, W^4 is a bond to amino groups of Z^2 to form amide linkages,

an enzyme conjugate of the formula:



wherein

R is an alkylene group of from 1 to 6 carbon atoms;

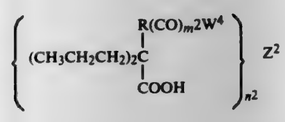
m^2 is 0 or 1;

Z^2 is an NAD dependent enzyme;

n^2 is at least 1 and not greater than the molecular weight of Z^2 divided by 500; and

when m^2 is 0, W^4 is methylene bonded to amino groups of Z^2 and when m^2 is 1, W^4 is a bond to amino groups of Z^2 to form amide linkages, NAD and remaining substrate for said enzyme, and determining the rate of transformation from NAD to NADH as compared to the rate determined with an assay medium having a known amount of valproate.

2. Antibodies prepared in response to an antigen conjugate of the formula:



wherein:

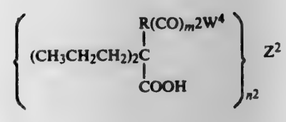
R is an alkylene group of from 1 to 6 carbon atoms;

m^2 is 0 or 1;

Z^2 is a poly(amino acid);

n^2 is at least 1 and not greater than the molecular weight of Z^2 divided by 500; and

when m^2 is 0, W^4 is methylene bonded to amino groups of Z^2 and when m^2 is 1, W^4 is a bond to amino groups of Z^2 to form amide linkages, which antibodies will bind to valproate, antigen conjugate of the above formula, and enzyme conjugate of the formula



wherein:

R is an alkylene group of from 1 to 6 carbon atoms;

m^2 is 0 or 1;

Z^2 is an enzyme;

n^2 is at least 1 and not greater than the molecular weight of Z^2 divided by 500; and

when m^2 is 0, W^4 is methylene bonded to amino groups of Z^2 and when m^2 is 1, W is a bond to amino groups of Z^2 to form amide linkages.

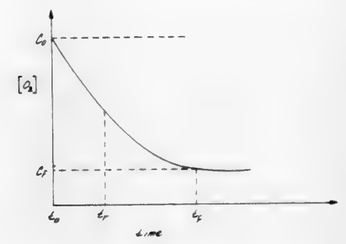
4,409,326

STABILIZED ENZYMATIC SOLUTIONS AND METHOD FOR DETERMINING TOTAL CHOLESTEROL IN HUMAN SERUM

Ivan E. Modrovich, 1043 Mesa Dr., Camarillo, Calif. 93010

Continuation of Ser. No. 168,204, Jul. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,911, Aug. 23, 1979, abandoned. This application Oct. 2, 1981, Ser. No. 308,162
Int. Cl.³ C12Q *1/60, 1/26, 1/28*; C12N *9/96*
U.S. Cl. 435—11 **27 Claims**

1. An aqueous stabilized enzymic reagent solution for use in determining total cholesterol, comprising cholesterol esterase in an amount greater than 50 U/liter, cholesterol oxidase in an amount greater than 100 U/l, a buffer solution for maintaining the pH within the range of about 4 to 9, a polyhydroxy organic compound in an amount from about 5 to about 50 percent by volume, potassium iodide in an amount from about 1 to about 15 percent by weight, a nonionic surfactant in an amount from



about 0.01 to about 0.5 percent by volume and a salt of cholic acid in an amount from about 0.01 mM to about 10 mM.

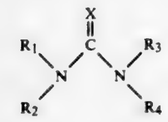
4,409,327

PROCESS AND REAGENT FOR THE DETERMINATION OF THE BIOLOGICAL ACTIVITY OF HEPARIN IN PLASMA

Knut Bartl, Wilzhofen; Helmut Lill, Wielenbach; Peter Roeschlau, Seeshaupt, and Joachim Ziegenhorn, Starnberg, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Feb. 11, 1981, Ser. No. 233,536
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005540
Int. Cl.³ C12Q *1/56, 1/38*
U.S. Cl. 435—13 **10 Claims**

1. In a method for the determination of the biological activity of heparin in plasma by adding thrombin or factor X_a as a proteolytic enzyme and a chromogen substrate of the latter, and measuring the dye liberated from the chromogen substrate, wherein the determination is carried out in the absence of exogenic anti-thrombin III, the improvement consisting of adding to the reaction mixture 0.02 to 2.0 mole per liter based on the total reaction mixture of at least one compound of the formula



wherein

X is oxygen or the group NR_5; and

R_1, R_2, R_3, R_4 and R_5 are independently selected from hydrogen or alkyl of 1 to 2 carbon atoms, so that the proteolytic enzyme acts in the presence of said compound.

4,409,328

METHOD AND REAGENT FOR THE DETERMINATION OF GLYCEROL

Joachim Ziegenhorn, Starnberg; Knut Bartl, Wilzhofen; Albert Röder, Seeshaupt; Gunter Lang; Hans Möllering, both of Tutzing, and Ulrich Nägele, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Sep. 16, 1981, Ser. No. 302,861
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1980, 3035465
Int. Cl.³ C12Q *1/26, 1/28, 1/30, 1/32, 1/44*
U.S. Cl. 435—25 **27 Claims**

1. Method for the determination of glycerol, comprising the steps:

incubating glycerol with galactose oxidase in an aqueous medium in the presence of oxygen for a time and under conditions sufficient for a reaction to occur; and

measuring the oxygen consumed or the products produced in the reaction as a measure of the glycerol.

4,409,329

SACCHARIFICATION METHOD

Richard S. Silver, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 243,296, Mar. 24, 1981, abandoned. This application Jul. 15, 1982, Ser. No. 398,618

Int. Cl.³ C12P *19/02, 7/06*

U.S. Cl. 435—105 **10 Claims**

1. A method for the hydrolysis of cellulose to simple sugars which comprises:

contacting in a reaction zone an aqueous slurry comprising from three to 20 weight percent of a solid cellulose containing charge stock with a cellulase enzyme complex wherein the concentration of said enzyme complex is greater than 0.1 units per milliliter of said slurry and wherein said contacting occurs in the presence of a mechanically produced shear rate of from 50,000 to 200,000 feet/minute/foot substantially throughout said reaction zone and wherein the cellulose content of said solid cellulose-containing charge stock is from 30 to 80 weight percent of said charge stock.

4,409,330

MATERIAL AND METHOD FOR REMOVING IMMUNOGLOBULINS FROM WHOLE BLOOD

John K. Pollard, Jr., Del Mar, Calif., assignor to American Hoechst Corporation, Somerville, N.J.

Filed Nov. 24, 1980, Ser. No. 209,872

Int. Cl.³ C12N *11/10, 11/04*

U.S. Cl. 435—178 **3 Claims**

1. An immunoadsorbent material for removing IgG immunoglobulins and immune complexes from whole blood comprising inactivated, protein A-bearing Staphlococcus aureus bacteria immobilized in a polymeric matrix, said material being in the form of gel like beads having an average diameter ranging from 100 to 1000 microns.

4,409,331

PREPARATION OF SUBSTANCES WITH ENCAPSULATED CELLS

Franklin Lim, Richmond, Va., assignor to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 243,583, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 24,600, Mar. 28, 1979, Pat. No. 4,352,883, which is a continuation-in-part of Ser. No. 953,413, Oct. 23, 1978, abandoned. This application Apr. 28, 1982, Ser. No. 372,835

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

Int. Cl.³ C12N *11/10, 11/04, 5/00, 5/02*

U.S. Cl. 435—178 **25 Claims**

18. A system for producing a substance which is produced by living cells comprising viable cells encapsulated within semipermeable membranes and suspended in an aqueous culture medium for said cells,

the semipermeable membranes of said encapsulated viable cells having an upper limit of permeability sufficient to allow traverse of nutrients required by said cells, said semipermeable membranes comprising a polysaccharide gel having plural anionic groups cross-linked with a polymer having a molecular weight greater than about 3000 and having plural cationic groups, said semipermeable membranes encapsulating suspended viable, healthy, physiologically active cells disposed in a medium which includes all components (A) needed to maintain viability of said cells and which components are of a size in excess of the upper permeability limit of said membranes,

said aqueous culture medium comprising all components (B) needed to maintain viability of said cells having a molecular weight below the upper permeability limit of said membranes.

4,409,332

COLLAGEN-ENZYME CONJUGATES THAT EXHIBIT NO INFLAMMATORY RESPONSE AND METHOD FOR MAKING THE SAME

Steven R. Jefferies, 5802 Leith Walk, Baltimore, Md. 21239; James L. Gutmann, 10112 Daventry Dr., Cockeysville, Md. 21030, and Barry M. Heatfield, 33 Penny La., Baltimore, Md. 21209

Filed Jan. 12, 1982, Ser. No. 338,973

Int. Cl.³ C12N *9/96*

U.S. Cl. 435—188 **11 Claims**

1. An inert, non-inflammatory polymeric conjugate of reconstituted collagen crosslinked to form a matrix and complexed with soluble alkaline phosphatase.

4,409,333

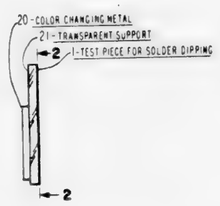
METHOD FOR THE EVALUATION OF SOLDERABILITY

Soitiro Tosima, Machida, and Shigeo Harada, Isehara, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 4, 1981, Ser. No. 327,595

Int. Cl.³ B23K *1/00*

U.S. Cl. 436—2 **15 Claims**



1. The method for evaluating the solderability properties of a molten solder, said method comprising the steps of

(a) providing a test piece having a transparent support with first and second surfaces, and having a metal film of a predetermined thickness formed on the first surface, said metal of the metal film being a metal which will alloy with the molten solder, said second surface be positioned relative to the first surface so that the area of the metal film on the first surface can be observed through the transparent support from the second surface;

(b) placing the metal film in contact with the molten solder;

(c) maintaining the metal film in contact with the molten solder for a measured length of time, at least sufficiently long enough for noticeable change due to alloying of the molten solder with the metal of the metal film to occur and be observed through the transparent support from second surface;

whereby, a rate of alloying of the molten solder with the predetermined thickness of the metal film is obtained which rate is directly related to the solderability properties of the molten solder.

4,409,334

STABILIZED THROMBIN PREPARATION

Helmut Lill, Wielenbach, and Knut Bartl, Wilzhofen, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,364

Claims priority, application Fed. Rep. of Germany, May 22, 1980, 3019612

Int. Cl.³ G01N *33/48;* **C09K** *3/00*

U.S. Cl. 436—8 **8 Claims**

1. Stabilized thrombin preparation comprising thrombin and as a stabilizer serum albumin together with at least one protease inhibitor which does not inhibit thrombin itself and at least one tetraligand or hexaligand chelate former.

4,409,335

METHOD FOR ELIMINATING GLUCOSE DEPENDENT SCHIFF BASE EFFECT FROM HEMOGLOBIN A_1 ASSAY

Mark S. Hanamoto, Mill Valley, and Steve K. Tanaka, Vallejo, both of Calif., assignors to Bio-Rad Laboratories, Inc., Richmond, Calif.

Filed May 28, 1982, Ser. No. 382,899

The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.

Int. Cl.³ G01N *33/66, 33/72*

U.S. Cl. 436—67 **16 Claims**

1. In a method for the separation of hemoglobin A_1 from nonglycosylated hemoglobins and the Schiff base precursors to hemoglobin A_1 in a sample of human blood which comprises:

(a) lysing the red blood cells in said sample to form a hemolysate,

(b) impregnating a weak cation exchange resin with said hemolysate,

(c) passing through said resin a buffer solution with ions of an alkali metal dissolved therein at a concentration of from about 0.06 M to about 0.11 M to dissociate said Schiff base precursors into glucose and hemoglobin A and to preferentially elute said glucose and said hemoglobin A_1 over said hemoglobin A said other nonglycosylated hemoglobins, and

(d) recovering the eluate from step (c),

the improvement which comprises including an effective amount of a dihydroxyboryl compound in said hemolysate, said buffer solution, or both.

4,409,336

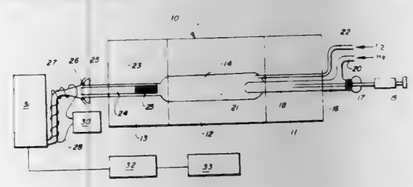
METHOD OF ANALYSIS FOR DETERMINING VERY LOW SULFUR LEVELS IN VOLATILIZABLE SAMPLES

Jack I. Oita, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 234,712, Feb. 17, 1981, abandoned. This application Jun. 7, 1982, Ser. No. 385,795

Int. Cl.³ G01N *31/12, 31/16*

U.S. Cl. 436—123 **6 Claims**



2. A method of analysis for determining very low levels of sulfur in volatilizable samples which contain sulfur and hydrocarbons which are convertible at least in part to unsatureated hydrocarbons by pyrolysis, which method comprises:

(a) contacting a sample of known quantity with a flowing stream of a carrier gas and oxygen at a temperature in the range of 800° C. to 1000° C. and sufficiently high to pyrolyze and volatilize the sample and to effect the oxidation of oxidizable sulfur containing components therein to sulfur dioxide and sulfur trioxide;

(b) conveying the pyrolyzed and volatilized components of said sample in the flowing stream of carrier gas through a fixed bed of cupric oxide maintained at a temperature in the range of about 650° C. to 800° C., whereby, sulfur dioxide and sulfur trioxide are quantitatively captured by the cupric oxide as copper sulfate and unsaturated hydrocarbons are oxidized so as to be noninterfering in an iodometric analysis;

(c) after all of the sulfur oxides are quantitatively captured, removing the stream of carrier gas together with the oxidized unsaturated hydrocarbons from contact with said fixed bed, and then raising the temperature of the cupric oxide above 840° C. to decompose said copper sulfate and liberate sulfur dioxide; and

(d) determining by iodometric titration the amount of sulfur dioxide which is liberated to determine the sulfur content of said sample.

4,409,337

GLASS ENVELOPES FOR TUNGSTEN-HALOGEN LAMPS

William H. Dumbaugh, Jr., Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 12, 1982, Ser. No. 440,865

Int. Cl.³ C03C *3/08*

U.S. Cl. 501—66 **4 Claims**

3. A glass exhibiting a strain point in excess of 665° C., a liquidus temperature no higher than 1125° C., a viscosity at the liquidus of at least 50,000 poises, and a coefficient of thermal expansion (0°-300° C.) between about $42\text{–}46\times10^{-7}$/°C., said glass consisting essentially, expressed in weight percent on the oxide basis, of

SiO_2—54–59
Al_2O_3—15.5–17.5
B_2O_3—3.75–5.5
CaO—6–9.25
MgO—4–6.25
BaO—5–11
ZnO—up to 4

wherein the sum $SiO_2+Al_2O_3$ will not exceed about 75%, the weight ratio SiO_2:Al_2O_3 is maintained about 3.1–3.7, and the weight ratio CaO:MgO is held between about 1.2–2.0.

4,409,338

PROCESS FOR FORMING FAST-COOL VINYL AROMATIC EXPANDABLE POLYMERS

Adolph V. DiGiulio, Wayne, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 31, 1983, Ser. No. 462,156

Int. Cl.³ C08J *9/18*

U.S. Cl. 521—59 **10 Claims**

1. A process for producing expandable vinyl aromatic polymer particles which exhibit fast-cooling properties in molded products produced therefrom comprising:

polymerizing a vinyl aromatic monomer in which is dissolved about 0.5 to 4.0 percent by weight, based on the vinyl aromatic monomer, of a triblock copolymer rubber of 2–50 weight percent of polymerized vinyl aromatic monomer and 50–98 weight percent of polymerized conjugated diene, to form vinyl aromatic polymer particles containing said triblock copolymer rubber; and impregnating the vinyl aromatic polymer particles, containing said triblock copolymer rubber, with a blowing agent.

4,409,339

HYDROPHILIC SULFONATED POLYOLEFIN POROUS MEMBRANE AND PROCESS FOR PREPARING THE SAME

Kazuo Matsuda; Mitsuo Kohno, both of Yokohama, and Yoshinao Doi, Moriyama, all of Japan, assignors to Asahi Kasei Kogyo, Osaka, Japan

Filed Oct. 6, 1980, Ser. No. 194,341
Claims priority, application Japan, Oct. 16, 1979, 54-132460
Int. Cl.³ C08F *110/00, 8/36;* **B01J** *47/12*
U.S. Cl. 521—143 **4 Claims**

1. A water permeable porous membrane which consists essentially of a sulfonated polyolefin selected from the group consisting of sulfonated polyethylene, sulfonated polypropylene, sulfonated polybutene and mixtures thereof and sulfonated copolymers of two or more kinds of monomers selected from ethylene, propylene, butene, hexene and tetrafluoroethylene, said polyolefin contains sulfonic groups in an amount, in terms of exchange capacity, of 0.05 to 1 milliequivalent per gram of the sulfonated polyolefin and has a porosity of 30 to 85% and an average pore diameter of 0.05 to 1μ.

4,409,340

HEAT-CURABLE COATING COMPOSITION, ITS USE AND PROCESS FOR COATING SUBSTRATES

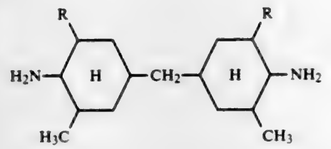
Heinrich Stolzenbach; Rudolf Heitzmann, and Siegfried Heinrich, all of Wuppertal, Fed. Rep. of Germany, assignors to Herberts GmbH, Wuppertal, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,061
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1981, 3108953
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—159 **19 Claims**

1. Heat-curable coating composition, consisting essentially of

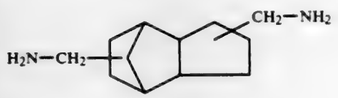
(A) a prepolymer with an average molecular weight of 500 to 15,000, which includes on the average 2 to 6 ketoxime-blocked NCO groups, which are linked via cycloaliphatic and/or aliphatic groups to the prepolymer,

(B) a cross linker from the group of amines having the formula



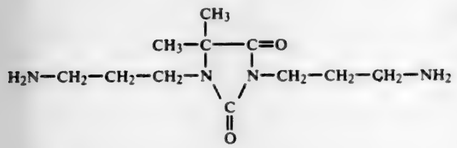
I

in which R represents hydrogen or a methyl group,



II

and



III

(C) organic solvents in an amount of 0 to 50 weight percent based on the total weight of the coating composition,

(D) optionally pigments, fillers, blowing agents and other known additives,

the equivalent ratio of blocked NCO groups of component (A) to NH_2 groups of component (B) lying between 1.3:1 and 0.75:1.

4,409,341

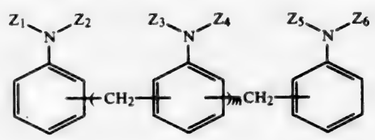
COMPOSITION FOR FIRE RETARDANT URETHANE FOAM

Yasuo Hira, Fujisawa; Susumu Tsuzuku, Tokyo; Makoto Iida, Kawasaki; Masao Gotoh, Yokosuka; Hitoshi Yokono, Katsuta; Yoshikazu Kimura, Seto, and Kazumi Iijima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

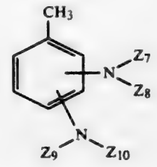
Filed Dec. 31, 1981, Ser. No. 336,323
Claims priority, application Japan, Feb. 9, 1981, 56-17002
Int. Cl.³ C08G *18/14, 18/32, 18/77*
U.S. Cl. 521—162 **8 Claims**

1. In a composition for forming rigid polyurethane foam comprising one or more polyols, one or more isocyanates, one or more catalysts, one or more foam stabilizers, one or more blowing agents and one or more fire retardants, the improvement wherein

(a) the one or more polyols comprises at least one polyol selected from polyols represented by the formulae (1) and (2) in an amount of 30 to 70% by weight of the polyols contained within said composition:

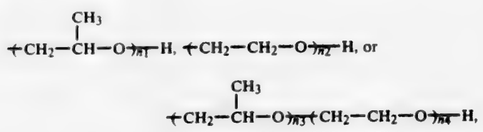


(1)



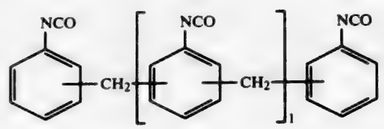
(2)

wherein m is zero or an integer of 1 to 4; Z_1 through Z_{10} are individually



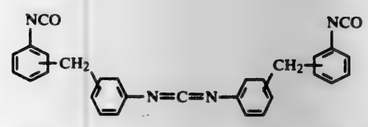
in which n_1 through n_4 are each an integer of 1 to 4;

(b) the one or more isocyanates consist of at least one isocyanate selected from isocyanates represented by the following formulae (3) and (4):



(3)

wherein 1 is 0–1.0,



(4)

the amount of the one or more isocyanates being 0.9 to 1.3 in terms of isocyanate index to the total polyols (a); and

(c) the one or more fire retardant consist of at least one halogen-containing phosphoric ester which is liquid at room temperature under atmospheric pressure; the amount of the one or more fire retardants being at least 0.35% by weight in terms of the content of phosphorus element in the total composition.

4,409,342

SYNERGISTIC REINFORCEMENT PROMOTER SYSTEMS FOR FILLED POLYMERS

Fred H. Ancker, Warren Township, Plainfield County; Arnold C. Ashcraft, Jr., Hightstown, both of N.J.; Eric R. Wagner, deceased, late of Basking Ridge, N.J., and by Maria M. Wagner, executrix, Princeton, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 27, 1981, Ser. No. 295,813
Int. Cl.³ C08K *3/10, 3/34, 3/26*
U.S. Cl. 523—202 **7 Claims**

1. A composition essentially free of free radical initiators comprising a hydrocarbon polymer, an inorganic filler, and about 0.1 to 5.0 weight percent of two interfacial agents wherein:

(a) said agents are capable of copolymerization with each other;

(b) at least one agent contains at least one reactive olefinic double bond capable of mechanico-chemical grafting to the polymer;

(c) one agent is more highly adsorbable onto the filler surface while the other agent is more highly soluble in the filled polymer; and

(d) said agents have a synergy index, S, being greater than zero, which is defined by the formula:

$$S=50(Q_A+Q_S-0.2)(1-10R_f')(0.5-\Delta^2)$$

wherein Q_A and Q_S are the Alfrey-Price resonance parameters of the most reactive olefinic double bonds in the adsorbable and soluble agents, respectively; R_f' is the relative flow ratio of the adsorbable agent measured by thin layer chromatography on a neutral silica gel using xylene as the eluant and di-n-butyl fumarate as the standard, and Δ is the the difference between the Hildebrand solubility parameter of the soluble agent and that of the polymer.

4,409,343

ADHESION OF RUBBER TO GLASS FIBERS

Richard M. Wise, Uniontown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 331,549, Dec. 17, 1981, Pat. No. 4,355,131, which is a continuation-in-part of Ser. No. 228,844, Jan. 26, 1981, abandoned. This application Jul. 22, 1982, Ser. No. 400,805
Int. Cl.³ C08L *61/10*
U.S. Cl. 523—206 **6 Claims**

1. A glass fiber reinforcing element containing from about 10 to 40% by weight (dry) based on the weight of said element of a heat cured adhesive composition useful for adhering said element to a rubber compound and comprising (a) 100 parts by weight of a rubbery graft copolymer of a seed of (1) a polymer of an acrylate monomer, said polymer having a glass transition temperature of not above about −20° C., said polymer optionally additionally containing copolymerized with said acrylate monomer a very minor amount by weight of a crosslinking polyunsaturated monomer, and a shell of (2) a copolymer of a vinyl pyridine monomer having from 7 to 9 carbon atoms and a conjugated diene monomer having from 4 to 6 carbon atoms, wherein in said graft copolymer the total amount of said monomers forming said graft copolymer is from about 8 to 20% by weight of said acrylate monomer, from 3 to 20% by weight of said vinyl pyridine monomer and from 60 to 89% by weight of said conjugated diene monomer and (b) from about 3 to 15 parts by weight of a water soluble thermosetting phenolic-aldehyde resin.

4,409,344

LOW SHRINK UNSATURATED POLYESTER RESINOUS COMPOSITION

Thomas J. Moulson, and John E. Greenzweig, both of Minneapolis, Minn., assignors to Cargill Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 138,660, Apr. 9, 1980, Pat. No. 4,298,711. This application Jun. 23, 1981, Ser. No. 276,478
Int. Cl.³ C08K *3/04, 3/08*
U.S. Cl. 523—512 **10 Claims**

1. A molding compound containing fibrous reinforcement comprising:

(a) a low shrink polyester which is a product of a mixture of

(i) from about 25 to about 35 parts by weight of a member selected from the group consisting of maleic acid, fumaric acid, their anhydrides and mixtures thereof;

from about 5 to about 25 parts by weight of a member selected from the group consisting of isophthalic acid, phthalic acid, their anhydrides, and mixtures thereof;

from about 10 to about 40 parts by weight propylene glycol;

from about 10 to about 30 parts by weight dipropylene glycol;

from about 5 to about 30 parts by weight propylene glycol terephthalate;

(ii) heating said mixture of about 420° F. until a neat resin is formed with an acid number of from about 5 to about 50; and

(iii) diluting the neat resin with from about 25 to about 100 parts by weight of a member selected from the group consisting of styrene, vinyl toluene and mixtures thereof;

(b) mixing said resin with a filler, fibrous reinforcing agent and catalyst-initiator.

4,409,345

POLYOLEFIN RESIN COMPOSITION

Tsutomu Moteki, Sodegauramachi; Kazuo Aoki, Chibashi; Kunihiro Yamaguchi, and Michio Yoshizaki, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 30, 1981, Ser. No. 335,678
Claims priority, application Japan, Jan. 6, 1981, 56-614
Int. Cl.³ C08L *23/04*
U.S. Cl. 524—13 **4 Claims**

1. A polyolefin resin composition comprising:

(a) a resin mixture comprising 50 to 90% by weight of a block copolymer of propylene containing at most 40% by weight of ethylene or butene and 8 to 50% by weight of a high density polyethylene resin, each based on the weight of said resin mixture;

(b) a modified polyolefin resin obtained by graft-polymerizing at least one monomer selected from the group consisting of polymerizable unsaturated carboxylic acids, their salts and their esters; and

(c) finely divided vegetable fibers, the ratio by weight of (a) to (b) being in the range of 55:45 to 99:1, and the content of (c) being in the range of 15 to 70% by weight based on the dry weight of the fibers and based on the weight of the composition.

4,409,346

COMPOSITIONS STABILIZED BY 6-AMINO-DIBENZ[D,G][1,3,2]DIOXAPHOSPHOCINES

Michael Rasberger, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 146,974, May 5, 1980, Pat. No. 4,322,527. This application Dec. 15, 1980, Ser. No. 216,350

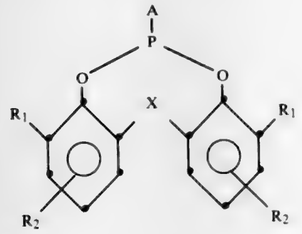
Claims priority, application Switzerland, May 15, 1979, 4504/79

Int. Cl.³ C08K *5/46, 5/15, 5/49, 5/51*

U.S. Cl. 524—83 **14 Claims**

1. A composition comprising an organic substrate stabilized by an effective amount of a compound of formula I

(I)

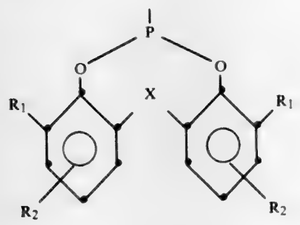


wherein

R_1 is hydrogen, C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, phenyl or C_7–C_9 phenylalkyl and R_2 is hydrogen or C_1–C_{18} alkyl, or, if R_1 is hydrogen, R_2 is a divalent 1,1,3,3-tetramethylpropylene radical fused in the 2-position and 3-position or the 9-position and 10-position, and X is a group —CH(R_3)—, in which R_3 is hydrogen or a radical of the formula II —CH(R_4)—CH(R_5)SR_6, and each of R_4 and R_5 independently is hydrogen or C_1–C_6 alkyl and R_6 is C_1–C_{20} alkyl, while the alkyl group can be interrupted by one or more sulfur atoms, and

A is a group —N(R_7)R_8 (IV), in which R_7 is hydrogen, C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycloalkyl, C_6–C_{14} aryl, C_7–C_{15} alkaryl, C_7–C_{15} aralkyl, a substituted or unsubstituted C_5–C_{17} piperidin-4- or -1-yl group or a group of the formula III

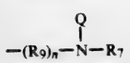
(III)



in which

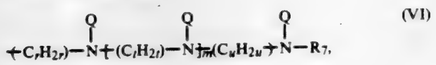
R_1, R_2 and X are as defined above, and R_8 is C_1–C_{22} alkyl, C_2–C_{21} oxa- or thiaalkyl, C_3–C_{18} alkenyl, C_3–C_{18} alkynyl, C_2–C_6 hydroxyalkyl, C_3–C_{24} alkoxycarbonylalkyl, C_5–C_{12} cycloalkyl, C_6–C_{14} aryl, C_7–C_{15} alkaryl, C_7–C_{15} aralkyl, a substituted or unsubstituted C_5–C_{17} piperidin-4-yl group or a group of the formula

(V)



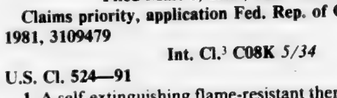
or

(VI)

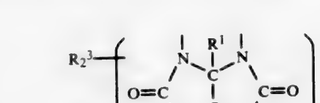


in which

R_7 is as defined above and n is 0 or 1, and R_9 is C_2–C_{22} alkylene which can be interrupted by one or two oxygen or sulfur atoms, or is C_4–C_{22} alkenylene, C_4–C_{22} alkynylene, C_5–C_9 cycloalkylene or a group of the formula

VII 

in which R_{10} is —O—, —S— or —(R_{11})C(R_{12})—, in which each of R_{11} and R_{12} independently is hydrogen or C_1–C_8 alkyl, or R_{11} and R_{12} together with the carbon atom to which they are attached form C_5–C_{12} cycloalkyl; and R_9 is also phenylene, biphenylene or a group of the formula VIII



in which

R_{10} is as defined above, and each of r, t and u independently is 2, 3, 4, 5 or 6 and m is 0, 1, 2 or 3, and Q is a group of the formula III, in which R_1, R_2 and X are as defined above, or R_7 and R_8 together with the nitrogen atom to which they are attached are also substituted or unsubstituted pyrrolidine, oxazolidine, piperidine or morpholine, or R_7 and R_8 together form the radical —CH_2—CH_2—N(-Q)—CH_2—CH_2—, in which Q is as defined above.

4,409,347

FLAME-PROOF POLYAMIDE MOULDING COMPOSITIONS

Ludwig Rottmaier, Odenthal; Rudolf Merten, Leverkusen; Milan J. Tima, Cologne, and Dietrich Michael, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 8, 1982, Ser. No. 355,602

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1981, 3109479

Int. Cl.³ C08K *5/34*

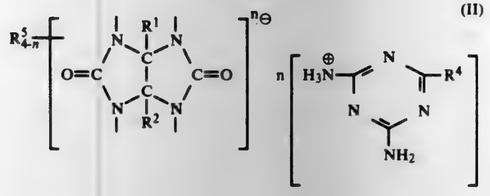
U.S. Cl. 524—91 **9 Claims**

1. A self-extinguishing flame-resistant thermoplastic polyamide moulding composition which optionally contains up to 60% by weight, based on the total composition, of reinforcing material and/or filler and optionally other conventional aids or additives, and which contains from 0.1 to 20% by weight, based on the total composition, of at least one glycoluryl, a reaction product of a glycoluryl or a mixture thereof as flame-proofing agent, said glycoluryl being of the formula

(I)

and said reaction product of glycoluryl being of the formula

(II)



wherein

R^1 and R^2 may be the same or different and each independently represents hydrogen or an aliphatic or aromatic radical;

R^3 represents hydrogen or an aliphatic, cycloaliphatic, araliphatic or aromatic radical;

R^4 represents hydrogen, amino, an aliphatic, cycloaliphatic, araliphatic or aromatic radical or one of said radicals substituted with halogen;

R^5 represents hydrogen or an aliphatic, cycloaliphatic, araliphatic or aromatic radical and

n represents an integer of from 1 to 4.

4,409,348

POLY-BIS-TRIAZINYLAMINOTRIAZINYLAMINES, THEIR PREPARATION AND THEIR USE AS LIGHT STABILIZERS FOR PLASTICS, AND PLASTICS WHICH HAVE BEEN STABILIZED WITH THEM

Hartmut Wiezer, Gersthofen, and Gerhard Pfahler, Augsburg, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed May 3, 1982, Ser. No. 374,085

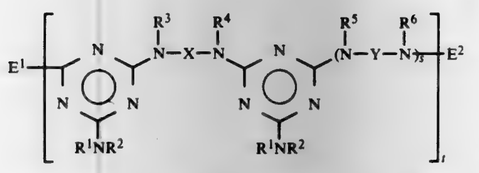
Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3117964

Int. Cl.³ C07D *43/00;* **C08K** *5/34;* **C08L** *79/04*

U.S. Cl. 524—100 **5 Claims**

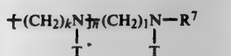
1. A poly-bis-triazinylaminotriazinylamine of the formula (I)

(I)

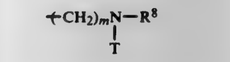


in which s is 0 or 1, t denotes an integer from 1 to 100 and R^1 and R^2 are identical or different and represent a group of the formula (II) or (III)

(II)

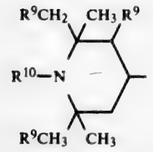


(III)



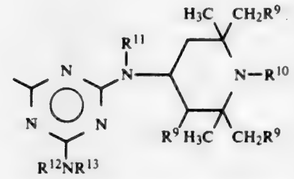
in which formulae k, l and m denote identical or different integers from 2 to 6 and n denotes an integer from 0 to 3, R^7 and R^8 are identical or different and represent hydrogen, C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, C_7–C_9 phenylalkyl or a group of the formula (IV)

(IV)



in which R^9 is hydrogen or methyl and R^{10} is hydrogen, C_1–C_{12} alkyl which can be substituted by 1 or 2 hydroxyl groups, C_3–C_8 alkenyl or benzyl, and T denotes a radical of the formula (V)

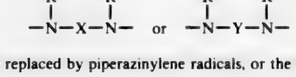
(V)



in which R^9 and R^{10} have the meanings indicated above, R^{11} and R^{12} are identical or different radicals which denote hydrogen, C_1–C_{18} alkyl which can be substituted by hydroxyl, C_1–C_{18} alkoxy or C_1–C_2 alkylamino, or denote C_5–C_{12} cycloalkyl which can be substituted by 1 to 4 C_1–C_4 alkyl groups, or denote allyl, phenyl which can be substituted by up to two C_1–C_8 alkyl groups and/or by an OH group, C_7–C_{14} aralkyl or a group of the formula (IV), and R^{13} denotes hydrogen, C_1–C_{18} alkyl, C_5–C_{12} cycloalkyl, C_7–C_{14} aralkyl or a group of the formula (IV), R^3, R^4, R^5 and R^6 represent identical or different radicals R^{13}, X and Y are identical or different and denote C_2–C_{18} alkylene, C_2–C_{12} bis-(propoxy)-alkylene or monocycloalkylene, dicycloalkylene or tricycloalkylene which has 6 to 18 C atoms and which can be substituted by up to four methyl groups and in which, moreover, up to two C atoms can be replaced by N atoms which can carry propylene groups, or denote C_6–C_{18} arylene or C_7–C_{18} aralkylene, or the groupings



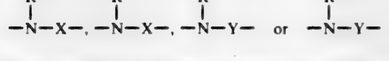
or



can be replaced by piperazinylene radicals, or the groupings



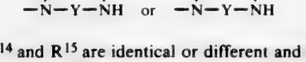
or



can be replaced by C_5–C_9 azamonocycloalkylene or azabicycloalkylene radicals which can be substituted by up to four methyl groups, with the limitation that, if s = zero, X is not C_2–C_6 alkylene or C_2 to C_6 alkylene which is interrupted by 0, and, if s = 1, either X alone or Y alone may be C_2–C_6 alkylene or C_2–C_6 alkylene which is interrupted by 0, E^1 represents Cl or a group of the formula —$NR^{14}R^{15}$,



or



in which R^{14} and R^{15} are identical or different and denote R^1 or R^2, and, if t = 1, R^{14} can also denote a radical R^{11} or R^{12} and R^{15} can denote a radical R^{13}, and E^2 is H, Cl or —$NR^{14}R^{15}$, and, in formula (I), at least one of the radicals R^1, R^2, R^3, R^4, R^5 and R^6 denotes a group of the formula (IV) or contains this group.

5. Synthetic polymers which have been stabilized against

decomposition by UV light and which contain 0.01 to 5 parts by weight, relative to the polymer, of a compound as claimed in claim 1.

4,409,349

STABILIZED POLYCARBONATE COMPOSITIONS

George E. Ham, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 22, 1982, Ser. No. 370,698
Int. Cl.³ C08K 5/15
U.S. Cl. 524—108 6 Claims

1. A heat stabilized aromatic polycarbonate composition resistant to yellowing which comprises an aromatic polycarbonate blended with a heat stabilizing amount of a 2-keto-1,3-dioxolane containing compound having a boiling point greater than about 250° C.

4,409,350

FIRE RETARDANT ACRYLIC FIBERS CONTAINING ORGANO-TIN-SULFUR COMPOUND HAVING HIGH DEGREE OF GLOSSINESS

Kazuaki Fujiwara, Himeji, and Akio Konishi, Kakogawa, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1981, Ser. No. 317,256
Claims priority, application Japan, Nov. 26, 1980, 55/167128
Int. Cl.³ C08K 3/00
U.S. Cl. 524—180 5 Claims

1. Acrylic fiber comprising a copolymer containing 30 to 70% by weight of acrylonitrile and 30 to 70% by weight of at least one halogen-containing monomer, said fiber further containing 0.2 to 3.0% by weight of at least one organic tin compound containing sulfur which is soluble in a solvent in which said copolymer is soluble, and 0.2 to 20% by weight of a glycidyl methacrylate polymer, based on the weight of said copolymer.

4,409,351

COMPOSITIONS COMPRISING THERMOPLASTIC RESIN AND LONG CHAINED FATTY ACID

Garland G. Lee, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jun. 15, 1981, Ser. No. 273,589
Int. Cl.³ C08K 5/09; C08L 69/00, 91/06
U.S. Cl. 524—322 15 Claims

1. A composition comprising a thermoplastic resin selected from the group consisting of aromatic polycarbonate, polysulfone, polyethersulfone, polysulfide or polyacrylate in admixture with an injection mold releasing effective amount of a saturated or unsaturated fatty acid having from about 14 to about 36 carbon atoms, inclusive.

4,409,352

METHOD OF MAKING A DISPERSION LACQUER FOR LUMINESCENT SCREENS

Heinz Beckerle, Aichwald; Lothar Huster, Plochingen, and Rolf Zondler, Stuttgart, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,639
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1980, 3046373
Int. Cl.³ C08K 3/38
U.S. Cl. 524—405 10 Claims

1. Method of making a dispersion lacquer containing a boric-acid compound and intended for use as a volatilizable substrate layer during the metallization of a luminescent screen, wherein an aqueous emission of a polyacrylate, an inorganic binder, and an oxidizing agent are used, the improvement comprising the steps of:

adding an aqueous solution of a polyvinylalcohol and a boric-acid solution as separate ingredients at approximately room temperature; and

adding a neutralizer to adjust the pH value of the dispersion lacquer to a desired level, whereby a desired viscosity is obtained.

4,409,353

EASILY DISPERSIBLE COMPOSITION FOR WATER SOLUBLE POLYMER

Osamu Umekawa, Kaizuka; Yosuke Ito, Osaka, and Sakae Katayama, Kobe, all of Japan, assignors to Katayama Chemical Works Co., Ltd., Osaka, Japan

Filed Jun. 29, 1982, Ser. No. 393,380
Claims priority, application Japan, Jul. 11, 1981, 56-108686
Int. Cl.³ C08K 3/30
U.S. Cl. 524—421 13 Claims

1. An easily dispersible composition having a high degree of granularity and free-fluidity which comprises a powder of a water-soluble polymer having flocculating ability and a hydrated sodium sulfate, and if required a hydrated magnesium sulfate and/or a hydroscopic agent.

4,409,354

FLUORINATED RESIN COATING COMPOSITION CONTAINING MICACEOUS IRON OXIDE

Mutsusuke Namba, Settsu; Seisuke Suzue, Ibaraki; Toshio Mizuno, Takatsuki, and Yoshiaki Kataoka, Settsu, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00013, § 371 Date Sep. 1, 1981, § 102(e) Date Sep. 1, 1981, PCT Pub. No. WO81/02161, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 21, 1981, Ser. No. 299,026
Int. Cl.³ C08K 3/08; C08L 27/18; B32B 27/20; C09D 3/78
U.S. Cl. 524—431 15 Claims

1. A fluorinated resin coating composition comprising (a) a fluorinated resin, (b) micaceous iron oxide and (c) a liquid carrier.

4,409,355

PROCESS FOR PREPARING HIGH SOLIDS COPOLYMER LATICES WITH LOW VISCOSITY

Manfred Heimberg, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 294,021, Aug. 18, 1981, which is a continuation of Ser. No. 128,603, Mar. 10, 1980, abandoned.
This application Jan. 29, 1982, Ser. No. 344,234
Int. Cl.³ C08L 33/08, 33/10
U.S. Cl. 524—458 14 Claims

1. A process for preparing copolymer latices possessing a solids content of at least about 60 weight percent and a viscosity not exceeding 15,000 cp. Brookfield Viscosity (RVF, Spindle No. 4) at 2 rpm from (a) vinyl acetate in an amount representing from about 10 weight percent to about 95 weight percent of total monomer charge, and (b) at least one monomer selected from the group consisting of acrylate ester, methacrylate ester, and vinyl ester of an alpha-branched saturated monocarboxylic acid representing the balance of the total monomer charge which comprises polymerizing in a single reaction stage at least 10 weight percent of the total vinyl acetate monomer (a) and from 0 to about 50 weight percent of the total acrylate ester, methyacrylate ester and/or vinyl ester of alpha-branched saturated monocarboxylic acid monomer (b) in an aqueous emulsion reaction medium containing a polymerization catalyst, and thereafter polymerizing in said reactor in a second stage the remaining portion of the total vinyl acetate monomer (a) together with the remaining portion of the acrylate ester, methacrylate ester, and/or vinyl ester of alpha-branched saturated carboxylic acid monomer (b) in the reaction medium containing additional catalyst if needed, polymerization being continued substantially to completion.

4,409,356

ORGANOSILICIC ELASTOMERS REINFORCED WITH IMPROVED PRECIPITATED SILICA PARTICULATES

Robert Lagarde, Feyzin, and Georges Vrisakis, Collonges au Mont d'Or, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 19, 1980, Ser. No. 218,291
Claims priority, application France, Dec. 20, 1979, 79 31218
Int. Cl.³ C08K 3/34
U.S. Cl. 524—492 15 Claims

1. A filler reinforced organosilicic polymeric composition of matter, the reinforcing filler therefor comprising a reinforcing amount of precipitated silica particulates having the properties:

(i)	BET surface area	190 to 340 m^2/g
(ii)	CTAB surface area	180 to 280 m^2/g
(iii)	Ratio $\frac{\text{BET surface area}}{\text{CTAB surface area}}$	0.9 to 1.2
(iv)	Residual sodium content	<500 ppm
(v)	pH	3.5 to 6.0
(vi)	Specific volume V_o	>4.2
(vii)	Amount of particles of a size as will not pass through a 45μ mesh sieve	<0.05%

4,409,357

FOOTWEAR-COMPOUNDS FROM DERIVATIZED STAR-BLOCK COPOLYMERS

Ralph Milkovich, Paoli, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 10, 1981, Ser. No. 300,832
Int. Cl.³ C08L 91/00, 53/02; C08K 3/36, 5/01
U.S. Cl. 524—505 5 Claims

1. A shoe-sole composition having greater processibility and adhesion to shoe uppers than composition made with underivatized copolymers consisting of:

(a) 100 parts by weight of a star-block copolymer of 10 to 55% by weight of a monovinyl aromatic monomer and 45 to 90% by weight of a conjugated diene monomer of 4 to to 8 carbon atoms; said copolymer having at least three arms connected to a polyvinyl aromatic compound nucleus and polar functional groups attached to said nucleus by reacting a derivatization agent directly at the nucleus;

(b) about 80–250 parts by weight of a naphthenic extender oil;

(c) about 40–150 parts by weight of a polystyrene material selected from the group consisting of low molecular weight polystyrene, low molecular weight poly-alphamethylstyrene, and mixtures thereof;

(d) about 0–80 parts by weight of a finely divided filler; and

(e) about 0–50 parts by weight of stabilizers.

4,409,358

COPPER COMPLEXES

Helmut Kraft, Wattenheim; Heinz Schumacher, Weinheim; Ernst-Heinrich Pommer; Dietrich Schlotterbeck, both of Limburgerhof, and Gregor Ley, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,800
Claims priority, application Fed. Rep. of Germany, May 3, 1980, 3017123; Jun. 14, 1980, 3022432; Oct. 18, 1980, 3039409
Int. Cl.³ C07F 1/08
U.S. Cl. 524—547 6 Claims

1. A copper ammine salt of a polymer or copolymer of acrylic acid or methacrylic acid, wherein the term ammine includes complexes of ammonia and/or low molecular weight volatile amines and wherein the anion is a polymer or copolymer of 60–100% of acrylic acid and/or methacrylic acid and 0–40% of a lower alkyl ester of acrylic acid or a lower alkyl ester of methacrylic acid.

4,409,359

SEALING COMPOUND FOR CAN ENDS

Yusaburo Tanimura, Kawasaki, and Hideo Kumasaka, Yokosuka, both of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,713
Claims priority, application Japan, Feb. 13, 1981, 56-18966
Int. Cl.³ C08L 7/00, 9/00
U.S. Cl. 524—575 8 Claims

1. A sealing compound for can ends excellent in the adaptability to the lining operation, which comprises an aqueous latex of a styrene-butadiene rubber, a tackifier and a filler, wherein said latex contains styrene-butadiene rubber particles having a number average particle size of from 1600 to 3000 Å, which are stabilized by an emulsifier or a dispersant.

4,409,360

UNSATURATED POLYESTERS CONTAINING DICYCLOPENTADIENE IN THE FORM OF ITS ESTERS AND ETHERS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 23, 1982, Ser. No. 422,323
Int. Cl.³ C08K 5/04
U.S. Cl. 524—804 9 Claims

1. An unsaturated polyester resin having dicylopentadienyl ether functionality and dicyclopentadienyl ester functionality produced by reacting under resin forming conditions

(A) an alpha, beta ethylenically unsaturated polycarboxylic acid, anhydride, or mixture thereof,

(B) about 0.05 to about 1.0 mole dicyclopentadiene, polycyclopentadiene, or a dicyclopentadiene concentrate per mole of (A),

(C) about 0.03 to about 10 moles of water per mole of (A),

(D) a polyol, and

(E) an ether compound having one of the formulas

$$R_o-O-(R_1-O)_n-CH_2-CH(R_2)-CH_2-R_3 \quad \text{I.}$$

$$R_o-O-R_4-OH \quad \text{II.}$$

$$R_o-O-CH_2-\underset{\displaystyle R_5}{\overset{\displaystyle R_2}{\underset{|}{\overset{|}{C}}}}-CH_2-R_6 \quad \text{III.}$$

$$R_o-OCH_2-CH(R_2)_4-CH_2-OH \quad \text{IV.}$$

where

R_0 = dicyclopentadienyl

$n = 0–2$

$R_1 = -C_xH_{2x}-(O-C_xH_{2x})_z$

$x = 1–4$

$z = 0–2$

$R_2 = -OH, -O-R_0$

$R_3 = R_2, -O-CH_2-CH(R_2)-CH_2-R_2$

$R_4 = -C_yH_{2y}-(O-C_yH_{2y})_w$

$y = 2–4$

$w = 0–2$

$R_5 = R_2, -CH_2-OH, -CH_2-O-R_0, -CH_3$, or $-H$

$R_6 = -OH, -CH_2-OH, -CH_2-O-R_0, -O-R_0, -(O-C_yH_{2y})_w-OH$; and wherein

R_2, R_3, R_5 and R_6 are chosen so that each compound has at least one hydroxyl group, with the proviso that the combined moles of (D) and (E) are in the range of 0.30 to 2.2 moles per mole of (A).

4,409,361
FIRE RETARDANT POLYMER RESIN

Lawrence E. McAllister, Saco, and Herbert Dietrich, Kennebunk, both of Me., assignors to Fiber Materials, Inc., Biddeford, Me.

Continuation-in-part of Ser. No. 232,980, Feb. 9, 1981, abandoned, which is a division of Ser. No. 73,218, Sep. 7, 1979, Pat. No. 4,275,170, which is a continuation-in-part of Ser. No. 58,567, Jul. 18, 1979, abandoned. This application Nov. 4, 1981, Ser. No. 318,141

Int. Cl.³ C08L *61/04*

U.S. Cl. 524—876 **8 Claims**

1. Method of forming a flame retardant polymer resin, said method comprising the steps of:

mixing an initially non-aqueous substantially unreacted solution of a phenol in a liquid aldehyde in molar ratio of about 0.5 to 1 phenol to aldehyde, said phenol being selected from the group consisting of metacresol, orthocresol, 3,5-dimethylphenol, resorcinol and substituted resorcinols, said aldehyde being selected from the group consisting of furfural and mixtures of furfural and paraformaldehyde;

effecting condensation polymerization of said solution into said resin; and

adding to said solution prior to polymerization, refractory fibers having an aspect ratio of greater than about 10, said fibers being selected from the group consisting of carbon, graphite, silica and metal oxides and silicates.

4,409,362
RESIN-OIL SHALE COMPOSITE REACTION PRODUCT

Joseph A. Bzdula, Fulton, and Howard W. Sibley, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 12, 1982, Ser. No. 377,529

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—54.5 **10 Claims**

1. A composite reaction product formed from a mixture of oil shale or organics separated therefrom, a resin or resin precursor reactive with said oil shale or organics and a catalyst agent for the reaction between the oil shale or organics separated therefrom and said reactive resin or resin precursor.

4,409,363
PROCESS FOR THE MANUFACTURE OF A MIXTURE OF POLYCARBONATES AND STYRENE-CONTAINING POLYMERS, USE OF THE MIXTURE AND MOLDED PARTS THEREOF

Franz Brandstetter, Neustadt, and Franz Haaf, Bad Durkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,762

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1981, 3106758

Int. Cl.³ C08L *69/00*

U.S. Cl. 525—67 **6 Claims**

1. A process for the manufacture of a mixture of a polycarbonate and a styrene containing polymer comprises

(a) contacting a dissolved polycarbonate with a precipitating agent and subsequently removing the solvent and the precipitating agent from the precipitated solid material to prepare a polycarbonate having a residual moisture, and

(b) mixing the polycarbonate having the residual moisture and styrene-containing polymer melt at a temperature above the softening range of the polycarbonate and styrene-containing polymer

wherein the polycarbonate having the residual moisture contains more than 1 and less than 50 percent by weight residual moisture, relative to the weight of polycarbonate, and wherein the mixing of the polycarbonate having the residual moisture and the styrene-containing polymer is accomplished while removing volatile ingredients.

4,409,364
ADHESIVE BLENDS AND COMPOSITE STRUCTURES COMPRISING ACID OR ANHYDRIDE MODIFIED PE + HOPE + POLYPROPYLENE

Seymour Schmukler, Palatine; John Machonis, Jr., Schaumburg, and Mitsuzo Shida, Barrington, all of Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Filed Dec. 4, 1981, Ser. No. 327,278

Int. Cl.³ C08L *51/06, 23/26*

U.S. Cl. 525—74 **10 Claims**

1. An adhesive blend consisting essentially of

(a) about 0.1–40 parts by weight in said blend of a graft copolymer of about 70–99.999 wt.% of a polyethylene backbone grafted with about 30–0.001 wt.% of at least one grafting monomer comprising at least one polymerizable ethylenically unsaturated carboxylic acid or carboxylic acid anhydride for a total of 100% and

(b) about 99.9–60 parts by weight of a blending resin mixture of about 25–90 wt.% of a high density polyethylene and about 75–10 wt.% of a polypropylene for a total of 100%.

4,409,365
THERMOPLASTIC RUBBER BLENDS COMPRISING CRYSTALLINE POLYOLEFIN, VULCANIZED MONO-OLEFIN RUBBER AND VULCANIZED NITRILE RUBBER

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 22, 1982, Ser. No. 443,355

Int. Cl.³ C08L *9/02, 23/16, 23/26, 53/00*

U.S. Cl. 525—78 **14 Claims**

1. An elastoplastic composition comprising a mixture of about 10 to 75 parts by weight of (a) an elastoplastic composition comprising a blend of about 15 to 75 parts by weight of crystalline polyolefin resin and, correspondingly, 85 to about 25 parts by weight of vulcanized monoolefin rubber, and, correspondingly, 90 to about 25 parts by weight of (b) an elastoplastic composition comprising a blend of about 25 to 75 parts by weight of crystalline polyolefin resin, and correspondingly, 75 to about 25 parts by weight of vulcanized nitrile rubber.

4,409,366
HOMOGENEOUS BLENDS OF A TRANS-ISOMER OF POLYISOPRENE

Henry Schmelzer, 66 Wingra Ave., Rutherford, N.J. 07070

Continuation of Ser. No. 196,735, Oct. 14, 1980, abandoned, which is a continuation of Ser. No. 107,375, Dec. 26, 1979, abandoned. This application Apr. 19, 1982, Ser. No. 369,615

Int. Cl.³ C08L *7/00, 33/02*

U.S. Cl. 525—221 **14 Claims**

1. A composition comprising an apparently homogeneous blend of from 10% to 90% by weight of trans-isomer of poly(1,4-isoprene) substantially free of depolymerized polymer, in combination with from 90% to 10% by weight of an ionomer that contains at least one mol percent of an ethylenically unsaturated carboxylic acid having one or two carboxylic acid groups, wherein at least about 10% of the carboxyl groups are neutralized by a metal having an ionic valence of from one to three, inclusive, and up to about 15% by weight of a cis-isomer of natural rubber or synthetic rubber.

4,409,367
PROCESS FOR CROSS-LINKING POLYMERS

Wilhelmus M. Beijleveld, ZM Olst, and Jan D. van Drumpt, ZD Deventer, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

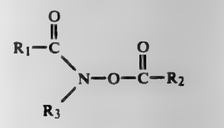
Filed Jan. 8, 1982, Ser. No. 338,172

Claims priority, application Netherlands, Jan. 20, 1981, 8100240

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—277 **7 Claims**

1. In a process for cross-linking a polymer selected from the group consisting of polyethylene and ethylenepropylene copolymers by contacting said polymer with a cross-linking agent at an elevated temperature, the improvement comprising using as the cross-linking agent a compound of the formula



(I)

wherein R_1 and R_2 are independently selected from the group consisting of alkyl groups having 1–22 carbon atoms, alkenyl groups having 2–22 carbon atoms, cyclohexyl groups having 6–20 carbon atoms, phenyl groups having 6–20 carbon atoms, aralkyl groups having 7–20 carbon atoms, alkyloxy groups having 1–22 carbon atoms, alkenyloxy groups having 2–22 carbon atoms, and cyclohexyloxy groups having 6–20 carbon atoms, all of which groups may be substituted or unsubstituted; R_3 is selected from the group consisting of hydrogen, alkyl groups having 1–22 carbon atoms, alkenyl groups having 2–22 carbon atoms, cyclohexyl groups having 6–20 carbon atoms, phenyl groups having 6–20 carbon atoms, aralkyl groups having 7–20 carbon atoms, and



wherein R_4 is independently selected from the same group as R_1 and R_2 as defined above, all of which groups may be substituted or unsubstituted; provided that when R_3 is hydrogen, R_1 represents an alkyloxy, alkenyloxy or cyclohexyloxy group as defined above.

4,409,368
PREPARATION OF STAR POLYMERS

Francis J. Vitus; Ivan G. Hargis, both of Tallmadge; Russell A. Livigni, and Sundar L. Aggarwal, both of Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Jul. 13, 1981, Ser. No. 282,671

Int. Cl.³ C08F *297/04*

U.S. Cl. 525—314 **9 Claims**

1. The method which comprises polymerizing under inert conditions in a hydrocarbon solvent at a temperature of from about 0° to 120° C., or from about 20° to 80° C., a polymerizable ethylenically unsaturated monomer having an activated unsaturated double bond with a hydrocarbon soluble, gel free and stable initiator in a minor amount sufficient to polymerize said monomer to obtain a polymer, said initiator being free of a solubilizing polymerizable comonomer and comprising the adduct of RLi where R is selected from the group consisting of normal, secondary and tertiary alkyl and cycloalkyl radicals of from 2 to 20 carbon atoms, or from 2 to 10 carbon atoms, and a diethylenically unsaturated aromatic compound selected from the group consisting of divinyl benzene and disopropenyl benzene and mixtures thereof, the mole ratio of RLi to said aromatic compound being about 1:0.83, said adduct having an average of from about 4 to 9 C-Li sites and a VPO $\overline{Mn}$ of from about 750 to 4,000 and said polymer having an average of from about 4 to 9 arms and having Li atoms on the ends of said arms.

4,409,369
TRANSPARENT IMPACT RESIN AND PROCESS FOR THE PREPARATION THEREOF

Charles E. Lyons, and Lu H. Tung, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 126,796, Mar. 3, 1980, abandoned. This application May 21, 1981, Ser. No. 265,760

Int. Cl.³ C08L *53/02*

U.S. Cl. 525—314 **21 Claims**

1. A transparent impact resistant alkenyl aromatic resin, the alkenyl aromatic resin being prepared by the free radical polymerization of a monomer, the monomer consisting essentially of an alkenyl aromatic monomer, in the presence of a block copolymer of the AB or $AB(BA)_n$ configuration wherein A represents a block of polymerized alkenyl aromatic monomer and B represents a block of diene polymer and n is an integer of from 1 to 5, the resin having a plurality of diene domains in the form of rods and spheres having diameters less than about 70 nanometers and without observable occlusions of polymerized alkenyl aromatic monomer.

4,409,370
THERMOPLASTIC BLEND OF OXYMETHYLENE COPOLYMERS EXHIBITING IMPROVED IMPACT RESISTANCE

Michael F. Froix, Menlo Park, Calif., and Rajal M. Kusumgar, North Plainfield, N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 165,535, Jul. 3, 1980, abandoned. This application May 26, 1982, Ser. No. 382,215

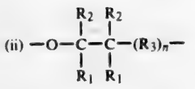
Int. Cl.³ C08L *59/04*

U.S. Cl. 525—414 **10 Claims**

1. A polymer blend having improved impact resistance comprising:

(A) a first copolymer whose recurring units consist essentially of

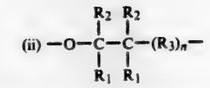
(i) oxymethylene groups having the formula $—OCH_2—$ interspersed with



groups, where each R_1 and R_2 is selected from the group consisting of hydrogen, lower alkyl radicals, and halogen-substituted lower alkyl radicals, each R_3 is selected from the group consisting of methylene, oxymethylene, lower alkyl and haloalkyl substituted methylene, and lower alkyl and haloalkyl substituted oxymethylene radicals, and n is an integer from zero to three, each lower alkyl radical having one to two carbon atoms, said oxymethylene units of said first copolymer comprising approximately 85 to approximately 99.9 mole percent of the recurring units of said first copolymer, said (ii) groups of said first copolymer being incorporated during the step of copolymerization to produce said first copolymer by the opening of the ring of a cyclic ether having adjacent carbon atoms by the breaking of an oxygen-to-carbon linkage, and

(B) a second copolymer whose randomly recurring units consist of

(i) oxymethylene groups having the formula $—OCH_2—$ interspersed with



groups, where R_1, R_2, R_3 and n have the same meanings as the corresponding symbols used with regard to said first copolymer and where the selections made with regard to said second copolymer are independent of the selections made with regard to said first copolymer, said oxymethylene groups of said second copolymer comprising approximately 65 to approximately 75 mole percent of the randomly recurring units of said second copolymer, said (ii) groups of said second polymer comprising approximately 25 to approximately 35 mole percent of the randomly recurring units of the second copolymer and being randomly incorporated during the step of copolymerization to produce said second copolymer by the opening of the ring of a cyclic ether having adjacent carbon atoms by the breaking of an oxygen-to-carbon linkage, wherein said second copolymer comprises approximately 1.5 to approximately 40 weight percent of said blend, said blend having an impact resistance greater than that of said first copolymer.

4,409,371

DICYCLOPENTADIENE MODIFIED POLYESTERAMIDES CONTAINING ENDOMETHYLENETETRAHYDROPHTHALYL FUNCTIONALITY AND PROCESS FOR PREPARING SAME

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 8, 1982, Ser. No. 366,507

Int. Cl.³ C08F *283/00*; C08G *63/76*; C08L *67/00*

U.S. Cl. 525—418 **18 Claims**

1. A process for preparing dicyclopentadienyl modified polyesteramides containing endomethylenetetrahydrophthalyl groups within the esteramide chain, said process comprising

(1) the reaction of

(a) a dicyclopentadiene or concentrate thereof, water, endomethylenetetrahydrophthalic acid or anhydride and maleic anhydride, maleic acid, fumaric acid or mixture of acid and anhydride, or

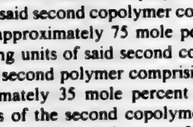
(b) a dicyclopentadiene or concentrate thereof, endomethylenetetrahydrophthalic acid or anhydride, and a polycarboxylic acid, and

(2) adding additional polycarboxylic acid, if desired, and a polyol and a diamine and reacting to substantial completion.

4. A dicyclopentadiene modified polyesteramide composed of:

(A) a central esteramide chain containing pendant olefinic unsaturation composed of:

(a) diamido groups of the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen, aliphatic, cycloaliphatic and aromatic or R_1 and R_2 together form a cycloaliphatic ring, and R_3 is a divalent organic radical selected from the group consisting of alkylene, ether-linked alkylene, ether-linked arylene, alkylene amino linked alkylene, alkylene amino linked cycloalylene, cycloalkylene, polycycloalkylene, arylene, bis(alkyl)cycloalkylene and bis(alkyl)polycycloalkylene,

(b) bisalkoxy groups of the formula:

$$-O-R_3-O-$$

wherein R_3 is a divalent organic radical as before defined,

(c) carboxylic acid groups wherein at least a part of said groups are endomethylenetetrahydrophthalyl and any remaining said groups are α,β-unsaturated, saturated or aromatic or a mixture thereof,

(B) at least one terminal group of said polyesteramide being a dicyclopentadienyl radical.

16. The modified polyesteramide of claim 4 formulated with a reactive diluent.

17. The modified polyesteramide of claim 16 wherein said reactive diluent is styrene.

4,409,372

PAINT BRUSH BRISTLES

John Ward, Crofton, and Robert E. Austin, Crownsville, both of Md., assignors to Ametek, Inc., Odenton, Md.

Filed Jan. 20, 1982, Ser. No. 340,914

Int. Cl.³ D02G *3/00*

U.S. Cl. 525—425 **2 Claims**

1. Paint brush bristles formed of a compatible blend of nylon 6/6 and 4–15% (based on the total quantity of resin) of a copolyester derived from terephthalic and isophthalic acids with cyclohexane dimethanol.

4,409,373

ADHESIVE COMPOSITIONS BASED UPON THERMOPLASTIC POLYAMIDES

Norbert Wiemers, Monheim, Fed. Rep. of Germany, and Italo Albini, Pavia, Italy, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,168

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111206

Int. Cl.³ C08L *77/08*; C09J *3/16*

U.S. Cl. 525—432 **13 Claims**

1. A hot melt adhesive composition based upon thermoplastic polymerized fatty acid components which comprises:

(I) from about 10 to 90 percent by weight, based on the weight of the total adhesive composition, of a polyamide prepared by condensing:

(a) from about 35 to 49.5 mol percent of dimeric higher fatty acids in combination with

(b) from about 0.5 to 15 mol percent of C_{12}–C_{22}-monomeric fatty acids with

(c) from about 2 to 35 mol percent of polyether diamines of the formula

$$H_2N-R_1-O-(RO)_x-R_2-NH_2$$

wherein x represents a number of from 8 to 80; R_1 and R_2, which may be the same or different, are each a divalent aliphatic or cycloaliphatic hydrocarbon having from 1 to 12 carbon atoms; and R represents a linear or branched aliphatic divalent hydrocarbon radical having from 1 to 6 carbon atoms, and

(d) from about 15 to 48 mol percent of aliphatic or cycloaliphatic diamines having from 2 to 40 carbon atoms in the aliphatic or cycloaliphatic moiety, and

(II) from about 90 to 10 percent by weight, based upon the weight of the total adhesive composition, of a polyamide prepared by condensing:

(a) from about 20 to 49.5 mol percent of dimeric higher fatty acids in combination with

(b) from about 0.5 to 15 mol percent of C_{12}–C_{22}-monomeric fatty acids with

(c) from 55 mol percent of at least one aliphatic or cycloaliphatic polyamine having at least 2 primary amino groups and from 2 to 40 carbon atoms.

4,409,374

COLOR DEVELOPER FOR PRESSURE-SENSITIVE COPYING PAPER

Toyoji Kikuga, and Koji Hirai, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Shizuoka, Japan

Continuation of Ser. No. 173,563, Jul. 30, 1980, abandoned, which is a division of Ser. No. 847,518, Nov. 1, 1977, Pat. No. 4,216,299. This application Jan. 25, 1982, Ser. No. 342,538

Claims priority, application Japan, Nov. 4, 1976, 51-131674

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.³ C08L *61/06, 61/10, 61/14*

U.S. Cl. 525—491 **43 Claims**

1. A color developer for pressure-sensitive copying paper which comprises:

(1) a polyvalent metal salt of a para-substituted difunctional phenol-aldehyde condensate, and

(2) a tri- or higher-functional phenol-aldehyde condensate, a polyvalent metal-modified product thereof or a mixture of said condensate and said metal modified product.

4,409,375

METHOD FOR SCAVENGING ALDEHYDES

Seymour Hartman, Mahopac, and Timothy M. Brown, Holmes, both of N.Y., assignors to Champion International Corporation, Stamford, Conn.

Filed Feb. 11, 1982, Ser. No. 347,965

Int. Cl.³ C08G *12/40*

U.S. Cl. 525—505 **9 Claims**

1. A method for scavenging aldehydes which comprises exposing the aldehydes to alkali metal bisulfite salts as the only scavenging agents.

4,409,376

NOVEL DILUENTS USEFUL IN PREPARING HIGH SOLIDS COATING COMPOSITIONS

Rostyslaw Dowbenko, Gibsonia; Marvis E. Hartman, Pittsburgh, and Thomas R. Hockswender, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 10, 1982, Ser. No. 448,168

Int. Cl.³ C08G *8/28*; C08L *61/32*

U.S. Cl. 525—509 **7 Claims**

1. A composition of matter, comprising a reaction product of:

(A) a compound containing from about 1 to 4 ethylenically unsaturated groups, and

(B) a compound having at least two reactive functional groups of varying reactivity; wherein one of said functional groups is a mercapto group which is reactive with the ethylenically unsaturated group or groups of compound (A), and another functional group is a member selected from the group consisting of hydroxyl group, carboxyl group and a group having an oxidizable unsaturation.

6. A coating composition comprising:

(i) the composition of claim 1, and

(ii) a crosslinking agent which is an isocyanate or an aminoplast.

4,409,377

SUSPENSION POLYMERIZATION PROCESS

Yoshiharu Misaka, and Takamitsu Morita, both of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 339,939

Claims priority, application Japan, Jan. 17, 1981, 56-5751

Int. Cl.³ C08F *4/10, 4/26*

U.S. Cl. 526—93 **14 Claims**

1. A suspension polymerization process which comprises suspension polymerizing a mixture of a monovinyl monomer selected from the group consisting of methacrylic acid, acrylic acid or styrene as a major component and a polyvinyl monomer which comprises divinylbenzene as a major component using carboxymethyl cellulose as a dispersing agent, the improvement wherein at least one metal compound selected from the group consisting of a halide, inorganic acid salt, organic acid salt, hydroxide or oxide of iron, zinc and copper is present in the polymerization system in an amount of 0.5 to 10 wt%, calculated as the metal, based on the weight of the carboxymethyl cellulose.

4,409,378

PROCESS FOR POLYMERIZATION OF α-OLEFINS AND CATALYSTS THEREFOR

Tadashi Asanuma, Izumi; Nobutaka Uchikawa, and Tetsunosuke Shiomura, both of Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 268,518, May 29, 1981. This application Mar. 7, 1983, Ser. No. 471,065

Claims priority, application Japan, Jul. 11, 1980, 55/93878

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—125 **2 Claims**

1. In a process for the stereospecific polymerization of α-olefins in the presence of a catalytic system comprising a titanium compound supported on a carrier, an organoaluminum compound and an electron donative compound, the improvement which comprises using an activated titanium compound obtained by copulverizing magnesium chloride, an orthocarboxylic acid ester represented by the formula,

$$X^1C(OR^1)_3$$

wherein X^1 is hydrogen or a hydrocarbon group of 1-12 carbon atoms and R^1 is a hydrocarbon group of 1-12 carbon atoms and a 1-10 halogen atom(s)-substituted hydrocarbon having 1-20 carbon atoms and then treating the copulverized product with titanium tetrachloride by suspending the copulverized product in the titanium tetrachloride or a solution thereof as said titanium compound supported on a carrier.

4,409,379

COPOLYMERIZATION PROCESS INITIATED WITH BIS (4-TERT. BUTYL CYCLOHEXYL) PEROXYDICARBONATE AND AEROSOL HAIR LACQUER CONTAINING THE COPOLYMER SO PRODUCED

Quintino Gaetani, Bondy; Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 83,653, Oct. 11, 1979, abandoned. This application Jul. 29, 1981, Ser. No. 288,157

Claims priority, application France, Oct. 26, 1978, 78 30462

Int. Cl.³ C08F *4/34*; A61K *7/11*

U.S. Cl. 526—230.5 **6 Claims**

1. A process for preparing a copolymer useful in cosmetics, in particular, for the production of aerosol hair lacquer compositions, comprising copolymerizing in the presence of bis(4-tert. butyl cyclohexyl)peroxydicarbonate, as the polymerization initiator, 85–95 weight percent vinyl acetate and 5–15 weight percent crotonic acid.

4,409,380

NOVEL TERTIARY ALCOHOL-DIBLOCKED DIISOCYANATE UREA URETHANE OLIGOMERS AND COATING COMPOSITIONS COMPRISING SAME

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,793
Int. Cl.³ C08G *18/32, 18/80;* **C08L** *63/00*
U.S. Cl. 528—45 **8 Claims**

1. A chain-extendable crosslinkable tertiary alcohol-diblocked diisocyanate urea urethane oligomer of number average molecular weight about 300 to about 5000 comprising the reaction product of primary or secondary alkanolamine of molecular weight about 60 to about 700, with half-blocked diisocyanate of molecular weight about 120 to about 2000 in molar ratio of about 1:2, respectively, whereby both the hydroxy and amine functionality react with free isocyanate groups to form urethane and urea linkages respectively, said oligomer being substantially free of unreacted hydroxy and amino functionality, said half-blocked diisocyanate comprising the reaction product of an alcohol blocking agent bearing a tertiary hydroxyl group, with organic diisocyanate in molar ratio of about 1:1, said oligomer having a de-blocking temperature of about 80° C. to about 220° C.

4,409,381

NOVEL DIBLOCKED DIISOCYANATE UREA URETHANE OLIGOMERS AND COATING COMPOSITIONS COMPRISING SAME

Joseph W. Holubka, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,794
Int. Cl.³ C08G *18/32;* **C08L** *63/00;* **C08G** *18/80*
U.S. Cl. 528—45 **9 Claims**

1. A chain-extendable, crosslinkable diblocked diisocyanate urea urethane oligomer of number average molecular weight about 300 to about 5000 comprising the reaction product of primary or secondary alkanolamine of molecular weight about 60 to about 700, with half-blocked diisocyanate of number average molecular weight about 120 to about 2000, in molar ratio of about 1:2, respectively, whereby both the hydroxy and amine functionality react with free isocyanate groups to form urethane and urea linkages respectively, said oligomer being substantially free of unreacted hydroxy and amino functionality wherein said half-blocked diisocyanate is the reaction product of organic diisocyanate with monofunctional blocking agent, wherein said oligomer has a de-blocking temperature of about 120° C. to about 250° C.

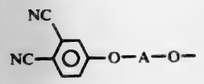
4,409,382

SYNTHESIS AND POLYMERIZATION OF PHTHALONITRILE MONOMERS CONTAINING MULTIPLE PHENOXY AND SULFONE LINKAGES

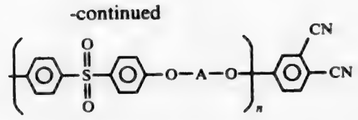
Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 7, 1982, Ser. No. 337,893
Int. Cl.³ C08G *73/06*
U.S. Cl. 528—173 **57 Claims**

1. An oligomeric polyarylether sulfone phthalonitrile monomer represented by the formula:



-continued



wherein A represents an aromatic unit having from 1 to 3 attached or fused aromatic rings, said rings being attached directly or through an aliphatic group, sulfur, or oxygen; and n represents an average value from 1 to 100.

4,409,383

THERMALLY-RESPONSIVE POLYMERIC MATERIALS

Denis J. Zalucha, Waterford; Frederick H. Sexsmith, Erie, and Dennis D. Howard, Girard, all of Pa.; Michael L. Nulph, Chula Vista, Calif., assignors to Lord Corporation, Erie Pa.

Filed Dec. 2, 1981, Ser. No. 326,628
Int. Cl.³ C08G *18/82, 18/48;* **B32B** *17/06*
U.S. Cl. 528—499 **27 Claims**

1. A polymeric material which is transparent at a first temperature and less transparent at a second temperature, said second temperature being different from and higher than said first temperature, said polymeric material being capable of returning to its more transparent state when its temperature is adjusted to said first temperature, said polymeric material comprising the reaction product obtained by curing in the presence of moisture at least one first organic compound, said first organic compound being selected from the group consisting of linear or branched saturated or unsaturated acyclic, cyclic or aromatic monomeric or polymeric compounds characterized by the presence of at least one reactive isocyanate group, such isocyanate group-containing compound being selected from the group consisting of such compounds which contain at least one hydrophilic center consisting essentially of ethylene oxide units having the structure $(CH_2CH_2O)_n$, wherein n is at least 2, such compounds which do not contain such hydrophilic centers, and mixtures thereof; providing that, when said reactive isocyanate group-containing compound does not contain such hydrophilic centers, said compound is cured in the presence of at least one second compound characterized by the presence of at least one hydrophilic center consisting essentially of ethylene oxide units having the structure $(CH_2CH_2O)_n$, wherein n is as previously defined, said reaction product containing at least 2 percent by weight water.

11. A method for the preparation of polymeric materials which are transparent at a first temperature and less transparent at a second temperature which is different from and higher than said first temperature, said polymeric materials being capable of reverting to the more transparent state when the temperature is adjusted to said first temperature, said method comprising curing in the presence of moisture at least one first organic compound having at least one reactive isocyanate group to form a cured polymeric material, said isocyanate group containing compound being selected from the group consisting of, (1) such compounds having at least one hydrophilic center consisting essentially of ethylene oxide units having the structure $(CH_2CH_2O)_n$, wherein n is at least 2, (2) such compounds which do not contain such hydrophilic centers, and (3) mixtures of such compounds (1) and (2); providing that, when said first compound does not contain such hydrophilic centers, such first compound is cured in the presence of at least one second compound which is characterized by the presence of at least one hydrophilic center consisting essentially of ethylene oxide units as previously defined, and contacting said cured polymeric material with moisture subsequent to its cure in an amount and for a time sufficient for said polymeric material to take up at least two percent by weight of moisture.

4,409,384

VISCOSE PREPARATION USING LOW CONCENTRATION CAUSTIC

William B. Lindsey, Clinton, Iowa, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 12, 1981, Ser. No. 320,218
Int. Cl.³ C08G *18/10*
U.S. Cl. 536—60 **6 Claims**

1. A process for the production of viscose having an "F" value greater than 250 from cellulose comprising the steps of:
(i) contacting the cellulose with an aqueous solution containing between 13 and 16 weight percent NaOH for a time and at a temperature sufficient to produce an alkali cellulose with an NaOH content of 12.0 to 15 weight percent and concurrently aging the alkali cellulose by contact with sufficient H_2O_2 and 10–40 ppm of a catalyst selected from the group consisting of Fe, Mn and Co compounds to reduce the DP to between 300 and 800;
(ii) removing excess NaOH from the alkali cellulose;
(iii) xanthating the alkali cellulose; and
(iv) dissolving the cellulose xanthate of step (iii) in aqueous NaOH to form a viscose containing at least 4.0% NaOH.

4,409,385

POLYSACCHARIDES HAVING ANTICARCINOGENIC ACTIVITY AND METHOD FOR PRODUCING SAME

Kazuo Nakajima, Kyoto; Yoshiaki Hirata; Hiroyuki Uchida, both of Otsu; Yoshie Kimizuka; Tsutomu Taniguchi, both of Kyoto; Akira Obayashi, and Osamu Tanabe, both of Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 175,690, Aug. 5, 1980, abandoned. This application Feb. 3, 1981, Ser. No. 231,575
Claims priority, application Japan, Aug. 8, 1979, 54-101100
Int. Cl.³ C07H *1/08;* **C08B** *37/00*
U.S. Cl. 536—123 **4 Claims**

1. A polysaccharide isolated from a liquid extract of at least one of stromatoid and mycelium of a strain of *Isaria atypicola* of the class Hyphomycetes which is capable of producing the polysaccharide, or from a culture medium in which said strain has been incubated, said polysaccharide having anticarcinogenic activity against Sarcoma-180, Ehrlich carcinoma and Meth A, and further having the following characteristics:
(1) white or slight brown powder, non-dialyzable;
(2) Molisch reaction, Anthrone reaction and ninhydrin reaction are positive;
(3) Elson-Morgain reaction is weak positive or negative;
(4) iodide reaction and Bial reaction are negative;
(5) soluble in water and in an aqueous solution of a substance soluble in water, but insoluble in an organic solvent;
(6) no sharp melting point, and is carbonized upon strong heating;
(7) the hydrolyzate of the polysaccharide, obtained by dissolving the polysaccharide in 0.1 N aq. sulfuric acid and heating the solution, containing 0.5% by weight of the polysaccharide, at 100° C. for 5 hours, contains one or more of glucose, galactose and mannose;
(8) elemental analysis is C 35.78%; H 6.28%, N 0.65%.

4,409,386

SEPARATION OF 3,4-DICHLOROANILINE

Tzu-Ching Chang, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 6, 1982, Ser. No. 405,757
Int. Cl.³ C07C *85/26*
U.S. Cl. 564—438 **2 Claims**

1. A process of purifying crude mixture of 3,4-dichloroaniline containing 2,3-dichloroaniline and 2,5-dichloroaniline as impurities comprising feeding the crude mixture to a multiple stage extraction unit, removing 2,3-dichloroaniline and 2,5-dichloroaniline from the bottom of the multiple stage extraction unit, removing a portion of said 2,3-dichloroaniline and 2,5-dichloroaniline from the system, feeding the remaining 2,3-dichloroaniline and 2,5-dichloroaniline to a neutralizer, feeding from 3.6 to 6.5 percent by weight aqueous hydrochloric acid to the neutralizer to convert, 2,3-dichloroaniline and 2,5-dichloroaniline to their corresponding hydrochlorides, feeding the hydrochlorides to the multiple stage extraction unit, removing an aqueous solution of 3,4-dichloroaniline hydrochloride from the top of the multiple stage extraction unit, reacting the 3,4-dichloroaniline hydrochloride with a base to form an immiscible mixture of an aqueous chloride salt solution and 3,4-dichloroaniline, decanting the mixture to recover 3,4-dichloroaniline, recycling a portion of the 3,4-dichloroaniline to the multiple stage extraction unit.

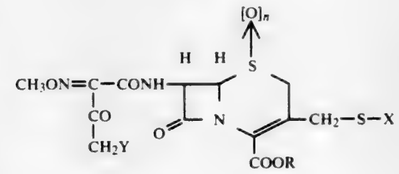
4,409,387

CEPHALOSPORIN DERIVATIVES

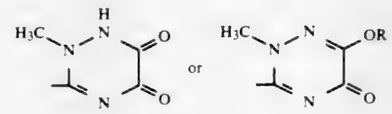
Marc Montavon, and Roland Reiner, both of Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 207,163, Nov. 17, 1980, Pat. No. 4,349,672. This application Jun. 30, 1982, Ser. No. 393,995
Int. Cl.³ C07D *501/36*
U.S. Cl. 544—26 **1 Claim**

1. A compound of the formula



wherein X is the group



Y is halogen, R is hydrogen or a readily hydrolysable ester group selected from the group consisting of lower alkanoyloxyalkyl, lower alkoxycarbonyloxyalkyl, lactonyl, lower alkoxymethyl and lower alkanoylaminomethyl groups or a readily hydrolysable ether group selected from the group consisting of lower alkanoyloxyalkyl, lower alkoxycarbonyloxyalkyl, lactonyl, lower alkoxymethyl and lower alkanoylaminomethyl groups and n stands for 1 or 2, as well as pharmaceutically acceptable salts with acids or bases of these compounds.

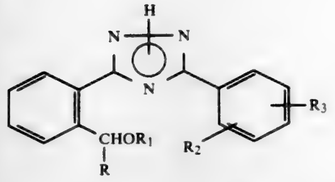
4,409,388

1,2,4-TRIAZOLE DERIVATIVES, AND THEIR USE AS ANTIFERTILITY AGENTS

Amedeo Omodei-Sale', Pavia; Pietro Consonni, and Giulio Galliani, both of Milan, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

Filed Oct. 23, 1979, Ser. No. 87,376
Claims priority, application United Kingdom, Oct. 30, 1978, 7842416
Int. Cl.³ C07D *249/08*
U.S. Cl. 548—262 **3 Claims**

1. A 1,2,4-triazole compound having the following general formula



wherein R represents hydrogen or methyl, R_1 represents hydrogen or (C_1–C_4)alkyl or R and R_1 taken together represent a further bond between the carbon and the oxygen atom, R_2 represents (C_1–C_4)alkoxy, chloro, fluoro or bromo and R_3 represents hydrogen or (C_1–C_4)alkyl or R_2 and R_3 taken together represent a methylenedioxy group.

4,409,389

PREPARATION OF IMIDAZOLES

Michael Bellas, Wigan, and John Duvall, Liverpool, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.

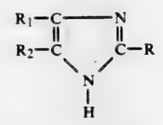
Continuation of Ser. No. 174,056, Jul. 31, 1980, abandoned. This application May 10, 1982, Ser. No. 376,974

Claims priority, application United Kingdom, Jan. 25, 1980, 8002594

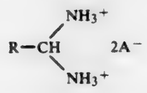
Int. Cl.³ C07D *233/64, 233/58*

U.S. Cl. 548—342 **5 Claims**

1. The process for preparing an imidazole of the formula



comprising contacting a diamine salt of the formula



in concentrated HCl, H_2SO_4, $HClO_4$ or H_3PO_4 with a biscarbonyl compound of the structure



wherein A^- is an anion equivalent of said HCl, H_2SO_4, $HClO_4$, or H_3PO_4, and R, R_1 and R_2 are each selected from hydrogen, an alkyl radical of 1 to 3 carbon atoms, and said alkyl radical substituted with 1 to 3 of halogen, hydroxy, lower alkoxy, lower alkoxycarbonyl, lower alkoxycarbonyloxy, carbamoyl, lower alkylcarbamoyl, lower dialkylcarbamoyl, lower alkylthio, or phenyl.

4,409,390

PYRROLO[3,4-D][2]BENZAZEPINES

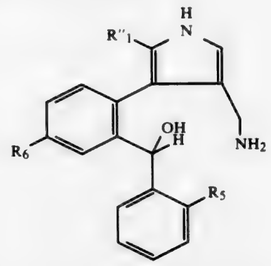
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 286,124, Jul. 23, 1981, Pat. No. 4,354,973, which is a continuation-in-part of Ser. No. 175,555, Aug. 5, 1980, abandoned. This application Aug. 3, 1982, Ser. No. 404,935

Int. Cl.³ C07D *207/333, 207/335*

U.S. Cl. 548—561 **1 Claim**

1. A compound of the formula



wherein R_1'' is selected from the group consisting of hydrogen, lower alkyl, C_3 to C_7 alkenyl and C_3 to C_7 alkynyl; R_5 is hydrogen or halogen and R_6 is halogen.

4,409,391

PROCESS TO PRODUCE ANTHRACYCLINE COMPOUNDS

Michael J. Broadhurst, Baldock; Cedric H. Hassall, Welwyn, and Gareth J. Thomas, Luton, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 111,348, Jan. 11, 1980, Pat. No. 4,316,985. This application Nov. 5, 1981, Ser. No. 318,522

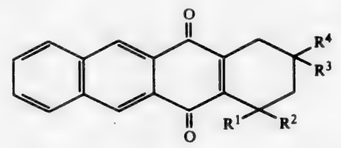
Claims priority, application United Kingdom, Jan. 16, 1979, 7901537; Jul. 26, 1979, 7926151

Int. Cl.³ C07C *50/22;* **C07D** *317/72, 339/06*

U.S. Cl. 549—39 **5 Claims**

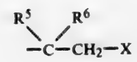
1. A process for the manufacture of compounds of the general formula

I



wherein one of R^1 and R^2 represents a hydrogen atom and the other represents a hydrogen atom or a hydroxy group or R^1 and R^2 together represent an ethylene ketal or ethylene thio ketal group, R^3 represents a hydrogen atom or a hydroxy or lower alkanoyloxy group and R^4 represents a lower alkyl or lower alkoxycarbonyl or benzyloxycarbonyl group or a group of the formula

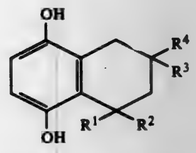
a



wherein R^5 and R^6 together form an oxo group or an ethylene ketal or ethylene thio ketal group and X represents a hydrogen atom or a hydroxy or lower alkanoyloxy group,

which comprises

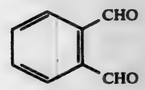
reacting a compound of the general formula



III

wherein R^1, R^2, R^3 and R^4 have the significance given earlier in this claim,

with the dialdehyde of the formula



IV

in the presence of an aromatic boronic acid selected from the group consisting of benzeneboronic, toueneboronic, xyleneboronic, methoxybenzeneboronic, nitrobenzeneboronic and pyridineboronic acid.

4,409,392

6′ ESTERS OF ZEARALANOL

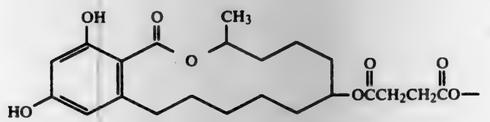
Edward B. Hodge, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

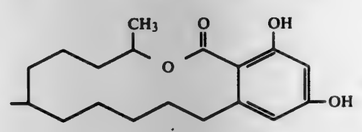
Filed Sep. 3, 1981, Ser. No. 299,271

Int. Cl.³ C07D *313/00*

U.S. Cl. 549—270 **1 Claim**

1. The composition





4,409,393

OLIGOMERS OF PERFLUORO(2,2-DIMETHYL-1,3-DIOXOLE) AND THEIR FLUORINATION PRODUCTS

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

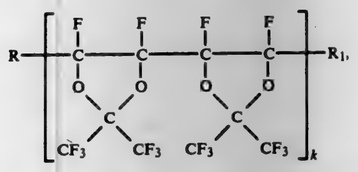
Filed Jul. 2, 1981, Ser. No. 279,867

Int. Cl.³ C07D *317/10*

U.S. Cl. 549—448 **4 Claims**

1. An oligomer of perfluoro(2,2-dimethyl-1,3-dioxole) containing at least one chain having the following formula:

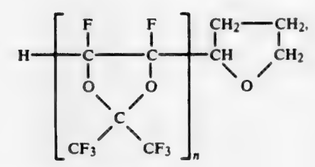
(A)



wherein k is 1 to about 4, and each of R and R_1 independently may be hydrogen, a radical obtained by removing a hydrogen atom from an aliphatic or cycloaliphatic ether molecule, a radical corresponding to any free radical, selected from the class consisting of peroxy, peroxycarbonyl, and azo compounds, present in the oligomerization reaction in which the oligomer is produced, the carboxyl group, a carboxylate ion, or a fluorocarbonyl group; with the proviso that when both R and R_1 are hydrogen atoms, the oligomer is a liquid.

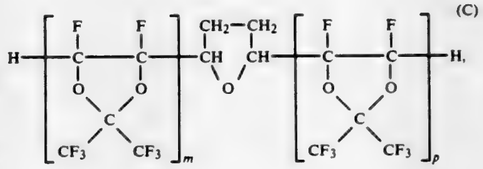
2. An oligomer of claim 1 which has a tetrahydrofuran radical attached thereto, either at one of the ends of the oligomer molecule, as shown in formula (B), or at a position removed from the end as shown in formula (C)

(B)



wherein n is about 2–8; and

(C)



wherein each of m and p is about 1–4.

3. An oligomer of claim 2 wherein n in formula (B) is 2–6 and each of (m) and (p) in Formula (C) is at least 2.

4,409,394

SUPPORTED SILVER CATALYSTS MIXED WITH PROMOTER METAL COMPOUNDS FOR THE PRODUCTION OF ETHYLENE OXIDE

Erwin Vangermain; Claus-Dieter Mengler; Rainer Elm; Horst Ueberschaer, and Wilhelm Brauckmann, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 162,649, Jun. 24, 1980, Pat. No. 4,310,442. This application Sep. 18, 1981, Ser. No. 303,470

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 2925625

Int. Cl.³ C07D *301/10*

U.S. Cl. 549—534 **8 Claims**

1. In a process for the production of ethylene oxide by the controlled, vapor phase, partial oxidation of ethylene with molecular oxygen in the presence of 7–8 mg of chloride per (stp) m^3 in the circulating gas from using 1,2-dichloroethane and in the presence of a fixed bed supported silver catalyst having a promoter metal compound, the improvement comprising increasing the activity and extending the service life of said catalyst by preparing a physical mixture of particles consisting essentially of:

(a) supported silver catalysts and promoter metal compounds;

(b) supported silver catalysts and supported promoter metal compounds;

(c) promoter metal compound treated supported silver catalysts and promoter metal compounds; or

(d) promoter metal compound treated supported silver catalysts and supported promoter metal compounds; said supported silver catalysts, said promoter metal compounds and said supported promoter metal compounds having the same shape and particle size so that uniform mixing is obtained.

4,409,395

PROCESS FOR THE PRODUCTION OF GLYCOLLIC ACID ESTERS

Haruhiko Miyazaki; Koichi Hirai; Taizo Uda; Yasuo Nakamura, all of Ube; Harumi Ikezawa, Onoda, and Takanori Tsuchie, Ube, all of Japan, assignors to UBE Industries, Ltd., Yanaguchi, Japan

Filed Jan. 18, 1982, Ser. No. 340,033
Claims priority, application Japan, Jan. 26, 1981, 56-9064
Int. Cl.³ C07C *69/66*
U.S. Cl. 560—179 **10 Claims**

1. In a process for producing a glycollic acid ester by the vapor phase catalytic hydrogenation of an oxalic acid diester in the presence of a catalyst and hydrogen gas, the improvement wherein the oxalic acid diester in the vaporous state is contacted with hydrogen gas in the presence of a catalyst composed of Ag supported on a solid carrier at a temperature of from about 120° C. to about 300° C.

4,409,396

PROCESS FOR THE MANUFACTURE OF UNSATURATED CARBOXYLIC ACID ESTERS

Dominik Dempf, Mehring; Ludwig Schmidhammer, Haiming; Gerhard Dummer, Burgkirchen; Günter Roscher, Kelkheim; Karl-Heinz Schmidt, Idstein; Ernst Selbertinger, Markti, and Rudolf Strasser, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich and Hoechst Aktiengesellschaft, Frankfurt, both of, Fed. Rep. of Germany, a part interest

Filed Sep. 3, 1981, Ser. No. 299,019
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036421
Int. Cl.³ C07C *67/055*
U.S. Cl. 560—245 **5 Claims**

1. In a process for the manufacture of an unsaturated carboxylic acid ester by the reaction of a member selected from the group consisting of an olefin and a cyclo-olefin, with oxygen and a carboxylic acid in the gaseous phase, in the presence of a catalyst selected from the group consisting of a catalyst which contains elements of subsidiary group VIII of the periodic system, a compound which contains elements of subsidiary group VIII of the periodic system and a combination of said catalyst and said compound, and an alkali metal acetate, at temperatures of from 100° to 250° C. and pressures of from 0.5 to 21 bar absolute, the improvement comprising: said reaction being carried out in the presence of from 1 to 8000 parts per million by weight, calculated on the carboxylic acid used, of an organic chlorine compound selected from the group consisting of:

(a) α-chlorocarboxylic acids having from 1 to 4 carbon atoms and esters thereof with alcohols having from 1 to 4 carbons atoms;
(b) α-chloroaldehydes having from 1 to 4 carbon atoms;
(c) chlorine derivatives of methane having from 1 to 4 chlorine atoms;
(d) chlorine derivatives of methane having from 1 to 3 chlorine atoms and at least one fluorine atom;
(e) chlorine derivatives of ethane and of propane each having at least 2 chlorine atoms; and
(f) an admixture thereof.

4,409,397

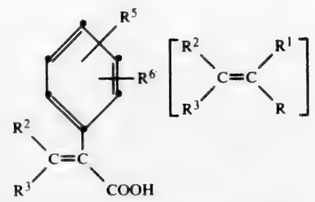
ASYMMETRIC HYDROGENATION OF TETRA-SUBSTITUTED OLEFINIC ACIDS AND DERIVATIVES

Timm E. Paxson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 6, 1982, Ser. No. 375,437
Int. Cl.³ C07C *59/48, 53/194*
U.S. Cl. 562—496 **24 Claims**

1. A process for the asymmetric hydrogenation of a tetra-substituted olefinic acid, which comprises the hydrogenation of a tetra-substituted olefinic acid having formula I

(I)



wherein R^2 and R^3 each is a methyl group or when taken together with the carbon atom to which they are attached form a cyclopropyl group; R^5 and R^6 each independently is hydrogen, chlorine, fluorine, bromine, or an alkyl or alkoxy group each optionally substituted by one or more halogen atoms in the presence of a coordination complex of rhodium, ruthenium or iridium in combination with a chiral metallocenylphosphine selected from a ferrocenyl-, a ruthenocenyl- or an osmocenylphosphine ligand or pyrrolidinylphosphine ligand.

4,409,398

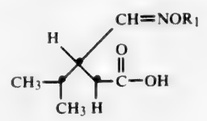
PREPARATION OF (1R, CIS)-OXYIMINO-SUBSTITUTED CYCLO-PROPANECARBOXYLIC ACIDS

Steven A. Roman, Fulshear, Tex., assignor to Shell Oil Company, Houston, Tex.

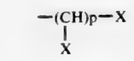
Filed Aug. 13, 1981, Ser. No. 292,567
Int. Cl.³ C07C *131/02*
U.S. Cl. 562—506 **14 Claims**

1. A process for the preparation of (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.0]hexan-2-one which comprises treating (1R,cis)-4,7,7-trimethyl-3-oxabicyclo[4.1.0]hept-4-en-2-one with ozone and reducing the product formed by this ozonolysis in the presence of hydrogen and a noble metal catalyst of Group VIII.

8. A process for the preparation of a (1R,cis)-oxyimino-substituted cyclopropanecarboxylic acid of the formula



wherein R_1 represents a hydrogen atom; an alkyl group containing from 1 to 10 carbon atoms optionally substituted by one or more halogen atoms; a (cycloalkyl)alkyl group containing from 3 to 7 carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms; a cycloalkyl group containing from 3 to 7 ring carbon atoms; an alkenyl group containing from 2 to 4 carbon atoms optionally substituted by one or more halogen atoms; an alkynyl group containing from 2 to 4 carbon atoms; an aryl group containing from 6 to 12 carbon atoms; an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms; or a group



wherein X is thienyl, furfuryl, $-CO_2R^1$, $-CONR^1R^2$, $-SO_3R^1$, $-SO_2NR^1R^2$, $-PO(OR^1)_2$, $-NO_2$, $-CN$, $-OR^1$, $-SR^1$, $-S(O)R^1$, $-S(O)_2R^1$, $-NR^1R^2$, $-N(O)R^1R^2$ or $-(OCH_2CH_2)_q-OR^1$ in which q is an integer of 1 to 4, R^1 and R^2 each independently is a hydrogen atom, an alkyl group containing from 1 to 8 carbon atoms optionally substituted by one or more halogen atoms, a (cycloalkyl)alkyl group containing from 3 to 7 ring carbon atoms, a total of from 4 to 9 carbon atoms and optionally ring-substituted by one or more halogen atoms, a cycloalkyl group containing from 3 to 7 ring carbon atoms, an alkenyl group containing from 3 to 4 carbon atoms optionally substituted by one or more halogen atoms, an alkynyl group containing from 3 to 4 carbon atoms or an aryl group containing from 6 to 12 carbon atoms or an aralkyl group containing from 7 to 10 carbon atoms, each optionally ring-substituted by one or more halogen atoms, or R^1 and R^2 taken together is an alkylene or oxaalkylene group containing from 4 to 6 carbon atoms, or when one R^1 or R^2 is furfuryl or thienyl then the other is a hydrogen atom; p is an integer of 1 or 2; when p is 1 then X^1 is an alkyl group containing from 1 to 4 carbon atoms or when p is 2 then X^1 is a hydrogen atom, which process comprises treating (1R,cis)-4,7,7-trimethyl-3-oxabicyclo-[4.1.0]hept-4-en-2-one with ozone and then reducing the product formed by this ozonolysis in the presence of hydrogen and a noble metal catalyst of Group VIII, and treating the resulting (1R,4R,5S)-4-acetoxy-6,6-dimethyl-3-oxabicyclo[3.1.0]-hexan-2-one with an acid addition salt of the corresponding hydroxylamine or optionally substituted hydrocarbyloxyamine in the presence of a base.

4,409,399

PROCESS FOR PRODUCING ALIPHATIC AMINES

Harold E. Swift, Gibsonia; Robert A. Innes, and Anatoli Onopchenko, both of Monroeville, all of Pa., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Filed Dec. 9, 1981, Ser. No. 328,639
Int. Cl.³ C07C *85/06, 85/08*
U.S. Cl. 564—473 **39 Claims**

1. A process for producing amines which comprises reacting an aliphatic alcohol or an aliphatic aldehyde with an aminating agent selected from the group consisting of ammonia, a primary amine and a secondary amine in the liquid phase in the presence of an unsupported catalyst consisting essentially of (1) copper oxide or copper hydroxide and (2) nickel oxide or nickel hydroxide.

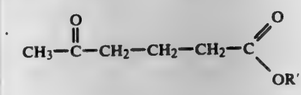
4,409,400

PROCESS FOR THE PREPARATION OF CYCLOHEXANE-1,3-DIONE FROM δ-KETOHEXANOIC ACID ESTER

Werner H. Müller, Eppstein; Karl E. Mack, Kelkheim, and Hansjörg Hey, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 46,098, Jun. 6, 1979, abandoned. This application Apr. 21, 1982, Ser. No. 370,393
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825170
Int. Cl.³ C07C *45/54*
U.S. Cl. 568—346 **6 Claims**

1. A process for the preparation of cyclohexane-1,3-dione consisting essentially of reacting, in the gaseous phase, a δ-ketohexanoic acid ester of the formula



wherein R' is an alkyl having 1 to 4 carbon atoms at a temperature of from 250° C. to 500° C. in the presence of an impregnated catalyst consisting essentially of a catalytic carrier impregnated with a compound of an active component selected from the group consisting of lanthanum, zirconium, cerium and thorium.

4,409,401

SELECTIVE HYDROGENATION OF ORGANIC MATERIALS

Timothy P. Murtha, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 17, 1981, Ser. No. 293,068
Int. Cl.³ C07C *45/00*
U.S. Cl. 568—362 **12 Claims**

1. A process for selectively hydrogenating one or more unsaturated compounds comprising contacting them with a catalyst containing palladium, sodium carbonate, and thioanisole wherein the sulfur content of the final catalyst is 0.001 to 1 wt. %, based on the total catalyst weight.

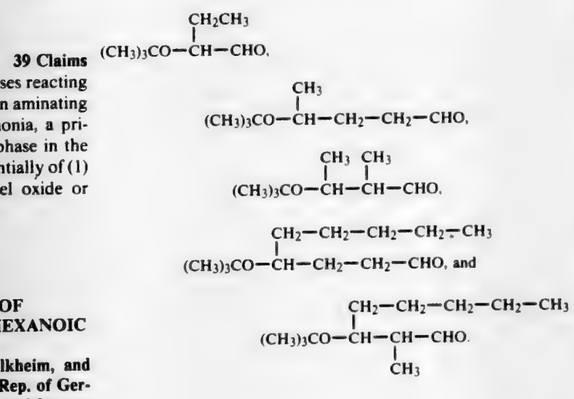
4,409,402

TERT.-BUTOXYBUTANALS, TERT.-BUTOXYBUTANOLS, BIS-TERT.-BUTOXYPENTANALS AND BIS-TERT.-BUTOXYPENTANOLS

Walter Himmele, Walldorf, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,790
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932527
Int. Cl.³ C07C *47/02, 43/13, 00/00*
U.S. Cl. 568—496 **10 Claims**

1. A compound of one of the formulae:



4,409,403

OXYALKYLATION PROCESS

Ronald J. Vaughan, Orinda, Calif., assignor to Varen Technology, Marshallton, Del.

Continuation-in-part of Ser. No. 179,520, Aug. 19, 1980, Ser. No. 90,940, Nov. 5, 1979, abandoned, and Ser. No. 660,634, Feb. 23, 1976, Pat. No. 4,317,949, said Ser. No. 179,520, is a continuation-in-part of Ser. No. 65,613, Aug. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 904,502, May 10, 1978, abandoned, said Ser. No. 90,940, is a continuation-in-part of Ser. No. 660,634, , and Ser. No. 65,613,. This application Sep. 28, 1981, Ser. No. 306,482
Int. Cl.³ C07C *41/03*
U.S. Cl. 568—678 **5 Claims**

1. In a process for the oxyalkylation of a vaporizable hydroxylic compound with an alkylene oxide, said reaction being carried out with an excess of said hydroxylic compound and wherein the reaction products are higher boiling than said reactants, the improvement which comprises

(1) vaporizing said hydroxylic compound in a reflux zone,
(2) passing said vaporized hydroxylic compound through a

catalyst zone to a condensing zone whereby said vapor is condensed,

(3) returning said condensed hydroxylic compound to said catalyst zone,

(4) in said catalyst zone contacting said condensed hydroxylic compound with vaporized hydroxylic compound and an alkylene oxide in the presence of a solid insoluble acid catalyst at about the boiling temperature of the liquid phase containing said hydroxylic compound whereby a mono-oxyalkylated derivative of said hydroxylic compound is formed,

(5) returning said mono-oxyalkylated derivative and unreacted hydroxylic compound to said reflux zone, and

(6) recovering said mono-oxyalkylated derivative from said reflux zone.

4,409,404

PROCESS FOR PRODUCING ETHANOL USING SAID NOVEL CATALYST SYSTEM

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

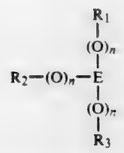
Continuation-in-part of Ser. No. 220,427, Dec. 29, 1980, Pat. No. 4,346,020, which is a continuation-in-part of Ser. No. 42,563, May 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 939,258, Sep. 5, 1978, abandoned. This application Feb. 26, 1982, Ser. No. 352,807

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.³ C07C *29/00, 27/00*

U.S. Cl. 568—902 **32 Claims**

1. A process for selectively producing ethanol which comprises introducing into a reaction zone (1) methanol, (2) hydrogen, (3) carbon monoxide, (4) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (5) a tertiary organo Group VA compound of the Periodic Table of the formula:



wherein E is a member selected from the group consisting of trivalent phosphorus, trivalent arsenic and trivalent antimony; and R_1, R_2 and R_3 are either alike or different members selected from the group consisting of saturated or unsaturated, straight- or branched-chain alkyl radicals having from one to 24 carbon atoms; aryl radicals having from six to 20 carbon atoms; alkenyl radicals having from two to 30 carbon atoms; cycloalkyl radicals having from three to 40 carbon atoms; aralkyl and alkaryl radicals having from six to 40 carbon atoms; and n is an integer of 0 or 1 with the provision that when n is 1, E must be phosphorus

(6) an iodine compound, and (7) a ruthenium compound, wherein the molar ratio of hydrogen to carbon monoxide are in excess of about 1:1, and then subjecting the contents of said reaction zone to an elevated temperature and elevated pressure for a time sufficient to convert methanol to ethanol.

4,409,405

PRODUCTION OF ETHANOL FROM METHANOL AND SYNTHESIS GAS

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 13, 1982, Ser. No. 377,724

Int. Cl.³ C07C *29/00*

U.S. Cl. 568—902 **18 Claims**

1. A process for preparing ethanol which comprises contacting a mixture of carbon monoxide, hydrogen and methanol with a catalyst system comprising a cobalt-containing compound and a germanium-containing compound in the presence of an inert oxygenated hydrocarbon solvent and at a pressure of 500 psi or greater and at a temperature of about 50° to about 350° C.

4,409,406

PROCESS FOR RECOVERING ETHANOL FROM DILUTE AQUEOUS SOLUTIONS EMPLOYING LIQUID EXTRACTION MEDIA

Julian Feldman, Cincinnati, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Division of Ser. No. 305,884, Sep. 28, 1981, Pat. No. 4,346,241. This application May 27, 1982, Ser. No. 382,544

Int. Cl.³ C07C *29/76, 29/80, 29/82, 29/86*

U.S. Cl. 568—916 **17 Claims**

1. A process for obtaining substantially anhydrous ethanol from a dilute aqueous ethanol solution thereof which comprises

(a) contacting the dilute aqueous ethanol solution with an inert organic extractant which is liquid at ambient pressure and temperature in at least one extraction zone for a period of time sufficient to provide a raffinate phase containing significantly less ethanol than the dilute aqueous ethanol feed, and an extract phase containing a significant amount of the ethanol originally present in the dilute aqueous ethanol feed,

(b) concentrating the extract phase resulting from step (a) in a rectifying column to provide an aqueous ethanol of high proof; and,

(c) azeotropically distilling the concentrated ethanol resulting from step (b) in an anhydrous column operated under substantially superatmospheric pressure with thermal values recovered from the anhydrous column overheads being used to satisfy part of all of the thermal operating requirements of the rectifying column.

4,409,407

PROCESS FOR THE PREPARATION OF 1,3,5-TRICHLOROBENZENE

Gerd-Michael Petruck, Erkrath, Fed. Rep. of Germany, and Paul R. Wambach, deceased, late of Leverkusen, Fed. Rep. of Germany by Christa Wambach, heiress, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,347

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1981, 3134726

Int. Cl.³ C07C *17/24*

U.S. Cl. 570—202 **8 Claims**

1. In a process for the preparation of 1,3,5-trichlorobenzene by isomerization of at least one other trichlorobenzene at an elevated temperature in the presence of aluminum trichloride, the improvement wherein the isomerization is carried out in the presence of formic acid.

4,409,408

INHIBITING POLYMERIZATION OF VINYL AROMATIC MONOMERS

Richard F. Miller, Humble, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 24, 1982, Ser. No. 423,409

Int. Cl.³ C07C *7/18*

U.S. Cl. 585—4 **9 Claims**

1. A composition comprised of (a) a vinyl aromatic compound containing an amount effective to inhibit polymerization of said vinyl aromatic compound of a mixture of (1) about 10 to 90 parts by weight of at least one N,N-dialkylhydroxylamine wherein the alkyl groups are the same or different and each alkyl group has 2 to 10 carbon atoms, and (2) about 90 to 10 parts by weight of at least one tertiary-alkylcatechol having 4 to 20 carbon atoms.

5. In a method of inhibiting polymerization of a vinyl aromatic compound comprising adding to the vinyl aromatic compound an amount of an polymerization inhibiting agent effective to substantially reduce the rate of polymerization, the improvement comprising using as the agent a combination of:

(a) about 10 to 90 parts of at least one N,N-dialkylhydroxylamine wherein the alkyl groups are the same or different and each alkyl group has 2 to 10 carbon atoms, and

(b) about 90 to 10 parts of at least one tertiary alkylcatechol having 4 to 20 alkyl carbon atoms

per 100 total parts by weight of the compounds in 8a) and (b).

4,409,409

TWO STAGE OLEFIN WAX PROCESS

Arthur W. Langer, Jr., Watchung; Gerald Doyle, White House Station; Terry J. Burkhardt, Cranford, all of N.J., and Ralph W. Looney, Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 10, 1982, Ser. No. 386,927

Int. Cl.³ C07C *2/74*

U.S. Cl. 585—255 **5 Claims**

1. A process for preparing linear waxes having an M_n of about 500 to about 5000 which comprises the steps of:

(a) oligomerizing ethylene to an ologomerization product having an M_n of about 200 to 700;

(b) metathesizing said oligomerization product to form a linear olefin wax; and

(c) removing from said linear olefin wax essentially all products having a carbon number of less than about C_{30}.

4,409,410

PROCESS FOR SELECTIVELY HYDROGENATING A DI-OLEFIN IN A MIXTURE OF HYDROCARBONS HAVING AT LEAST 4 CARBON ATOMS AND COMPRISING AN α-OLEFIN

Jean Cosyns, Maule, and Daniel Durand, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 9, 1982, Ser. No. 347,127

Int. Cl.³ C07C *5/06, 5/16*

U.S. Cl. 585—259 **10 Claims**

1. In a process for selectively hydrogenating a diolefin present in a mixture of hydrocarbons having at least 4 carbon atoms and comprising an 1-olefin in addition to the diolefin, wherein said mixture is reacted with hydrogen in contact with a catalyst, the improvement wherein said catalyst is a supported catalyst comprising simultaneously palladium or a palladium compound and silver or a silver compound, the palladium content of the catalyst being from 0.05 to 0.5% by weight and the silver content from 0.05 to 1% by weight, the

$$\frac{\text{silver}}{\text{palladium}} \text{ ratio}$$

being from 0.7:1 to 3:1 by weight, thereby avoiding substantial isomerization and hydrogenation of the 1-olefin.

4,409,411

PROCESS OF HYDROGENATING BENZENES AND GROUP IVA METAL HYDRIDE CATALYSTS THEREFOR

Guido P. Pez, Boonton, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 17, 1981, Ser. No. 303,261

Int. Cl.³ C07C *5/02, 5/03*

U.S. Cl. 585—275 **12 Claims**

1. A process of producing cyclohexene or alkylcyclohexene which comprises reacting liquid benzene or alkylbenzene with hydrogen gas in the presence of a catalytic amount of a solid carbonaceous group IVa metal hydride.

said solid carbonaceous group IVa metal hydride having been produced by reacting a group IVa metal halide with a hydrocarbon solution of an alkyllithium or aryllithium at a temperature between about 0° and about 120° C., recovering the solid carbonaceous product, and reacting the solid carbonaceous product with hydrogen to produce said solid carbonaceous Group IVa metal hydride.

4,409,412

PROCESS FOR PRODUCING ALKYL AROMATIC COMPOUNDS

Werner O. Haag, and Tracy J. Huang, both of Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 230,176, Jan. 30, 1981. This application Sep. 24, 1982, Ser. No. 423,337

Int. Cl.³ C07C *2/86*

U.S. Cl. 585—454 **6 Claims**

1. A process for alkylating an aromatic compound to provide a product aromatic compound possessing at least one more alkyl group of at least two carbon atoms than the starting aromatic compound, which comprises reacting at elevated temperature at least one aromatic compound possessing at least one hydrogen atom directly bonded to the aromatic nucleus with an alkylating agent which is a mixture of hydrogen and/or a hydrogen-containing substance which provides hydrogen under process conditions and a carbon oxide, in the presence of a catalyst comprising a metal or metal-containing component, selected from the group consisting of iron, cobalt, ruthenium, manganese, rhodium and osmium, and a zeolite having a constraint index of 12 or less whereby said product aromatic compound is produced.

4,409,413

CONVERSION OF XYLENES CONTAINING ETHYL BENZENE

Kazuyoshi Iwayama, Kamakura, and Takehisa Inoue, Tokyo, both of Japan, assignors to Toray Industries, Incorporated, Tokyo, Japan

Filed Jun. 16, 1981, Ser. No. 274,318

Claims priority, application Japan, Jun. 23, 1980, 55-83952; Oct. 9, 1980, 55-140408

Int. Cl.³ C07C *5/22, 4/12*

U.S. Cl. 585—481 **6 Claims**

1. A process for simultaneously isomerizing xylenes and hydrodealkylating ethyl benzene to benzene by contacting a mixture containing ethyl benzene and at least one xylene isomer with a catalyst in the presence of hydrogen, said catalyst comprising a mordenite type zeolite which has been ion-exchanged with hydrogen ion and/or hydrogen ion precursor rhenium and phosphorus.

4. A process for simultaneously isomerizing xylenes and hydrodealkylating ethyl benzene to benzene by contacting a mixture containing ethyl benzene and at least one xylene isomer with a catalyst in the presence of hydrogen, said catalyst comprising a mordenite type zeolite which has been ion-exchanged with hydrogen ion and/or hydrogen ion precursor, phosphorus and vanadium.

4,409,414

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 10,527, Feb. 9, 1979, abandoned, which is a division of Ser. No. 882,946, Mar. 2, 1978, which is a continuation of Ser. No. 232,618, Mar. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 783,699, Dec. 13, 1968, Pat. No. 4,108,744, which is a continuation-in-part of Ser. No. 562,089, Jul. 1, 1966, abandoned, which is a continuation-in-part of Ser. No. 428,836, Jan. 28, 1965, abandoned, which is a continuation-in-part of Ser. No. 55,845, Sep. 8, 1960, Pat. No. 3,168,588. This application Aug. 20, 1980, Ser. No. 179,655

The portion of the term of this patent subsequent to Apr. 29, 1986, has been disclaimed.

Int. Cl.³ C07C *2/34*

U.S. Cl. 585—524 **1 Claim**

1. A process for preparing a reaction product comprising at least 90 mole % linear alpha olefins having a number average molecular weight ranging from about 70 to about 700 which comprises polymerizing an ethylene-containing gas in the presence of a substantially soluble catalyst comprising the reaction product of a Ti metal compound with an aluminum alkyl compound such that the ultimate formula of the aluminum alkyl compound is AlR_nX_{3-n}, wherein X is selected from the group comprising chloride, bromide and iodine, n is less than 2, and R is a hydrocarbyl radical, said Ti metal compound having the formula TiX_aA_b, wherein a=3 or 4, b=0 or 1 and a+b=3 or 4, X=Cl or Br and A is Cl or Br or an anion derived from a protonic compound selected from the group consisting of R'OH and R'COOH, wherein R' is selected from the group consisting of alkyl, aryl, aralkyl and cycloalkyl groups, said aluminum alkyl compound and said Ti metal compound being in the presence of a diluent at a temperature of less than about +75° C. and an ethylene pressure above about 50 psia, wherein the mole ratio of ethylene to olefin reaction product is above 0.8 throughout the reaction wherein the product olefin concentration is greater than 5 wt. % based on the diluent and reaction product.

4,409,415

OLEFIN OLIGOMERIZATION USING BORON TRIFLUORIDE AND AN ALCOHOL-POLYOL COCATALYST

Neal E. Morganson, McCandless Township, Allegheny County, and Adam V. Vayda, Oakmont Borough, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 18, 1981, Ser. No. 303,369

Int. Cl.³ C07C *3/02, 3/18*

U.S. Cl. 585—525 **8 Claims**

1. A process for producing a mixture of olefin oligomers which comprises contacting in the liquid phase an olefin having from about six to about 20 carbon atoms or a mixture thereof with a catalyst comprising boron trifluoride and a cocatalyst comprising between about 75 and about 99 weight percent of an aliphatic alcohol having from one to about ten carbon atoms, and between about one and about 25 percent of a polyol selected from ethylene glycol, propylene glycol, butane diol and glycerine.

4,409,416

LIGNIN CRACKING PROCESS USING FAST FLUIDIZED BED REACTIONS

George J. Snell, 112 Arlington Dr., Fords, N.J. 08863, and Derk T. A. Huibers, 37 Abey Dr., Pennington, N.J. 08534

Filed Mar. 1, 1982, Ser. No. 353,314

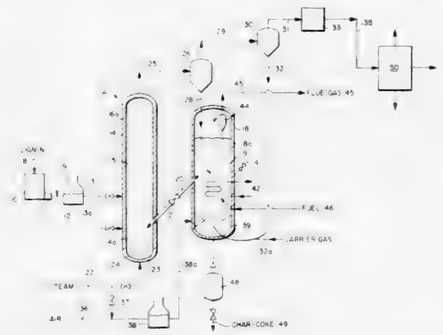
Int. Cl.³ C07C *1/00, 1/20*

U.S. Cl. 585—635 **12 Claims**

1. A process for cracking lignin-containing materials to produce hydrocarbon products, comprising:

(a) feeding lignin-containing feed material with a diluent gas into a cracking zone containing a fast fluidized bed of particulate solids carrier material, and maintaining the bed within a temperature range of about 1200°–1700° F. and at an average residence time less than about 5.0 seconds to crack the feed material and produce a crackate material and coke, while depositing coke on the particulate solids carrier material;

(b) passing the crackate effluent from said cracking zone along with said particulate solids carrier material containing coke to a solids separation step, and then passing the solids to a combustion zone containing a slow fluidized bed of said particulate solids carrier material containing



coke maintained at higher temperature then in said cracking zone;

(c) introducing oxygen-containing gas and steam into the slow fluidized bed to maintain it within a temperature range of about 1400°–2000° F. for combustion of coke;

(d) recycling said particulate solids carrier material from said combustion zone to the lower end of said fast fluidized bed cracking zone at a controlled rate to provide process heat therein; and

(e) withdrawing a hydrocarbon vapor effluent product from the solids separation step.

4,409,417

PROCESS OF DEHYDROGENATION OF HYDROCARBONS

Sheldon Herbstman, Spring Valley, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,477

Int. Cl.³ C07C *5/36*

U.S. Cl. 585—660 **16 Claims**

1. The method of dehydrogenating a dehydrogenatable hydrocarbon which comprises passing, at dehydrogenating conditions, into contact with a supported dehydrogenation catalyst containing (i) a noble Group VIII metal, (ii) a metal of Group VII B or Group IV A, and (iii) a metal of Group IA, a charge composition containing dehydrogenatable hydrocarbon, hydrogen, and ammonia thereby forming a product dehydrogenated gas stream; and

recovering said product dehydrogenated gas stream.

4,409,418

ISOMERIZATION PROCESS

Marvin M. Johnson; Gerhard P. Nowack, and Semyon Kukes, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 7, 1982, Ser. No. 395,939

Int. Cl.³ C07C *5/24, 5/30*

U.S. Cl. 585—667 **6 Claims**

1. A process for the isomerization of an aliphatic mono-olefin hydrocarbon feed to shift an internal double bond therein to produce a corresponding terminal olefin which comprises subjecting said mono-olefin hydrocarbon feed under isomerization conditions to the action of a catalyst comprising zirconium phosphate and at least one of chromium and thorium.

4,409,419

PROCESS FOR PREPARING 2,5-DIMETHYL-2,4-HEXADIENE

Aldo Prevedello; Edoardo Platone, and Morello Morelli, all of San Donato Milanese, Italy, assignors to Anic S.p.A., Palermo, Italy

Filed Aug. 6, 1981, Ser. No. 290,655

Claims priority, application Italy, Aug. 29, 1980, 24353 A/80

Int. Cl.³ C07C *1/20, 1/253*

U.S. Cl. 585—611 **7 Claims**

1. A process for the preparation of 2,5-dimethyl-2,4-hexadiene comprising the steps of contacting 2,5-dimethyl-2,5-hexanediol in liquid phase or in aqueous solutions thereof with an acid, derivatives of said acid or substances which form free acids, heating the mixture thus obtained to a temperature in a range of from about 100° C. to about 160° C., distilling off water as it is formed, recycling the organic phase, and separating the 2,5-dimethyl-2,4-hexadiene obtained from the reaction mixture.

4,409,420

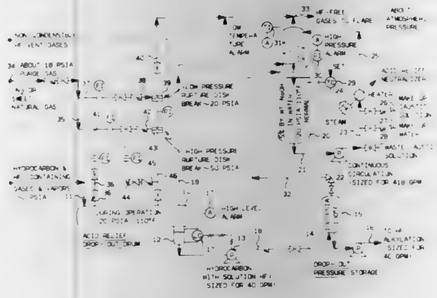
RELIEF SYSTEM

Joe Van Pool, and Mack F. Potts, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 28, 1981, Ser. No. 296,948

Int. Cl.³ C07C *2/62;* B01D *53/34*

U.S. Cl. 585—723 **6 Claims**



1. In an HF-alkylation operation wherein there are obtained in a stream various light hydrocarbons and HF acid those steps in combination which comprises

(a) passing a vaporous HF acid-hydrocarbon stream containing entrained liquid to an acid relief drop-out zone operating under conditions which remove entrained liquid therefrom,

(b) charging the vaporous stream, reduced in liquid content, obtained in (a) to a neutralizing zone or section operated under conditions such that the vaporous stream is contacted with continuously circulating heated neutralizing agent so that substantially HF-free hydrocarbon vapors are yielded to a flare,

(c) introducing a first portion of a sulfur-free and HF-free gas into a by-pass line which is in open communication with the downstream portion of a low pressure rupture zone or section,

(d) maintaining open pressure communication between said gas in (c) and the upstream portion of said low pressure rupture zone or section and with the downstream portion of a high pressure rupture zone or section, said by-pass line affording a vapor relief safety by-pass for said acid relief drop-out zone when both said high pressure rupture zone or section and said low pressure rupture zone or section are ruptured, and

(e) introducing a second portion of said sulfur-free and HF-free gas in (c) into said drop-out zone or section and passing same therethrough and into and through said neutralizing zone to prevent moisture from entering the system as via the flare.

4,409,421

PROCESS FOR THE PREPARATION OF PURE TERT.-OLEFINS

Jens Herwig; Bruno Schulwitz, both of Cologne; Bernhard Schleppinghoff; Hans-Volker Scheef, both of Dormagen, and Peter M. Lange, Leverkusen, all of Fed. Rep. of Germany, assignors to EC Erdolchemie GmbH, Cologne and Bayer Aktiengesellschaft, Leverkusen, both of, Fed. Rep. of Germany

Filed Jun. 4, 1982, Ser. No. 385,225

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1981, 3124294

Int. Cl.³ C07C *7/01, 7/12*

U.S. Cl. 585—833 **7 Claims**

1. In a process for the preparation of a pure tertiary olefin comprising the steps of:

(A) contacting at least one tertiary olefin in a hydrocarbon stream within which it is in admixture with other hydrocarbons with an alkanol whereby to form an alkyl tertiary alkyl ether;

(B) separating off the residual hydrocarbons which are largely free of tertiary olefins from said alkyl tertiary alkyl ether;

(C) cleaving said alkyl tertiary alkyl ether back to said tertiary olefin and alkanol; and

(D) separating pure tertiary olefin from alkanol,

the improvement wherein:

(E) said alkanol, at the cleavage from said tertiary alkyl ether, is separated off by distilling off from said tertiary olefin to the extent of 60 to 99% by weight;

(F) residual alkanol in admixture with said tertiary olefin is separated from said tertiary olefin by passing the mixture of residual alkanol and tertiary olefin over a synthetic ion exchanger which contains groups which exchange cations or anions or a mixture thereof whereby said alkanol becomes absorbed on said synthetic ion exchanger and substantially pure tertiary olefin is removed; and thereafter absorbed alkanol on said synthetic ion exchanger is desorbed by contacting said synthetic ion exchanger containing absorbed alkanol with a mixture of hydrocarbons containing at least one tertiary olefin; and

(G) reacting said desorbed alkanol from step (F), while in admixture with at least one tertiary olefin to form said alkyl tertiary alkyl ether.

4,409,422

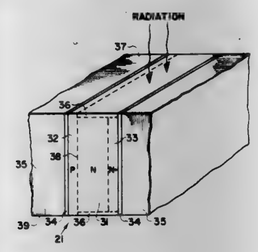
HIGH INTENSITY SOLAR CELL

Bernard L. Sater, 9007 Westlawn Blvd., Olmsted Falls, Ohio 44138

Continuation of Ser. No. 53,923, Jul. 2, 1979, abandoned, which is a continuation of Ser. No. 522,244, Nov. 8, 1974, abandoned. This application Dec. 4, 1981, Ser. No. 327,567

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—244 **16 Claims**



1. A high intensity edge illuminated solar cell comprising:

first, second and third essentially parallel layers of impurity doped semiconductor material and arranged in that order with said first and third layers terminating in opposing essentially parallel first and second major surfaces, said layers having a plurality of edge surfaces extending perpendicularly between said major surfaces;

said second layer being of a first type conductivity and exhibiting a high resistivity on the order of 100 ohm-cm to 1000 ohm-cm, said first layer being of an opposite second type conductivity so as to define a PN junction between said first and second layers and which junction is essentially parallel to said first and second major surfaces;

said third layer being of said first type conductivity but of greater impurity concentration than that of said second layer and the junction of said second and third layers being essentially parallel to said PN junction;

at least one of said edge surfaces adapted for receiving incident radiation and thereby serving as an operating surface, said operating surface being passivated to minimize surface recombination losses; and,

first and second low ohmic resistance metalized layers respectively on said first and second major surfaces, said metalized layers being opaque to radiation.

16. A high intensity solar cell as set forth in claim 1, including a plurality of said cells aligned in series such that the first and second major surfaces of an intermediate cell respectfully face the second and first major surfaces of the next preceding cell and the next succeeding cell.

4,409,423

HOLE MATRIX VERTICAL JUNCTION SOLAR CELL

James F. Holt, Medway, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 9, 1982, Ser. No. 356,574

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—255 **2 Claims**

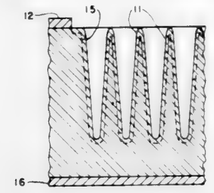
1. A vertical junction solar cell comprising:

a. a semiconductor substrate of predetermined thickness having substantially parallel upper and lower surfaces;

b. a plurality of electrically conducting strips on said upper surface and separating said upper surface into a plurality of distinct active areas, and an electrical header strip joining said conducting strips to provide a first electrical contact for said cell;

c. a second electrical contact on said lower surface; and

d. each of said active areas including a plurality of closely spaced holes of predetermined depth into said substrate, said holes having a substantially circular cross-section and a depth less than said substrate thickness and greater than the diameter of said holes, and being configured in a predetermined array, the walls defining said holes forming the vertical junctions of said cell.



4,409,424

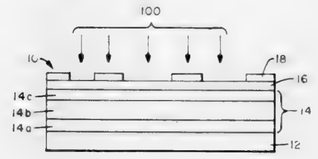
COMPENSATED AMORPHOUS SILICON SOLAR CELL

Genevieve Devaud, Oak Park, Ill., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 21, 1982, Ser. No. 390,730

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—258 **21 Claims**



1. In an amorphous silicon solar cell which comprises an electrically conductive substrate, a layer of glow discharge deposited hydrogenated amorphous silicon over said substrate and having regions of differing conductivity with at least one region of intrinsic hydrogenated amorphous silicon, said layer of hydrogenated amorphous silicon having opposed first and second major surfaces where said first major surface contacts said electrically conductive substrate, and means for electrically contacting said second major surface, the improvement wherein the intrinsic hydrogenated amorphous silicon region is deposited from an atmosphere containing not less than about 0.2 atom percent mono-atomic boron.

4,409,425

CRYOGENICALLY STABILIZED SUPERCONDUCTOR IN CABLE FORM FOR LARGE CURRENTS AND ALTERNATING FIELD STRESSES

Günter Ries, Weingarten, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 9, 1981, Ser. No. 329,013

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1980, 3048418

Int. Cl.³ H01B *12/00*

U.S. Cl. 174—15 S **15 Claims**

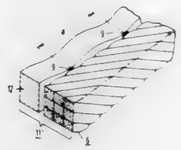
1. In a cryogenically stabilized superconductor in cable form for large currents and alternating field stresses comprising a plurality of superconducting elements which contain twisted conductor filaments of superconductor material embedded in a matrix material of predetermined electric conductivity, said superconducting elements twisted with several stabilizing elements of thermally and electrically highly conductive material which is electrically normally conducting at the operating temperature of the superconductor and the electric conductiv-

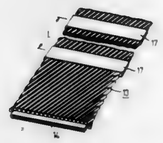
ity of which, at the operating temperature, is substantially higher than that of the matrix material of the superconducting elements, disposed parallel thereto, the improvement comprising:

(a) the superconductor being divided into stabilized superconducting subconductors, each comprising a superconducting element and a stabilizing element, the stabilizing element electrically connected to its respective superconducting element only at individual points dispersed one behind the other in the lengthwise direction of the superconductor;

(b) said subconductors being twisted with each other; and

(c) means insulating said subconductors from each other in such a manner that an electrically highly conducting cross connection of all of said subconductors is provided only after one or more twisting lay lengths.





4,409,426

SPLICE CASE

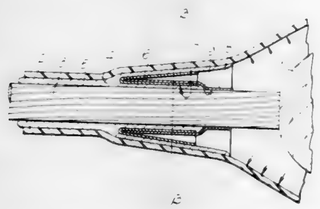
Jean-Marie E. Nolf, Hamme-Mille, and Marc Verschelde, Waregem, both of Belgium, assignors to N.V. Raychem S.A., Kessel-lo, Belgium

Continuation of Ser. No. 87,337, Oct. 23, 1979, abandoned. This application Jan. 27, 1982, Ser. No. 343,254

Claims priority, application United Kingdom, Oct. 27, 1978, 42194/78

Int. Cl.³ H02G *15/32*

U.S. Cl. 174—21 R **18 Claims**



1. A casing for a pressurized segment of an elongate substrate, comprising

a sleeve positionable about the substrate segment to define an enclosure thereabout, said sleeve tapering at the ends thereof to meet the substrate when said sleeve is assembled with the substrate; and

an auxiliary member positionable about the substrate between the substrate and said sleeve at the region where the substrate and said sleeve meet, said auxiliary member being of flexible sheet material having inner and outer arms in cross-section defining an annular channel with the concavity of said channel facing the interior of said enclosure and adapted to allow said channel to open out responsive to pressure within said sleeve, the inner and outer arms of said channel being bondable to the substrate and said sleeve respectively.

4,409,427

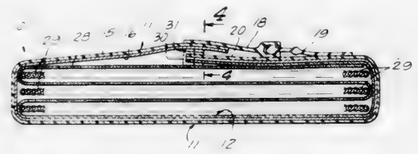
RADIO FREQUENCY SHIELDING JACKET FOR MULTIPLE RIBBON CABLES

Walter A. Plummer, III, 14831 Foxcroft Rd., Tustin, Calif. 92680

Filed Nov. 30, 1981, Ser. No. 325,725

Int. Cl.³ H01B *7/34*

U.S. Cl. 174—36 **5 Claims**



1. A unitary tubular jacket for shielding a plurality of ribbon cables from electrical interference comprising:

inner and outer shielding subassemblies the inner one of which comprises a flexible strip of flexible conductive material foldable into a plurality of accordian pleats forming storage cells for a respective ribbon cable and the outer one of which subassemblies has one lateral edge secured to one lateral edge of said inner subassembly;

a pair of separable interlocking seam members secured to the lateral edge portions of said outer subassembly in a manner providing a guard flap sufficiently wide to bridge and underlie said seam members when interlocked to one another;

said outer subassembly comprising an outer layer of flexible non-conductive material secured to an inner layer of conductive material; and

means, including conductive braids electrically connected to said conductive inner subassembly and secured to the outer side of said guard flap in position to lie in contact with the conductive layer of said outer subassembly when said seam members are interlocked.

4,409,428

OVERHEAD ELECTRIC TRANSMISSION SYSTEMS

Philip Dey, New Barnet; Ronald Dunkley, High Wycombe, and Graham Holden, Bradshaw, all of England, assignors to BICC Public Limited Company, London, England

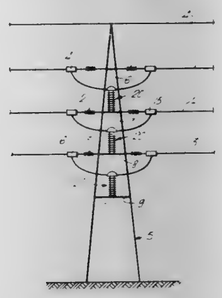
Filed May 27, 1982, Ser. No. 382,596

Claims priority, application United Kingdom, Jun. 3, 1981, 8116960

Int. Cl.³ H02G *7/00;* **H01B** *17/44*

U.S. Cl. 174—43 **15 Claims**

1. In an overhead electric transmission system of the kind in which there is freely supported in long lengths between towers mutually spaced along the system at least one overhead electric conductor which includes at least one optical fibre for the transmission of light, a joint between optical fibres of two overhead electric conductors suspended from a tower, or between optical fibres of an overhead electric conductor suspended from a tower and of a cable extending to a location spaced from the tower, in which each or the overhead electric conductor constitutes a live conductor of the system, which joint is enclosed within a substantially fluid-tight housing of metal or metal alloy, the housing being electrically connected to each or the said overhead electric conductor, being electrically insulated from earth, and having an external shape of such a form as to provide effective control of electrical stress.



4,409,429

OVERHEAD ELECTRIC TRANSMISSION OR DISTRIBUTION SYSTEM

Bernard Gaylard, 2 Ollerbarrow Rd., Altrincham, Cheshire, England

Filed Jun. 18, 1982, Ser. No. 389,683

Claims priority, application United Kingdom, Jun. 16, 1981, 8118526

Int. Cl.³ H02G *7/04, 7/20, 7/22*

U.S. Cl. 174—43 **10 Claims**

1. An overhead electric transmission or distribution system comprising at least one overhead stranded electric conductor comprising at least one layer of helically wound bare elongate elements of metal or metal alloy, at least one elongate compartment within and extending throughout the length of the stranded conductor and, loosely housed in the elongate compartment or at least one of the elongate compartments, at least one optical fibre, which overhead stranded conductor is freely supported in long lengths from towers spaced along the system, wherein at at least one tower of the system at least one said overhead stranded conductor is supported from each of two opposite sides of the tower by suspension means incorporating a weak link designed to fracture at a tensile load substantially less than that which the or each optical fibre of the stranded conductor can withstand before fracturing and wherein an excess length of the said stranded conductor extends between the positions at which said suspension means are secured to the stranded conductor, the arrangement being such that, in the event that the tensile load on the stranded conductor increases to a value greater than that which the weak links can withstand, at least one of the weak links will fracture and the excess length of stranded conductor will reduce substantially the tensile load on the stranded conductor and thereby substantially reduce risk of optical fibre fracture.

4,409,430

MULTIPLE JOINT BOX

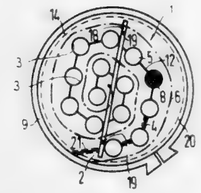
Georg Boscher, Munich, and Wolfgang Haeder, Eichenau, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 14, 1982, Ser. No. 398,401

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1981, 3129570

Int. Cl.³ H02G *15/013*

U.S. Cl. 174—92 **26 Claims**



1. A multiple joint box having a longitudinally slitted socket pipe and at least one end-face sealing body with a plurality of cable apertures formed therein for the connecting or distributing of cables, the improvements comprising said sealing body comprising a tape wound spirally into a disk, the thickness of the tape being at least greater than half the diameter of a said cable aperture, said tape having a plurality of semicircular recesses formed at spaced intervals in one side of said tape in an end portion of said tape whose length corresponds to the circumference of said socket pipe, and a plurality of semicircular recesses formed at spaced intervals in both sides of the remaining length of said tape, the spacings of said recesses being selected such that they lie opposite one another in the wound state of said tape, thereby forming circular cable apertures.

25. The method of sealing a plurality of circular cables protruding from a cylindrical pipe which comprises

forming a flexible, resilient sealing tape with a thickness at least equal to one-half the diameter of the cables to be sealed,

forming substantially semi-circular recesses on only one surface of the tape from one end of the tape toward the other a distance at least as great as the dimension of the inner circumference of said cylindrical pipe to provide a non-recessed tape surface on a portion of one surface of said tape,

forming semi-circular recesses on both surfaces of said tape along the remainder of the length of the tape,

winding the said tape about said cables such that each cable is received within complementary substantially semi-circular recesses juxtaposed with one another,

winding said non-recessed portion of said tape last to present a non-recessed tape surface exteriorly of all of the cables,

clamping a seal sleeve over the non-recessed portion of said tape to compress the wound seal tape about said cables, and

sealing said seal sleeve to the inner circumference of said pipe.

4,409,431

OIL WELL CABLE

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Aug. 7, 1981, Ser. No. 291,125

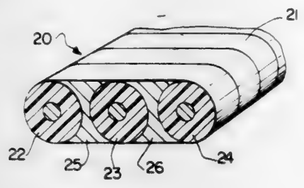
Int. Cl.³ H01B *7/18*

U.S. Cl. 174—103 **38 Claims**

38. An electrical cable comprising:

a pair of elongated, bendable electrical conductors, each comprising a conductor surrounded by a layer of insulation;

first means, located adjacent the insulation on at least one of said electrical conductors and extending substantially across the cross sectional height of the cable, for providing cross sectional rigidity to the cable for resisting compressive forces exerted in a direction transverse to the longitudinal axes of said electrical conductors, while allowing long radius bending transverse to the longitudinal axes of said electrical conductors; and



second means for enclosing said electrical conductors and said first means,

said first means having a height substantially equal to the diameter of the insulation on one of said conductors.

4,409,432

BINDING RETAINING AN ELECTRICAL CONDUCTOR IN A CIRCUMFERENTIAL GROOVE AROUND A RIGID INSULATOR

Michel Willem, Abrest, and Lucien Gamet, Saint-Yorre, both of France, assignors to Societe Anonyme dite: Ceraver, Paris, France

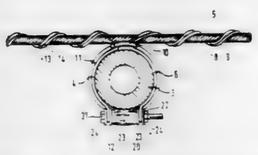
Filed Jul. 21, 1982, Ser. No. 400,369

Claims priority, application France, Aug. 5, 1981, 81 15205; Apr. 6, 1982, 82 05929

Int. Cl.³ H01B *17/22*

U.S. Cl. 174—172 **14 Claims**





1. A binding for retaining an electrical conductor in a circumferential groove around a rigid insulator, the binding being disposed substantially symmetrically about a plane of symmetry which passes through the insulator and which is orthogonal to said conductor, and comprising a ring, two conductor-retaining branches, and tightening means for tightening the binding, wherein each of said branches comprises a first end portion in the form of a preformed spiral retainer for wrapping around said conductor, an intermediate portion in the form of an arc of a circle having a radius of curvature that is substantially equal to the radius of the bottom of said circumferential groove, and a second end portion providing an eye for engaging the tightening means, with both branches passing through the ring at the transition between their spiral end portions and their intermediate arcuate portions, and wherein at least one elastomer block is inserted between said eyes to be held in position by said tightening means drawing said eyes towards each other.

4,409,433

BINDING FOR RETAINING AN ELECTRICAL CONDUCTOR IN A TOP GROOVE ON A RIGID INSULATOR WHICH ALSO HAS A CIRCUMFERENTIAL GROOVE

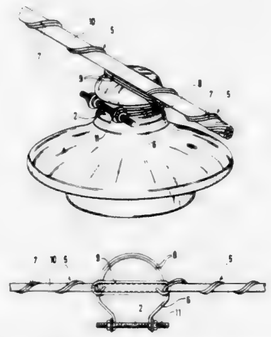
Michel Willem, Abrest, France, assignor to Societe Anonyme dite: Ceraver, Paris, France

Filed Jul. 21, 1982, Ser. No. 400,370

Claims priority, application France, Apr. 6, 1982, 82 05930

Int. Cl.³ H01B *17/22*

U.S. Cl. 174—172 **9 Claims**



1. A binding for retaining an electrical conductor in a top groove on a rigid insulator which also has a circumferential groove, the binding being disposed substantially symmetrically about a plane of symmetry which passes through the insulator and which is orthogonal to said conductor, and comprising a first ring for occupying a portion of the circumferential groove, a second ring for occupying the top groove, two conductor-retaining branches, and tightening means for tightening the binding, each of said branches comprising a first end portion in the form of a preformed spiral retainer for wrapping around said conductor, an intermediate portion for threading through said second ring when lodged in the top groove and through said first ring when lodged in the circumferential groove, and then extending in an arc of the same diameter as the circumferential groove to a second end portion which provides an eye for engaging the tightening means.

4,409,434

TRANSISTOR INTEGRATED DEVICE, PARTICULARLY USABLE FOR CODING PURPOSES

Jean-Claude Basset, Paris, and Alain Meinguss, Meudon la Foret, both of France, assignors to Electronique Marcel Dassault, Paris, France

Filed Dec. 1, 1980, Ser. No. 211,970

Claims priority, application France, Nov. 30, 1979, 79 29588; Nov. 30, 1979, 79 29589

Int. Cl.³ H01K *1/00*; **G06K** *19/06*

U.S. Cl. 178—22.19 **23 Claims**

11. An MOS logic integrated circuit comprising:

first and second input terminals E1, E2 adapted to receive respective logic signals relative to a common ground connection;

an output terminal;

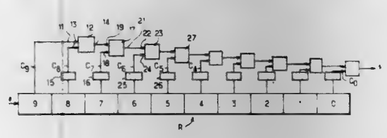
first and second inverting MOS transistors having gates directly coupled to said first and second inputs, said transistors delivering as outputs inverted signals from said first and second inputs, respectively;

first and second processing MOS transistors having gates coupled to receive signals from said first input and to receive said inverted second input signal, respectively;

third and fourth processing MOS transistors having gates coupled to receive said inverted first input signal and to receive signals from said second input, respectively;

the source-drain paths of said first and secondprocessing MOS transistors being serially arranged with those of said third and fourth processing MOS transistors between said output terminal and a ground connection;

fifth and sixth processing MOS transistors arranged in



source-drain parallel relationship and having gates coupled to said first input and to receive said inverted second input signal, respectively;

seventh and eighth processing MOS transistors having gates coupled to receive said inverted first input signal and to receive a signal from said second input, respectively;

the source-drain paths of said fifth and sixth processing MOS transistors being serially arranged with those of said seventh and eighth processing MOS transistors between said output terminal and ground connection;

at least one of said processing transitors being doped to be passive and inactive in response to its gate signal.

4,409,435

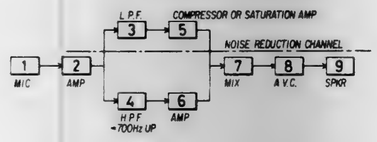
HEARING AID SUITABLE FOR USE UNDER NOISY CIRCUMSTANCE

Hiroshi Ono, Tokyo, Japan, assignor to Gen Engineering Co., Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,552

Int. Cl.³ H04R *25/00*

U.S. Cl. 381—71 **4 Claims**



1. A hearing aid suitable for use under noisy conditions comprising;

a frequency division means for dividing input signals picked up through a microphone into a first low frequency range and a second substantially unattenuated frequency range higher than said first range, said second range having a low frequency cutoff that is no higher than 700 Hz.,

a compensating means for selectively saturating or reducing the output level of one of said ranges including noisy signals therein only when the input level of signals of said one frequency range is higher than the certain level, and

a mixing means for mixing said compensated signals of said one frequency range with non-compensated signals of the other of said frequency ranges.

4,409,436

STEREO PILOT SIGNAL ELIMINATING CIRCUIT FOR AM STEREOPHONIC RECEIVER

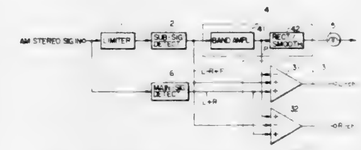
Tatsuo Numata; Akira Nishioka, and Hitoshi Hirata, all of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,562

Claims priority, application Japan, Jun. 19, 1980, 55-85914

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—15 **6 Claims**



1. An AM stereophonic receiver circuit for an AM stereophonic signal in which a carrier signal is phase modulated by a sub-signal corresponding to a difference between right and left channel signals and amplitude modulated by a main signal corresponding to a sum of said right and left channel signals, comprising: means for receiving and producing an IF signal; a main signal detector having an input coupled to receive said IF signal; a sub-signal detector having an input coupled to receive said IF signal; first and second adder/subtractor circuits, an output of said sub-signal detector being coupled to an addition input of said first adder/subtractor circuit and to a subtraction input of said second adder/subtractor circuit, and an output of said main signal detector being coupled to addition inputs of both said first and second adder/subtractor circuit; and a stereo pilot signal detector circuit having an input coupled to said output of said sub-signal detector, said stereo pilot signal detector circuit producing an output signal corresponding to a pilot signal of a received stereophonic AM modulated signal, said output signal of said stereo pilot signal detector circuit being coupled to a subtraction input of said first adder/subtractor circuit and to an addition input of said second adder/subtractor circuit, a left channel output being produced at an output of said first adder/subtractor circuit and a right channel signal being produced at an output of said second adder/subtractor circuit.

4,409,437

APPARATUS FOR INDICATING TELEPHONE LINE STATE

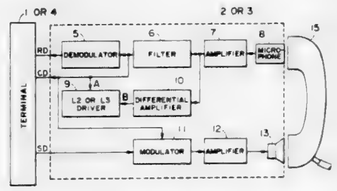
Sakae Horyu, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1980, Ser. No. 203,444

Claims priority, application Japan, Nov. 2, 1979, 54-141188

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 DP **5 Claims**



1. An apparatus for indicating states of a telephone line, comprising:

means for receiving a plurality of signals from the telephone line in forms distinguishable one from another;

means for indicating a first state of the than a predetermined level is included in said plurality of signals; and

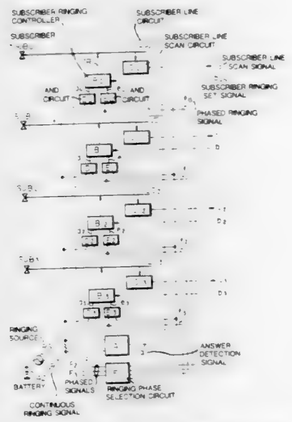
means for disabling said indicating means when said receiving means receives a signal having a predetermined frequency, and for providing a signal causing an external unit connected to said apparatus to indicate that the telephone line is in a second state different from the first state.

4,409,438

RINGING CONTROL CIRCUIT IN A TELEPHONE SWITCHING SYSTEM

Masajiro Akuta, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Japan

Filed May 20, 1981, Ser. No. 265,630
Claims priority, application Japan, May 24, 1980, 55/69223
Int. Cl.³ H04M *3/06*
U.S. Cl. 179—18 HB **3 Claims**



1. A ringing control circuit for a telephone exchange system comprising:

(a) a plurality of subscriber line circuits in a group, each coupled with a subscriber,

(b) a ringing source common to all the subscriber line circuits for providing a continuous ringing signal,

(c) a ringing switch means provided for each subscriber for coupling said ringing source to each subscriber,

(d) a ring trip circuit common to all the subscriber line circuits provided between said ringing source and the subscribers to detect an answer signal of subscribers,

(e) each subscriber line circuit having a subscriber ringing controller for switching said ringing switch means to provide an interrupted ringing signal to a related subcriber, and a subscriber line scan circuit for detecting whether a handset is lifted,

(f) said subscriber ringing controller starting ringing upon arrival of a call to the subscriber and finishing ringing upon detection of an answer signal by said ring trip circuit, characterized in that

(g) a ringing phase selection means is provided, having as its outputs phased ringing signals equal to or less in number than the number of subscribers in a group, said phased ringing signals being alternatively active,

(h) each subscriber line circuit having an AND circuit with two inputs, one input of which is the answer signal provided by said ring trip circuit, and the other input of which is one of the phased ringing signals,

(i) an output of said AND circuit causing a subscriber ringing controller to stop the ringing.

4,409,439

CONTROLLABLE TELEPHONE CALL ANNUNCIATOR

Barry I. Gamble, 9175 Poplar Ave., Cotati, Calif. 94928

Filed Apr. 24, 1981, Ser. No. 257,362
Int. Cl.³ H04M *11/02*
U.S. Cl. 179—84 C **10 Claims**



1. A controllable telephone call annunciator for connection to a telephone line which can supply consecutive ring signals, comprising:

(a) indicating means for providing a humanly-sensible indication in response to a driving signal supplied thereto,

(b) gate means having a plurality of inputs and an output arranged to supply said driving signal to said indicating means when all of said inputs thereof are activated,

(c) coupling means connecting said telephone line to one of the inputs of said gate means such that said one input will be intermittently enabled in correspondence to the respective ring signals on said telephone line,

(d) selectable timer means for selectively supplying a timed activating signal to a second input of said gate means,

(e) selectable sensing means connected to said telephone line for sensing the occurrence of a predetermined ring signal condition on said telephone line and selectively supplying an activating signal on a third input of said gate means in response thereto, and

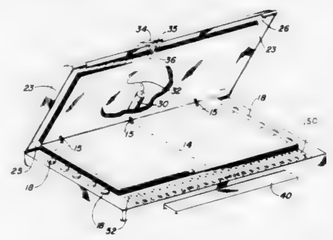
(f) selection means for manually selecting and initiating operation among said selectable timer means, said selectable sensing means, or both said selectable timer means and said selectable sensing means, whereby said indicating means can be selectively disabled or made operational in a plurality of independent modes.

4,409,440

TELEPHONE INDEX AND SWITCH ARRANGEMENT

Robert M. Brodbeck, Littleton, Colo., assignor to Marcamor, Inc., Denver, Colo.

Filed Nov. 25, 1981, Ser. No. 324,788
Int. Cl.³ H04M *1/51*
U.S. Cl. 179—90 BD **10 Claims**



1. Telephone index and combined switch arrangement for memory stored dialing data for automatic dial telephone systems, said arrangement comprising:

(a) multiple card index means for a visual listing of names and telephone numbers, each card including individual lines for individual numbers;

(b) means to individually visual display a single card thereof;

(c) a light source;

(d) fiber optic means for conducting light enamating from said light source, to said means to individually display one of said cards;

(e) light sensing means having a plurality of identical components, each of which is associated with a separate, individual card, and each of which functions to convert incident light to an electrical impulse, and activate a first circuit to a data block,

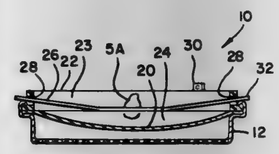
(f) selector switch means for each said individual line of a displayed card for activating a second circuit associated with a particular line on a card to retrieve and automatically dial a telephone number stored at a location in the memory associated with said particular line.

4,409,441

ULTRASONIC TRANSDUCER FOR USE IN A VIBRATORY ENVIRONMENT

Joseph E. Murray, Jr., Malden, and Paul J. Sylvester, Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 2, 1981, Ser. No. 279,722
Int. Cl.³ H04R *19/00*
U.S. Cl. 179—111 R **9 Claims**



1. An electroacoustical transducer assembly, comprising:

a relatively inflexible backplate having an electrically conductive major surface and having another electrically conductive surface electrically connected to said major surface on the opposite side thereof;

a relatively flexible diaphragm having electrically conductive and electrically nonconductive surfaces on opposite sides thereof; and

an electrically conductive spring, having a portion thereof fixedly attached to said electrically conductive opposite-side backplate surface, for connecting said backplate to an electrical circuit, for urging said major backplate surface into engagement with said electrically nonconductive diaphragm surface and for properly tensioning said diaphragm.

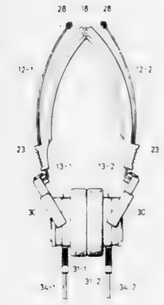
4,409,442

HEADPHONE

Tomohiko Kamimura, Habikino, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Apr. 30, 1981, Ser. No. 259,223
Claims priority, application Japan, May 12, 1980, 55-64684[U]
Int. Cl.³ H04M *1/05*
U.S. Cl. 179—156 R **2 Claims**

1. A headphone comprising a first resilient band piece of arcuate shape having first coupling means at one end thereof; a second resilient band piece having second coupling means at one end thereof, said second band piece having the same length, width, thickness and shape as said first band piece; connecting means for connecting the other ends of said first and second band pieces to one another with the arcuate shapes of said band pieces lying in a common plane, said connecting means comprising a coupling portion projecting from said other end of said first resilient band piece and having a hole extending therethrough in a direction perpendicular to said common plane, a pair of spaced coupling pieces projecting from said other end of said second resilient band piece in facing relation to the opposing ends of said coupling portion, each of said pair of coupling pieces having a hole therein in alignment with the hole in said coupling portion, a shaft extending through the holes formed in said coupling portion and in said pair of coupling pieces whereby said first and second band pieces can be angularly displaced relative to one another in said common plane about said shaft, the spacing between said pair of coupling pieces being significantly greater than the axial extent of said coupling portion in a direction parallel to said shaft whereby said first and second band pieces can be moved relative to one another along said shaft, bias means comprising a coil spring wound about said shaft between one of said pair of the coupling pieces and said coupling portion for urging said coupling portion along said shaft into engagement with one of said coupling pieces, said coupling portion and said one of said coupling pieces having stepped portions which define planes that extend transverse to said shaft and which are moved into engagement with one another by the biasing force of said coil spring to prevent angular displacement of said band pieces relative to one another about said shaft, said planes being disengaged from one another, to permit relative angular displacement of said band pieces about said shaft, by movement of said coupling portion and said one of said coupling pieces away from one another along said shaft against the biasing force exerted by said coil spring; a first end piece having a length approximately equal to that of said first resilient band piece, said first end piece being slidably coupled with said first coupling means so that substantially the entire length of the first end piece is slidable along said first resilient band piece; a second end piece of the same material, shape, length, width and thickness as said first end piece, said second end piece being slidably coupled with said second coupling means so that substantially the entire length of said second end piece is slidable along said second resilient band piece; and first and second headphone members each of which is covered by an ear pad and each of which includes a transducer for converting an electric signal into an acoustic signal, said first and second headphone members being respectively mounted on said first and second end pieces at positions remote from said connecting means such that when said first and second end pieces are slid relative to their respective coupling means until said headphone members reach said first and second coupling means, respectively, said first and second headphone members are brought into contact with each other through said covering ear pads.

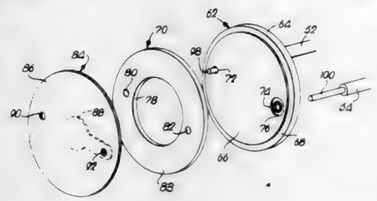


4,409,443

PRESSURE RESPONSIVE ELECTRICAL SWITCHING APPARATUS

Charles N. Tyree; Lester L. Fike, Jr., and Ronald A. McIntire, all of Blue Springs, Mo., assignors to Fike Metal Products Corporation, Blue Springs, Mo.

Filed Jun. 4, 1981, Ser. No. 270,220
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 N **6 Claims**



1. In fluid pressure responsive electrical switching apparatus having a laminated switch assembly including

a diaphragm contact subassembly at one extremity of said assembly and having an upstream face adapted to communicate directly with fluid in a zone to whose pressure said apparatus is to respond and an opposite downstream face,

an intermediate spacer subassembly provided with a laterally inwardly aperture therethrough and having an upstream surface extending around one extremity of said aperture and engaged with said downstream face of said diaphragm contact subassembly and an opposite downstream surface extending around the opposite extremity of said aperture,

a base contact subassembly at the opposite extremity of said assembly and having an upstream face of which a portion is engaged with said downstream surface of said spacer assembly and an opposite downstream face, and

means for securing said subassemblies together in the aforesaid relationship thereof,

said diaphragm contact subassembly comprising a relatively yieldable, electrically insulative diaphragm element having an upstream surface presenting said upstream face of said diaphragm contact subassembly and an opposite downstream surface facing said upstream surface and said one extremity of said aperture of said spacer subassembly, and electrically conductive, first contact structure secured to said downstream surface of said diaphragm element and extending over at least a portion of the latter aligned with said aperture of said spacer subassembly,

said spacer subassembly comprising an electrically insulative spacer element having said aperture therethrough,

said base contact subassembly comprising a relatively rigid, electrically insulative baseplate element having an upstream surface facing said downstream surface and said opposite extremity of said aperture of said spacer subassembly and an opposite downstream surface, and electrically conductive, second contact structure secured to said upstream surface of said baseplate element and extending over at least a portion of the latter aligned with said aperture of said spacer subassembly and with at least a part of said first contact structure,

said first and second contact structures being normally spaced apart when said diaphragm element is in a normal disposition thereof,

said part of said first contact structure being shiftable into engagement with a part of said second contact structure through said aperture when a portion of said diaphragm element aligned with said aperture moves sufficiently in a downstream direction under the influence of a fluid pressure of at least a predetermined level applied to said upstream face of said diaphragm contact subassembly,

there being a fluid chamber in said assembly within said aperture of said spacer subassembly and between said downstream face of said diaphragm contact subassembly and said upstream face of said base contact subassembly,

there being housing means for mounting said switch assembly with said upstream face of said diaphragm contact subassembly in direct fluid communication with said zone,

there being means for peripherally sealing said switch assembly to said housing means to separate said upstream face of said diaphragm contact subassembly from direct fluid communication with said downstream face of said base contact subassembly,

there being electrically conductive lead means for effecting electrical connection with at least one of said contact structures internally of said switch assembly,

said lead means passing through said baseplate element and emanating from said downstream surface thereof,

the improvement of which comprises:

each of said diaphragm element, said spacer element and said baseplate element being provided with a pair of holes therethrough, one of said pair of holes through each of said elements being aligned with each other, the other of said pair of holes through each of said elements being aligned with each other, a portion of said first contact structure extending into adjacency with said one hole through said diaphragm element, a portion of said second contact structure extending into adjacency with said other hole through said baseplate element, and

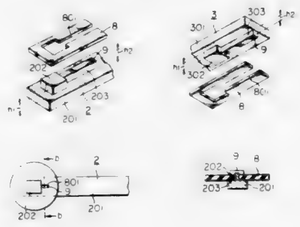
said lead means including a first lead wire extending through said one holes and said first contact structure and being electrically connected with the latter, and a second lead wire extending through said other holes and said second contact structure and being electrically connected with the latter.

4,409,444

CIRCUIT BREAKER

Hajimu Yoshiyasu, Itami; Fumiyuki Hisatsune, Fukuyama; Shinji Yamagata, Fukuyama, and Junichi Terachi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,676
Claims priority, application Japan, Dec. 9, 1980, 55-175987; Feb. 26, 1981, 56-27918[U]; Feb. 26, 1981, 56-27919[U]
Int. Cl.³ H01H *33/02*
U.S. Cl. 200—144 R **6 Claims**



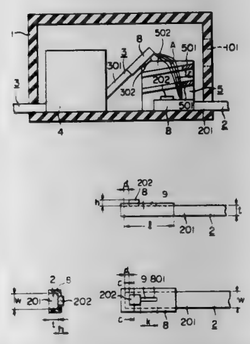
1. A circuit breaker comprising a pair of contactors comprising rigid conductors with contacts secured thereto, said contactors functioning to open and close an electric circuit, an arc shield disposed on at least one of said contactors, having a resistivity higher than that of said rigid conductors and which surrounds said contact, arc driving means to drive in a predetermined direction an electric arc struck across the gap between said pair of contactors, and an arc runway adjoining said contact provided with said arc shield, which extends in said predetermined direction with a predetermined height, said arc runway having a resistivity lower than that of said arc shield.

4,409,445

CIRCUIT BREAKER

Hajimu Yoshiyasu, Itami; Fumiyuki Hisatsune, Fukuyama; Shinji Yamagata, Fukuyama, and Junichi Terachi, Fukuyama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1981, Ser. No. 326,678
Claims priority, application Japan, Dec. 9, 1980, 55-175984; Feb. 26, 1981, 56-27913[U]; Feb. 26, 1981, 56-27920[U]; Feb. 26, 1981, 56-27922[U]; Feb. 26, 1981, 56-27923[U]
Int. Cl.³ H01H *33/02*
U.S. Cl. 200—144 R **9 Claims**



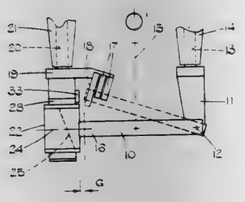
1. A circuit breaker comprising a pair of contactors comprising rigid conductors with contacts fastened thereto, said contactors functioning to open and close an electric circuit, an arc shield disposed on at least one of said contactors, having a resistivity higher than that of said conductors and which surrounds said contact, arc driving means to drive in a predetermined direction an electric arc struck across the gap between said pair of contactors, and an arc runway adjoining said contact provided with said arc shield and extending in said predetermined direction, and which has a resistivity lower than that of said arc shield and is narrower than the side of said contact to which it adjoins.

4,409,446

ELECTRICAL SWITCHGEAR

John Parry, Gwent, Wales, assignor to South Wales Switchgear Limited, Wales

Filed Jan. 27, 1982, Ser. No. 343,200
Int. Cl.³ H01H *33/18*
U.S. Cl. 200—147 R **15 Claims**



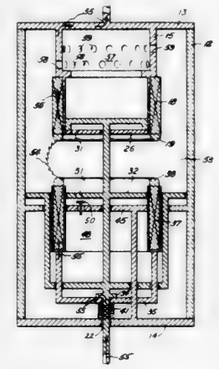
1. Electrical switchgear employing an electrically insulating fluid for arc extinction and comprising first and second contacts which are movable between open and closed positions, an arcing electrode electrically connected to said second contact, and a field coil electrically connected in series with said arcing electrode, said field coil having a pole face and an axis, said first contact having an end portion which engages said second contact when said contacts are in said closed position and which, when said contacts are moved towards said open position, moves transversely across said pole face of said field coil and inwardly of said axis thereof, movement of said contacts from said closed position to said open position causing an arc to be drawn therebetween such that said arc has a root on said second contact, and further movement of said contacts towards said open position causing said arc root to be transferred from said second contact to said arcing electrode, whereby a magnetic field is generated by an arcing current flowing through said field coil which causes said arc to rotate and become extinguished, a principal arcing zone being defined by such rotation of said arc, said arc being disposed within said principal arcing zone when said root thereof is transferred from said second contact to said arcing electrode, whereby said arc can rotate immediately under the influence of said magnetic field.

4,409,447

GAS BLAST CIRCUIT BREAKER COMBINING A MAGNETICALLY DRIVEN ROTATING ARC AND A PUFFER INDUCED GAS BLAST

Heinz O. Noeske, Cherry Hill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 51,115, Jun. 22, 1979, abandoned. This application Jan. 11, 1982, Ser. No. 338,747
Int. Cl.³ H01H *33/88, 33/18*
U.S. Cl. 200—148 A **18 Claims**



1. A circuit breaker comprising:

a sealed housing filled with an insulating gas at a predetermined pressure;

first main contact means disposed within said housing;

second main contact means disposed within said housing; said second contact means being movable relative to said first contact means between a first position in which said contact means are in abutment and a second position in which said contact means are separated, and said second contact means being cooperable with said first contact means to carry electrical current when said first and second contact means are in said first position and to interrupt an electrical circuit when said first and second contact means are in said second position;

a first annular auxiliary electrode having an annular arcing surface disposed adjacent said first main contact means;

a second annular auxiliary electrode having an annular arcing surface disposed adjacent said first auxiliary electrode such that said arcing surface of said second auxiliary electrode is adjacent and in axial alignment with said arcing surface of said first auxiliary electrode; said second auxiliary electrode being movable relative to said first auxiliary electrode between a first position in which said first and second arcing surfaces are in abutment and a second position in which said arcing surfaces are separated from each other;

first annular magnetic means disposed in axial alignment with said first auxiliary electrode;

second annular magnetic means disposed in axial alignment with said second auxiliary electrode;

first relatively movable piston and cylinder means disposed within said housing adjacent said first main contact means;

second relatively movable piston and cylinder means disposed within said housing adjacent said second main contact means; and

actuating means including means for moving said second main contact means from said first position to said second position, means for moving said second auxiliary electrode from said first position said second position, means for moving said piston relative to said cylinder of said first piston and cylinder means and means for moving said piston relative to said cylinder of said second piston and cylinder means.

4,409,448

PULL-PUSH SWITCH

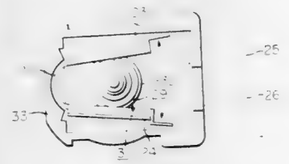
Hiroshi Matsui, Hirakata; Kazuo Sakami, Kobe; Matsuo Nishioka, Hirakata, and Takashi Onizawa, Sakai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 29, 1981, Ser. No. 316,283

Claims priority, application Japan, Oct. 31, 1980, 55/156665[U]; May 20, 1981, 56/73572[U]

Int. Cl.[3] **H01H** *5/20*

U.S. Cl. 200—153 LA **7 Claims**



1. A pull-push switch comprising:

an operating shaft;

a U-shaped elastic movable contact fabricated by bending a leaf spring disposed astride said shaft;

a stationary contact disposed between the legs of said elastic contact;

a cam securely mounted on said operating shaft so as to be positioned between the legs of said elastic movable contact;

said cam having a small-diameter cylindrical portion and a large-diameter cylindrical portion spaced apart from each other by a predetermined distance in the axial direction, said small-diameter cylindrical portion and said large-diameter cylindrical portion are joined with each other through a tapered intermediate position;

said tapered intermediate portion comprises a first conically tapered portion and a second conically tapered portion; and

the large-diameter bases of said first and second conically tapered portions are contiguous and the small-diameter bases of said first and second conically tapered portions are contiguous with the small- and large-diameter cylindrical portions, respectively;

whereby when said operating shaft is pulled or pushed so that said large-diameter cylindrical portion of said cam forces at least one of said legs of said elastic movable contact to bend outwardly away from said stationary contact, the switch is opened, but when said operating shaft is pushed or pulled so that said legs of said elastic movable contact spring back to rest on said small-diameter cylindrical portion of said cam, said legs are made into and maintained in contact with said stationary contact and consequently the switch is closed.

4,409,449

OPERATING MECHANISM FOR USE IN A CIRCUIT BREAKER

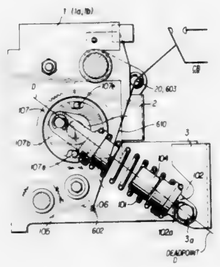
Ikuo Takano, Hachioji; Hiroshi Umino, Inagi, and Junji Fujiwara, Fuchuhonmachi, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 94,297, Nov. 14, 1979, abandoned. This application Jun. 8, 1982, Ser. No. 386,395

Claims priority, application Japan, Feb. 13, 1979, 54-14303

Int. Cl.[3] **H01H** *3/30*

U.S. Cl. 200—153 SC **4 Claims**



1. An operating mechanism for use in a circuit breaker having a stationary contact and a moving contact, said mechanism comprising:

a frame;

a shaft disposed on said frame;

link means for actuating said moving contact of the circuit breaker;

accumulating means for accumulating energy for actuating said moving contact and provided between said frame and said shaft;

means for associating said link means with said accumulating means;

means fo driving said accumulating means;

at least one roller clutching means provided between said means for driving said accumulating means and said accumulating means;

biasing means for biasing said link means;

means for operating said link means for closing said moving contact of the circuit breaker by using the accumulated energy of said accumulating means;

means for operating said link means for tripping said moving contact of the circuit breaker by using the energy of said biasing means; and

means for absorbing an an over-loading of said means for driving said accumulating means and provided between said accumulating means and said means for driving said accumulating means wherein said means for absorbing an over-loading as said means for driving said accumulating means comprises:

a connecting element mounted on said shaft and connected with one end of said accumulating means;

a bearing fitting member mounted circumferentially around a first roller clutching means and having at least one predetermined gap, wherein said first roller clutching means is mounted on said shaft; and

a gear member mounted around said fitting member having at least one stud adapted to fit within said gap of said fitting member, wherein said at least one gap and stud permit relative movement between said bearing fitting member and said gear member, said movement being limited by said predetermined gap.

4,409,450

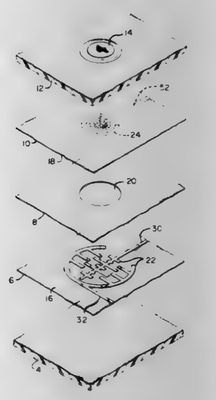
DOUBLE POLE MEMBRANE SWITCH HAVING PREFERRED SEQUENCE CLOSING FEATURE

Brian J. Blades, Woburn, Mass., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 29, 1982, Ser. No. 402,876

Int. Cl.[3] **H01H** *13/54*

U.S. Cl. 200—159 B **10 Claims**



1. A membrane switch device of the type comprising first and second parallel spaced-apart insulating supports, the supports having opposed first and second surfaces and having opposed contact means on the opposed surfaces forming an electrical switch means, at least one of the supports being flexible whereby upon movement of the supports towards and against each other until the opposed contacts are against each other, the switch means is closed, the switch means being characterized in that:

the contact means on the first surface comprises two electrically separate and adjacent contacts, one of the contacts having a first surface main contact portion and a commoning portion, the other contact on the first surface having a commoning portion which is adjacent to the commoning portion of the main contact portion, the two commoning portions defining a commoning zone on the first surface,

the contact means on the second surface comprises a second surface main contact portion and a second surface commoning portion which is electrically isolated from the second surface main contact portion, the second surface commoning portion being against the commoning zone and the second surface main contact portion being against the first surface main contact portion when the second surface is moved relatively towards and against the first surface,

a second surface circuit conductor on the second surface extends to the second surface main contact portion and first surface circuit conductors on the first surface extend to the two contacts on the first surface whereby,

upon relative movement of the second surface towards the first surface, the second surface circuit conductor will be electrically connected to both circuit conductors on the first surface, and the sequence of connection will exclude the possibility of the second surface circuit conductor being connected to the other contact on the first surface prior to its being connected to the first surface main contact portion.

4,409,451

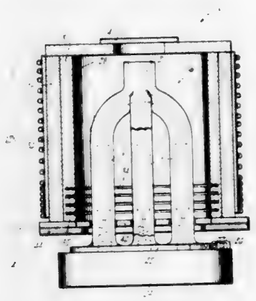
INDUCTION FURNACE HAVING IMPROVED THERMAL PROFILE

Kenneth E. Taylor, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 31, 1981, Ser. No. 297,900

Int. Cl.[3] **H05B** *6/30, 6/40*

U.S. Cl. 219—10.49 R **7 Claims**



1. In a casting furnace of the type suited to the production of directionally solidified articles by a withdrawal process and having a cylindrical susceptor with a pour end and a withdrawal end surrounded by induction heating coils, the improvement which comprises:

means for establishing a temperature profile within the furnace which is characterized by a peak temperature in close proximity to the withdrawal end of the furnace including a plurality of grooves extending circumferentially about the interior of the withdrawal end of the susceptor for inhibiting the conduction of heat energy out of the furnace at the withdrawal end of the susceptor.

4,409,452

HIGH-FREQUENCY HEATING APPLIANCE

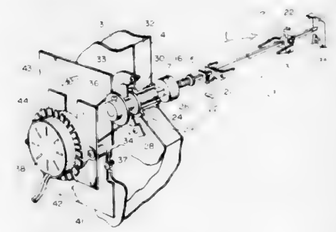
Keiji Oouchi; Isao Takoh, and Hisayuki Serizawa, all of Kashiwa, Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan

Filed Jun. 15, 1981, Ser. No. 273,812

Claims priority, application Japan, Jun. 19, 1980, 55-83215

Int. Cl.[3] **H05B** *6/78*

U.S. Cl. 219—10.55 E **15 Claims**



1. A cooking appliance including a resistive heating element and a high-frequency wave source, comprising:

a heating chamber;

a metal skewer having a length shorter than a horizontal distance between opposed side walls of said heating chamber;

a driving rotation shaft for rotatingly driving said skewer from a first end of said skewer, said driving rotation shaft passing through one of said side walls of said heating

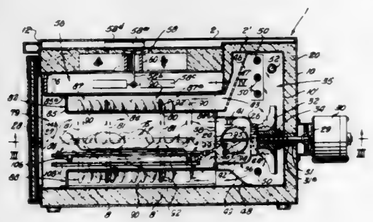
chamber, said driving rotation shaft being formed of a dielectric material;
an electric motor for rotating said driving rotation shaft mounted outside said heating chamber;
a receiver made of dielectric material rotatingly and detachably supporting a second end of said skewer;
a coupling detachably connected to said driving rotation shaft and slidably mounted on said first end of said skewer for transmitting rotational movement of said driving rotation shaft to said skewer, said coupling being formed of a dielectric material;
a spring positioned around said skewer and disposed between a stop integrally formed with said skewer and said coupling for urging said first end of said skewer away from and out of contact with said driving rotation shaft and urging said coupling toward said driving rotation shaft;
a clamping member provided on said skewer and slidable in the longitudinal axial direction of said skewer for holding food products on said skewer; and
power transmission means for connecting a driven portion of said driving rotation shaft and said electric motor without slip therebetween.

4,409,453

COMBINED MICROWAVE AND IMPINGEMENT HEATING APPARATUS

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220

Continuation of Ser. No. 20,968, Mar. 16, 1979, abandoned, which is a division of Ser. No. 687,982, May 19, 1976, Pat. No. 4,154,861. This application Jul. 22, 1981, Ser. No. 286,060
Int. Cl.³ H05B *6/78*
U.S. Cl. 219—10.55 A **3 Claims**



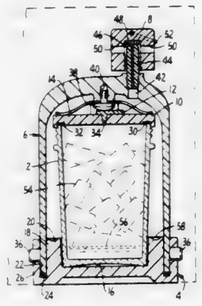
1. Apparatus for heating a food product comprising: a cabinet; a conveyor means adapted to transport a food product through the cabinet; means to deliver a temperature controlled gaseous fluid within the cabinet; a plenum adapted to receive the temperature controlled gaseous fluid from the delivery means; a plurality of ducts communicating with the plenum and extending outwardly therefrom in a direction substantially transverse to the direction of travel of said conveyor means and being further adapted to evenly distribute the flow of said temperature controlled gaseous fluid from said plenum to a cooking compartment disposed within said cabinet, at least one duct being disposed above the conveyor means, at least one duct being disposed below the conveyor means, and at least one additional spaced apart duct being disposed either over or below the conveyor means, each of said ducts being further provided with at least two spaced apart jet plates having a plurality of spaced apertures extending therethrough, the spaced apertures of the spaced apart jet plates being aligned so as to form columnated jets from the temperature controlled gaseous fluid received by the duct from the plenum and to thereafter direct the columnated jets so as to impinge against discrete areas on the surface of the food product, before the columnated jets are substantially diffused, to wipe away a boundary layer of air from the discrete areas against which the streams impinge; and microwave energy generating means adapted to deliver microwave energy to the interior of the cabinet.

4,409,454

MICROWAVE CANNING APPARATUS

Max P. Beauvais, 46 Southridge West, Tiburon, Calif. 94920, and Raymond E. Camezon, 623 Tunbridge Rd., Danville, Calif. 94526

Continuation of Ser. No. 122,354, Feb. 19, 1980, abandoned. This application Sep. 24, 1981, Ser. No. 305,279
Int. Cl.³ H05B *6/80;* **A47J** *27/08*
U.S. Cl. 219—10.55 E **6 Claims**



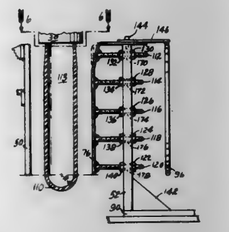
1. An apparatus for use in a microwave oven for canning food products in a non-metallic jar having a mouth, comprising:
a non-metallic jar having a mouth;
a jar lid of non-metallic material and having sealing means for engaging the mouth of the jar and forming an airtight seal therewith under the influence of greater atmospheric pressure outside the jar than inside; and
an enclosure of non-metallic material generally transparent to microwave energy enveloping said jar and said lid and comprising
a base member for engaging the base of said jar and holding said jar in a predetermined position;
a cover member releasably engaging said base member and enclosing at least the portions of said jar and said lid not enclosed by said base member, said cover member and said base member forming a pressure-tight seal therebetween when so engaged as to prevent the entry of gas from outside the enclosure to within the enclosure;
means connected to said cover member for resiliently urging said jar lid against said jar mouth, and
pressure control means communicating with the interior of said enclosure for limiting the maximum pressure within said enclosure to a predetermined amount above the ambient pressure outside said enclosure sealing the enclosure against entry of air, whereby said jar and said lid enclosing a food product and held within the enveloping enclosure may be heated within a microwave oven to form steam of the predetermined maximum pressure within the jar to sterilize the food product and venting the steam from the jar and from the enclosure, with subsequent cooling of the enclosure and the jar causing the pressure within the enclosure and outside the jar to be less than the ambient outside the enclosure and greater than the pressure in the jar, said pressure control means preventing the entry of air into said enclosure, thereby causing the venting of the steam from the jar, again, and to effect an air-tight seal between the lid and the jar when removed from the enclosure.

4,409,455

DIELECTRIC HEATING SECTION FOR BLOW MOLDING MACHINE

Samuel L. Belcher, Cincinnati, Ohio; Timothy R. Peck, Kiawah Island, S.C., and Roger D. Smith, Bethel, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Mar. 5, 1982, Ser. No. 355,223
Int. Cl.³ H05B *6/54;* **B29H** *5/26*
U.S. Cl. 219—10.81 **7 Claims**



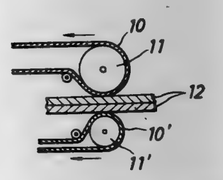
1. Apparatus for dielectric heating tubular thermoplastic article preforms, each article preform having a formed portion and a formable portion, the formable portion to be heated to the molecular orientation temperature in preparation for biaxial expansion into a finished article, the apparatus comprising:
(a) a radio frequency signal generator for producing an alternating electric potential having a frequency in the radio frequency range;
(b) an electrode pair energizable by the signal generator, the electrodes of the pair arranged to establish an alternating electric field therebetween when energized by the electric potential, the pair having at least one recontourable electrode comprising;
(1) a support post,
(2) a continuous strip attached to the support post with a portion of its length substantially parallel to and facing the other electrode of the pair, the post and strip being less wide than the inside diameter of the preform, and
(3) means for adjustably supporting by the post said portion of the length of the strip, the supporting means providing adjustment of the distance between the strip and the post to define a contour of said portion of the strip; and
(c) means for rotatably supporting a single preform by its formed portion with the formable portion between the electrodes of the electrode pair, the preforms being located with the inside diameter thereof extending equally beyond the width of the recontourable electrode.

4,409,456

WELDED CAN AND PROCESS FOR PREPARATION THEREOF

Yoichi Kitamura; Hisashi Hotta, both of Yokohama, and Chikara Yurita, Kawasaki, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,824
Claims priority, application Japan, Mar. 8, 1980, 55-28585
Int. Cl.³ B23K *1/16, 11/30*
U.S. Cl. 219—64 **6 Claims**



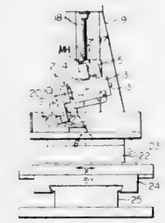
1. A process for the preparatioon of welded cans, which comprises forming a blank comprised of a surface-treated steel plate into a cylinder and passing a lap portion of the formed cylinder between a pair of electrode rollers through an electrode wire to effect electric resistance welding, wherein said surface-treated steel plate comprises a layer of metallic tin or a tin-iron alloy formed on the steel plate substrate in an amount of 0.05 to 0.5 g/m^2 as calculated as metallic tin and a hydrated chromium oxide layer formed on said tin layer in an amount of 0.005 to 0.05 g/m^2 as calculated as metallic chromium and electric resistance welding is carried out in an inert atmosphere in the state where an electrode wire having a plated layer of tin or a tin alloy having a thickness of 0.15 to 2 μm is kept in close contact with the surface of said surface-treated steel plate.

4,409,457

SYSTEM FOR MANUFACTURING TIRE MOLDING METAL MOLDS WITH ELECTRICAL DISCHARGE MACHINING

Kenichi Takahashi; Koichi Hirano, both of Kodaira, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgeport Tire Co. Ltd. and Institute of Technology Precision Electrical Discharge Works, both of, Japan

Filed Mar. 3, 1980, Ser. No. 126,199
Claims priority, application Japan, Mar. 8, 1979, 54-26919; Jun. 20, 1979, 54-77653; Jun. 20, 1979, 54-77654; Jun. 20, 1979, 54-77655; Aug. 6, 1979, 54-100046; Dec. 10, 1979, 54-160000
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 M **24 Claims**



1. A tire molding metal mold manufacturing method using electric discharge machining for machining a tire molding metal mold having an integrally formed tire molding surface consisting of a predetermined curved surface corresponding to the outer circumference of a tire to be molded and a plurality of projections protruding on said tire molding surface, comprising the steps of: providing an electrical discharge machining equipment having a machining head for feeding a machining electrode which is disposed at a predetermined angular position, in a feeding direction of said angular position, and having a rotatable head support for supporting said machining head at said predetermined angular position; providing a plurality of machining electrodes each having a portion corresponding to a common reference plane determined by the curved surface of said tire molding surface and recesses corresponding to at least one projection protruding on said tire molding surface, a part of said reference plane and a part of said recesses being formed into such a shape so as to prevent excess metal removal during discharge machining, in relation to the feeding direction of said angular position; mounting one of said machining electrodes to said machining head; setting said machining head at a first predetermined angular position corresponding to said one of said machining electrodes; machining a workpiece being machined by feeding said one of said machining electrodes in a feeding direction of said first angular position while preventing excess metal removal; replacing said one of said machining electrodes with another one of said machining electrodes; and machining a portion of said workpiece left unmachined during the step of preventing ex-

cess metal removal, using said other one of said machining electrodes.

4,409,458

EDM METHOD AND APPARATUS WITH THE CONTROLLED SUPPLY OF A LIQUID MACHINING MEDIUM INTO THE GAP

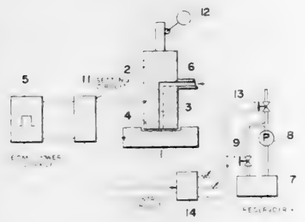
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Apr. 14, 1981, Ser. No. 254,093

Claims priority, application Japan, Apr. 17, 1980, 55-51335; Apr. 21, 1980, 55-52699

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 D **21 Claims**



1. A method of machining an electrically conductive workpiece with a tool electrode spacedly juxtaposed therewith across a machining gap comprising the steps of:

supplying a liquid machining medium into said gap;

effecting a succession of electrical discharges between the tool electrode and the workpiece to electroerosively remove stock from the workpiece with said liquid medium in the machining gap being progressively contaminated with discharge products;

replenishing a predetermined amount in volume of said liquid machining medium into discharge sites of said machining gap to partially replace said contaminated liquid medium to produce such electrical discharges consecutively, and predetermining said amount in volume for each unit weight of said stock removed from the workpiece, said amount in volume per unit weight of stock removed ranging between 400 and 3000 cc/gr; and

presetting the rate of flow of said liquid machining medium replenished into discharge sites of said machining gap in conjunction with at least one of the parameters of said electrical discharges determining the prescribed stock removal by weight per unit time, thereby presetting said amount in volume per unit weight.

4,409,459

AUTOMATIC WELDING APPARATUS

Shuzi Nakayama, Hatano, Japan, assignor to Tokico, Ltd., Kawasaki, Japan

Filed Jun. 18, 1981, Ser. No. 274,733

Claims priority, application Japan, Jun. 19, 1980, 55-84895; Apr. 20, 1981, 56-56666

Int. Cl.³ B23K *11/10, 37/04*

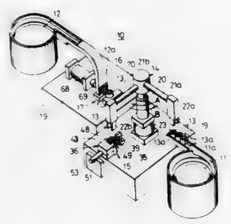
U.S. Cl. 219—86.24 **6 Claims**

1. An automatic welding apparatus comprising:

positioning means successively supplied with a first workpiece, for positioning said first workpiece so that a joint part of said first workpiece faces toward a predetermined direction;

holding and moving means for holding and moving the first workpiece which is positioned by said positioning means;

holding means provided at a position opposing a second workpiece which is successively supplied, for receiving the first workpiece moved by said holding and moving means and holding said first workpiece in a state where the joint part of the first workpiece opposes said second workpiece, said holding means comprising a supporting member loosely inserted into said first workpiece, a stopping member inserted into a depression formed in said supporting member with a gap formed therebetween and movable in the diametrical direction of said first workpiece, said stopping member having a pointed end part projecting from said depression, and means for flowing compressed air within said depression even in a state in which the welding operation is performed, said stopping



member being urged by a force in a direction projecting outward from said depression due to the compressed air supplied into said depression so that said pointed end part pushes against the joint part of said first workpiece, said compressed air being released at a part where said pointed end part pushes against said joint part; and

welding means for welding said first workpiece held by said holding means and said second workpiece in a confronting state, at said joint part of said first workpiece.

4,409,460

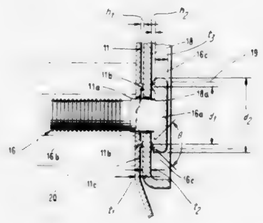
METHOD OF MANUFACTURING A VACUUM BOOSTER HOUSING

Michiharu Nishii, Chiryu, and Atsushi Ohmi, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Dec. 14, 1981, Ser. No. 330,503

Int. Cl.³ B23K *11/14*

U.S. Cl. 219—93 **3 Claims**



1. In a method of manufacturing a vacuum booster housing including a body of sheet metal having an annular wall portion, a plurality of bolts disposed in a plurality of spaced holes in said annular wall portion with the heads of said bolts being inside said body and the shafts of said bolts projecting through said holes for securing a brake master cylinder to said booster housing, and an annular reinforcing plate interposed between and in contact with the inner surface of said annular wall portion and the seating faces of the heads of said bolts, the improvement comprising the steps of:

(a) forming on the seating face of the head of each said bolt an annular projection coaxial with the shaft thereof;

(b) forming on the inner surface of said annular wall portion annular projections, each annular projection being coaxial with a respective one of said holes;

(c) placing said reinforcing plate between and in contact with the annular projections on said bolts and on the inner surface of said annular wall portion, and

(d) simultaneously projection welding said annular wall portion to said reinforcing plate and said reinforcing plate to the heads of said bolts.

4,409,461

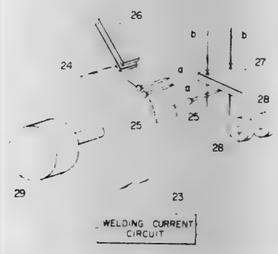
ELECTRICAL RESISTANCE WELDER FOR NAILS USED IN AN AUTOMATIC NAILING MACHINE

Hiroshi Mizutani, Gifu, Japan, assignor to Kabushiki Kaisha Chuo Seisakusho, Aichi, Japan

Filed Sep. 23, 1981, Ser. No. 304,918

Int. Cl.³ B23K *11/00*

U.S. Cl. 219—111 **2 Claims**



1. An electrical resistance welder for welding nails used in an automatic nailing machine comprising:

a rotary disk having grooves cut in a periphery thereof at predetermined intervals for holding said nails;

means for successively feeding nails into said grooves;

means for rotating said disk to successively place said nails in a predetermined welding position;

means for feeding a pair of wires at a constant speed to said position where said wires can be contacted with one of said nails held in said grooves;

a position detector for producing a signal upon each rotation of said disk by a predetermined rotating angle corresponding to said intervals; and

energization means having current supplying elements contacting said wires, for supplying momentary currents through a circuit consisting of said wires and a nail contacted therewith at said welding position each time said signal is produced; said rotary disk, energization means and feeding means cooperating to weld nails across said pair of wires successively so as to make nails suitable for use in an automatic nailing machine.

4,409,462

PROCESS FOR THE NON-CRACKING ENERGY BEAM WELDING OF HIGH TEMPERATURE SHAPED PARTS

Bernd Jahnke, Neckargemünd, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

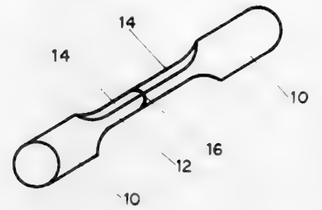
Filed Aug. 11, 1981, Ser. No. 292,007

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030532

Int. Cl.³ B23K *15/00*

U.S. Cl. 219—121 ED **8 Claims**

1. Process for the crack-free energy beam welding of temperature resistant shaped parts, made of nickel and cobalt-based superalloys containing 5 to 24% chromium, up to 11% molybdenum, up to 2% niobium, tantalum and niobium up to 7%, up to 22% cobalt, up to 6% titanium, up to 7% aluminum, 0.01 to 0.5% carbon, 0.001 to 0.2% beryllium, up to 0.3% zirconium, up to 2% hafnium, up to 6% iron and up to 12% tungsten, balance nickel (all percentages by weight), characterized in that the weld zone and an adjacent area are heated to a preheat temperature of between 1070° to 1180° C. and maintained at said preheat temperature until the temperature has been at least extensively equalized within the weld zone and the adjacent area, the abutting weld surfaces in contact with



each other are melted and welded to each other by means of an energy beam, and the weld zone and the adjacent area are subsequently cooled in a uniform manner.

4,409,463

MACHINE FOR CUTTING SHEET MATERIAL

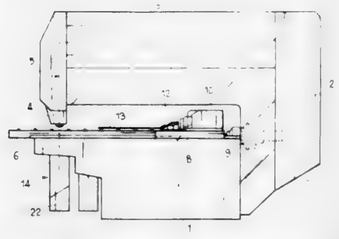
Louis Duruz, Romanel, and Jean-Marc Strehl, Lausanne, both of Switzerland, assignors to Raskin, S.A., Cheseaux/-Lausanne, Switzerland

Filed Oct. 23, 1981, Ser. No. 314,193

Claims priority, application Switzerland, Oct. 23, 1980, 7908/80

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LG **6 Claims**



1. A machine for cutting sheet material by means of a stationary laser beam, comprising a table provided with an opening through which the laser beam passes, and which further comprises, disposed under said table, a deflector means for deflecting rays of the laser beam which ensures the dispersion of the energy of the laser beam and means for recovering the cut-out members, the arrangement being such that said members are not subject to deterioration by the laser beam during continuation of the cutting operations.

4,409,464

AUTOMATIC DEVICE FOR CHANGING AN ELECTRIC WELDING GUN, OPERATED BY THE ARM OF A PROGRAMMABLE MANIPULATOR

Marcello Favareto, Rivoli, and Renato Anselmino, Turin, both of Italy, assignors to Comau S.p.A., Turin, Italy

Filed Jun. 16, 1981, Ser. No. 274,237

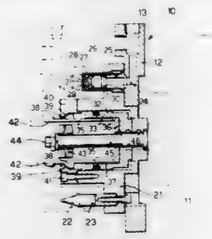
Claims priority, application Italy, Jun. 26, 1980, 67994 A/80

Int. Cl.³ B23K *9/24*

U.S. Cl. 219—136 **8 Claims**

1. An automatic device for changing an electric welding gun, operated by an arm of a programmable manipulator and disposed between the end of said arm of a programmable manipulator and an electric welding gun, comprising two elements (**10, 50**) which are rigid with said manipulator arm (**11**) and a welding gun respectively, and which can be connected together in a separable manner; means (**19**) for checking

the correct selection of the chosen type of gun and for checking that said element (**10**) carried by the arm (**11**) has properly approached this latter, lead-in guide means (**22**, **60**) between the two elements for their mutual insertion, means (**42**, **71**) for releasably coupling together the two elements at the end of their mutual insertion movement, and valve units (**31**) which automatically open during the coupling together of the two elements in order to directly connect together ducts (**13**) in the



two elements for the passage of a liquid for cooling electrical contacts (**15**, **16**) and electrodes (**63**) and oil for a closing cylinder (**33**) thereof, the electrical connection between the manipulator and gun being made by means of two male (**66**) and female (**16**) contacts, one provided on the element (**10**) rigid with the arm (**11**) and the other in the element (**50**) rigid with the gun and being coupled together at the moment in which said elements (**10**, **50**) become connected together.

4,409,465

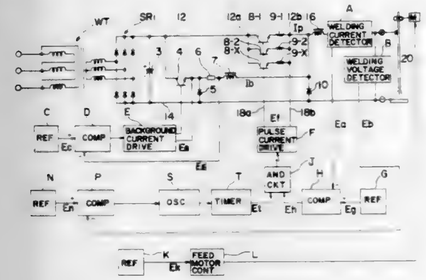
PULSE ARC WELDING METHOD AND DEVICE IN WHICH PULSE CURRENT AND BACKGROUND CURRENT HAVE A CONSTANT CURRENT CHARACTERISTIC

Hideyuki Yamamoto; Waichi Nishikawa, both of Kobe, and Moritoshi Nagasaka, Osaka, all of Japan, assignors to Osaka Transformer Co., Ltd., Osaka, Japan

Filed Apr. 24, 1981, Ser. No. 257,388

Int. Cl.³ B23K *9/09*

U.S. Cl. 219—137 PS **17 Claims**



1. A method of welding a workpiece by an arc produced between a consumable electrode which is fed towards the workpiece at a constant speed and the workpiece, said arc being produced by a pulse current imposed on a background current, said method comprising the steps of:

generating a background current with a constant current characteristic;

generating a pulse current with a constant current characteristic;

controlling the pulse current level to a predetermined level;

imposing the pulse current on the background current;

detecting the welding voltage measured between the consumable electrode and the workpiece for producing a welding voltage signal;

producing a reference signal indicative of a desired welding voltage;

comparing the welding voltage signal with the reference signal for producing a difference signal indicative of the difference therebetween; and

controlling an average value of the welding current by said difference signal such that the average value of the welding current is decreased relative to the increase of said welding voltage signal above a predetermined level, and the average value of the welding current is increased relative to the decrease of said welding voltage signal below said predetermined level, whereby said selding voltage which is in relation to the arc length is maintained constant.

4,409,466

METHOD OF MANUFACTURE OF A HOOP FOR THE VESSEL OF A NUCLEAR REACTOR

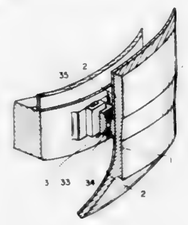
Alain Commeau, Montchanin, France, assignor to Framatome, Courbevoie, France

Filed Sep. 30, 1981, Ser. No. 307,260

Claims priority, application France, Oct. 22, 1980, 80 22554

Int. Cl.³ B23K *9/00*

U.S. Cl. 219—137 R **5 Claims**



1. A method of manufacturing a hoop for a nuclear reactor vessel, equipped internally with projecting guide blocks of nickel-base alloy, formed of an outer cylindrical hoop (**1**) of low-alloy steel coated internally with a thin plating (**2**) of stainless steel, comprising the steps of

(a) internally coating said hoop (**1**) with a thin stainless steel plating (**2**);

(b) attaching supporting blocks (**3**) to the interior of said hoop (**1**), leaving bare an area of low-alloy steel of said hoop surrounded by said stainless steel plating (**2**);

(c) depositing on said area by arc welding a plating (**34**) of nickel-base alloy until a profile is obtained which projects with respect to said stainless steel plating (**2**);

(d) machining said nickel-based alloy plating (**34**) and then welding thereto a separate piece (**35**) of nickel-base alloy by arc welding with addition of nickel alloy deposited in a groove (**4**) formed between said nickel-base alloy plating (**34**) and said separate piece (**35**).

4,409,467

PORTABLE PRINTING ELECTRONIC CALCULATOR USING MULTIPLE FOLDED RECORDING PAPER

Yoshiaki Honjo, Higashiyamato, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,482

Claims priority, application Japan, Dec. 21, 1979, 54-177569[U]; Dec. 21, 1979, 54-177572[U]; Mar. 13, 1980, 55-32715[U]

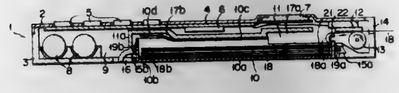
Int. Cl.³ G06C *29/00;* **B41J** *11/00*

U.S. Cl. 235—58 CF **14 Claims**

4. A compact portable printing electronic calculator comprising:

a calculator body;

a recording paper tape-holding means for holding a multiple-folded recording paper tape therein and in said calculator body, said multiple-folded recording paper tape having a forward end portion, said recording paper tape-holding means including an outlet port having a guide member projecting above the forward end portion of the uppermost portion of the multiple-folded recording paper tape in the recording paper tape-holding means; said guide member comprising means defining a press plane for supporting the forward end portion of the uppermost portion of the recording paper tape which is brought to the outlet port, and means defining a guide plane for guiding the forward end portion of the uppermost portion of the recording paper tape out of said recording paper tape-holding means in an unfolded state; and



a printer located in the calculator body and including means for printing data on the recording paper tape which is guided and delivered out from within the recording paper tape-holding means.

4,409,468

METHOD FOR INDIRECTLY LAYING A WEAPON AND APPARATUS FOR THE PERFORMANCE OF THE METHOD

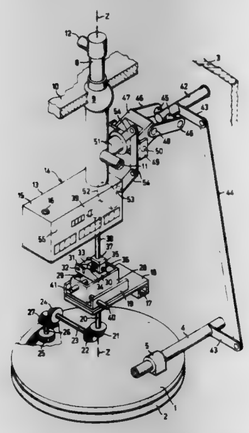
Cornelius Mayer, Fällanden; Jörg Durrer, Oberengstringen, and Ronald Weber, Wettswil, all of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Continuation of Ser. No. 127,267, Mar. 5, 1980, abandoned. This application Nov. 2, 1981, Ser. No. 317,147

Claims priority, application Switzerland, Mar. 23, 1979, 2738/79

Int. Cl.³ F41G *3/14, 5/14*

U.S. Cl. 235—404 **4 Claims**



4. An apparatus for indirect laying a weapon arranged upon a vehicle at a target with the aid of an electronic firing data computer having a display, comprising:

a first selector switch for inputting to the computer a value representative of an orientation azimuth angle A measured between a reference direction N and an auxiliary direction OA;

a second selector switch for inputting to the computer a value representative of a target azimuth angle Z measured between said reference direction N and the target direction ZA;

a third selector switch for inputting to the computer a value representative of a target elevation angle;

an azimuth code disk for inputting to the computer a value representative of the angle between the auxiliary direction OA and the effective direction of the weapon;

an elevation code disk for inputting to the computer a value representative of the effective elevation angle of the weapon;

a first numerical display cooperating with said computer for indicating the angle between the effective lateral direction of the weapon and the target direction ZA; and

a second numerical display cooperating with said computer for indicating the difference between the effective elevation angle of the weapon and the target elevation angle.

4,409,469

OPTICAL BAR CODE READER

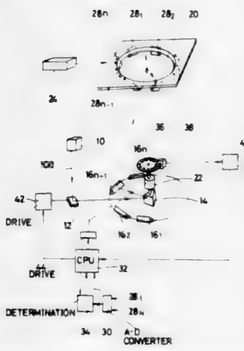
Syoichi Yasuda; Takaaki Okamoto, both of Nara; Kenrow Yatsunami, Yamatokoriyama; Shigeo Terashima, Tenri; Masahiro Horii, Nara; Yoshihiko Iwamoto, Sakurai, and Kiyotsugu Amasaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1981, Ser. No. 226,864

Claims priority, application Japan, Jan. 21, 1980, 55-5989; Jan. 23, 1980, 55-7450

Int. Cl.³ G06K *7/14*

U.S. Cl. 235—463 **3 Claims**



1. An optical bar code reader comprising:

scanning means for providing a plurality of scanning beams separated from each other by a predetermined distance, each said beam scanning successive randomly oriented portions of a bar code label;

light receiving means for developing an output signal in response to each beam developed by said scanning means and scanning at least a portion of the bar code label;

processor means for receiving signals developed by said light receiving means representative of said bar code;

means for combining a plurality of signals developed by said light receiving means for forming a combined signal representative of the entire bar code and for transferring said combined signal to said processor means, said combining means comprising a plurality of storing means for storing a plurality of signals developed in response to scanning beams which scan less than the entire bar code label and composition means for combining said plurality of signals to form said combined signal; and

means for determining if a signal developed by said light receiving means in response to any scanning beam represents the entire bar code, for interrupting operation of said combining means upon determination that a signal developed by said light receiving means represents the entire

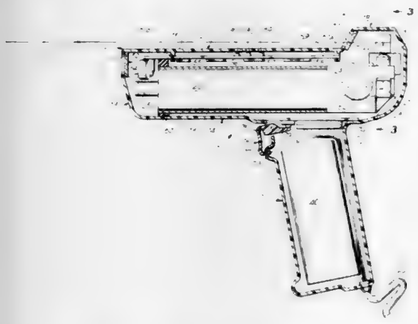
bar code, and for transferring such a signal representing the entire bar code to said processor means.

4,409,470

NARROW-BODIED, SINGLE-AND TWIN-WINDOWED PORTABLE LASER SCANNING HEAD FOR READING BAR CODE SYMBOLS

Howard M. Shepard, Great River; Edward D. Barkan, South Setauket, and Jerome Swartz, Stonybrook, all of N.Y., assignors to Symbol Technologies, Inc., Hauppauge, N.Y.

Filed Jan. 25, 1982, Ser. No. 342,231
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—472 **63 Claims**



1. In a scanning system for reading bar code symbols, a scanning head comprising:

(a) a housing having an elongated body portion including a front region, a rear region, and an intermediate body region extending between the front and rear regions, and having side walls spaced transversely apart of each other by a predetermined width;

(b) light source means mounted within the housing, for generating an incident light beam;

(c) optic means mounted within the housing, for directing the incident beam along a light path towards a reference plane located exteriorly of the housing in the vicinity of the front region thereof, and towards a bar code symbol located in the vicinity of the reference plane to thereby generate a reflected light beam which is directed along a light path away from the reference plane and back towards the housing;

(d) scanning means mounted within the housing at the rear region thereof, for sweeping at least one of said beams over a field of view across the bar code symbol;

(e) sensor means mounted within the housing, for detecting the light intensity in the reflected beam over a field of view across the bar code symbol, and for generating an electrical signal indicative of the detected light intensity;

(f) signal processing means mounted within the housing, for processing the electrical signal to generate therefrom data descriptive of the bar code symbol; and

(g) window means mounted on the housing, and having a light-transmissive window at the rear region in close adjacent confronting relationship with the scanning means thereat, said window being configured and positioned in the light path of said at least one swept beam to permit the latter to pass through the window and unobstructedly travel exteriorly of and past the front and intermediate body regions of the housing,

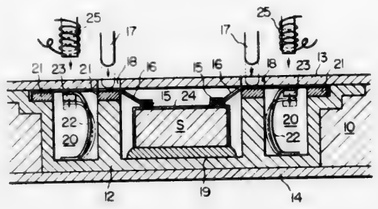
whereby the field of view of the swept beam is substantially independent of the predetermined width of the housing due to its exterior transmission outside of the front and intermediate body regions of the housing.

4,409,471

INFORMATION CARD

Seiichiro Aigo, 3-15-13 Negishi, Daito-ku, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,512
Int. Cl.³ G06K *19/06*
U.S. Cl. 235—492 **4 Claims**



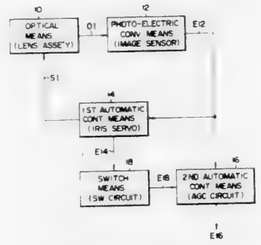
1. In an information card adapted to identify an individual or organization in accordance with security code information, to store an input signal therein or to generate an output signal in response to the input signal and to provide like functions, said card including a metallic casing disposed in an opening which is formed in said card and at least one semiconductor chip seated in said metallic casing and roofed by a cover film, and a conductor strip extending from each of contacts of said semiconductor chip being disposed in such a way that it can be brought into contact with a signal input/output terminal, the improvement comprises that said information card further comprises an elastic member provided in said metallic casing at a location corresponding to the conductor strip and equipped with a magnet at the free end thereof, the conductor strip is fixedly secured to the metallic casing through an insulative material, and, when the conductor strip is spaced apart from the signal input/output terminal, the conductor strip is kept in contact with said magnet or elastic member so that it is electrically connected with said metallic casing through said elastic member, whereby electrically connecting all conductor strips together and protecting said semiconductor chip from electrostatic breakdown.

4,409,472

IRIS SERVO APPARATUS

Kenji Kimura, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1981, Ser. No. 254,299
Claims priority, application Japan, Apr. 28, 1980, 55/56867
Int. Cl.³ G01J *1/20*; H04N *5/34*
U.S. Cl. 250—201 **7 Claims**



1. An iris servo apparatus comprising:

optical means including an iris mechanism and adapted to obtain optical information corresponding to an object being photographed;

photoelectric converting means coupled to said optical means for converting said optical information obtained by said optical means into a first electrical signal;

first automatic control means coupled to said photoelectric converting means and to said iris mechanism for controlling said iris mechanism responsive to said first electrical signal so as to maintain the level of said first electrical signal at a first predetermined level;

switch means coupled to said first automatic control means for detecting how said iris mechanism is controlled by said first automatic control means and for outputting a second electrical signal from said first automatic control means when said iris mechanism of said optical means is controlled to be fully opened; and

second automatic control means coupled to said photoelectric means and to said switch means for generating a third electrical signal responsive to said first electrical signal, the gain of said second automatic control means being controlled responsive to outputting of said second electrical signal by said switch means such that the level of said third electrical signal becomes equal to a second predetermined level;

said first automatic control means alone controlling said iris mechanism and said second automatic control means being substantially inoperable as long as said switch means does not output said second electrical signal; and

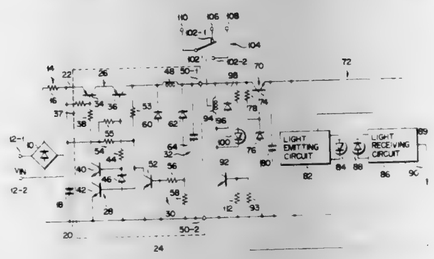
said second automatic control means alone controlling said iris mechanism responsive to said switch means outputting said second electrical signal.

4,409,473

APPARATUS FOR DETECTING AN OBJECT

Naofumi Furuta, Konan, and Kunio Ohi, Nagoya, both of Japan, assignors to Sunx Limited, Komaki, Japan

Filed Dec. 31, 1981, Ser. No. 336,186
Claims priority, application Japan, Jan. 9, 1981, 56-2299; Jan. 13, 1981, 56-4490; Mar. 5, 1981, 56-31745
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—206 **9 Claims**



1. An apparatus for detecting an object to be detected, said apparatus comprising:

(a) input means, having outputs respectively connected to first and second lines, for connection to an external power source and for transforming input voltage supplied from the external power source to a predetermined DC voltage;

(b) switching regulator means, connected to said input means through the first and second lines, for chopping the DC voltage applied from said input means at a given duty cycle, said switching regulator means including

(i) an inductive member having at least one end,

(ii) a drive section having at least two transistors connected in series with each other and being arranged between the second line and the one end of said inductive member to perform switching operation, and

(iii) a control section connected to said drive section to control the switching operation of said drive section and having at least two transistors connected in series with each other and at least one zener diode;

(c) detecting means, connected to said switching regulator means so as to be supplied with power from said switching regulator means, for detecting the object to generate an electrical signal; and

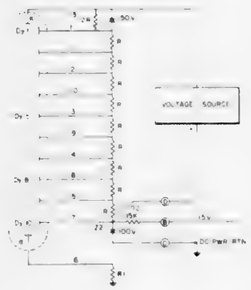
(d) output means, connected to said detecting means, for carrying out switching operation in response to said electrical signal and for producing a detection output corresponding to said electrical signal.

4,409,474

WIDERANGE PHOTOMULTIPLIER CIRCUIT

Robert F. Howarth, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,203
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—207 **10 Claims**



1. In a photomultiplier tube having a cathode, dynodes and anode disposed in an envelope in a mutually spaced relationship, an improvement for increasing the linear dynamic range capability comprising:

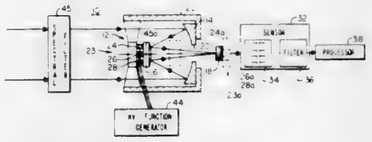
means coupled between the anode and the dynode nearest the anode for impressing a constant and stable collection potential thereacross.

4,409,475

SPATIAL FREQUENCY FILTER

Theodore F. Zehnpfennig, Wayland, Mass., assignor to Visidyne, Inc., Burlington, Mass.

Filed Jul. 29, 1981, Ser. No. 288,155
Int. Cl.³ G02B *27/46*
U.S. Cl. 250—224 **26 Claims**



1. A spatial frequency filter comprising:

an optical system having detector means and means for projecting onto said detector means an image of an object area; and

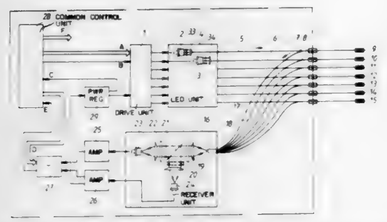
means for gyrating said optical system alternately at least in a first mode to develop a first system transfer function and a second mode to develop a second system transfer function which is matched to said first system transfer function in low spatial frequencies for imposing on said detector means a first representation of the image in said first mode and a second representation of the image in said second mode for providing a fluctuating elemental image output from each element of said detector means, which image output derives from a high spatial frequency object.

4,409,476

FIBER OPTIC TEMPERATURE-MEASURING APPARATUS

Folke Löfgren, and Sven-Erik Söderstrom, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden

Filed Jun. 12, 1981, Ser. No. 273,118
Claims priority, application Sweden, Jun. 16, 1980, 8004447
Int. Cl.[3] G01J *5/10*; G01K *11/20*; G08C *15/06*
U.S. Cl. 250—227 **11 Claims**



1. A fiber optic temperature-measuring apparatus comprising

a plurality of different sensors made of a solid material having temperature-dependent photo-luminescent properties and each arranged in a different location where temperature is to be sensed,

a source of incident light for each sensor which incident light is capable of making the respective sensor luminesce,

an optical fiber for each source and respective sensor positioned to feed incident light from the former to the latter,

a luminescent light receiving unit,

a further optical fiber for each sensor, each said further optical fiber terminating adjacent to the receiving unit and positioned to receive luminescent light from the respective sensor,

electronic measuring means to process the output of the receiving unit, and

means to sequence the operation of said plurality of sources so that the incident light therefrom is time-division multiplexed.

4,409,477

SCANNING OPTICAL SYSTEM

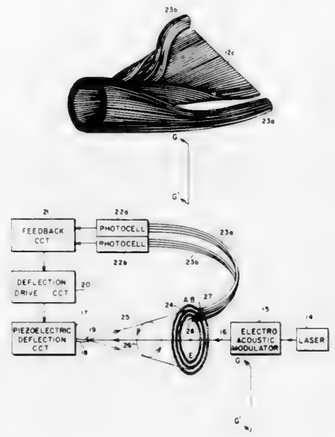
Norman J. Carl, La Habra, Calif., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 22, 1981, Ser. No. 276,279
Int. Cl.[3] G02B *5/14*; H01J *3/14*
U.S. Cl. 250—227 **6 Claims**

1. In a scanning optical system including a collimated light beam, means for deflecting said beam periodically over a predetermined non-linear path and including means for continuously controlling the deflection of said beam comprising:

means for continuously sensing when said beam is being deflected over a path deviating from said predetermined non-linear path over substantially the entire length of said path; and

means responsive to said sensing means for continuously generating a feedback signal which is continuously applied to said deflecting means causing it to substantially simultaneously change the deflection path so that said



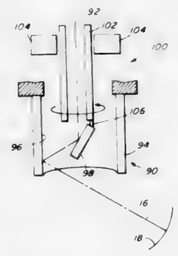
light beam continuously traces said predetermined non-linear path.

4,409,478

METHOD AND APPARATUS FOR IMAGE ACQUISITION UTILIZING A CONCAVE, CYLINDRICAL REFLECTOR

Charles J. Libby, West Roxbury, Mass., assignor to Automatix Incorporated, Billerica, Mass.

Continuation-in-part of Ser. No. 352,597, Feb. 26, 1982. This application Jan. 18, 1983, Ser. No. 458,932
Int. Cl.[3] H01J *3/14*
U.S. Cl. 250—236 **15 Claims**



1. Method for image acquisition comprising the steps of:

A. impinging a beam of collimated light on a concave, cylindrical reflective surface to produce a conical beam of light having an angular arc that is a function of the radius of the concave, cylindrical reflective surface and the width of the collimated light beam impinging thereon;

B. illuminating at least a portion of an object with said conical beam of light; and,

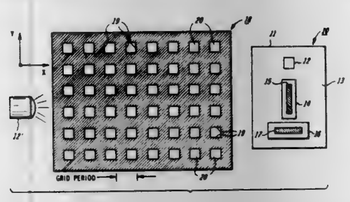
C. imaging at least part of said light beam illuminated portion of the object on an array of photosensitive elements to produce corresponding signals representative of the image on said array.

4,409,479

OPTICAL CURSOR CONTROL DEVICE

Robert A. Sprague, Saratoga, and Donald R. Scifres, Los Altos, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1981, Ser. No. 327,137
Int. Cl.[3] H01J *5/16*
U.S. Cl. 250—237 G **6 Claims**



1. In a cursor control device to provide an output indicative of the amount and direction of movement of the device relative to an orthogonal coordinate system including

a planar grid pattern comprising orthogonally positioned grid lines of uniform spacing, a line and spacing therebetween defining a grid period,

means to illuminate at least a portion of said grid portion,

a housing,

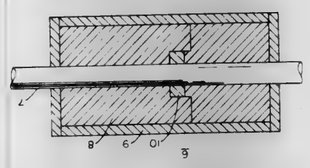
sensor array means mounted in said housing to receive and detect radiation from said grid pattern, said array means comprising optical transducer means for each orthogonal direction, each of said transducer means having an elongated radiation detecting area to receive radiation from an elongated radiation collecting area at the plane of said grid pattern, the length of each of said transducer means radiation collecting area being equal to or greater than a grid period and the width of each of said transducer means radiation collecting area being equal to or narrower than one half of said grid period.

4,409,480

METHOD AND SYSTEM FOR THE TESTING AND CALIBRATION OF RADIOACTIVE WELL LOGGING TOOLS

Wyatt W. Givens, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,930
Int. Cl.[3] G01D *18/00*; G01V *5/00*
U.S. Cl. 250—252.1 **4 Claims**



1. Apparatus for calibrating a radioactive logging tool having an epithermal neutron detector and a thermal neutron detector, comprising:

(a) a steady-state neutron source,

(b) means for housing said neutron source so as to permit said neutron source to be placed surrounding said radioactive logging tool,

(c) means surrounding said housing for shielding said neutron source from radioactive ground scattering effects, and

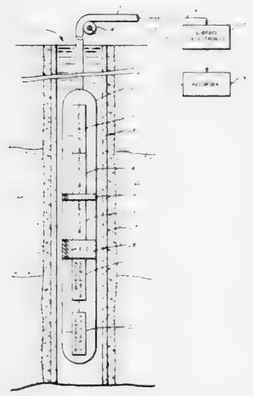
(d) neutron moderating means surrounding said neutron source and said radioactive logging tool, whereby the epithermal neutron detector of said radioactive logging tool is exposed to epithermal neutrons directly from said neutron source and the thermal neutron detector of said radioactive logging tool is exposed to thermal neutrons from said moderating material.

4,409,481

METHOD FOR SIMULTANEOUS MEASUREMENT OF THERMAL NEUTRON DECAY COMPONENTS

Harry D. Smith, Jr.; Ward E. Schultz, and Jerry L. Verbout, all of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 182,151, Aug. 28, 1980, abandoned. This application Jun. 1, 1982, Ser. No. 383,680
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—270 **49 Claims**



1. A method for simultaneously determining the borehole component and the formation component of thermal neutron decay time of a borehole and earth formations in the vicinity of the borehole, comprising the steps of:

repetitively emitting, in a well borehole, relatively short duration pulses of fast neutrons which are rapidly moderated by interaction with nuclei of materials in the borehole and surrounding earth formations and slowed down to thermal energy, creating repetitive bursts of thermal neutron population in the borehole and surrounding earth formations;

detecting, in the borehole during a time interval between said repetitive pulses of fast neutrons, radiations representative of the thermal neutron population in the borehole and surrounding earth formations, in at least four time subintervals subsequent to a pulse of fast neutrons and generating at least four count rate signals representative of said thermal neutron populations during said at least four time subintervals;

detecting, during a separate time interval between said repetitive bursts of fast neutrons, radiations attributable to a background radiation component of radiation and generating a background count signal representative thereof;

correcting said at least four count rate signals for the presence of said background radiation component to provide at least four background corrected count rate signals;

combining said at least four background corrected count rate signals according to an iterative fitting technique in which exponential relationships are assumed to exist for a borehole and a formation component of thermal neutron decay time to simultaneously obtain two measurement signals representative of the borehole component and the formation component of thermal neutron decay times; and

recording said measurement signals as a function of borehole depth.

4,409,482
STABILIZATION CONTROL FOR A MASS SPECTROMETER

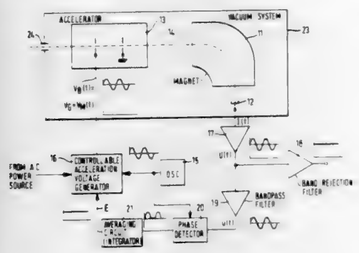
Peter Scheid, Göttingen, and Heinrich Slama, Bovenden, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Göettingen, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,863

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1980, 3014053

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—282 **10 Claims**



6. The method of controlling the operation of a mass spectrometer in which an ion stream is accelerated by a unidirectional acceleration voltage and subsequently deflected by a magnetic field to impinge upon an ion collector that generates an output current proportional to the ion concentration in the stream, comprising the following steps:

A. modulating the acceleration voltage with a constant frequency modulation signal voltage having an amplitude smaller than the acceleration voltage range over which the output of the ion collector is equal to or exceeds fifty percent of the maximum current;

B. deriving a modulation signal component from the output of the ion collector;

C. detecting the phase of that modulation signal component to develop an error signal having a polarity indicative of the direction of variation of the acceleration voltage from an optimum condition corresponding to maximum current output from the ion collector;

D. and adjusting the acceleration voltage, in response to the error signal, to reduce the error signal to approximately zero and thereby stabilize operation at the optimum condition.

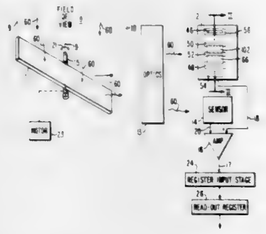
4,409,483
RADIANT ENERGY DIFFERENTIAL SENSOR SYSTEM

Alfred P. Turley, Glen Burnie, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1980, Ser. No. 194,720

Int. Cl.³ H01J *31/49*; G01J *1/00*; G01T *1/24*; H01L *27/14*

U.S. Cl. 250—332 **16 Claims**



1. A system for generating an electrical signal representative of amplitude differences in radiant energy from adjacent areas of a target scene to remove unchanging target scene content and background radiation from said electrical signal, comprising:

(a) means for scanning a target scene for directing radiant energy from two adjacent target areas to a first and second means for detecting radiant energy, respectively;

(b) first and second means for detecting radiant energy including means responsive to said radiant energy for generating first and second electrical signals; and

(c) means for comparing said first and second electrical signals to generate a difference signal representative of the difference between said first and second electrical signals representative of target scene radiant energy variations.

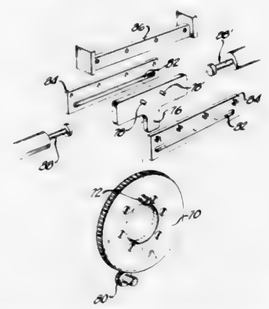
4,409,484
BRAKE ASSEMBLY FOR ROTATABLE SCINTILLATION DETECTOR

Carlos D. Pinkstaff, Chardon, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Sep. 28, 1981, Ser. No. 306,573

Int. Cl.³ G01T *1/166*

U.S. Cl. 250—363 S **8 Claims**



1. In a curved beam apparatus for supporting a rotating scintillation detector of the type having a support arm for supporting the scintillation detector, a carrier member rotatable about its longitudinal axis for retaining the support arm permitting the support arm and scintillation detector to orbit about the longitudinal axis of the carrier member, and a base member for supporting the support arm, a brake mechanism which permits the carrier member to make a complete revolution from a preselected starting position in either clockwise or counterclockwise direction before impeding further travel in said direction, said brake mechanism comprising:

(a) a reciprocating striker member;

(b) guide means disposed adjacent said striker member for defining its reciprocating path;

(c) a pair of dampening means for opposing the reciprocating motion of said striker member and for positionally biasing said striker member; and

(d) means for intermittently coupling said striker member and carrier member such that during an orbit of the detector, said striker member is advanced toward one of said dampening means to decelerate said rotated carrier member and preclude the carrier member from traversing a second revolution in its direction of rotation.

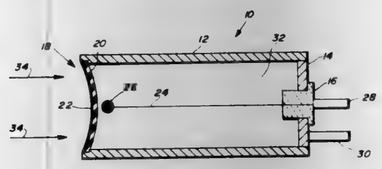
4,409,485
RADIATION DETECTOR AND METHOD OF OPAQUING THE MICA WINDOW

Hayden Morris, Washington, D.C., and Charles Christianson, Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 2, 1981, Ser. No. 308,740

Int. Cl.³ G01T *1/18*

U.S. Cl. 250—374 **8 Claims**



1. In a radiation detection tube comprising an electrically conducting cylindrical case, an end member attached to one end of said case closing said end of said case, an insulator fitted to said end member, an anode extending coaxially through said insulator and said case, a radiation transparent mica window secured to the end of said case opposite said end member, an opaque to ultraviolet light radiation transparent coating on said mica window, a radiation detection gas contained within said case, wherein the improvement comprises:

said coating being electrically non-conductive preventing electrical arcing between said anode and said coating.

4,409,486
DEFLECTION SYSTEM FOR CHARGED-PARTICLE BEAM

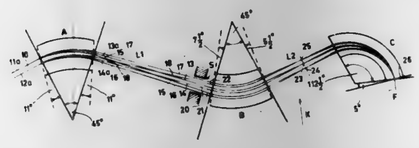
Terence Bates, Horsham, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1981, Ser. No. 268,457

Claims priority, application United Kingdom, Jun. 10, 1980, 8018987; Apr. 15, 1981, 8111893

Int. Cl.³ H01J *3/12*

U.S. Cl. 250—396 ML **17 Claims**



1. An achromatic system for deflecting a beam of charged particles comprising a plurality of spaced successive magnetic deflection means arranged to produce in operation successive deflections of the beam in alternate directions, the system causing substantially no net divergence in position and direction, in each of two mutually perpendicular planes, of the beam leaving the system compared with the beam entering the system, characterised in that said plurality comprises, in succession, first and second magnetic deflection means each for deflecting the beam through an angle not substantially greater than 50 degrees followed by a third magnetic deflection means for deflecting the beam through an angle not substantially less than 90 degrees, and wherein in operation charged particles with different respective energies entering the third deflection means are transversely spaced.

4,409,487
ELECTRODE ARRANGEMENT FOR ELECTROSTATIC DEFLECTION SYSTEM

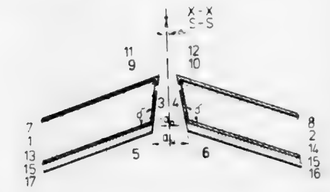
Georg Kuschel, 16, W.-Pieck-Str., JENA-Lobeda, District of Gera, and Hartmut Reinhardt, 59b, Grobschwabhausen, District of Erfurt, both of German Democratic Rep.

Filed May 27, 1981, Ser. No. 267,562

Claims priority, application German Democratic Rep., Jul. 1, 1980, 222294

Int. Cl.³ H01J *37/26*

U.S. Cl. 250—398 **11 Claims**



1. A corpuscular beam processing device comprising subsequently about an optical axis in mutual electron optical alignment

an electron gun for producing a corpuscular beam,

an aperture adjacent to said electron gun for defining said corpuscular beam cross-section,

a first deflection system,

a first electron lens,

a second deflection system,

an electrostatic deflection system,

a black-out aperture,

at least a second electron lens having a center in said optical axis,

a third deflection system,

a target plane,

a slide being displaceably arranged in said target plane,

said first deflection system being for deflecting said corpuscular beam off said optical axis,

said first electron lens being for focusing said corpuscular beam into said electrostatic deflection system,

said second deflection system being for directing said corpuscular beam into said center of said second electron lens,

said second electron lens being arranged adjacent said target plane,

said electrostatic deflection system comprising at least two electrode supporting bodies,

each of said bodies being provided with a face in opposition to the face of the other electrode body, each face having a leading edge in opposition to said second deflection system, the faces of said bodies having a leading edge distance a_o relative to each other and a bottom distance a_u relative to each other where $a_u > a_o$,

each of said bodies having limiting plane faces in opposition to said black-out aperture,

said limiting plane faces including obtuse angles with the associated one of said both faces,

a plurality of electrodes being provided at least on one of said both faces,

said electrodes being of high conductive material compared to the material of said faces,

said electrodes being adjacently arranged along the direction of the greatest extension of said one of said both faces,

each electrode of said plurality of electrodes on said one of said both faces being provided with an individual supply lead,

said one of said both faces being of low electric conductivity compared to the electrode material,

each of said plurality of electrodes is of rectangular shape having two sides in parallel and two sides at right angles

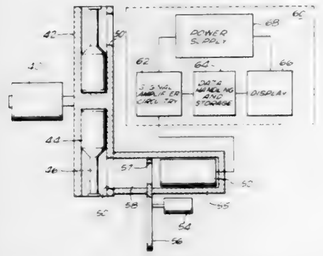
to the corpuscular beam for substantially each deflected off the optical axis position of said corpuscular beam,
said electrostatic deflection system being for deflecting said corpuscular beam off and directing said corpuscular beam to, respectively, said target plane,
said black-out aperture being for trapping said corpuscular beam when deflected off the target plane,
said third deflection system being for fine positioning said corpuscular beam in said target plane,
said second electron lens being for imaging said leading edges into said target plane.

4,409,488

RADIOACTIVE MATERIAL DOSE COMPUTER

Russell W. King, 1220 Via Granate Ave., Sierra Madre, Calif. 91024

Filed Mar. 6, 1981, Ser. No. 241,026
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ G01N *23/10*
U.S. Cl. 250—432 PD **16 Claims**



1. An apparatus for directly determining the contration of radioactivity of a source in a radiation-shielded closed container and for determining the volume of material to be withdrawn from the container such that the withdrawn volume will constitute a predetermined dose of radioactivity, the determination and withdrawal of the desired amount of radioactive material being accomplished without removing the container from its radiation shield, said apparatus comprising in combination:
(a) a radioactive source container having a body in which the main volume of radioactive material is contained, said container being adapted for isolating an aliquot of predetermined volume of the radioactive material from the main volume;
(b) radiation-shielding means within which said container is enclosed, said radiation- shielding means being adapted for isolating the radiation of said aliquot from that the main volume of radioactive material within said container;
(c) radiation-detection means in operable association with said radiation-shielding means for sensing and converting the radiation from said aliquot into an electrical signal indicative of the concentration of radioactivity in the container.

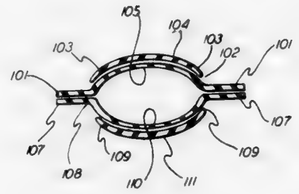
4,409,489

ROAD TRAFFIC ACTUATED GENERATOR

Thomas J. Hayes, 11 W. 17th St., New York, N.Y. 10011

Continuation-in-part of Ser. No. 191,304, Sep. 26, 1980, abandoned. This application Sep. 24, 1981, Ser. No. 305,340
Int. Cl.³ F03G *5/00*; F04B *9/14, 43/12*
U.S. Cl. 290—1 R **27 Claims**

1. An apparatus for recovering energy from a moving vehicle on a roadway by causing a working fluid to flow therefrom, which comprises:
a network of collapsible, resilient bodies, an input manifold and an output manifold coupled thereto wherein each body comprises a structure allowing substantially complete working fluid expulsion therefrom, an inlet connected to the input manifold and an outlet connected to the output manifold, the network forming part of the roadway and having a surface adapted for passage of a vehicle, each body comprising an inner elastic tube and outer, upper and lower sections of semirigid hose, the tube having upper and lower portions with integral projections extending substantially horizontally from the longitudinal sides of each portion, each pair of upper and lower projections forming a continuous, unbroken protrusion or being permanently or detachably joined, the upper and lower portions of the tube being concentrically joined to the



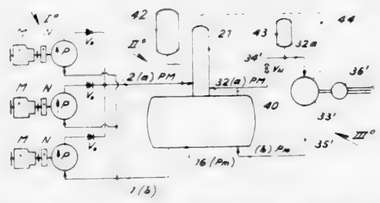
upper and lower sections of hose, the radial dimensions of each hose section being smaller than the radial dimension of the corresponding inner tube portion measured from the extreme horizontal ends of the projections;
a working fluid source coupled to the input manifold;
a means for converting a volume of pressurized working fluid into mechanical or electrical energy;
a means for accumulating a pressure head of working fluid; and
the means for converting and means for accumulating being connected in series or in parallel through a one-way valve to the output manifold.

4,409,490

HYDRAULIC PLANT

Carmelo Caputo, Rome, Italy, assignor to Solar 77 S.p.A., Rome, Italy

Filed Jul. 31, 1981, Ser. No. 288,766
Claims priority, application Italy, Aug. 5, 1980, 24002 A/80
Int. Cl.³ F03B *13/00*
U.S. Cl. 290—4 D **12 Claims**



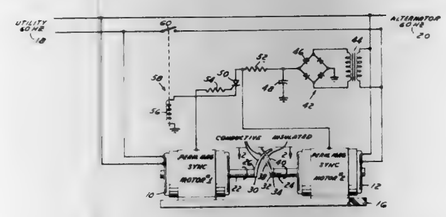
1. Hydraulic plant for the dynamometric braking of and the recovery of energy from engines under test comprising a separate pumping unit mechanically connected to and driven by each engine under test and operable to pump fluid at a substantially constant pressure and at a delivery rate which is a function of the power supplied by the associated engine, a hydraulic circuit having a high pressure side to which the pumped fluid is delivered and a lower pressure side for the delivery of fluid to the pumping units, a fluid reservoir connected to said low pressure side of the hydraulic circuit, means for maintaining said reservoir at a substantially low predetermined pressure, a hydraulic motor operable at substantially constant pressure and variable liquid flow rate, an alternating electrical current generator mechanically connected to said hydraulic motor and operable to be driven by said motor and to drive said motor, said generator being adapted for connection to external electrical network, a first fluid connection from said motor to said reservoir, a second fluid connection to said motor, valve control means connected between said high pressure side of said hydraulic circuit, said reservoir and said second fluid connection and displaceable as a function of the fluid delivery rate in said high pressure side and the fluid delivery rate in said second fluid connection demanded by said hydraulic motor to control the delivery of fluid from said high pressure side to said reservoir and to said second fluid connection, said valve control means being operable to at least partly place said high pressure side in communication with said reservoir when the fluid delivery rate in said high pressure side is greater than the delivery rate demanded in said second fluid connection and to at least partly interrupt delivery of fluid from said high pressure side to said second conduit when the fluid delivery rate in said high pressure side is less than the delivery rate demanded in said second fluid connection and a non-return valve connection between said second fluid connection and said reservoir to supply fluid to said motor when the fluid delivery rate in said high pressure side falls to zero and the motor is driven as a pump by the alternator from the external electrical network.

4,409,491

AC FREQUENCY AND PHASE SYNCHRONIZER

Lawrence A. Schott, 15940 Warwick Rd., Detroit, Mich. 48223

Filed Dec. 27, 1982, Ser. No. 453,619
Int. Cl.³ H04B *3/44*
U.S. Cl. 307—77 **14 Claims**



1. A system for detecting frequency and phase synchronism between two a.c. power sources comprising a pair of dynamoelectric motors each having an electrically conductive housing and an output shaft, means mounting said motors with said output shafts in opposed coaxial orientation and with at least one of said motor housings ungrounded, means for connecting said motors to respective ones of said power sources such that said opposed shafts are adapted for rotation in opposite directions, means mounted on said opposed shafts and responsive to electrical synchronism between said sources for effecting a change in electrical interconnection between said motor housings through said shafts, and means responsive to said change in electrical interconnection of said housings through said shafts for indicating such electrical synchronism.

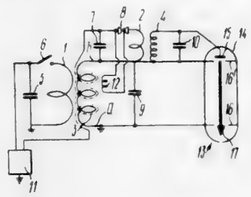
4,409,492

SHOCK EXCITED PULSE TRANSFORMER

Evgeny A. Abramian, Moscow, U.S.S.R., assignor to Institut Vysokikh Temperatur Akademii Nauk SSSR, Moscow, U.S.S.R.

PCT No. PCT/SU80/00074, § 371 Date Jan. 4, 1982, § 102(e) Date Jan. 4, 1982, PCT Pub. No. WO81/03254, PCT Pub. Date Nov. 12, 1981
PCT Filed May 5, 1980, Ser. No. 336,351
Int. Cl.³ H02M *9/02*
U.S. Cl. 307—108 **2 Claims**

1. A shock excited pulse transformer comprising a primary winding, a secondary winding, a capacitor, a charging device and a switch mechanism in the circuit of the winding, wherein the improvement comprises at least two stages, each having a primary winding equipped with a capacitor and a switch device and a secondary winding, the secondary windings being connected in series and in all stages except the last one coiled



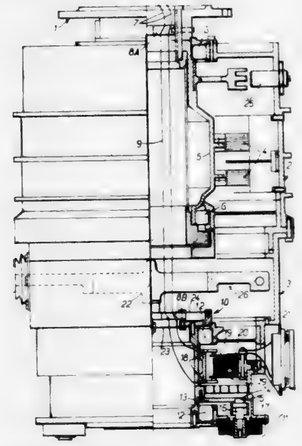
with two parallel conductors insulated from each other, in the first stage a first conductor is connected to an output of the charging device and a second conductor is grounded, and in all other stages capacitors of the circuits of the primary windings are inserted between said conductors in parallel.

4,409,493

METHOD AND DEVICE FOR THE TRANSMISSION OF ELECTRIC POWER BETWEEN PARTS TURNING AT LOW SPEED

Jean-Claude Le Stang, Toulouse, and Georges Thomin, Tolosan, both of France, assignors to Centre National d'Etudes Spatiales, France

Filed Jun. 26, 1981, Ser. No. 277,496
Claims priority, application France, Jun. 27, 1980, 80 14381
Int. Cl.³ H01H *47/00*
U.S. Cl. 307—132 R **14 Claims**



4. A device for transmitting electrical power between a fixed part and a turning part, said device comprising:
(a) at least one movable intermediate part,
(b) a flexible electrical conductor connecting the intermediate part to the turning part,
(c) a driving device located between the intermediate part and the turning part,
(d) clutching means for coupling and uncoupling the intermediate part and the fixed part,
(e) electrical switching means for electrically connecting and disconnecting the intermediate and fixed parts,
(f) a position detector, and
(g) control means located between the position detector and the electrical switching means and the clutching means for

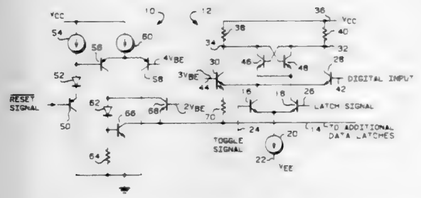
activating said electrical switching means and said clutching means.

4,409,494

RESET CIRCUIT FOR DATA LATCHES

Gregory J. Smith, Chandler, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 21, 1982, Ser. No. 341,049
Int. Cl.³ H03K *17/20, 17/62*
U.S. Cl. 307—238.3 **9 Claims**



1. A reset circuit having an input terminal and an output terminal, said input terminal responsive to a reset signal having first and second states, comprising:

a first NPN transistor having a collector coupled to said output terminal and an emitter coupled to a first bias voltage, for sinking current from said output terminal;

means coupled to said input terminal and a base of said first NPN transistor for biasing said first NPN transistor when said reset signal is in said first state; and

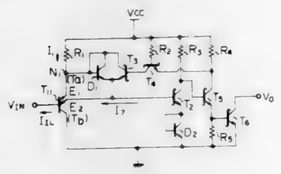
a second NPN transistor for limiting current from said output terminal, said second NPN transistor having an emitter coupled to said output terminal, a base coupled to said first threshold voltage, and a collector coupled to said means.

4,409,495

SCHMITT TRIGGER CIRCUIT WITH LOW INPUT CURRENT

Hiromu Enomoto, Kawasaki; Yoshiharu Mitono, Tokyo; Yasushi Yasuda, Inagi; Taketo Imaizumi, Fukuoka, and Hiroshi Ohta, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 29, 1981, Ser. No. 268,643
Claims priority, application Japan, May 29, 1980, 55-71804
Int. Cl.³ H03K *3/295*
U.S. Cl. 307—290 **13 Claims**



1. A Schmitt trigger circuit having an input-voltage hysteresis characteristic, comprising:

an input stage comprising a first transistor which is a multi-emitter transistor having first and second emitters, and a first load resistor connected to said first emitter at a node;

an output stage comprising a second transistor having a base connected to said second emitter of said first transistor;

a first pn junction diode having an anode connected to said node and a cathode connected to the base of said second transistor, for turning on said second transistor by applying a voltage lower than the voltage at said node by the amount of the voltage drop across said first pn junction diode;

a third transistor having a collector and an emitter connected to said first pn junction diode, for providing said input-voltage hysteresis characteristic; and

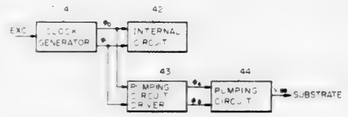
a switching circuit, connected to said second and third transistors, for turning on said third transistor in response to a turning on of said second transistor.

4,409,496

MOS DEVICE INCLUDING A SUBSTRATE BIAS GENERATING CIRCUIT

Fumio Baba, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP80/00124, § 371 Date Feb. 5, 1981, § 102(e) Date Jan. 28, 1981, PCT Pub. No. WO80/02773, PCT Pub. Date Dec. 11, 1980
PCT Filed Jun. 4, 1980, Ser. No. 232,032
Claims priority, application Japan, Jun. 5, 1979, 54-70382
Int. Cl.³ H03K *3/353;* **H03L** *7/24*
U.S. Cl. 307—296 R **6 Claims**



1. An MOS device including a substrate bias circuit for controlling the potential on a substrate containing said MOS device, comprising:

a clock generator for receiving an external clock signal and generating first and second internal clock signals;

a circuit internal to said MOS device connected to said clock generator and operated by said first and second internal clock signals;

a pumping circuit driver, connected to said clock generator, for receiving said first and second internal clock signals and generating third and fourth internal clock signals which are in synchronization with said first and second internal clock signals and are in opposite phase with each other; and

a pumping circuit connected to said pumping circuit driver and said substrate and driven by said third and fourth internal clock signals, for generating a potential for biasing said substrate when said pumping circuit effectuates a pumping operation, said pumping circuit effecting said pumping operation when the potential on said substrate is higher than a predetermined value.

4,409,497

WINDOW COMPARATOR CIRCUIT

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 11, 1981, Ser. No. 262,498
Claims priority, application Japan, May 29, 1980, 55-71722
Int. Cl.³ H03K *5/153, 5/24;* **G01R** *19/165*
U.S. Cl. 307—360 **3 Claims**

1. A window comparator circuit comprising:

an input terminal to be supplied with an input signal;

a first reference voltage terminal to be supplied with a first voltage;

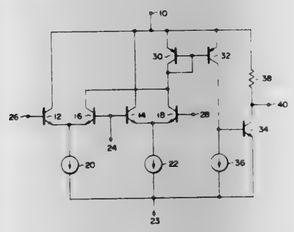
a second reference voltage terminal to be supplied with a second voltage lower than the first voltage;

first differential amplifier means having a first transistor whose base is connected to the first reference voltage terminal, and a second transistor whose base is connected to the input terminal and whose emitter is connected to an emitter of the first transistor;

a first constant current source for supplying a first constant current and connected to the emitters of said first and second transistors;

second differential amplifier means having a third transistor whose base is connected to the input terminal, and a fourth transistor whose base is connected to the second reference voltage terminal and whose emitter is connected to the emitter of said third transistor;

a second constant current source for supplying a second constant current having the same value as the first constant current and connected to the emitters of said third and fourth transistors;



a current mirror circuit to be supplied with one of the sum of collector currents of said second and fourth transistors and the sum of collector currents of said first and third transistors;

a third constant current source for supplying a third constant current having a value different from the first and the second constant currents and connected to an output terminal of said current mirror circuit; and

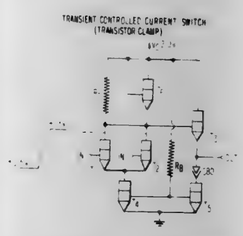
an output transistor whose base is connected to an output terminal of said current mirror circuit.

4,409,498

TRANSIENT CONTROLLED CURRENT SWITCH

Jack A. Dorler, Wappingers Falls, and Joseph M. Mosley, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1980, Ser. No. 221,684
Int. Cl.³ H03K *17/16, 19/092*
U.S. Cl. 307—454 **11 Claims**



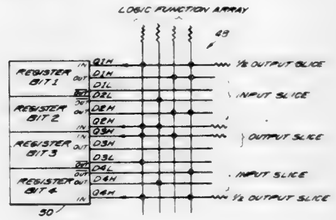
1. A current controlled gate comprising at least one input transistor receiving a logic input signal, a voltage source, a pair of transistors coupled to operate as a current mirror, means coupled to said voltage source and to the bases of said pair of transistors to insure that one of said pair of transistors will be driven into saturation dependent on the state of said input transistor, and an output transistor connected to said voltage source and responsive to said input transistor state and a current from said current mirror which is dependent upon the saturation state of one of said pair of transistors to produce a logic output.

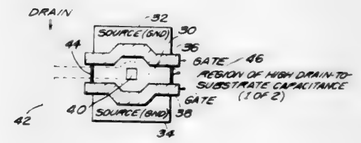
4,409,499

HIGH-SPEED MERGED PLANE LOGIC FUNCTION ARRAY

John M. Zapisek, Hauppauge, and Gus Giulekas, West Hempstead, both of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,160
Int. Cl.³ H03K *19/177, 19/094;* **H01L** *29/78;* **G06F** *7/48*
U.S. Cl. 307—468 **6 Claims**





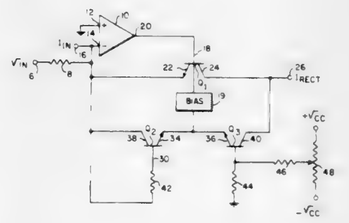
1. In a programmable logic array comprising an array of input and output lines and a plurality of product term lines intersecting said input lines and said output lines, and MOS devices having gate and drain terminals formed at selected intersections of said product term lines and said input lines and said output lines, said product term lines being connected to the drains of said MOS devices on said input lines and to the gates of said MOS devices on said output lines, said MOS devices being provided in the form of dual-device structures, each of which comprises a pair of doped silicon source regions, an intermediate doped silicon drain region, and a pair of spaced polysilicon terminals overlying and extending beyond said source and drain regions, said input lines and said output lines and their associated MOS devices being arranged in a direction orthogonal to the direction of said product term lines.

4,409,500

OPERATIONAL RECTIFIER AND BIAS GENERATOR

David R. Welland, Boston, Mass., assignor to DBX, Inc., Newton, Mass.

Filed Mar. 26, 1981, Ser. No. 247,811
Int. Cl.³ H03K *17/00;* **G06G** *7/12*
U.S. Cl. 307—490 **23 Claims**



1. A device for rectifying an AC current input signal applied at its input terminal and adapted to have its output be a current

rce, said device comprising, in combination (1) an amplifier ge having an inverting input terminal coupled to the input minal of said device, and an output terminal, (2) a first nsmission path including first current conveying means (a) upled selectively to provide signal transmission between the ut and output terminals of said device and (b) connected so t said selective signal transmission over said first transmis- n path is controlled by the output signal provided at said tput terminal of said amplifier stage, wherein a first current ws between the input and output terminals of the device ng said first transmission path only when said input signal is a first polarity; and (3) a second transmission path including ond current conveying means (a) coupled selectively to ovide signal transmission between the input and output minals of said device and (b) connected so that said selective nal transmission over said second transmission path is con- lled by the output signal provided at said output terminal of d amplifier stage wherein a second current flows between d input and output terminals of said amplifier stage along d second transmission path and an inverted current substan- lly equal in magnitude but opposite in polarity to said second rrent simultaneously flows between the output terminal of d amplifier stage and the output terminal of said device ng said second transmission path only when said input nal is of a polarity opposite said first polarity, the improve- nt wherein:

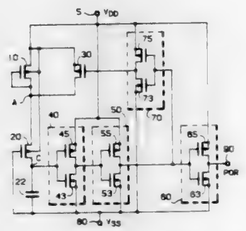
said first and second current conveying means, each include means for respectively poviding a maximum limit of unity voltage feedback with respect to said amplifier stage.

4,409,501

POWER-ON RESET CIRCUIT

rtis L. Eickerman, and Arlie A. Ramsey, both of Scottsdale, Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Jul. 20, 1981, Ser. No. 284,415
Int. Cl.[3] H03K *17/22, 17/284, 17/687*
S. Cl. 307—594 7 Claims



6. A reset circuit, responsive to an applied voltage and hav- g a first and second voltage terminal, comprising in combina- on:

a first FET having a source, a gate, and a drain coupled to said gate;

a second FET having a source coupled to said drain of said first FET, a gate, and a drain, said gate of said second FET being coupled to said second voltage terminal;

a capacitor having a first electrode coupled to said drain of said second FET to form a first node, said first FET, said second FET, and said capacitor being connected in series between said first and second voltage terminals;

a first inverter having an input coupled to said first node and providing an output;

a second inverter having an input coupled to said output of said first inverter and providing an output;

a third inverter having an input coupled to said output of said second inverter to form a second node, said third inverter having an output providing a reset pulse which is the output of the circuit; and

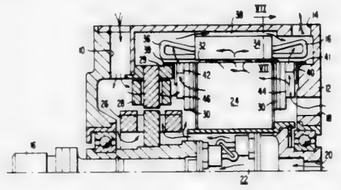
means for providing feedback from said second node to said first electrode of said capacitor to maintain said capacitor at a predetermined voltage level.

4,409,502

SELF-COOLED ELECTRICAL MACHINE WITH INTEGRATED FAN AND SALIENT POLE ROTOR

Jack L. McCabria, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1981, Ser. No. 331,725
Int. Cl.[3] H02K *1/32*
U.S. Cl. 310—61 8 Claims



1. A self-cooled electrical machine comprising:

a frame having a plurality of inlet and outlet ports;

a stator assembly within said frame, said stator assembly having a plurality of axial stator cooling passages;

a rotor within said frame, said rotor including a plurality of poles with interpole spaces between said poles;

a plurality of wedges each disposed within one of said interpole spaces, and each having two radially disposed legs and one circumferentially disposed surface;

said radially disposed legs and said circumferentially disposed surface of each of said wedges forming an axial rotor cooling passage extending along the length of said wedge and having a plurality of apertures in said circumferentially disposed surface;

said axial stator cooling passages having an opening which is in radial alignment with at least one of said apertures in each of said wedges;

a plurality of radial vanes, one of said vanes being attached to one end of each of said wedge legs wherein one of said vanes extends from each end of said wedges to a point beyond said interpole space;

an impeller tab attached to each end of each of said wedges said tabs propelling coolant radially as said rotor turns; and

a shroud attached to each end of each of said wedges, said shrouds preventing recirculation of coolant after said coolant has been propelled by said impeller tabs.

4,409,503

ROTARY ASSISTANCE DEVICE, MORE ESPECIALLY FOR VEHICLE STEERING

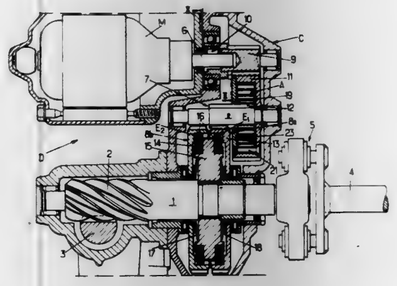
Andre Barthelemy, Saint Remy les Chevreuse, France, assignor to Automobiles Citroen and Automobiles Peugeot, both of Paris, France

Filed Oct. 15, 1981, Ser. No. 311,604
Claims priority, application France, Oct. 20, 1980, 80 22407
Int. Cl.[3] H02K *7/10*
U.S. Cl. 310—75 D 6 Claims

1. A rotary assistance device for coupling to a driven member which is able to rotate in both directions in response to the rotation of a drive shaft, comprising:

a motor rotatable at a relatively high speed in relation to the speed of the drive shaft and the driven member;

speed reducing means for reducing the speed of the motor comprising at least one pinion driven by said motor and



angular torque damping means of high flexibility disposed inside said at least one pinion;

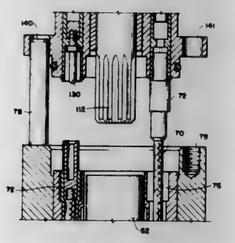
friction coupling means for driving the driven shaft.

4,409,504

TANDEM CONNECTED SUBMERSIBLE OIL WELL PUMP MOTORS

Brown L. Wilson, and Joseph T. Carle, both of Tulsa, Okla., assignors to Oil Dynamics, Inc., Tulsa, Okla.

Division of Ser. No. 45,312, Jun. 4, 1979, Pat. No. 4,350,911.
This application Sep. 8, 1981, Ser. No. 300,176
The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.
Int. Cl.[3] F04D *13/08;* H02K *5/10*
U.S. Cl. 310—87 3 Claims



1. In a submersible motor assembly used to drive a pump for pumping fluids from wells having, tandemly arranged, a lower motor assembly and an upper motor assembly, each motor assembly having a longitudinal housing with top and bottom ends, an electric motor, rotor-driven longitudinal shaft, thrust bearings supporting the shaft, oil corridor means within the shaft, and housing to permit the circulation of oil contained within the housing, and internal electrical leads to the motor and splined connection for the shafts, the improvement characterized by:

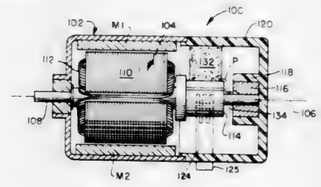
electrical connection means between the lower and upper motor assemblies comprising, at the top of the lower assembly, a socket, an insulated female receptacle, connected to the internal electrical lead, which is spirally wrapped inside the housing, the receptacle movable from the socket for initial connection with an insulated male terminal fixed at the bottom of the upper assembly just prior to connecting the motor assemblies, and positionable in the socket when connected.

4,409,505

ELECTRIC MOTOR HAVING IMPROVED OPERATING CHARACTERISTICS

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 15, 1981, Ser. No. 263,975
Int. Cl.[3] H02K *5/14*
U.S. Cl. 310—90 6 Claims



1. An electric motor comprising in combination:

a housing including means for establishing a stator field;

an armature including a commutator and a rotor shaft;

bearing means supporting said rotor shaft for rotation with respect to said stator;

a brush arrangement comprising at least one brush including a terminal portion integrally formed of base metal resiliently biased into contact with said commutator; and

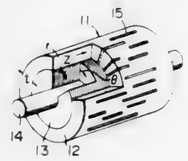
means for providing a supply of synthetic non-organic commutator enhancing lubricant to the area of or adjoining said commutator to enhance commutation with said brush arrangement and thereby reduce the voltage drop from said terminal portion to said commutator.

4,409,506

INDUCTION MOTOR

Motoya Ito; Noboru Fujimoto; Noriyoshi Takahashi; Masatoshi Watanabe, all of Hitachi, and Seizi Yamashita, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1981, Ser. No. 286,841
Claims priority, application Japan, Jul. 28, 1980, 55-102362
Int. Cl.[3] H02K *1/22, 17/00*
U.S. Cl. 310—166 20 Claims



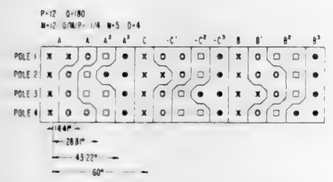
1. An induction motor comprising a stator having a stator core applied with a winding for generating a rotating magnetic field, and a rotor opposing the stator with a predetermined gap therebetween and rotating under the influence of the rotating magnetic field generated by the stator, said rotor including a core fitted to a rotor shaft and a cylindrical member covering the circumferential surface of the core, said cylindrical member being formed with a plurality of slits, each of said slits being elongated axially and extending through the cylindrical member in a radial direction thereof to the circumferential surface of said core.

4,409,507

DYNAMOELECTRIC MACHINES FOR MULTIPLES OF THREE PHASES WITH UNBALANCED FRACTIONAL-SLOT WINDINGS

Gurney L. Godwin, Georgetown, Tex., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 28, 1982, Ser. No. 392,427
Int. Cl.³ H02K *23/34*
U.S. Cl. 310—205 **6 Claims**



1. An AC dynamoelectric machine comprising:

an AC winding configured for M phases, where M is an integral multiple of three, disposed in a core having uniformly spaced coil slots numbering Q and a number of electrical poles P where the number of coil slots per phase (Q/M) is an integer, and the number of coil slots per phase per pole (Q/M/P) is a non-integer expressible as a simple fraction having a numerator N and a denominator D, where D is two or more and M and D have a common factor of at least two;

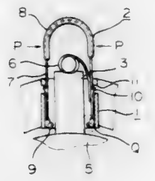
said winding comprising a plurality of coils of one or more turns, each of which has two coil sides respectively disposed in two of said coil slots, and selected numbers of said coils are connected into coil groups of which some are of unequal numbers of coils, where the number of successive poles whose coil groups for the M phases are a distinct repeatable pattern for the total winding is D, and D times X, where X is an integer, equals P, and the number of individual coils within the coil groups for each individual phase within said D pole windings is N.

4,409,508

BRUSH HOLDER WITH COATED CLAMP FOR DYNAMO-ELECTRIC MACHINE

Norihiro Ooki, Katsuta; Noriyoshi Takahashi, Hitachi; Yasuyuki Wachi, Takahagi; Yoshio Takikawa, Hitachi; Norio Yamakawa, Ibaraki, and Shoji Motegi, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Filed May 5, 1982, Ser. No. 375,102
Claims priority, application Japan, May 11, 1981, 56-69415
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—239 **7 Claims**



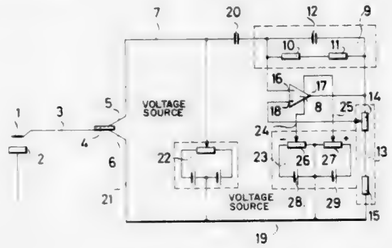
1. A brush holder for detachably holding a brush adapted to slide on the surface of a rotary electricity collector of a dynamo-electric machine, said brush holder having a stationary holder part stationarily fixed to the stationary part of said dynamo-electric machine, and a detachable holder part detachably secured to said stationary holder part for holding the brush after separation from said stationary holder part, said detachable holder part being provided with a retainer for clamping and retaining said brush when separated from said stationary holder part and for releasing said brush when attached to said stationary holder part, said retainer being constructed so as to be disposed near the sliding surface of the brush when the detachable holder part is secured to the stationary holder part, characterized by comprising a coating film coating the entire surface of the brush clamping portion and thereabout of said retainer and made of an electrically insulating material having a coefficient of friction smaller than that of the material of said retainer, whereby undesirable accumulations of powders on said retainer are avoided.

4,409,509

PIEZOELECTRICALLY DRIVEN TRANSDUCER FOR ELECTRON WORK FUNCTION AND CONTACT POTENTIAL MEASUREMENTS

Karl-Heinz Besocke, Jülich, and Siegfried Berger, Titz-Rödingen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,233
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3034390
Int. Cl.³ H01L *41/10*
U.S. Cl. 310—317 **3 Claims**



1. A piezoelectric transducer apparatus for measuring contact potentials between relatively movable electrodes and electron work function of surfaces and for atomar molecular and optical chopper applications, said apparatus having a piezoelectrically driven movable electrode and a counter-electrode, means for providing an oscillatory driving voltage for said movable electrodes, spring means for mounting said movable electrode and means for providing a controllable voltage superimposed on said oscillatory driving voltage for variation of the means spacing between said movable electrode and said counter-electrode, said movable electrode having first and second poles respectively on opposite sides of a position of said movable electrode to which said oscillatory driving voltage means provides said voltage to said movable electrode,

said means for providing oscillatory driving voltage including a self excited oscillation generator circuit (**8, 9, 13**), having a reference or ground potential conductor (**19**), said apparatus further comprising

a capacitor (**20**) connected between said first pole (**5**) of a piezoelectric driving element (**4**) of said movable electrode and said oscillation generator circuit;

a connection between said second pole (**6**) of said piezoelectric element and said reference or ground potential conductor;

connection means for applying said controllable voltage in parallel to said poles (**5, 6**) of said piezoelectric element, and

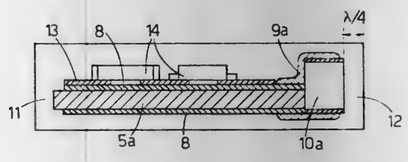
an amplitude control circuit (**26, 27, 28, 29**) for varying the amplitude of said oscillatory driving voltage.

4,409,510

METHOD FOR PROVIDING ULTRAACOUSTIC TRANSDUCERS OF THE LINE CURTAIN OR POINT MATRIX TYPE AND TRANSDUCERS OBTAINED THEREFROM

Donello Assenza, and Massimo Pappalardo, both of Rome, Italy, assignors to Consiglio Nazionale Delle Ricerche, Italy

Division of Ser. No. 157,281, Jun. 6, 1980, Pat. No. 4,370,785.
This application Oct. 14, 1982, Ser. No. 434,355
Claims priority, application Italy, Jun. 22, 1979, 49520 A/79
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—334 **13 Claims**



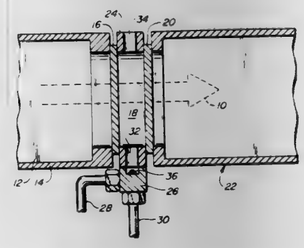
1. An ultraacoustic line curtain or point matrix transducer, characterized by a piezoelectric bar (**10**) having width and thickness almost equal to each other and provided with four faces (**1, 2, 3, 4,**) two of which (**2, 4**) are metalized, a substrate (**5**) connected with one (**3**) of both non-metalized faces of the piezoelectric bar (**10**) and provided with at least a metallic electrode (**8**) deposited on both opposite faces (**6, 7**) thereof, which are normal to the face connected with said one (**3**) of both non-metalized faces of the piezoelectric bar (**10**), said electrode (**8**) being connected with the metalized faces (**2, 4**) of the bar (**10**) by a layer (**9**) of conductive epoxy resin, and an external coating jacket (**11**) of epoxy resin which encloses completely the bar (**10**) and the substrate (**5**) with the electrodes (**8**).

4,409,511

PHASE TRANSITION COOLED WINDOW FOR BROAD BEAM ELECTRON GUN

Gary K. Loda, Danville, and Sherman R. Farrell, Orinda, both of Calif., assignors to RPC Industries, Hayward, Calif.

Filed Feb. 23, 1981, Ser. No. 236,808
Int. Cl.³ H01J *7/28*
U.S. Cl. 313—34 **27 Claims**



1. Apparatus for cooling a charged-particle-transparent window of the type used in combination with a charged particle accelerator system, the cooling apparatus comprising:

means for supplying a vaporizable, liquid coolant material;

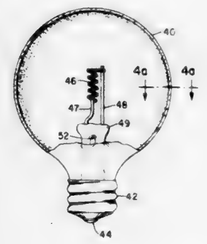
means for atomizing the liquid coolant material and for directing the atomized material onto the window whereby when the window is heated by the charged particles, the atomized material absorbs heat from the window as at least some of the material changes from a liquid to a gaseous state.

4,409,512

INCANDESCENT ELECTRIC LAMP WITH ETALON TYPE TRANSPARENT HEAT MIRROR

Peter Walsh, Stirling, N.J., assignor to Duro-Test Corporation, North Bergen, N.J.

Continuation of Ser. No. 45,645, Jun. 5, 1979, which is a continuation of Ser. No. 863,155, Dec. 22, 1977, abandoned. This application Aug. 11, 1981, Ser. No. 291,941
Int. Cl.³ H01J *5/16, 61/40;* **H01K** *1/26, 1/30*
U.S. Cl. 313—113 **14 Claims**



1. An incandescent electric lamp comprising

a sealed envelope of a material which is transparent to light in the visible range,

an incandescent filament within said envelope,

means for supplying electrical current to said filament to cause it to incandesce at a temperature so as to produce light energy in at least a portion of the visible range and energy in the infrared range,

the major portion of said envelope being optically shaped with a curved surface curved in at least two directions in any given area to reflect energy back toward and to impinge upon said filament, an etalon coating located directly on a substantial part of the curved surface portion of the envelope, said coating comprising only a single triad of films consisting of a film of a dielectric material sandwiched between and in direct contact with two films of an electrically conductive metal with one of said films of electrically conductive metal being deposited directly on the envelope, said films being matched to the characteristics of both the visible range light energy and the infrared range energy produced by the filament for transmitting exterior to the lamp at least about 80% of the visible range light energy at the peak of the luminosity curve of the visible range light energy produced by the filament and for reflecting at least about 75% of the energy in the infrared range at about 1.0 micron and above back towards the filament to impinge thereon to thereby increase the operating temperature of the filament and to reduce the amount of electrical current needed to heat said filament to incandescence.

4,409,513

ELECTRODE FOR AN ELECTRON GUN

Ralph J. D'Amato, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 145,237, Apr. 3, 1980, Pat. No. 4,318,026. This application Oct. 5, 1981, Ser. No. 308,841
Int. Cl.³ H01J *1/46, 17/04, 19/38, 19/40*
U.S. Cl. 313—348 **5 Claims**

1. In an electron gun comprising a cathode and a plurality of electrodes spaced therefrom, the improvement wherein said electrode adjacent to said cathode comprises

an electrically conductive base member of a first material having an aperture extending therethrough, said base member having two opposing surfaces, and

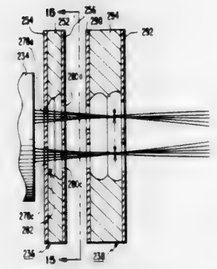
overlying layers of a second electrically conductive material disposed on said opposing surfaces of said base member, said overlying layers overhanging said aperture in said

base member, said overlying layer proximate to said cathode having a plurality of beam forming apertures therethrough which communicate with said aperture in said base member for forming a plurality of beam bundles which originate from isolated areas on said cathode.

5. In an electron gun comprising a cathode and a plurality of electrodes spaced therefrom, the improvement wherein the electrode adjacent to said cathode comprises

an electrically conductive base member of a first material having an aperture extending therethrough, said base member having two opposing surfaces, and





overlying layers of a second electrically conductive material disposed on said opposing surfaces of said base member overhanging said aperture therein, said overlying layer proximate to said cathode having a plurality of beam forming apertures therethrough and said overlying layer remote from said cathode having a like plurality of beam forming apertures therethrough, said apertures in said remote layer being aligned with said apertures in said proximate layer, said apertures in said proximate layer and in said remote layer communicating with said aperture in said base member for forming a plurality of electron beams which originate from isolated areas of said cathode.

4,409,514

ELECTRON GUN WITH IMPROVED BEAM FORMING REGION

Joshua Shefer, Princeton, and Carmen A. Catanese, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

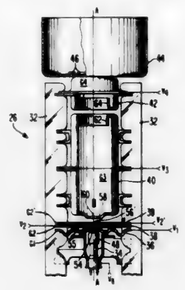
Filed Apr. 29, 1981, Ser. No. 258,805

Int. Cl.³ H01J *29/48*

U.S. Cl. 313—449 **16 Claims**

1. In an electron gun for use in a cathode ray tube, said gun including beam forming electrodes and beam focusing electrodes, the improvement comprising

said beam forming electrodes including a cathode, a control grid adjacent to said cathode and two screen grids, a first of said screen grids being adjacent to a side of said control grid opposite said cathode and a second screen grid being between said first screen grid and said beam focusing



electrodes, and said second screen grid and said control grid being electrically connected.

4,409,515

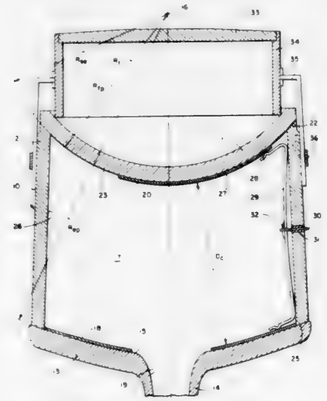
PROJECTION TELEVISION TUBE AND PROCESS FOR FORMING SAME

Henry E. Kloss, 174 Brattle St., Cambridge, Mass. 02133

Continuation of Ser. No. 12,714, Feb. 16, 1979, which is a division of Ser. No. 875,222, Feb. 6, 1978, abandoned. This application Jul. 24, 1981, Ser. No. 286,711

Int. Cl.³ H01J *31/00, 31/10*

U.S. Cl. 313—477 R **8 Claims**



1. A projection television tube comprising:

a neck;

an end plate sealed to the neck and having an internal reflective surface lying on a spherical surface having a center of curvature located forwardly of the end plate along the projection axis of the tube and an end plate peripheral area including a sealing surface lying on a spherical surface concentric with said reflective surface;

an electron beam target surface spaced forwardly of said end plate and lying on a spherical surface concentric with said reflective surface and located on the same side of said center of curvature as said reflective surface, said target surface intersecting the projection axis of the tube;

a target support having a target support peripheral edge sealing area lying on a spherical surface that is concentric with said target surface, said target support being located between said target surface and said center of curvature, and intersecting the projection axis of the tube, said target support also comprising an imperforate face plate for the envelope;

said target surface being secured to said target support;

a hollow cylindrical member of predetermined length extending between said end plate peripheral area and said peripheral edge sealing area of said target support, said cylindrical member having an axis of symmetry coextensive with said projection axis, and including opposite sealing end surfaces concentric with said reflective surface;

said cylindrical member and said target support peripheral edge sealing area being joined along a joint interface surface area lying on a spherical surface that is concentric with said reflective and target surfaces;

said cylindrical member and said end plate sealing surface also being joined along a joint interface surface area lying on a spherical surface that is concentric with said reflective and target surfaces;

said end plate, target support and cylindrical member being respectively bonded together along their mutual joint interface areas in sealed relationship;

an electron gun means sealed within said neck and arranged to produce an electron beam to print a raster on said target surface;

an electron beam focusing means; and

an electrical connection between said target surface and said reflective surface.

4,409,516

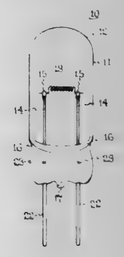
ROUNDED END HALOGEN LAMP WITH EXHAUST TUBE HAVING DIFFERENT GLASS

George L. Thomas, Chesterland, and William A. Graff, Willoughby, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1981, Ser. No. 227,224

Int. Cl.³ H01K *1/22*

U.S. Cl. 313—579 **6 Claims**



1. An improved incandescent lamp comprising an envelope of a first high temperature aluminosilicate glass exhibiting a sealing temperature not exceeding about 1450° C. comprising in approximate weight percent 54–71 SiO_2, 12–18 Al_2O_3, 4–8 CaO, 10–23 BaO, and 0–3 R_2O, wherein R is an alkali metal ion, along with minor amounts of incidental impurities, residual fluxes and refining agents, such that the aggregate SiO_2 and Al_2O_3 content lies within the approximate range 73–83 weight percent, the aggregate BaO and CaO content lies within the approximate range 17–30 weight percent and the ratio between BaO weight percent and CaO weight percent lies within the approximate range 2.3 to 3.5, said envelope also having a rounded end, refractory metal lead-in wires hermetically sealed into said envelope at one end of said envelope opposite said rounded end, a tungsten filament connected at each end to said lead-in wires, said envelope containing the tipped-off residue of an exhaust tube prepared from a second different higher temperature aluminosilicate glass located at the end of the envelope opposite the rounded end and exhibiting a higher sealing temperature of about 1500° C., with said different higher temperature aluminosilicate glass comprising in approximate weight percent 56–63 SiO_2, 13–17 Al_2O_3, 19–24 BaO, 1–4.5 CaO, and 0–3 R_2O, wherein R is an alkali metal ion, along with minor amounts of incidental impurities, residual fluxes and fining agents, such that the aggregate BaO and CaO content lies within the approximate range 21–26 weight percent and the ratio between BaO weight percent and CaO weight percent exceeds 4.7, and a filling within said envelope containing an inert gas and a halogen, wherein the improvement comprises having said exhaust tube devoid of any conventional refractory metal spiral.

4,409,517

HIGH-PRESSURE DISCHARGE LAMP WITH ENVELOPE LEAD-THROUGH STRUCTURE

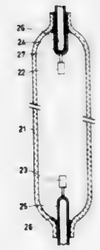
Johannes H. M. Van Der Sande; Franciscus G. P. Sools, both of Eindhoven, Netherlands, and Ronald J. Campbell, Pennington, N.J., assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 18, 1981, Ser. No. 264,746

Claims priority, application Netherlands, Jun. 3, 1980, 8003216

Int. Cl.³ H01J *61/12, 61/36*

U.S. Cl. 313—631 **5 Claims**



1. A high-pressure discharge lamp for use in the vertical position having a ceramic tubular discharge vessel which is sealed in a vacuum-tight manner, the longitudinal axis of which does not deviate by more than 45° from the vertical in use, the discharge vessel containing a gas filling containing a halogen and/or halide, respective electrodes disposed at the ends of the discharge vessel, the discharge being maintained between these electrodes during operation of the lamp, each electrode being connected to a current lead-through member included in the discharge vessel wall, the current lead-through member located at the upper end of the discharge vessel consists at least at its surface facing the discharge, of a material which is resistant to attack by halogens and/or halides, and that the current lead-through member located at the other, lower end of the discharge vessel contains a material which is highly permeable to hydrogen and which would be attacked by a halogen and/or a halide if used at the upper end.

4,409,518

TWT INTERACTION CIRCUIT WITH BROAD LADDER RUNGS

Arthur Karp, Palo Alto, Calif., and Gary A. Biggs, Sandy, Utah, assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 29, 1981, Ser. No. 287,954

Int. Cl.³ H01J *25/34*

U.S. Cl. 315—3.5 **13 Claims**

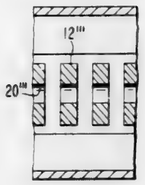
1. A slow wave circuit comprising:

a conductive envelope extended in an axial direction, and defining interior walls;

an array of parallel conductive rungs spaced along the length of said envelope, each rung connected only at its ends to said envelope at opposite ones of said interior walls;

the improvement wherein at least a remaining one of said

interior walls of said envelope is shaped so that the spacing between said remaining wall and each said rung near at least one of said rung ends is smaller than the spacing between said wall and rung near the middle of each said rung, and the breadth of at least a portion of said rungs, in a direction perpendicular to the length of said rungs and to



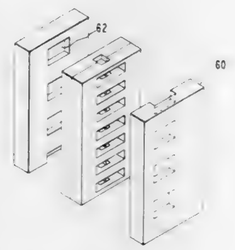
said axial direction is greater than one-half the length of said rungs, whereby the fundamental wave of said lowest passband is a backward wave, and the upper cutoff frequency of the lowest passband of said circuit corresponds to a pole of the impedance of said circuit in said axial direction.

4,409,519

TWT SLOW-WAVE STRUCTURE ASSEMBLED FROM THREE LADDER-LIKE SLABS

Arthur Karp, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 29, 1981, Ser. No. 287,953
Int. Cl.³ H01J *25/34*
U.S. Cl. 315—3.5 **5 Claims**



1. A slow wave circuit comprising:

a first unitary elongated metallic ladder-like interaction element, said element including a pair of parallel spaced axially-extending longitudinal members, and an array of rung members connecting said longitudinal members;

said longitudinal and rung members defining apertures in said element, said apertures being spaced from each other by a periodic pitch;

a pair of unitary elongated metallic side coupling elements, each having an array of axially extending recesses, said recesses being spaced from each other by twice said periodic pitch;

said pair of side elements being bonded to opposite sides of said interaction element such that each of said recesses bridges two successive apertures of said interaction element;

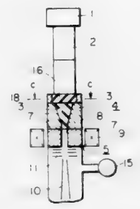
said recesses in one of said side elements being axially offset by said pitch with respect to said recesses in the other of said side elements, such that successive apertures are connected via said recesses on alternating sides of said apertures.

4,409,520

MICROWAVE DISCHARGE ION SOURCE

Hidemi Koike, Tokorozawa; Noriyuki Sakudo, Ohme; Katsumi Tokiguchi, Hachioji, and Ichiro Kanomata, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 24, 1981, Ser. No. 247,072
Claims priority, application Japan, Mar. 24, 1980, 55-36074
Int. Cl.³ H01J *7/46, 19/80*
U.S. Cl. 315—39 **8 Claims**



1. A microwave discharge ion source comprising means for generating microwaves, a discharge chamber which has ridged electrodes for introducing the microwaves generated by the microwave generating means and establishing a microwave electric field and which is maintained in a vacuum state, and a waveguide which guides said microwaves generated by said microwave generating means to said discharge chamber; said waveguide consisting of a section which has no ridged electrode and which serves to guide said microwaves generated by said microwave generating means to said discharge chamber without reflecting them, and a section which has ridged electrodes; a vacuum-sealing dielectric plate being disposed in said section of said waveguide having no ridged electrode, said vacuum-sealing dielectric plate serving to maintain the vacuum state of said discharge chamber and also to propagate said microwaves without reflecting them; an insulating packed material being packed in a space in said waveguide existent between said vacuum-sealing dielectric plate and said discharge chamber, said insulating packed material serving to prevent any discharge outside said discharge chamber.

4,409,521

FLUORESCENT LAMP WITH REDUCED ELECTROMAGNETIC INTERFERENCE

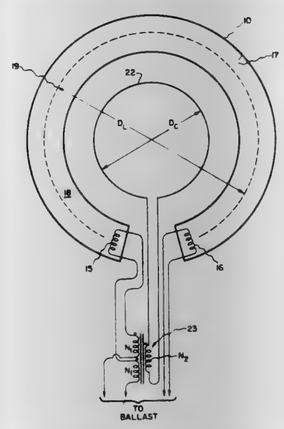
Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 104,422, Dec. 17, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 277,422
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—57 **16 Claims**

1. An arc discharge device comprising:

an elongate evacuable envelope having electrodes disposed within said envelope at opposite ends thereof, said envelope containing an ionizable discharge medium, said discharge device operating by the conduction of alternating current between said electrodes through said medium; and

electromagnetic radiation reduction means external to said envelope, said means providing a conductive current path in which the direction of current flow is opposite to the direction of current flow within said envelope so as to produce a magnetic field which generally opposes the



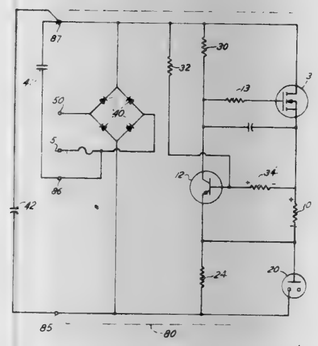
magnetic field produced by the discharge current flow between said electrodes.

4,409,522

DIRECT CURRENT POWER SOURCE FOR AN ELECTRIC DISCHARGE LAMP USING REDUCED STARTING CURRENT

William J. Elliott, Zephyr Cove, Nev., assignor to Quietlite International, Inc., Reno, Nev.

Filed Aug. 28, 1981, Ser. No. 297,146
Int. Cl.³ G05F *1/00;* **H05B** *37/02*
U.S. Cl. 315—308 **10 Claims**



1. A power supply for an electric discharge lamp comprising, in combination,

a source of a direct current potential,

current sensing means,

at least one power transistor having a transconductive path and a control electrode, said transconductive path(s), said lamp, and said current sensing means being connected in series across said source,

means responsive to said current sensing means for maintaining the magnitude of current flowing through said lamp at a regulated level, and

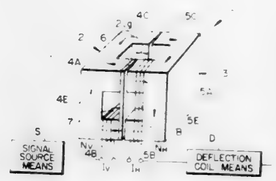
means responsive to the voltage across said transconductive path(s) for increasing the magnitude of said regulated level as said voltage decreases during initial lamp warmup.

4,409,523

PINCUSHION DISTORTION CORRECTION APPARATUS

Masayuki Yasumura, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 26, 1981, Ser. No. 228,677
Claims priority, application Japan, Jan. 31, 1980, 55-10700
Int. Cl.³ H01J *29/70, 29/56*
U.S. Cl. 315—371 **6 Claims**



1. A pincushion distortion correction apparatus for television receivers comprising;

a saturable transformer including a ferromagnetic core forming a cubic magnetic loop path structure, said ferromagnetic core consisting of two ferromagnetic core pieces having four legs and two common portions, a controlled winding wound on the first and second ones of said four legs of the core, a control winding wound on the second and third ones of said four legs of the core, and a space gap means provided between said two ferromagnetic core pieces;

a deflection coil being connected in series with said controlled winding; and

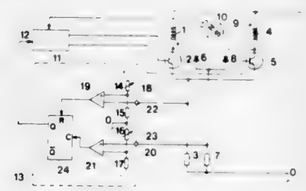
a signal source for supplying a control parabolic signal to said control winding.

4,409,524

ARRANGEMENT FOR CONTROLLING THE DRIVING AND BRAKING CURRENT OF A BRUSHLESS D.C. MOTOR

Henrik B. Nielsen, Nordborg, and Nils H. Nygaard, Rodding, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 20, 1980, Ser. No. 208,529
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949017
Int. Cl.³ H02P *6/02*
U.S. Cl. 318—138 **5 Claims**



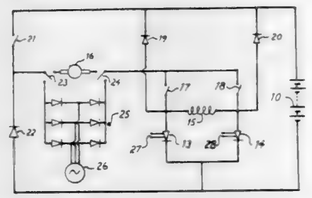
1. A control circuit for a brushless DC motor having a permanent magnet rotor and first and second stator windings, comprising, first and second semiconductor switching elements in respective series with said windings, said windings being double wound on the core of said stator, the core of said stator, first and second free wheeling diodes connected respectively to the junctions of said windings and said switching elements in oppositely poled relation to said switching elements, scanning circuit commutating means for alternately switching said elements on and off in accordance with the rotary position of said rotor, first and second current measuring means in respective series relation to said switching ele-

ments and said diodes, and comparator means responsive to said current measuring means for alternately blocking and unblocking the output of said scanning circuit commutating means when said first and second current measuring means reach predetermined values.

4,409,525
VEHICLE

Carl S. M. Hartwig, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jul. 15, 1981, Ser. No. 283,517
Claims priority, application Sweden, Aug. 14, 1980, 8005729
Int. Cl.³ H02J *7/00*
U.S. Cl. 318—139 **4 Claims**

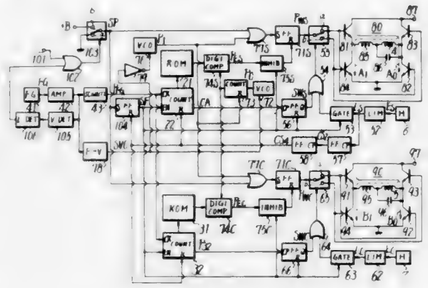


1. A vehicle operated by electric battery power comprising:
a DC electric traction motor (**11**) having an armature (**16**) and a field winding (**15**);
a battery (**10**) chargeable from an external power source (**26**) separate from the vehicle; and
a battery charging and motor drive controlling circuit comprising:
a chopper-controller being operable in a drive mode for coupling said motor to said battery (**10**) for controlling the motor speed and for selectively operating in an external charge mode for coupling said battery (**10**) to said external power source (**26**) for controlling the supply of battery charging energy to said battery (**10**) from said external source (**26**);
said chopper-controller being also operable in a regenerative braking mode and includes means coupled to said field winding (**15**) of said motor for causing said motor to carry out regenerative braking of the vehicle when in said regenerative braking mode;
said chopper-controller including replacing means coupled to said armature (**16**) and to said external power source (**26**) for replacing said armature (**16**) with said external power source (**26**) when in said external charge mode;
a diode-bridge rectifier means (**25**) coupling said external power source (**26**) to said replacing means;
said chopper-controller operating in said regenerative braking mode when said battery (**10**) is charged from said external source (**26**); and
said chopper-controller further comprising a first circuit including a series circuit of a forced-commutated thyristor (**14**), a first diode means (**22**) and the traction motor (**11**); whereby when said copper-controller is in said regenerative braking mode, said first circuit builds up charging energy in said field winding (**15**) of the motor (**11**) which energy is supplied to said battery (**10**) by said second circuit for charging said battery (**10**) during said regenerative braking mode.

4,409,526
BRUSHLESS DC MOTOR

Hiroyuki Yamauchi, Saitama, and Tamotsu Yamagami, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 21, 1980, Ser. No. 209,145
Claims priority, application Japan, Nov. 22, 1979, 54-151433
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 **29 Claims**



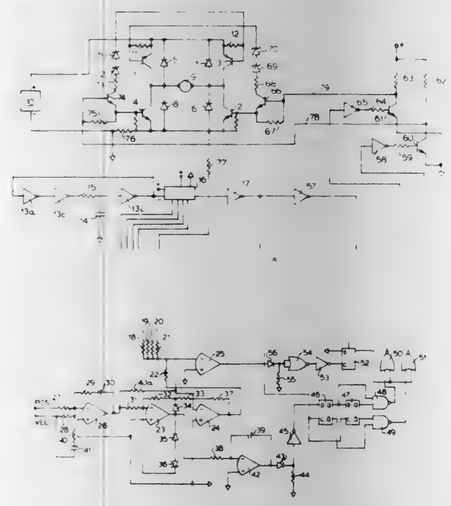
1. In a brushless DC motor comprising a rotor having an axis of rotation and including rotor magnet means establishing a sinusoidal magnetic field along a circular line concentric with said axis, and a stator including two-phase stator windings spaced from each other by an electrical angle which is an odd multiple of 90°, said rotor and stator being mounted for relative rotation about said axis with said stator windings confronting said rotor magnet means across said line so as to be affected by said sinusoidal magnetic field;
a drive circuit including signal generating means providing an output with a frequency determined by the speed of said relative rotation, memory means for storing information data representing respective sampled values of predetermined sinusoidal waveforms, means responsive to said output of the signal generating means for reading out said information data from said memory means, means for synchronizing said reading out of the information data with the affect of said sinusoidal magnetic field on said stator windings, means for providing electrical currents through said stator windings which co-act with said magnetic field to produce torque for effecting said relative rotation, and means responsive to said information data read out of the memory means for controlling said electrical currents so as to substantially eliminate ripple from said torque.

4,409,527
TRANSISTOR MOTOR CONTROL

Marcel R. Sommeria, P.O. Box 371, Palos Heights, Ill. 60463
Continuation of Ser. No. 54,419, Jul. 3, 1979, abandoned. This application Aug. 12, 1981, Ser. No. 292,161
Int. Cl.³ H02P *5/06*
U.S. Cl. 318—341 **3 Claims**

1. A digital motor control circuit for a DC motor, including means for generating an analog feedback signal indicative of the speed of said motor; comprising a plurality of driving elements connected in two groups, a power supply, a first of said groups being connected to supply current from said power supply to said motor for powering the motor in a forward direction, and the other group being connected to supply current from said power supply to said motor for powering the motor in the reverse direction, a source of clock pulses, a digital counter connected to said source of clock pulses and operative continuously, a digital-to-analog converter connected to said counter for connecting a stair-step waveform having levels corresponding to the state of said counter, comparator means connected to said digital-to-analog converter for comparing said analog feedback signal indicative of the

speed of said motor with said stair-step waveform, means connected to said comparator means for deriving a pulse width modulated signal consisting of pulses having leading and trailing edges, one edge of each of said pulses being established in response to a comparison between said stair-step waveform and said feedback signal, and the other edge being established at the beginning of each cycle of said stair-step waveform, means connected to receive said pulse width modulated waveform for controlling one or the other group of said driving elements, means for deriving a signal responsive to the sign of said feedback signal, means for storing said sign signal, means for comparing said sign signal with a previously stored sign signal, and means for interrupting operation of said driving

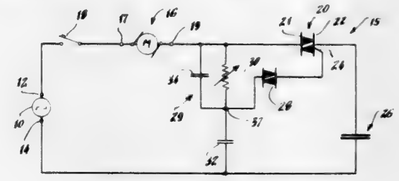


elements for at least one cycle of operation of said counter coincident with each change in sign, a precision rectifier for providing an amplified signal corresponding to the absolute value of said feedback signal, said rectifier including an inverting amplifier having an input resistor and two parallel feedback circuits, one feedback circuit having a diode poled relative to the output terminals of said amplifier in one direction and having a resistor equal to said input resistor for establishing unity gain in one mode of operation of said amplifier, and the other feedback circuit having a diode poled in the opposite direction and a zener diode for determining the output voltage of said amplifier in another mode of operation of said amplifier, and means connected to the output of said amplifier to receive said sign signal.

4,409,528
MOTOR SPEED CONTROL CIRCUIT PROVIDING ARMATURE CURRENT SENSING AND FEEDBACK ACTION FOR EACH HALF CYCLE AND CONTROL CIRCUIT REDUCING ENERGY CONSUMPTION OF INDUCTION MOTORS WHEN RUNNING UNDER NO LOAD AND LIGHT LOADING

Allen F. Podell, Palo Alto, Calif., assignor to Cuisinarts, Inc., Greenwich, Conn.
Filed Jun. 13, 1980, Ser. No. 159,136
Int. Cl.³ H02P *5/16*
U.S. Cl. 318—345 D **12 Claims**

1. A motor speed control circuit for supplying electrical power to a motor during both positive and negative half cycles of an alternating current supply voltage in which power is automatically varied as the load on the motor varies at any given speed setting in order to maintain the motor speed substantially constant at that speed setting under variable load conditions, said motor speed control circuit comprising:
a pair of terminals adapted for connection to an electric motor of the universal type having an armature winding and a commutator,
a triac having first and second electrodes and a control electrode,
a pair of alternating current (AC) supply terminals,
a capacitor of relatively large capacitance value of the non-polar type having a capacitance in the range of 500 to 1,000 microFarads per ampere of peak motor current when the motor is operating under full rated load at full speed setting,
said pair of supply terminals, said motor terminals, said first and second electrodes of said triac and said capacitor being connected in a series circuit,
a phase-shifting trigger circuit having a speed-control variable resistor, said trigger circuit being connected across said series circuit, with said trigger circuit being connected to said control electrode of said triac for adjusting the desired speed of the motor by adjusting said variable resistor for adjusting the firing angle of said triac,



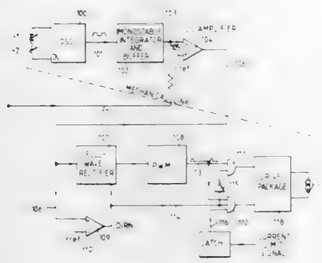
by virtue of said capacitor being in said series circuit with the motor and the triac, the charging voltage occurring on the capacitor during each half cycle of the AC supply voltage is a function of the current flowing through the armature winding which in turn is a function of the torque load being imposed on the motor at that moment,
whereby the magnitude of said charging voltage occurring on said capacitor during each half cycle automatically changes the firing angle of the triac at a given setting of said variable resistor during each succeeding half cycle for increasing the power to the motor when the torque load has increased and for decreasing the power to the motor when the torque load has decreased,
thereby to maintain the motor speed substantially constant at any given speed setting of said variable resistor over a relatively wide range of torque loading on the motor.

4,409,529
PROSTHESIS

Robert Basford, Fetcham; David Hart, Keighley; David Hawkins, Bifleet; David Knight, Worcester Park, and Roger Sidey, Richmond, all of England, assignors to Hugh Steeper Limited, London, England
Filed Mar. 24, 1981, Ser. No. 247,117
Claims priority, application United Kingdom, Mar. 24, 1980, 8009850; Sep. 23, 1980, 8030680
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—653 **23 Claims**

1. A prosthesis comprising:
(a) a gripping member;
(b) an operating lever mounted to pivot about a pivot axis and operatively connected to the gripping member;
(c) a power unit including an electric motor, and a drive shaft rotatable by said electric motor;
(d) means connecting the drive shaft to the operating lever at a region spaced from the said pivot axis of the operating lever, said connecting means being constructed so that when the drive shaft rotates the connecting means (and also the region of the operating lever connected to the

shaft) travels axially along the shaft thereby causing the operating lever to pivot about its pivot axis; and



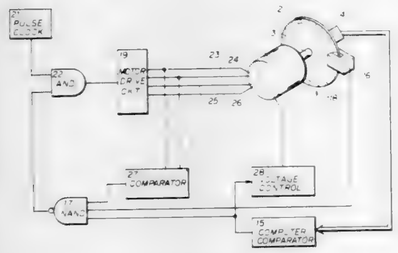
(e) means pivotally mounting said power unit to allow the connecting means to move along an arcuate path about the pivot axis during pivoting of the operating lever.

4,409,530

METHOD AND APPARATUS FOR STEPPER MOTOR POSITION CONTROL

Robert K. Neeper, Yorba Linda, and Richard C. Meyer, La Habra, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 10, 1980, Ser. No. 205,114
Int. Cl.[3] G05B *19/40*
U.S. Cl. 318—685 **2 Claims**



1. Apparatus for positioning a turntable comprising:
a four winding stepping motor coupled with said turntable;
means, connected to said four windings, for energizing said four windings;
a NAND gate connected to said energizing means;
an optical sensor, associated with said turntable and connected to said NAND gate;
a position encoder, associated with said turntable and connected to said NAND gate; and
a comparator, connected to at least two of said windings and to said NAND gate.

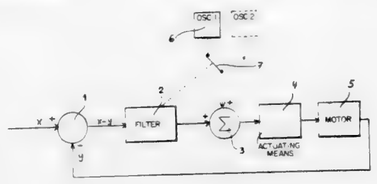
4,409,531

METHOD AND A DEVICE FOR INCREASING THE LINEARITY OF A SERVO SYSTEM

Lennart Bjurström, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Oct. 1, 1980, Ser. No. 192,659
Claims priority, application Sweden, Oct. 2, 1979, 7908149
Int. Cl.[3] F41G *5/06*; G05B *13/00*
U.S. Cl. 318—631 **4 Claims**

1. In a closed loop servo system, wherein a command signal and position signal are compared forming an error signal serving as a control signal reducing said error signal, said system having a bandwidth with an upper frequency limit, an apparatus for increasing the accuracy and response linearity of said servo system comprising:
one or more integrating second order filter networks for filtering said control signal;
a dither frequency generator for producing a dither signal at a frequency substantially the same as said upper frequency limit; and



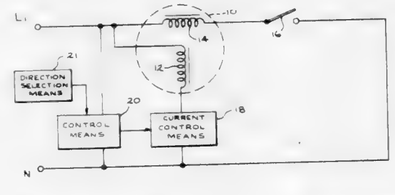
switching means for inserting said second order filter networks in said servo system to filter said control signal and for applying said dither signal to said control signal during small position errors, whereby overall servo system response linearity is improved by said dither signal.

4,409,532

START CONTROL ARRANGEMENT FOR SPLIT PHASE INDUCTION MOTOR

Robert K. Hollenbeck, and Jimmy R. Rickard, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 6, 1981, Ser. No. 318,717
Int. Cl.[3] H02P *3/20, 1/24*
U.S. Cl. 318—749 **18 Claims**



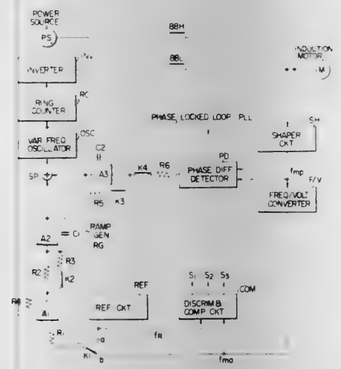
1. A start control arrangement for a reversible alternating current split phase induction motor having a run winding electrically connected in parallel with a start winding adapted for energization by a voltage signal from an external alternating current power supply, said start control arrangement being effective to selectively initiate motor rotation in one direction or the other, said start control arrangement comprising:
selection means for selecting rotation of the motor in one direction or the other;
current control means for connection in series with the start winding of the motor having a conductive state and a non-conductive state and operative when conductive to pass current from the power supply to the start winding and when non-conductive to prevent current from flowing in the start winding; and
control means comprising:
voltage sensing means for detecting zero crossings of the voltage signal from the external supply;
timing means operative to sense the elapsed time from the preceding zero crossing; and
start control means responsive to said timing means and said selection means operative to render said current control means conductive for a first predetermined portion of each half-cycle of the voltage signal when rotation in said one direction is selected, thereby initiating motor rotation in said one direction and to render said current control means conductive for a second predetermined portion of each half-cycle when rotation in said other direction is selected, thereby initiating motor rotation in said other direction.

4,409,533

METHOD OF RESTARTING INDUCTION MOTOR AND APPARATUS FOR CARRYING OUT THE SAME

Takao Kawabata, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 55,192
Claims priority, application Japan, Jun. 30, 1978, 53-80349
Int. Cl.[3] H02P *1/42*
U.S. Cl. 318—807 **5 Claims**



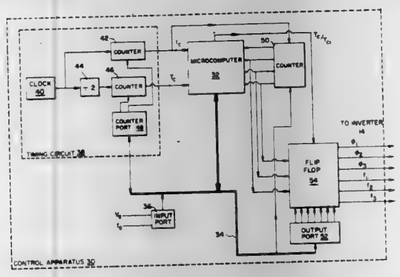
1. A method of restarting an induction motor in the decelerating mode by a variable frequency electric source, comprising the steps of detecting a residual electromotive force across said induction motor, synchronizing the frequency of said variable frequency electric source with the frequency of said residual electromotive force to thereby supply electric power to said induction motor from said variable frequency source while maintaining the frequency of said variable frequency electric source in synchronism with the speed of said induction motor, and then changing said frequency of said variable frequency electric source to a predetermined value to thereby place said induction motor in a predetermined operating state.

4,409,534

MICROCOMPUTER-BASED PULSE WIDTH MODULATED INVERTER FED MACHINE DRIVE SYSTEM

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 138,537, Apr. 9, 1980, abandoned. This application Dec. 7, 1981, Ser. No. 328,164
Int. Cl.[3] H02P *5/40, 7/44, 7/58*
U.S. Cl. 318—811 **5 Claims**



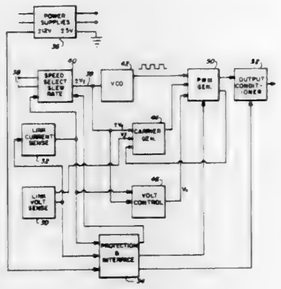
1. For use with a pulse width modulated inverter fed machine drive system comprised of a polyphase alternating current machine excited from a direct current voltage source through an inverter configured of a plurality of pairs of controlled switching devices, each of the controlled switching devices of each pair coupled in series aiding fashion and each of the pairs of controlled switching devices, respectively, coupled across the direct current source and coupled at the junction between switching devices of each pair to a separate one of the phases of the polyphase alternating current machine, an improved control apparatus for regulating the conduction frequency and conduction duration of inverter controlled switching devices to regulate machine speed and torque, comprising:
timing circuit means for generating a first interrupt signal at a frequency varying in accordance with an operator-command frequency and generating a second interrupt signal at a frequency proportional to the frequency of said first interrupt signal:
said timing circuit comprising,
a clock for generating a clock signal at periodic intervals, a counter port for storing a first word proportional in length to the desired duration between successive occurrences of said first interrupt signal and storing a second word proportional in length to the desired duration between successive occurrences of said second interrupt signal; a first counter coupled to said counter port and to said clock, said first counter receiving said first word from said counter port and decrementing said first word from said counter port and decrementing said first word by a fixed amount upon receipt of a clock signal from said clock and when said first word is completely decremented, said first counter generating said first interrupt signal; a logic gate coupled to said clock for generating periodic pulses at a frequency twice the frequency of said clock signals; and a second counter coupled to said counter port and to said logic gate, said second counter receiving said second word from said counter port and decrementing said second word by a fixed amount upon each receipt of a signal from said logic gate, and when said second word is completely decremented, said second counter producing said second interrupt signal;
processor means coupled to said timing circuit means, said processor means being responsive to said timing circuit first and second interrupt signal and during intervals between successive occurrences of said timing circuit first interrupt signal, said processor means producing inverter pulse width modulation signal pulses and inverter half cycle polarity signal pulses to regulate the conduction duration and conduction sequence of inverter switching devices, respectively, said inverter pulse width modulation signal pulses being produced by said processor means by uniform sampling in accordance with said timing circuit means second interrupt signal when said operator-commanded frequency is below a preselected frequency and said inverter pulse width modulation signal pulse being produced by said processor means by synthesis from stored data in accordance with said timing circuit second interrupt signal when said operator-commanded frequency is above said preselected frequency; and
storage means coupled to said processor means and to said inverter for retaining said pulse width modulation signal pulses and said half cycle polarity signal pulses generated by said processing means during each interval between successive occurrences of said timing circuit first interrupt signal and during each successive interval between successive occurrences of said timing circuit first interrupt signal, said storage means releasing pulse width modulation signal pulses and half cycle polarity signal pulses stored therein during each previous interval between successive occurrences of said timing circuit first interrupt signal to said inverter.

4,409,535

GATED ASYNCHRONOUS CARRIER MODULATION

Mark R. Hickman, Westboro, Mass., assignor to Vee Arc Corporation, Westboro, Mass.

Filed Mar. 18, 1982, Ser. No. 359,615
Int. Cl.³ H02P 5/34
U.S. Cl. 318—811 **10 Claims**



1. Motor pulse width modulation control apparatus comprising;

means for establishing a repetitive modulation signal,

means for generating a carrier frequency signal at a frequency greater than the frequency of the modulation signal,

means for gating the carrier frequency signal at a gating rate less than the frequency of the carrier frequency signal so as to provide a gated carrier frequency signal,

and means for modulating the gated carrier frequency signal by the repetitive modulation signal so as to provide a cyclic pulse width modulation drive signal for motor control,

said means for gating the carrier frequency signal comprising means for generating, on an asynchronous basis to the modulation signal, a resetting of the carrier frequency signal whereby the carrier frequency is restarted a number of times every modulation cycle,

said carrier frequency being restarted from a fixed amplitude at each gating.

4,409,536

SUPPORT MEANS FOR PLUG-IN TRANSFORMER/CHARGER

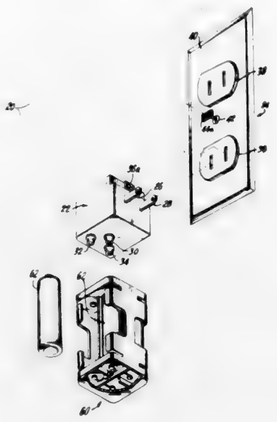
John M. Evjen, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Continuation of Ser. No. 66,190, Aug. 13, 1979, abandoned. This application Sep. 14, 1981, Ser. No. 302,320
Int. Cl.³ H02J 7/00
U.S. Cl. 320—2 **10 Claims**

1. A charging system adapted for use with a conventional outlet source, said system comprising:

(i) a charge current source including a high impedence center tapped transformer, a housing for said transformer, two blades extending from one face of the housing for engagement with the socket outlet source, and fastening means on said face of the housing; and

(ii) anchoring means disposed on said outlet and detachable matable with said fastening means, whereby engagement of said fastening means with said anchoring means when the charge current source is plugged into the outlet source provides auxiliary mechanical supporting for the charge current source and any associated modules, said mechanical support occurring simultaneously with the plugging in of the charge current source into the outlet source.

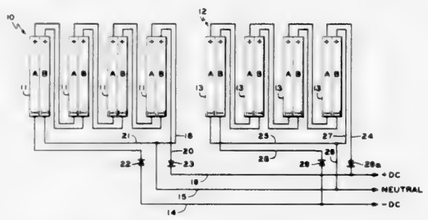


4,409,537

INTERCONNECTION OF PRIMARY CELLS

William A. Harris, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 31, 1982, Ser. No. 363,982
Int. Cl.³ H01M 10/44
U.S. Cl. 320—7 **17 Claims**



1. A method for supplying power from at least one group of primary electric cells, said method comprising the steps of:

connecting said at least one group of primary electric cells to form two series-connected subgroups each containing one-half of the cells;

connecting said at least one group of primary electric cells to a three-conductor electric supply system having positive, negative and neutral conductors such that one of said series-connected subgroups is connected between the negative conductor and the neutral conductor and the other of said serially connected subgroups is connected between the positive conductor and the neutral conductor.

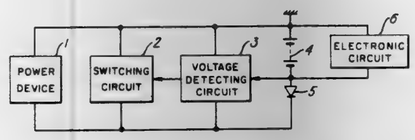
4,409,538

CHARGE CONTROL CIRCUIT

Junichi Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,345
Claims priority, application Japan, Aug. 27, 1980, 55-117885
Int. Cl.³ H01M 10/46
U.S. Cl. 320—11 **2 Claims**

1. A charge control circuit comprising: an excess charge detecting circuit and a charge changeover circuit of a secondary battery operated by an electromotive force of a power device, said excess charge detecting circuit being connected between a first line connected to both a positive terminal of said power device and a positive terminal of said secondary battery and a second line connected to a negative terminal of said power device, said excess charge detecting circuit comprising a first stage having a source of a first P channel MOSFET connected to the first line, a gate thereof connected to a negative terminal of the secondary battery and a drain thereof connected to both a drain and a gate of a first N channel MOS-



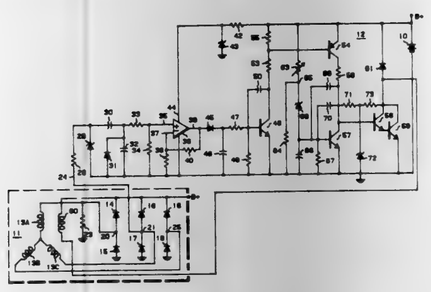
FET connected to the second line, a second stage having a source of a second N channel MOSFET connected to the second line, a gate thereof connected to the drain of the first N channel MOSFET and a drain thereof connected to the first line by way of a resistor, and a third stage having a source of a second P channel MOSFET connected to the first line, a gate thereof connected to the drain of the second N channel MOSFET, a drain thereof connected to a drain of a third N channel MOSFET, a gate of the third N channel MOSFET connected to the drain of the first N channel MOSFET and a source of the third N channel MOSFET connected to the second line.

4,409,539

SELF-EXCITATION FOR AN ALTERNATOR OF THE LOW-CARBON STEEL ROTOR TYPE

Raymond E. Nordbrock, West Chicago, and Kirk A. Sievers, Roselle, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Mar. 12, 1981, Ser. No. 242,864
Int. Cl.³ H02P 9/08
U.S. Cl. 322—28 **6 Claims**



1. A charging system for amplifying AC output voltages induced in at least one stator winding of an alternator by residual magnetism in the alternator rotor and energizing a field winding of the alternator at low alternator rotational speeds to self-energize the charging system by means of the residual magnetism, said charging system comprising:

an alternator having at least one stator winding wound on a core, the alternator further having a field winding wound on a low carbon steel core and in operative proximity to said stator winding to provide an electromagnetic field for said stator winding;

electronic voltage regulator means having at least one input terminal coupled to said stator winding of the alternator, the electronic voltage regulator means comprising an operational amplifier having one of its input terminals coupled to the input terminal of the electronic voltage regulator means, the operational amplifier providing an amplified output AC signal at its output terminal, peak detector means coupled to the output terminal of the operational amplifier to peak detect the magnitude of the amplified AC output signal, and circuit means coupled to the peak detector means and responsive to the output of the peak detector means to develop the output signal of the electronic voltage regulator means, whereby the electronic voltage regulator means is responsive to small AC output voltages induced into the stator winding by residual magnetism during low alternator speeds, such as during start-up, to develop an output signal at an output of the electronic voltage regulator means of sufficient magnitude to fully excite the alternator field winding even when said small AC output voltages are of lower magnitude than that required to forward a silicon semiconductor junction; and

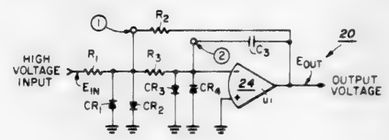
coupling means to couple the output signal of the electronic voltage regulator means to said field winding of the alternator.

4,409,540

ACTIVE VOLTAGE DIVIDER

Thaddeus M. Jones, Mishawaka, Ind., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 28, 1981, Ser. No. 305,862
Int. Cl.³ H03H 1/00
U.S. Cl. 323—369 **10 Claims**



1. In a voltage divider circuit adapted to receive an input voltage and including a high resistance primary resistor providing a voltage drop for effecting a selected low output voltage, overload protection means operably effective on failure of said resistor to restrict increases in said output voltage, said overload protection means comprising differential amplifier means affording integrating operation and diode means effective to prevent excess voltage from being applied to summing junctions of said amplifier means.

4,409,541

METHOD OF AND APPARATUS FOR DETERMINING CONTINUITY OF AN ELECTRICAL CONDUCTOR

Raymond G. Richards, Summerside, Canada, assignor to PPG Industries, Inc., Pittsburgh, Pa.

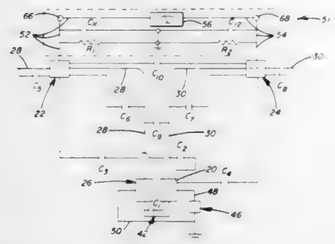
Filed Mar. 19, 1981, Ser. No. 245,473
Int. Cl.³ G01R 31/02, 27/26
U.S. Cl. 324—51 **17 Claims**

1. A method of determining continuity of a conductor, comprising the steps of:

forming with the conductor a capacitor intermediate its ends to provide a transmitting capacitance coupling;

forming with the conductor a capacitor on each side of the transmitting capacitance coupling to provide a first receiving capacitance coupling and a second receiving capacitance coupling; and

determining the potential difference between the first and second receiving capacitance coupling to determine continuity of the conductor at least between the first and second receiving capacitance couplings.



4,409,542

MONITORING SYSTEM FOR AN LC FILTER CIRCUIT IN AN AC POWER NETWORK

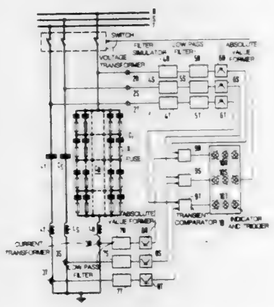
Michael Becker, Uttenreuth; Alfons Fendt, Erlangen; Dusan Povh, Nuremberg; Klaus Renz, Fürth; Gerhard Schuch, Erlangen, and Hermann Waldmann, Weiher, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 26, 1981, Ser. No. 266,279

Claims priority, application Fed. Rep. of Germany, May 27, 1980, 3020107

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 Q **5 Claims**



1. A monitoring system for an LC filter circuit connected to an AC power network, the LC filter circuit having a capacitor battery of the type having a plurality of parallel legs, each leg having a plurality of sectional capacitors connected in series with respective fuses, adjacent ones of the sectional capacitors being coupled to one another, the system further comprising:

electronic simulator means for determining the fundamental frequency component of a simulated filter current; and

transient comparator means for comparing said fundamental frequency component of said simulated filter current with a fundamental frequency component of a measured filter current.

4,409,543

IMPEDANCE METER

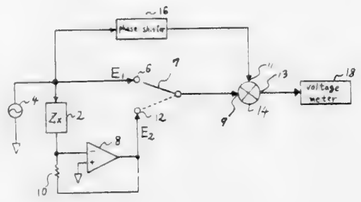
Noriyuki Sugihara, Hachioojishi, Japan, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 5, 1981, Ser. No. 240,719

Claims priority, application Japan, Mar. 11, 1980, 55-30740

Int. Cl.³ G01R *27/00, 25/00;* **H03D** *13/00*

U.S. Cl. 324—57 R **4 Claims**



1. An apparatus for measuring an impedance or a dissipation factor of a device, the apparatus comprising:

a reference oscillator, having an output coupled to the device, for applying a first voltage signal across the device to yield a current;

a converter, coupled at an input to the device, for converting the current to a second voltage signal and for presenting said second voltage signal at an output;

a phase shifter, coupled at an input to the reference oscillator, for selectively shifting the phase of the first voltage signal by either 0 or 90 degrees in response to a control signal and for presenting the 0 degree shifted first voltage signal or the 90 degree shifted first voltage signal at an output;

switch means, having a first input coupled to the output of the reference oscillator and a second input coupled to the output of the converter, for selecting one of a first and a second position in response to a control signal, whereby the first voltage signal is presented at an output when the first position is selected and the second voltage signal is presented at the output when the second position is selected;

synchronous rectifying means, having a first input coupled to the phase shifter output and a second input coupled to the switch means output, for presenting at an output a rectified signal such that said rectified signal represents a phase difference between the shifted first voltage signal and the first voltage signal when the first position is selected and the rectified signal represents a phase difference between the shifted first voltage signal and the second voltage signal when the second position is selected;

control means, coupled to the phase shifter and to the switch means, for presenting control signals to the phase shifter and to the switch means;

detecting means, coupled to the output of the synchronous rectifying means, for detecting the rectified signal and for measuring a phase difference A when the first switch position and the 0 degree shifted first voltage signal are selected, a phase difference B when the first switch position and the 90 degree shifted first voltage signal are selected, a phase difference C when the second switch and the 0 degree shifted first voltage signal are selected, and a phase difference D when the second switch position and the 90 degree shifted first voltage signal are selected; and,

calculating means, coupled to the detecting means, for calculating B/A, D/C, and D/A and for determining the device impedance or the dissipation factor therefrom.

4,409,544

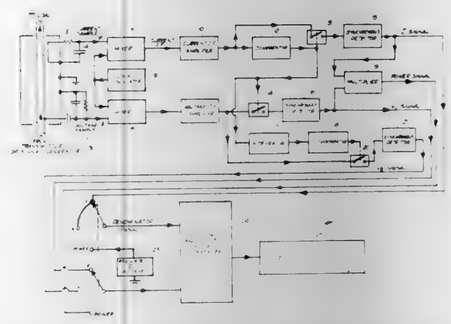
INSTRUMENTS FOR MEASUREMENT OF CARRIER POWER AND ANTENNA IMPEDANCE IN AM BROADCASTING

Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio 45701

Filed Jul. 6, 1981, Ser. No. 256,782

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—57 R **2 Claims**



1. In an instrument for measuring the resistance and reactance of the antenna load on an AM broadcasting transmitter, the combination of;

heterodyning, long time-constant detection means for obtaining voltages I, V_i, and V_q that are proportional respectively to the magnitudes of carrier current, the component of carrier voltage that is in-phase with carrier current, and the component of carrier voltage that is in phase quadrature with carrier current, said carrier voltages and currents being those that exist in a transmission line between an AM broadcasting transmitter and its antenna load,

a dividing analog to digital converter having numerator and denominator inputs, with said voltage I impressed at all times on the denominator input, and said voltages V_i and V_q impressed selectively by means of a switch on the numerator input, so that the analog to digital converter is a digital signal proportional respectively to resistance and reactance of the antenna load.

4,409,545

ELECTRONIC MEASURING DEVICE FOR A POLYPHASE NETWORK, IN PARTICULAR FOR THE MEASUREMENT OF POWER

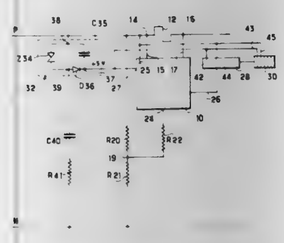
Alain Bazin, Villejuif, France, assignor to Enertec, Montrouge, France

Filed Feb. 11, 1981, Ser. No. 233,426

Claims priority, application France, Feb. 19, 1980, 80 03565

Int. Cl.³ G01R *19/00, 1/20*

U.S. Cl. 324—107 **13 Claims**



1. In a device for measuring a quantity in a polyphase alternating current electrical distribution network which includes at least one first and one second phase conductor and one reference conductor, the device being of the type comprising a first and a second electronic measuring device for producing a signal representative of said quantity measured respectively on the first and the second phase conductor, and a summing device for providing the sum of the signal so produced, the device further including means for powering the electronic measuring devices and the summing device comprising:

a first supply circuit connected to the first phase conductor for supplying a continuous supply voltage to the first measuring device, a supply device connected to the second phase conductor for supplying a continuous supply voltage to the second measuring device and a continuous supply voltage to the summing device, and a high-impedance tie circuit having a first end connected to the first supply circuit and a second end connected to the supply device, wherein the summing device is supplied with operating voltage so long as a potential difference exists between one of the phase conductors and the reference conductor.

4,409,546

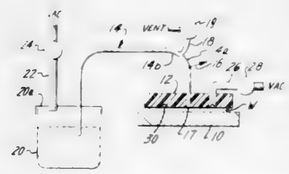
MERCURY PROBE AND METHOD

Carl Shulman, Edgewater, N.J., assignor to MSI Electronics Inc., Woodside, N.Y.

Filed Jan. 19, 1981, Ser. No. 226,357

Int. Cl.³ G01R *1/06, 31/22;* **H01R** *3/04*

U.S. Cl. 324—158 P **17 Claims**



1. The method of operating mercury probe apparatus of the type having at least one contact aperture in an aperture plate for engagement with a test wafer, a mercury reservoir and passage means between said aperture and the reservoir, the passage means having an opening into the reservoir below the level of the mercury therein, the contact aperture being above the level of the mercury in the reservoir so that the mercury is normally retracted from the contact aperture by gravity, said method including the steps of applying a pressure difference between the contact aperture and the upper surface of the mercury in the reservoir for thereby shifting mercury from the reservoir to the aperture to form at least one mercury-probe contact, electrically testing the wafer, and terminating said pressure difference for thereby allowing mercury in the passage means to descend from the contact aperture, said method including the further step of adjusting the level of the mercury in the reservoir so that said opening of the passage means into the reservoir is not deeper than about the level at which the buoyant force of the mercury at said opening tending to cause mercury to enter the passage means is balanced by the surface tension of the mercury across the opening whereby, when the pressure difference is terminated, mercury is expelled from the passage means into the reservoir for retention therein with any dross that may have entered said aperture.

4,409,547

MERCURY-PROBE APPARATUS

Albert Lederman, New York, N.Y., assignor to MSI Electronics Inc., Woodside, N.Y.

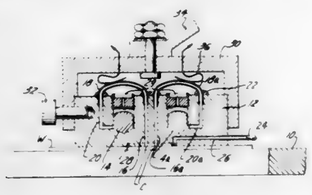
Filed Mar. 17, 1981, Ser. No. 244,745

Int. Cl.³ G01R *1/06, 31/22;* **H01R** *3/04*

U.S. Cl. 324—158 P **13 Claims**

1. Apparatus for testing semiconductor wafers, including a support for a test wafer and a mercury probe movable into test position overlying the test wafer, said mercury probe compris-

ing a reservoir of mercury and means defining a mercury passage having one end that opens into a submerged portion of said reservoir, the opposite end of the passage being formed in insulation and constituting a contact aperture, means for establishing a pressure difference between the reservoir and the contact aperture to fill the passage with mercury, said contact aperture being below the upper surface of the mercury in the



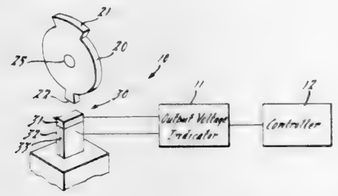
reservoir by a vertial distance, said vertical distance and the cross-section of the passage being so limited that, when said pressure difference is eliminated, surface tension of the mercury causes the mercury in the passage to be emptied automatically into the reservoir, said passage including means for inhibiting escape of mercury from the reservoir via said passage in case the probe is jolted while the contact aperture is unobstructed.

4,409,548

PIEZOELECTRIC APPARATUS FOR GENERATING ELECTRICALLY DISTINGUISHABLE BIPOLAR SIGNALS

Louis R. Focht, Farmington Hills, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jul. 6, 1981, Ser. No. 280,744
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—168 **11 Claims**



1. A pulse generating means for providing electrically distinguishable signals, said signals occurring as a function of position of a relatively moveable element, said pulse generating means comprising:

a wheel means coupled to said relatively movable element for generating changes in magnetic flux;

a pickup receiving means located in energy transfer coupling with respect to said wheel means for providing electrically distinguishable signals in response to passage of said wheel means past said pickup means;

said wheel means including a tooth means extending along a portion of the circumference of said wheel means and projecting toward said pickup means for generating changes in magnetic flux at said pickup as said wheel rotates;

said pickup receiving means including a permanent magnet, coupled to a piezoelectric ceramic transducer capable of electrically generating a piezoelectric signal of two polarities, said magnet being sufficiently close to a path of rotation for said teeth means so that movement of said teeth means past said pickup receiving means causes a change of magnetic flux and applies a force to said magnet which applies a stress to the ceramic transducer thereby creating a piezoelectric voltage;

said wheel means including at least one tooth positioned around the circumference of said wheel and having a leading edge and a trailing edge as said wheel rotates so that said leading edge produces a signal of a first polarity and said trailing edge produces a signal of a second polarity, opposite from said first polarity, with an intermediate zero crossing between said signal of said first polarity and said signal of said second polarity; and

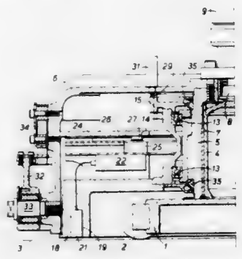
said pickup receiving means including a rigid base for mounting said piezoelectric ceramic transducer thereby providing a cantilevered support for said magnet so that said piezoelectric ceramic transducer can bend in two different directions from an undeflected reference position and produce said first polarity signal by bending in a first direction and said second polarity signal by bending in a second direction.

4,409,549

CARRIAGE MOUNTED APPARATUS FOR DETECTING SURFACE DEFECTS IN FLAT SURFACED METALLIC OBJECTS

Henry C. Garner, Swinton; Jack Broadbent, Rotherham; David H. Savidge, Rotherham, and Eric Wadsworth, Dinnington, all of England, assignors to British Steel Corporation, London, England

Filed Jan. 21, 1981, Ser. No. 226,638
Claims priority, application United Kingdom, Jan. 29, 1980, 8002887
Int. Cl.³ G01N *27/90*; G01R *33/12*
U.S. Cl. 324—262 **2 Claims**



1. Apparatus for inspecting a flat surface of an elongate metallic object which comprises:

(a) a carriage operable to traverse the object surface to be inspected;

(b) a rotor rotatably mounted on the carriage and coupled to a flexible drive such that it rotates about an axis perpendicular to the object surface;

(c) a scanning disc attached to the rotor so as to rotate about the periphery of the carriage about an axis perpendicular to the object surface;

(d) high frequency energized eddy-current probes located within recesses in the periphery of the scanning disc so that the probes scan the object surface at locations outboard of the carriage;

(e) a housing for the scanning disc supported on the carriage; and,

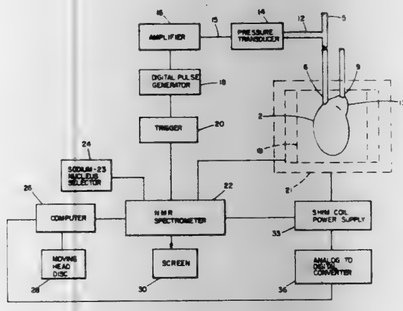
(f) a gimbal device positioned about the circumference of the housing and operable in concert with the housing to position the scanning disc vertically above and substantially parallel to the object surface to be inspected.

4,409,550

NMR SODIUM IMAGES

Eric T. Fossel, West Newton, and Jean L. Delayre, Quincy, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed May 15, 1981, Ser. No. 264,100
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—300 **6 Claims**



1. Apparatus for producing a sodium NMR image of sodium-containing biological tissue having a physical characteristic capable of fluctuation, said apparatus comprising

an NMR pulse spectrometer capable of providing a plurality of observation pulses and changing magnetic field gradients for producing an image,

sodium-23 nucleus selector means connected to said spectrometer,

sensing means for sensing said physical characteristic and providing an output signal, and

triggering means responsive to said sensing means output signal and connected to said spectrometer for triggering said spectrometer to produce said observation pulses at a selected point in the course of said fluctuation of said physical characteristic of said tissue.

4,409,551

TELLURIC SURVEY ELECTRODE

Lonnie J. Norton, Cedar Hill, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,897
Int. Cl.³ G01V *3/00*
U.S. Cl. 324—349 **5 Claims**



1. A telluric survey electrode for temporary ground insertion comprising:

elongated-housing constructed of an electrically conductive metal;

insulating means within said housing for fortifying said housing;

connector means soldered to one end of said elongated housing for removal of said survey electrode from the ground and for providing an electrical path to and from said electrode; and

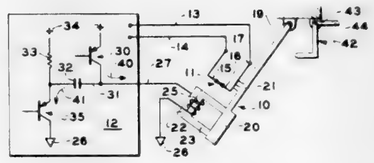
sealing means at each end of said housing having at least one end soldered for providing a generally smooth airtight barrier between said connector means and outside ambiance.

4,409,552

CYCLIC MEANS WITH MAGNETIC LATCH FOR CHECKING SWITCH INTEGRITY

Arlon D. Kompelien, Richfield, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 16, 1981, Ser. No. 254,813
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—415 **9 Claims**



1. A means for checking the electrical integrity of electric switch means, including: switch means capable of being mechanically operated by movement of a biased mechanical mass; magnetic means including electromagnetic means and permanent magnetic means with said magnetic means having two relatively moveable parts with said relatively moveable parts being attracted to each other against said biased mechanical mass by said permanent magnetic means when said electromagnetic means is deenergized; a first of said parts being moved with said biased mechanical mass and a second of said parts being fixed in space; said permanent magnetic means holding said two moveable parts engaged to establish a first state for said switch means, and said electromagnetic means being energized to neutralize said permanent magnetic means to allow said biased mechanical means to disengage said two moveable parts to establish a second state for said switch means; reset means capable of manually moving said baised mechanical mass from said second state to said first state in the event that said two moveable parts fail to become engaged; electric circuit means connected to said electromagnetic means and said switch means to controllably energize said electromagnetic means to allow said moveable parts to move from said first state to said second state; said biased mechanical mass tending to return said moveable parts toward said first state with said electric circuit means being operated to reverse the energization of said electromagnetic means at a proper time to cause said electromagnetic means to attract and hold said moveable parts in said first state; and said electric circuit means verifying the operation of said switch means when said moveable parts change between said states.

4,409,553

PARAFFIN MONITOR

Carlton M. Slough, Spring, and Edwin L. Colling, Jr., Sugarland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

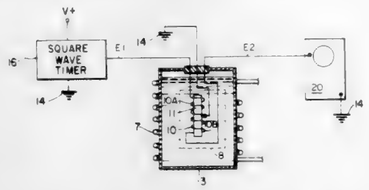
Continuation of Ser. No. 194,696, Oct. 6, 1980, abandoned. This application Apr. 23, 1982, Ser. No. 371,359
Int. Cl.³ G01N *27/00, 33/28*
U.S. Cl. 324—445 **6 Claims**

1. A paraffin monitor which comprises:

pulse means connected to ground, the pulse means being means for periodically providing electrical pulses to a signal means;

signal means connected to the pulse means and to ground and immersed in a medium having paraffin, the signal

means being means for providing an oscillating decaying signal in response to each pulse from the pulse means, with the frequency and decay time of the oscillating decaying signal decreasing in accordance with the build-up of paraffin on the signal means; and



indicating means connected to the signal means and to ground, the indicating means being means for providing an indication of the paraffin build-up in accordance with the signal from the signal means.

4,409,554

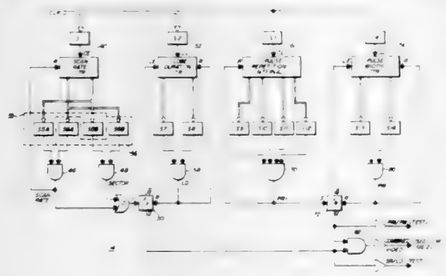
ELECTRONIC SIGNAL SIMULATION DEVICE

Joe B. Lentz, 317 Silver Fox La., Goose Creek, S.C. 29445

Filed Feb. 25, 1981, Ser. No. 237,834

Int. Cl.³ H03K *3/017, 7/06*

U.S. Cl. 328—14 **13 Claims**



1. An electronic signal simulator device comprising:

a master clock having a stable oscillator and outputting a plurality of discrete frequencies derived from said stable oscillator;

a modulation generator having at least one signal output channel, said modulation generator having as an input said discrete frequencies which are used to generate an output signal with a predetermined signal characteristic;

said signal output channel having a plurality of clock switches, each of said clock switches selecting one of said discrete frequencies, a plurality of counters, each of said counters being connected to one of said clock switches to count the frequency pulses of said discrete frequency selected, and a plurality of parameter switches connected to the outputs of said counters to select said predetermined signal characteristic for said output signal; and

means for supplying electrical power to said master clock and said modulation generator.

4,409,555

QUADRATURE STEPWAVE FREQUENCY CONVERTER

Mart V. Min, ulitsa Ladva, 26; Toomas E. Parve, bulvar Ryannaku, 3, kv. 7; Khyarmo E. Khyarm, ulitsa Silla, 2, kv. 2, and Toom A. Pungas, Sypruse pst, 219, kv. 3, all of Tallin, U.S.S.R.

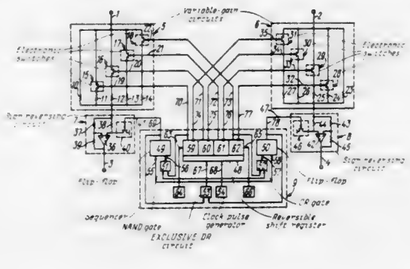
PCT No. PCT/SU80/00121, § 371 Date Aug. 4, 1981, § 102(e) Date Aug. 4, 1981, PCT Pub. No. WO81/01762, PCT Pub. Date Jun. 25, 1981

PCT Filed Jul. 31, 1981, Ser. No. 293,632

Claims priority, application U.S.S.R., Dec. 11, 1979, 2845551

Int. Cl.³ H03B *19/00;* **H03K** *5/00*

U.S. Cl. 328—14 **5 Claims**



1. A quadrature stepwave frequence converter comprising a two-output device having a plurality of control inputs for changing the gains for the signals transmitted from its inputs to its outputs upon a change in the values of the binary signals at the control inputs, and a sequencer having its outputs connected to the control inputs of the two-output device for applying binary signals to said control inputs so as to vary the gain for the signal transmitted from the input of the two-output device to its one output according to a step variable function approximating a sine wave and to vary the gain for the signal transmitted from the input of the device to its other output according to a step variable function approximating a cosine wave, wherein the improvement comprises said two-output device comprising first and second variable-gain circuits, each having N control inputs forming a separate group of the control inputs of the device and respectively corresponding to the control inputs of the other variable-gain circuit for changing the absolute value of the gain for the signal transmitted from a first input of the device to a first output upon a change in the value of the binary signal applied to a control input of said first variable-gain circuit and the absolute value of the gain for the signal transmitted from a second input of the device to a second output upon a change in the value of the binary signal applied to a control input of the second variable-gain circuit so that a change in the value of the binary signal applied to a control input of a variable-gain circuit produces a change in the absolute value of the corresponding gain by a predetermined value corresponding to this control input and in a direction determined by the direction of the change in the binary signal and so that changes in the binary signals applied to the control inputs of one variable-gain circuit produce changes in the corresponding gain which are proportional to the changes in the other gain produced by changes in the binary signals at the corresponding control inputs of the other circuit; and first and second sign reversing circuits, said first sign reversing circuit being connected to said first variable-gain circuit and the second sign reversing circuit being connected to the second variable-gain circuit, each of the sign reversing circuits having a control input forming another control input of the two-output device for reversing upon a change in the value of the binary signal at the control input of the sign reversing circuit the sign of the gain, the absolute value of which is varied by means of the variable-gain circuit connected to this sign reversing circuit; wherein the sequencer has first and second sign control outputs, said first sign control output being connected to the control input of said first sign reversing circuit and the second sign control output being connected to the control input of the second sign reversing circuit for applying to said control inputs binary signals each changing its value at regular intervals and which are shifted in phase with respect to each other by 90°, and a plurality of gain value control outputs connected to the control inputs of the variable-gain circuits for changing the value of the binary signal applied to each of the control inputs of said first variable-gain circuit first in a direction providing an increase in the gain absolute value and then in a direction providing a decrease in the gain absolute value during each time period between two successive changes in the binary signal at the control input of the first sign reversing circuit connected to the first variable-gain circuit so that a change in the binary signal at each next-in-order control input of said first variable-gain circuit in a direction providing an increase in the gain absolute value occurs after a change in a similar direction in the binary signal at the preceding-in-order control input of said first variable-gain circuit (5), a change in the binary signal in a direction providing a decrease in the gain absolute value occurs before a change in a similar direction in the binary signal at the preceding-in-order control input of said first variable gain circuit, and for changing the binary signals applied to the control inputs of the second variable gain circuit so that the instant of change in the value of the binary signal at that control input of the second variable-gain circuit which corresponds to the "k"th-in-order control input of the first variable gain circuit in a direction providing a change in the gain absolute value in one sense coincides with the instant of change in the value of the binary signal at the (N−k+1)th-in-order control input of the first variable gain circuit in a direction providing a change in the gain absolute value in the opposite sense.

4,409,556

AMPLIFIER ARRANGEMENT WITH VERY LOW DISTORTION

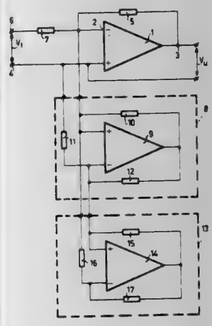
Theodorus J. Van Kessel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 5, 1981, Ser. No. 270,771

Claims priority, application Netherlands, Jul. 7, 1980, 8003905

Int. Cl.³ H03F *1/34, 1/26, 3/45*

U.S. Cl. 330—75 **9 Claims**



1. An amplifier arrangement comprisng: an amplifier having an inverting input, a non-inverting input and an output, a first impedance coupled between the output and the inverting input of the amplifier and a second impedance coupled between an input terminal of the amplifier arrangement and the inverting input of the amplifier, an impedance network having a first and a second terminal, means coupling said network between the inverting input and the non-inverting input of the amplifier, the value of the impedance of said impedance network substantially corresponding to the impedance value of a parallel connection of the first impedance and the second impedance, but of opposite sign.

4,409,557

BANDPASS FILTER WITH AN ACTIVE ELEMENT

Franco N. Sechi, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,724

Int. Cl.³ H03F *3/191*

U.S. Cl. 330—277 **19 Claims**



1. A bandpass filter for passing radio frequency signals, including frequency F, over a given range of frequencies comprising in combination:

a circuit reference point;

an output terminal;

a negative resistance means including first and second amplifying means connected in cascode between said reference point and said output terminal with said first amplifying means coupled between said second amplifying means and said reference point and responsive at an input terminal thereof to said radio frequency signals which include said frequency F for amplifying the same, means for feeding back in phase a sufficient portion of the signal appearing at said output terminal to the junction of said first and second amplifying means for producing a negative resistance at said output terminal relative to said circuit reference point; and

an inductor and a capacitor coupled to said output terminal to form a resonant circuit having a center frequency of said F and having undesired resistance which is offset by said negative resistance.

4,409,558

GAIN COMPENSATED TRANSISTOR AMPLIFIER

Johannus P. H. Knijnenburg, and Bernardus Verhoeven, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,568

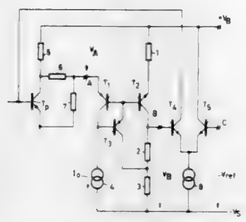
Claims priority, application Netherlands, Feb. 25, 1980, 8001116

Int. Cl.³ H03F *3/04*

U.S. Cl. 330—288 **6 Claims**

1. Am amplifier arrangement comprising an input terminal and an output terminal, a first and a second transistor of the same conductivity type whose base electrodes are interconnected, means connecting the emitter electrode of the first transistor to the input terminal, means connecting the emitter of the second transistor to a first common circuit point via a first resistor, means connecting the collector of the first transistor to a quiescent-current source, means connecting the collector of the second transistor to the output terminal and, via a second resistor, to a power-supply terminal, a base drive circuit having an input connected to the collector electrode of the first transistor, a voltage follower output connected to the base electrodes of the first and second transistors for driving said base electrodes so that the current in the first transistor is equal to the quiescent current from said quiescent-current source,

and a base-current diverting output to which at least a part of the base currents of the first and second transistors flow, and means connecting said base-current diverting output to a tapping on the second resistor located so that the voltage across



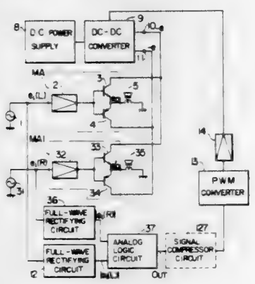
the second resistor depends on the current gain factors of the first and second transistors to a minimal extent when the voltage at the input terminal has a value that corresponds to the voltage across the first resistor.

4,409,559

SUPPLY VOLTAGE CONTROLLED STEREOPHONIC AMPLIFIER SYSTEM

Nobutaka Amada; Harushige Nakagaki, and Shigeki Inoue, all of Toyokawa, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,736
Claims priority, application Japan, Mar. 26, 1980, 55-37538; Dec. 4, 1980, 55-170268
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—295 **8 Claims**



1. A power supply controlled stereophonic amplifier system comprising:

two main amplifier circuits respectively corresponding to left and right channels;

a switching regulator having a switching element for supplying a voltage to the main amplifier circuits;

input signal level detecting means for detecting input signals supplied to said main amplifier circuits to produce a detected signal having a magnitude equal to the larger of the absolute values of the input signals;

means for controlling said switching element in response to a compressed output signal produced from the detected signal, the supplied voltage of said main amplifier circuits varying as a function of said input signals;

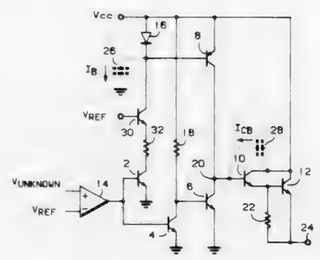
said input signal level detecting means including a signal compressor means which is responsive to the detected signal for producing the compressed output signal which is supplied to said means for controlling said switching element whereby the voltage supplied to said main amplifier circuits is controlled.

4,409,560

OUTPUT TRANSIENT SUPPRESSION CIRCUIT

William F. Davis, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1980, Ser. No. 220,612
Int. Cl.³ H03F *3/04*; H03K *5/22*
U.S. Cl. 330—296 **8 Claims**



1. An output circuit powered by a source of supply voltage and having an output node, comprising:

first means for receiving an input signal capable of assuming first and second states;

second means coupled to said first means and to said output node for generating a first voltage at said output node when said input signal is in said first state and for generating a second voltage at said output node when said input signal is in said second state, said second means including a current source coupled to said first means and to said output node for supplying current to said output node when said input signal is in said second state, said current source being turned off when said input signal is in said first state; and

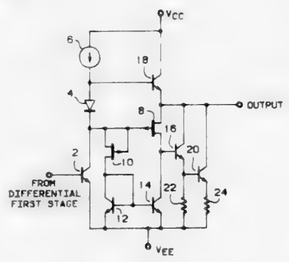
third means coupled to said second means and said output node for clamping said output node to said first voltage when said source of supply voltage is turned on, said third means comprising: current sinking means coupled to said output node for diverting current from said output node; and switching means coupled to said current sinking means and to said source of supply voltage for turning said current sinking means off when said input signal is in said second state.

4,409,561

OPERATIONAL AMPLIFIER OUTPUT STAGE DRIVEN BY A SINGLE ENDED GAIN STAGE

Stuart B. Shacter, Mesa, Ariz., assignor to Motorali, Inc., Schaumburg, Ill.

Filed Apr. 13, 1981, Ser. No. 253,980
Int. Cl.³ H03F *3/16, 3/26*
U.S. Cl. 330—300 **5 Claims**



1. In an operational amplifier of the type which includes a differential first state, an output circuit having an intput and an output, comprising:

a voltage gain transistor having a base electrode coupled to the output of said differential first stage, an emitter adapted to be coupled to a first source of supply voltage, and having a collector;

a current source coupled to the collector of said voltage gain transistor and adapted to be coupled to a second source of supply voltage;

first means coupled to said collector of said voltage gain transistor and to said output and responsive to current flowing from said current source for establishing a quiescent voltage at said output, said first means including:

diode means coupled between said current source and the collector of said voltage gain transistor;

a first junction field effect transistor having gate and source electrodes coupled to the collector of said voltage gain transistor and having a drain electrode;

a second junction field effect transistor having a gate electrode coupled to the collector of said voltage gain transistor, a source electrode coupled to said output and a drain electrode; and

current mirror means coupled between the drain electrode of said first junction field effect transistor and a drain electrode of said second junction field effect transistor;

voltage pull-up means coupled between said current source and said output for producing a first output voltage at said output when a first input voltage appears on said base electrode of said voltage gain transistor; and

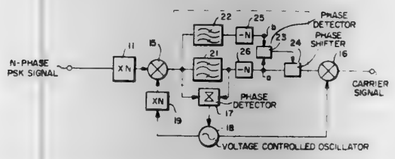
voltage pull-down means coupled to said output and to said first means for producing a second output voltage at said output when a second input voltage is applied to the base electrode of said voltage gain transistor.

4,409,562

PHASE CORRECTION CIRCUIT EMPLOYING BANDPASS FILTERS

Hiroshi Kurihara, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation-in-part of Ser. No. 202,444, Aug. 6, 1980, abandoned. This application Jun. 3, 1981, Ser. No. 269,860
Claims priority, application Japan, Aug. 12, 1978, 53-152342
Int. Cl.³ H03D *3/18*; H03L *7/00*
U.S. Cl. 331—1 A **12 Claims**



1. A phase correction circuit, comprising:

first means, having an input point and having first and second output points with different equivalent noise bandwidths, for receiving a signal to be filtered at said input point and for generating therefrom bandpass-filtered signals at said first and second output points;

phase detector means for detecting the phase difference between signals at said first and second output points; and

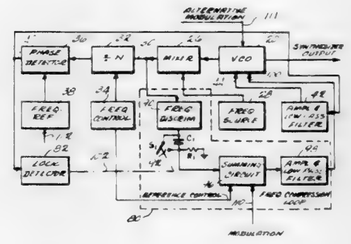
phase shifter means connected to the output of said phase detector means and the output point having the larger equivalent noise bandwidth for changing the phase of the signal at the output point having the larger equivalent noise bandwidth when a phase difference is detected.

4,409,563

PHASE LOCKED LOOP FREQUENCY SYNTHESIZER WITH FREQUENCY COMPRESSION LOOP

Johannes J. Vandegraaf, Lynchburg, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Feb. 26, 1981, Ser. No. 238,655
Int. Cl.³ H03C *3/00*; H03L *7/22*
U.S. Cl. 331—11 **17 Claims**



13. A phase locked loop synthesizer, comprising:

phase locked loop (PLL) means, having a first characteristic loop bandwidth, for generating a synthesized signal, said PLL means including a signal controlled oscillator (SCO) having first and second control inputs for controlling the frequency of said SCO, said first control input receiving a signal from said PLL; and

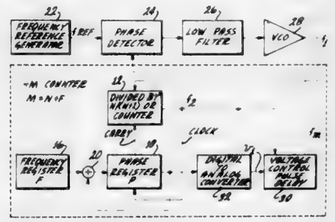
subsidiary frequency compression loop (FCL) means having a second characteristic bandwidth wider than said first characteristic bandwidth, said FCL means having an output coupled to said second control input of said SCO whereby said SCO is subject to frequency control by both said PLL means and said FCL means.

4,409,564

PULSE DELAY COMPENSATION FOR FREQUENCY SYNTHESIZER

Kwok S. Lo, San Diego, Calif., assignor to Wavetek, San Diego, Calif.

Filed Mar. 20, 1981, Ser. No. 245,996
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—16 **16 Claims**



11. A pulse delay compensator for use with a divide counter dividing a frequency signal by a first positive integer or a second positive integer to produce a divided frequency signal having a division ratio equivalent to a number including an integer and a fixed fractional number and with the first and second positive integers a number of integers apart, including,

means for controlling the divide counter to divide the frequency signal by the first or second positive integer,

the controlling means including means for repetitively summing the fixed fractional number to produce a summation with each divide by the dividing means and with the control of the divide counter in accordance with each

overflow in excess of a predetermined summation value produced by the repetitive summing, and

means coupled to the divide counter and to the repetitive summing means for producing pulse delay compensation for the divided frequency signal in accordance with the repetitive summing to equalize the pulse period between adjacent pulses in the divided frequency signal.

4,409,565

CIRCUIT ARRANGEMENT FOR PRODUCING A LOW FREQUENCY ALTERNATING CURRENT

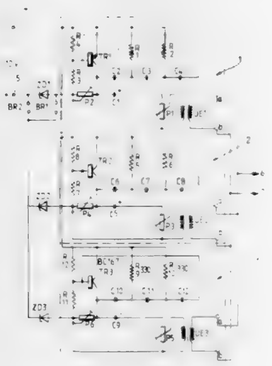
Erich Scherer, Wiesenstrasse 18, D-6603 Sulzbach, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,931

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007717

Int. Cl.³ H03B *21/01;* **A61N** *1/36*

U.S. Cl. 331—40 **11 Claims**



1. An apparatus including a circuit arrangement for producing a low frequency alternating output current having a frequency within the range of 0 to 100 Hz comprising at least three sine wave oscillation generators (**1**, **2**, **3**) each producing a basic oscillation having a fundamental frequency of about 4000 Hz, direct current power supply means operatively connected to said sine wave oscillation generators for supplying d.c. power to said generators, common generator output terminals (**6**, **7**) operatively connected in parallel to all three generators for providing said output current in the form of low frequency beats, each generator comprising a plurality of oscillation circuits (R_1, C_2; R_2k C_3) for producing different harmonic modulating frequency signals for modulating said basic oscillation, a regenerative feedback circuit (C_4, C_8, C_{12}) operatively connecting its respective oscillation circuits to the input of its oscillation generator for said modulating of the basic oscillation, each generator further comprising an input circuit including an input potentiometer (P_2, P_4, P_6) operatively connected to the input of the respective generator for varying said modulating frequency signals by varying the operating point of its respective generator, output means (**49**, **50**), and low frequency amplifier means (**44**) operatively connected between said common generator output terminals and said output means, whereby said output means are supplied with said low frequency output current having the frequency of said beats.

4,409,566

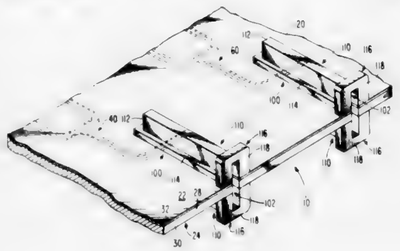
COAXIAL LINE TO WAVEGUIDE COUPLER

Willard T. Patton, Moorestown, and Robert J. Mason, Medford, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 21, 1981, Ser. No. 313,453

Int. Cl.³ H01P *5/103*

U.S. Cl. 333—26 **8 Claims**



1. A coaxial transmission line to waveguide coupling structure for operation over a frequency range, said structure comprising:

a base plate having first and second major surfaces and an edge surface, said base plate having an elongated transmission line cavity therein;

an inner conductor disposed in said transmission line cavity and spaced from said base plate to form a coaxial transmission line with said base plate forming the outer conductor of said coaxial line, said coaxial transmission line terminated at one end;

said base plate having a tapered slot extending completely therethrough, said slot intersecting and extending beyond said coaxial transmission line; and

first and second waveguide half-pieces, said first and second waveguide half-pieces contacting and extending from said first and second major surfaces, respectively, of said base plate over the region of said slot to form a waveguide having ridge loading provided by said base plate, said waveguide terminated at one end, said wavelength half-pieces extending the length of said slot whereby said waveguide and said coaxial line intersect and cross.

4,409,567

SURFACE ACOUSTIC WAVE DEVICE

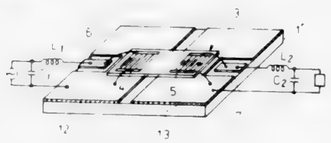
Kentaro Setsune, Sakai, and Toshihide Tanaka, Ikoma, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 24, 1980, Ser. No. 220,254

Claims priority, application Japan, Dec. 28, 1979, 54-171166

Int. Cl.³ H03H *9/145, 9/42, 9/64*

U.S. Cl. 333—151 **4 Claims**



1. A surface acoustic wave device comprising:

(a) an SAW (surface acoustic wave) element having an SAW propagating substrate,

an input piezoelectric transducer having a pair of comb-shaped electrodes which are coupled with each other and formed on said SAW propagating substrate and for generating an SAW on said SAW propagating substrate responding to an input electric signal,

an output piezoelectric transducer having another pair of another comb-shaped electrodes which are coupled with each other and formed on said SAW propagating substrate and for generating an output electric signal responding to said SAW on said SAW propagating substrate,

(b) a printed circuit having an insulation substrate,

wiring conductors formed on a surface of said insulation substrate as a signal input electrode and as a signal output electrode, and at least one of said wiring conductors including one among an inductor and a capacitor,

an input side grounding conductor formed on said surface and an output side grounding conductor formed on said surface, said input side grounding conductor and said output side grounding conductor being isolated from each other by an isolation gap inbetween,

(c) fixing means for fixing said SAW element on said printed circuit,

(d) connecting means for connecting said comb-shaped electrodes of said input piezoelectric transducer to said signal input electrode and to said input side grounding conductor, and

(e) another connecting means for connecting said another comb-shaped electrodes of said output piezoelectric transducer to said signal output electrode and to said output side grounding conductor.

4,409,568

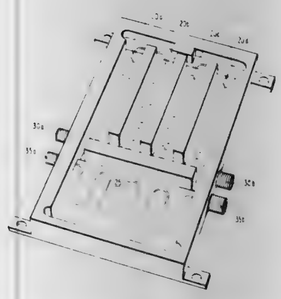
TEMPERATURE COMPENSATED TIME DELAY ELEMENT FOR A DIFFERENTIALLY COHERENT DIGITAL RECEIVER

William H. Childs, Gaithersburg, and Peter A. Carlton, Clarksburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Jan. 9, 1981, Ser. No. 223,645

Int. Cl.³ H01P *9/00;* **H03D** *3/02*

U.S. Cl. 333—156 **15 Claims**



1. A signal delay circuit having first and second parallel paths providing signal delays t_D and t_U respectively, said circuit having a preselected net delay t_R, means in said second path for producing variations in delay with temperature to offset the changes in delay with temperature of the first path, the first path having a temperature coefficient α_D and the second path having temperature coefficient α_U of the same sign as α_D, wherein $t_R = t_D - t_U$.

4,409,569

FILTER CIRCUITS HAVING TRANSFORMERS AS FILTER ELEMENTS

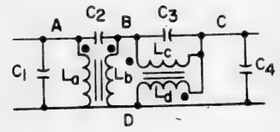
Jerome Potash, Flemington, N.J., assignor to OPT Industries, Inc., Phillipsburg, N.J.

Filed Nov. 2, 1981, Ser. No. 317,438

Int. Cl.³ H03H *7/09, 7/075*

U.S. Cl. 333—177 **7 Claims**

1. An improved filter circuit comprising at least two transformers and having a frequency characteristic corresponding to that of a given filter circuit including at least four individual inductors, comprising a pair of transformers each having a T or pi network equivalent circuit consisting of three inductance values, wherein two inductance values correspond to those of two of said individual inductors, the third inductance value of one of said equivalent circuits being positive and the third inductance value of the other end of said equivalent circuits being negative and equal to the third inductance value of the first-mentioned of said equivalent circuits, said transformers being interconnected so that said equivalent circuit third inductance values are in series or in parallel with each other, whereby the third inductance values do not affect the frequency characterisitc of said filter circuit, each transformer having a primary winding and a secondary winding, one end of the primary winding of each transformer being connected to one end of the secondary winding thereof so that said windings are effectively connected in series with each other, the windings of one transformer being connected in series aiding relationship and the windings of the other transformer being connected in series opposing relationship.



4,409,570

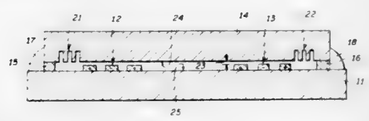
SEPARATED SUBSTRATE ACOUSTIC WAVE DEVICE

William J. Tanski, Maynard, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 322,044

Int. Cl.³ H03H *9/64, 9/42, 9/25, 9/54*

U.S. Cl. 333—187 **12 Claims**



1. A shallow bulk acoustic wave delay filter, including:

a base substrate having a first surface;

active piezoelectric substrate means for propagating acoustic waves therein, said active means having a first surface disposed adjacent to and opposite from said base substrate first surface;

transducer means affixed to said base substrate first surface in energy coupling non-contacting relation to said active substrate for coupling energy between said transducer means and said active substrate; and

means for separation disposed between said active substrate and said base substrate for fixing a separation distance between said active substrate first surface and said base substrate first surface.

4,409,571

SURFACE ACOUSTIC WAVE FILTERS

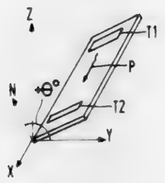
Robert F. Milsom, Redhill; Robert J. Murray, Horley, and Ian Flinn, Crawley, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,806

Claims priority, application United Kingdom, Oct. 8, 1980, 8032360

Int. Cl.³ H03H *9/64, 9/145*

U.S. Cl. 333—196 **6 Claims**



1. A surface acoustic wave bandpass transversal filter comprising a $+\theta°$ rotated Y-cut lithium niobate substrate, an input and an output transducer each including an interdigital array of strip-like electrodes arranged on the substrate to respectively launch and receive surface acoustic waves propagating in the X direction, characterized in that the spacing, overlap and the number of strip electrodes in said input and output transducer interdigital electrode arrays are chosen and provided so as to cause the transfer response from the input transducer to the output of the output transducer of the filter to have a passband with a 35 db fractional bandwidth Δ in the range 0.05 to 0.5, and to have an upper stopband of at least 35 db from said passband up to a frequency approximately equal to

$$\left(\frac{V_L}{V_S} - \frac{\Delta}{2}\right) F_C$$

where V_L and V_S are the velocities in the X direction of the substrate of longitudinal bulk acoustic waves and surface acoustic waves, respectively, and F_C is the centre frequency relative to the 35 db fractional bandwidth Δ, and in that $\theta°$ is in the range from 121° to 127°.

4,409,572

ELECTRIC SWITCH

Angelo Mostosi, Bergamo, Italy, assignor to SACE S.p.A. Costruzioni Elettromeccaniche, Bergamo, Italy

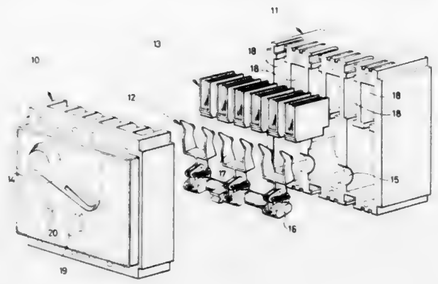
Filed Mar. 24, 1982, Ser. No. 361,580

Claims priority, application Italy, Apr. 2, 1981, 21367/81[U]

Int. Cl.³ H01H *75/00, 77/00, 83/00*

U.S. Cl. 335—8 **2 Claims**

1. An electric switch comprising two main constructional units defining a switch housing, a first of said units housing fixed contacts, associated terminals and tripping means; a second of said units carrying substantially the entire mechanical control mechanism of said electric switch including a manually operative handle movable between off and on positions, means carried by said second unit for displaying the electrical status of said electric switch, means for pivotal supporting movable contacts between opposing surface portions of each of said units whereby said movable contacts can be moved by the operation of said handle into and out of contact with said fixed contacts, said pivotal supporting means including an arbor carrying movable contacts, said arbor being confined by and seated relative to said opposing surface portions of said units, and means for removably fastening said units together to retain



said arbor confined by and seated relative to said opposing surface portions.

4,409,573

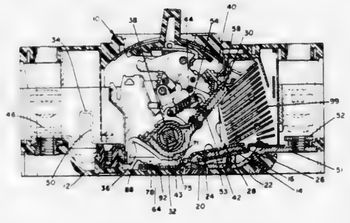
ELECTROMAGNETICALLY ACTUATED ANTI-REBOUND LATCH

Bernard Di Marco, Bellefontaine, and Andrew J. Kralik, Marysville, both of Ohio, assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Apr. 23, 1981, Ser. No. 257,305

Int. Cl.³ H01H *77/10*

U.S. Cl. 335—16 **25 Claims**



1. A circuit breaker comprising:

a first electrically conductive arm equipped with a first electrical contact at one end thereof;

a second electrically conductive arm equipped with a second electrical contact at one end thereof, said second arm movable from a closed position wherein said contacts are engaged to allow current to flow between said contacts to said arms and to an open position wherein said contacts are disengaged to prevent current from flowing between said first and second arms, said first and second arms being operatively positioned so that electrodynamic forces generated by current flowing in said arms and acting therebetween will move said second arm from said closed to said open position when the current through said contacts exceeds a predetermined amount; and

magnetically activated means for operatively engaging said second arm to maintain said second arm in said open position after said second arm has been moved by said electrodynamic forces said magnetically activated means being mounted for movement independent of movement by said second arm and being activated by the flow of current in said second arm.

4,409,574

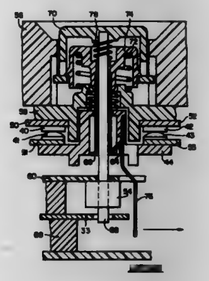
GROUND FAULT CIRCUIT INTERRUPTER WITH A UNIFIED TEST AND RESET SWITCH MECHANISM

John J. Misencik, Shelton, and Alden K. Clements, Stratford, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 21, 1982, Ser. No. 342,025

Int. Cl.³ H01H *73/22*

U.S. Cl. 335—18 **7 Claims**



1. A ground fault circuit interrupter comprising:

means for interrupting applied power to a load upon occurrence of a ground fault by opening a pair of power contacts;

a test circuit branch, including a pair of test contacts, connected to simulate a ground fault when said test contacts are closed;

a test and reset mechanism for testing said interrupter means to determine its operability and for resetting said interrupter means after it has performed a ground fault or test trip;

said mechanism comprising a single manually operable force applying element accessible on the exterior of the interrupter,

latch and spring means for holding said force applying element at a first, latched, position in normal operation in which said power contacts are closed and said test contacts are open,

means responsive to a first externally applied movement of said single manually operable force applying element for sequentially achieving second and third positions of which said second position is a test position in which said power contacts are closed and said test contacts are also closed, and said third position is a tripped position in which the release of said latch and spring means has occurred and said power contacts are open,

means responsive to a second externally applied movement of said single manually operable force applying element for achieving a fourth position which is a reset position in which said power contacts are open and said test contacts are closed, and after achieving said fourth position said mechanism returns to said first, latched, position.

4,409,575

ELECTROMAGNETIC CONTACTOR

Masanao Hisadome, Kuwana, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 24, 1981, Ser. No. 286,659

Claims priority, application Japan, Aug. 7, 1980, 55-111842[U]; Dec. 20, 1980, 55-183572[U]

Int. Cl.³ H01H *9/26*

U.S. Cl. 335—160 **2 Claims**

1. A reversible electromagnetic contactor comprising:

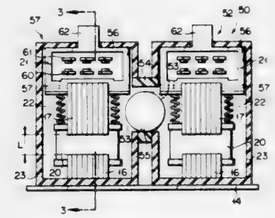
two electromagnetic contactor units each including a coil for exciting a fixed iron core, a movable iron core which is in a predetermined inoperative position when the fixed iron core is not excited but pulled toward the fixed iron core and contacted therewith when the fixed iron core is excited, and a spring means for urging the movable iron core to the inoperative position;

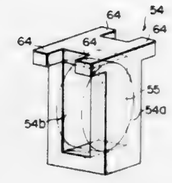
a roller;

a connecting member held between the two units and provided with a through-groove which holds the roller movable in any direction toward the both units; and

holding means for pushing the roller toward the inoperative unit and holding the movable iron core of said unit in the inoperative position when the movable iron core of the other unit moves to the operative position;

wherein the distance in which the roller can move along the through-groove of the connecting member is made shorter than the diameter of said roller, and the holding means in each of the units is a movable frame attached to the movable iron core in each of the units and, when one





of the units is excited, forces the roller into the other of units causing the roller to contact the movable frame of the other unit and to prevent the movement of this movable frame toward the operative position; and

wherein the connecting member has two parallel side walls which define the through-groove, and roller supporting holes formed in the side walls to be aligned with each other, and the roller has a shaft whose diameter is smaller than that of the roller supporting hole, and said connecting member and roller are made of somewhat resilient material permitting the roller to be forced into the through-groove of the connecting member in such a way that the roller can be positioned in the through-groove with its shaft projected into the roller supporting holes so as not to freely come out of the through-groove.

4,409,576

METHOD AND APPARATUS WHICH CHANGE MAGNETIC FORCES OF A LINEAR MOTOR

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Feb. 3, 1982, Ser. No. 345,232

Int. Cl.³ H01H *9/20, 36/00*

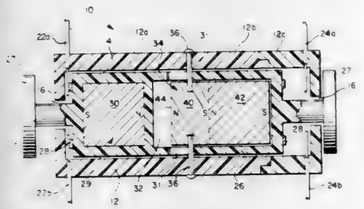
U.S. Cl. 335—170 **12 Claims**

1. A magnetic apparatus comprising:

first and second means aligned in and spaced apart along a given direction and being operable for establishing first and second magnetic fields having predetermined strengths with like poles facing each other along said given direction;

and said first means including magnetically permeable material having a distal end face in facing relation to an op-

posed end face of said second means, said material having a given permeability and relatively easily demagnetizable relative to said fields and being of short enough length which, when said second means is in remote proximity to said material, will permit substantially all of the magnetic field of said first means to pass through side surfaces of said material whereby as the distance along said given direction between said first and second means is varied, an attractive force exists between said second means and said material when said end face of said second means is within a given distance of said distal end of said material and a repulsive force exists when said end face of said second means is greater than said given distance.

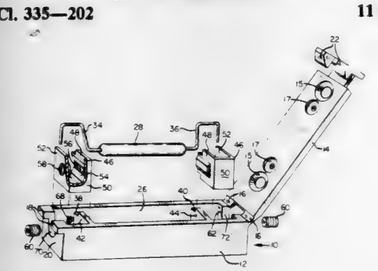


4,409,577

SWITCH HOUSING HAVING RECESSED CONDUCTOR TERMINALS

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed Jun. 8, 1981, Ser. No. 271,574
Int. Cl.³ H01H *45/04*
U.S. Cl. 335—202 **11 Claims**



10. A magnetically actuated switch unit for use in a security alarm intrusion detection circuit and the like, comprising:

(a) an elongate body having a pair of opposite ends and defining cavity means therein for receiving an electrical component;

(b) a pair of terminal clamps, one of said clamps being located at each of said opposite ends of said elongate body;

(c) a magnetic contact switch mounted in said cavity means, said magnetic contact switch having a pair of leads, each of said leads being electrically connected to one of said terminal clamps;

(d) conductor aperture means defined in said body for receiving circuit conductors therethrough;

(e) means for holding said terminal clamps in predetermined positions with respect to said conductor aperture means;

(f) gripping means included in each of said terminal clamps for electrically connecting a circuit conductor to a respective one of said terminal clamps; and

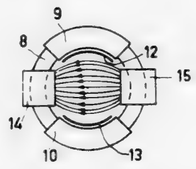
(g) an end wall at each of said opposite ends of said body, each end wall defining a terminal access aperture providing operative access to the respective one of said gripping means.

4,409,578

COLOR DISPLAY TUBE COMPRISING A DEFLECTION YOKE AND DEFLECTION YOKE FOR A COLOR DISPLAY TUBE

Wilhelmus A. J. Beelaard, and Nicolaas G. Vink, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 23, 1980, Ser. No. 199,791
Claims priority, application Netherlands, Nov. 1, 1979, 7908000
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—210 **10 Claims**



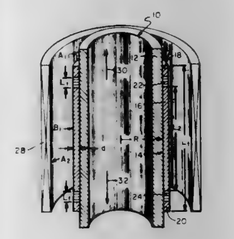
1. A color display tube having three electron guns situated in one plane for emitting three electron beams towards a display screen and having a deflection device which is mounted around a neck part of the display tube and also having a deflection yoke comprising a substantially cylindrical core of a magnetizable material the diameter of which at one end is smaller than that at the other end, a first deflection coil for generating, upon energization, a line deflection magnetic field, and a second deflection coil for generating, upon energization, a field deflection magnetic field, which second deflection coil consists of two substantially symmetrical coil halves which are axially wound and which are provided toroidally on the core, each of said second deflection coil halves occupying an angular amount on said core of between 70° and 90°, said second deflection coil having a winding distribution for generating a field deflection magnetic field of substantially pin-cushion shape throughout the length of the core, a first deflection device provided at the end of said core having the smaller cross-section, said first device changing the magnetic field of the second deflection coil from pin-cushion to barrel-shape, said first device comprising two members of magnetically permeable material which are provided substantially parallel to the direction of the field deflection magnetic field, symmetrically with respect to the axis thereof, inside said core adjacent the end having the smaller diameter, and a second deflection device comprising two blocks of magnetically permeable material placed diametrically opposite to each other on the axis of the field deflection magnetic field, which blocks are situated in the regions of stray magnetic field produced by said second deflection coil at the end of said core having said smaller diameter.

4,409,579

SUPERCONDUCTING MAGNETIC SHIELDING APPARATUS AND METHOD

John R. Clem, Ames, Iowa, assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jul. 9, 1982, Ser. No. 396,556
Int. Cl.³ H01F *7/22*
U.S. Cl. 335—216 **19 Claims**



1. An apparatus for providing a magnetic shield around a working volume, comprising:

(a) first cylinder of superconducting material surrounding said working volume, said first cylinder having an axis, a circumference, a central portion of predetermined magnetic pinning properties, end portions of higher magnetic pinning properties, and transition regions interposed between said central and said end portions, said transition regions having a predetermined length and magnetic pinning properties which vary monotonically along the length of said transition regions:

(b) first current means for generating circumferentially-directed currents in said first cylinder; and

(c) second current means for generating axially-directed currents in said first cylinder.

4,409,580

SOLENOID ACTUATOR FOR ELECTROMAGNETIC VALVE

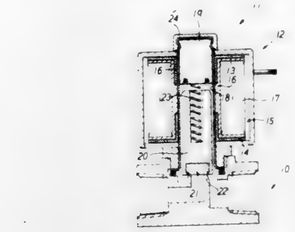
Tsuneo Ishigaki, Sugito, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

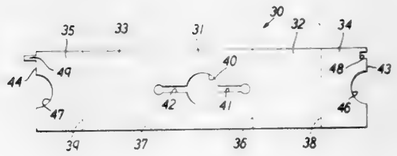
Filed Oct. 29, 1981, Ser. No. 316,531
Claims priority, application Japan, Jan. 8, 1981, 56-1117[U]
Int. Cl.³ H01F *7/10*
U.S. Cl. 335—243 **4 Claims**

1. A solenoid actuator for an electromagnetic valve, comprising:

a coil body having at an axial center portion thereof a stationary core and a movable core; and

a magnetic frame within which said coil is housed and which further comprises an integral one-piece bent magnetic frame plate having an end plate which abuts against a first end face of said coil body, a first and second side plate integrally extending from said end plate for covering side portions of said coil body and a first and second half end plate integrally extending from each of the side plates, respectively, for covering a second end face of said coil body, wherein mating end edge portions of each of said half end plates each include a semi-circular notch formed therein, respectively, at a center portion of said mating end edge portions to define a through hole within which said stationary core is mounted and a respective concave and convex connecting portion engageable with each other and formed at opposing portions of said mating end edge portions, said mating end edge portions of said half





end plates being opposed to each other so as to form at least one slit for eliminating eddy current therebetween.

4,409,581

PROCESS AND APPARATUS FOR MAGNETIZING, ON BOTH SIDES, THE SURFACES OF BODIES TO BE MAGNETIZED

Franz Reumann, Baden, Austria, assignor to Internationale Patente Verwertungsgesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 927,524, Jul. 24, 1978, abandoned. This application Jul. 3, 1980, Ser. No. 166,089
Claims priority, application Austria, Jul. 28, 1977, 5576/77
Int. Cl.³ H01F *13/00*
U.S. Cl. 335—284 **2 Claims**



2. Apparatus for magnetizing two opposite sides of a body of magnetizable material comprising two magnetizing heads arranged at a spaced relationship opposite one another to receive said body therebetween; means for rotating magnetization vectors of said heads relative to one another by a compensating angle in accordance with the equation

$$z = \arcsin\left(\frac{\sin x \cdot \sin w}{\sin (w - x)}\right)$$

where

z is the compensating angle of each vector with respect to the intended position of that vector in the magnetised body,

x is the error angle of each vector with respect to its intended position when no angular compensation is made, and

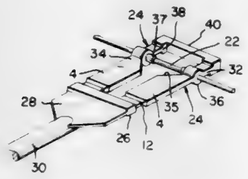
w is the angle included between the two magnetisation vectors in their intended position in the magnetised body.

4,409,582

ELECTRICAL FUSE AND METHOD OF MAKING SAME

David J. Kimmel, Clearwater, and John H. F. Lauterbach, New Port Richey, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 2, 1982, Ser. No. 384,358
Int. Cl.³ H01H *85/16*
U.S. Cl. 337—231 **12 Claims**



1. An electrical fuse of the type comprising a pair of parallel spaced-apart conductors, each of the conductors having a supported portion and a flat blade portion, the supported portions being supported in an insulating body, the blade portions extending from one end of the insulating body, and a fuse metal link having its ends connected to the supported portions and being at least partially continued in the insulating body, the fuse being characterized in that:

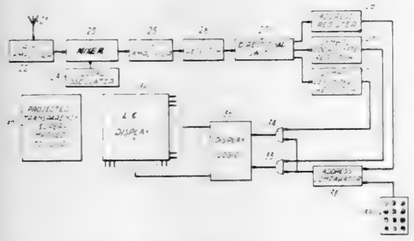
the spaced-apart conductors are of die cast metal and the insulating body is molded onto the spaced-apart conductors.

4,409,583

VIDEO SYSTEM FOR ASSISTING AUTOMOBILE TRAFFIC EMPLOYING A SEGMENTED LCD DISPLAY

Pierre-Louis Dahan, 106, Bd. Pereire, Paris, France 75017, and Phac Letuan, 5, Parc de la Bievre, L'Hay-les-Roses, France 94240

Continuation-in-part of Ser. No. 236,991, Feb. 23, 1981. This application May 21, 1981, Ser. No. 265,797
Int. Cl.³ G08G *1/00*; G09G *3/18*
U.S. Cl. 340—22 **5 Claims**



1. Radio system for video display of a map and symbols traced on said map comprising:

means for radio transmitting a plurality of digital messages, each including the address of a map among a plurality of maps, the definition of symbols among a plurality of symbols and the coordinates of said symbols on said map;

a display device having a plurality of points defined by coordinates and which can be selectively activated;

a plurality of transparent views representing said maps and having addresses assigned thereto;

means for selecting from among said view plurality the view having a given address;

means for projecting the selected view on to said display device;

means for selecting from among said address message-plurality the message including a map address equal to said selected view address; and

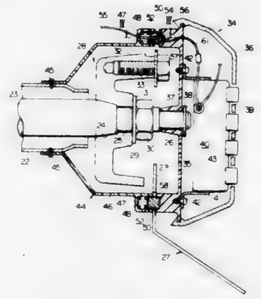
display logic means for activating selected points of the display device in response to the definition and coordinates of the symbols contained in the selected message.

4,409,584

INSTRUMENT PANEL SUPPORTING STRUCTURE

Sumitsugu Arima, Yokosuka; Harutoshi Tsujimura, and Yukio Fukunaga, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 31, 1981, Ser. No. 288,779
Claims priority, application Japan, Aug. 13, 1980, 55-114597[U]
Int. Cl.³ G08G *1/00*; G05G *11/00*
U.S. Cl. 340—22 **6 Claims**



1. An instrument panel supporting structure for a steerable vehicle including a body structure having a fore-and-aft direction, comprising:

a hollow steering column tube held stationary with respect to said body structure,

a steering shaft axially extending in and through said steering column tube and having a rear end portion, the steering shaft having a center axis therethrough and being rotatable about the center axis with respect to the steering column tube,

a steering wheel rotatable with the steering shaft about said center axis and including at least one spoke portion extending substantially radially away from said center axis,

a first support member mounted on the rear end portion of the steering shaft and rotatable about said center axis with respect to both the steering column tube and the steering shaft,

a second support member fixed with respect to said steering column tube,

one of the first and second support members having a plurality of recesses arranged circumferentially about said center axis and open in directions parallel with said center axis and the other of said first and second support members being formed with a plurality of cavities arranged circumferentially about said center axis and open toward and in alignment with said recesses, respectively,

said spoke portion partly intervening between said first support member and said second support member so as to intervene between any one of said recesses and correspondingly aligned cavities when the steering wheel assumes a predetermined angular position about said center axis with respect to said steering column tube,

a plurality of slidable members respectively movable through said cavities toward and away from said recesses,

each of said slidable members having a tapered end portion so as to be moved by said spoke portion, and

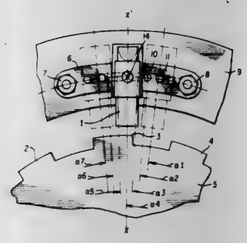
biasing means urging each of said slidable members to project into each of said recesses so as to have the tapered end portion of each slidable member received in each of the recesses, said slidable members comprising a first group of members each having a tapered end portion provided with an electric contact element and a second group of members each of which is devoid of an electric contact element, said recesses comprising a first group of recesses each having an electric contact element embedded therein and formed with a recess provided with a contact element for receiving and contacting each of said first group of slidable members and a second group of recesses each of which is devoid of an electric contact element, each of the contact elements of said first group of slidable members being urged by said biasing means to establish electrical connection with each of the contact elements in said first group of recesses.

4,409,585

SYSTEM GOVERNING THE POSITION OF A SENSOR

Christian Rousseau, Antony, France, assignor to Regie Nationale Des Usines Renault, Boulogne-Billancourt, France

Filed Mar. 17, 1981, Ser. No. 244,739
Claims priority, application France, Mar. 28, 1980, 80 06952
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—52 R **4 Claims**



1. A sensor comprising:

an electromagnetic sensor body;

a movable target fixed to a crankshaft of an internal combustion engine, said target being constructed and adapted to electrically influence said sensor when passing before said sensor body without contacting any element mechanically connected to said sensor body;

a bar having a circular arcuate longitudinal axis, said axis being parallel to the path of said target;

means for fixing said bar to a clutch bell housing for said engine such that said bar is stationarily fixed adjacent said target; and

means defining a plurality of discrete predetermined adjustment positions for said sensor body along said axis, whereby said sensor body may be fixed to said bar at a selected one of said adjustment positions so that the angular position and velocity of said crankshaft can be detected.

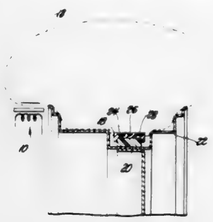
4,409,586

TIRE CONDITION MONITOR CONVERTER

Peter A. Hochstein, 14020 Fifteen Mile Rd., Sterling Heights, Mich. 48077

Filed May 26, 1981, Ser. No. 267,261
Int. Cl.³ B60C *23/02*
U.S. Cl. 340—58 **7 Claims**

1. A tire condition monitor converter assembly comprising; a circular mounting means for engaging a vehicle wheel rim, a plurality of coils of wire extending about said mounting means, and terminl means for deposition on the wheel rim with said mounting means and including a first capacitor connected to a first number of said coils of said wire about said mounting means to define a first LC circuit and a second capacitor connected to a second number of said coils of said wire about said mounting means to define a second LC circuit, said first number of coils being different than said second number of coils, a harmonic multiplier supported by said mounting means and interconnecting said one of said coils of said first LC circuit



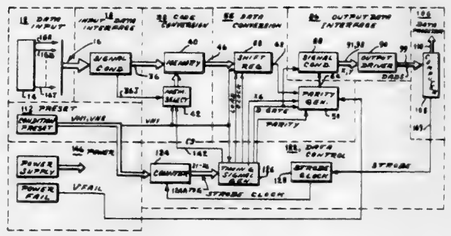
with one of said coils of said second LC circuit at a position about the circumference of said mounting means so that said first LC circuit is resonant to a first frequency and said second LC circuit is resonant to a different second frequency, a switch supported by said terminal means and connected to said LC circuits for actuating upon sensing a predetermined tire condition.

4,409,587

ALTIMETER CODE CONVERTER

Robert G. Scott, Quincy, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 27, 1982, Ser. No. 343,031
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **3 Claims**



1. An altitude code converter that has input a parallel signal being Gray coded for altitude information and that outputs a binary serial word acceptable to a computer comprising:

an input data interface connected for receiving the altitude information coded parallel signal and connected for outputting an adjusted parallel signal having a plurality of adjusted bit signals, said input data interface having a plurality of adjusting circuits equal in number to the number of bit signals of the parallel signal, each of said adjusting circuits having buffer amplifying means therein;

a conversion device connected for receiving the adjusted parallel signal output from said input data interface and connected for outputting a binary serial signal, said conversion device including a code conversion circuit for converting the adjusted parallel signal to a binary parallel signal representing actual altitude in binary notation, said code conversion circuit being memory means having a lookup table therein, said memory means addressed by a plurality of said adjusted bit signals and outputting a 16 bit binary parallel signal having a decimal equivalent value of an altitude input to said altitude code converter in Gray

code, and a memory select circuit connected for selecting read-only memories to be addressed; a data conversion circuit for receiving the binary parallel signal and outputting a binary serial signal having a predetermined bit length and having a parity bit inserted therein, said data conversion circuit including at least one parallel-to-serial shift register for outputting a 32 bit serial signal without parity and a parity generator connected for inserting a parity bit into said 32 bit serial signal; and a data control circuit for outputting timing signals to said code conversion circuit and said data conversion circuit, said data control circuit including a pair of counters connected for having input initializing signals from said condition present circuit and a strobe signal from said computer and outputting a plurality of counting signals to a timing signal generator comprising a plurality of gates and inverters, said timing signal generator outputting a clock signal, a data gating signal during a data shift period, a data enable signal, a parity signal, a chip select signal, and a load signal;

an output data interface connected for receiving the binary serial signal and for outputting said binary serial computer word;

a condition preset circuit connected for initializing said conversion device;

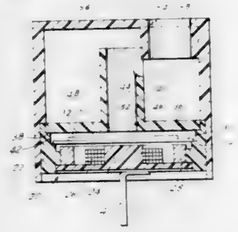
means for powering, said means for powering including a circuit connected for providing a plurality of fixed voltages to said code converter and a circuit connected for indicating external power failure to said conversion device.

4,409,588

MINIATURE SOUNDER WITH MULTI-PART TUNED CAVITIES

Alan Hofer, Wantaugh, and Frank M. Yama, Massapequa, both of N.Y., assignors to Pickering & Company, Inc., Plainview, N.Y.

Filed Mar. 10, 1981, Ser. No. 242,347
Int. Cl.³ G08B *3/10*
U.S. Cl. 340—384 R **5 Claims**



1. A miniature sounder comprising:

a diaphragm;

a surrounding housing disposed about said diaphragm;

an open-ended chamber dimensioned to resonate at a predetermined frequency positioned within said housing, said chamber having a first portion including a first open end closed by said diaphragm and a second portion including an opposite open end communicating with the interior of said housing;

an armature affixed to said diaphragm;

a magnetic circuit operatively connected to said armature for driving said diaphragm at a desired frequency; and,

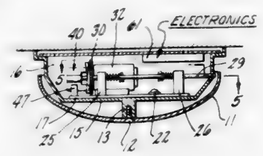
an open-ended enclosure positioned within said housing providing an outlet from said sounder; said open-ended chamber having a volume tuned to a subharmonic of said desired frequency and said open-ended enclosure and housing having a combined volume tuned to said desired frequency.

4,409,589

ADJUSTABLE ELECTRIC BELL

Louis J. Finkle, Bellflower, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Oct. 16, 1981, Ser. No. 312,433
Int. Cl.³ G08B *3/00*
U.S. Cl. 340—396 **6 Claims**



1. An electrically powered bell assembly comprising:

a bell;

a base structure fixed relative to said bell;

a support plate adjustably attached to said base structure for adjustable alignment relative to said bell; and

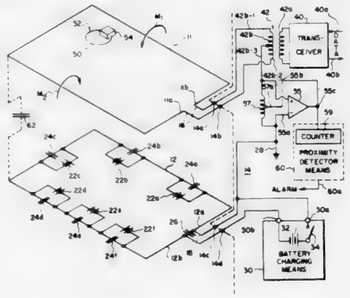
a hammer assembly mounted on said plate and adapted to strike said bell, said hammer assembly including a hammer slidably mounted to impact against said bell, an electric motor, an annular cam plate operatively interconnected to said motor for rotation thereby, said cam plate having a circular cam surface formed on one side thereof, said cam surface including at least one step in the shape thereof, a follower attached to said hammer and aligned to ride on said cam surface and spring means deployed between said hammer and said support plate for urging said hammer to an equilibrium position relative to said bell.

4,409,590

BUILDING SECURITY, COMMUNICATION AND CONTROL SYSTEM

Lewin T. Baker, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 28, 1981, Ser. No. 305,867
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—533 **10 Claims**



1. A system for providing perimeter security, intra-building communication and power to powering means in each of at least one functional unit in a building, comprising:

first and second conductive loops placed about the building periphery and spaced from one another;

means coupled to said first and second loops for detecting an intruder in proximity to said building periphery;

data transceiver means coupled to a first one of said loops for transmitting data to, and for receiving data from, the interior of said building by magnetic induction; and

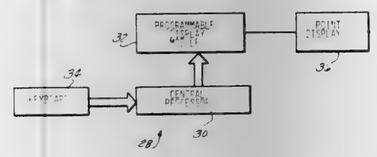
means for providing power to those of said functional unit powering means connected in series with said second loop.

4,409,591

VARIABLE SIZE CHARACTER GENERATOR

Mark D. Simkovitz, Oak Park, Mich., assignor to Wayne State University, Detroit, Mich.

Filed May 20, 1981, Ser. No. 265,371
Int. Cl.³ G06F *3/14*
U.S. Cl. 340—731 **31 Claims**



1. An apparatus for generating variable size, point display characters comprising:

means for selecting a character to be displayed;

means for selecting one of a predetermined number of distinct character sizes for the selected character;

character generator means, responsive to the means for selecting a character and the means for selecting a character size, for generating the selected character having the selected one of a predetermined number of distinct sizes, the character generator means comprising:

first memory means for storing first binary codes assigned to each distinct geometric pattern disposed in a block element of a character matrix defining each character to be displayed on a row-by-row, column-by-column basis;

first means for addressing the first memory to output therefrom selected ones of the first binary codes corresponding to the selected character on a row-by-row, column-by-column basis of the selected character matrix;

first means, responsive to the output of the first memory means, for generating second binary codes corresponding to the sequence of binary states of the points defining the point matrices of each block element of the selected character on a line-by-line basis for each block element, the second binary codes corresponding to the selected one of the predetermined number of distinct character sizes; and

second means, responsive to the second binary codes, for generating binary sequences of signals on a point-by-point basis for generating the selected character having the selected character size.

4,409,592

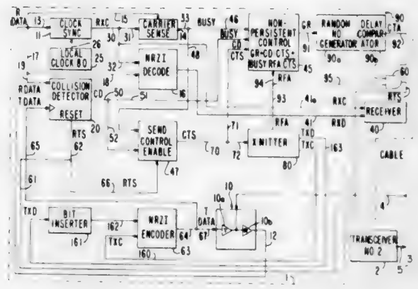
MULTIPOINT PACKET DATA COMMUNICATION SYSTEM USING RANDOM ACCESS AND COLLISION DETECTION TECHNIQUES

V. Bruce Hunt, 2070-B Liberty Park Ave., Menlo Park, Calif. 94025

Filed Apr. 20, 1981, Ser. No. 255,448
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.5 **13 Claims**

1. In a data communication system having a communication channel for interconnecting a plurality of transceivers, each of said transceivers including means for transmitting a signal having transitions, the improvement comprising:

means responsive to the presence and absence of a signal on said communication channel during a transition of a signal transmitted by said transmitting means for providing a collision detected (CD) signal if no signal is detected on said communication channel during a transition of said transmitted signal; and



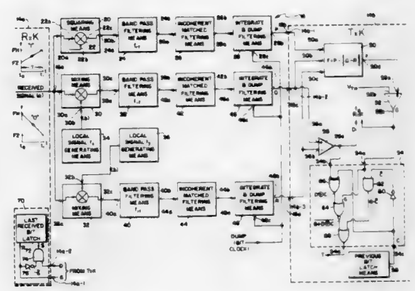
means responsive to said CD signal for terminating said transmitting of said signal.

4,409,593

THRESHOLD-LESS COLLISION DETECTION AND BIT ARBITRATION IN A CFSK DATA SYSTEM

Sanjay K. Bose, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 11, 1982, Ser. No. 338,707
Int. Cl.³ H04Q *9/00*; H04J *6/00*
U.S. Cl. 340—825.5 **15 Claims**



1. A method for collision detection in a chirped-frequency-shift-keyed (CFSK) data system having a common system communications medium and a plurality of data stations each containing a data transmitter and a data receiver, comprising the steps of:

identifying each of a successive plurality of synchronous bit time intervals during which at least one of the plurality of data stations transmitters may transmit a bit of digital data over the common system communications medium;

constantly monitoring the common system communications medium with each data station receiver even while the transmitter of the same data station is transmitting digital data;

subjecting the signal received by each data station receiver to a plurality of processing operations each in a respective one of a like plurality of channels; and

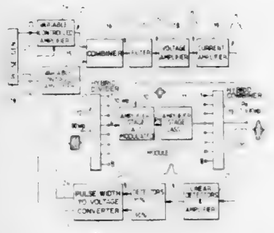
comparing the energy contents of the outputs of the plurality of channels to detect if a data transmission colision has occurred.

4,409,594

APPARATUS FOR PERFORMING RADIO FREQUENCY PULSE MODULATION WITH AUTOMATIC MODULATION CONTROL

Danio Graziani, Milan, Italy, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 198,300
Claims priority, application Italy, Sep. 21, 1979, 25913 A/79
Int. Cl.³ G01S *1/44*
U.S. Cl. 343—399 **10 Claims**



1. A radio-frequency pulse transmitting system such as DME or Tacan comprising:

first means including at least one radio-frequency amplifier responsive on a radio-frequency input to a pulse-modulated carrier signal and to a further-frequency video pulse on a control terminal for producing radio-frequency output pulses having predetermined envelope characteristics;

second means for discretely sampling said radio-frequency output pulses at a plurality of amplitude levels and for generating discrete modulation control signals each representing the duration of the envelope of said radio-frequency output pulses at a predetermined corresponding amplitude level;

third means for generating a plurality of separate video pulse trains synchronous with and of pulse duration not exceeding the pulses of said pulse-modulated carrier signal;

fourth means comprising a separate gain-controllable amplifier responsive to each of said second means modulation control signals and to a corresponding one of said third means video pulses to adjust the amplitude of said corresponding video pulse as a function of the corresponding control signal from said second means;

and fifth means for combining said video pulses from said third means to provide a train of pulses having peak amplitude substantially equal to the sum of the amplitudes of said video pulses from said third means, said combined pulse train being applied at said radio-frequency amplifier as said further-modulating pulse.

4,409,595

STRIPLINE SLOT ARRAY

Pyong K. Park, Canoga Park, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

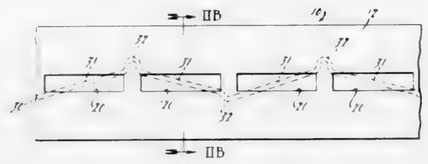
Continuation of Ser. No. 147,416, May 6, 1980, abandoned. This application Jan. 25, 1982, Ser. No. 342,323
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—771 **8 Claims**

1. A slot array antenna comprising:

a dielectric-filled electrically conductive box having four electrically conductive faces elongated along a longitudinal axis, each face having a width dimension orthogonal to the longitudinal axis, each cross-section of said box orthogonal to said longitudinal axis being substantially rectangular, whereby two of the faces have relatively narrow widths and two of the faces have relatively wide widths;

cut out of one of the relatively wide width faces, several collinearslots, each slot being aligned and elongated along a single long axis, said long axis being parallel to the longitudinal axis and bifurcating said cut face into two substantially equal halves; and

one continuous stripline feed conductor for exciting said slots, said conductor being imbedded within said dielectric, roughly disposed in the direction of said longitudinal axis, wherein said conductor comprises several segments



each of which is angled with respect to the long axis depending upon the desired amount of energy to be coupled from said segment to its nearest slot;

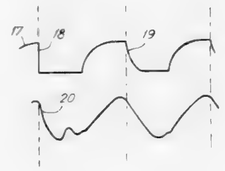
wherein the electrical width of each of said relatively wide width conductive faces is greater than one-half wavelength at the desired frequency of operation of said antenna.

4,409,596

METHOD AND APPARATUS FOR DRIVING AN INK JET PRINTER HEAD

Hiroshi Ishii, Shiojiri, Japan, assignor to Epson Corporation, Nageno and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Aug. 11, 1981, Ser. No. 291,904
Claims priority, application Japan, Aug. 12, 1980, 55-110652; Aug. 25, 1980, 55-116727
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **27 Claims**



1. A method of expelling ink droplets on demand from an ink jet printer head to effect printing, said head including a combination of a single pressure chamber, a nozzle, a flow path connecting said chamber to an ink source, a flow path connecting said chamber to said nozzle, and a transducer element associated with said single chamber, said transducer element when driven altering the internal volume of said pressure chamber, a driver circuit for driving said transducer element, comprising the steps of:

(a) generating driver pulses of a first waveform and amplitude in said driver circuit;

(b) continuously applying said pulses of said first waveform and amplitude to drive said transducer element when droplet expulsion is not desired;

(c) selectively generating a driving pulse of a second waveform and amplitude in said driver circuit whenever a droplet is demanded;

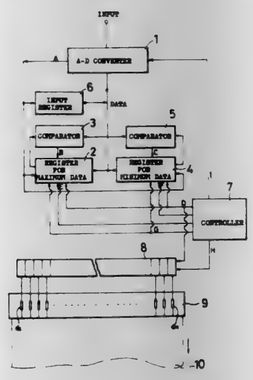
(d) applying said pulse of said second waveform after a pulse of said first waveform to drive said transducer element and to effect droplet ejection, only said pulse of said second waveform imparting sufficient energy to said transducer at a rate sufficient to cause a droplet to eject from said nozzle.

4,409,597

LINE PRINTER FOR RECORDING ANALOG SIGNALS

Kenji Nakamura, Takatsuki, and Shigeru Ideno, Kameoka, both of Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Mar. 30, 1982, Ser. No. 363,626
Claims priority, application Japan, Jul. 30, 1981, 56-120393
Int. Cl.³ G01D *9/12, 15/10*
U.S. Cl. 346—35 **3 Claims**



1. A line printer for recording analog signals, which comprises:

a plurality of printing elements arranged side by side in a row, said printing elements being located close to each other one after another;

an output head carrying said printing elements such that they are individually and selectively driven;

a paper feeding device allowing a paper to be fed perpendicularly to said row of said printing elements;

a register for storing the maximum data of all signals received for a given period of time;

a register for storing the minimum data of all signals received for said period of time, and

means for driving said output head so as to cause said printing elements to be driven at the same time correspondingly to said maximum data, said minimum data, and data interlocated therebetween.

4,409,598

MAGNETIC IMAGING

J. Kirk Swigert, Penfield, and Darlyn F. Pochan, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 25, 1980, Ser. No. 180,730
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.2 **2 Claims**

1. An improved magnetic imaging method comprising the steps of:

(a) creating a latent magnetic image on a flexible and movable magnetizable imaging member, wherein said magnetizable imaging member comprises a base or web having a solid coating of magnetizable material thereon and the magnetizable material having an overcoating of electroconductive material that is selected from the group consisting of aluminum, copper, nickel, cobolt, magnesium, tin, zinc, chromium, gold, silver, and mixtures or alloys thereof, said overcoating of electroconductive material being approximately 0.04 microns thick and having a surface resistivity of approximately 2 ohms per square;

(b) developing said latent magnetic image with toner having magnetic or magnetizable properties as said magnetizable imaging member is moved past a developing station, wherein the developed image lies on the surface of the electroconductive material;

(c) pressure transferring the developed image from the surface of the electroconductive material of the magnetizable imaging member to a receiving substrate by passing the magnetizable image member and the receiving substrate with the developed image therebetween through at least two rotatable pressure rolls which exert a linear pressure thereon of approximately 25 pounds per linear inch, whereby adhesive properties of the electroconductive material enable efficient release and transfer of greater than 90% of the developed image to the receiving substrate without damaging the imaging member and without toner residue buildup; and

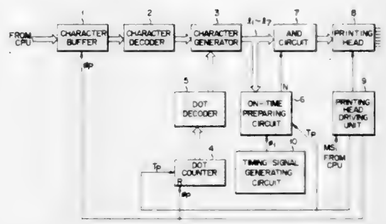
(d) fixing said developed image to said receiving substrate.

4,409,599

PRINTING CONTROL DEVICE FOR THERMAL PRINTER

Takeshi Yasuda, Fussa, and Kazuyoshi Watanabe, Tokyo, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1981, Ser. No. 310,840
Claims priority, application Japan, Oct. 27, 1980, 55-149285; Oct. 27, 1980, 55-149286
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **12 Claims**



1. A printing control device for a thermal printer, comprising:

buffer means for storing data to be printed;

character generating means coupled to said buffer means for generating, in a parallel mode, dot data of a dot pattern which corresponds to data read out of said buffer means;

printing means including a thermal printing head section coupled to said character generating means and having n printing elements, said thermal printing head section being adapted to apply a predetermined voltage to given ones of said printing elements corresponding to the dot data to be printed, which dot data are generated from said character generating means; and

an on-time preparing circuit coupled to said thermal printing head section and to said character generating means including means for detecting, out of the dot pattern generated from said character generating means, the number of dots to be printed; and means for generating an on-time signal having a time width determined as a function of the number of detected dots, and for delivering said on-time signal to said thermal printing head section each time one dot printing is performed;

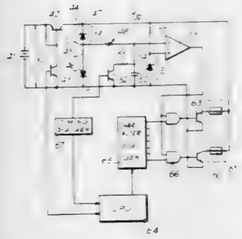
said printing means including means responsive to said on-time signal for controlling the time width of said predetermined voltage applied to the respective printing elements of said printing head section which correspond to the dot data to be printed.

4,409,600

THERMAL PRINTER DRIVE CIRCUIT

Masahiro Minowa, Shiojiri, Japan, assignor to Epson Corporation, Nagano, Japan

Filed Dec. 28, 1981, Ser. No. 334,757
Claims priority, application Japan, Dec. 29, 1980, 55-187626
Int. Cl.³ G01D *15/10*; B41J *3/20*
U.S. Cl. 346—76 PH **13 Claims**



1. A drive circuit for a thermal printer for printing characters on a printing sheet by selectively applying current to a plurality of heat generating elements, comprising:
current application control means for selectively controlling the application of current to said heat generating elements;
a power source supplying said current to said current application control means and to said heat generating elements;
time control means for varying the active operational period of time of said current application control means for energizing said heat generating elements, said time control means including:
a charging circuit having at least a first constant voltage means, a first resistor and a capacitor in series between the terminals of said power source; a discharging circuit connected in parallel with at least said capacitor of said charging circuit; and
switching means adapted to be ON or OFF according to a selected charge level of said capacitor, said switching means when ON enabling said current application control means to apply current to said heat generating elements, said switching means, when OFF, preventing said current application control means from applying current to said heat generating elements, the time required for said capacitor to charge to said selected level varying inversely with the voltage level of said power source, the temperature of said heat generating elements, when energized, being constant over a wide range of voltages of said power source.

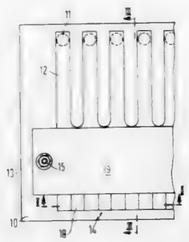
4,409,601

MOSAIC RECORDER WITH REDUCED MECHANICAL COUPLING

Kenth Nilsson, Akersberga, and Jan Bolmgren, Vaellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,982
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114192
Int. Cl.³ G01D *15/18*; B41J *3/04*
U.S. Cl. 346—140 R **1 Claim**

1. In a mosaic recorder having a plurality of nozzles through which a recording liquid is ejected for printing alphanumeric characters and images in punctiform representation on a moving recording medium, said nozzles being disposed adjacent one another in rows in a recording head, and each nozzle having an inlet opening, the improvement comprising:
a comb-like bilaminar piezoplate having a plurality of teeth respectively overlying said inlet openings of said nozzles, each tooth being a transducer for selectively causing a droplet of recording liquid to be ejected from the nozzle associated therewith, said piezoplate having a base portion which is clamped to said recording head, said piezoplate consisting of a layer of piezoceramic material and a carrier layer and having a base portion, the ceramic layer of said base portion of said piezoplate having a pluraity of gaps disposed in regions corresponding to extensions of the interstices between said transducer teeth,



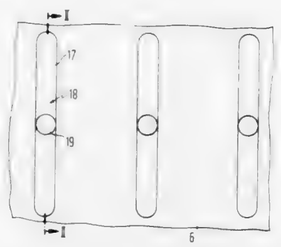
whereby said gaps substantially eliminate mechanical coupling between said transducer teeth such that actuation of one of said transducer teeth has substantially no influence on others of said transducer teeth.

4,409,602

MOSAIC RECORDER WITH IMPROVED NOZZLE STRUCTURE

Jan Bolmgren, Vaellingby; Bertil Hoek, Västeras, and Kenth Nilsson, Akersberga, all of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,987
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1981, 3114259
Int. Cl.³ G01D *15/18*; B41J *3/04*
U.S. Cl. 346—140 R **10 Claims**



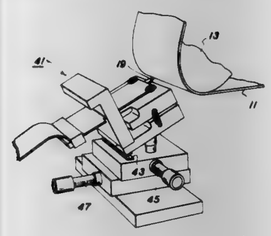
1. In a mosaic recorder for printing characters and images on a moving recording medium in punctiform representation, said recorder having a recording head with a plurality of nozzles disposed in rows therein for respectively ejecting droplets of a recording liquid onto said recording medium, each said nozzle having a piezoelectric transducer associated therewith, each transducer being a tooth of a comb-like transducer plate mounted to said recording head, said transducers respectively forcing ejection of said droplets from said nozzles upon respective actuation of said transducers, the improvement comprising:
each of said nozzles having a generally oblong inlet opening tapering to a generally circular exit opening from which said droplet is ejected, said inlet opening of said nozzle being disposed substantially transversely to a row of said nozzles.

4,409,603

ELECTROGRAPHIC METHOD AND APPARATUS

Wiliam L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 22, 1980, Ser. No. 219,280
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—155 **10 Claims**



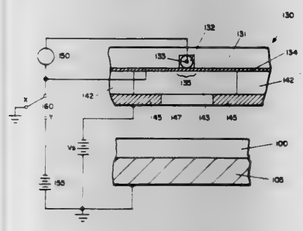
1. An improved apparatus for applying a charge pattern to an insulating imaging member by a stylus array of the type wherein the styli of the array are in direct contact with the insulating imaging member, and the insulating imaging member and the styli move relatively with respect to each other, the improvement comprising:
an adjustable stylus array having each stylus in the array resiliently held into contact with the insulating imaging member;
means for applying a signal voltage to the styli in said array for production of a charge pattern on the insulating imaging member; and
means for adjusting said stylus array to obtain a force of contact between the styli in the array and the insulating imaging member that is below the force of contact necessary to develop a triboelectric charge on the insulating imaging member because of the rubbing contact with the styli during relative movement between the styli and the insulating imaging member, so that there will be substantially no background charge on the insulating imaging member.

4,409,604

ELECTROSTATIC IMAGING DEVICE

Richard A. Fotland, Holliston, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Jan. 5, 1981, Ser. No. 222,830
Int. Cl.³ G01D *15/06*; H01J *7/24*; H05B *31/26*
U.S. Cl. 346—159 **35 Claims**



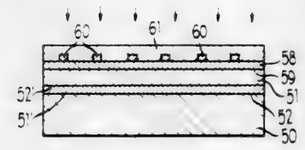
1. Electrostatic imaging apparatus, comprising:
an elongate conductor;
a dielectric sheath for said elongate conductor;
a conductive member transversely oriented with respect to said elongate conductor and contacting or closely spaced from said dielectric sheath;
a varying potential applied between said elongate conductor and said conductive member in order to generate ions in an air region adjacent the dielectric sheath and conductive member; and
means for extracting ions from said air region to create an electrostatic image on a further member.

4,409,605

AMORPHOUS SEMICONDUCTORS EQUIVALENT TO CRYSTALLINE SEMICONDUCTORS

Stanford R. Ovshinsky, Bloomfield Hills, and Arun Madan, Birmingham, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 222,489, Jan. 5, 1981, abandoned, which is a continuation-in-part of Ser. No. 104,284, Dec. 17, 1979, abandoned, which is a division of Ser. No. 887,353, Mar. 16, 1978, Pat. No. 4,226,898. This application Sep. 29, 1982, Ser. No. 427,688
Int. Cl.³ H01L *45/00*
U.S. Cl. 357—2 **39 Claims**



1. A semiconductor film comprising a solid amorphous semiconductor host matrix including at least one element and having elecronic configurations which have an energy gap and a density of localized defect states therein, said host matrix including at least one element being formed by the glow discharge decomposition of a compound containing said at least one element and at least one compensating or alterant element in a partial vacuum having an atmosphere separately containing at least one different compensating or alterant element and not derived from the compound, wherein one of said different at least one compensating or alterant element of said compound and element separately contained in said atmosphere comprises at least fluorine and wherein both of the same were incorporated in said amorphous semiconductor host matrix during deposition thereof yielding compensated or altered amorphous semiconductor material having altered electronic configurations with a reduced density of localized defect states in the energy gap.

4,409,606

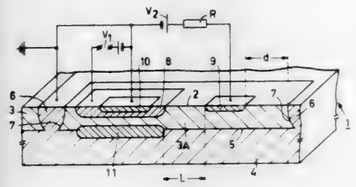
HIGH BREAKDOWN VOLTAGE SEMICONDUCTOR DEVICE

Kornelis J. Wagenaar, Nijmegen; Hendrik C. De Graaff, and Johannes A. Appels, both of Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,199
Claims priority, application Netherlands, Mar. 10, 1980, 8001409
Int. Cl.³ H01L *29/90*
U.S. Cl. 357—13 **12 Claims**

1. A semiconductor device having a semiconductor body comprising a surface-adjoining semiconductor layer of a first conductivity type which is situated on a substrate region of the second opposite conductivity type and forms a p-n junction therewith, a separation region which extends from the surface over substantially the whole thickness of the semiconductor layer and surrounds an island-shaped region of the semiconductor layer, within which island-shaped region are present an active zone of the second conductivity type belonging to a semiconductor circuit element and a juxtaposed contact zone of the first conductivity type having a higher doping concentration than the semiconductor layer, the active zone and the contact zone both adjoining the surface and at least the contact

zone being further surrounded entirely by the island-shaped region, the thickness and the doping concentration of the island-shaped region being so small that upon applying a voltage in the reverse direction across the p-n junction, the depletion zone extends up to the surface at a voltage which is lower than the breakdown voltage of the p-n junction, characterized in that between the semiconductor layer and the substrate region a buried layer of the first conductivity type is present having a higher doping concentration than the semiconductor



layer and extending at least below at least a portion of the said active zone and is separated from the active zone by the island-shaped region, in which, in projection, the distance in μm between the edge of the buried layer and the edge of the contact zone is at least equal to

$$2V_B/E_c$$

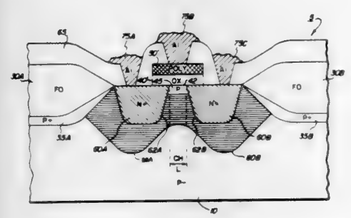
wherein E_c is the critical field strength in volts per μm above which avalanche multiplication occurs in the semi-conductor layer, and V_B is the breakdown voltage in volts of the p-n junction.

4,409,607

NORMALLY-ON ENHANCEMENT MODE MOSFET WITH NEGATIVE THRESHOLD GATING

Vladimir Rumennik, Playa Del Rey, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1980, Ser. No. 172,338
Int. Cl.³ H01L *27/02, 29/12, 29/78*
U.S. Cl. 357—23 **1 Claim**



1. A Normally-On enhancement mode MOSFET having a gate threshold voltage for nonconduction comprising:

a semiconductor substrate of a first conductivity type, said substrate being very lightly doped such that it has a relatively very high resistivity of at least 300 ohm centimeters,

a heavily doped source region and a heavily doped drain region provided at a surface of said substrate, said regions being of a second conductivity type whereby source and drain junctions are provided, each of said junctions having a depletion region associated therewith due to the built-in potential of the junction, said depletion regions extending substantially into said substrate due to the very light doping of said substrate,

and an insulated gate electrode coupled to said surface of said substrate adjacent said source and drain regions,

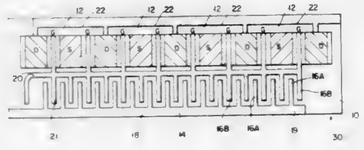
said source and drain regions being separated by a substrate channel of a length not greater than about one micron whereby said depletion regions associated with said junctions overlap in said channel from source region to drain region due to the substantial extension of said depletion regions into said substrate, the electric field associated with the overlapped depletion regions being of sufficient magnitude to create an inversion layer of said second conductivity type in said channel extending from source region to drain region, said surface inversion layer providing a conduction path through said channel as between said source and drain regions such that said MOSFET is normally in the conduction mode without application of said threshold gate voltage for nonconduction to said gate electrode.

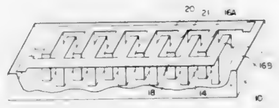
4,409,608

RECESSED INTERDIGITATED INTEGRATED CAPACITOR

Max N. Yoder, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 28, 1981, Ser. No. 258,345
Int. Cl.³ H01L *27/02, 29/06, 23/48, 29/44*
U.S. Cl. 357—51 **3 Claims**





1. An integrated circuit comprising:

a semiconductor substrate having first and second spaced apart surfaces and a resistivity of the material of the substrate being greater than 10^4 ohm-centimeters;

a first plurality of spaced apart electrodes embedded within the bulk of the substrate between the first and second surfaces;

a second plurality of spaced apart electrodes embedded within the bulk of the substrate between the first and second surfaces, the ones of the first electrodes alternating with the ones of the second electrodes along the plane of the substrate;

at least one electronic member formed within the substrate;

means interconnecting the first plurality of electrodes and the electronic member and disposed proximal the first surface; and

means interconnecting the second plurality of electrodes and disposed proximal the first surface;

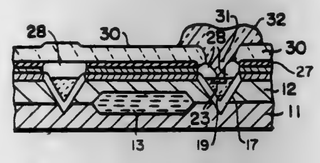
the first and second plurality of electrodes being metallized members forming interdigited opposite electrodes of a capacitor with a dielectric thereof being the substrate material.

4,409,609

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Takeshi Fukuda, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 18, 1981, Ser. No. 244,952
Int. Cl.³ H01L *29/06, 29/04, 27/12*
U.S. Cl. 357—55 **3 Claims**



1. A selected interconnection between a plurality of semiconductor devices on a substrate, comprising

said semiconductor substrate having a first conductivity type,

a semiconductor layer of a second conductivity type opposite to the first conductivity type, the layer being formed on the substrate,

a V-groove for selectively separating said devices, penetrating through the semiconductor layer, and reaching into the substrate,

an insulating film formed on the surface of the V-groove,

a polycrystalline semiconductor layer formed in the V-groove on the insulating film,

a single crystal semiconductor region formed along a surface portion of the polycrystal semiconductor layer, and

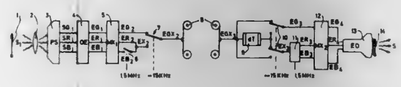
a metal wiring layer formed to selectively contact with the single crystal semiconductor region and said devices.

4,409,610

METHOD FOR REPRODUCING POLYCHROME IMAGES

Walter Jaeger, Cureglia, Switzerland, assignor to GX-Holding AG, Basel, Switzerland

Filed Nov. 25, 1980, Ser. No. 210,353
Claims priority, application Switzerland, Nov. 29, 1979, 10614/79
Int. Cl.³ H04N *9/34*
U.S. Cl. 358—12 **10 Claims**



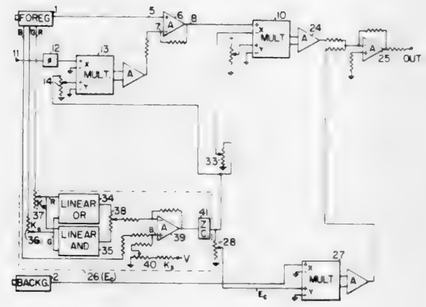
1. Method for reproducing polychrome moving images from an electric video signal sequence, characterized by the use of a video signal sequence which corresponds to an image scan and image reproduction with a line raster and the line by line video signal sequence comprises alternately a first and a second signal of which the first signal, at least in portions of a line, corresponds to a first colour separation and that the second signal, in portions of a line and sequentially, corresponds to at least two different other colour separations of the image original, that at least the first signal is repeated at least once by repetition and delayed by at least one field period and that at least the second signal is divided into signal components associated with its colour separations and that the first signal as well as the signal components of the second signal are converted into luminous image traces of different colour.

4,409,611

ENCODED SIGNAL COLOR IMAGE COMPOSITING

Petro Vlahos, Tarzana, Calif., assignor to Vlahos-Gottschalk Research Corp., now Ultimatte Corp., Reseda, Calif.

Filed Sep. 24, 1981, Ser. No. 305,073
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **19 Claims**



1. The method of compositing color image video signals involving a colored backing, which comprises the method steps of;

(a) forming a control signal E_b as a linear function of the red, green and blue video components of the foreground scene in accordance with the equation;

$$E_b = K[(B-G)-K_1(G-R)^+ - K_2(R-G)^+]^+,$$

(b) generating a chroma vector and adjusting the phase angle of the generated vector to match the phase angle of the vector representing the colored backing in the foreground scene video signal,

(c) removing the chroma of the colored backing by vector subtraction in which the amplitude of the generated vector is controlled by E_b and where K is initially adjusted to match vector amplitudes,

(d) removing the spurious chroma from the foreground subject caused by illumination of the subject by colored light from the backing by setting K_1 to unity and K_2 to zero in the E_b equation,

(e) forming a control signal E_c as a linear function of the red, green and blue video components of the foreground scene in accordance with the equation;

$$E_c = K_1[B-K_2(K_rR \text{ OR } K_gG)+(1-K_2)(K_rR \text{ AND } K_gG)-K_3(1-B)]^+,$$

(f) arithmetically subtracting E_b and E_c in a selected proportion from the foreground scene video signal at an amplitude that results in zero luminance over the area of the colored backing,

(g) linearly controlling the level of the background image video signal in proportion to the amplitude of control signal E_c,

(h) combining by arithmetic addition the foreground scene video signal from which has been removed the chroma and luminance of the colored backing, with the background scene video signal whose level has been controlled by E_c.

4,409,612

CIRCUIT ARRANGEMENT FOR SEPARATING THE COMPONENTS OF A PAL COLOR TELEVISION SIGNAL

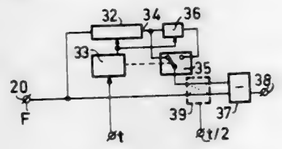
Leo Warmuth, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,308

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035647

Int. Cl.³ H04N *9/50*

U.S. Cl. 358—24 **2 Claims**



1. A circuit arrangement for separating the components of a PAL-colour television signal, in which the composite chrominance signal is applied through a first path and through a second path delayed by substantially one line period or a multiple thereof relative to the first path to respective inputs of a first and second combining stage, particularly an adder or a subtracting stage, from the outputs of which the separated chrominance signal components can be derived, said circuit arrangement comprising:

a first and second delay device in said second signal path, and

a first and second combining device having their inputs connected respectively to said first and second signal paths,

said delayed signal being applied to said first combining stage through said first delay device producing a time delay of, 283.5 chrominance subcarrier periods and to said second combining stage through said first and second delay devices, said second delay device producing a time delay of 0.5 chrominance subcarrier period.

4,409,613

SEPP-BASED DEFLECTION CONTROL CIRCUIT

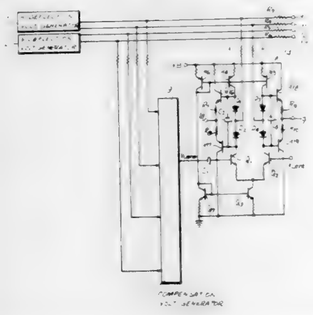
Takashi Nakamura; Yoshihiro Morioka; Kazunori Yamaji, all of Atsugi, Japan; Takashi Nakamura; Yoshihiro Morioka, and Kazunori Yamaji, all of Atsugi, Japan, assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Mar. 3, 1982, Ser. No. 354,307

Claims priority, application Japan, Mar. 4, 1981, 56-31004

Int. Cl.³ H04N *9/09*

U.S. Cl. 358—51 **10 Claims**



1. Apparatus for correcting scanning of an electron beam which is scanned in respective horizontal and vertical directions in at least one pickup tube of a television camera having a plurality of pickup tubes; comprising

a source of horizontal and vertical deflecting signals having respective outlets supplying said deflecting signals;

means for supplying said horizontal and vertical deflecting signals to respective horizontal and vertical deflection inputs of a predetermined one of said pickup tubes;

compensating voltage generating means having an input coupled to receive said horizontal and vertical deflecting signals and outputs providing respective deflection compensating voltages for selected ones of said pickup tubes; and

combining means for combining said respective deflection compensating voltages with corresponding ones of said horizontal and vertical deflecting signals to generate adjusted horizontal and vertical deflecting signals for application to the horizontal and vertical deflection inputs of said selected pickup tubes; said combining means including

transistor means having an input electrode coupled to receive the associated deflection compensating voltage and an output electrode coupled through a load resistor to one of said outputs of said source of horizontal and vertical deflecting signals; and

a pair of complementary transistors arranged in single-ended push-pull configuration, said complementary transistors having bases coupled to said output electrode of said transistor means and emitters coupled through respective emitter resistors to one of the deflection inputs of one said selected pickup tubes.

4,409,614

METHOD FOR THE REPRODUCTION OF ORIGINALS WHICH, WITH RESPECT TO THEIR COLOR CONTENT, ARE SCANNED ACCORDING TO A TRISTIMULUS METHOD

Helmut Eichler, Burgunderstr. 13, D-7601 Durbach; Friedrich W. Vorhagen, Am Wald 44, D-5190 Stolberg-Atsch, and Hans M. Hütten, Helleter Feldchenstr. 10, D-5102 Würselen-Broichweiden, all of Fed. Rep. of Germany

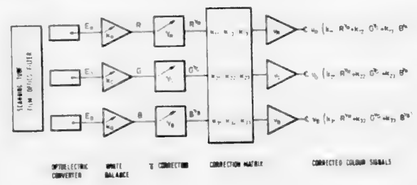
Continuation of Ser. No. 192,953, filed as PCT DE79/00121 on Oct. 9, 1979, published as WO80/00753. Apr. 17, 1980, § 102(e) dated Jun. 6, 1980, abandoned.

This application Dec. 7, 1981, Ser. No. 328,157

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1978, 2844158

Int. Cl.³ G03F *3/08*

U.S. Cl. 358—76 **72 Claims**



1. Method for reproduction of originals, including originals of non-metameric colour composition, where the original is scanned in each case, with respect to its colour content, according to a tristimulus method and after processing of the scanning signals a reproduction is obtained, via colour mixture, by means of a predetermined colour rendition system, characterized in that the scanning signals (E_R,E_G,E_B) are converted, into three primary colour signals (e.g. X, Y, Z) having actual colour values in a predetermined colour coordinate system corresponding substantially identically to theoretical colour values of the original, and that adaptation of the primary colour signals or the signals deriving from these to at least one colour rendition system and/or measures to alter the gradation and/or objective measures to alter the colour rendition of individual colours in the overall image or in discrete areas of

the image and/or any other further non-linear processing of the primary colour signals or the signals deriving from these are only carried out after said scanning signals have been converted into the primary colour signals having actual colour values in said predetermined colour coordinate system corresponding substantially identically to said theoretical colour values of the original.

4,409,615

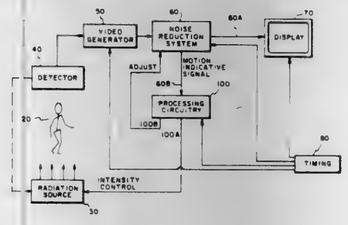
VIDEO IMAGING WITH AUTOMATICALLY CONTROLLED RADIATION SOURCE

Renville H. McMann, Jr., New Canaan, Conn.; Stephen Kreinik, Monsey, N.Y., and Martin M. Novack, Weston, Conn., assignors to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Dec. 29, 1980, Ser. No. 220,793

Int. Cl.³ H04N *5/32*

U.S. Cl. 358—111 **27 Claims**



1. Apparatus for imaging a body, comprising:

an adjustable source of radiation directable at the body;

means for detecting radiation received from said body;

means for converting the detected radiation into an electronic video signal;

motion detection means responsive to said video signal for generating a motion-indicative signal as a function of differences between present and past signal levels at elemental positions of the video frame;

control signal generating means responsive to said motion-indicative signal for generating an intensity control signal as a function of said motion-indicative signal;

means for applying said control signal to said source of radiation to vary the active intensity of said source of radiation; and

means for displaying said video signal.

4,409,616

DIGITAL DENTAL SYSTEM AND METHOD

Robert S. Ledley, Silver Spring, Md., assignor to Georgetown University, Washington, D.C.

Filed Mar. 20, 1981, Ser. No. 245,997

Int. Cl.³ H04N *7/18, 5/32*

U.S. Cl. 358—111 **8 Claims**

1. A digital dental system for real time display of a patient's dental image to detect changes with respect to at least one previous dental image of the patient, comprising:

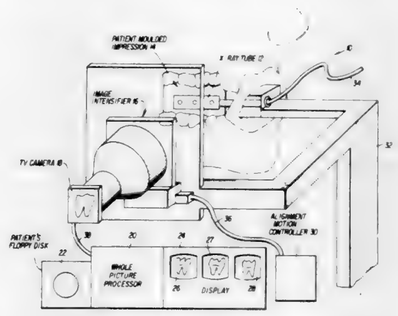
imaging means for obtaining a dental image from the patient in real time and providing said dental image as electrical signals;

converting means for converting said electrical signals to digital signals;

input means for inputting further digital signals corresponding to said at least one previous dental image of the patient;

processing means for processing said digital signals and said further digital signals to develop corresponding display signals and further display signals; and

display means comprising a display unit and at least one further display unit responsive to said display signals and said further display signals, respectively, for simultaneously and in real time displaying said dental image and said at least one previous dental image, respectively of said patient wherein said processing means comprises a plurality of memories, one for each said display unit and said at least one further display unit, and a video crossbar switch connecting said converting means to said plurality of memories, said plurality of memories storing said digital signals and said further digital signals, respectively, said processing means further comprises a video processor connected to said video crossbar switch, said video crossbar switch being actuable for routing digital signals from said plurality of memories to said video processor, said video processor operating to whole picture process said digital signals to determine changes in the patient's dental image with respect to the at least one previous dental image of the patient.



4,409,617

INFORMATION PROCESSING

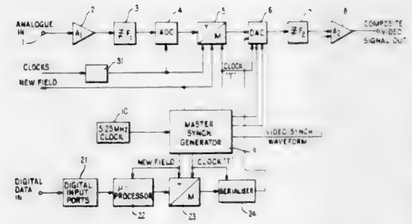
Norman P. Whitehead, Newbury; Kenneth D. Boness, Wallingford, and Roger Martin, Faringdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 30, 1981, Ser. No. 326,164

Claims priority, application United Kingdom, Dec. 3, 1980, 8038807

Int. Cl.³ H04N *7/08*

U.S. Cl. 358—147 **13 Claims**



1. An information processor for rendering input data compatible with standard video recording and/or display equipment, said information processor comprising means for digitizing the input data over periods which are synchronous with the fields of a standard video signal, memory means for storing the digitized data and for releasing stored digitized data in correspondence with the line scan of a standard video monitor, said memory means having two halves which correspond to the interlaced fields of a standard video signal and being so arranged that one half is filled while the other is emptied, and means for converting the released stored digitized data into video luminance signals.

4,409,618

DIGITAL VIDEO EFFECTS SYSTEM EMPLOYING A CHROMA-KEY TRACKING TECHNIQUE

Masao Inaba, and Kazuo Kashigi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

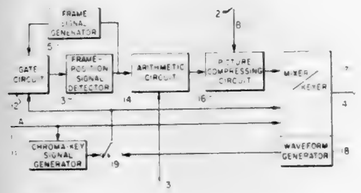
Continuation of Ser. No. 87,334, Oct. 23, 1979, abandoned, which is a division of Ser. No. 922,634, Jul. 7, 1978, Pat. No. 4,200,890. This application Sep. 10, 1981, Ser. No. 301,037

Claims priority, application Japan, Jul. 11, 1977, 52-83285; Jul. 11, 1977, 52-83286

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ H04N *5/22, 9/535*

U.S. Cl. 358—183 **3 Claims**



1. A tracking system for producing special effects on a television picture, said television picture comprised of a first picture and a second picture inserted into said first picture, said first and second pictures being represented by first and second video signals respectively, said system comprising:

means for producing a key signal representing a key frame to be positioned on said first picture; means for removing electrical noise signals from said key signal to produce a noise-removed key signal; means responsive to said noise-removed key signal for producing a position signal representing a position of a circumscribed frame of said key frame, said position signal including two horizontal position signal values and two vertical position signal values; means for producing a compressed second video signal representing a compressed second picture in response to said second video signal and said position signal; means responsive to said two horizontal position signal values and two vertical position signal values for producing a frame signal, said frame signal being applied to said removing means; and means responsive to said key signal for selectively combining said first video signal and said compressed second video signal, whereby said special effects are produced.

4,409,619

TELEVISION CAMERA WITH AN ELECTRONIC VIEW FINDER

Takayuki Takubo, and Takeshi Okano, both of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 30, 1981, Ser. No. 259,458

Claims priority, application Japan, Apr. 30, 1980, 55-59516[U]

Int. Cl.³ H04N *5/26*

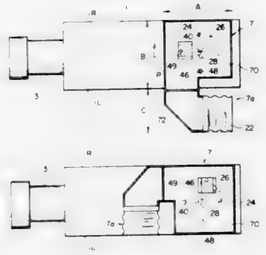
U.S. Cl. 358—224 **14 Claims**

1. A television camera assembly comprising:

(a) a television camera body having a top and two sides which are substantially parallel to a camera axis passing through a lens attached to said television camera body and a subject to be viewed by said television camera;

(b) an electronic view finder having a body mounted on or above the top of said television camera body, an eyepiece portion attached to one side of a body of said electronic view finder; and

(c) means for pivotally mounting said body of said electronic view finder on or above the top of said television camera body so that said electronic view finder can be rotated between a position of use and a position of non-use through substantially 90 degrees in a plane parallel to the camera axis and perpendicular to said two sides of said television camera body, the electronic view finder including the eyepiece portion having a length less than its width in the direction of the camera axis, when in said position of use, said eyepiece portion projecting from one side of said television camera body when said electronic view finder body is rotated to said position of use whereby a user can readily look into said eyepiece portion when using said



television camera assembly, and said eyepiece portion being positioned above and substantially contiguous with said television camera body when said electronic view finder body is rotated to the position of non-use whereby said eyepiece portion does not project substantially beyond the sides of said television camera body when viewed from the top, thereby reducing the effective width of said television camera assembly when altering it to the position of non-use.

4,409,620

PICTURE DIVISION TYPE AUTOMATIC EXPOSURE CONTROL DEVICE FOR TELEVISION CAMERA

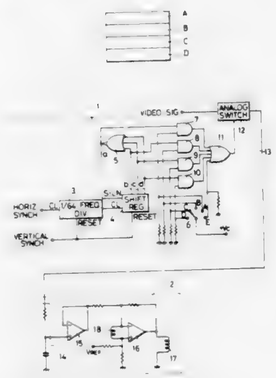
Shigeo Enomoto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 20, 1981, Ser. No. 284,745

Claims priority, application Japan, Aug. 26, 1980, 55-117348

Int. Cl.³ H04N *5/38*

U.S. Cl. 358—228 **12 Claims**



1. An automatic exposure control circuit for a television camera, comprising:

a video signal extracting circuit means for dividing a video signal for a field into a plurality of parts in a time division mode and for selectively extracting any one of said parts each of which represents a different specified picture region less than the entire field; and

means for performing automatic exposure control in response to a video signal corresponding only to said picture region extracted by said video signal extracting circuit means.

4,409,621

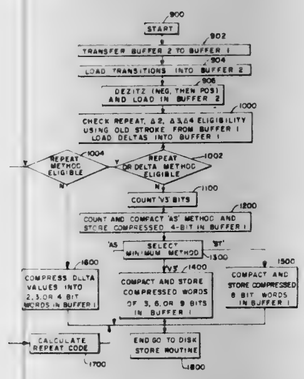
METHOD AND APPARATUS FOR COMPACTING AND DECOMPACTING CHARACTER IN ACCORDANCE WITH A VARIETY OF METHODS

John S. Richards, and Alan G. DePaoli, both of Bolingbrook, Ill., assignors to Information International, Inc., Culver City, Calif.

Division of Ser. No. 908,772, May 23, 1978. This application Jun. 25, 1979, Ser. No. 51,945

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—260 **32 Claims**



1. An apparatus for providing a coded representation of a character comprising a plurality of substantially linear, adjacent zones, selected of said zones comprising one or more segments, each segment having a transition at each end thereof, the combination of:

(a) means for providing signals indicative of the orthogonal positions of said transitions;

(b) means for storing separately the transition signals of a first zone from the transition signals of a second zone adjacent to said first zone;

(c) means coupled to said storing means for counting the transition signals of said first and second zones to provide first and second counts respectively, for comparing said first count of the number of transition signals in said first zone with respect to said second count of the number of transition signals in said second zone, and for selecting one of a plurality of methods of encoding which provides the smallest quantity of storable data indicative of the transitions of each of said zones dependent upon said comparison; and

(d) means for encoding the transition signals of each of said zones into encoded data in accordance with the encoding method selected for said zone; said means for counting, comparing and selecting including means responsive to the first and second counts of transition signals in said first and second zones being unequal for examining the number and spacing of said transitions within a zone to select a first encoding method if there are a relatively small number of transitions within a single zone, to select a second encoding method if there are a large number of transitions within a single zone, and to select a third encoding method if there is a larger number of transitions than that required to initiate said second encoding method.

4,409,622

METHOD OF SKIPPING ALL-WHITE BLOCKS BY INTERPOSING A WHITE SIGNAL PIECE BETWEEN TWO ADJACENT BLOCKS WHICH ARE NOT CONSECUTIVE IN AN ORIGINAL FACSIMILE SIGNAL

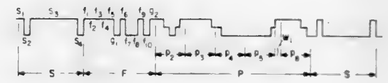
Hideaki Watanabe, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1981, Ser. No. 318,950

Claims priority, application Japan, Nov. 11, 1980, 55-158710

Int. Cl.³ H04N *1/40, 7/12*

U.S. Cl. 358—260 **5 Claims**



1. A method of compressing graphic information of an original facsimile signal comprising black and white signal elements representative, respectively, of black and white areas arranged along a line of scan on an original text, said method including the steps of dividing said original facsimile signal into a plurality of signal blocks corresponding to graphic blocks on said original text and having predetermined durations, respectively, of producing control flags for the respective signal blocks for use in discriminating a signal block consisting of a white signal element from a signal block comprising a signal element other than the white signal element, and of producing a compressed facsimile signal comprising said control flags and a succession of the signal blocks comprising the signal elements other than the white signal element with the signal blocks consisting of white signal elements deleted from said succession, wherein the improvement comprises the step of interposing a white signal piece of a preselected duration between two adjacent signal blocks in said succession only when said two adjacent signal blocks do not correspond to the graphic blocks which are continuous on said original text.

4,409,623

METHOD AND EQUIPMENT FOR PROCESSING GRAY SCALE FACSIMILE SIGNAL

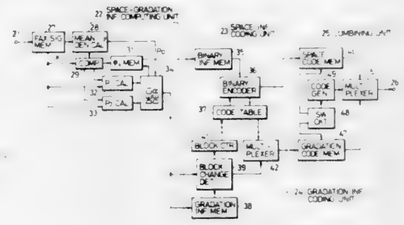
Makoto Kobayashi, Yokosuka; Tetsuji Yamamoto, and Yoshihiro Jimbo, both of Yokohama, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 25, 1982, Ser. No. 342,548

Claims priority, application Japan, Jan. 31, 1981, 56-12233; Jan. 31, 1981, 56-12234; Apr. 20, 1981, 56-59505

Int. Cl.³ H04N *7/12*

U.S. Cl. 358—261 **14 Claims**



1. A method for processing a gray scale facsimile signal, comprising the steps of:

dividing the gray scale facsimile signal into a plurality of block signals, each block signal being a facsimile signal containing a gray scale component which corresponds to one of the blocks obtained by dividing an original picture of the facsim-

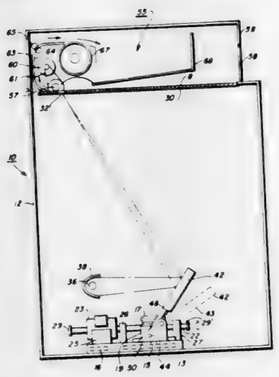
ile signal into a plurality of blocks, each composed of a plurality of picture elements;
classifying picture element signals of each block signal into a high optical density and a low optical density group through the use of a threshold value and generating binary space information indicating which one of the two groups each picture element signal belongs to;
obtaining means gradation information of the high optical density group and mean gradation information of the low optical density group for each block signal and making the gradation of each block signal to be represented by the two pieces of gradation information;
making the gradation information of the block signal to be represented by one of the two pieces of gradation information in the case where the difference between the two pieces of gradation information of the block signal is smaller than a predetermined value and/or in the case where the number of picture element signals belonging to either one of the two groups is smaller than a predetermined value;
correcting the space information to space information having all the picture elements of the block signal belonging to one of the two groups in the case of the gradation information of the block signal being represented by one of the two pieces of gradation information;
coding the space information into a binary code corresponding to the order of occurrence of the picture element signals of the facsimile signal to obtain space coded data; and
combining the space coded data and the representative gradation information into a series of coded data for output.

4,409,624

RASTER SCANNING APPARATUS

William Kingsley, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1982, Ser. No. 364,132
Int. Cl.³ H04N *1/04*; G03G *15/28*
U.S. Cl. 358—285 **12 Claims**



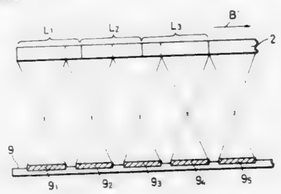
10. A raster input scanner comprising:
(a) a transparent platen for supporting documents to be scanned;
(b) lamp means movable across the length of said platen to progressively illuminate the document thereon during scanning;
(c) lamp drive means for moving said lamp means;
(d) a linear scanning array, said array being stationary;
(e) a lens interposed between said platen and said array for focusing image lines from said document onto said array; and
(f) drive means for moving said lens in synchronism with said lamp means at a fraction of the rate at which said lamp means is moved, the fractional rate at which said lens is moved being proportional to the reduction ratio between said platen and said array.

4,409,625

METHOD AND APPARATUS FOR INFORMATION READING IN ORIGINAL DOCUMENT READERS

Satoru Ogasawara, Ebina, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 7, 1982, Ser. No. 337,892
Claims priority, application Japan, Jan. 7, 1981, 56-972
Int. Cl.³ H04N *1/17*
U.S. Cl. 358—288 **10 Claims**



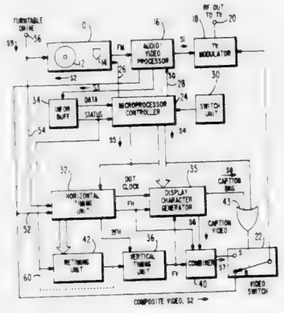
1. An information reading device comprising a sensor having a plurality of sensing elements receiving an image of an original document through an optical system, said original document having respective lines of information thereon separated by first intervals, said sensing elements not aligned with said lines of information separated by said first intervals such that the lines of information in the image received by said sensing elements are not aligned with said sensing elements, and logic means for combining selected sensor element outputs to obtain signals representing information on respective lines.

4,409,626

VIDEO DISC PLAYER HAVING VERTICAL TIMING SIGNAL GENERATOR

James M. Ferguson, Levittown, Pa.; Thomas Y. Chen, Brunswick, and Walter G. Gibson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1981, Ser. No. 309,193
Int. Cl.³ H04N *5/76*, *5/04*
U.S. Cl. 358—338 **10 Claims**



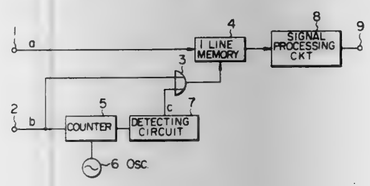
1. A video disc player, comprising:
signal recovery means for providing a composite video output signal having recurring horizontal timing components and recurring vertical timing components and in which a data word is present during a horizontal line of the vertical interval thereof;
first means coupled to said recovery means for processing said data words to provide a data status signal indicative of the validity of each processed data word;
second means coupled to said recovery means for providing a reference signal having a frequency proportional to the horizontal line rate of said composite video output signal;
third means responsive to said reference signal for continuously producing a vertical timing signal having a frequency proportional to the field rate of said composite video output signal;
fourth means for applying said data status signal to said third means for causing said vertical timing signal produced by said third means to exhibit a predetermined timing relationship with said vertical timing component of said composite video output signal; and
fifth means for utilizing said vertical timing signal.

4,409,627

VIDEO SIGNAL DECODING CIRCUIT

Yoshizumi Eto, Sagamihara, and Yasuhiro Hirano, Hachioji, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1980, Ser. No. 184,313
Claims priority, application Japan, Sep. 10, 1979, 54-115282
Int. Cl.³ H04N *5/94*
U.S. Cl. 360—38.1 **6 Claims**



1. A video signal decoding circuit for decoding a received video code signal which is accompanied by a clock signal comprised of pulses synchronized with the video code signal comprising:
memory means for storing said video code signal in synchronism with said clock signal;
signal processing means coupled to said memory means for decoding the data stored in said memory means;
first means for detecting a drop-out of pulses in only said clock signal; and
second means coupled to said memory means for producing a quasi-code in that portion of the video code signal which occurs only when a drop-out of said clock signal is detected by said first means.

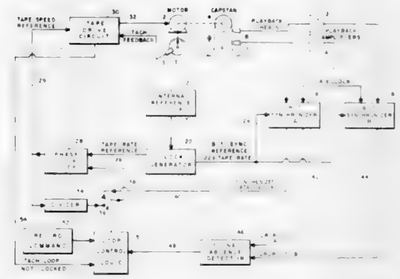
4,409,628

TAPE TRANSPORT SPEED CONTROL USING A PLAYBACK DATA DERIVED CLOCK SIGNAL

Stanley H. Frimet, Englewood, and Leighton A. Meeks, Littleton, both of Colo., assignors to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 16, 1981, Ser. No. 321,365
Int. Cl.³ G11B *15/52*
U.S. Cl. 360—73 **14 Claims**

1. A tape transport speed control system comprising:
playback means for reading digital data signals recorded on a preselected recording track of a recording medium,
means for driving the recording medium past said playback means;
means for synthesizing digital clock signals representative of the speed of the recording medium during the recording of the digital data signals from said digital data signals;
means for producing a digital signal representative of the speed of the recording medium during the playback of said digital data signals, and
speed control means responsive said digital signal from said means for producing and said digital clock signal from said means for synthesizing to produce a control signal for said means for driving to maintain the speed of the recording medium at the speed used during the recording of said digital data signals.

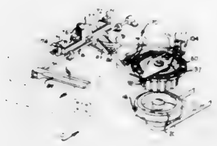


4,409,629

MECHANISM FOR CENTERING AND CLAMPING A FLOPPY DISC

Norman M. Puls, Woodland Hills, Calif., assignor to Magnum Division of Tandon Corporation, Chatsworth, Calif.

Filed May 4, 1981, Ser. No. 259,913
Int. Cl.³ G11B *5/016*, *17/02*, *25/04*
U.S. Cl. 360—99 **10 Claims**



1. A positioner system for floppy disc drives having a rotatable center spindle comprising:
a positioner element comprising a multiple-petal cone insertable within the central aperture of a floppy disc, a portion of the outer cone surface defined by the petals being greater in diameter than the nominal dimension of the interior aperture of the floppy disc, the petals being sufficiently compliant to be bent inwardly by the floppy disc edge upon insertion without distorting the floppy disc and to thereafter restore the unclamped disc to concentricity; and
follower means mounted adjacent the positioner element and movable to engage the petals thereof to urge the petals downwardly to clamp the floppy disc against the spindle.

4,409,630

INFORMATION SIGNAL RECORDING AND/OR REPRODUCING APPARATUS AND A RECORDING JACKET FOR USE THEREWITH

Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 9, 1980, Ser. No. 214,737
Claims priority, application Japan, Dec. 29, 1979, 54-171747
Int. Cl.³ G11B *5/016*, *21/08*, *5/82*, *23/02*
U.S. Cl. 360—99 **31 Claims**

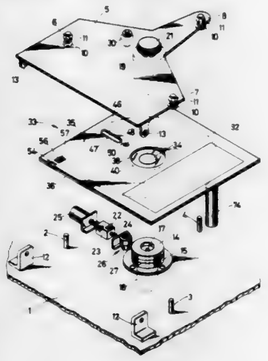
1. A jacket for positioning a recording sheet in an informa-

tion signal recording and/or reproducing apparatus of the type including holding means, comprising:

an upper plate having a peripheral portion;

a lower plate having a peripheral portion and cooperating with said upper plate for sandwiching said recording sheet between said upper plate and said lower plate;

a peripheral wall enclosing the peripheral portions of the upper and lower plates; and



positioning means located on at least one of said upper and lower plates and adapted to cooperate with said holding means so that said holding means pulls at least said one of said upper plate and said lower plate in a direction away from the other for maintaining said upper plate and said lower plate a substantially fixed distance apart during operation of said apparatus with said jacket and recording sheet positioned therein.

4,409,631

OPTICAL APPARATUS AND METHOD FOR REPRODUCING INFORMATION RECORDED IN A MAGNETIC RECORDING MEDIUM

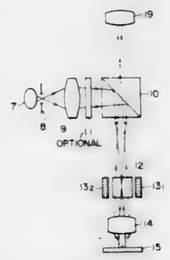
Kazuya Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 28, 1981, Ser. No. 306,536

Claims priority, application Japan, Dec. 27, 1980, 55-188878

Int. Cl.³ G11B *5/32*

U.S. Cl. 360—114 **5 Claims**



1. An optical apparatus to reproduce information recorded in a magnetic recording medium by utilization of the interaction between light and magnetism, which comprises:

(a) a light source to supply a light beam for reproduction;

(b) a polarizing beam splitter, the transmission and reflection factors of which depend on the polarization direction of the light beam, and which leads said light beam for reproduction from said light source to the magnetic recording medium, and, in interaction with the magnetism in said magnetic recording medium, receives again said emitting light beam for reproduction to lead it to a direction different from the direction of said light source; and

(c) rotatory polarizing means disposed in a light path of said light beam for reproduction between said polarizing beam splitter and said magnetic recording medium, and to rotate the polarized plane of said light beam for reproduction.

4,409,632

MAGNETIC HEAD ARRANGEMENT

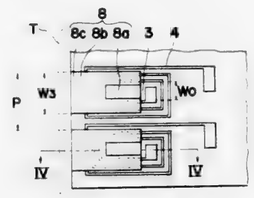
Kenji Kanai, Neyagawa; Nobuyuki Kaminaka, Moriguchi; Norimoto Nouchi, Katano, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 19, 1980, Ser. No. 208,480

Claims priority, application Japan, Nov. 20, 1979, 54-151047

Int. Cl.³ G11B *5/20, 5/22*

U.S. Cl. 360—123 **7 Claims**



1. A magnetic head arrangement including a plurality of magnetic head units aligned with a predetermined pitch along a first direction orthogonal to a second direction of movement of a recording medium, each said magnetic head unit comprising:

a first magnetic layer;

a first electrically insulating layer in contact with said first magnetic layer;

an electrically conductive layer formed directly on said first electrically insulating layer, said electrically conductive layer being in the shape of a spiral having a central opening;

a second electrically insulating layer covering a portion of said spiral which is wider than said central opening;

a second magnetic layer having a contacting portion within said central opening and in magnetic connection with said first magnetic layer, an intermediate portion located above said portion of said spiral and electrically insulated therefrom by said second electrically insulating layer, and a gap forming portion positioned exteriorly of said spiral and forming with said first magnetic layer a predetermined gap adapted to confront a recording medium;

said second magnetic layer including said gap forming portion having a width in said first direction greater than the width in said first direction of said central opening; and

the total length of a border between said contacting portion and said intermediate portion being equal to or greater than the width in said first direction of said gap forming portion.

4,409,633

MN-ZN SINGLE CRYSTALLINE FERRITE HEAD AND A METHOD OF MAKING THE SAME

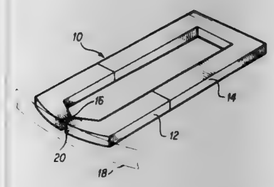
Hisashi Watanabe, Yokohama; Yoshiteru Urino, Tokyo, and Shinichi Aotsu, Urawa, all of Japan, assignors to Akai Electric Company Limited, Tokyo, Japan

Division of Ser. No. 18,768, Mar. 8, 1979, Pat. No. 4,285,894. This application Apr. 3, 1981, Ser. No. 250,557

Claims priority, application Japan, Mar. 13, 1978, 53-28873

Int. Cl.³ G11B *5/14, 5/22*

U.S. Cl. 360—127 **3 Claims**



1. A magnetic head, for a magnetic tape recording and reproducing apparatus, comprising:

at least one head core, at least a part of which is made of Mn-Zn single crystalline ferrites where an air gap is formed;

wherein different phases are locally precipitated only at a region including the air gap at the central portion thereof where a running magnetic tape is contacted during the recording and reproducing operations of the tape recording and reproducing apparatus.

4,409,634

TAPE RECORDER

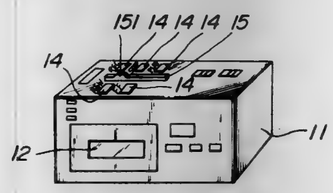
Ryoichi Sawaki, and Toshihiko Kadota, both of Hachioji, Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed May 8, 1981, Ser. No. 261,754

Claims priority, application Japan, May 12, 1980, 55-64631[U]

Int. Cl.³ G11B *15/04*

U.S. Cl. 360—137 **1 Claim**



1. An audio tape mechanism comprising:

a casing;

a cassette tape chamber for receiving a tape cassette therein;

speaker means for generating sound developed from operative engagement of a tape cassette placed within said tape chamber with said audio tape mechanism;

control means within said audio tape mechanism for controlling operation of said tape cassette to enable said audio tape mechanism to both record sound on said tape cassette and to reproduce recorded sound through said speaker means;

a plurality of operating buttons located on the exterior of said casing for enabling selective actuation of said control means for effecting controlled actuation of said audio tape mechanism, said operating buttons including a record button capable of effecting operation of said audio tape mechanism to record sound on said tape cassette while simultaneously erasing any sound previously recorded thereon; and

tactile indicating means arranged on said casing adjacent said buttons to enable said buttons to be distinguished one from the other by human touch alone, said tactile indicating means including means for enabling said record button to be readily distinguished from the others of said plurality of buttons;

said tactile indicating means comprising a projected wall arranged to project from the surface of said casing, said projected wall being formed with a portion extending about said record button on at least three sides thereof.

4,409,635

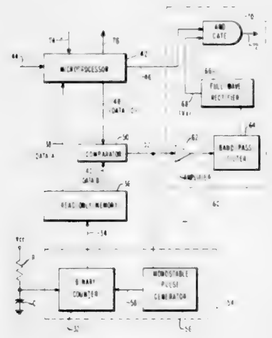
ELECTRICAL POWER SYSTEM WITH FAULT TOLERANT CONTROL UNIT

Mark G. Kraus, Churchill Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1981, Ser. No. 275,425

Int. Cl.³ H02H *7/26*

U.S. Cl. 361—62 **16 Claims**



1. An electrical power system comprising:

a plurality of generators;

a plurality of contactors individually connected in series with the output of said generators and a plurality of power buses;

computer means having input means for receiving information signals and output means for delivering digitally encoded information signals;

said computer means being adapted to treat said received information signals in accordance with a predetermined program and to produce said digitally encoded output information signals;

said computer means being further adapted to run through a self-test program and to generate a digital control word at the end of each test program sequence after a fixed time interval following the initiation of said self-test program, wherein said control word encodes the test program results;

a memory for storing predetermined digitally encoded messages and self-test routine instructions in a given sequence and outputting said messages and said self-test routine instructions;

a comparator for comparing said predetermined digitally encoded messages from said memory means and said digitally encoded control words from said computer means, producing an output signal at a first logic level when said messages are equivalent to said control words and producing an output signal at a second logic level when said messages are not equivalent to said control words;

means for initializing said memory such that a selected predetermined digitally encoded message appears at the out-

put of said memory when electrical power is applied to the control unit;

feedback means responsive to a transition in said comparator means output signal which delivers signals to said memory means for the purpose of indexing said predetermined digitally encoded messages and self-test routine instructions after said fixed time interval following the occurrence of said transition; and

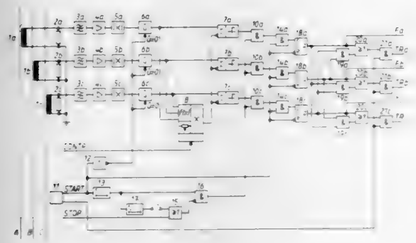
output means responsive to said comparator means for controlling said contactors in accordance with said computer means output information signals when the comparator means output signal periodically switches between said first and second logic levels to define a square wave, and for driving said contactors into a predetermined state when the comparator means output signal fails to define a square wave.

4,409,636

DEVICE FOR DETECTING FAULTY PHASES IN A MULTI-PHASE ELECTRICAL NETWORK

Nils Brandt, and Torbjörn Einarsson, both of Västeras, Sweden, assignors to Asea Aktiebolag, Västeras, Sweden

Filed Dec. 4, 1981, Ser. No. 327,454
Claims priority, application Sweden, Dec. 5, 1980, 8008576
Int. Cl.³ H02H *3/26*
U.S. Cl. 361—87 **13 Claims**



1. A device for detecting at least one faulty phase in a multiphase electrical network comprising,

a band exclusion filter connected to each phase of the network for filtering off the part of a received signal which has the same frequency as the nominal operating frequency of the network, said signal being proportional to the current which flows through the phase,

a first output for each phase for indicating whether or not there is a fault in that phase,

a second output of the device for each phase for a tripping signal for supply to a circuit breaker in that phase,

a rectifying unit,

a unit for determining the peak value of the output from the rectifier unit, both said rectifying unit and said peak value determining unit being connected to each said band exclusion filter,

a function element to receive the output signals from the peak value forming units in all the phases and to produce an output signal which represents a percentage of the phase signal whose amplitude is highest,

a level and comparison device for each phase, in which the output signal from the function element is compared with the rectified peak value for each phase, and

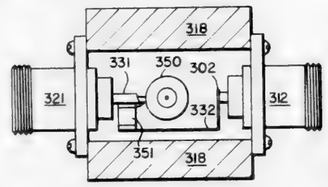
means to control the generation of signals for said first and second outputs of the device from the output signal from the respective level and comparison device.

4,409,637

CONNECTOR FOR ELECTROMAGNETIC IMPULSE SUPPRESSION

Roger R. Block, 4712 S. Wind Blvd., Kissimmee, Fla. 32741

Continuation-in-part of Ser. No. 138,354, Apr. 8, 1980, Pat. No. 4,359,764. This application Nov. 15, 1982, Ser. No. 441,765
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—119 **14 Claims**



1. An electrical impulse suppressor for shunting electromagnetic impulse energy along a radio frequency signal transmission line of the type having primary and secondary conductors and a known characteristic impedance therebetween, the suppressor comprising in combination:

paired first and second electrical connectors each having primary and secondary conductors for being operatively interposed along the primary and secondary conductors of the radio frequency signal transmission line;

first and second discharge means each for defining a known breakdown voltage and a known capacitance between first and second sections thereof;

first means for electrically coupling said first section of said first discharge means between said primary conductors of said first and second electrical connectors;

second means for electrically coupling said first section of said second discharge means between said secondary conductors of said first and second electrical connectors; and

groundplane means located adjacent said first means and said second means for electrically coupling said second section of each of said discharge means to a ground potential, with said first means and said second means and groundplane means having known inductances which interact with said capacitances of each of said discharge means and any stray capacitance of the combination thereof to produce a characteristic impedance which is generally equal to the characteristic impedance of the radio frequency signal cable, whereby the suppressor will shunt electrical impulse energy to ground potential while normally representing a low standing wave ratio for radio frequency energy transmitted along the transmission line.

4,409,638

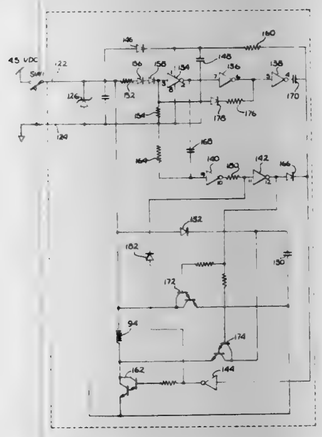
INTEGRATED LATCHING ACTUATORS

Oded E. Sturman, c/o Kineret Engineering, 9819 Etiwanda Ave.; Benjamin Grill, 9819 Etiwanda Ave., both of Northridge, Calif. 91325, and Lynn Harrison, 23554 Cherry St., Newhall, Calif. 91321

Filed Oct. 14, 1981, Ser. No. 311,174
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—152 **11 Claims**

1. An integrated latching actuator comprising an actuator having a stationary magnetic member, at least one coil, a moveable magnetic member and a return means, said stationary magnetic and said moveable magnetic member forming a magnetic circuit, said moveable magnetic member being moveable with respect to said stationary magnetic member between a first latched position and a second unlatched position, said at least one coil being disposed in said magnetic circuit so that a first current pulse therein magnetizes said magnetic circuit and encourages said moveable magnetic member to said first position wherein the retentivity of said magnetic circuit will maintain said moveable magnetic member at said first position, and a second current pulse therein substantially demagnetizes said magnetic circuit, said return means being a means for encouraging said moveable magnetic member to said second position upon substantial demagnitization of said magnetic circuit

circuit means having first and second electrical connections and being coupled to said at least one coil, said circuit means being a means responsive to a first predetermined voltage sequence applied to said electrical connections to provide said first current pulse to said at least one coil, and



responsive to a second predetermined voltage sequence applied to said electrical input connections to provide said second current pulse to said at least one coil, wherein said first predetermined voltage sequence is the application of a substantially nonzero voltage, the removal of said substantially nonzero voltage for a period less than a predetermined time period, followed by the reapplication of the substantially nonzero voltage

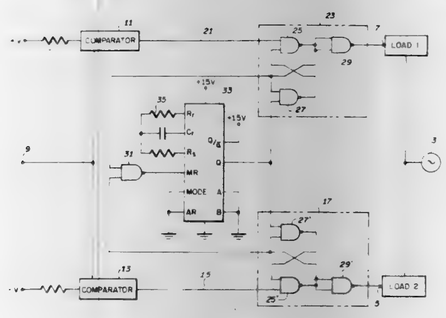
enclosure means containing said actuator and said circuit means, said first and second electrical input connections being accessible outside said enclosure means.

4,409,639

SOLENOID DRIVER CIRCUIT

Charles R. Wesner, Crozet, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,445
Int. Cl.³ H01H *47/18*
U.S. Cl. 361—167 **4 Claims**



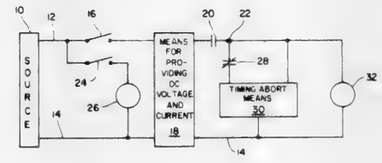
1. A driver circuit for energizing a solenoid in response to analog input signals, said circuit comprising input terminal means for receiving said analog input signals, comparator means coupled to said input terminal means for producing a high constant value control signal whenever the input signal exceeds a predetermined threshold value, output terminal means for coupling the control signal to a load, gating circuit means for coupling said control signals to said output terminal means, and timing means for disabling said gating circuit means for a predetermined time interval after the termination of a high level control signal, said gating circuit means including signal gating means through which the control signal is coupled to the output terminal means, and enabling gating means for enabling and disabling said signal gating means in response to the output of said timing means.

4,409,640

ABORT CYCLE TIMER

Mark V. Profio, Wauwatosa; James T. Libert, Waukesha, and Julian C. Kampf, Grafton, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed Nov. 9, 1981, Ser. No. 319,487
Int. Cl.³ H01H *47/18*
U.S. Cl. 361—197 **14 Claims**



1. An abort cycle timer circuit connected to an AC source of electrical power having first and second conductors and providing an AC electrical signal and for operating electrical equipment, said circuit comprising:

a means for providing a substantially DC voltage and current;

a first relay having at least one set of normally open contacts and at least one set of normally closed contacts, said normally open contacts connected between said means for providing a DC voltage and current and a junction point, and one of said normally closed contacts connected to said junction point;

a first means for causing an open circuit connected in series between the first conductor and said means for providing a DC voltage and current;

a second means for causing an open circuit connected in series with a coil of said first relay between the first conductor and the second conductor; and,

a timing abort means for operating a coil of a second relay and connected to said normally closed contacts of said first relay, said junction point and the second conductor, said coil of said second relay connected between said junction point and the second conductor, said second relay having normally open and/or normally closed contacts.

4,409,641

ENVIRONMENTALLY PROTECTED ELECTRONIC NETWORK STRUCTURE AND HOUSING COMBINATION

Gert Jakob, Stuttgart; Willi Gansert, Kornwestheim; Siegfried Goetzke, Bietigheim-Bissingen, and Lothar Ruttkowski, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 12, 1981, Ser. No. 262,914
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 3020902
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **15 Claims**

1. Environmentally protected electronic network structure,

particularly a control system for automotive vehicles, including a printed circuit board (**41**) and electrical and electronic circuit elements (**42, 43, 65**), at least some of which (**43, 65**) require cooling, having

a housing (**1**) retaining said printed circuit board;

a cover (**49**) closing off the housing,

the electrical and electronic circuit elements being supported on the printed circuit board;

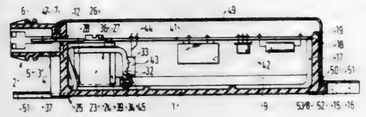
a heat conducting element (**24, 25; 73, 75**) located in thermal transfer relation with respect to said at least some circuit elements requiring cooling to conduct heat therefrom;

and an externally accessible multi-terminal connection socket (**2**) to provide externally accessible electrical terminals,

wherein

the housing comprises a unitary pan or tub-shaped element (**1**) of an electrically insulating plastic material;

said printed circuit board (**41**) having a unitary projecting portion forming a projecting contact terminal strip (**47**);



said housing being formed with a slit (**3**) through which said projecting terminal portion extends, and further being formed with a plug receiving portion externally of the slit and adjacent the projecting portion (**47**) of the printed circuit board, with clearance, to permit engagement with a plug connector for the terminals of the terminal strip on the printed circuit board;

said unitary plastic element being further formed with internal locating means for positioning and holding the printed circuit board (**41**) therein;

being additionally formed with an internal attachment means (**23, 62, 69**) for attachment, in heat transfer relation, of said heat conducting element (**24, 25; 73, 75**);

and being additionally formed with external attachment means (**13, 15**) for attachment of the housing to a support structure on the vehicle;

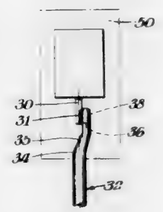
and wherein said cover (**49**) comprises a metal lid secured to said housing element (**1**) and closing off the pan or tub-shaped element, while providing for radiation of heat generated by the electrical and electronic elements positioned within the housing.

4,409,642

OFFSET LEAD CONFIGURATION FOR SOLID ELECTROLYTE CAPACITOR

Douglas M. Edson, Alfred, Me., assignor to Sprague Electric Company, North Adams, Mass.

Filed Nov. 24, 1980, Ser. No. 209,818
Int. Cl.³ H01G 9/00; B01J 17/00
U.S. Cl. 361—433 **6 Claims**



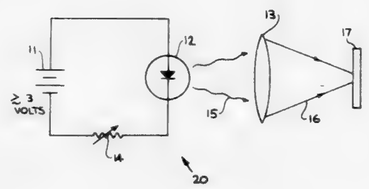
1. A solid electrolyte capacitor comprising a capacitor body having a conductive cathode coating, a riser extending from said body and isolated from said coating, a cathode lead wire in contact with said coating, an anode lead wire in contact with said riser, and a molded encapsulating material surrounding and enclosing said body, said riser, and portions of said lead wires to form a case, said anode lead wire having three spaced apart elbows forming an offset bent transverse portion and a non-offset portion; said riser and said non-offset portion of said anode lead wire being coaxial with each other; two of said elbows offsetting said bent portion a spaced distance from said riser and said non-offset portion, the third of said elbows forming said bent transverse portion, said contact of riser to anode lead wire being at said bent transverse portion, and said transverse portion and said offset portion of said lead wire being enclosed in said case.

4,409,643

LONG LIFETIME, LOW INTENSITY LIGHT SOURCE FOR USE IN NIGHTTIME VIEWING OF EQUIPMENT MAPS AND OTHER WRITINGS

Alan M. Frank, Livermore, and William R. Edwards, Modesto, both of Calif., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Mar. 23, 1982, Ser. No. 360,966
Int. Cl.³ F21L 7/00
U.S. Cl. 362—157 **5 Claims**



1. A low intensity, long-lifetime continuous light source for nighttime use for low intensity illumination of maps and documents to enable reading time without obscuring normal night vision, which comprises:

a power source;

a diode, electrically connected in series to said power source, for producing visible wavelength light in response to a small current through said diode from said power source;

a lens positioned adjacent to said diode to focus at least a portion of said diode light, said lens having a focal length in the range of 1 to 2 centimeters; and

means electrically connected in series with said power source and said diode so as to reduce the intensity of the light produced by said diode by controlling the current through said diode.

4,409,644

BATTERY SYSTEM ADAPTER FOR USING FILM POWER PACKS

Hoyt W. Axton, Tahoe City, and Corey B. Bailey, Lake View Terrace, both of Calif., assignors to Sierra Survival Company, Inc., Ada, Okla.

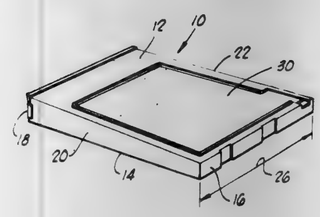
Filed Jun. 12, 1981, Ser. No. 272,987
Int. Cl.³ F21L 7/00
U.S. Cl. 362—200 **4 Claims**

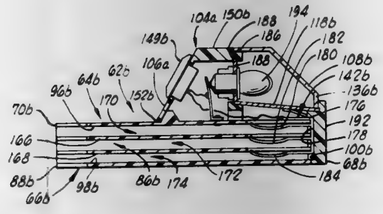
1. A battery assembly for replacing one of a NEDA 908 like battery and a NEDA 26 like battery adapted for using a film power pack as a source of electrical energy, the film power pack having a length, a width, and a height, and at least two film power pack terminals, the battery assembly comprising:

a case having a substantially square cross-section in a horizontal plane and a holding opening extending a distance therethrough and intersecting a portion of the case;

a plurality of dividers disposed in the holding opening and connected to the case, each divider being spaced a distance from at least one adjacent divider to form a holding space between each pair of adjacent dividers and each of the holding spaces being sized and adapted for receiving and retainingly accommodating a substantial portion of one film power pack;

contact means connected to the case and having a portion disposed in the holding opening, the portion of the contact





means disposed in the holding opening being contactable with the film power pack terminals when the film power packs are disposed in the holding spaces, the contact means contacting the film power pack terminals of each film power pack to connect at least some of the film power packs in electrical series, the source of electrical energy provided by the film power pack being provided at the contact means; and

at least two terminals, each terminal connected to the case and to a portion of the contact means, the source of electrical energy provided by the film power pack being provided at the terminals.

4,409,645

COMBINATION FLASHLIGHT AND AUXILIARY POWER PACK

Francis J. Sloan, 211 Holly St., Cranford, N.J. 07016

Filed Oct. 9, 1981, Ser. No. 310,287
Int. Cl.³ F21L 7/00
U.S. Cl. 362—200 **21 Claims**

1. A power pack for accommodating therein at least one battery comprising:

a housing forming a chamber therein;

a carrier for insertion in said chamber;

electrical contact means mounted on said carrier for operably electrically contacting the terminals of said at least one battery; and

electrical connector means mounted on said carrier, said electrical connector means being electrically coupled to said contact means and being accessible from the exterior of said housing when said carrier is disposed in said housing chamber.

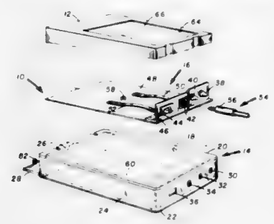
21. A flashlight and auxiliary power pack for utilizing flat batteries disposed in cartridges configured for also accommodating therein a plurality of photographic image rendering units comprising:

a housing forming therein a chamber;

a carrier for insertion in said chamber, said carrier configured to conform substantially to said cartridge;

electrical contact means mounted on said carrier for operably electrically contacting the terminals of said battery when said cartridge is placed in said carrier;

electrical illumination means mounted on said carrier and being selectively electrically coupled to said electrical contact means, said electrical illumination means being



visible from outside said housing when said carrier is inserted therein;

electrical connector means mounted on said carrier, said electrical connector means being selectively electrically coupled to said contact means and being accessible from the exterior of said housing when said carrier is disposed in said housing chamber; and

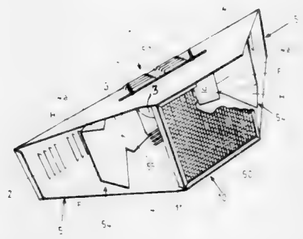
electrical switch means for selectively coupling said electrical illumination means and said electrical connector means to said electrical contact means.

4,409,646

MULTIPLE-EFFECT LIGHT SOURCE, ESPECIALLY USABLE AS A PROJECTOR FOR PHOTOGRAPHY, MOTION PICTURES AND TELEVISION OR AS A LIGHTING APPARATUS

Mardick Baliozian, 15, route de Val Martin, Sainte-Gemme, F-78810 Feucherolles, France

Filed Jan. 13, 1981, Ser. No. 224,798
Claims priority, application France, Sep. 11, 1980, 80 19612
Int. Cl.³ F21V 17/02
U.S. Cl. 362—319 **2 Claims**



1. A device to be used with a light source for use as a projector for lighting subjects in photography, motion pictures, or television, comprising:

a polyhedric housing with a rectangular opaque light-reflecting back,

two opaque light-reflecting longitudinal sides contiguous with the long sides of said back and disposed at an angle to the plane of said back,

a central front rectangular side between opposed edges of said longitudinal sides,

two contiguous inclined front translucent sides each of which

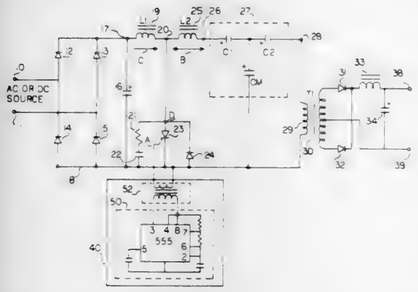
is situated between said central front rectangular side and the corresponding extremity of said reflecting back,
said inclined sides being visible in a direction parallel with the reflecting back,
two reflecting flaps mounted on opposite sides of the light source inside the housing and articulated on the back between the lateral sides, in order to move from one extreme position to the other, namely a first position where they are at an angle with respect to the plane of the back and a second position where they lie against it, means to control these flaps so as to place them and keep them in the selected angular position, and adjustable exterior reflecting flaps articulated on the edges common to the back and the translucent lateral faces.

4,409,647

POWER CONVERTER USING A RESONANT CIRCUIT

Harry Terkanian, 267 Concord Ave., Lexington, Mass. 02173

Filed Mar. 12, 1981, Ser. No. 243,125
Int. Cl.³ H02M *3/315, 5/45*
U.S. Cl. 363—27 **8 Claims**



1. A circuit for providing a direct current voltage, said circuit comprising;
A. circuit for rectifying input A C utility voltage to obtain a direct current voltage, and
B. means for capacitive smoothing said direct current voltage, and
C. charging inductance means for coupling said direct current voltage to a resonant circuit
D. said resonant circuit including three capacitive elements, each of said elements connected at a common junction in a so called T connection and having a resonant frequency that will remain in a predetermined and narrow range despite wide variations in loading
E. switch means, consisting of an SCR, an antiparallel diode, and enabling pulse generator, said switch coupled with said charging inductor means and said resonant circuit means for enabling a circulating current representing energy received by means of said charging inductor means, and
F. means, coupled with said resonant circuit means for converting said circulating current to said direct current voltage consisting of an output transformer, rectifier, and filter.

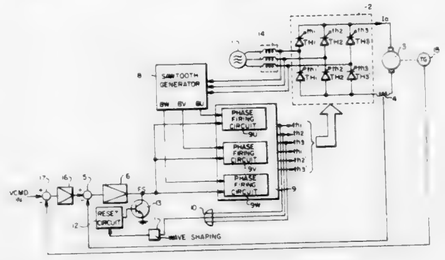
4,409,648

APPARATUS FOR PREVENTING PHASE CONTROL MECHANISM MALFUNCTION

Katsuo Kobari, Tachikawa, and Yoshiaki Hachisuka, Hachioji, both of Japan, assignors to Fanuc Ltd., Tokyo, Japan

Filed Oct. 23, 1981, Ser. No. 314,468
Int. Cl.³ H02H *7/125*
U.S. Cl. 363—54 **7 Claims**

1. An apparatus for preventing malfunctions in a phase control mechanism operatively connectable to receive an analog firing control input signal, and to receive N-number sawtooth signals, said apparatus comprising:
a thyristor bridge, including a plurality of thyristors, operatively connected to receive N-phase power from an N-phase power supply;
a firing angle control circuit operatively connected to said plurality of thyristors, and having an input terminal, for generating thyristor firing pulses to control the firing angle of said plurality of thyristors in response to comparing said analog firing control input signal, arriving at said input terminal of the firing angle control circuit, with each of said N-number of sawtooth signals;



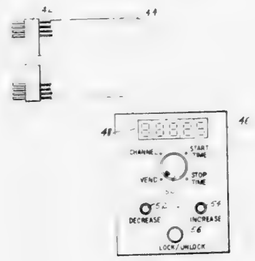
an input signal control circuit, connected to receive the analog firing control input signal received at the input terminal of said firing angle control circuit, for controlling the level of said analog firing control input signal; and
a firing circuit input reset circuit, operatively connected to receive and controlled by said thyristor firing pulses, for enabling said input signal control circuit for at least an interval of time equivalent to the commutation overlap time of said thyristors;
said analog firing control input signal held at a constant level by said input signal control circuit immediately after the generation of each of said thyristor firing pulses.

4,409,649

SEQUENCE CONTROLLER WITH MICROPROCESSOR

Stephen E. Heeger, Evansville, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Continuation of Ser. No. 928,905, Jul. 28, 1978, abandoned. This application Nov. 4, 1980, Ser. No. 203,883
Int. Cl.³ G05B *19/04*; G06F *15/46*
U.S. Cl. 364—144 **8 Claims**



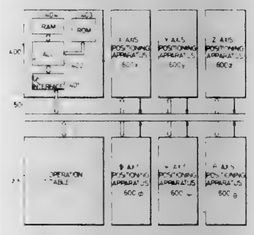
1. For use with program controlled apparatus having storage means for storing program data and modifiable storage means for storing data including timing data used by the program controlled apparatus, a service module comprising a hand-held unit, said unit containing display means for displaying said data, and switch means for permanently modifying only said timing data, and an electrical connector connected with said switch means and display means, said connector being releasably connectable with said storage means, whereby the data content of said storage means may be displayed by said display means and modified by said switch means only while said service module is connected with said storage means by said connector, said program data other than said time data being unmodifiable by said service module.

4,409,650

AUTOMATIC POSITION CONTROLLING APPARATUS

Fumio Noguchi, Takarazuka, Japan, assignor to Shin Meiwa Industry Co., Ltd., Nishinomiya, Japan

Filed Mar. 4, 1981, Ser. No. 240,305
Int. Cl.³ G05B *19/42*; G06F *15/46*
U.S. Cl. 364—193 **22 Claims**



1. An automatic position controlling apparatus of a playback system, comprising
means for teaching positional data of a plurality of points,
driving means responsive to said positional data of said plurality of points, as taught, for driving an apparatus to be position controlled,
smoothing means acting on said driving means, said smoothing means including
means for evaluating a formula of a curve smoothly connecting said taught positional data of a plurality of points associated with each other,
means responsive to said curve formula for evaluating a commanded position for every predetermined time interval less than the response time period of said driving means, and
means for correcting said commanded position according to a time delay in the response characteristic of said driving means.

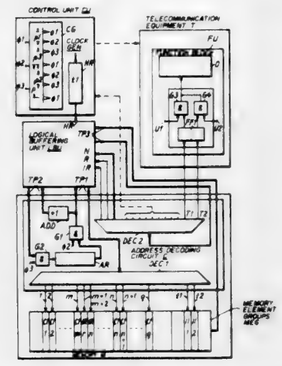
4,409,651

METHOD AND APPARATUS FOR INSERTING INSTRUCTIONS IN A CONTROL SEQUENCE IN A STORED PROGRAM CONTROLLED TELECOMMUNICATIONS SYSTEM

Hans O. S. Kjoller, Västerhaninge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Continuation of Ser. No. 876,881, Feb. 13, 1978, Pat. No. 4,240,136. This application Feb. 7, 1980, Ser. No. 119,395
Claims priority, application Sweden, Feb. 28, 1977, 7702208
The portion of the term of this patent subsequent to Dec. 16, 1997, has been disclaimed.
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—200 **7 Claims**

1. In a stored program controlled equipment having an operating device to be controlled, a clock pulse generator for generating sequences of timing pulses wherein adjacent timing pulses within one of the sequences establishes the clock pulse period of the equipment, an addressed memory means having a plurality of addressed memory element groups for storing control instructions which are read in response to received addresses, an address generator means responsive to said timing pulse for sequentially emitting to the addressed memory means the addresses of the memory element groups to be read, and an instruction decoder means for generating control signals for controlling the operating device, the method of introducing one of a plurality of insertion instructions at one point in the sequence of control instructions, said method comprising the steps of storing in one of the addressed memory element groups the insertion instruction for controlling the testing of the operating device, storing in at least one of the addressed memory element groups an insertion reference instruction routine associated with the fetching of the insertion instruction and the address of the next instruction of the sequence of



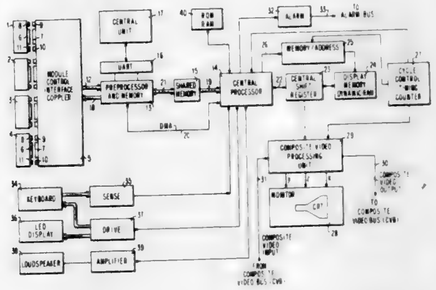
control instructions, upon reading the insertion reference instruction routine momentarily stopping the operation of the address generator means and during such stopping fetching the insertion instruction from the addressed memory means for transfer to the decoder means, then inserting the address of said next instruction of the sequence of control instructions into the address generator means, and then restarting the address generator means.

4,409,652

APPARATUS FOR PROCESSING DIGITAL SIGNALS

Leopold Neumann, Lexington, and Richard B. Kline, II, Stoneham, both of Mass., assignors to Siemens AG, Munich, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,764
Int. Cl.³ G06F *15/16, 15/20, 11/00*
U.S. Cl. 364—200 **12 Claims**



1. An apparatus for processing digital signals, containing a microprocessor system, said microprocessor system comprising in combination:
(a) a first processor which is DMA-capable,
(b) a second processor which is not DMA-capable;
(c) a main memory;
(d) first connecting means associated with said first processor for connecting said first processor with said main memory via a first communication path;
(e) second connecting means associated with said second

processor for connecting said second processor with said main memory via a second communication path;
(f) an input for said first processor for receiving an DMA request;
(g) means associated with said second processor for issuing a DMA request at certain time intervals to said input for DMA request of said first processor;
(h) means associated with said first processor for initiating the first processor's current operations such that those operations that the first processor had started before the arrival of the DMA request of said second processor and had not yet completed are now completed; and
(i) means associated with said first processor for producing a signal when the first processor has completed its current operations, said signal controlling said first connecting means associated with said first processor and said second connecting means associated with said second processor to cut off said first communication path between first processor and main memory and instead close the second communication path between said second processor and said main memory.

4,409,653

METHOD OF PERFORMING A CLEAR AND WAIT OPERATION WITH A SINGLE INSTRUCTION

William C. Bruce, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 929,629, Jul. 31, 1978, abandoned. This application Mar. 2, 1981, Ser. No. 239,269
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—200 **5 Claims**



1. A method of performing a clear and wait operation with a single instruction in a processor having a plurality of programmable registers including a condition code register, by performing the following steps in response to a clear and wait instruction ANDing an immediate byte with contents of the condition code register so that the condition code register may be cleared if desired, the immediate byte being obtained from a preselected memory location; inhibiting a non-maskable interrupt during the ANDing of the immediate byte with the contents of the condition code register; stacking the plurality of programmable registers to save the state of the processor at time of performing the clear and wait operation; and waiting for an interrupt to occur so the interrupt can be directly serviced, and returning the processor to normal program execution after servicing the interrupt, thereby having performed a clear and wait operation with a single instruction.

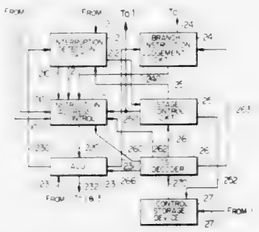
4,409,654

DATA PROCESSOR ADAPTED FOR INTERRUPTION TO AN INSTRUCTION STREAM

Kenichi Wada, Zama, and Naoki Yamada, Hadano, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,370
Claims priority, application Japan, Mar. 7, 1980, 55-28140
Int. Cl.³ G06F *9/30*
U.S. Cl. 364—200 **6 Claims**

1. An information processing system comprising:
instruction means for sequentially decoding a plurality of instructions to generate the address of the next sequential instruction and to additionally generate, when the decoded instruction is a branch instruction, a branch-to address of said decoded branch instruction;
means for generating an interrupt signal for various types of interrupt requests at a timing depending on the type of interrupt request;
execution means connected to said instruction means for sequentially executing operations of said decoded instructions, when no interrupt signal is recieved from said interrupt generating means, including means for providing a first signal to said instruction means in response to completion of the operation of each of said decoded instructions for fetching from said instruction means a next sequential instruction address for an instruction to be next executed and means for providing a second signal to said instruction means, when a branch instruction is executed and the branch is successful, to fetch a branch-to address of said branch instruction from said instruction means;
a plurality of registers;



input pointer means for generating a pointer signal whose value indicates one of said registers, including means for storing any of said next sequential instruction address and said branch-to address, as fetched, in the register indicated by said pointer signal, and means for sequentially and cyclically changing said pointer value in response to one of said first and second signals for indicating said registers sequentially and cyclically;
delay means connected to said input pointer means for receiving the pointer signal and producing it at a predetermined time delay;
control means connected to receive said first, second and interrupt signals and for producing a third signal at a timing which is determined by said first, second and interrupt signals;
latch means for latching said delayed pointer signal in response to said third signal; and
means for reading the address out of one of said registers indicated by the delay pointer signal latched by said latch means.

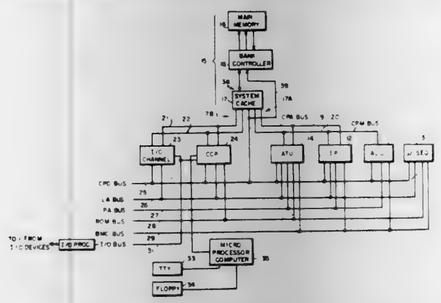
4,409,655

HIERARCHIAL MEMORY RING PROTECTION SYSTEM USING COMPARISONS OF REQUESTED AND PREVIOUSLY ACCESSED ADDRESSES

Steven Wallach, Framingham; Kenneth D. Holberger, North Grafton; David L. Keating, Natick, and Steven M. Staudaher, Northboro, all of Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Apr. 25, 1980, Ser. No. 143,981
Int. Cl.³ G06F *9/00, 9/32, 9/34*
U.S. Cl. 364—200 **9 Claims**

1. In a data processing system which utilizes memory storage means for storing a plurality of different groups of data, said memory storage means being capable of storing said different groups of data at different designated locations thereof, said designated locations being identifiable as storage segment locations, said locations being designated by successive segment nembers and having a descending order of protection with respect to data reference accesses by an operator such that the degree of protection of a segment location becomes successively higher as the segment number thereof becomes successively lower, the addresses of data in each group thereof being accompanied by a plurality of selected bits which identify the storage segment location in which said data is stored, said system comprising
comparing means for responding to said selected bits which accompany an address and which identify the storage segment location at which a data reference access is being



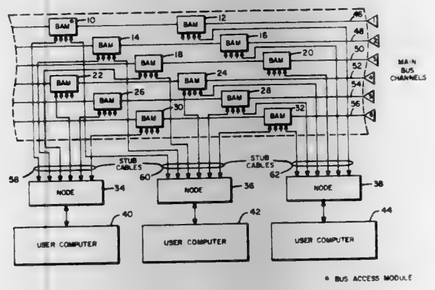
requested to compare said selected bits with a plurality of selected bits which accompany a current address and which identify the storage segment location at which currently requested data reference access has already been provided with respect to said current address; and
means responsive to said comparing means for prohibiting a data reference access to an address at a storage segment location which the selected bits of the address at which said data reference is being requested identify as a segment location having a higher segment number than the segment number of the selected bits of said current address.

4,409,656

SERIAL DATA BUS COMMUNICATION SYSTEM

Steven C. Andersen, Prior Lake; Thomas P. Penkauskas, Eagan; James W. Kassel, St. Paul, and Stephen O. Newcomer, Apple Valley, all of Minn., assignors to Her Majesty the Queen, in right of Canada as represented by the Minister of National Defense, Ottawa, Canada

Continuation of Ser. No. 130,125, Mar. 13, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 333,068
Int. Cl.³ G06F *3/04, 5/04, 9/22, 11/20*
U.S. Cl. 364—200 **25 Claims**



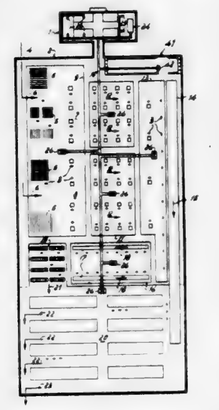
1. In a serial data bus transmission system of the type used to interconnect a plurality of user devices for message intercommunication over transmission cables, said system including a plurality of cables, one of which acts as an active control cable and one of which acts as an active message cable at a given time, with at least one bus access module coupled to each of said plurality of cables, a plurality of node devices for coupling said user devices to said bus access modules, each of said node devices comprising in combination:
(a) bus input/output means including data format conversion means coupled to said bus access modules for selecting said active ones of said control cable and said message cable and for transmitting or receiving digital messages and control signals therethrough;
(b) a control bus coupled to said bus input/output means;
(c) a message bus coupled to said bus input/output means;
(d) control line sequencer means coupled to said control bus for receiving control signals therefrom and including logic means for performing preprocessing functions relative to said control signals for determining whether said control signals are intended to affect that node device and are of a proper format;
(e) controller means adapted to receive preprocessed data signals from said control line sequencer and to develop command signals in accordance with said preprocessed data signals, and further status indicators;
(f) means including said control bus and said bus input/output means for sending said command signals on said active control cables to other of said plurality of nodes coupled to said active control cable; and
(g) means responsive to said command signals for controlling the flow of messages over said message bus and between said plurality of user devices.

4,409,657

TIME CLOCK FOR RECORDING THE IDENTIFICATION OF A PERSON

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed May 4, 1981, Ser. No. 260,381
Claims priority, application Netherlands, May 20, 1980, 8002895
Int. Cl.³ G06F *15/21*; G07C *1/00*
U.S. Cl. 364—401 **21 Claims**

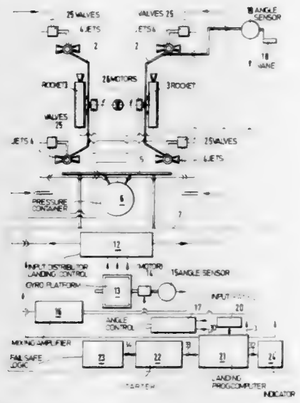


1. A time clock system for recording and communicating between management and workers, work being performed during time periods, comprising a management office and a plurality of work stations, electronic circuits connecting said office and said work stations for transmitting data between them, said work stations adapted to receive work orders from said management office via said circuits, a time clock at said station, said clock having means that records the work orders and information as to the identification of the worker carrying out said work orders, said clock being positioned to receive said information concerning said worker from card means and record said information.

4,409,658
APPARATUS FOR LANDING LOADS FROM TRANSPORT AIRCRAFT, ESPECIALLY LOW FLYING AIRCRAFT

Hans Beusse, Hamburg, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 872,827, Jan. 27, 1978, abandoned. This application Jun. 26, 1979, Ser. No. 52,426
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704650
Int. Cl.³ G06G *7/78*; G06F *15/50*; B64D *1/02*
U.S. Cl. 364—424 **13 Claims**



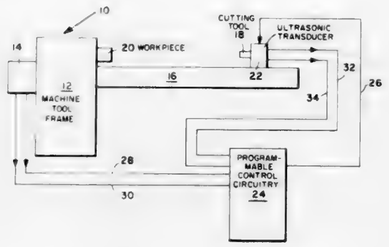
1. A load landing system for discharging a load from an aircraft and landing said load on the ground, comprising frame means, means releasably securing said frame means to said load, rocket means operatively secured to said frame means, servomotor means operatively connected to said rocket means for tilting said rocket means, gyro platform means supported by said frame means, steering nozzle means supported by said frame means, closed loop control amplifier means operatively connecting said steering nozzle means to said gyro platform means for operating said steering nozzle means for the position control of the landing apparatus, computer means, keyboard input means operatively connected to said computer means for supplying input values to the computer means, said input values including values representing the horizontal starting speed of the load, the predetermined horizontal touchdown speed, and the mass of the load as it is starting from the aircraft, said computer providing output values including a tilting sequence for said rocket means, the operating duration of said rocket means and the dropping altitude above ground; said landing system further comprising logic circuit means operatively connected to the landing system for checking the landing system to provide clearance signals representing the operability of the landing system and given operating conditions, and pressure supply means operatively connected to said steering nozzle means.

4,409,659
PROGRAMMABLE POWER SUPPLY FOR ULTRASONIC APPLICATIONS

Janet Devine, Downingtown, Pa., assignor to Sonobond Ultrasonics, Inc.

Filed Dec. 15, 1980, Ser. No. 216,081
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—475 **20 Claims**

1. In a method of metalworking comprising the steps of:
(a) providing relative interfering motion between a metal workpiece and a cutting tool whereby said cutting tool cuts said workpiece; and
(b) vibrating said tool, by application thereto of ultrasonic vibratory energy, to enhance tool cutting action:
the improvement comprising:
(c) sensing a physical parameter indicative of progress of said tool in cutting said workpiece while said tool is cutting and workpiece; and

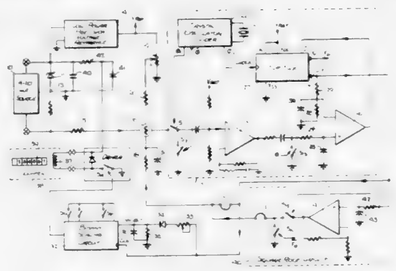


(d) changing vibrational amplitude of said tool, while said tool is cutting said workpiece, in response to a continuously mathematically calculated relationship between said sensed physical parameter and previous observations of said sensed physical parameter by continously reinitiating said mathematical calculations until and after said parameter is within preselected limits indicative of satisfactory progress of said tool cutting said workpiece.

4,409,660
ELECTRONIC TOTALIZER

Herbert A. Shauger, Doylestown, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 3, 1981, Ser. No. 240,229
Int. Cl.³ G01G *9/00*
U.S. Cl. 364—510 **11 Claims**

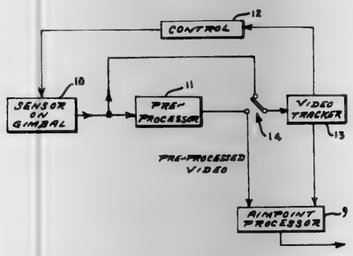


1. A totalizer usable in conjunction with a transducer responsive to a process variable such as flow rate to produce a varying current signal in a predetermined range, the totalizer providing a readout indicative of the time-integrated total of the process variable in units of measurement appropriate thereto which in the case of liquid flow rate may be liters, tons or other measuring units, said totalizer comprising:
A input means to convert the current signal into a voltage signal proportional to the process variable;
B a voltage-to-frequency converter coupled to said input means for converting the voltage signal into pulses at a rate that is a function of the signal magnitude, the pulse frequency being relatively high at the upper limit of the range;
C a selectively adjustable digital scaler responsive to the converter pulses to provide output pulses at a scaled-down rate selected to yield the desired unit of measurement; said scaler being formed by a binary scaling circuit having a series of switches to select the desired scale-down factor, said binary scaling circuit having an inhibiting network connected thereto to prevent response to converter pulses representing a transducer current signal below said range; and
D a counter responsive to the scaler output pulses to provide said readout.

4,409,661
AIMPOINT SELECTION PROCESSOR

John G. Romanski, Kingsville, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 68,817, Aug. 22, 1979, abandoned. This application Apr. 22, 1981, Ser. No. 256,362
Int. Cl.³ G06F *15/58*; H04N *3/00, 7/18*
U.S. Cl. 364—516 **4 Claims**



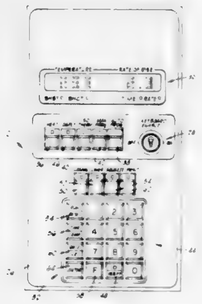
1. In a video tracking system having a digital correlation tracker, an imaging sensor, video preprocessor means for spatial and amplitude quantizing of the sensor image into pixels and gray levels and means for computing target discriminant functions therefrom, the improvement residing in an aimpoint selection processor, said aimpoint selection processor comprising
image binary coding means for developing binary target patterns from said discriminant functions,
a moment measuring circuit, responsive to said discriminant functions and the output of said image binary coding means, for measuring the moments of said binary target patterns,
a microprocessor said microprocessor being programmed to: (a) generate and store, from initial binary coding and moment measurement data, a target reference pattern data base defining target pattern size, aspect angle, selected aimpoint and reference points; (b) compute, from real time binary coding and moment measurement data and said reference pattern data base, an ensemble of estimated aimpoints; and (c) average said estimated aimpoints to provide an output aimpoint signal, and
data bus means operably connected to said image binary coding means, said moment measuring circuit and said microprocessor.

4,409,662
PROGRAMMABLE DIGITAL TEMPERATURE CONTROLLER

Prabhakar P. Rao, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Dec. 29, 1980, Ser. No. 221,008
Int. Cl.³ G05D *23/00*
U.S. Cl. 364—557 **11 Claims**

1. An apparatus for controlling a temperature device, comprising:
heat mode select switch means for placing said apparatus in a heat mode of operation from which one of three selectable states can be entered;
automatic state select switch means for placing said apparatus in an automatic operation state when said apparatus is placed in said heat mode;
isothermal state select switch means for placing said apparatus in an isothermal operation state when said apparatus is placed in said heat mode;
manual state select switch means for placing said apparatus in a manual operation state when said apparatus is placed in said heat mode;
information entry switch means for providing manually selectable numerical data to said apparatus;
temperature information select switch means for directing said apparatus to receive manually selectable temperature information from said information entry switch means;
time information select switch means for directing said apparatus to receive manually selectable time information from said information entry switch means;
rate information select switch means for directing said apparatus to receive manually selectable rate information from said information entry switch means;
casing data select switch means for instructing said apparatus to utilize predetermined casing temperature and casing time parameters stored in a memory of said apparatus;
liner data select switch means for instructing said apparatus to utilize predetermined liner temperature and liner time parameters stored said memory;
squeeze data select switch means for directing said apparatus to utilize predetermined squeeze temperature ans squeeze time parameters stored said memory;
means, responsive to the sequential actuation of said heat mode select switch means, said automatic state select switch means, one of said casing data select switch means, liner data select switch means, or squeeze data select switch means, said information entry switch means, said rate information select switch means, and said information entry switch means, for controlling the temperature device using the predetermined temperature and time parameters selected by the actuation of one of said casing data select switch means, said liner data select switch means or said squeeze data select switch means;



means, responsive to the sequential actuation of said heat mode select switch means, said isothermal state select switch means, said temperature information select switch means, and said information entry switch means, for controlling the temperature device to reach a selectable temperature as selected by the actuation of said temperature information select switch means and said information entry switch means;
means, responsive to the sequential actuation of said heat mode select switch means, said manual state select switch means, one of said casing data select switch means, liner data select switch means, or squeeze data select switch means, said information entry switch means, and either said temperature information select switch means and said information entry switch means or said time information select switch means and said information entry switch means, for controlling the temperature device in an automatic with partial override substate wherein the predeter-

mined temperature and time parameters selected by the actuation of one of said casing data select switch means, said liner data select switch means, or said squeeze data select switch means are overridden by the temperature or time data manually selected by the actuation of one of said temperature information select switch means and said information entry switch means or said time information select switch means and said information entry switch means;

means, responsive to the sequential actuation of said heat mode select switch means, said manual state select switch means, said temperature information select switch means, said information entry switch means, said time information select switch means and said information entry switch means, for controlling the temperature device to achieve a temperature selected by the actuation of said temperature information select switch means and said information entry switch means in a time selected by the actuation of said time information select switch means and said information entry switch means; and

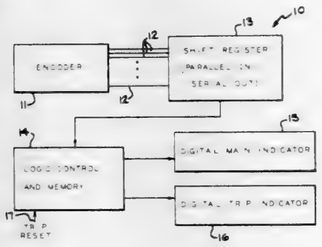
means, responsive to the sequential actuation of said heat mode select switch means, said manual state select switch means, said rate information select switch means, said information entry switch means, said temperature information select switch means, and said information entry switch means, for controlling the temperature device to achieve a temperature selected by the actuation of said temperature information select switch means and said information entry switch means at a rate selected by the actuation of said rate information select switch means and said information entry switch means.

4,409,663

DIGITAL ODOMETER

James Becker, Ann Arbor, and Daniel L. Neill, Belleville, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 22, 1980, Ser. No. 219,199
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—561 **4 Claims**



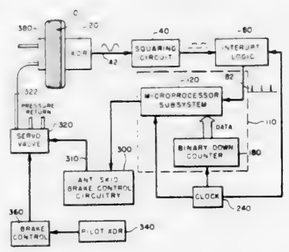
1. A digital odometer for a vehicle comprising mechanical encoder means located in the vicinity of and mechanically connected to be driven by the transmission of said vehicle, said encoder means including a plurality of rotatable encoder discs, means for incrementally rotating said discs by a predetermined amount for each unit of distance travelled by the vehicle, means for sensing and supplying digital electrical data signals corresponding to the rotational position of each of said discs as an indication of the total distance of travel of the vehicle, logic means including a first memory for receiving said data in digital form, and first digital indicator means for displaying data stored in said first memory, said indicator means being located for convenient viewing from the driver's area of the vehicle, said logic means and said first memory being wire connected to said transmission-located encoder, said logic means further including a second memory, manually controlled means for clearing said second memory, and program control means for incrementing the count stored in said second memory by a predetermined amount each time the contents of said first memory are incremented by such predetermined amount, and including second digital indicator means for displaying the count stored in said second memory.

4,409,664

DIGITAL WHEEL SPEED SENSOR

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Division of Ser. No. 80,123, Sep. 27, 1979, Pat. No. 4,270,176.
This application Mar. 5, 1981, Ser. No. 240,902
The portion of the term of this patent subsequent to May 26, 1998, has been disclaimed.
Int. Cl.³ G06F *15/20*; B60T *8/00*
U.S. Cl. 364—565 **10 Claims**



4. In a brake control system including a rotatable wheel and means, responsive to the wheel, for generating a periodic wheel signal having a frequency indicative of the rotational behavior of the wheel, an apparatus for precisely measuring the time duration of one or more cycles of the wheel signal comprising:

clock means for generating a periodic clock signal;

first counter means for maintaining a count indicative of clock signal cycles;

second counter means for maintaining a count indicative of wheel signal cycles;

gating means for selectively enabling and disabling the first and second counter means, said gating means responsive both to a control signal and to the phase angle of the wheel signal, such that, when the control signal is in a first state, the first and second counter means are consistently enabled at a predetermined phase angle of the wheel signal and, when the control signal is in a second state, the first and second counter means are consistently disabled at the same predetermined phase angle of the wheel signal;

computer means, coupled to the first and second counter means and to the gating means, for generating the control signal to selectively control the gating means;

means, included in the computer means, for reading and storing the counts stored in the first and second counter means at a first time;

means, included in the computer means, for placing the control signal in the first state at a second time, subsequent to the first time, to cause the gating means to enable the first and second counter means at the next occurrence of the predetermined phase angle of the wheel signal;

means, included in the computer means, for placing the control signal in the second state at a third time, subsequent to the second time, to cause the gating means to disable the first and second counter means at the next occurrence of the predetermined phase angle of the wheel signal;

means, included in the computer means, for determining whether the first and second counter means have been disabled;

means, included in the computer means, for reading and storing the counts stored in the first and second counter means at a fourth time, subsequent to the third time and after the determining means has determined that the first and second counter means have been disabled;

means, included in the computer means, for calculating the difference between the count stored in the first counter means at the first and fourth times as a measure of elapsed time; and

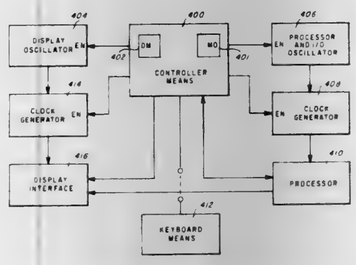
means, included in the computer means, for calculating the difference between the count stored in the second counter means at the first and fourth times as a measure of the number of wheel signal cycles occurring during the elapsed time.

4,409,665

TURN-OFF-PROCESSOR BETWEEN KEYSTROKES

Graham S. Tubbs, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1979, Ser. No. 106,430
Int. Cl.³ G06F *1/04*
U.S. Cl. 364—707 **2 Claims**



1. An electronic data processing system comprising:

(a) operator input means including means for generating an ON signal, an OFF signal and a plurality of operation signals; and

(b) integrated circuit means, connected to said operator input means, having a process only mode, a display only mode, a process and display mode and an off mode, said integrated circuit means including (i) controller means having means for selectively generating inactive first and second control outputs when said integrated circuit means is in the off mode, means for selectively generating an active first control output and an inactive second control output when said integrated circuit means is in the process only mode, means for selectively generating an inactive first control output and an active second control output when said integrated circuit means is in the display only mode and means for selectively generating active first and second control outputs when said integrated circuit means is in the process and display mode, and (ii) clock generator means, connected to said controller means, including first means for selectively generating first clock outputs in an active cycling state in response to said active first control output and in an inactive predefined steady state in response to said inactive first control output and second means for selectively generating second clock outputs in an active cycling state in response to said active second control output and in an inactive predefined steady state in response to the inactive second control output.

4,409,666

ELECTRONIC DESK-TOP CALCULATOR WITH INDICATION FUNCTION OF STORED DATA RANGE

Yukihiro Nishiguchi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 72,816, Sep. 5, 1979, abandoned. This application Jun. 9, 1981, Ser. No. 271,905
Claims priority, application Japan, Sep. 5, 1978, 53-109455
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—710 **20 Claims**



1. An electronic calculator comprising: a plurality of first memory means for independently storing data, key means, second memory means, a plurality of transfer means respectively coupled between said first memory means and said second memory means, first means responsive to actuation of said key means for selectively enabling one of said transfer means to transfer data stored in an associated one of said first memory means to said second memory means, third memory means for storing address information of said associated one of said first memory means, first display means coupled to said second memory means for displaying data stored in said second memory means, second display means having a plurality of display patterns provided in correspondence to said plurality of first memory means respectively, second means responsive to said address information stored in said third memory means for operatively energizing one of said display patterns, means for determining if the content of said associated one of said first memory means is outside a predetermined range, third means for supplying a data representing said predetermined range to said determining means, fourth means for supplying the content of said second memory means to said determining means, and fifth means responsive to said determining means for controlling said second means when the content of said associated one of said first memory means is outside of said predetermined range to render the energizing manner of said one of said display patterns distinguishable from the energizing manner when the content of said associated one of said first memory means is within said predetermined range.

4,409,667

PROCESS AND DEVICE FOR THE DERIVATION OF AN ANALOG ELECTRIC SIGNAL

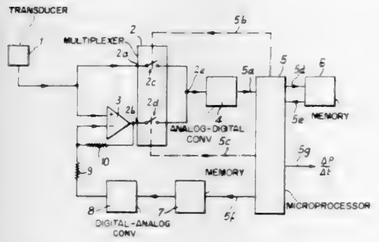
Pierre Ricaud, Colomiers, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed May 21, 1981, Ser. No. 265,812
Claims priority, application France, Jun. 4, 1980, 80 12381
Int. Cl.³ G06F *7/48*; G06J *1/00*
U.S. Cl. 364—732 **12 Claims**

1. Process for obtaining the derivative of an analog electric signal P varying slowly as a function of a variable t, comprising the steps of:

converting a first analog value P_1 taken by the signal P for a first value t_1 of the variable t to a first digital value;

reconverting said first digital value to an analog value P_{12} representative of P_1;
forming a first analog difference $\delta P = P_1 - P_{12}$;
converting δP to a second digital value;
forming a second analog difference $(P_2 - P_{12})$ by subtracting P_{12} from a second analog value P_2 taken by said signal P for a second value t_2 of the variable t;



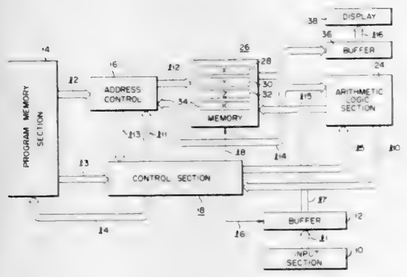
converting said second analog difference to a third digital value;
subtracting said second digital value from said third digital value to form a digital difference $\Delta P = P_2 - P_1$; and
dividing ΔP by the digital value of the difference $\Delta t = t_2 - t_1$ between said values t_2 and t_1 of said variable t.

4,409,668

ROUND-OFF APPARATUS FOR DATA PROCESSORS

Junichi Yoshida, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1981, Ser. No. 242,142
Claims priority, application Japan, Mar. 24, 1980, 55-37223
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—745 **4 Claims**



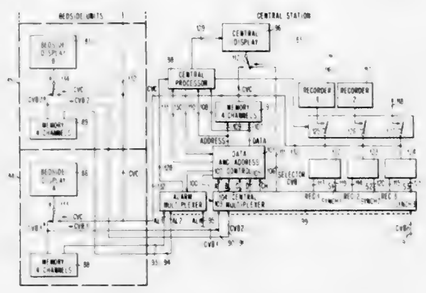
1. A round-off apparatus for data processors which carry out a series of arithmetic operations to approach a solution with increasing degrees of accuracy, the rounding-off apparatus comprising:
first storage means for storing the (i)th result of a series of arithmetic operations of a data processor by which a solution is gradually approached with increasing degrees of accuracy;
second storage means for storing the (i+1)th result of said series of arithmetic operations;
detecting means coupled to said first and second storage means for computing the difference between said (i)th result and said (i+1)th result and detecting the highest non-zero digit (n) of the computed difference;
third storage means coupled to said detecting means for storing said highest non-zero digit (n); and
rounding-off means coupled to said second and third storage means for rounding-off said (i+1)th result to the (n+1)th digit.

4,409,669

SIGNAL PROCESSING DEVICE

Leopold Neumann, Lexington, and Richard B. Kline, II, Stoneham, both of Mass., assignors to Siemens AG, Munich, Fed. Rep. of Germany

Filed Sep. 12, 1980, Ser. No. 186,763
Int. Cl.³ G06F *3/04*
U.S. Cl. 364—900 **16 Claims**



1. A signal processing apparatus comprising:
(1) a main unit having
(a) a frame;
(b) a signal processing means located in said frame;
(c) a conversion pulse clock generator of predetermined clock frequency located in said frame and having an output for conversion pulses;
(2) a plurality of modules replaceably inserted into said frame of said main unit, each of said modules having
(a) a module input for analog signals;
(b) a module output connectable with said signal processing means of said main unit;
(c) an analog-to-digital converter connected between said module input and said module output for converting said analog signals into digital output data, which analog-to-digital converter comprises a conversion clock input connectable with said output of said conversion pulse clock generator of said main unit;
(d) an identification signal generator connected to said module output for generating a module identification signal in form of a sequence of digital pulses which module identification signal is different from each module;
wherein said conversing pulse clock generator in said main unit is provided for clocking each of said analog-to-digital converters of said replaceable modules with said conversion pulses for the execution of convertions of said analog signals in a fixed sequence, regardless of the relative spatial correlation in which said modules are inserted into said main frame, said analog-to-digital converters thereupon generating said digital output data from said analog input signals for being transmitted to said signal processing means in said main unit, and wherein said identification signals of said identification signal generators are provided for being transmitted together with said digital output data of said analog-to-digital convertors to said signal processing means in said main unit, and wherein each of said replaceable modules comprises a plurality of signal channels connected to said module input and a plurality of switches, said switches connecting said signal channels to said analog-to-digital converter for the purpose of executing analog-to-digital conversion with respect to said analog signals, and wherein said conversion pulse clock generator supplies a train of said conversion pulses which clock each of said analog-to-digital converters for the executions of conversions in said fixed sequence, and a train of switching pulses which actuate said switches in the sense that said individual signal channels are connected to and disconnected from said analog-to-digital converter in a predetermined sequence which sequence is

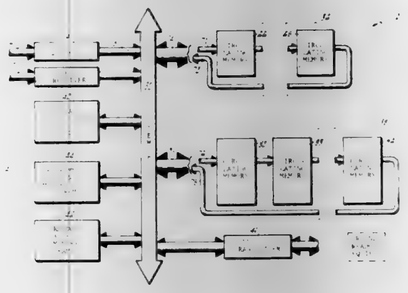
fixed, and wherein said signal channels are assigned to signals of different bandwidths, and wherein said switches connected to said signal channels are supplied with switching pulses of different switching frequencies such that a signal channel with a higher bandwidth is scanned more often than of signal channel with a lower bandwidth.

4,409,670

SOLID-STATE DIGITAL FLIGHT DATA RECORDER

James A. Herndon, Suffield, and Henry R. Ask, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1981, Ser. No. 277,545
Int. Cl.³ G11B *5/02*; G09F *3/00*
U.S. Cl. 364—900 **17 Claims**



1. A digital flight data recorder for recording units of signal information representing repetitively sampled aircraft operating parameters presented in series repeating data frames within a recording time period, comprising:
minor memory means, having an input for receiving each series data frame and having an output, said minor memory circulating each received data frame therethrough, as received, in a preserved first-in first-out (FIFO) sequence to said output, whereby the current data frames circulating therethrough represent the information received in a most recent value real time interval less than the recording time period;
major memory means, having an input and an output, for circulating in FIFO sequence selected units of information presented to said input therethrough to said output; and
signal processing means, responsive to said minor memory means and said major memory means, for compressing said received series data frames appearing at said minor memory output so as to select therefrom successive ones of said received data frames as said selected units of information and to present said selected units of information to said major memory means, whereby said selected units of information in said major memory are represent the units of information received in the recording time period and said series data frames in said minor memory represent the units of information received within a most recent time interval of the recording period.

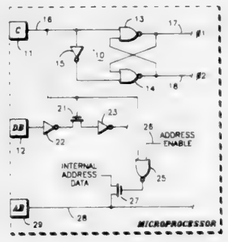
4,409,671

DATA PROCESSOR HAVING SINGLE CLOCK PIN

R. Gary Daniels, Round Rock, Tex.; Thomas H. Bennett, Scottsdale, Ariz.; Fuad H. Musa, Austin, and Michael F. Wiles, Round Rock, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 939,722, Sep. 5, 1978, abandoned. This application Aug. 24, 1981, Ser. No. 295,912
Int. Cl.³ G06F *1/04*
U.S. Cl. 364—900 **1 Claim**

1. A monolithic integrated circuit microprocessor comprising:
a single clock input terminal for receiving an externally generated clock signal which changes between first and second states at a predetermined frequency;
timing signal generating means coupled to the single clock input terminal, for generating first and second complementary, non-overlapping timing signals having substantially the same frequency as said clock signal but delayed relative thereto by first and second predetermined skews, respectively;
at least one data input terminal for receiving an externally generated input data signal;
input gating means coupled to the single clock input terminal and to the one data input terminal, for latching the state of the input data signal in response to said clock signal



changing from a selected one of said states to the other of said states;
at least one address output terminal for providing an internally generated output address signal; and
output gating means coupled to the single clock input terminal and to the one address output terminal and responsive to an internally generated address enable signal, for selectively coupling the internally generated output address signal to the one address output terminal in response to the clock signal changing to said selected one of said states from the other of said states;
whereby the microprocessor latches the state of the input data signal and provides the output address signal with minimum skew relative to the clock signal.

4,409,672

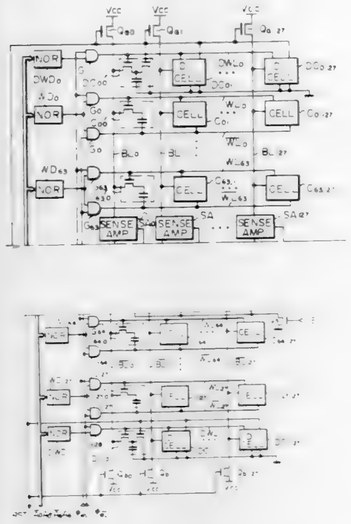
DYNAMIC SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 31, 1981, Ser. No. 249,702
Claims priority, application Japan, Mar. 31, 1980, 55-41810
Int. Cl.³ G11C *11/40, 11/24*
U.S. Cl. 365—149 **8 Claims**

1. A semiconductor memory device operatively connected to receive address signals and clock signals, said device comprising:
first and second power supplies, the potential of said second power supply being lower than said first power supply potential;
a plurality of word lines;
a plurality of power supply lines;
a plurality of pairs of bit lines;
a plurality of sense amplifiers, respective of said sense amplifiers operatively connected between a corresponding pair of said pairs of bit lines;
a plurality of memory cells, each comprising
a transistor having a gate connected to a corresponding one of said word lines, a drain connected to a corresponding one of said bit lines, and a source,
a capacitor having a predetermined capacitance and an electrode connected to the source of said transistor and another electrode connected to a corresponding one of said power supply lines; and
clock means operatively connected to said power supply

lines and to said word lines, for selectively supplying a clock signal to corresponding of said power supply lines in response to said address signals and after the potential of



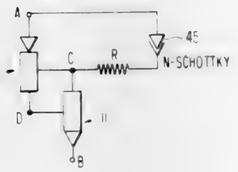
said corresponding word line rises and before the potential of said corresponding word line falls, the potential of said clock signal falls and after that, rises.

4,409,673

SINGLE ISOLATION CELL FOR DC STABLE MEMORY

Shashi D. Malaviya, Fishkill, N.Y., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,651
Int. Cl.³ G11C *11/34*
U.S. Cl. 365—180 **16 Claims**



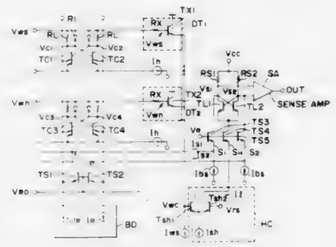
1. A fully selectable static memory cell capable of writing either one of two information states or reading either one of two information states and contained within a single isolated region comprising:
a substrate supporting a P-type semiconductor,
means for isolating a region of said semiconductor,
an N^+ sub-collector within said isolated region,
a first NPN transistor within said region including said sub-collector, a P-type NPN base region and an N-type NPN emitter region, a parasitic PNP transistor within said region, said parasitic PNP transistor including a base region comprising said NPN collector and a collector region comprising said NPN base region,
controllable word and bit lines in said isolated region, and
coupling means for coupling said word lines to said transistors and for coupling each of said bit lines to both said first and second transistors for operating said transistors as an SCR latch to read the information state of said latch or to write either of said information states regardless of the pre-existing state of said latch in response to read and write signals on said word and bit lines.

4,409,674

SEMICONDUCTOR MEMORY

Yukio Takahashi, Sakata, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 22, 1980, Ser. No. 180,453
Claims priority, application Japan, Aug. 23, 1979, 54-107394
Int. Cl.³ G11C *7/06*
U.S. Cl. 365—190 **5 Claims**



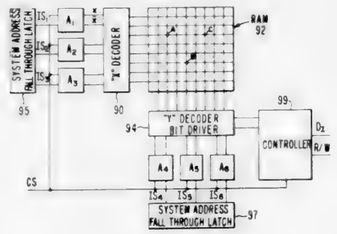
2. A semiconductor memory which is provided with a memory cell array composed of a plurality of memory cells, word lines and bit lines for selecting a desired one of the memory cells, comprising:
a detector circuit for detecting a read current of the selected memory cell of said memory cell array;
means included as part of said detector circuit for providing hysteresis characteristics thereto so that said detector circuit can retain data read immediately before; and
means for monitoring the potentials of said word lines and effecting a flow of current for providing the aforesaid hysteresis characteristics only when all the word line potentials are lower than a predetermined potential.

4,409,675

ADDRESS GATE FOR MEMORIES TO PROTECT STORED DATA, AND TO SIMPLIFY MEMORY TESTING, AND METHOD OF USE THEREOF

Jonathan J. Stinehelfer, Sunnyvale, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Dec. 22, 1980, Ser. No. 219,294
Int. Cl.³ G11C *7/00, 29/00*
U.S. Cl. 365—201 **1 Claim**



1. A method of addressing a random access memory comprising in order the steps of:
addressing the memory at a particular address; addressing the memory at an address other than said particular address;
(i) addressing the memory at said particular address;

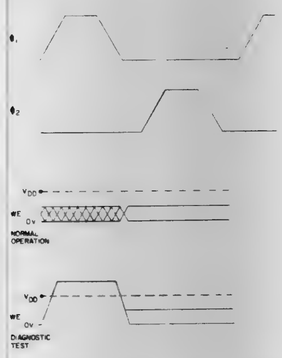
(ii) addressing the memory at an address not previously addressed and other than said particular address, and repeating said steps (i) and (ii) until all addresses in the memory have been addressed.

4,409,676

METHOD AND MEANS FOR DIAGNOSTIC TESTING OF CCD MEMORIES

Ramesh C. Varshney, San Jose, Calif., assignor to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed Feb. 19, 1981, Ser. No. 235,804
Int. Cl.³ G11C *29/00*
U.S. Cl. 365—201 **4 Claims**



1. In a charge coupled memory device having a reference voltage node for receiving a reference voltage and a first and a second external pin for receiving a first and a second external control signal, respectively, a memory testing apparatus comprising:
means coupled to said reference voltage node and said first and second external pins which is responsive to a control signal applied to said first external pin for connecting said reference voltage node to said second external pin.

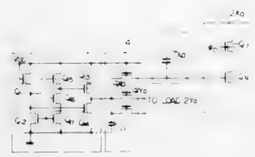
4,409,677

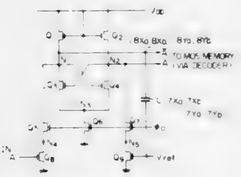
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Yoshihiro Takemae, Yokohama, and Masao Nakano, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 17, 1979, Ser. No. 103,925
Claims priority, application Japan, Dec. 23, 1978, 53-161648; Dec. 23, 1978, 53-161649
Int. Cl.³ G11C *7/02*
U.S. Cl. 365—206 **15 Claims**

1. A semiconductor integrated circuit device including a semiconductor portion, a constant voltage reference circuit to generate a constant reference voltage and at least two load circuits which receive said constant reference voltage, said device comprising:
at least two noise limiters, each having two terminals, a first of said two terminals of each said noise limiter being commonly connected to the output terminal of said constant voltage reference circuit, the second one of said two terminals of the first one of said noise limiters being connected to at least a first one of said load circuits, the second one of said two terminals of a second one of said noise limiters being connected to at least a second one of said load circuits, and the impedance of each said noise limiter being at least approximately as large as the output impedance of said constant voltage reference circuit;
wherein all of the load circuits connected to said second terminal of each said noise limiter are operated at a respective time that is different from the time of operating each load circuit connected to the second terminal of each other of said noise limiters; and
wherein a noise signal that appears at said input of each one of said load circuits connected to one of said noise limiters,





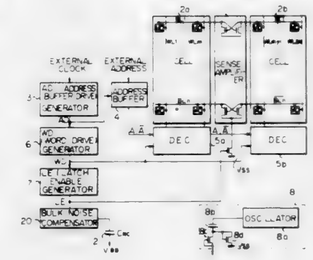
associated with the operation of one of these load circuits, is suppressed from effecting the value of said constant reference voltage that is applied to the inputs of each of said load circuits connected to the other noise limiters.

4,409,678

SEMICONDUCTOR MEMORY DEVICE

Yoshihiro Takemae, and Fumio Baba, both of Yokohama, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 13, 1981, Ser. No. 234,195
Claims priority, application Japan, Feb. 16, 1980, 55-18358
Int. Cl.³ G11C *7/02*
U.S. Cl. 365—206 **5 Claims**



1. A semiconductor memory device, operatively connected to receive a cancelling voltage, comprising:
a semiconductor substrate having a predetermined bias voltage applied thereto;
a sense amplifier;
a pair of bit lines operatively connected to said sense amplifier;
memory cells formed on said semiconductor substrate and operatively connected to said pair of bit lines; and
a capacitance formed on said semiconductor substrate and operatively connected to receive said cancelling voltage, wherein the predetermined bias voltage is applied to the semiconductor substrate and a reading operation is performed by amplifying through said sense amplifier a voltage difference caused between said pair of bit lines due to access to one of said memory cells, and wherein said cancelling voltage of a phase reverse to that of a noise disturbing said predetermined bias voltage applied to said

semiconductor substrate is applied to said semiconductor substrate through said capacitance.

4,409,679

STATIC MEMORY CIRCUIT

Setsuo Kurafuji, Yokohama, and Kazuo Tanimoto, Tama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 26, 1981, Ser. No. 247,748
Claims priority, application Japan, Mar. 26, 1980, 55-38537
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—227 **8 Claims**



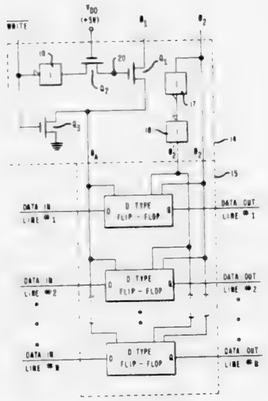
1. A static memory circuit, operatively connectable to receive column selection signals, comprising:
a first power supply;
a second power supply the potential of which is lower than that of said first power supply;
a plurality of word lines;
a plurality of pairs of bit lines;
a plurality of pairs of column selection gate transistors, each pair operatively connected to one of said plurality of pairs of bit lines and controlled by said column selection signals;
a plurality of memory cells each of which comprises:
a pair of first loads operatively connected to said first power supply;
first and second transistors each having a gate operatively connected both to a respective one of said first loads and to a drain of the other transistor of said first and second transistors and each having a source operatively connected to a source of the other transistor of said first and second transistors; and
third and fourth transistors each having a drain operatively connected to one of the respective bit lines of a respective one of said pairs of bit lines, each having a source operatively connected to a respective one of the drains of said first and second transistors and each having a gate operatively connected to a respective one of said word lines; and
means, operatively connected to both the source of said first and second transistors of said memory cells and to said second power supply, for setting the potential of the sources of said first and second transistors of a selected one of said plurality of memory cells to be lower than those of non-selected ones of said plurality of memory cells.

4,409,680

HIGH SPEED WRITE CONTROL FOR SYNCHRONOUS REGISTERS

Vernon K. Schnathorst, Monument, and Gary T. Bastian, Colorado Springs, both of Colo., assignors to NCR Corporation, Dayton, Ohio

Filed Aug. 27, 1981, Ser. No. 296,753
Int. Cl.³ G11C *8/00, 7/00*
U.S. Cl. 365—233 **4 Claims**



1. An electronic circuit for controlling data in a bank of D-type, master-slave flip-flops synchronized to a multiple phase clock, comprising:
a first field effect transistor having its drain electrode connected to receive a first phase signal from said clock, having its source electrode connected to said bank of flip-flops to control the entry of data into said bank of flip-flops, and having a gate electrode;
a bootstrapping field effect transistor having its source electrode connected to said gate electrode of said first field effect transistor, having its drain electrode connected to a source of write command signals, and having its gate electrode connected to a source of voltage which is substantially identical to said write command signals in magnitude; and
means for connecting said source electrode of said first field effect transistor to ground potential whenever a write command signal is absent.

4,409,681

TRANSDUCER

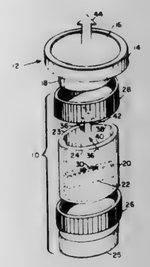
Ronald P. White, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 15, 1979, Ser. No. 20,572
Int. Cl.³ H04B *13/00*
U.S. Cl. 367—166 **15 Claims**

1. Apparatus for driving an element that has piston-like motion, said apparatus comprising:
a flextensional transducer having a hollow shell with interior side walls; and
fluid drive means including fluid communicating with said interior side walls and one side of said piston-like radiating element.

6. A transducer apparatus for converting flexural volume velocity flow to acoustic radiation comprising:
A. a fluid filled flextensional transducer having a hollow shell which contains said fluid, said fluid being acoustically coupled to an outside medium and to the inner wall of said shell; the outer wall of said shell being acoustically decoupled from said medium to prevent contact between the outer wall of said shell and said medium;
B. means for coupling the flexural vibrations of the inner wall of said shell of said flextensional transducer to said outside medium; and
C. a driving element mounted between the inner walls of said shell, whereby the desirable frequency characteristics of said flextensional transducer are utilized and the radiating area of said transducer is determined by the size of said coupling means.

8. The apparatus claimed in claim 6 wherein the outer wall of said shell is acoustically decoupled by being mounted on the hull of a ship.

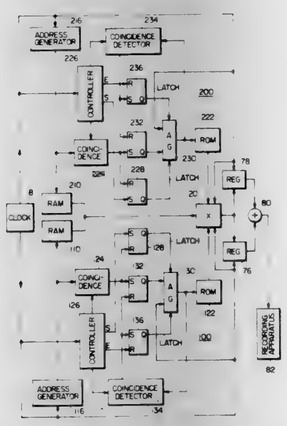


4,409,682

DIGITAL EDITING SYSTEM FOR AUDIO PROGRAMS

Toshinori Mori; Yoshiyuki Tsuchikane, and Takashi Matsushige, all of Yokohama, Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 18, 1980, Ser. No. 188,273
Claims priority, application Japan, Sep. 18, 1979, 54-119616
Int. Cl.³ G09B *5/04*; G06F *3/16, 5/00*
U.S. Cl. 369—3 **6 Claims**



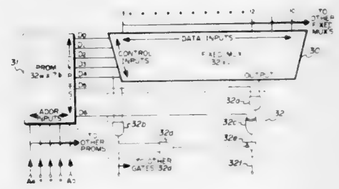
1. A digital editing system for combining first and second digitized analog signals into a third, continuous signal, comprising:
first and second digital memories in which said first and second digitized analog signals are respectively stored;
third and fourth digital memories in which first and second digital weighting factors are stored respectively, the first digital weighting factors representing a magnitude decreasing from unity to zero and stored in locations sequentially addressable as a function of time and the second digital weighting factors representing a magnitude increasing from zero to unity and stored in locations sequentially addressable as a function of time;
first, second, third and fourth address generators respectively associated with said first, second, third and fourth memories;
control means for initially causing said first and second address generators substantially simultaneously to retrieve the first and second digitized analog signals sequentially from sequential addresses generated thereby for said first and second digital memories and for subsequently causing said third and fourth address generators substantially simultaneously to retrieve the first and second digital weighting factors sequentially from said third and fourth digital memories when a predetermined address is reached by said first and second address generators;
means for multiyplying the retrieved first and second digitized analog signals respectively by digital magnitudes of unity and zero until said predetermined address is reached, and for subsequently multiplying the retrieved first and second digitized analog signals first by the retrieved first and second digital weighting factors, respectively, and thereafter by digital magnitudes of zero and unity, respectively; and
means for combining the multiplied first and second digitized analog signals to generate a combined digital signal.

4,409,683

PROGRAMMABLE MULTIPLEXER

Thomas R. Woodward, West Chester, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 18, 1981, Ser. No. 322,462
Int. Cl.³ H04J *3/02*; H03K *17/00*
U.S. Cl. 370—112 **10 Claims**



9. An improved programmable multiplexer circuit integrated on a semiconductor chip comprised of:
a plurality of fixed multiplexer means; each of said fixed multiplexer means including a plurality of data inputs, a plurality of control inputs, and an output for passing a signal from any one of said data inputs to said output in a fixed predetermined fashion in response to encoded signals on said control inputs; wherein
associated with each of said fixed multiplexer means is a programmable memory means for generating said encoded control signals by performing respective programmable transformations of an address that is the same for all of said memory means.

4,409,684

CIRCUIT FOR SYNCHRONIZING A TRANSMITTING-RECEIVING STATION TO A DATA NETWORK OF A DIGITAL COMMUNICATION SYSTEM

Gerhard Pooch, Emmering, and Hans-Juergen von der Neyen, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

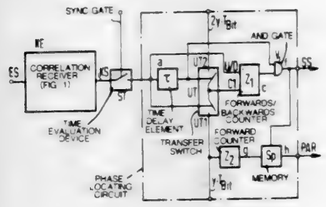
Filed Jul. 31, 1981, Ser. No. 289,102
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032296
Int. Cl.³ H04L *7/00*
U.S. Cl. 375—116 **3 Claims**

1. In a circuit for synchronizing a transmitting/receiving station to the data network of a digital communication system which comprises a correlation receiver in the receiving device, the correlation receiver including a multi-stage time delay

chain in which the input data signals, composed of a data block containing code words inserted at determinate points of the data block as a Barker code, is delayed, the time delay chain including a plurality of parallel outputs each connected to an input of a respective multiplier, which multipliers can be set to the Barker code, and in which the multipliers have respective outputs which are connected to a majority decision circuit which is operable to provide a correlation signal for synchronization purposes, the improvement therein comprising:

synchronization means in said correlation receiver including a bit synchronization output and a block synchronization output for providing respective bit and block synchronization signals;

a regenerator including a plurality of inputs one of which is connected to receive the input data signal and including an output;



a phase shifter including an input for connection to said bit synchronization output, a control input, and an output connected to another one of said inputs of said regenerator for controlling the phase of the bit synchronization signals;

a first switch connected between said bit synchronization output and said input of said phase shifter;

a second switch connected between said block synchronization output and a further one of said inputs of said regenerator;

said first and second switches each including a control input; and

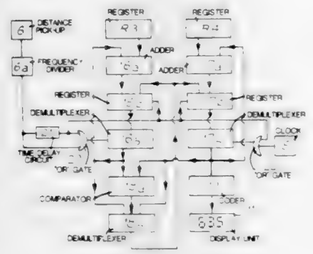
control means connected to said bit and block synchronization outputs and connected to said control inputs of said first and second switches and to said control input of said phase shifter, and operable to correct phase shift and connect said output synchronization outputs to said regenerator for synchronized operation of said regenerator.

4,409,685

METHODS AND TAXIMETERS FOR CALCULATING A TAXI FARE

Claude F. Ricard, 10 Oliveraie G - Route de Nice, Aix-en-Provence, France 13100

Filed Jan. 27, 1981, Ser. No. 228,741
Claims priority, application France, Feb. 7, 1980, 80 02900
Int. Cl.³ G07B *13/00;* **G06F** *15/20*
U.S. Cl. 377—20 **6 Claims**



1. Method for calculating a taxi fare displayed on an electronic taximeter, according to which the distance travelled by the taxi is measured by means of a distance pick-up, which delivers a number of pulses proportional to said distance, and the duration of the taxi run is measured by means of an electronic clock which delivers pulses of constant and high frequency, wherein the taxi run is split into elementary portions of equal length, which is the constant distance travelled by the taxi between two successive pulses delivered by the distance pick-up; the number of pulses **n1** delivered by the said clock during each elementary portion, i.e. between two successive pulses of the distance pick-up is counted; a constant number **p2** which is the unit price of a travelled distance equal to the constant length of each portion, is compared after each portion, to a variable number **n1.p1** which is the partial price of the portion obtained by multiplying the price **p1** of a time unit equal to the period of the said clock, by the duration **n1** of each portion; the highest of the two numbers then selected as partial price of the said elementry portion; and wherein the total fare is calculated by adding up the said partial prices.

4,409,686

METHOD OF SERIALIZATION OF DICE

Kenneth A. Ports, Indialantic, and Justin E. Harlow, Melbourne, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Filed Jun. 16, 1980, Ser. No. 159,750
Int. Cl.³ G06F *15/46;* **G06K** *9/00*
U.S. Cl. 382—8 **8 Claims**



1. A method of preparing a mask for serialization of chips on a wafer comprising:

initially forming a plurality of identical chip patterns on a mask by stepping and repeating a single chip pattern onto said mask in rows and columns, said single chip pattern having a blank area in said pattern; and

secondly forming location identifying indicia in the resulting blank areas of each chip pattern on the mask by stepping to each blank area after the formation of said chip patterns.

4,409,687

ARRANGEMENT AND METHOD FOR ESTABLISHING RADIO COMMUNICATION IN A SYSTEM

John C. Berti, and James W. Williams, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Continuation of Ser. No. 110,995, Jan. 10, 1980, abandoned, which is a continuation of Ser. No. 956,085, Oct. 30, 1978, abandoned. This application Apr. 14, 1981, Ser. No. 254,080
Int. Cl.³ H04Q *7/02;* **H04B** *7/26*
U.S. Cl. 455—7 **48 Claims**

1. An arrangement for establishing communication over one of a plurality of radio frequency channels between a first one of a plurality of radio stations and a second one of the plurality of radio stations through a repeater station, said arrangement comprising:

a. first means for placing said first station in an idle mode and for causing said first station to scan said radio frequency channels;

b. second means for stopping the scan caused by said first means in response to a predetermined group signal transmitted by said repeater on one of said channels, and enabling said first station to be operated on said one channel in response to said predetermined group signal thereon;

c. third means for alternatively placing said first station in a call originate mode and for causing said first station to scan said radio frequency channels; and

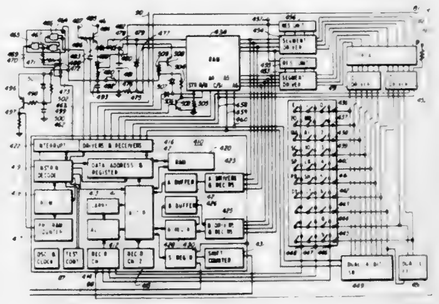
d. fourth means for stopping the scan caused by said third means on one of said channels and listening for a predetermined busy signal on said one channel and in response to the absence of said predetermined busy signal on said one channel, determining that said one channel is non-busy and enabling said first station to be operated on said non-busy channel in response to said absence of said predetermined busy signal thereon, and in response to the presence of said predetermined busy signal, continuing said scanning.

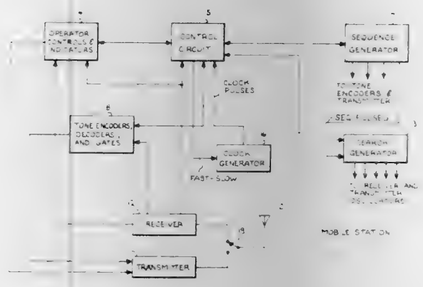
4,409,688

PROCESSOR CONTROLLED, SCANNING RADIO RECEIVER INCLUDING FUTURE CODE DEVELOPING MEANS

William Baker, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Cumberland, Ind.

Continuation-in-part of Ser. No. 154,032, May 28, 1980, abandoned, which is a continuation-in-part of Ser. No. 34,738, Apr. 30, 1979, Pat. No. 4,270,217. This application Jun. 28, 1982, Ser. No. 392,458
Int. Cl.³ H03J *7/18*
U.S. Cl. 455—165 **17 Claims**





43. A method of automatically establishing trunked plural channel radio communication, between plural transceivers, said method comprising the following steps at each transceiver site:

normally scanning each channel to detect the presence of predetermined control signals thereon transmitted by another of said plural transceivers and, if detected, at least temporarily interrupting the scan and permitting transceive operations to occur, and

upon command, interrupting said normal scanning step to search for an idle one of said channels, and, when detected, thereafter generating and transmitting predetermined control signals thereon including the transmission of a busy signal interrupted during an initial listening period when an answering busy signal is detected to permit transceive communication operations.

1. In a scanning radio receiver, including frequency synthesizer means for generating a local oscillator signal for mixing with a received signal to produce an IF signal at a certain IF frequency, said frequency synthesizer means being digitally controlled and being responsive to applied frequency codes to develop a local oscillator frequency for reception of a signal at a frequency corresponding to the applied frequency code, a detector circuit for responding to said IF signal and including means for developing on a signal present line an indication of the receipt of a signal by the receiver, keyboard means for supplying control data, processor means coupled to said detector circuit through said signal present line and coupled to said frequency synthesizer means for control thereof, timer means operatively associated with said processor means, said processor means including means for testing for the presence or absence of a signal on said signal present line and further including a read only memory and a random access memory for storing data, the control data supplied by said keyboard means and the data stored by said read only and random access memory being such that frequencies to be scanned by said receiver are determinable therefrom, said processor means being operative to develop a frequency code for supply to said synthesizer means in accordance with said control and stored data, said random access memory having a first frequency code memory portion for temporarily containing a frequency code developed by said processor means, said processor means being controlled by said timer means to process said control and stored data to develop and supply a frequency code to said first frequency code memory portion and to thereafter output said frequency code from said first frequency code memory portion to said synthesizer means and to thereafter process control and stored data and develop and supply a new frequency code to said first frequency code, memory portion, said processor means being also controlled by said timer means for operating after supply of a new frequency code to said first frequency code memory portion to effect a test of said signal present line, and said processor means being responsive to the absence of a signal on said signal present line in said test thereof for output of said new frequency code from said first frequency code memory portion to said synthesizer means.

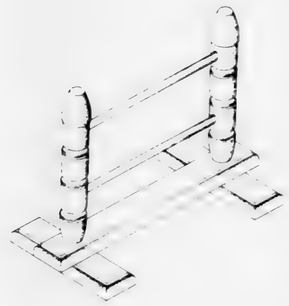
270,869
LADIES SPATS
Richard E. Kronberg, 1500 55th Ave. No., Minneapolis, Minn. 55430
Filed Jul. 13, 1981, Ser. No. 282,511
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—267



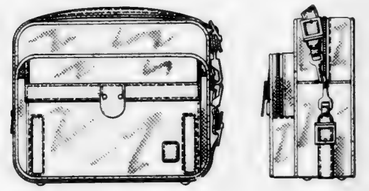
270,870
ATHLETIC SHOE
Harvey G. Tilles, P.O. Box 5466, 614 N. Hamilton, High Point, Guilford, N.C. 27262
Filed May 8, 1981, Ser. No. 261,889
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309



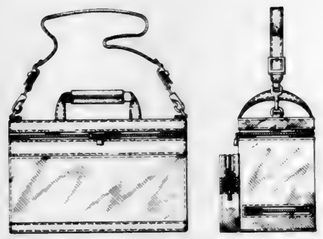
270,871
KNITTING STAND
Wendy M. Wright, 105 Balbair Rd., Kanata, Ontario, Canada K2L 1G5
Filed May 18, 1981, Ser. No. 264,988
Claims priority, application Canada, Feb. 23, 1981, 23-02-81-1
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D3—23



270,872
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartman Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,436
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



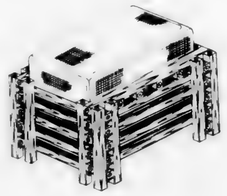
270,873
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartman Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,544
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



270,874
CHAIR OR SIMILAR ARTICLE
Koni Ochsner, Wettingen, Switzerland, assignor to Giroflex-Entwicklungs AG, Koblenz, Switzerland
Filed Mar. 5, 1980, Ser. No. 127,375
Claims priority, application Switzerland, Sep. 10, 1979, DMA/00007
The portion of the term of this patent subsequent to Sep. 13, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—31



270,875
OTTOMAN
Robert V. Thompson, Boatyard Condominiums, 75th Ave. North, Myrtle Beach, S.C. 29577
Filed Apr. 23, 1981, Ser. No. 256,803
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—36



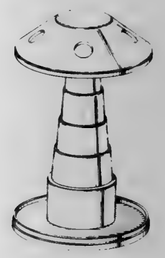
270,876
AUTOMOBILE SEAT
Yutaka Ikeda, Lomita, and Truman Pollard, Torrance, both of Calif., assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 10, 1981, Ser. No. 291,686
Claims priority, application Japan, Apr. 2, 1981, 56-14010
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



270,877
CHAIR
Larry G. Hickey, Costa Mesa, Calif., assignor to Tropitone Furniture Co., Inc., Sarasota, Fla.
Filed Dec. 23, 1980, Ser. No. 223,487
The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56



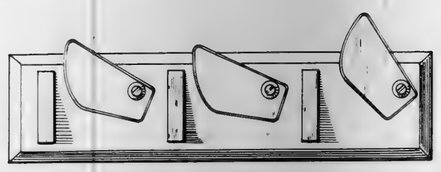
270,878
COLLAPSIBLE TOOTHBRUSH HOLDER
Ralph Sabatella, 711 Mound Ave., South Pasadena, Calif. 91030
Filed Apr. 13, 1981, Ser. No. 253,736
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—94



270,879
WALL MOUNTABLE BICYCLE SUPPORT
Jon O. Jacobson, 6836 - 20th NE., Seattle, Wash. 98115
Continuation-in-part of Ser. No. 61,033, Jul. 26, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,533
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—114



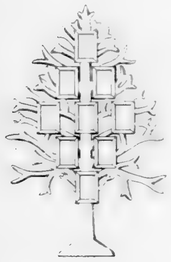
270,880
HOLDER FOR ROD SHAPED ARTICLES
Alpheus B. Poland, Rte. 5 Box 149, Coushatta, La. 71019
Filed Jul. 28, 1981, Ser. No. 287,778
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—125



270,881
DIPLAY UNIT
Marvin Zaro, New York, N.Y., assignor to Advertising Displays Company, Englewood Cliffs, N.J.
Filed Jul. 1, 1980, Ser. No. 165,168
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—181



270,882
PICTURE FRAME
Arlie J. Wilson, Rte. #1, Box 268D, Tellico Plains, Tenn. 37385
Filed Jul. 15, 1981, Ser. No. 283,719
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



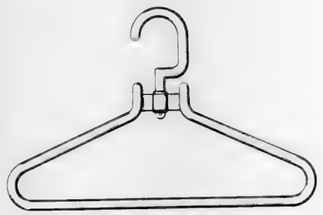
270,883
CORNER JUNCTION ELEMENT
Ake A. Hultberg, Stallarholmsvägen 2, S-150 30 Mariefred, Sweden
Filed Apr. 18, 1980, Ser. No. 142,064
Claims priority, application Sweden, Nov. 14, 1979, 79-2508
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—246



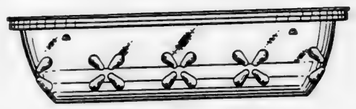
270,884
CLOTHES HANGER
Heikki Tavela, Helsinki, Finland, assignor to Oy Mk-Tuote AB, Helsinki, Finland
Filed Apr. 14, 1981, Ser. No. 234,178
Claims priority, application Finland, Dec. 29, 1980, 911/80
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—247



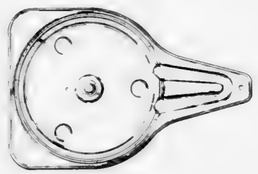
270,885
CLOTHES HANGER
Auvo Taivalvuo, Sairakkala, Finland, assignor to Oy Mk-Tuote AB, Helsinki, Finland
Filed Apr. 14, 1981, Ser. No. 254,179
Claims priority, application Finland, Oct. 30, 1980, 789/80
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—256



270,886
DISH
John M. Wathen, Jr., Chester, N.J., assignor to James River-Dixie/Northern, Inc., Greenwich, Conn.
Division of Ser. No. 74,675, Sep. 12, 1979. This application Sep. 25, 1981, Ser. No. 305,788
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—28

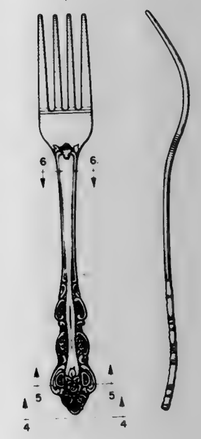


270,887
DISPOSABLE PAN FOR HEATING AND SERVING FOOD
David F. Allgeyer; Philip P. Johnson, both of Conway, and John W. Gilliom, Wooster, all of Ark., assignors to UMC Industries, Inc., Stamford, Conn.
Filed Mar. 5, 1981, Ser. No. 240,800
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—359

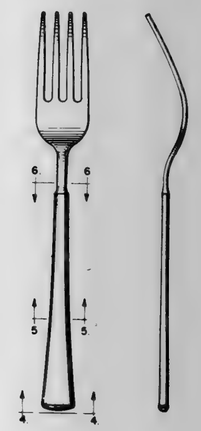




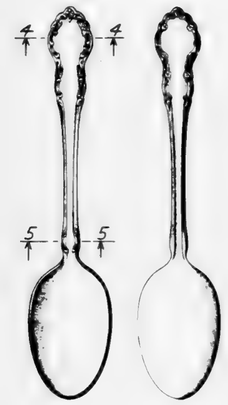
270,888
FORK OR SIMILAR ARTICLE
Oleg L. Cassini, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 25, 1981, Ser. No. 305,594
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



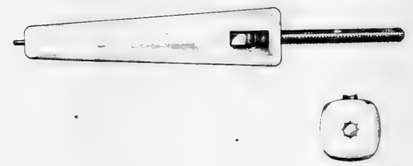
270,889
FORK OR SIMILAR ARTICLE
Oleg L. Cassini, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 25, 1981, Ser. No. 305,596
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



270,890
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Oct. 23, 1981, Ser. No. 314,378
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



270,891
ELECTRIC SCALER AND PEELER
Chris T. Spurr, 1417 Avenue E, Bay City, Tex. 77414
Filed May 5, 1981, Ser. No. 260,556
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—139



270,892
FOLDING COOKING GRILL
Omar Gonzales, 105 Willim Ave., San Antonio, Tex. 78209, and George B. Kobel, 4523 Briarwick, San Antonio, Tex. 78217
Filed Nov. 12, 1981, Ser. No. 320,657
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—336



270,893
TRAY FOR MICROWAVE STEAMING UTENSIL
Robert F. Bowen, Burlington, Mass.; Walter B. Herbst, Evanston, and Thomas E. Salisbury, Highland Park, both of Ill., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 3, 1981, Ser. No. 270,045
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—409



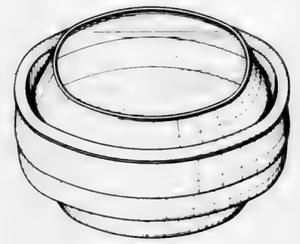
270,894
TREE GUARD
Robert E. Haggard, Everett, Wash., assignor to Merry Haggard, Snohomish, Wash.
Division of Ser. No. 158,937, Jun. 12, 1980, Pat. No. Des. 268,084. This application Sep. 9, 1982, Ser. No. 416,247
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—01



270,895
SHINGLE STRIPPER
William R. Holloway, 3046 Bloomington Ave. South, Minneapolis, Minn. 55407
Filed Jan. 22, 1981, Ser. No. 227,151
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—89



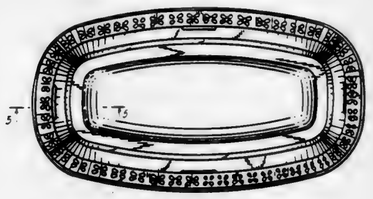
270,896
STORAGE CONTAINER FOR SMALL ARTICLES
Frederic Baillod, 1, Place du Tricentenaire, 2300 La Chaux-de-Fonds, Switzerland
Filed Feb. 27, 1981, Ser. No. 239,656
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—349



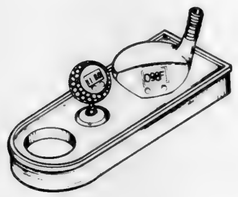
270,897
BOTTLE
John J. Scalice, New York, N.Y., assignor to Revlon, Inc., New York, N.Y.
Filed Nov. 5, 1980, Ser. No. 204,134
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—395



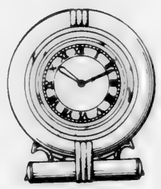
270,898
FOOD CONTAINER
Dennis J. Nemura, Easton, Pa., and John M. Wathen, Jr., Chester, N.J., assignors to James River-Dixie/Northern, Inc., Greenwich, Conn.
Division of Ser. No. 74,673, Sep. 12, 1979. This application Sep. 25, 1981, Ser. No. 305,789
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—429



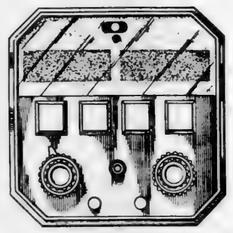
270,899
COMBINED CLOCK AND THERMOMETER DESK SET
Roger Huang, 2-6th Fl., 13 La. 118 Chung Ching S. Rd., Sec. 1, Taipei, Taiwan
Filed Sep. 14, 1981, Ser. No. 301,617
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2



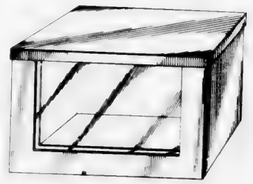
270,900
ALARM CLOCK
Joseph Kanoui, Geneva, Switzerland, assignor to Interdica S.A., Villars-sur-Glane, Switzerland
Filed Apr. 8, 1981, Ser. No. 252,223
Claims priority, application Hague, Oct. 16, 1980, 70774
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—23



270,901
FACE PLATE AND CONTROLS FOR AN AERONAUTICAL RADIO NAVIGATION DEVICE
George B. Foster, Worthington; Paul D. Gibbs, Blacklick, and Michael A. Smyser, Galena, all of Ohio, assignors to Foster Airdata Systems, Inc., Columbus, Ohio
Filed Dec. 17, 1980, Ser. No. 217,382
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—74



270,902
CHROMATOGRAPHY CHAMBER
Herman R. Felton, Wilmington, Del., assignor to Analtech, Incorporated, Newark, Del.
Filed Jun. 1, 1981, Ser. No. 269,414
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—81



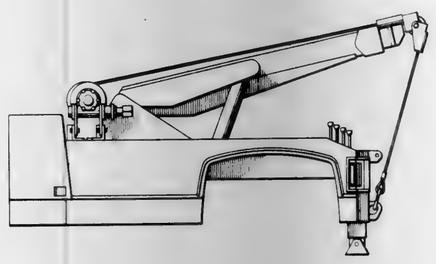
270,903
INFANT SCALE
Sönke Vogel, Hamburg, and Frohmut Müller, Barsbüttel, both of Fed. Rep. of Germany, assignors to Vogel & Halke, Fed. Rep. of Germany
Filed Jul. 16, 1980, Ser. No. 169,394
Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 66MR10919
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—91



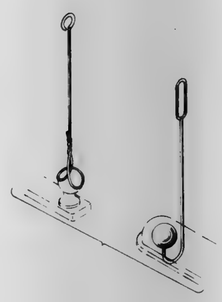
270,904
MOUNTING FIXTURE FOR A MANNEQUIN HEAD
Louis V. Spina, 1211 E. Dominick St., Rome, N.Y. 13440
Filed Feb. 17, 1981, Ser. No. 234,663
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—164



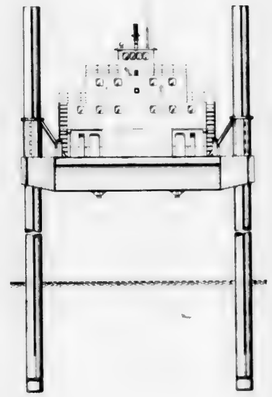
270,905
TOW TRUCK VEHICLE BODY
Ronald R. Nespor, c/o Chevron, Inc., R.D. #7, Rte. 62, Mercer, Pa. 16137
Filed Oct. 24, 1980, Ser. No. 200,076
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—14



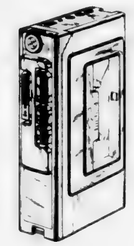
270,906
VISUAL AID UNIT FOR TRAILER HITCH ALIGNMENT
Jack Orr, 107 Lexington, Denton, Tex. 76201
Filed Jan. 5, 1981, Ser. No. 222,606
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



270,907
SELF-ELEVATING LINE TESTING VESSEL FOR OFFSHORE OIL LINES OR THE LIKE
David T. Younes, P.O. Box 7333, Abu Dhabi, United Arab Emirates
Filed Jul. 6, 1981, Ser. No. 280,283
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—316



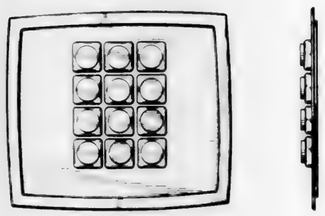
270,908
TAPE PLAYER
Kaoru Sumita, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 6, 1981, Ser. No. 309,112
Claims priority, application Japan, Apr. 9, 1981, 56-15011
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



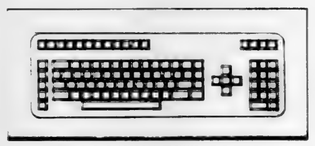
270,909
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 24, 1981, Ser. No. 246,959
Claims priority, application Japan, Nov. 8, 1980, 55-46725
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30



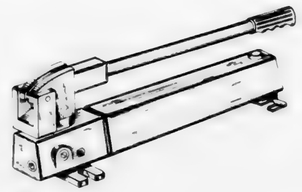
270,910
TELEPHONE COVER DEVICE
Milton Morse, Fort Lee, N.J., assignor to APM Corporation, Englewood, N.J.
Filed Feb. 23, 1981, Ser. No. 236,759
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66



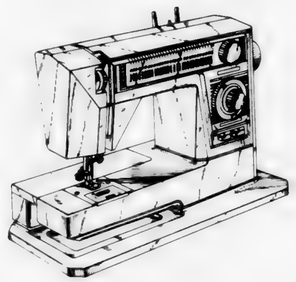
270,911
KEYBOARD
Evert Endt, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Jan. 21, 1981, Ser. No. 226,660
Claims priority, application Hague, Jul. 21, 1980, DM/000276
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



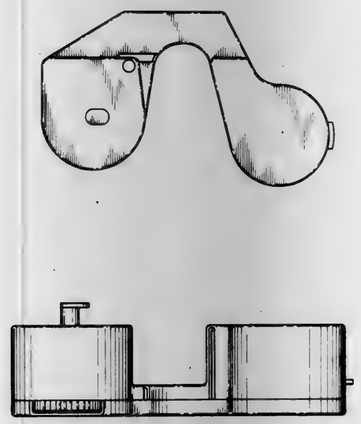
270,912
HYDRAULIC PUMP
Donald W. Sessody, Brookfield, Wis., assignor to Applied Power Inc., Brookfield, Wis.
Filed Jun. 18, 1981, Ser. No. 275,138
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



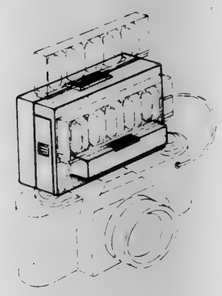
270,913
SEWING MACHINE
Ziro Kosugi, Tokyo, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Continuation of Ser. No. 124,788, Feb. 25, 1980. This application Nov. 30, 1981, Ser. No. 325,829
Claims priority, application Japan, Sep. 19, 1979, 54 39,113
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—69



270,914
CARTRIDGE FOR PROTECTIVE FILM OVERLAY OF A RECORDING HEAD IN A XEROGRAPHIC PRINTER
Philip L. Nader, Succasunna, N.J., assignor to Wang Laboratories, Inc., Lowell, Mass.
Filed Aug. 31, 1981, Ser. No. 290,273
Term of patent 14 years
Int. Cl. D16—*03, 99*
U.S. Cl. D16—32



270,915
DUAL SOCKET FLASH ADAPTER FOR CAMERA
Timothy Fohl, Carlisle, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Jun. 19, 1981, Ser. No. 275,546
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42



270,916
CAMERA GRIP
Nandor J. Cheplo, 4009 N. 30th St., Arlington, Va. 22207
Filed Oct. 19, 1981, Ser. No. 312,813
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47

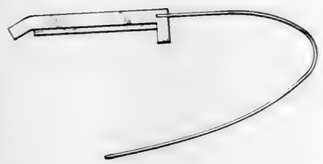


270,917
COMPACT PEDAL BOARD FOR ELECTRONICALLY-OPERATED MUSICAL INSTRUMENTS
Richard H. Peterson, 11748 Walnut Ridge Dr., Palos Park, Ill. 60464; Patrick J. Bovenizer, Alsip, Ill.; Richard W. Jensen, Elmhurst, Ill., and William H. Haas, Hickory Hills, Ill., assignors to Richard H. Peterson, Palos Park, Ill.
Filed Jun. 9, 1981, Ser. No. 271,761
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—9



270,918
CAPO FOR A STRINGED MUSICAL INSTRUMENT
John Williamson, and Robert Falloon, both of Warnham, England, assignors to Muse Music Company Limited, England
Filed Dec. 4, 1980, Ser. No. 212,904
Claims priority, application United Kingdom, Jun. 6, 1980, 995201
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—20





270,919
DRUM
George Migirian, 2832 E. Grand Blvd., Detroit, Mich. 48211
Filed May 28, 1981, Ser. No. 267,744
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



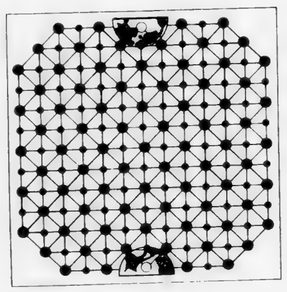
270,920
GAME TARGET
Donald F. Branom, P.O. Box 671, Oswego, Ill. 60543
Filed Jun. 1, 1981, Ser. No. 268,898
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—5



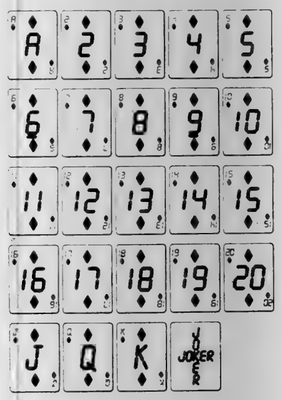
270,921
GAME BOARD
David Morgan, P.O. Sub 36, Saskatoon, Saskatchewan, Canada (S7H 3VO)
Filed Apr. 13, 1981, Ser. No. 253,889
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—15



270,922
GAME BOARD
Bror O. Astergard, Nilssons Berg 3, Göteborg, Sweden (S-411 43)
Filed Mar. 5, 1981, Ser. No. 240,972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—31



270,923
DECK OF PLAYING CARDS WITH SEGMENTED NUMBERS
Bill J. Raheb, 38 Briarwood Dr., Matawan, N.J. 07747
Filed Jul. 23, 1981, Ser. No. 286,299
The portion of the term of this patent subsequent to Jun. 21, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—45



270,924
TOY RAZOR
Ronald R. Klawitter, Gasconade County, Mo., assignor to Hand-i-Pac, Inc., Hermann, Mo.
Filed Apr. 17, 1978, Ser. No. 896,819
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



270,925
PHYSICAL EXERCISER
Senzo Watanabe, Nagoya, Japan, assignor to Kabushiki Kaisha Aiky Group, Nagoya, Japan
Filed Jul. 28, 1980, Ser. No. 173,197
Claims priority, application Japan, Jan. 29, 1980, 55-2367
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191



270,926
SWIM FIN
John F. Simpson, 1622 Ponderosa Ave., Costa Mesa, Calif. 92626
Filed Aug. 28, 1981, Ser. No. 297,515
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—239

270,927
CHILD'S OUTDOOR PLAY GYM
Harold W. Carlson, Dothan, Ala., assignor to Brown Group Recreational Products, Inc., Bedford, Pa.
Division of Ser. No. 959,928, Nov. 13, 1978. This application Mar. 16, 1981, Ser. No. 243,818
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



270,928
BACKPACKER'S TENT
Jean-Michel Brossier, 2081 Motor Ave., Los Angeles, Calif. 90064
Filed Jul. 9, 1981, Ser. No. 281,831
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



270,929
HANDGUN CASE
James F. Shasteen, Maumee, and Philip W. Shasteen, Defiance, both of Ohio, assignors to Shasteen Industries, Inc., Defiance, Ohio
Filed Jun. 12, 1981, Ser. No. 273,080
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—13



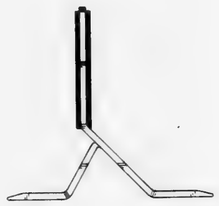
270,930
ELECTRONIC INSECT KILLER
Man H. Lee; Moon W. Lee; Ping N. Lin, and Kai C. Chan, all of 8/F, Sui On Industrial Bldg., 134 Wai Yip St., Kwun Tong, Kowloon, Hong Kong
Filed Dec. 7, 1981, Ser. No. 327,750
Claims priority, application United Kingdom, Jun. 16, 1981, 1000998
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



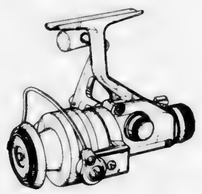
270,931
FISHING ROD HANDLE COMPONENT
Shigeru Yamamoto, Higashikurume, and Hideo Nakamura, Koganei, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Aug. 3, 1981, Ser. No. 289,645
Claims priority, application Japan, Feb. 9, 1981, 56-4695
Term of patent 14 years
Int. Cl. D24—*05*; D22—*23;26*
U.S. Cl. D22—23



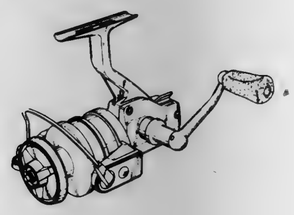
270,932
LINE GUIDE FOR FISHING ROD OR THE LIKE
Shigeru Yamamoto, Higashikurume, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Oct. 19, 1981, Ser. No. 312,396
Claims priority, application Japan, May 19, 1981, 56-21495
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24



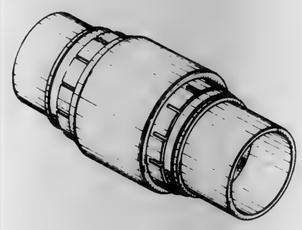
270,933
FISHING REEL
Kanji Iinuma, and Yasuhisa Kameda, both of Koganei, Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Jul. 30, 1981, Ser. No. 288,446
Claims priority, application Japan, Jan. 31, 1981, 56-3508
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



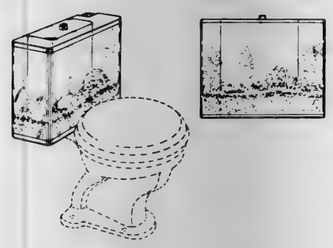
270,934
FISHING REEL
Kanji Iinuma, Koganei, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Aug. 19, 1981, Ser. No. 294,099
Claims priority, application Japan, May 29, 1981, 56-23667
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



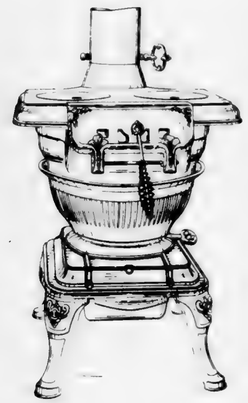
270,935
EXPANSION COUPLING FOR PLASTIC PIPE
Duane D. Logsdon, 1708 Calavera Dr., Fullerton, Calif. 92631
Filed Jan. 26, 1981, Ser. No. 228,299
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



270,936
COMBINED TOILET TANK AND AQUARIUM
D. Randall Everson, 18615 Loree Ave., Cupertino, Calif. 95014
Filed Jan. 22, 1981, Ser. No. 227,164
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



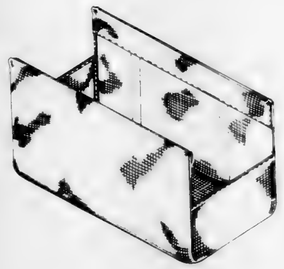
270,937
STOVE
Terence F. Porter, and Philip R. Allen, both of Auckland, New Zealand, assignors to Mason & Porter Limited, Mount Wellington, New Zealand
Filed Jan. 2, 1981, Ser. No. 222,517
Claims priority, application New Zealand, Sep. 25, 1980, 16753
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



270,938
SOLID FUEL BURNING STOVE UNIT FOR USE AS FIREPLACE INSERT OR FREE-STANDING HEATER
William H. Johnson, Harrisonburg, Va., assignor to Shenandoah Manufacturing Co. Inc., Harrisonburg, Va.
Filed Jun. 9, 1981, Ser. No. 272,018
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



270,939
LOG HOLDER
Richard C. Stehlik, 1234 Hollins Rd., Waynesboro, Va. 22980
Filed Aug. 31, 1981, Ser. No. 297,978
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D23—138.5



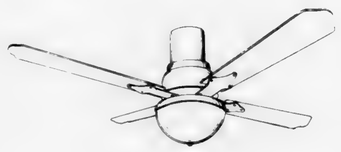
270,940
RIDGE CONSTRUCTION FOR A GREENHOUSE
Christopher Esposito, 897 Gardiner Dr., West Bay Shore, N.Y. 11706
Filed Jul. 6, 1981, Ser. No. 281,228
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D23—153



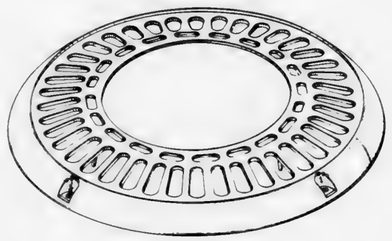
270,941
ELECTRIC DESK FAN
Chiang-Lee Lin, Rm. 5K, Chung Shan Commercial Bldg., No. 49, Chung Shan N. Rd., Sec. 3, Taipei, Taiwan
Filed Mar. 12, 1982, Ser. No. 357,796
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



270,942
COMBINED CEILING FAN AND LIGHT
Lawrence G. McCain, Beverly Hills, Calif., assignor to Allware Agencies Limited, London, England
Filed Aug. 14, 1980, Ser. No. 178,021
Term of patent 14 years
Int. Cl. B23—*04*
U.S. Cl. D23—158



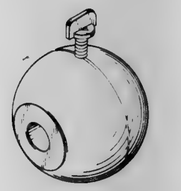
270,943
COVER PLATE FOR CEILING FANS
Warren E. Dennis, Pasadena, Calif., assignor to Casablanca Fan Company, Inc., City of Industry, Calif.
Filed Dec. 21, 1981, Ser. No. 332,744
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



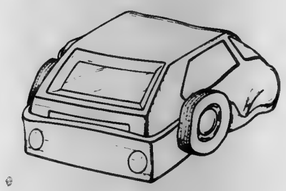
270,944
CANNULA MALE ADAPTOR PLUG EXTRACTOR
Van B. Hostetler, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed Mar. 18, 1981, Ser. No. 244,995
Term of patent 14 years
Int. Cl. D24—*03*; D8—*05*
U.S. Cl. D24—08



270,945
UTENSIL HOLDER FOR USE BY ARTHRITIC PATIENTS OR THE LIKE
Irving Kohn, P.O. Box 1112, Vallejo, Calif. 94590
Filed Apr. 17, 1981, Ser. No. 258,091
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—34



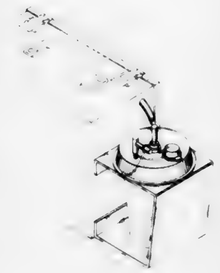
270,946
SIMULATIVE PACIFIER
Lisa Brauer, 5 Waldron St., Marblehead, Mass. 01945
Filed May 1, 1981, Ser. No. 259,512
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—45



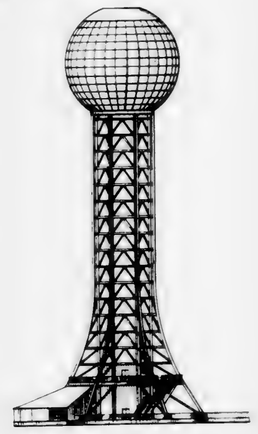
270,947
UNITARY, DISPOSABLE FILTER UNIT
Ravinder C. Mehra, Fairport; Heinz W. Hahn, Rochester, and Raj K. Aggarwal, Penfield, all of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed Mar. 2, 1981, Ser. No. 239,321
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—57



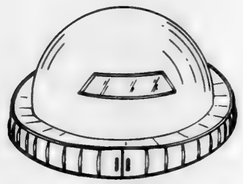
270,948
COMBINED COLLECTOR AND HOLDER FOR A PATIENT RESUSCIATION SUCTION PUMP
Sam L. Say, La Canada, Calif., assignor to S-Scor Corporation, La Canada, Calif.
Filed Apr. 10, 1981, Ser. No. 252,955
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59



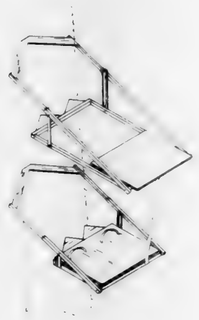
270,949
BUILDING STRUCTURE
William S. Denton, Jr., Morristown; Donald P. Shell, Knoxville, and Hubert Bebb, Gatlinburg, all of Tenn., assignors to Comunity Tectonics, Inc., Knoxville, Tenn.
Filed Aug. 24, 1981, Ser. No. 295,714
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—6



270,950
DISCOTEQUE BUILDING STRUCTURE
Diana D. Walls, Des Moines, Iowa 50312, and Sharon D. Newton, 1010 School St., Apt. 5, Des Moines, Iowa 50309, assignors to Sharon Newton, Des Moines, Iowa
Filed Aug. 27, 1981, Ser. No. 296,792
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—19



270,951
TREE STAND
Bobby G. Cryar, 115 Joann St., Albertville, Ala. 35950
Filed Apr. 10, 1981, Ser. No. 252,942
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—62



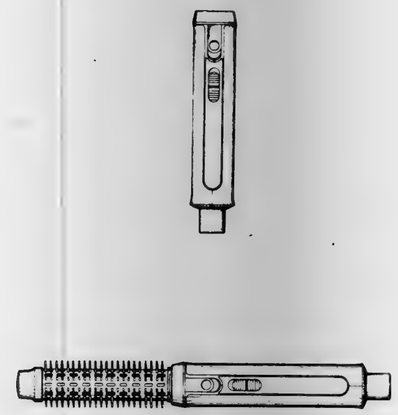
270,952
COMBINED LIGHTER HOLDER AND PIPE SMOKER'S TOOL
Charles A. Peterson, 444 Estudillo Ave., San Leandro, Calif. 94577
Filed Jan. 26, 1981, Ser. No. 228,384
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



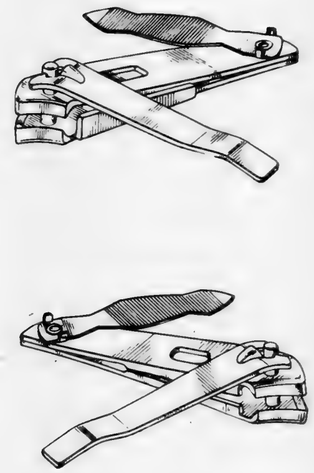
270,953
COMBINATION KNIFE AND PIPE TAMPER
Jerry Langtry, 24342 Penn, Dearborn, Mich. 48124
Filed Oct. 13, 1981, Ser. No. 310,757
Term of patent 14 years
Int. Cl. D27—*99*
U.S. Cl. D27—51



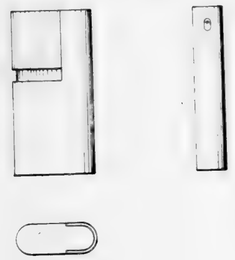
270,954
HAIR SETTING APPARATUS
Yoshio Mizobata, and Kuniharu Ichikawa, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Apr. 1, 1982, Ser. No. 364,442
Claims priority, application Japan, Oct. 19, 1981, 56-46607
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35



270,955
NAIL CLIPPER WITH CLIPPING EMPTYING CHAMBER
William B. Hannon, P.O. Box 187, Kihei, Maui, Hi. 96753
Filed Dec. 7, 1981, Ser. No. 327,959
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—60

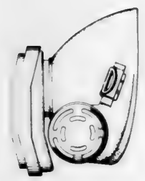


270,956
SPRAY
Carlos M. Martinez, Barcelona, Spain, assignor to Monturas y Fornituras, S.A., Barcelona, Spain
Filed Jul. 22, 1981, Ser. No. 285,773
Claims priority, application Spain, Feb. 14, 1981, 98,814
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—91.1



270,957
RESPIRATOR
Richard D. Maryyanek, Northbridge, and Joseph Z. Zdrok, Webster, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Nov. 8, 1982, Ser. No. 439,948
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D29—7





270,958
HORSESHOE
James J. Rigney, 158 Club Dr., Loveland, Ohio 45140
Filed Aug. 5, 1980, Ser. No. 175,663
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—35

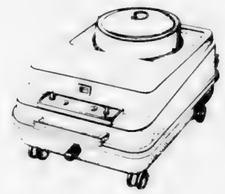


270,959
HORSESHOE
James J. Rigney, 158 Club Dr., Loveland, Ohio 45140
Filed Aug. 5, 1980, Ser. No. 175,664
Term of patent 14 years
Int. Cl. D30—*01*
U.S. Cl. D30—35





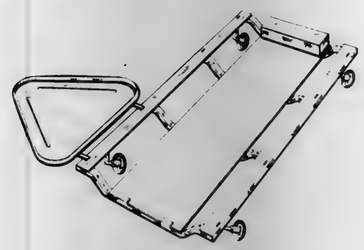
270,960
WET/DRY VACUUM CLEANER
Carl Parise, Reno, and Michael Parise, Sparks, both of Nev., assignors to Parise and Sons, Inc., Sparks, Nev.
Filed Apr. 28, 1981, Ser. No. 258,240
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—21



270,961
MOP BUCKET
Larry S. Hawkins, Winchester; William A. LaFollette, Jr., Stephens City, and Dale T. Maza, Stephenson, all of Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Nov. 13, 1981, Ser. No. 321,043
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D32—53



270,962
COMBINED CREEPER AND TOOL CADDY
Detlef Martell, Kitchener, Canada, assignor to J. C. Hallman Manufacturing Co. Limited, Kitchener, Canada
Filed Oct. 22, 1981, Ser. No. 313,893
Claims priority, application Canada, Jul. 14, 1981, 14-07-81-6
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D34—23



270,963
STORAGE BASKET FOR FOOD PRODUCTS
Daniel D. Hawes, Chagrin Falls, and Edward W. Massey, Parma, both of Ohio, assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.
Filed Mar. 16, 1981, Ser. No. 244,221
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See—*
Lehnhardt, William F.; and Orthoefer, Frank T., 4,409,248., Cl. 426-46.000.

Abe, Motoshi: *See—*
Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, 4,409,030., Cl. 106-97.000.

Abramian, Evgeny A., to Institut Vysokikh Temperatur Akademii Nauk SSSR. Shock excited pulse transformer. 4,409,492., Cl. 307-108.000.

Abrams, Simon. Ventilated rain garment. 4,408,356., Cl. 2-87.000.

ACF Industries, Incorporated: *See—*
Shelton, William S., 4,408,771., Cl. 277-206.00R.

A'Costa, Anthony. Hand gun and kit therefor. 4,408,410., Cl. 42-90.000.

Acton Research Corporation: *See—*
Stelmack, Lawrence A., 4,408,825., Cl. 350-1.700.

Adamovich, Anatoly V.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Adelmann, William J., Jr., to Dresser Industries, Inc. Differential pressure control for gas seal in turbo machinery. 4,408,765., Cl. 277-3.000.

Adomeit, Heinz-Dieter; and Schulz, Volkmar, to Heinz-Dieter Adomeit; and Metallwerk Max Brose GmbH & Co. Adjustable vehicle seat. 4,408,802., Cl. 297-452.000.

Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, to Steag Aktiengesellschaft. Method of and apparatus for the treatment of pyrite-containing mineral coal. 4,408,723., Cl. 241-19.000.

Advance Brushes, Inc.: *See—*
Pusterhofer, Ronald J., 4,408,367., Cl. 15-180.000.

Aeration Industries, Inc.: *See—*
Rajendren, Richard B., 4,409,100., Cl. 210-219.000.

Aerobitronics, Inc.: *See—*
Relyea, Richard D., 4,408,613., Cl. 128-670.000.

Agfa-Gevaert AG: *See—*
Schirk, Gunter; and Kastl, Alfons, 4,408,891., Cl. 366-265.000.

Aggarwal, Sundar L.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,409,368., Cl. 525-314.000.

Aigo, Seiichiro. Information card. 4,409,471., Cl. 235-492.000.

Air Products and Chemicals, Inc.: *See—*
Vora, Suresh M.; Mazzafro, William J.; Brian, Pierre L. T.; and Chen, Michael S. K., 4,409,064., Cl. 159-47.100.

Aisin Seiki Kabushiki Kaisha: *See—*
Nishii, Michiharu; and Ohmi, Atsushi, 4,409,460., Cl. 219-93.000.

Aisin Warner Kabushiki Kaisha: *See—*
Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, 4,408,462., Cl. 60-330.000.

Akagi, Motoo: *See—*
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.

Akai Electric Company Limited: *See—*
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,409,633., Cl. 360-127.000.

Akashi, Goro: *See—*
Kitamoto, Tatsuji; and Akashi, Goro, 4,409,281., Cl. 428-212.000.

Akiba, Tokuji: *See—*
Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, 4,409,030., Cl. 106-97.000.

Akimov, Boris I.: *See—*
Azarevich, Gennady M.; Maximov, Jury V.; Akimov, Boris I.; and Gusyatsky, Iosif A., 4,408,472., Cl. 72-71.000.

Akimune, Yoshio; and Ambe, Satoshi, to Nissan Motor Company, Limited. Paste containing electrically conducting powder to form conducting solid filler in cavity in ceramic substrate. 4,409,135., Cl. 252-514.000.

Aktiebolaget Bofors: *See—*
Bjurstrom, Lennart, 4,409,531., Cl. 318-631.000.

Akuta, Masajiro, to OKI Electric Industry Co., Ltd. Ringing control circuit in a telephone switching system. 4,409,438., Cl. 179-18.0HB.

Akutsu, Fumihiko: *See—*
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,408,491., Cl. 73-626.000.

Akzona Incorporated: *See—*
Beijleveld, Wilhelmus M.; and van Drumpt, Jan D., 4,409,367., Cl. 525-277.000.
Richmond, James M., 4,409,109., Cl. 252-8.800.

Albertson, Clarence E.; Horwath, John A.; and Lashua, Duane W., to Borg-Warner Corporation. Castable metal composite friction materials. 4,409,298., Cl. 428-614.000.

Albini, Italo: *See—*
Wiemers, Norbert; and Albini, Italo, 4,409,373., Cl. 525-432.000.

Albrecht, Konrad: *See—*
Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, 4,409,201., Cl. 424-32.000.

Albright, Larry E.; and Hoechst, Lonnie D., to Clark Equipment Company. Latch mechanism for a skid-steer loader with a roll over protective structure having a tilt-back capability. 4,408,672., Cl. 180-89.140.

Alcon Pharmaceuticals Limited: *See—*
Feurer, Bernard; and Baronet, Philippe, 4,409,258., Cl. 427-38.000.

Alefeld, Georg; and Maier-Laxhuber, Peter, to Alefeld, Georg. System comprising at least one absorption heat pump. 4,408,468., Cl. 82-476.000.

Alflex Limited: *See—*
Alford, Sidney C., 4,408,535., Cl. 102-305.000.

Alford, Sidney C., to Alflex Limited. Explosive cutting means. 4,408,535., Cl. 102-305.000.

Allegheny Ludlum Steel Corporation: *See—*
Ward, Brian L., 4,409,296., Cl. 428-610.000.

Allen, Paul E., to Logic Devices, Inc. Pneumatic method and apparatus for circulating liquids. 4,408,960., Cl. 417-54.000.

Allied Corporation: *See—*
Datta, Amitava; Davis, Lance A.; DeCristofaro, Nicholas J.; and Marti, Jordi, 4,409,041., Cl. 148-31.550.
Nienart, Louis F.; Fehrman, Richard G.; and Wan, Chung-Chu, 4,408,653., Cl. 164-463.000.
Pez, Guido P., 4,409,411., Cl. 585-275.000.

Allis-Chalmers Corporation: *See—*
Novotny, Carl F., 4,408,768., Cl. 277-84.000.

Allison, Blair: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.

Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., to Western Electric Co., Inc.; and Bell Telephone Laboratories, Inc. Methods of and apparatus for coating lightguide fiber. 4,409,263., Cl. 427-163.000.

Altringer, Paulette B.: *See—*
Borrowman, S. Ralph; Altringer, Paulette B.; and Brooks, Parkman T., 4,409,189., Cl. 423-54.000.

Aluminum Company of America: *See—*
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,409,036., Cl. 148-2.000.

Amada, Nobutaka; Nakagaki, Harushige; and Inoue, Shigeki, to Hitachi, Ltd. Supply voltage controlled stereophonic amplifier system. 4,409,559., Cl. 330-295.000.

Amasaki, Kiyotsugu: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Ambe, Satoshi: *See—*
Akimune, Yoshio; and Ambe, Satoshi, 4,409,135., Cl. 252-514.000.

Amchem Products, Inc.: *See—*
Burger, Helga; and Rossmann, Christian, 4,409,119., Cl. 252-156.000.

Amemiya, Norio: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

American Hoechst Corporation: *See—*
Pollard, John K., Jr., 4,409,330., Cl. 435-178.000.

American Home Products Corp.: *See—*
Jirkovsky, Ivo L., 4,409,224., Cl. 424-251.000.

American Maplan Corporation: *See—*
Hanslik, Wilhelm, 4,408,888., Cl. 366-83.000.

American Seating Company: *See—*
Knapp, Robert L., 4,408,800., Cl. 297-285.000.

American Standard, Inc.: *See—*
Swiers, Richard H.; and Parkison, Richard G., 4,408,745., Cl. 251-357.000.

Ametek, Inc.: *See—*
Ward, John; and Austin, Robert E., 4,409,372., Cl. 525-425.000.

AMF Incorporated: *See—*
Heeger, Stephen E., 4,409,649., Cl. 364-144.000.

AMP Incorporated: *See—*
Apicelli, Samuel W.; and Grabbe, Dimitry G., 4,408,815., Cl. 339-95.00R.
Blades, Brian J., 4,409,450., Cl. 200-159.00B.
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,408,820., Cl. 339-156.00R.
Forney, Edgar W., Jr., 4,408,821., Cl. 339-177.00R.

Huber, John H., 4,408,823., Cl. 339-208.000.
Kimmel, David J.; and Lauterbach, John H. F., 4,409,582., Cl. 337-231.000.
Weidler, Charles H., 4,408,824., Cl. 339-258.00R.
Werner, Walter M., 4,408,926., Cl. 403-310.000.

Ampex Corporation: *See—*
Barzee, Verl N., 4,408,860., Cl. 354-293.000.

Anchor/Darling Valve Company: *See—*
Karpenko, Anatole N., 4,408,636., Cl. 138-94.000.

Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Wagner, Eric R., deceased; and by Wagner, Maria M., executrix, to Union Carbide Corporation. Synergistic reinforcement promoter systems for filled polymers. 4,409,342., Cl. 523-202.000.

Andersen, Steven C.; Penkauskas, Thomas P.; Kassel, James W.; and Newcomer, Stephen O., to Canada, Her Majesty the Queen, in right of, as represented by the Minister of National Defense. Serial data bus communication system. 4,409,656., Cl. 364-200.000.

Anderson, Andrew W., to Scandia Packaging Machinery Company. Method and apparatus for wrapping an article. 4,408,439., Cl. 53-461.000.

Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., to Britt Tech Corporation. Demountable wheeled liquid sprayer. 4,408,720., Cl. 239-149.000.

Anderson, John E.: *See—*
Kobayashi, Hisashi; and Anderson, John E., 4,408,982., Cl. 431-10.000.

Anderson, Mark A.; Balliett, Robert W.; Link, Paul E.; and Satchell, Donald P. Method of fixing hazardous substances in waste foundry sand. 4,408,985., Cl. 432-1.000.

Anderson, Thomas E.: *See—*
Carney, Leroy L.; Loftin, Royal E.; Anderson, Thomas E.; and Vasquez, Guillermo, 4,409,108., Cl. 252-8.50C.

Anderson, Vernon B.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,409,229., Cl. 424-267.000.

Andersson, Kjell; and Forsell, Ragnar, to Scandinavian Lancers Aktiebolag. Method and arrangement for spreading covering material. 4,408,750., Cl. 266-216.000.

Angerer, Herman F.; and Tomov, Nenad R., to Diamond Shamrock Corporation. Bifunctional gas diffusion electrode. 4,409,301., Cl. 429-27.000.

Anic S.p.A.: *See—*
Prevedello, Aldo; Platone, Edoardo; and Morelli, Morello, 4,409,419., Cl. 585-611.000.

Anker, Charles A.: *See—*
Van Hulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,409,250., Cl. 426-242.000.

Anselmino, Renato: *See—*
Favareto, Marcello; and Anselmino, Renato, 4,409,464., Cl. 219-136.000.

Aoki, Kazuo: *See—*
Moteki, Tsutomu; Aoki, Kazuo; Yamaguchi, Kunihiro; and Yoshizaki, Michio, 4,409,345., Cl. 524-13.000.

Aotsu, Shinichi: *See—*
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,409,633., Cl. 360-127.000.

Apicelli, Samuel W.; and Grabbe, Dimitry G., to AMP Incorporated. High compliance roll-in channel wire termination. 4,408,815., Cl. 339-95.00R.

Appels, Johannes A.: *See—*
Wagenaar, Kornelis J.; De Graaff, Hendrik C.; and Appels, Johannes A., 4,409,606., Cl. 357-13.000.

Applegate, Steven L.; and Molloy, James J., to International Business Machines Corporation. Ribbon feed system for a matrix printer. 4,408,908., Cl. 400-120.000.

Appling, Tom J. Apparatus and method for sandblasting flanged beams. 4,408,419., Cl. 51-429.000.

ARA, Inc.: *See—*
Mazelsky, Bernard, 4,408,738., Cl. 244-122.00R.

Arai, Yasunori; and Ogawa, Ryota, to Asahi Kogaku Kogyo Kabushiki Kaisha. Variable power lens system for copying. 4,408,841., Cl. 350-425.000.

Araki, Ikuo; Kanazawa, Teruo; Ito, Shinji; and Sumikawa, Kenji, to Nippon Oil and Fats Co., Ltd. Grain of gas generator and a process for producing the same. 4,408,534., Cl. 102-288.000.

Architectural Signing, Inc.: *See—*
Bloom, Hanley D.; Bloom, Stanley; Perry, Fred E.; and Leone, Sam, 4,408,407., Cl. 40-607.000.

Argon Industrie Meccaniche s.r.l.: *See—*
Colapinto, Fabio, 4,408,400., Cl. 34-4.000.

Arias L., Adolfo. Ammunition magazine package combination. 4,408,409., Cl. 42-50.000.

Arima, Sumitsugu; Tsujimura, Harutoshi; and Fukunaga, Yukio, to Nissan Motor Company, Limited. Instrument panel supporting structure. 4,409,584., Cl. 340-22.000.

Arkans, Edward J.: *See—*
Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., 4,408,692., Cl. 206-438.000.

Armco Inc.: *See—*
Cordea, James N.; and Sheth, Harshad V., 4,409,027., Cl. 75-128.00W.
Cowan, William S., 4,408,932., Cl. 405-227.000.
Lautensleger, Richard W.; Bingham, George R.; and Trepanier, Peter J., 4,408,423., Cl. 52-90.000.

Armour, Eugene A.; Henzel, Richard P.; and Mowrey, Rowland G., to Eastman Kodak Company. Reducing post-process D_{min} increase in positive redox dye-releasing image transfer systems using oxidants in cover sheets. 4,409,315., Cl. 430-214.000.

Armstrong, Richard J. Torch for vaporizable pressurized liquid. 4,408,630., Cl. 137-340.000.

Arndt, Raymond J.: *See—*
DeCamp, James E.; Arndt, Raymond J.; and Gruzewski, Ronald L., 4,408,562., Cl. 118-669.000.

Arrigoni-Martelli, Edoardo, to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiski Fabrik Produktionsaktieselskab). Pinacidil-diuretic preparation for treating hypertension or congestive heart failure. 4,409,222., Cl. 424-251.000.

Asahi Kasei Kogyo: *See—*
Matsuda, Kazuo; Kohno, Mitsuo; and Doi, Yoshinao, 4,409,339., Cl. 521-143.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Furuta, Tadaaki; and Tabata, Shunsaku, 4,409,106., Cl. 210-732.000.
Hayashi, Hiroshi; Kiyota, Takao; and Shibukawa, Mitsuru, 4,409,105., Cl. 210-679.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Arai, Yasunori; and Ogawa, Ryota, 4,408,841., Cl. 350-425.000.
Enomoto, Shigeo, 4,409,620., Cl. 358-228.000.
Haneishi, Yasuyuki, 4,408,499., Cl. 74-527.000.
Nakajima, Tohru, 4,408,602., Cl. 128-303.100.
Tokutomi, Seijiro; Nakamura, Kazuo; and Jyojiki, Kasao, 4,408,853., Cl. 354-25.000.

Asai, Kiyokazu; Oshima, Yujiro; Takeuchi, Akihiro; and Tokoro, Hiroharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Knocking detecting device for internal combustion engines. 4,408,479., Cl. 73-35.000.

Asai, Mitsuko; Shinagawa, Susumu; and Imada, Akira, to Takeda Chemical Industries, Ltd. Carbapenem compounds and their production. 4,409,147., Cl. 260-245.20T.

Asakawa, Hiroo: *See—*
Mimura, Fumio; and Asakawa, Hiroo, 4,408,741., Cl. 248-68.0CB.

Asano, Kiyomitsu; and Watanabe, Tetsuo, to Ricoh Co., Ltd.; and Nihon Tsushin Gijyutsu Kabushiki Kaisha. Printer with cartridge type wheel. 4,408,909., Cl. 400-144.200.

Asanuma, Tadashi; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, to Mitsui Toatsu Chemicals, Inc. Process for polymerization of α-olefins and catalysts therefor. 4,409,378., Cl. 526-125.000.

Asea Aktiebolag: *See—*
Brandt, Nils; and Einarsson, Torbjorn, 4,409,636., Cl. 361-87.000.
Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, 4,408,496., Cl. 73-728.000.
Larker, Hans; and Tegman, Ragnar, 4,409,029., Cl. 419-10.000.
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,409,476., Cl. 250-227.000.

Ashcraft, Arnold C., Jr.: *See—*
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Wagner, Eric R., deceased; and Wagner, Maria M., executrix, 4,409,342., Cl. 523-202.000.

Ashida, Shinzo: *See—*
Yamada, Yoshiro; Hatsuoka, Nobuyasu; and Ashida, Shinzo, 4,409,026., Cl. 75-124.000.

Ashland Oil, Inc.: *See—*
Johnson, Charles A.; Ward, Clifford; Moore, Howard F.; and Hettinger, Jr.; William P., 4,409,092., Cl. 208-89.000.

Ask, Henry R.: *See—*
Herndon, James A.; and Ask, Henry R., 4,409,670., Cl. 364-900.000.

Assenza, Donello; and Pappalardo, Massimo, to Consiglio Nazionale Delle Ricerche. Method for providing ultraacoustic transducers of the line curtain or point matrix type and transducers obtained therefrom. 4,409,510., Cl. 310-334.000.

Associated Electrical Industries Limited: *See—*
Ketteringham, Terence A.; Lewis, Dennis L.; and Mayley, David E., 4,408,378., Cl. 28-289.000.

Astemborski, Dennis: *See—*
Torrey, Rodney J.; Astemborski, Dennis; Carner, Marshall A.; and Rose, Gerald D., 4,409,007., Cl. 55-112.000.

Atlantic Richfield Company: *See—*
DiGiulio, Adolph V., 4,409,338., Cl. 521-59.000.
Milkovich, Ralph, 4,409,357., Cl. 524-505.000.
Miller, Richard F., 4,409,408., Cl. 585-4.000.

Atlas Copco Aktiebolag: *See—*
Hartwig, Carl S. M., 4,409,525., Cl. 318-139.000.

Audi NSU Auto Union Aktiengesellschaft: *See—*
Schaper, Siegfried; Wimmer, Anton; and Dommes, Werner, 4,408,380., Cl. 29-156.50A.

Auguste, Deloffre. Apparatus for detecting the acupuncture points on a patient and for applying electrical stimulating signals to the detected points. 4,408,617., Cl. 128-735.000.

Aung, U. Soe. Ships steering gear. 4,408,555., Cl. 114-150.000.

Aust, John J., to Owens-Illinois, Inc. Carton having tear resistant hand holes. 4,408,710., Cl. 229-15.000.

Austin, Robert E.: *See—*
Ward, John; and Austin, Robert E., 4,409,372., Cl. 525-425.000.

Autere, Ilpo. Heating boiler. 4,408,547., Cl. 110-234.000.

Automatic Controls, Corp.: *See—*
Merrick, James W., 4,408,583., Cl. 123-415.000.

Automatix Incorporated: *See—*
Libby, Charles J., 4,409,478., Cl. 250-236.000.

Automobiles Citroen: *See—*
Barthelemy, Andre, 4,409,503., Cl. 310-75.00D.
Sigwald, Jacques; and Lesueur, Claude, 4,408,451., Cl. 60-322.000.

Automobiles Peugeot: *See—*
Barthelemy, Andre, 4,409,503., Cl. 310-75.00D.

Sigwald, Jacques; and Lesueur, Claude, 4,408,451., Cl. 60-322.000.

Avila, Nanette R.: *See—*
Gordon, Harry W.; and Avila, Nanette R., 4,409,203., Cl. 424-61.000.

AVM Corporation: *See—*
Dodson, Daniel P.; and Ludwig, George C., 4,408,751., Cl. 267-120.000.

Axelgaard, Jens, to Professional Staff Association of the Rancho Los Amigos Hospital, Inc. Electrical muscle stimulation for treatment of scoliosis and other spinal deformities. 4,408,609., Cl. 128-421.000.

Axton, Hoyt W.; and Bailey, Corey B., to Sierra Survival Company, Inc. Battery system adapter for using film power packs. 4,409,644., Cl. 362-200.000.

Azarevich, Gennady M.; Maximov, Jury V.; Akimov, Boris I.; and Gusyatsky, Iosif A. Apparatus for the machining on cylindrical surfaces on metal-cutting lathes. 4,408,472., Cl. 72-71.000.

B. F. Goodrich Company, The: *See—*
Kim, Hueng T., 4,409,165., Cl. 264-53.000.

Baba, Fumio, to Fujitsu Limited. MOS Device including a substrate bias generating circuit. 4,409,496., Cl. 307-296.00R.

Baba, Fumio: *See—*
Takemae, Yoshihiro; and Baba, Fumio, 4,409,678., Cl. 365-206.000.

Bailey, Corey B.: *See—*
Axton, Hoyt W.; and Bailey, Corey B., 4,409,644., Cl. 362-200.000.

Baillievier, Freddy, to N.V. Bekaert S.A. Steel cord for reinforcement of elastomer material. 4,408,444., Cl. 57-237.000.

Baker, Lewin T., to General Electric Company. Building security, communication and control system. 4,409,590., Cl. 340-533.000.

Baker Perkins Holdings Limited: *See—*
Sutton, Leonard, 4,408,435., Cl. 53-225.000.

Baker Perkins Inc.: *See—*
Layfield, James D., 4,408,972., Cl. 425-8.000.

Baker, William, to Masco Corporation of Indiana. Processor controlled, scanning radio receiver including future code developing means. 4,409,688., Cl. 455-165.000.

Baldasarri, Giuseppe, to Southwire Company. Method of and apparatus for radiation pyrometric temperature measurement of a continuous cast metal bar. 4,408,903., Cl. 374-121.000.

Baldwin, A. Frank, to Burlington Industries, Inc. Process for dyeing absorbent microbiocidal fabric and product so produced. 4,408,996., Cl. 8-490.000.

Baliozian, Mardick. Multiple-effect light source, especially usable as a projector for photography, motion pictures and television or as a lighting apparatus. 4,409,646., Cl. 362-319.000.

Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F. Air and moisture resistant cover with electrical box having fastening flange. 4,408,695., Cl. 220-3.300.

Ballester, Jose F. Novel cover and container assembly. 4,408,698., Cl. 220-306.000.

Balliet, Richard F., to Clay, Andrew M., a part interest. Method and apparatus for increasing visual acuity. 4,408,846., Cl. 351-203.000.

Balliett, Robert W.: *See—*
Anderson, Mark A.; Balliett, Robert W.; Link, Paul E.; and Satchell, Donald P., 4,408,985., Cl. 432-1.000.

Bally Manufacturing Corporation: *See—*
Brey, Arthur L., 4,408,762., Cl. 273-121.00A.

Bankoku Needle Manufacturing Co., Ltd.: *See—*
Takahashi, Masamitsu, 4,408,691., Cl. 206-382.000.

Barclay, John A. Wheel-type magnetic refrigerator. 4,408,463., Cl. 62-3.000.

Baret, Jean-Luc A. G.; and Dohan, Luc A., to Corning Glass Works. Process for hydrolyzing lactose with immobilized lactose. 4,409,247., Cl. 426-41.000.

Barkan, Edward D.: *See—*
Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, 4,409,470., Cl. 235-472.000.

Barmag Barmer Maschinenfabrik AG: *See—*
Bauer, Karl; Dammann, Peter; Kubler, Hermann; and Lorenz, Hellmut, 4,408,448., Cl. 57-336.000.
Bauer, Karl; Schippers, Heinz; and Dammann, Peter, 4,408,449., Cl. 57-340.000.
Schippers, Heinz, 4,408,377., Cl. 28-250.000.

Baronet, Philippe: *See—*
Feurer, Bernard; and Baronet, Philippe, 4,409,258., Cl. 427-38.000.

Bartel, Donald L.: *See—*
Burstein, Albert H.; and Bartel, Donald L., 4,408,359., Cl. 3-1.912.

Barthelemy, Andre, to Automobiles Citroen; and Automobiles Peugeot. Rotary assistance device, more especially for vehicle steering. 4,409,503., Cl. 310-75.00D.

Barthelmess, Ulrich, to OMYA GmbH. Improved pivotable centrifugal classifier and method of classifying. 4,409,097., Cl. 209-11.000.

Bartholdsten, Dieter; Koop, Hermann; Schrode, Erhard; and Zielasek, Adelbert, to Polygram GmbH. Method for manufacturing disk-shaped information carriers. 4,409,169., Cl. 264-107.000.

Bartl, Knut; Lill, Helmut; Roeschlau, Peter; and Ziegenhorn, Joachim, to Boehringer Mannheim GmbH. Process and reagent for the determination of the biological activity of heparin in plasma. 4,409,327., Cl. 435-13.000.

Bartl, Knut: *See—*
Lill, Helmut; and Bartl, Knut, 4,409,334., Cl. 436-8.000.
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.

Barton, C. D. Luggage identification tag. 4,408,406., Cl. 40-19.000.

Bartos, Ralph M. Lattice pie top cutter guide plate. 4,408,397., Cl. 33-174.00T.

Bartsch, Walter F., to Figgie International. Power brake for article feed apparatus. 4,408,687., Cl. 198-491.000.

Barzee, Verl N., to Ampex Corporation. Apparatus for a camera mount. 4,408,860., Cl. 354-293.000.

Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, to Ciba-Geigy Corporation. Novel phosphorylmuramyl peptides and processes for the manufacture thereof. 4,409,209., Cl. 424-177.000.

BASF Aktiengesellschaft: *See—*
Brandstetter, Franz; and Haaf, Franz, 4,409,363., Cl. 525-67.000.
Himmele, Walter; and Hoffmann, Werner, 4,409,402., Cl. 568-496.000.
Krabetz, Richard; Merger, Franz; and Schwarzmann, Matthias, 4,409,128., Cl. 502-211.000.
Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, 4,409,358., Cl. 524-547.000.

Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, to Hugh Steeper Limited. Prosthesis. 4,409,529., Cl. 318-653.000.

Basset, Jean-Claude; and Meinguss, Alain, to Electronique Marcel Dassault. Transistor integrated device, particularly usable for coding purposes. 4,409,434., Cl. 178-22.190.

Bassoff, Arthur B., to Lear Siegler, Inc. Gear-roller. 4,408,473., Cl. 72-108.000.

Bastian, Gary T.: *See—*
Schnathorst, Vernon K.; and Bastian, Gary T., 4,409,680., Cl. 365-233.000.

Bates, Terence, to U.S. Philips Corporation. Deflection system for charged-particle beam. 4,409,486., Cl. 250-396.0ML.

Battles, James E.: *See—*
Mrazek, Franklin C.; and Battles, James E., 4,409,168., Cl. 264-104.000.

Bauer, Karl; Dammann, Peter; Kubler, Hermann; and Lorenz, Hellmut, to Barmag Barmer Maschinenfabrik AG. Yarn false twisting method and apparatus. 4,408,448., Cl. 57-336.000.

Bauer, Karl; Schippers, Heinz; and Dammann, Peter, to Barmag Barmer Maschinenfabrik AG. Friction false twisting apparatus. 4,408,449., Cl. 57-340.000.

Baugh, Hollis A. Latching system for control lines for pipe-laying barges. 4,408,929., Cl. 405-166.000.

Bayer Aktiengesellschaft: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.
Kohler, Armin; Schuster, Herbert; and Renner, Rudi, 4,409,187., Cl. 422-135.000.
Petruck, Gerd-Michael; and Wambach, Paul R., deceased, 4,409,407., Cl. 570-202.000.
Rottmaier, Ludwig; Merten, Rudolf; Tima, Milan J.; and Michael, Dietrich, 4,409,347., Cl. 524-91.000.
Wieczorrek, Wolfhart; and Mennicken, Gerhard, 4,409,266., Cl. 427-302.000.

Bazin, Alain, to Enertec. Electronic measuring device for a polyphase network, in particular for the measurement of power. 4,409,545., Cl. 324-107.000.

BBC Brown, Boveri & Company Limited: *See—*
Bruhwiler, Eduard; and Koch, Hans, 4,408,461., Cl. 60-737.000.
Jahnke, Bernd, 4,409,462., Cl. 219-121.0ED.

Bearden, Joe L.: *See—*
Clarady, Joseph F., Jr.; Jessee, Karen L.; and Bearden, Joe L., 4,408,881., Cl. 356-347.000.

Bearden, Roby, Jr.; and Stuntz, Gordon, to Exxon Research and Engineering Co. Process for reducing coke formation in heavy feed catalytic cracking. 4,409,093., Cl. 208-108.000.

Beauvais, Max P.; and Camezon, Raymond E. Microwave canning apparatus. 4,409,454., Cl. 219-10.55E.

Bechthold, Paul; Joswig, Franz; and Lingenbach, Josef, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Heatable cell for photoacoustic tests. 4,408,478., Cl. 73-24.000.

Bechtold, Stephen K. Skylight dome assembly. 4,408,422., Cl. 52-72.000.

Beck, Martin H.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,409,161., Cl. 264-40.100.

Becker, James; and Neill, Daniel L., to Kelsey-Hayes Company. Digital odometer. 4,409,663., Cl. 364-561.000.

Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, to Siemens Aktiengesellschaft. Monitoring system for an LC filter circuit in an AC power network. 4,409,542., Cl. 324-57.00Q.

Beckerle, Heinz; Huster, Lothar; and Zondler, Rolf, to International Standard Electric Corporation. Method of making a dispersion lacquer for luminescent screens. 4,409,352., Cl. 524-405.000.

Beckham, Donald R.: *See—*
Ward, Robert S., Jr.; and Beckham, Donald R., 4,409,172., Cl. 264-209.200.

Beckman Instruments, Inc.: *See—*
Neeper, Robert K.; and Meyer, Richard C., 4,409,530., Cl. 318-685.000.

Beckmann, Charles H., to Du Pont de Nemours, E. I., and Company. Pigment pre-blending mixhead attachment. 4,408,890., Cl. 366-155.000.

Beckmann, Juergen: *See—*
Uhlig, Klaus; Szczurek, Marian; Vilacha, Carlos; and Beckmann, Juergen, 4,408,631., Cl. 137-380.000.

Beecham Group Limited: *See—*
Cantello, Barrie C. C., 4,409,216., Cl. 424-246.000.
Gasson, Brian C., 4,409,207., Cl. 424-114.000.
Hadley, Michael S., 4,409,225., Cl. 424-256.000.

Beelaard, Wilhelmus A. J.; and Vink, Nicolaas G., to U.S. Philips Corporation. Color display tube comprising a deflection yoke and deflection yoke for a color display tube. 4,409,578., Cl. 335-210.000.

Beiersdorf Aktiengesellschaft: *See—*
Cohnen, Erich, 4,409,232., Cl. 424-272.000.
Stenzel, Wolfgang; and Cohnen, Erich, 4,409,231., Cl. 424-272.000.

Beijbom, Peter: *See—*
Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., 4,408,682., Cl. 188-202.000.

Beijleveld, Wilhelmus M.; and van Drumpt, Jan D., to Akzona Incorporated. Process for cross-linking polymers. 4,409,367., Cl. 525-277.000.

Belcher, Samuel L.; Peck, Timothy R.; and Smith, Roger D., to Cincinnati Milacron Inc. Dielectric heating section for blow molding machine. 4,409,455., Cl. 219-10.810.

Belgonucleaire: *See—*
Mergan, Leo M.; and Cordier, Jean-Pierre, 4,409,137., Cl. 252-632.000.

Bell, Clinton C. Flexographic ink distribution system. 4,408,527., Cl. 101-350.000.

Bell Telephone Laboratories, Inc.: *See—*
Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., 4,409,263., Cl. 427-163.000.
Chandross, Edwin A.; and Hartless, Ray L., 4,409,318., Cl. 430-271.000.

Bellas, Michael; and Duvall, John, to Eastman Kodak Company. Preparation of imidazoles. 4,409,389., Cl. 548-342.000.

Belov, Alexei G.: *See—*
Zhuravlev, Vadim F.; and Belov, Alexei G., 4,408,482., Cl. 73-75.000.

Bendix Corporation, The: *See—*
Schacle, Charles V., 4,408,958., Cl. 416-237.000.

Benko, Pal; Bozsing, Daniel; Gundel, Jamos; and Magyar, Karoly, to Egyt Gyogyszervegyeszeti Gyar. Quinoxaline-1,4-dioxide fodder suppliments. 4,409,219., Cl. 424-250.000.

Bennett, Thomas H.: *See—*
Daniels, R. Gary; Bennett, Thomas H.; Musa, Fuad H.; and Wiles, Michael F., 4,409,671., Cl. 364-900.000.

Berger, Herbert: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,409,236., Cl. 424-275.000.

Berger, Siegfried: *See—*
Besocke, Karl-Heinz; and Berger, Siegfried, 4,409,509., Cl. 310-317.000.

Berglund, C. Neil: *See—*
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, C. Neil, 4,409,259., Cl. 427-38.000.

Bernardis, Francesco, to Ing. C. Olivetti & C., S.p.A. Dot printing device for accounting, terminal, telewriting machine, and similar office machine. 4,408,907., Cl. 400-124.000.

Bernt, Jorgen O. Repair or replacement link. 4,408,450., Cl. 59-88.000.

Bertell, Jerome W., to Pennwalt Corporation. Synthetic hot forging lubricants and process. 4,409,113., Cl. 252-42.000.

Berth, Jorgen; Hansen, Erling; Heaven, Malcolm D.; and Petersen, Tommy, to Raychem A/S. Method of forming a wraparound closure article. 4,409,177., Cl. 264-531.000.

Berti, John C.; and Williams, James W., to General Electric Company. Arrangement and method for establishing radio communication in a system. 4,409,687., Cl. 455-7.000.

Besocke, Karl-Heinz; and Berger, Siegfried, to Kernforschungsanlage Julich GmbH. Piezoelectrically driven transducer for electron work function and contact potential measurements. 4,409,509., Cl. 310-317.000.

Betz Laboratories, Inc.: *See—*
Lichtner, Frederick W.; and Rose, Jean T., 4,409,192., Cl. 423-242.000.

Beukema, John A., to Grinnell Fire Protection Systems Company, Inc. Hingeable split pipe collar. 4,408,788., Cl. 285-419.000.

Beusse, Hans, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for landing loads from transport aircraft, especially low flying aircraft. 4,409,658., Cl. 364-424.000.

Bhatia, Shyam: *See—*
Mohan Rao, G. R.; Stanczak, John S.; Lien, Jih-chang; and Bhatia, Shyam, 4,408,385., Cl. 29-576.00B.

Bhattacharyya, Dhirendra N.; Seshan, Srinivasachari; Campbell, John S.; and Sen, Soumendranath, to Indian Explosives Limited. Water-in-oil emulsion explosives and a method for the preparation of the same. 4,409,044., Cl. 149-2.000.

BICC Public Limited Company: *See—*
Dey, Philip; Dunkley, Ronald; and Holden, Graham, 4,409,428., Cl. 174-43.000.

Bicker, Uwe: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,409,236., Cl. 424-275.000.

Bickford, Gary P.: *See—*
Fitzgerald, Robert W., Jr.; Hall, Robert L.; and Bickford, Gary P., 4,408,829., Cl. 350-96.290.

Bieri, Rudolf, to Rud. Biere Maschinen Und Apparatebau AG. Device for coating a surface of a conveyor band. 4,408,688., Cl. 198-500.000.

Biggs, Gary A.: *See—*
Karp, Arthur; and Biggs, Gary A., 4,409,518., Cl. 315-3.500.

Billig, Ernst; and Bryant, David R., to Union Carbide Corporation. Process for producing catalyst precursors. 4,409,149., Cl. 260-429.00R.

Bingham, George R.: *See—*
Lautensleger, Richard W.; Bingham, George R.; and Trepanier, Peter J., 4,408,423., Cl. 52-90.000.

Binz, Jorg: *See—*
Guth, Christian; and Binz, Jorg, 4,408,995., Cl. 8-477.000.

Bio-Rad Laboratories, Inc.: *See—*
Hanamoto, Mark S.; and Tanaka, Steve K., 4,409,335., Cl. 436-67.000.

Bird, Graham J.: *See—*
Serban, Alexander; Bird, Graham J.; and Cross, Lindsay E., 4,409,017., Cl. 71-94.000.

Birkelbach, Donald F.: *See—*
Shipley, Randall S.; and Birkelbach, Donald F., 4,409,126., Cl. 502-169.000.

Bissell, Eugene R.: *See—*
Smith, Robert E.; and Bissell, Eugene R., 4,409,140., Cl. 260-112.50R.

Bjorhaag, Georg, to Byggnads AB Hammaren. Method of preshaping a preformed lignocellulosic mat for molding into a structural member. 4,409,175., Cl. 264-517.000.

Bjurstrom, Lennart, to Aktiebolaget Bofors. Method and a device for increasing the linearity of a servo system. 4,409,531., Cl. 318-631.000.

Blackwood, John: *See—*
Mihovch, John; and Blackwood, John, 4,408,553., Cl. 112-158.00A.

Blades, Brian J., to AMP Incorporated. Double pole membrane switch having preferred sequence closing feature. 4,409,450., Cl. 200-159.00B.

Blake, Joseph W., III; and Kaufman, Jack W. Surgical device. 4,408,603., Cl. 128-325.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Transom mounted marine propulsion device with fore and aft crankshaft and power shaft. 4,408,994., Cl. 440-53.000.

Block, Roger R. Connector for electromagnetic impulse suppression. 4,409,637., Cl. 361-119.000.

Bloom, Hanley D.; Bloom, Stanley; Perry, Fred E.; and Leone, Sam, to Architectural Signing, Inc. Panel sign. 4,408,407., Cl. 40-607.000.

Bloom, Stanley: *See—*
Bloom, Hanley D.; Bloom, Stanley; Perry, Fred E.; and Leone, Sam, 4,408,407., Cl. 40-607.000.

Bloomer, Charles K.: *See—*
Bustin, Franz; and Bloomer, Charles K., 4,408,970., Cl. 425-72.00R.

Blytas, George C., to Shell Oil Company. Removal of H_2S and COS. 4,409,199., Cl. 423-573.00G.

Board of Trustees operating Michigan State University: *See—*
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., 4,408,414., Cl. 47-1.00R.

Boehringer Ingelheim GmbH: *See—*
Stricker, Herbert, 4,409,206., Cl. 424-81.000.

Boehringer Mannheim GmbH: *See—*
Bartl, Knut; Lill, Helmut; Roeschlau, Peter; and Ziegenhorn, Joachim, 4,409,327., Cl. 435-13.000.
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,409,236., Cl. 424-275.000.
Lill, Helmut; and Bartl, Knut, 4,409,334., Cl. 436-8.000.
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.

Boeing Company, The: *See—*
Buchsel, Christian K. E., 4,408,739., Cl. 244-137.00R.

BOGE GmbH: *See—*
Meller, Theo; and Knecht, Heinz, 4,408,773., Cl. 280-611.000.

Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, C. Neil, to Intel Corporation. MOS Dynamic RAM cell and method of fabrication. 4,409,259., Cl. 427-38.000.

Bollinger, John G.; Nichols, Richard E.; and Delaruelle, Dale H., to Harris Corporation. Engine monitoring system. 4,408,483., Cl. 73-115.000.

Bolmgren, Jan; Hoek, Bertil; and Nilsson, Kenth, to Siemens Aktiengesellschaft. Mosaic recorder with improved nozzle structure. 4,409,602., Cl. 346-140.00R.

Bolmgren, Jan: *See—*
Nilsson, Kenth; and Bolmgren, Jan, 4,409,601., Cl. 346-140.00R.

Boness, Kenneth D.: *See—*
Whitehead, Norman P.; Boness, Kenneth D.; and Martin, Roger, 4,409,617., Cl. 358-147.000.

Bonin, Jean-Claude, to CAV Rotodiesel. Fuel injection pump. 4,408,590., Cl. 123-502.000.

Bonnycastle, Joseph R.; Michaud, Alfred G.; and Rowley, Edward K., to C-I-L Inc. Explosive booster manufacture. 4,409,155., Cl. 264-3.00R.

Bononi, Walter H. Hinge joint for childrens eyeglasses. 4,408,843., Cl. 351-153.000.

Borchardt, John K.; and Brown, David L., to Halliburton Company. Enhanced oil displacement processes and compositions. 4,409,110., Cl. 252-8.55D.

Borden, Inc.: *See—*
Grace, Thomas T., Jr., 4,409,015., Cl. 71-28.000.
Williams, James H., 4,409,293., Cl. 428-524.000.

Borg-Warner Corporation: *See—*
Albertson, Clarence E.; Horwath, John A.; and Lashua, Duane W., 4,409,298., Cl. 428-614.000.

Borrowman, S. Ralph; Altringer, Paulette B.; and Brooks, Parkman T., to United States of America, Interior. Recovery of tungsten from brines. 4,409,189., Cl. 423-54.000.

Boscher, Georg; and Haeder, Wolfgang, to Siemens Aktiengesellschaft. Multiple joint box. 4,409,430., Cl. 174-92.000.

Bosco, Peter M.: *See—*
Danielson, Robert L.; and Bosco, Peter M., 4,409,255., Cl. 426-576.000.

Bose, Bimal K., to General Electric Company. Microcomputer-based pulse width modulated inverter fed machine drive system. 4,409,534., Cl. 318-811.000.

Bose, Sanjay K., to General Electric Company. Threshold-less collision detection and bit arbitration in a CFSK data system. 4,409,593., Cl. 340-825.500.

Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, to Boehringer Mannheim GmbH. N-Substituted aziridine-2-carboxylic acid derivatives and immuno-stimulation composition and method. 4,409,236., Cl. 424-275.000.

Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel. Process for improving the stability of catalysts for the catalytic hydrotreatment of petroleum cuts. 4,409,130., Cl. 502-211.000.

Bowden, William L., to Duracell Inc. Catalytic cathode for primary and secondary fluid cathode depolarized cells. 4,409,303., Cl. 429-105.000.

Bowman, James A., to Hoover Universal, Inc. Infinitely variable seat back recliner. 4,408,799., Cl. 297-361.000.

Boyesen, Eyvind, to Performance Industries, Inc. Motorcycle drive wheel suspension system. 4,408,674., Cl. 180-227.000.

Boyle, Donald E., Jr. Formable viscid caulking member and method of making same. 4,409,283., Cl. 428-272.000.

Bozik, John E.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,409,404., Cl. 568-902.000.

Bozsing, Daniel: *See—*
Benko, Pal; Bozsing, Daniel; Gundel, Jamos; and Magyar, Karoly, 4,409,219., Cl. 424-250.000.

Bradley, Gerald: *See—*
White, Alan C.; and Bradley, Gerald, 4,409,218., Cl. 424-248.550.

Bradley, Lindell P.: *See—*
Bradley, Robert F.; and Bradley, Lindell P., 4,408,557., Cl. 116-206.000.

Bradley, Robert F.; and Bradley, Lindell P., to Micro-Circuits Co., Inc. Timer and storage condition indicator. 4,408,557., Cl. 116-206.000.

Brainman, Felix A.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Brandenstein, Manfred: *See—*
Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, 4,408,809., Cl. 308-187.100.

Brandstetter, Franz; and Haaf, Franz, to BASF Aktiengesellschaft. Process for the manufacture of a mixture of polycarbonates and styrene-containing polymers, use of the mixture and molded parts thereof. 4,409,363., Cl. 525-67.000.

Brandt, Nils; and Einarsson, Torbjorn, to Asea Aktiebolag. Device for detecting faulty phases in a multi-phase electrical network. 4,409,636., Cl. 361-87.000.

Brasz, Albert J. H.; and Wallink, Hermanus A., to Stamicarbon, B.V. Process of making products consisting of foamed and/or cross-linked synthetic polymers. 4,409,164., Cl. 264-50.000.

Brauckmann, Wilhelm: *See—*
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, 4,409,394., Cl. 549-534.000.

Brauer, Hans; and Demny, Werner, to Kocks Technik GmbH & Co. Rolling lines. 4,408,476., Cl. 72-229.000.

Braunschweigische Maschinenbauanstalt AG: *See—*
Schaper, Helmut, 4,409,031., Cl. 127-19.000.

Brester, Robert R.; and Roberts, Thomas L., to Velvac, Inc. Cutting tool having circular blade mounted on a pivoted lever. 4,408,508., Cl. 83-397.000.

Brewaeys, Luc; and Hens, Maurice, to CMP Chemical & Metallurgical Products Ltd. Blister pack. 4,408,693., Cl. 206-461.000.

Brey, Arthur L., to Bally Manufacturing Corporation. Electronic pinball game. 4,408,762., Cl. 273-121.00A.

Brian Griffin Pty. Limited: *See—*
Griffin, Brian C., 4,408,543., Cl. 108-24.000.

Brian, Pierre L. T.: *See—*
Vora, Suresh M.; Mazzafro, William J.; Brian, Pierre L. T.; and Chen, Michael S. K., 4,409,064., Cl. 159-47.100.

Bridgeport Tire Co. Ltd.: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,409,457., Cl. 219-69.00M.

Bristol, James A.; and Lovey, Raymond G., to Schering Corporation. Imidazo[1,5-a]pyridines. 4,409,226., Cl. 424-256.000.

Bristol-Myers Company: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,409,210., Cl. 424-177.000.

British Aerospace Public Limited Company: *See—*
Stevens, James W., 4,409,070., Cl. 204-4.000.

British Gas Corporation: *See—*
Masters, Jeffrey; Saimbi, Manjit S.; and Webb, Roger J., 4,408,983., Cl. 431-116.000.

British Steel Corporation: *See—*
Garner, Henry C.; Broadbent, Jack; Savidge, David H.; and Wadsworth, Eric, 4,409,549., Cl. 324-262.000.

Britt Tech Corporation: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 4,408,720., Cl. 239-149.000.

Broadbent, Edward G. Curtainsided vehicles. 4,408,793., Cl. 296-181.000.

Broadbent, Jack: *See—*
Garner, Henry C.; Broadbent, Jack; Savidge, David H.; and Wadsworth, Eric, 4,409,549., Cl. 324-262.000.

Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., to Hoffmann-La Roche Inc. Process to produce anthracycline compounds. 4,409,391., Cl. 549-39.000.

Brock, Kenneth. Hand warmer. 4,408,355., Cl. 2-66.000.

Brodbeck, Robert M., to Marcamor, Inc. Telephone index and switch arrangement. 4,409,440., Cl. 179-90.0BD.

Brois, Stanley J.; Gutierrez, Antonio; and Ryer, Jack, to Exxon Research & Engineering Co. Hydrogen sulfide suppressant additive for functional fluids. 4,409,114., Cl. 252-75.000.

Brooke, Michael E.; and Wendt, Alan C., to United States Gypsum Company. Suspended panel ceiling having impact absorbent panel retaining clip assemblies. 4,408,428., Cl. 52-489.000.

Brooks, Alden W., to Dayco Corporation. Method of making a top toothed endless power transmission belt construction and a belt construction made by such method. 4,409,047., Cl. 156-138.000.

Brooks, Parkman T.: *See—*
Borrowman, S. Ralph; Altringer, Paulette B.; and Brooks, Parkman T., 4,409,189., Cl. 423-54.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Takiguchi, Michitaka; and Horie, Fujio, 4,408,554., Cl. 112-302.000.

Brower, Charles H.: *See—*
Wiley, John W.; Brower, Charles H.; and Wang, David, 4,409,280., Cl. 428-203.000.

Brown, David L.: *See—*
Borchardt, John K.; and Brown, David L., 4,409,110., Cl. 252-8.55D.

Brown, Paul, to Husky Injection Molding Systems Inc. Support for an intermediate platen of a stack mold. 4,408,981., Cl. 425-589.000.

Brown, Robert, to Rheological Systems, Inc. Apparatus and process for hot-stamping containers. 4,409,063., Cl. 156-542.000.

Brown, Robert J.; and Lever, Clyde J., Jr., to Western Electric Company, Inc. Telecommunications cable and method of making same. 4,408,443., Cl. 57-204.000.

Brown, Roy, to Graphoidal Developments Limited. Method and apparatus for glass mould lubrication. 4,409,010., Cl. 65-26.000.

Brown, Thomas W., to General Electric Company. Electrical circuit and method of operating such. 4,408,466., Cl. 62-208.000.

Brown, Timothy M.: *See—*
Hartman, Seymour; and Brown, Timothy M., 4,409,375., Cl. 525-505.000.

Broyles, Howard F.; White, Mark L.; and Dipprey, Neil F. Turret mounted solar concentrator with boom mounted secondary mirror or collector. 4,408,595., Cl. 126-424.000.

Bruce, William C., Jr., to Motorola, Inc. Method of performing a clear and wait operation with a single instruction. 4,409,653., Cl. 364-200.000.

Bruckner, Werner: *See—*
Schmalfeld, Jorg; Bruckner, Werner; Jacobs, Jorn; Greulich, H. S.; and Schlutter, A., 4,408,548., Cl. 110-347.000.

Bruhwiler, Eduard; and Koch, Hans, to BBC Brown, Boveri & Company Limited. Combustion chamber of a gas turbine with pre-mixing and pre-evaporation elements. 4,408,461., Cl. 60-737.000.

Brunswick Corporation: *See—*
Kent, Preben, 4,408,632., Cl. 137-516.290.
Kusche, David W., 4,408,579., Cl. 123-73.00V.
Moss, Elvis W.; and Shackelford, John T., 4,408,729., Cl. 242-84.50A.
Pittman, John B., 4,408,728., Cl. 242-84.20A.

Bryan, James S.; Gaster, Ivan; Tell, Mayo B.; and Dunn, Claude, to Dayco Corporation. Textile cot remover and method of making and using same. 4,408,395., Cl. 30-179.000.

Bryant, David R.: *See—*
Billig, Ernst; and Bryant, David R., 4,409,149., Cl. 260-429.00R.

Bucher-Guyer AG: *See—*
Vogt, Willy, 4,409,166., Cl. 264-72.000.

Buchsel, Christian K. E., to Boeing Company, The. Air transportable cargo loader for an airplane. 4,408,739., Cl. 244-137.00R.

Buhr, Gerhard; Ruckert, Hans; and Stahlhofen, Paul, to Hoechst Aktiengesellschaft. Light-sensitive compounds, light-sensitive mixture, and light-sensitive copying material prepared therefrom. 4,409,314., Cl. 430-192.000.

Buljan, Sergej-Tomislav: *See—*
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,409,003., Cl. 51-295.000.
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,409,004., Cl. 51-295.000.

Bullseye Gun Centers, Inc.: *See—*
Reneau, J. R.; and Relyea, Richard D., 4,408,759., Cl. 272-131.000.

Bulten-Kanthal AB: *See—*
Camitz, Carl-Henning; and Lindgren, Stig, 4,408,747., Cl. 254-382.000.

Burger, Helga; and Rossmann, Christian, to Amchem Products, Inc. Process for regenerating cleaning solutions. 4,409,119., Cl. 252-156.000.

Burger, Joseph M., to Combustion Engineering, Inc. Pressurized core shroud for aligning a nuclear reactor core. 4,409,179., Cl. 376-302.000.

Burgert, Manfred. Feed-in device for continuous forms for a printer. 4,408,916., Cl. 400-613.200.

Burke, Billy T. Apparatus for separating a material of lighter specific gravity from a material of heavier specific gravity. 4,409,098., Cl. 209-172.500.

Burkhardt, Terry J.: *See—*
Langer, Arthur W., Jr.; Doyle, Gerald; Burkhardt, Terry J.; and Looney, Ralph W., 4,409,409., Cl. 585-255.000.

Burlington Industries, Inc.: *See—*
Baldwin, A. Frank, 4,408,996., Cl. 8-490.000.

Burov, Lev A.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Burroughs Corporation: *See—*
Woodward, Thomas R., 4,409,683., Cl. 370-112.000.

Burstein, Albert H.; and Bartel, Donald L., to New York Society for the Relief of the Ruptured and Crippled, Maintaining the Hospital for Special Surgery. Hip joint prosthesis. 4,408,359., Cl. 3-1.912.

Busch, Charles D., to Busch, Charles D. Method and apparatus for aerating bodies of water. 4,409,107., Cl. 210-758.000.

Busch, Norbert: *See—*
Combourieu, Michel; Laigle, Jean-Claude; and Busch, Norbert, 4,409,221., Cl. 424-250.000.

Buschkens, Guido; and Nobis, Peter, to Messer Griesheim GmbH. Procedure for packaging of food under protective gas in synthetic containers with flexible tops. 4,409,252., Cl. 426-396.000.

Busse, Charles E., to Maryland Cup Corporation. Method and apparatus for sealing the sidewall and bottom seam portions of two-piece containers during manufacture thereof. 4,409,045., Cl. 156-69.000.

Bustin, Franz; and Bloomer, Charles K., to Mobil Oil Corporation. Stabilizing air ring apparatus. 4,408,970., Cl. 425-72.00R.

Butler, John C.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Butler, L. Dennis; and Wells, J. Dwayne, to Sperry Corporation. Control linkage for two function bale pickup. 4,408,942., Cl. 414-24.500.

Buttner, Hans H. Machine for tying packages. 4,409,061., Cl. 156-502.000.

Byggnads AB Hammaren: *See—*
Bjorhaag, Georg, 4,409,175., Cl. 264-517.000.

Byrne, Dale M.: *See—*
Guthrie, Richard W.; and Byrne, Dale M., 4,408,827., Cl. 350-96.100.

Bzdula, Joseph A.; and Sibley, Howard W., to Carrier Corporation. Resin-oil shale composite reaction product. 4,409,362., Cl. 525-54.500.

C. H. Boehringer Sohn: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.

C-I-L Inc.: *See—*
Bonnycastle, Joseph R.; Michaud, Alfred G.; and Rowley, Edward K., 4,409,155., Cl. 264-3.00R.

C. L. Frost & Son, Inc.: *See—*
Redmann, Jerry L., Jr.; and Gurney, Gerald W., 4,408,808., Cl. 308-187.000.

Cabot Corporation: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,409,171., Cl. 264-120.000.

Cadbury Schweppes PLC: *See—*
Jeans, Edward L., 4,408,701., Cl. 222-153.000.

Cahill, Lysle D.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Cairns, Hugh; Greenhalgh, Peter M.; and Howlett, Brian, to Fisons Limited. Pharmaceutical compositions containing sodium chromoglycate and $\beta 2$ selective bronchodilators. 4,409,237., Cl. 424-283.000.

Calkins Manufacturing Company: *See—*
Carrick, Lawrence K., 4,408,777., Cl. 280-461.00A.

Cambridge Instruments, Inc.: *See—*
Grossman, Hyman, 4,408,615., Cl. 128-696.000.

Cameco Industries, Inc.: *See—*
Willett, Harold A., 4,408,441., Cl. 56-14.300.

Camezon, Raymond E.: *See—*
Beauvais, Max P.; and Camezon, Raymond E., 4,409,454., Cl. 219-10.55E.

Camis, Thomas; Spencer, Paul R.; Schwiebert, Erwin H.; and Hay, Robert R., to Hewlett Packard Company. Corona discharge device for electrophotographic charging and potential leveling. 4,408,865., Cl. 355-3.0CH.

Camitz, Carl-Henning; and Lindgren, Stig, to Bulten-Kanthal AB. Device and method for collecting chains or the like. 4,408,747., Cl. 254-382.000.

Camm, Alan J.: *See—*
Spurrell, Roworth A. J.; Camm, Alan J.; and Ward, David E., 4,408,606., Cl. 128-419.0PG.

Campbell, Allan H.: *See—*
Richardson, Frank; and Campbell, Allan H., 4,408,811., Cl. 312-37.000.

Campbell, Ira J., to Westinghouse Electric Corp. Method for removing and replacing shrunk-on sleeves on a shaft. 4,408,382., Cl. 29-426.100.

Campbell, John S.: *See—*
Bhattacharyya, Dhirendra N.; Seshan, Srinivasachari; Campbell, John S.; and Sen, Soumendranath, 4,409,044., Cl. 149-2.000.

Campbell, Ronald J.: *See—*
Van Der Sande, Johannes H. M.; Sools, Franciscus G. P.; and Campbell, Ronald J., 4,409,517., Cl. 313-631.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Fortier, Michel, 4,408,537., Cl. 102-395.000.

Canada, Her Majesty the Queen, in right of, as represented by the Minister of National Defense: *See—*
Andersen, Steven C.; Penkauskas, Thomas P.; Kassel, James W.; and Newcomer, Stephen O., 4,409,656., Cl. 364-200.000.

Canon Kabushiki Kaisha: *See—*
Fukahori, Hidehiko; Iwashita, Tomonori; and Nakamura, Katsunori, 4,408,859., Cl. 354-274.000.
Horyu, Sakae, 4,409,437., Cl. 179-2.0DP.
Matsumoto, Kazuya, 4,409,631., Cl. 360-114.000.
Okano, Kazumi; Nishigaki, Yuji; and Kasai, Masanao, 4,409,310., Cl. 430-95.000.
Sugiura, Yoshinori, 4,408,559., Cl. 118-60.000.
Tomosada, Masahiro; and Maeshima, Katsuyoshi, 4,408,869., Cl. 355-14.00R.

Canon Kabuskiki Kaisha: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,409,308., Cl. 430-60.000.

Cantello, Barrie C. C., to Beecham Group Limited. Method of treating diabetes using oxazoline or thiazoline compounds. 4,409,216., Cl. 424-246.000.

Caputo, Carmelo, to Solar 77 S.p.A. Hydraulic plant. 4,409,490., Cl. 290-4.00D.

Caratsch, Hans-Peter, to Sinter Limited. Apparatus for applying solder to printed circuit boards. 4,408,560., Cl. 118-69.000.

Cardenas, Luis F.; and Veazey, Enrique M., to Vitro Tec Fideicomiso. 90 Degree push-out for glassware forming machines and electronic control for the same. 4,409,013., Cl. 65-163.000.

Cargill Incorporated: *See—*
Moulson, Thomas J.; and Greenzweig, John E., 4,409,344., Cl. 523-512.000.

Carl, Norman J., to Sanders Associates, Inc. Scanning optical system. 4,409,477., Cl. 250-227.000.

Carle, Joseph T.: *See—*
Wilson, Brown L.; and Carle, Joseph T., 4,409,504., Cl. 310-87.000.

Carlton, Peter A.: *See—*
Childs, William H.; and Carlton, Peter A., 4,409,568., Cl. 333-156.000.

Carminati, Paolo: *See—*
Nisato, Dino; and Carminati, Paolo, 4,409,228., Cl. 424-267.000.

Carner, Marshall A.: *See—*
Torrey, Rodney J.; Astemborski, Dennis; Carner, Marshall A.; and Rose, Gerald D., 4,409,007., Cl. 55-112.000.

Carney, Leroy L.; Loftin, Royal E.; Anderson, Thomas E.; and Vasquez, Guillermo, to Halliburton Company. Lubricating composition for well fluids. 4,409,108., Cl. 252-8.50C.

Carrick, Lawrence K., to Calkins Manufacturing Company. Hitch mechanism. 4,408,777., Cl. 280-461.00A.

Carrier Corporation: *See—*
Bzdula, Joseph A.; and Sibley, Howard W., 4,409,362., Cl. 525-54.500.
Murnane, Raymond J.; Gomore, Stephen C.; and Mathewson, Myron, 4,408,467., Cl. 62-296.000.

Carter, Gordon V.; and Tromble, Ralph D., to General Electric Company. Trim strip assembly. 4,408,432., Cl. 52-718.000.

Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., to Carter Wind Power. Method of making blade supports. 4,409,050., Cl. 156-172.000.

Carter, J. Warne, Sr.: *See—*
Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., 4,409,050., Cl. 156-172.000.

Carter Wind Power: *See—*
Carter, J. Warne, Jr.; and Carter, J. Warne, Sr., 4,409,050., Cl. 156-172.000.

Casio Computer Co., Ltd.: *See—*
Honjo, Yoshiaki, 4,409,467., Cl. 235-58.0CF.
Yasuda, Takeshi; and Watanabe, Kazuyoshi, 4,409,599., Cl. 346-76.0PH.
Yoshida, Junichi, 4,409,668., Cl. 364-745.000.

Catanese, Carmen A.: *See—*
Shefer, Joshua; and Catanese, Carmen A., 4,409,514., Cl. 313-449.000.

Caterpillar Tractor Co.: *See—*
Clairmont, Floyd H., Jr.; and Graze, Russell R., Jr., 4,408,575., Cl. 123-41.350.

CAV Rotodiesel: *See—*
Bonin, Jean-Claude, 4,408,590., Cl. 123-502.000.

Celanese Corporation: *See—*
Froix, Michael F.; and Kusumgar, Rajal M., 4,409,370., Cl. 525-414.000.

Central Plants, Inc.: *See—*
Tanner, Milton R., 4,409,102., Cl. 210-603.000.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See—*
Fischbach, Jean-Paul F., 4,408,878., Cl. 356-43.000.

Centre National d'Etudes Spatiales: *See—*
Le Stang, Jean-Claude; and Thomin, Georges, 4,409,493., Cl. 307-132.00R.

Cessna Aircraft Company, The: *See—*
Diel, Robert McK.; and Huebert, James P., 4,408,518., Cl. 91-31.000.

Chalesle, Andre: *See—*
Legros, Andre; and Chalesle, Andre, 4,408,785., Cl. 285-49.000.

Chambers, Allan K.: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K., 4,408,568., Cl. 122-379.000.

Champion International Corporation: *See—*
Hartman, Seymour; and Brown, Timothy M., 4,409,375., Cl. 525-505.000.

Chan, Riley T.: *See—*
Levenspiel, Octave; and Chan, Riley T., 4,408,656., Cl. 165-1.000.

Chandler Evans Inc: *See—*
Nasvytis, Pius J.; and Jahrstorfer, George W., 4,408,953., Cl. 415-62.000.

Chandler Evans, Inc.: *See—*
Laybourne, Bernard D., 4,408,961., Cl. 417-189.000.

Chandross, Edwin A.; and Hartless, Ray L., to Bell Telephone Laboratories, Incorporated. Photosensitive element containing a polymer of an indenone based compound and a methacrylate compound. 4,409,318., Cl. 430-271.000.

Chang, Pei-Ching: *See—*
Paszner, Laszlo; and Chang, Pei-Ching, 4,409,032., Cl. 127-37.000.

Chang, Tzu-Ching, to Du Pont de Nemours, E. I., and Company. Separation of 3,4-dichloroaniline. 4,409,386., Cl. 564-438.000.

Chaplin, Christopher R.; Gordon, James E.; and Jeronimidis, Giorgio, to Westvaco Corporation. Composite material. 4,409,274., Cl. 428-112.000.

Chapman, James S.; and Tedeschi, Anthony, to Western Electric Company, Inc. Holder for aligning paramagnetic articles. 4,408,753., Cl. 269-8.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Singer, Herbert B., 4,408,807., Cl. 308-187.000.

Chase, Thomas L.; and Ehemann, George M., Jr., to RCA Corporation. Photographic method for printing a viewing-screen structure using a light-transmission filter. 4,408,851., Cl. 354-1.000.

Chemische Werke Huls, AG: *See—*
Coenen, Alfred; Schroeder, Manfred; and Prominski, Guenter, 4,409,198., Cl. 423-462.000.
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, 4,409,394., Cl. 549-534.000.

Chemplex Company: *See—*
Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,409,364., Cl. 525-74.000.

Chen, Michael S. K.: *See—*
Vora, Suresh M.; Mazzafro, William J.; Brian, Pierre L. T.; and Chen, Michael S. K., 4,409,064., Cl. 159-47.100.

Chen, Thomas Y.: *See—*
Ferguson, James M.; Chen, Thomas Y.; and Gibson, Walter G., 4,409,626., Cl. 358-338.000.

Cheng, Bao-ding, to Colgate Palmolive Company. Molecular sieve zeolite-built detergent paste. 4,409,136., Cl. 252-540.000.

Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., to Nabisco Brands, Inc. Chewing gum containing fructose syrup. 4,409,244., Cl. 426-5.000.

Chevron Research Company: *See—*
Hecker, William C., 4,409,123., Cl. 502-38.000.
Robinson, Richard C.; and Hecker, William C., 4,409,124., Cl. 502-5.000.
Van Leirsburg, Dean A., 4,409,190., Cl. 423-150.000.

Chew, Remedios K.: *See—*
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,409,260., Cl. 427-82.000.

Chiba, Toshiyuki: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,409,217., Cl. 424-246.000.

Chichibu Cement Co., Ltd.: *See—*
Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, 4,409,030., Cl. 106-97.000.

Children's Medical Center Corporation, The: *See—*
Duffy, Frank H.; and Culver, Norman D., 4,408,616., Cl. 128-731.000.

Childs, William H.; and Carlton, Peter A., to Communications Satellite Corporation. Temperature compensated time delay element for a differentially coherent digital receiver. 4,409,568., Cl. 333-156.000.

Chimicasa GmbH: *See—*
Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, 4,409,245., Cl. 426-9.000.

Chirikjian, Jack G.: *See—*
Feller, William F.; Kantor, Judith A.; Chirikjian, Jack G.; and Phillips, Terence M., 4,409,200., Cl. 436-516.000.

Chisso Corporation: *See—*
Moteki, Tsutomu; Aoki, Kazuo; Yamaguchi, Kunihiro; and Yoshizaki, Michio, 4,409,345., Cl. 524-13.000.

Chittenden, Constance T.: *See—*
Weaver, Charles S.; and Chittenden, Constance T., 4,408,614., Cl. 128-680.000.

Chlorine Engineers Corp. Ltd.: *See—*
Yamaguchi, Kenzo; Ichisaka, Teruo; and Ikegami, Tadao, 4,409,084., Cl. 204-257.000.

Christian, Robert F., to Jude Engineering, Inc. Conveyor for removal of bed drain material from a coal-burning fluidized bed combustor. 4,408,944., Cl. 414-216.000.

Christianson, Charles: *See—*
Morris, Hayden; and Christianson, Charles, 4,409,485., Cl. 250-374.000.

Christie, Eugene J. Gas leak detector viewer. 4,408,480., Cl. 73-40.700.

Chugai Seiyaku Kabushiki Kaisha: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.
Tsuji, Yashuhiro; Wakabayashi, Kiyoshige; and Watanabe, Mitsuo, 4,408,880., Cl. 356-338.000.

Chwang, Ronald J. C.: *See—*
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, C. Neil, 4,409,259., Cl. 427-38.000.

Ciba-Geigy AG: *See—*
Lenoir, John; and Jan, Gerald, 4,409,143., Cl. 260-205.000.

Ciba-Geigy Corporation: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,409,209., Cl. 424-177.000.
Guth, Christian; and Binz, Jorg, 4,408,995., Cl. 8-477.000.
Mondadori, Cesare, 4,409,212., Cl. 424-244.000.
Rasberger, Michael, 4,409,346., Cl. 524-83.000.

Ciesiel, Allen R.; LaSpesa, Richard E.; and Zolavvar, Ruperto B., to Teletype Corporation. Printer ribbon cartridge mounting assembly. 4,408,914., Cl. 400-208.000.

Ciliberti, Frank L., Jr., to Duracell Inc. Method of jacketing a battery with a self-adhesive battery jacket and article. 4,409,051., Cl. 156-212.000.

Cincinnati Milacron Inc.: *See—*
Belcher, Samuel L.; Peck, Timothy R.; and Smith, Roger D., 4,409,455., Cl. 219-10.810.

Citizen Watch Company Limited: *See—*
Takasugi, Tsuneji; and Umezawa, Seiji, 4,408,900., Cl. 368-295.000.

Clairmont, Floyd H., Jr.; and Graze, Russell R., Jr., to Caterpillar Tractor Co. Nozzle assembly for controlled spray. 4,408,575., Cl. 123-41.350.

Clarady, Joseph F., Jr.; Jessee, Karen L.; and Bearden, Joe L., to United Technologies Corporation. Holographic inspection technique. 4,408,881., Cl. 356-347.000.

Clark Equipment Company: *See—*
Albright, Larry E.; and Hoechst, Lonnie D., 4,408,672., Cl. 180-89.140.

Clay, Andrew M.: *See—*
Balliet, Richard F., 4,408,846., Cl. 351-203.000.

Cleary, James D., to Unitek Corporation. Orthodontic palatal arch wires for accurate transmittal of correctional forces. 4,408,989., Cl. 433-7.000.

Clem, John R.; and Clem, John R. Superconducting magnetic shielding apparatus and method. 4,409,579., Cl. 335-216.000.

Clem, John R.: *See—*
Clem, John R.; and Clem, John R., 4,409,579., Cl. 335-216.000.

Clements, Alden K.: *See—*
Misencik, John J.; and Clements, Alden K., 4,409,574., Cl. 335-18.000.

Clevinger, Martin R. Dual signal magnetic pickup with even response of strings of different diameters. 4,408,513., Cl. 84-1.150.

CMP Chemical & Metallurgical Products Ltd.: *See—*
Brewaeys, Luc; and Hens, Maurice, 4,408,693., Cl. 206-461.000.

Coach and Car Equipment Corporation: *See—*
DeWitt, Robert W.; and Feddeler, Lester H., 4,408,743., Cl. 248-285.000.

Coad, Brian C., to GTE Products Corporation. Brazing compositions. 4,409,181., Cl. 420-502.000.

Coal Industry (Patents) Ltd.: *See—*
O'Brian, Rodney W., 4,409,096., Cl. 209-10.000.
Sampson, John D.; and Sparrow, David J. W., 4,408,886., Cl. 366-13.000.

Cobaris, Paul L.: *See—*
Green, James P.; and Cobaris, Paul L., 4,408,803., Cl. 301-5.700.

Cockerill Sambre: *See—*
Delcour, Leon J. E., 4,408,708., Cl. 228-139.000.

Coenen, Alfred; Schroeder, Manfred; and Prominski, Guenter, to Chemische Werke Huls, AG. Process for the production of copper (II) chloride from copper (II) oxychloride using tertiary amine hydrochlorides. 4,409,198., Cl. 423-462.000.

Cohen, Carlos; and Raab, Alfred, to Jacuzzi Inc. Fitting to combine air and pressurized water. 4,408,721., Cl. 239-417.000.

Cohnen, Erich, to Beiersdorf Aktiengesellschaft. Substituted oxadiazoles, method for the production thereof, compositions containing them and method of use thereof. 4,409,232., Cl. 424-272.000.

Cohnen, Erich: *See—*
Stenzel, Wolfgang; and Cohnen, Erich, 4,409,231., Cl. 424-272.000.

Colacino, James J.; and Leone, Ronald A., to International Business Machines Corporation. Electron beam exposed positive resist mask process. 4,409,319., Cl. 430-296.000.

Colapinto, Fabio, to Argon Industrie Meccaniche s.r.l. Method of and apparatus for drying freshly printed sheets and other substrates by infrared or ultraviolet radiation. 4,408,400., Cl. 34-4.000.

Colgate Palmolive Company: *See—*
Cheng, Bao-ding, 4,409,136., Cl. 252-540.000.

Colling, Edwin L., Jr.: *See—*
Slough, Carlton M.; and Colling, Edwin L., Jr., 4,409,553., Cl. 324-445.000.

Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., to Glaxo Group Limited. Prostanoid compounds and pharmaceutical compositions. 4,409,213., Cl. 424-244.000.

Collins, Leonard D. Multi-storey building and a prefabricated panel for such a building. 4,408,434., Cl. 52-745.000.

Collonia, Harald: *See—*
Pfalzgraf, Manfred; Kern, Eckhart; and Collonia, Harald, 4,408,581., Cl. 123-339.000.

Colt Industries Operating Corp.: *See—*
Corrette, Richard H., 4,408,418., Cl. 51-288.000.

Comau S.p.A.: *See—*
Favareto, Marcello; and Anselmino, Renato, 4,409,464., Cl. 219-136.000.

Combes, Gilles; and Kuntz, Raymond, to Societe Anonyme dite: Alsthom-Atlantique. Apparatus for increasing the homogeneity of a fluid flow in a pipe. 4,408,892., Cl. 366-337.000.

Combourieu, Michel; Laigle, Jean-Claude; and Busch, Norbert, to Riom Laboratories - Cerm S.A. 1,2,3,4,4a,9b-Hexahydro-4a-piperazinylmethyl-4-dibenzofuranone or -dibenzofuranol derivatives. 4,409,221., Cl. 424-250.000.

Combustion Engineering, Inc.: *See—*
Burger, Joseph M., 4,409,179., Cl. 376-302.000.

Comerio Ercole, S.p.A.: *See—*
Comerio, Rinaldo I., 4,408,974., Cl. 425-194.000.

Comerio, Rinaldo I., to Comerio Ercole, S.p.A. Mobile film stretching unit. 4,408,974., Cl. 425-194.000.

Commeau, Alain, to Framatome. Method of manufacture of a hoop for the vessel of a nuclear reactor. 4,409,466., Cl. 219-137.00R.

Commonwealth of Australia, The: *See—*
Kossoff, George; and Robinson, David E., 4,408,492., Cl. 73-631.000.

Communications Satellite Corporation: *See—*
Childs, William H.; and Carlton, Peter A., 4,409,568., Cl. 333-156.000.

Compagnie Generale de Geophysique: *See—*
Gleize, Jacques; and Roy, Jean-Joseph, 4,408,677., Cl. 181-121.000.

Compagnie Generale des Etablissements Michelin: *See—*
Gerard, Francois; and Machat, Jean-Yves, 4,409,304., Cl. 429-158.000.

Computervision Corporation: *See—*
Zinky, William; and Rosenberg, Larry, 4,408,874., Cl. 355-52.000.

Condon, Edward L., to Merriam, Marshall & Bicknell. Graphic means and method for maximizing utilization of cargo space. 4,408,782., Cl. 283-70.000.

Conoco Inc.: *See—*
Davis, Richard L.; Graf, Harlan G.; and Edwards, Don L., 4,409,068., Cl. 202-85.000.
Jackson, Robert G.; and Yoon, Heeyoung, 4,408,571., Cl. 123-3.000.
Lafont, Larry J., 4,408,629., Cl. 137-329.040.
Yoon, Heeyoung; and Jackson, Robert G., 4,408,572., Cl. 123-3.000.

Consiglio Nazionale Delle Ricerche: *See—*
Assenza, Donello; and Pappalardo, Massimo, 4,409,510., Cl. 310-334.000.

Consonni, Pietro: *See—*
Omodei-Sale', Amedeo; Consonni, Pietro; and Galliani, Giulio, 4,409,388., Cl. 548-262.000.

Constantino, Louis L.: *See—*
Toy, Albert; Constantino, Louis L.; and Evans, Donald B., 4,409,174., Cl. 264-313.000.

Conti, Paolo. Rotary binder. 4,409,062., Cl. 156-518.000.

Continental Group, Inc., The: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,409,161., Cl. 264-40.100.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Kuhn, Dieter; Rach, Heinz-Dieter; Frerichs, Udo; and Pieper, Henner, 4,408,647., Cl. 152-330.0RF.

Cook, E. Wayne. Multipurpose ratcheting wrench. 4,408,505., Cl. 81-98.000.

Cooper Laboratories, Inc.: *See—*
Shively, Charles D., 4,409,205., Cl. 424-78.000.

Copal Company Limited: *See—*
Suzuki, Akira; Yoshikawa, Yukio; and Kaneko, Katumi, 4,408,856., Cl. 354-234.000.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Thermoplastic rubber blends comprising crystalline polyolefin, vulcanized mono-olefin rubber and vulcanized nitrile rubber. 4,409,365., Cl. 525-78.000.

Cordea, James N.; and Sheth, Harshad V., to Armco Inc. Alloy steel for roll caster shell. 4,409,027., Cl. 75-128.00W.

Cordier, Jean-Pierre: *See—*
Mergan, Leo M.; and Cordier, Jean-Pierre, 4,409,137., Cl. 252-632.000.

Corning Glass Works: *See—*
Baret, Jean-Luc A. G.; and Dohan, Luc A., 4,409,247., Cl. 426-41.000.
Dumbaugh, William H., Jr., 4,409,337., Cl. 501-66.000.

Corrette, Richard H., to Colt Industries Operating Corp. Method of forming through-feed cylindrical thread rolling dies. 4,408,418., Cl. 51-288.000.

Cosyns, Jean; and Durand, Daniel, to Institut Francais du Petrole. Process for selectively hydrogenating a di-olefin in a mixture of hydrocarbons having at least 4 carbon atoms and comprising an α-olefin. 4,409,410., Cl. 585-259.000.

Couch, Robert D.; and Lenderking, Bruce N., to Westinghouse Electric Corp. Fiber optic system for measuring mechanical motion or vibration of a body. 4,408,495., Cl. 73-655.000.

Coulter Systems Corporation: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Cousse, Henri: *See—*
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,409,241., Cl. 424-324.000.

Cowan, William S., to Armco Inc. Subsea template levelling system and method. 4,408,932., Cl. 405-227.000.

Coy, Donald L.; and McEvers, Dale L., to H & H Industries, Inc. Machine for precisely feeding and turning an axially movable non-rotating workpiece. 4,408,506., Cl. 82-20.000.

Crabtree, Joe: *See—*
Elmy, Raymond L.; and Crabtree, Joe, 4,408,683., Cl. 192-11.000.

Crane Co.: *See—*
Skarvada, Thomas, 4,409,664., Cl. 364-565.000.

Crawford, Wheeler C.: *See—*
Sung, Rodney L.; Sweeney, William M.; and Crawford, Wheeler C., 4,409,001., Cl. 44-71.000.

Cremonesi, Pietro; and Sportoletti, Giancarlo, to Italfarmaco S.p.A. Method for the preparation of calcium heparinate. 4,409,103., Cl. 210-638.000.

Crichlow, Charles A.: *See—*
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,409,145., Cl. 260-239.0BD.

Cross, Lindsay E.: *See—*
Serban, Alexander; Bird, Graham J.; and Cross, Lindsay E., 4,409,017., Cl. 71-94.000.

Crosson, William J., to Westmoreland Plastics Company. Removable electrical receptacle. 4,408,696., Cl. 220-3.600.

Crouch, Bill W.; Sauer, William F.; and Zylka, Kenneth R., to Meridian Industries, Inc. Method and apparatus for producing liquid impregnated fabric wipes. 4,408,437., Cl. 53-431.000.

CTS Corporation: *See—*
Kuo, Charles Y., 4,409,261., Cl. 427-96.000.

Cuisinarts, Inc.: *See—*
Podell, Allen F., 4,409,528., Cl. 318-345.00D.

Culver, Norman D.: *See—*
Duffy, Frank H.; and Culver, Norman D., 4,408,616., Cl. 128-731.000.

Cummins, William T.: *See—*
Leblanc, Raymond F.; and Cummins, William T., 4,408,931., Cl. 405-213.000.

Dahan, Pierre-Louis; and Letuan, Phac. Video system for assisting automobile traffic employing a segmented LCD display. 4,409,583., Cl. 340-22.000.

Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, to ASEA Aktiebolag. Pressure-sensing transducer. 4,408,496., Cl. 73-728.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Tano, Mikio, 4,408,487., Cl. 13-159.000.

Daikin Kogyo Co., Ltd.: *See—*
Namba, Mutsusuke; Suzue, Seisuke; Mizuno, Toshio; and Kataoka, Yoshiaki, 4,409,354., Cl. 524-431.000.

Dainippon Ink and Chemicals Inc.: *See—*
Tabayashi, Isao; Soma, Hiromi; and Fukutomi, Hiroshi, 4,409,040., Cl. 106-20.000.

D'Alessio, Michael S.; and Sandler, Stanley A., to Harsco Corporation. Shoring equipment. 4,408,431., Cl. 52-690.000.

D'Alessio, Michael S., to Harsco Corporation. Coupler. 4,408,922., Cl. 403-12.000.

Daly, Christopher N.; and Money, David K., to Telectronics Pty. Ltd. Implantable tissue-stimulating prosthesis. 4,408,608., Cl. 128-421.000.

D'Amato, Ralph J., to RCA Corporation. Electrode for an electron gun. 4,409,513., Cl. 313-348.000.

Dammann, Peter: *See—*
Bauer, Karl; Dammann, Peter; Kubler, Hermann; and Lorenz, Hellmut, 4,408,448., Cl. 57-336.000.
Bauer, Karl; Schippers, Heinz; and Dammann, Peter, 4,408,449., Cl. 57-340.000.

Damon Corporation: *See—*
Lim, Franklin, 4,409,331., Cl. 435-178.000.

Danfoss A/S: *See—*
Nielsen, Henrik B.; and Nygaard, Nils H., 4,409,524., Cl. 318-138.000.

D'Angelo, Charles: *See—*
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,409,004., Cl. 51-295.000.

Danhoff, Ronald S.: *See—*
Detterman, Don E.; Danhoff, Ronald S.; and Wheeler, William E., 4,408,780., Cl. 281-15.00R.

Daniels, Joseph C., to State Industries, Inc. Floor merchandise display container. 4,408,689., Cl. 206-45.170.

Daniels, R. Gary; Bennett, Thomas H.; Musa, Fuad H.; and Wiles, Michael F., to Motorola, Inc. Data processor having single clock pin. 4,409,671., Cl. 364-900.000.

Danielson, Robert L.; and Bosco, Peter M., to Nabisco Brands, Inc. Cold water soluble gelatin and process. 4,409,255., Cl. 426-576.000.

Danly Machine Corporation: *See—*
Schelli, William; and Sindelar, William E., 4,408,521., Cl. 100-229.00R.

Darnell, Robert D.; and Ingle, William M., to Motorola, Inc. Purification of silicon source materials. 4,409,195., Cl. 423-342.000.

Dart Industries Inc.: *See—*
Wolff, Martin J.; and Falvo, Joseph S., 4,408,919., Cl. 401-12.000.

Darwood, Phillip I.; Holland, Ernest; Taylor, Peter M.; and Marley, Christopher, to V. L. Churchill Limited. Wheel alignment gauge. 4,408,399., Cl. 33-203.180.

Data General Corporation: *See—*
Wallach, Steven; Holberger, Kenneth D.; Keating, David L.; and Staudaher, Steven M., 4,409,655., Cl. 364-200.000.

Data Packaging Corporation: *See—*
Yonkers, Edward, 4,408,912., Cl. 400-208.000.

Datta, Amitava; Davis, Lance A.; DeCristofaro, Nicholas J.; and Marti, Jordi, to Allied Corporation. Amorphous alloys for electromagnetic devices. 4,409,041., Cl. 148-31.550.

Davey, Richard G.: *See—*
Taylor, Randle W.; and Davey, Richard G., 4,409,014., Cl. 65-170.000.

Davis, Billy R.; and Davis, Bob G. Christmas tree stand. 4,408,415., Cl. 47-40.500.

Davis, Bob G.: *See—*
Davis, Billy R.; and Davis, Bob G., 4,408,415., Cl. 47-40.500.

Davis, Edward P. Leg aid device and method. 4,408,600., Cl. 128-80.00R.

Davis, George D.: *See—*
Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,409,127., Cl. 502-205.000.
Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,409,133., Cl. 502-354.000.

Davis, Lance A.: *See—*
Datta, Amitava; Davis, Lance A.; DeCristofaro, Nicholas J.; and Marti, Jordi, 4,409,041., Cl. 148-31.550.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. Pharmaceutical compositions and methods employing 8-[3-(6-fluoro-1,2-benzisoxazol-3-yl)propyl]-1-phenyl-1,3,8-triazaspiro-[4.5]decan-4-one and derivatives thereof. 4,409,230., Cl. 424-267.000.

Davis, Richard L.; Graf, Harlan G.; and Edwards, Don L., to Conoco Inc. Injector for calciner. 4,409,068., Cl. 202-85.000.

Davis, William F., to Motorola, Inc. Output transient suppression circuit. 4,409,560., Cl. 330-296.000.

Davlantes, George N. Pet access door panel. 4,408,416., Cl. 49-168.000.

Day, David R.: *See—*
McElroy, Lucian G.; and Day, David R., 4,409,035., Cl. 134-6.000.

Dayco Corporation: *See—*
Brooks, Alden W., 4,409,047., Cl. 156-138.000.
Bryan, James S.; Gaster, Ivan; Tell, Mayo B.; and Dunn, Claude, 4,408,395., Cl. 30-179.000.

DBS, Inc.: *See—*
Senyitko, Erwin J., 4,408,523., Cl. 101-56.000.

DBX, Inc.: *See—*
Welland, David R., 4,409,500., Cl. 307-490.000.

Debuque, Ignacio D., Jr.: *See—*
Schlueter, William B.; and Debuque, Ignacio D., Jr., 4,408,573., Cl. 123-25.00P.

DeCamp, James E.; Arndt, Raymond J.; and Gruzewski, Ronald L., to Mactron, Inc. Apparatus for applying a coating to a moving surface. 4,408,562., Cl. 118-669.000.

DeCristofaro, Nicholas J.: *See—*
Datta, Amitava; Davis, Lance A.; DeCristofaro, Nicholas J.; and Marti, Jordi, 4,409,041., Cl. 148-31.550.

Decroix, Jean-Claude, to Societe Chimique des Charbonnages-CDF Chimie. Composite thermoplastic films and a process for their preparation. 4,409,286., Cl. 428-332.000.

Deepsea Ventures, Inc.: *See—*
Latimer, John P., 4,408,404., Cl. 37-58.000.

Deere & Company: *See—*
Lenski, Ralph; Peiler, Rolf W.; and Pauli, Klaus H., 4,408,947., Cl. 414-526.000.
Steilen, Ronald M., 4,408,704., Cl. 222-312.000.
Thompson, Raymond D., 4,408,744., Cl. 248-636.000.

Deffayet, Jean; and Lamarque, Etienne, to Thomson-Brandt. Launching mechanism for subcalibre projectile. 4,408,538., Cl. 102-522.000.

Deforeit, Christian J., to Matt. Hohner AG. Electronic musical instrument. 4,408,511., Cl. 84-1.010.

De Graaff, Hendrik C.: *See—*
Wagenaar, Kornelis J.; De Graaff, Hendrik C.; and Appels, Johannes A., 4,409,606., Cl. 357-13.000.

Degussa Aktiengesellschaft: *See—*
Krause, Helmfried; Wobbermin, Hubertus; and Geigle, Edgar, deceased, 4,409,185., Cl. 422-113.000.

Dehne, Clarence A., to Jervis B. Webb Company. Method and conveyor system for processing articles through successive operations. 4,408,540., Cl. 104-172.00B.

Deininger, Rolf: *See—*
Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, 4,409,245., Cl. 426-9.000.

Del Laboratories, Inc.: *See—*
Gordon, Harry W.; and Avila, Nanette R., 4,409,203., Cl. 424-61.000.

Delaruelle, Dale H.: *See—*
Bollinger, John G.; Nichols, Richard E.; and Delaruelle, Dale H., 4,408,483., Cl. 73-115.000.

Delayre, Jean L.: *See—*
Fossel, Eric T.; and Delayre, Jean L., 4,409,550., Cl. 324-300.000.

Delcour, Leon J. E., to Cockerill Sambre. Method of securing prefabricated lagging components to a metal surface, and a prefabricated lagging component for use in the method. 4,408,708., Cl. 228-139.000.

Deline, G. Duane, to McCormick & Company, Inc. Homogeneous, free-flowing liquid black pepper oleoresin composition. 4,409,257., Cl. 426-651.000.

Delta Electronic Manufacturing Corp.: *See—*
Nikitas, Nick C., 4,408,822., Cl. 339-177.00R.

Demny, Werner: *See—*
Brauer, Hans; and Demny, Werner, 4,408,476., Cl. 72-229.000.

Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, to Wacker-Chemie GmbH; and Hoechst Aktiengesellschaft, a part interest. Process for the manufacture of unsaturated carboxylic acid esters. 4,409,396., Cl. 560-245.000.

Dennison Manufacturing Company: *See—*
Fotland, Richard A., 4,409,604., Cl. 346-159.000.
Russell, David B., 4,408,979., Cl. 425-383.000.

DePaoli, Alan G.: *See—*
Richards, John S.; and DePaoli, Alan G., 4,409,621., Cl. 358-260.000.

Deprez, Michel; Fromion, Andre; Hardouin, Claude; and Vilas Boas, Jean C., to 501 Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme). Viewing system with automatic correction of the reading distance as a function of the inclination of the viewing screen housing. 4,408,835., Cl. 350-117.000.

Detterman, Don E.; Danhoff, Ronald S.; and Wheeler, William E., to R. R. Donnelley & Sons Company. Bound book and method of making such books. 4,408,780., Cl. 281-15.00R.

Deutsche Forschungs- und Versuchsanstalt fur Luft: *See—*
Kleber, Peter, 4,408,740., Cl. 244-158.00R.

Devaud, Genevieve. Compensated amorphous silicon solar cell. 4,409,424., Cl. 136-258.000.

Devine, Janet, to Sonobond Ultrasonics, Inc. Programmable power supply for ultrasonic applications. 4,409,659., Cl. 364-475.000.

Devine, Thomas M., Jr., to General Electric Company. Method of making titanium-stabilized ferritic stainless steel for preheater and reheater equipment applications. 4,408,709., Cl. 228-183.000.

DeWitt, Robert W.; and Feddeler, Lester H., to Coach and Car Equipment Corporation. Seat with wear-resistant mounting. 4,408,743., Cl. 248-285.000.

Dey, Philip; Dunkley, Ronald; and Holden, Graham, to BICC Public Limited Company. Overhead electric transmission systems. 4,409,428., Cl. 174-43.000.

Deyoe, Charles W.: *See—*
Johnson, Lawrence A.; Hoover, William J.; and Deyoe, Charles W., 4,409,256., Cl. 426-598.000.

Diamond Shamrock Corporation: *See—*
Angerer, Herman F.; and Tomov, Nenad R., 4,409,301., Cl. 429-27.000.

Dibble, Eric P.; and Lynch, Thomas E., to International Business Machines Corporation. Masking for selective electroplating jet method. 4,409,071., Cl. 204-15.000.

Diel, Robert McK.; and Huebert, James P., to Cessna Aircraft Company, The. Series self-leveling valve. 4,408,518., Cl. 91-31.000.

Diesel Kiki Co., Ltd.: *See—*
Nakamura, Hisashi, 4,408,591., Cl. 123-502.000.
Sutoh, Shinji; Hara, Toshizo; Harada, Takeshi; and Eda, Masahiro, 4,408,660., Cl. 165-21.000.
Takada, Haruhiko, 4,408,969., Cl. 418-93.000.

Dietrich, Herbert: *See—*
McAllister, Lawrence E.; and Dietrich, Herbert, 4,409,361., Cl. 524-876.000.

DiGiulio, Adolph V., to Atlantic Richfield Company. Process for forming fast-cool vinyl aromatic expandable polymers. 4,409,338., Cl. 521-59.000.

Di Marco, Bernard; and Kralik, Andrew J., to Siemens-Allis, Inc. Electromagnetically actuated anti-rebound latch. 4,409,573., Cl. 335-16.000.

DiNolfo, Mario A.: *See—*
Witzel, Frank; DiNolfo, Mario A.; Rodney, Burton; and Mackay, Donald A. M., 4,409,202., Cl. 424-49.000.

Dipprey, Neil F.: *See—*
Broyles, Howard F.; White, Mark L.; and Dipprey, Neil F., 4,408,595., Cl. 126-424.000.

Dobosh, Raymond M. Socket drive. 4,408,504., Cl. 81-59.100.

Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.

Dodson, Daniel P.; and Ludwig, George C., to AVM Corporation. Multi-chamber temperature compensated pneumatic counterbalance. 4,408,751., Cl. 267-120.000.

Doerr, John D.; and Duncan, Donn G. Device for treatment of barotrauma of the middle ear. 4,408,605., Cl. 128-402.000.

Dohan, Luc A.: *See—*
Baret, Jean-Luc A. G.; and Dohan, Luc A., 4,409,247., Cl. 426-41.000.

Dohmeier, Hans O. Laminated wearing plate assembly for tire chain. 4,408,645., Cl. 152-172.000.

Doi, Yoshinao: *See—*
Matsuda, Kazuo; Kohno, Mitsuo; and Doi, Yoshinao, 4,409,339., Cl. 521-143.000.

Dominguez, Manuel F.; and Ferguson, Joseph E., to Shell Oil Company. Tube hanger for steam generator. 4,408,570., Cl. 122-510.000.

Dommes, Werner: *See—*
Schaper, Siegfried; Wimmer, Anton; and Dommes, Werner, 4,408,380., Cl. 29-156.50A.

Donn Incorporated: *See—*
Zilch, Gregory W., 4,408,427., Cl. 52-481.000.

Doomernik B.V.: *See—*
Doomernik, Cornelis, 4,408,654., Cl. 165-10.000.

Doomernik, Cornelis, to Doomernik B.V. Accumulator for storing heat or cold. 4,408,654., Cl. 165-10.000.

Doree, Donald A. Thread conditioning device. 4,408,363., Cl. 10-1.00B.

Dorler, Jack A.; and Mosley, Joseph M., to International Business Machines Corporation. Transient controlled current switch. 4,409,498., Cl. 307-454.000.

Dornberger, Georg C. E.; and Streich, Robert E., to Western Electric Company, Inc. Method and apparatus for measuring the temperature of moving elongated articles and application thereof. 4,409,042., Cl. 148-129.000.

Dougan, Paul N., to Equity Oil Company. In situ recovery of oil and gas from water-flooded oil shale formations. 4,408,665., Cl. 166-266.000.

Dow Chemical Company, The: *See—*
Ham, George E., 4,409,349., Cl. 524-108.000.
Hefner, Robert E., Jr., 4,409,360., Cl. 524-804.000.
Hefner, Robert E., Jr., 4,409,371., Cl. 525-418.000.
Lyons, Charles E.; and Tung, Lu H., 4,409,369., Cl. 525-314.000.
Matthews, Donald P., 4,409,227., Cl. 424-263.000.
Shipley, Randall S.; and Birkelbach, Donald F., 4,409,126., Cl. 502-169.000.
Spangle, Lloyd B., 4,408,489., Cl. 73-432.00R.

Dow Mac Concrete Limited: *See—*
Parkins, Ian C. N. W., 4,409,159., Cl. 264-39.000.

Dowbenko, Rostyslaw; Hartman, Marvis E.; and Hockswender, Thomas R., to PPG Industries, Inc. Novel diluents useful in preparing high solids coating compositions. 4,409,376., Cl. 525-509.000.

Doyle, Gerald: *See—*
Langer, Arthur W., Jr.; Doyle, Gerald; Burkhardt, Terry J.; and Looney, Ralph W., 4,409,409., Cl. 585-255.000.

Dravo Corporation: *See—*
Oyler, John F., 4,408,987., Cl. 432-137.000.

Dresser Industries, Inc.: *See—*
Adelmann, William J., Jr., 4,408,765., Cl. 277-3.000.
Jones, Thaddeus M., 4,409,540., Cl. 323-369.000.
Urmy, Charles W., Jr., 4,409,112., Cl. 252-33.400.

Dropczynski, Hartmut, to Jagenberg Werke AG. Method and apparatus for the automatic severing and reattachment of a web. 4,408,727., Cl. 242-56.00R.

Drutchas, Gilbert H., to TRW Inc. Power steering pump. 4,408,963., Cl. 417-283.000.

Duffy, Frank H.; and Culver, Norman D., to Children's Medical Center Corporation, The. Brain electricaL activity mapping. 4,408,616., Cl. 128-731.000.

Duke, Ronald J.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Dumbaugh, William H., Jr., to Corning Glass Works. Glass envelopes for tungsten-halogen lamps. 4,409,337., Cl. 501-66.000.

Dummer, Gerhard: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.

Duncan, Donn G.: *See—*
Doerr, John D.; and Duncan, Donn G., 4,408,605., Cl. 128-402.000.

Dunkley, Ronald: *See—*
Dey, Philip; Dunkley, Ronald; and Holden, Graham, 4,409,428., Cl. 174-43.000.

Dunn, Claude: *See—*
Bryan, James S.; Gaster, Ivan; Tell, Mayo B.; and Dunn, Claude, 4,408,395., Cl. 30-179.000.

Du Pont de Nemours, E. I., and Company: *See—*
Beckmann, Charles H., 4,408,890., Cl. 366-155.000.
Chang, Tzu-Ching, 4,409,386., Cl. 564-438.000.
Kolouch, Robert J.; and Michel, Rudolph H., 4,409,167., Cl. 264-102.000.
Lindsey, William B., 4,409,384., Cl. 536-60.000.
Seidel, William C.; and Staikos, Dimitri N., 4,409,076., Cl. 204-130.000.
Sondergeld, Manfred A. J., 4,409,115., Cl. 252-79.100.
Squire, Edward N., 4,409,393., Cl. 549-448.000.

Duracell Inc.: *See—*
Bowden, William L., 4,409,303., Cl. 429-105.000.
Ciliberti, Frank L., Jr., 4,409,051., Cl. 156-212.000.

Durand, Daniel: *See—*
Cosyns, Jean; and Durand, Daniel, 4,409,410., Cl. 585-259.000.

Duro-Test Corporation: *See—*
Walsh, Peter, 4,409,512., Cl. 313-113.000.

Durrer, Jorg: *See—*
Mayer, Cornelius; Durrer, Jorg; and Weber, Ronald, 4,409,468., Cl. 235-404.000.

Duruz, Louis; and Strehl, Jean-Marc, to Raskin, S.A. Machine for cutting sheet material. 4,409,463., Cl. 219-121.0LG.

Duvall, John: *See—*
Bellas, Michael; and Duvall, John, 4,409,389., Cl. 548-342.000.

Eaby, Daniel G.; Long, William B.; and Shuey, John R., to AMP Incorporated. Electrical terminals for modular wiring systems. 4,408,820., Cl. 339-156.00R.

Earle, John L. Windmill yaw and speed controls. 4,408,954., Cl. 416-9.000.

Eastman, George Y.; Ernst, Donald M.; and Thomas, Warren E., to Thermacore, Inc. Cabinet cooler heat exchanger. 4,408,661., Cl. 165-164.000.

Eastman Kodak Company: *See—*
Armour, Eugene A.; Henzel, Richard P.; and Mowrey, Rowland G., 4,409,315., Cl. 430-214.000.
Bellas, Michael; and Duvall, John, 4,409,389., Cl. 548-342.000.
Frank, Lee F., 4,408,857., Cl. 354-234.000.
Gustafson, Gary B., 4,408,866., Cl. 355-3.0TR.
Lee, James K., 4,408,858., Cl. 354-234.000.
Lelental, Mark; Rasch, Arthur A.; and Sullivan, David P., 4,409,307., Cl. 430-31.000.
Phillips, Bobby M., 4,408,977., Cl. 425-382.200.

Ebauches Electroniques S.A.: *See—*
Mutrux, Claude, 4,408,897., Cl. 368-200.000.

EC Erdolchemie GmbH: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.

Eckert, Herbert L.: *See—*
Marsch, James E.; and Eckert, Herbert L., 4,408,746., Cl. 254-344.000.

Eda, Masahiro: *See—*
Sutoh, Shinji; Hara, Toshizo; Harada, Takeshi; and Eda, Masahiro, 4,408,660., Cl. 165-21.000.

Edel, Hans J.; and Hornung, Helmut. Elevated swivel chair having a movable foot support for locking the chair against swiveling motion. 4,408,801., Cl. 297-433.000.

Edlong Corporation, The: *See—*
Johnson, Lawrence A.; Hoover, William J.; and Deyoe, Charles W., 4,409,256., Cl. 426-598.000.

Edson, Douglas M., to Sprague Electric Company. Offset lead configuration for solid electrolyte capacitor. 4,409,642., Cl. 361-433.000.

Edwards, Don L.: *See—*
Davis, Richard L.; Graf, Harlan G.; and Edwards, Don L., 4,409,068., Cl. 202-85.000.

Edwards, Roy E.; and Price, Anthony G., to Lucas Industries Limited. Control valve assemblies for hydraulic braking systems. 4,408,805., Cl. 303-6.00A.

Edwards, William R.: *See—*
Frank, Alan M.; and Edwards, William R., 4,409,643., Cl. 362-157.000.

Egyt Gyogyszervegyeszeti Gyar: *See—*
Benko, Pal; Bozsing, Daniel; Gundel, Jamos; and Magyar, Karoly, 4,409,219., Cl. 424-250.000.

Ehemann, George M., Jr.: *See—*
Chase, Thomas L.; and Ehemann, George M., Jr., 4,408,851., Cl. 354-1.000.

Ehrenkranz, Joel R. L. Urinary temperature measurement device. 4,408,905., Cl. 374-157.000.

Eichler, Helmut; Vorhagen, Friedrich W.; and Hutten, Hans M. Method for the reproduction of originals which, with respect to their color content, are scanned according to a tristimulus method. 4,409,614., Cl. 358-76.000.

Eickerman, Curtis L.; and Ramsey, Arlie A., to Motorola Inc. Power-on reset circuit. 4,409,501., Cl. 307-594.000.

Einarsson, Torbjorn: *See—*
Brandt, Nils; and Einarsson, Torbjorn, 4,409,636., Cl. 361-87.000.

Eison, Michael S.: *See—*
Riblet, Leslie A.; and Eison, Michael S., 4,409,223., Cl. 424-251.000.

EKA AB: *See—*
Holmberg, Krister; and Nilsson, Ingvar, 4,409,117., Cl. 252-99.000.

Ekstrom, James R. Wave powered turbine. 4,408,965., Cl. 417-331.000.

Elder, Melisse N.: *See—*
Morrison, Lowen R., Jr.; Elder, Melisse N.; and Phillips, John H., 4,409,253., Cl. 426-424.000.

Electronique Marcel Dassault: *See—*
Basset, Jean-Claude; and Meinguss, Alain, 4,409,434., Cl. 178-22.190.
Geesen, Michel, 4,408,895., Cl. 368-118.000.

Ellen, Leonard W. Pipe organ. 4,408,517., Cl. 84-345.000.

Elliott, William J., to Quietlite International, Inc. Direct current power source for an electric discharge lamp using reduced starting current. 4,409,522., Cl. 315-308.000.

Ellis, Wayne S. Transplanting implement. 4,408,550., Cl. 111-2.000.

Elm, Rainer: *See—*
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, 4,409,394., Cl. 549-534.000.

Elmer, Otto C., to General Tire & Rubber Company, The. Adhesion of rubber to aramid cords. 4,409,055., Cl. 156-307.500.

Elmy, Raymond L.; and Crabtree, Joe, to Murray Ohio Manufacturing Co., The. Combined clutch and braking arrangement for a tractor. 4,408,683., Cl. 192-11.000.

Emdener Strasse: *See—*
Hack, Adolf, 4,408,975., Cl. 425-231.000.

Emhart Industries, Inc.: *See—*
Finkle, Louis J., 4,409,589., Cl. 340-396.000.

EMPI, Inc.: *See—*
Maurer, Donald D., 4,408,607., Cl. 128-419.00R.

Endo, Tadashi: *See—*
Sato, Tadao; Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,409,193., Cl. 423-290.000.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; and Madan, Arun, 4,409,605., Cl. 357-2.000.

Enertec: *See—*
Bazin, Alain, 4,409,545., Cl. 324-107.000.

Eng, Fe C. Decorative mounting system. 4,408,408., Cl. 40-617.000.

Engel, Joseph R. Self-cleaning mirror. 4,408,991., Cl. 433-30.000.

Enjoji, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Probe for ultrasonic imaging apparatus. 4,408,611., Cl. 128-660.000.

Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, to Fujitsu Limited. Schmitt trigger circuit with low input current. 4,409,495., Cl. 307-290.000.

Enomoto, Shigeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Picture division type automatic exposure control device for television camera. 4,409,620., Cl. 358-228.000.

Eoga, Anthony B. J., to Warner-Lambert Company. Tablet forming cleanser composition and method of preparation. 4,409,118., Cl. 252-99.000.

Epson Corporation: *See—*
Ishii, Hiroshi, 4,409,596., Cl. 346-1.100.
Minowa, Masahiro, 4,409,600., Cl. 346-76.0PH.
Shimodaira, Tadayoshi, 4,408,911., Cl. 400-208.000.

Equity Oil Company: *See—*
Dougan, Paul N., 4,408,665., Cl. 166-266.000.

Erco Industries Limited: *See—*
Reeve, Douglas W.; and Rapson, W. Howard, 4,409,066., Cl. 162-88.000.

Eremenko, Boris S.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Erickson, Lloyd A.: *See—*
Graff, Henry W.; and Erickson, Lloyd A., 4,408,939., Cl. 411-112.000.

Erickson, Roman R., to Gas Service Energy Corporation. Temperature compensated gauge for pressurized gas such as natural gas fuel for vehicles. 4,408,484., Cl. 73-149.000.

Eriez Manufacturing Company: *See—*
Torrey, Rodney J.; Astemborski, Dennis; Carner, Marshall A.; and Rose, Gerald D., 4,409,007., Cl. 55-112.000.

Erni, Bruno: *See—*
Vuilleumier, Cyril; and Erni, Bruno, 4,408,898., Cl. 368-220.000.

Ernst, Donald M.: *See—*
Eastman, George Y.; Ernst, Donald M.; and Thomas, Warren E., 4,408,661., Cl. 165-164.000.

Ernst, Horst M.: *See—*
Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, 4,408,809., Cl. 308-187.100.

Ernst Leitz Wetzlar GmbH: *See—*
Lindmo, Tore; and Steen, Harald B., 4,408,877., Cl. 356-38.000.

Esch, Frederick S.: *See—*
Ling, Nicholas C.; Guillemin, Roger C. L.; Ying, Shao-Yao; and Esch, Frederick S., 4,409,139., Cl. 260-112.00R.

Esge-Marby GmbH & Co. KG: *See—*
Niemann, Heinz, 4,408,705., Cl. 224-39.000.

Etablissement Texcontor: *See—*
Maltz, Javier E., 4,409,138., Cl. 260-112.00R.

Eto, Kunihiko: *See—*
Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, 4,408,933., Cl. 408-8.000.

Eto, Yoshizumi; and Hirano, Yasuhiro, to Hitachi Denshi Kabushiki Kaisha. Video signal decoding circuit. 4,409,627., Cl. 360-38.100.

Evans, Donald B.: *See—*
Toy, Albert; Constantino, Louis L.; and Evans, Donald B., 4,409,174., Cl. 264-313.000.

Evjen, John M., to General Electric Company. Support means for plug-in transformer/charger. 4,409,536., Cl. 320-2.000.

Excelermatic Inc.: *See—*
Kraus, Charles E., 4,408,502., Cl. 74-789.000.
Kraus, Charles E., 4,408,503., Cl. 74-798.000.

Exxon Research and Engineering Co.: *See—*
Bearden, Roby, Jr.; and Stuntz, Gordon, 4,409,093., Cl. 208-108.000.
Brois, Stanley J.; Gutierrez, Antonio; and Ryer, Jack, 4,409,114., Cl. 252-75.000.
Langer, Arthur W., Jr.; Doyle, Gerald; Burkhardt, Terry J.; and Looney, Ralph W., 4,409,409., Cl. 585-255.000.
Langer, Arthur W., Jr., 4,409,414., Cl. 585-524.000.
Nadkarni, Ramachandra A.; and Williams, Rollie B., 4,408,999., Cl. 44-1.0SR.
Osman, Robert M., 4,409,191., Cl. 423-220.000.
Wagner, John P.; and Hsu, Edward C., 4,409,078., Cl. 204-188.000.

Ezaki, Atsuo; and Murakami, Takeshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photosensitive material. 4,409,322., Cl. 430-523.000.

Fa. Erwin Kampf GmbH & Co.: *See—*
Hutzenlaub, Armin S. P.; and Schmidt, Willi, 4,408,474., Cl. 72-205.000.

Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., to General Tire & Rubber Company, The. Repair apparatus. 4,408,558., Cl. 118-59.000.

Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., to General Tire & Rubber Company, The. Method for repairing glass fiber reinforced plastic parts and product. 4,409,270., Cl. 428-63.000.

Faccini, Ernest: *See—*
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.

Factor, Neal. System for the regulation of light for a sequential picture apparatus. 4,408,838., Cl. 350-347.00E.

Fag Kugelfischer Georg Schafer & Co.: *See—*
Peuker, Karl, 4,408,902., Cl. 374-27.000.

Fairchild Camera & Instrument Corporation: *See—*
Stinehelfer, Jonathan J., 4,409,675., Cl. 365-201.000.
Varshney, Ramesh C., 4,409,676., Cl. 365-201.000.

Falvo, Joseph S.: *See—*
Wolff, Martin J.; and Falvo, Joseph S., 4,408,919., Cl. 401-12.000.

Fanuc Ltd.: *See—*
Kobari, Katsuo; and Hachisuka, Yoshiaki, 4,409,648., Cl. 363-54.000.

Farrell, Sherman R.: *See—*
Loda, Gary K.; and Farrell, Sherman R., 4,409,511., Cl. 313-34.000.

Favareto, Marcello; and Anselmino, Renato, to Comau S.p.A. Automatic device for changing an electric welding gun, operated by the arm of a programmable manipulator. 4,409,464., Cl. 219-136.000.

Feddeler, Lester H.: *See—*
DeWitt, Robert W.; and Feddeler, Lester H., 4,408,743., Cl. 248-285.000.

Fehrman, Richard G.: *See—*
Nienart, Louis F.; Fehrman, Richard G.; and Wan, Chung-Chu, 4,408,653., Cl. 164-463.000.

Feld, Gundolf: *See—*
Soraya, Sorayapour; Feld, Gundolf; and Wacker, Fredy, 4,408,986., Cl. 432-6.000.

Feldman, Julian, to National Distillers and Chemical Corporation. Process for recovering ethanol from dilute aqueous solutions employing liquid extraction media. 4,409,406., Cl. 568-916.000.

Feller, William F.; Kantor, Judith A.; Chirikjian, Jack G.; and Phillips, Terence M., to Research Corporation. Reverse transcriptase from human milk, method for its purification, and its use in the detection of breast cancer. 4,409,200., Cl. 436-516.000.

Fendt, Alfons: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.

Ferag AG: *See—*
Meier, Jacques, 4,408,754., Cl. 270-52.000.
Meier, Jacques, 4,408,755., Cl. 270-52.000.

Ferguson, James M.; Chen, Thomas Y.; and Gibson, Walter G., to RCA Corporation. Video disc player having vertical timing signal generator. 4,409,626., Cl. 358-338.000.

Ferguson, Joseph E.: *See—*
Dominguez, Manuel F.; and Ferguson, Joseph E., 4,408,570., Cl. 122-510.000.

Ferrari, Harry. Strung racquet. 4,408,760., Cl. 273-73.00D.

Ferrero, Giovanni, to Ferrero S.p.A. Beverage container pierceable by a drinking straw. 4,408,690., Cl. 206-222.000.

Ferrero S.p.A.: *See—*
Ferrero, Giovanni, 4,408,690., Cl. 206-222.000.

Fetchin, John A., to Maine. Preparation of CoMo and NiMo catalyst using cobalt or nickel complexes that are stable in basic solution. 4,409,131., Cl. 502-263.000.

Feurer, Bernard; and Baronet, Philippe, to Alcon Pharmaceuticals Limited. Treatment process for rendering corneal contact lenses hydrophilic. 4,409,258., Cl. 427-38.000.

Fiber Materials, Inc.: *See—*
McAllister, Lawrence E.; and Dietrich, Herbert, 4,409,361., Cl. 524-876.000.

Fiedler, Otto K.: *See—*
Wangler, Alfred; and Fiedler, Otto K., 4,408,430., Cl. 52-585.000.

Figgie International: *See—*
Bartsch, Walter F., 4,408,687., Cl. 198-491.000.

Fike, Lester L., Jr.: *See—*
Tyree, Charles N.; Fike, Lester L., Jr.; and McIntire, Ronald A., 4,409,443., Cl. 200-83.00N.

Fike Metal Products Corporation: *See—*
Tyree, Charles N.; Fike, Lester L., Jr.; and McIntire, Ronald A., 4,409,443., Cl. 200-83.00N.

Fillmore, William E.; Mumford, George V.; and Smalley, Ned J., to Owens-Illinois, Inc. Multi-part dispensing closure having a frangible connecting web. 4,408,700., Cl. 222-153.000.

Finch, Harry: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,409,213., Cl. 424-244.000.

Finkle, Louis J., to Emhart Industries, Inc. Adjustable electric bell. 4,409,589., Cl. 340-396.000.

Fischbach, Jean-Paul F., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Method and apparatus for measuring emissivity. 4,408,878., Cl. 356-43.000.

Fischell, Norman L. Apparatus and process for nesting drum bodies. 4,408,390., Cl. 29-822.000.

Fischer, Bertram. Apparatus for ascertaining the quantity of ozone in water. 4,409,183., Cl. 422-68.000.
Fischer, Mark L. Bolt anchor assembly. 4,408,940., Cl. 411-258.000.
Fischer & Porter Company: *See—*
Shauger, Herbert A., 4,409,660., Cl. 364-510.000.
Fisher, Alan R.: *See—*
Liang, Po-lung; and Fisher, Alan R., 4,408,501., Cl. 74-688.000.
Fisons Limited: *See—*
Cairns, Hugh; Greenhalgh, Peter M.; and Howlett, Brian, 4,409,237., Cl. 424-283.000.
Fitzgerald, Robert W., Jr.; Hall, Robert L.; and Bickford, Gary P., to Schlumberger Technology Corporation. Fiber optic transducers. 4,408,829., Cl. 350-96.290.
Flaig, Hans, to Gebruder Junghans GmbH. Electronic clock striking mechanism. 4,408,899., Cl. 368-273.000.
Flinn, Ian: *See—*
Milsom, Robert F.; Murray, Robert J.; and Flinn, Ian, 4,409,571., Cl. 333-196.000.
Flocchini, Andrew J. Milking apparatus. 4,408,564., Cl. 119-14.080.
FMC Corporation: *See—*
McTamaney, Louis S.; and Haley, Frank P., 4,408,943., Cl. 414-138.000.
Ragan, Marshall P., 4,408,879., Cl. 356-155.000.
Focht, Louis R., to Ford Motor Company. Piezoelectric apparatus for generating electrically distinguishable bipolar signals. 4,409,548., Cl. 324-168.000.
Fohl, Artur, to Repa Feinstanzwerk GmbH. Belt lock for a safety belt. 4,408,374., Cl. 24-230.00A.
Forbus, Nancy P.; and Kaeding, Warren W., to Mobil Oil Corporation. Organophosphorus-treated zeolite catalysts for para-selective aromatics conversion. 4,409,132., Cl. 502-62.000.
Ford Aerospace & Communications Corporation: *See—*
Park, Pyong K., 4,409,595., Cl. 343-771.000.
Ford Motor Company: *See—*
Focht, Louis R., 4,409,548., Cl. 324-168.000.
Holubka, Joseph W., 4,409,380., Cl. 528-45.000.
Holubka, Joseph W., 4,409,381., Cl. 528-45.000.
Liang, Po-lung; and Fisher, Alan R., 4,408,501., Cl. 74-688.000.
Forker, Richard O. Toy aircraft and method of operation. 4,408,412., Cl. 46-89.000.
Forkner, John H. Egg product and process of manufacture. 4,409,249., Cl. 426-100.000.
Forney, Edgar W., Jr., to AMP Incorporated. Connector for semi-rigid coaxial cable. 4,408,821., Cl. 339-177.00R.
Forsell, Ragnar: *See—*
Andersson, Kjell; and Forsell, Ragnar, 4,408,750., Cl. 266-216.000.
Forster, Karl-Heinz: *See—*
Johne, Hans; Forster, Karl-Heinz; Jentzsch, Arndt; and Muller, Wolfgang, 4,408,528., Cl. 101-364.000.
Forster, Siegfried, to Kernforschungsanlange Julich Gesellschaft mit beschrankter Haftung. Burner for the formation and combustion of an ignitable mixture of a liquid fuel and combustion air. 4,408,984., Cl. 431-354.000.
Forsyth, Robert W. Wheeled vehicle support apparatus. 4,408,646., Cl. 152-179.000.
Forth, Hans-Joachim, to Leybold Heraeus GmbH. Refrigerator cryostat. 4,408,469., Cl. 62-514.00R.
Fortier, Michel, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Laser-guided bomb trainer. 4,408,537., Cl. 102-395.000.
Fortier, Richard C.: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,409,171., Cl. 264-120.000.
Fossel, Eric T.; and Delayre, Jean L., to President and Fellows of Harvard College. NMR Sodium images. 4,409,550., Cl. 324-300.000.
Foster Wheeler Energy Corporation: *See—*
Skinner, Geoffrey F.; and Kowal, Wieslaw M., 4,409,196., Cl. 423-359.000.
Fotland, Richard A., to Dennison Manufacturing Company. Electrostatic imaging device. 4,409,604., Cl. 346-159.000.
Fraiberg, Igor, to Gearhart Industries, Inc. Threaded joint toggle-locked with a helical spring. 4,408,927., Cl. 403-320.000.
Fraize, John E.: *See—*
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., 4,409,171., Cl. 264-120.000.
Framatome: *See—*
Commeau, Alain, 4,409,466., Cl. 219-137.00R.
Franck, Klaus; Sauer, Werner; and Wiesmann, Herbert L., to Wilkhahn, Wilkening & Hahne GmbH & Co. Furniture article with padding attached to a supporting shell. 4,408,797., Cl. 297-218.000.
Frank, Alan M.; and Edwards, William R. Long lifetime, low intensity light source for use in nighttime viewing of equipment maps and other writings. 4,409,643., Cl. 362-157.000.
Frank, Gary L.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.
Frank, Lee F., to Eastman Kodak Company. Method and circuit for controlling an electromagnetic actuator in photographic apparatus. 4,408,857., Cl. 354-234.000.
Franssell, Dean E.: *See—*
Van Hulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,409,250., Cl. 426-242.000.
Fraser, Kenneth D.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.
Frauenglass, Elliott: *See—*
Holmes, Mark; and Frauenglass, Elliott, 4,409,111., Cl. 252-30.000.
Frechette, Thomas E., to Royal Business Machines, Inc. Inked ribbon cartridge ribbon with supply spool drag device. 4,408,913., Cl. 400-208.000.
Freiberg, Ashley H., to Stauffer Chemical Company. Systemic control of insect infestations in animals by use of O,O-dimethyl-2,2,2-trichloro-2-(tetrahydropyranyl-2-oxy)ethylphosphonate. 4,409,211., Cl. 424-203.000.
Frelund, Arthur R., to General Motors Corporation. Fuel injection nozzle with grooved poppet valve. 4,408,722., Cl. 239-453.000.
Frensch, Heinz: *See—*
Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, 4,409,201., Cl. 424-32.000.
Frerichs, Udo: *See—*
Kuhn, Dieter; Rach, Heinz-Dieter; Frerichs, Udo; and Pieper, Henner, 4,408,647., Cl. 152-330.0RF.
Friedrich Schroeder, Firma: *See—*
Motz, Heinz D., 4,408,941., Cl. 411-378.000.
Friedrich, Wolfgang: *See—*
Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, 4,408,809., Cl. 308-187.100.
Friello, Dominick R.: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., 4,409,244., Cl. 426-5.000.
Friemert, Horst, to Siemens Aktiengesellschaft. System for arranging ferromagnetic coil springs and feeding same to a work station. 4,408,624., Cl. 134-133.000.
Frimet, Stanley H.; and Meeks, Leighton A., to Honeywell, Inc. Tape transport speed control using a playback data derived clock signal. 4,409,628., Cl. 360-73.000.
Froix, Michael F.; and Kusumgar, Rajal M., to Celanese Corporation. Thermoplastic blend of oxymethylene copolymers exhibiting improved impact resistance. 4,409,370., Cl. 525-414.000.
Fromion, Andre: *See—*
Deprez, Michel; Fromion, Andre; Hardouin, Claude; and Vilas Boas, Jean C., 4,408,835., Cl. 350-117.000.
Frommann, Klaus, to Mannesmann Aktiengesellschaft. Method and apparatus for the one-sided coating of continuous metal strip. 4,409,265., Cl. 427-271.000.
Fromont, Jacques; and Plancon, Marcel, to Jeumont-Schneider Corporation. Procedure and device for rolling metals without stress. 4,408,470., Cl. 72-8.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Pyrrolo[3,4-D][2]Benzazepines. 4,409,390., Cl. 548-561.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Yabuhara, Hideo; and Kudo, Ichiro, 4,408,584., Cl. 123-440.000.
Fuji Photo Film Co., Ltd.: *See—*
Hoshi, Yoshiyuki; and Hayashi, Takayuki, 4,409,156., Cl. 264-4.330.
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,409,324., Cl. 430-546.000.
Kitamoto, Tatsuji; and Akashi, Goro, 4,409,281., Cl. 428-212.000.
Mizuno, Chiaki; Tamai, Yasuo; and Kasuga, Akira, 4,409,299., Cl. 428-694.000.
Ogawa, Hiroshi; Kasuga, Akira; Tamai, Yasuo; and Yamada, Yasuyuki, 4,409,291., Cl. 428-425.900.
Ooishi, Kengo; and Suzuki, Osamu, 4,408,733., Cl. 242-199.000.
Watanabe, Shojiro, 4,408,781., Cl. 282-27.500.
Yagihara, Morio; Hirano, Tsumoru; Mihayashi, Keiji; and Ozawa, Takashi, 4,409,320., Cl. 430-381.000.
Fuji Xerox Co., Ltd.: *See—*
Ogasawara, Satoru, 4,409,625., Cl. 358-288.000.
Oka, Kozo, 4,409,309., Cl. 430-65.000.
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, to Toa Nenryo Kogyo Kabushiki Kaisha. Nonwoven fabrics. 4,409,282., Cl. 428-219.000.
Fujii, Yozo; and Shiozawa, Takao, to Konishiroku Photo Industry Co., Ltd. Optical scanning unit driving device for electrophotographic reproducing apparatus. 4,408,867., Cl. 355-8.000.
Fujimastu, Wataru: *See—*
Onodera, Kaoru; Iijima, Toshifumi; and Fujimastu, Wataru, 4,409,321., Cl. 430-383.000.
Fujimoto, Noboru: *See—*
Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, 4,409,506., Cl. 310-166.000.
Fujimoto, Tsuneo: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, 4,409,197., Cl. 423-415.00P.
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, to Chugai Seiyaku Kabushiki Kaisha. Pyrazoloindazole derivatives and bronchodilating composition. 4,409,234., Cl. 424-273.00N.
Fujisawa Pharmaceutical, Co., Ltd.: *See—*
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,214., Cl. 424-246.000.

Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,215., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,409,217., Cl. 424-246.000.
Fujitsu Limited: *See—*
Baba, Fumio, 4,409,496., Cl. 307-296.00R.
Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, 4,409,495., Cl. 307-290.000.
Fukuda, Takeshi, 4,409,609., Cl. 357-55.000.
Kiriseko, Tadashi, 4,408,387., Cl. 29-576.00E.
Kurafuji, Setsuo; and Tanimoto, Kazuo, 4,409,679., Cl. 365-227.000.
Kurihara, Hiroshi, 4,409,562., Cl. 331-1.00A.
Majima, Teiji, 4,408,875., Cl. 355-53.000.
Takahashi, Yukio, 4,409,674., Cl. 365-190.000.
Takemae, Yoshihiro, 4,409,672., Cl. 365-149.000.
Takemae, Yoshihiro; and Nakano, Masao, 4,409,677., Cl. 365-206.000.
Takemae, Yoshihiro; and Baba, Fumio, 4,409,678., Cl. 365-206.000.
Fujiwara, Junji: *See—*
Takano, Ikuo; Umino, Hiroshi; and Fujiwara, Junji, 4,409,449., Cl. 200-153.0SC.
Fujiwara, Katsuji, to TLV Co., Ltd. Valve seat assembly for a steam trap. 4,408,626., Cl. 137-185.000.
Fujiwara, Kazuaki; and Konishi, Akio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Fire retardant acrylic fibers containing organo-tin-sulfur compound having high degree of glossiness. 4,409,350., Cl. 524-180.000.
Fukahori, Hidehiko; Iwashita, Tomonori; and Nakamura, Katsunori, to Canon Kabushiki Kaisha. Speed governor for camera. 4,408,859., Cl. 354-274.000.
Fukuda, Takeshi, to Fujitsu Limited. Semiconductor device and method of manufacturing the same. 4,409,609., Cl. 357-55.000.
Fukui, Koichiro: *See—*
Hashimoto, Michitaka; and Fukui, Koichiro, 4,408,655., Cl. 165-104.270.
Fukunaga, Osamu: *See—*
Sato, Tadao; Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,409,193., Cl. 423-290.000.
Fukunaga, Yukio: *See—*
Arima, Sumitsugu; Tsujimura, Harutoshi; and Fukunaga, Yukio, 4,409,584., Cl. 340-22.000.
Fukutomi, Hiroshi: *See—*
Tabayashi, Isao; Somā, Hiromi; and Fukutomi, Hiroshi, 4,409,040., Cl. 106-20.000.
Fulton, William: *See—*
Gurbst, Herbert S.; and Fulton, William, 4,408,758., Cl. 272-85.000.
Funada, Fumiaki: *See—*
Kozaki, Syuichi; Funada, Fumiaki; and Minezaki, Shigehiro, 4,408,837., Cl. 350-336.000.
Furumoto, Michitake; and Harada, Shinichi, to Nippon Carbureter Co., Ltd. Liquid fuel combustion apparatus. 4,408,593., Cl. 126-85.00R.
Furuta, Naofumi; and Ohi, Kunio, to Sunx Limited. Apparatus for detecting an object. 4,409,473., Cl. 250-206.000.
Furuta, Tadaaki; and Tabata, Shunsaku, to Asahi Kasei Kogyo Kabushiki Kaisha. Apparatus and method for separating blood components. 4,409,106., Cl. 210-732.000.
Futamura, Shoji: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,409,457., Cl. 219-69.00M.
G. Siempelkamp GmbH & Co.: *See—*
Wons, Hubert; and Sitzler, Hans-Dietrich, 4,408,520., Cl. 100-93.00P.
Gabbrielli Impianti di Gabbrielli Franco & C.s.a.s.: *See—*
Taverna, Andrea, 4,408,686., Cl. 198-433.000.
Gaetani, Quintino; Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. Copolymerization process initiated with bis (4-tert. butyl cyclohexyl) peroxydicarbonate and aerosol hair lacquer containing the copolymer so produced. 4,409,379., Cl. 526-230.500.
Gagnebin, Gaston, to Societe Suisse pour l'Industrie Horlogere Management Services, S.A. Miniature pushbutton. 4,408,901., Cl. 368-321.000.
Galliani, Giulio: *See—*
Omodei-Sale', Amedeo; Consonni, Pietro; and Galliani, Giulio, 4,409,388., Cl. 548-262.000.
Gallizia, Achille, to Industrie Pirelli S.p.A. Device for manufacturing closed hollow bodies in elastomeric material. 4,408,980., Cl. 425-501.000.
Gamble, Barry I. Controllable telephone call annunciator. 4,409,439., Cl. 179-84.00C.
Gamet, Lucien: *See—*
Willem, Michel; and Gamet, Lucien, 4,409,432., Cl. 174-172.000.
Gansert, Willi: *See—*
Jakob, Gert; Gansert, Willi; Goetzke, Siegfried; and Ruttkowski, Lothar, 4,409,641., Cl. 361-386.000.
Gardner, Harlis. Framed wood block facing. 4,409,269., Cl. 428-50.000.
Garin, Torunn A.; and Vogel, Gerald J., to General Foods Corporation. Process for concentrating and isolating a beet colorant. 4,409,254., Cl. 426-540.000.
Garner, Henry C.; Broadbent, Jack; Savidge, David H.; and Wadsworth, Eric, to British Steel Corporation. Carriage mounted apparatus for detecting surface defects in flat surfaced metallic objects. 4,409,549., Cl. 324-262.000.
Gas Service Energy Corporation: *See—*
Erickson, Roman R., 4,408,484., Cl. 73-149.000.
Gasson, Brian C., to Beecham Group Limited. Derivatives of clavulanic acid, a process for their preparation and their use. 4,409,207., Cl. 424-114.000.
Gast, Fred C. Apparatus for indicating a line and for producing and visually displaying an image of a line indicator. 4,408,848., Cl. 353-11.000.
Gaster, Ivan: *See—*
Bryan, James S.; Gaster, Ivan; Tell, Mayo B.; and Dunn, Claude, 4,408,395., Cl. 30-179.000.
Gatayama, Tetsuya: *See—*
Kanno, Ken-ichi; Gatayama, Tetsuya; and Koyama, Masao, 4,409,088., Cl. 204-402.000.
Gates Rubber Company, The: *See—*
Stuemky, Robert E., 4,408,786., Cl. 285-256.000.
Gateway Industries, Inc.: *See—*
Miskowicz, John S., 4,408,373., Cl. 24-230.00A.
Gaylard, Bernard. Overhead electric transmission or distribution system. 4,409,429., Cl. 174-43.000.
Gearhart Industries, Inc.: *See—*
Fraiberg, Igor, 4,408,927., Cl. 403-320.000.
Gebruder Junghans GmbH: *See—*
Flaig, Hans, 4,408,899., Cl. 368-273.000.
Gebruder Linck Maschinenfabrik und Eisengiesserei "Gatterlinck": *See—*
Reuter, Alfred, 4,408,510., Cl. 83-869.000.
Geesen, Michel, to Electronique Marcel Dassault. Apparatus for accurately timing an event relative to clock signals. 4,408,895., Cl. 368-118.000.
Geigle, Brigitte, legal representative: *See—*
Krause, Helmfried; Wobbermin, Hubertus; and Geigle, Edgar, deceased, 4,409,185., Cl. 422-113.000.
Geigle, Edgar, deceased: *See—*
Krause, Helmfried; Wobbermin, Hubertus; and Geigle, Edgar, deceased, 4,409,185., Cl. 422-113.000.
Gen Engineering Co., Ltd.: *See—*
Ono, Hiroshi, 4,409,435., Cl. 381-71.000.
General Dynamics Corporation: *See—*
Merrick, James W., 4,408,582., Cl. 123-415.000.
General Electric Company: *See—*
Baker, Lewin T., 4,409,590., Cl. 340-533.000.
Berti, John C.; and Williams, James W., 4,409,687., Cl. 455-7.000.
Bose, Bimal K., 4,409,534., Cl. 318-811.000.
Bose, Sanjay K., 4,409,593., Cl. 340-825.500.
Brown, Thomas W., 4,408,466., Cl. 62-208.000.
Carter, Gordon V.; and Tromble, Ralph D., 4,408,432., Cl. 52-718.000.
Devine, Thomas M., Jr., 4,408,709., Cl. 228-183.000.
Evjen, John M., 4,409,536., Cl. 320-2.000.
Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,409,532., Cl. 318-749.000.
Jochym, Eric P., 4,409,278., Cl. 428-163.000.
Lee, Garland G., 4,409,351., Cl. 524-322.000.
Noeske, Heinz O., 4,409,447., Cl. 200-148.00A.
Roberts, Victor D., 4,409,521., Cl. 315-57.000.
Thomas, George L.; and Graff, William A., 4,409,516., Cl. 313-579.000.
Vandegraaf, Johannes J., 4,409,563., Cl. 331-11.000.
General Foods Corporation: *See—*
Garin, Torunn A.; and Vogel, Gerald J., 4,409,254., Cl. 426-540.000.
General Mills, Inc.: *See—*
Van Hulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,409,250., Cl. 426-242.000.
General Motors Corporation: *See—*
Frelund, Arthur R., 4,408,722., Cl. 239-453.000.
Keller, Robert C., 4,408,675., Cl. 180-296.000.
Kurzrock, John W.; and Tramm, Peter C., 4,408,957., Cl. 416-237.000.
Poe, David T., 4,409,302., Cl. 429-88.000.
Wich, Thomas J., 4,408,718., Cl. 239-88.000.
General Signal Corporation: *See—*
Westveer, Robert C., 4,408,453., Cl. 60-445.000.
General Tire & Rubber Company, The: *See—*
Elmer, Otto C., 4,409,055., Cl. 156-307.500.
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,408,558., Cl. 118-59.000.
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,409,270., Cl. 428-63.000.
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,409,368., Cl. 525-314.000.
Wise, Richard M., 4,409,290., Cl. 428-378.000.
Wise, Richard M., 4,409,343., Cl. 523-206.000.
Georgetown University: *See—*
Ledley, Robert S., 4,409,616., Cl. 358-111.000.
Gerard, Francois; and Machat, Jean-Yves, to Compagnie Generale des Etablissements Michelin. Electrochemical device comprising at least two cells connected in electrical series. 4,409,304., Cl. 429-158.000.
Germanas, Dalia: *See—*
Qualeatti, Gail M.; and Germanas, Dalia, 4,409,148., Cl. 260-409.000.
Gerstle, Volker; Mauz, Gerhard; and Zondler, Rolf, to International Standard Electric Corporation. Method of preparing a phosphor suspension. 4,409,306., Cl. 430-28.000.
Geyer, Robert P., to Standard Car Truck Company. Resilient side bearing. 4,408,810., Cl. 308-226.000.

Gibson, Dale E., to Leupold & Stevens, Inc. Telescopic sight having lens holder tube with half socket pivot mount. 4,408,842., Cl. 350-560.000.

Gibson, Walter G.: *See—*
Ferguson, James M.; Chen, Thomas Y.; and Gibson, Walter G., 4,409,626., Cl. 358-338.000.

Gibson, William A.; and Ho, Ting C., to Gulf Oil Corporation. Catalyst particle sizing apparatus. 4,409,186., Cl. 422-131.000.

Gilleo, Kenneth B.; and Kreibich, Willard H., to Northern Engraving Corporation. Boss formation using low surface energy dams. 4,409,264., Cl. 427-265.000.

Giroir, William. Paraffin wrinkle and bubble remover apparatus. 4,409,184., Cl. 422-99.000.

Giulekas, Gus: *See—*
Zapisek, John M.; and Giulekas, Gus, 4,409,499., Cl. 307-468.000.

Givens, Wyatt W., to Mobil Oil Corporation. Method and system for the testing and calibration of radioactive well logging tools. 4,409,480., Cl. 250-252.100.

Gladich, Radisko S., to International Harvester Co. Sequence shifting coupling. 4,408,684., Cl. 192-53.00G.

Glaenzer Spicer: *See—*
Orain, Meidul, 4,408,806., Cl. 308-6.00R.

Glaxo Group Limited: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,409,213., Cl. 424-244.000.

Glaze, John R. Gage for laying blocks. 4,408,398., Cl. 33-180.00R.

Glazunov, Sergei G.: *See—*
Karinsky, Viktor N.; Musienko, Viktor T.; and Glazunov, Sergei G., 4,408,971., Cl. 425-8.000.

Gleize, Jacques; and Roy, Jean-Joseph, to Compagnie Generale de Geophysique. Method and apparatus for the production of seismic shocks. 4,408,677., Cl. 181-121.000.

Glover, Charles G., to Lodge & Shipley Company, The. Case packer for inverting bottles and depositing them in a case. 4,408,436., Cl. 53-247.000.

Godwin, Gurney L., to Westinghouse Electric Corp. Dynamoelectric machines for multiples of three phases with unbalanced fractional-slot windings. 4,409,507., Cl. 310-205.000.

Goetschi, Fred A. Method for producing characters and other representations, in particular title set, on a photo material. 4,409,305., Cl. 430-22.000.

Goetzke, Siegfried: *See—*
Jakob, Gert; Gansert, Willi; Goetzke, Siegfried; and Ruttkowski, Lothar, 4,409,641., Cl. 361-386.000.

Goffe, Wiliam L., to Xerox Corporation. Electrographic method and apparatus. 4,409,603., Cl. 346-155.000.

Goldberger, William M., to Superior Graphite Co. Process for the electrolytic reduction of metals and an improved particulate carbon electrode for the same. 4,409,073., Cl. 204-67.000.

Goldmann, Helmut, to Schering AG. Method and apparatus for the galvanic deposition of metal onto objects, cleaning off and recovery of adherent surface treatment agents. 4,409,082., Cl. 204-213.000.

Goldsmith, Aaron. Cleaning system having improved agitation. 4,408,366., Cl. 15-321.000.

Gomore, Stephen C.: *See—*
Murnane, Raymond J.; Gomore, Stephen C.; and Mathewson, Myron, 4,408,467., Cl. 62-296.000.

Gorbulev, Efim S.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Gordon, Carroll K.: *See—*
Hagen, Glenn E.; and Gordon, Carroll K., 4,408,454., Cl. 60-500.000.

Gordon, Harry W.; and Avila, Nanette R., to Del Laboratories, Inc. Non-nitrocellulose non-formaldehyde or formaldehyde resin nail polish employing an acrylate resin as the film former. 4,409,203., Cl. 424-61.000.

Gordon, James E.: *See—*
Chaplin, Christopher R.; Gordon, James E.; and Jeronimidis, Giorgio, 4,409,274., Cl. 428-112.000.

Gordon, Robert L.: *See—*
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,409,053., Cl. 156-287.000.

Goring, Thomas E.: *See—*
Stewart, Graham G.; Goring, Thomas E.; and Russell, Ingeborg, 4,409,246., Cl. 426-16.000.

Gorre, Luisa E.: *See—*
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,409,260., Cl. 427-82.000.

Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, to Massachusetts Institute of Technology. Press brake having spring-back compensating adaptive control. 4,408,471., Cl. 72-21.000.

Gotoh, Hiroshi: *See—*
Takahashi, Fumitaka; and Gotoh, Hiroshi, 4,408,490., Cl. 73-497.000.

Gotoh, Masao: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.

Gowan, John G., to United States of America, Air Force. Hot pressed and diffusion bonded laser mirror heat exchanger. 4,408,833., Cl. 350-310.000.

Grabbe, Dimitry G.: *See—*
Apicelli, Samuel W.; and Grabbe, Dimitry G., 4,408,815., Cl. 339-95.00R.

Grace, Thomas T., Jr., to Borden, Inc. Flowable liquid fertilizer containing suspended water insoluble nitrogen. 4,409,015., Cl. 71-28.000.

Graf, Harlan G.: *See—*
Davis, Richard L.; Graf, Harlan G.; and Edwards, Don L., 4,409,068., Cl. 202-85.000.

Grafe, Alfred: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,409,236., Cl. 424-275.000.

Graff, Henry W.; and Erickson, Lloyd A., to Pathfinder Auto Lamp Company; and Illinois Tool Works Inc. Composite fastener for attaching splash guard. 4,408,939., Cl. 411-112.000.

Graff, William A.: *See—*
Thomas, George L.; and Graff, William A., 4,409,516., Cl. 313-579.000.

Graphoidal Developments Limited: *See—*
Brown, Roy, 4,409,010., Cl. 65-26.000.

Graze, Russell R., Jr.: *See—*
Clairmont, Floyd H., Jr.; and Graze, Russell R., Jr., 4,408,575., Cl. 123-41.350.

Graziani, Danio, to International Standard Electric Corporation. Apparatus for performing radio frequency pulse modulation with automatic modulation control. 4,409,594., Cl. 343-399.000.

Green, James P.; and Cobaris, Paul L. Hub assembly for roller skates. 4,408,803., Cl. 301-5.700.

Greenhalgh, Peter M.: *See—*
Cairns, Hugh; Greenhalgh, Peter M.; and Howlett, Brian, 4,409,237., Cl. 424-283.000.

Greenzweig, John E.: *See—*
Moulson, Thomas J.; and Greenzweig, John E., 4,409,344., Cl. 523-512.000.

Grell, Wolfgang: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.

Grenat, Bernard, to Societe Anonyme dite Compagnie Lyonnaise de Transmissions Optiques. Method and apparatus for manufacturing a watertight optical fiber cable. 4,409,154., Cl. 264-1.500.

Greulich, H. S.: *See—*
Schmalfeld, Jorg; Bruckner, Werner; Jacobs, Jorn; Greulich, H. S.; and Schlutter, A., 4,408,548., Cl. 110-347.000.

Griffin, Brian C., to Brian Griffin Pty. Limited. Laboratory supply arrangement. 4,408,543., Cl. 108-24.000.

Griffin, James E.; and Griffin, Lamar H. Gas pump lever hook member. 4,408,791., Cl. 294-1.00R.

Griffin, Lamar H.: *See—*
Griffin, James E.; and Griffin, Lamar H., 4,408,791., Cl. 294-1.00R.

Grill, Benjamin: *See—*
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn, 4,409,638., Cl. 361-152.000.

Grinnell Fire Protection Systems Company, Inc.: *See—*
Beukema, John A., 4,408,788., Cl. 285-419.000.

Griss, Gerhart: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.

Grossman, David: *See—*
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., 4,408,414., Cl. 47-1.00R.

Grossman, Hyman, to Cambridge Instruments, Inc. Interference filter. 4,408,615., Cl. 128-696.000.

Grozdev, Sergei S.: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.

Gruller, David L., to Smith International Inc. Holddown apparatus. 4,408,783., Cl. 285-3.000.

Grumman Aerospace Corporation: *See—*
Kirschbaum, Nathan; and Sclafani, Augustus, 4,408,736., Cl. 244-100.00R.

Gruppo Lepetit S.p.A.: *See—*
Omodei-Sale', Amedeo; Consonni, Pietro; and Galliani, Giulio, 4,409,388., Cl. 548-262.000.

Gruzewski, Ronald L.: *See—*
DeCamp, James E.; Arndt, Raymond J.; and Gruzewski, Ronald L., 4,408,562., Cl. 118-669.000.

GTE Laboratories Incorporated: *See—*
Sarin, Vinod K.; and Buljan, Sergej-Tomislav, 4,409,003., Cl. 51-295.000.
Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, 4,409,004., Cl. 51-295.000.

GTE Products Corporation: *See—*
Coad, Brian C., 4,409,181., Cl. 420-502.000.
Louie, Edmund A., 4,408,925., Cl. 403-27.000.
Vanderpool, Clarence D.; and MacInnis, Martin B., 4,409,019., Cl. 75-0.5AA.

Guderley, Werner: *See—*
Wenzel, Jurgen-Michael; Guderley, Werner; and Hamel, Ernst, 4,408,945., Cl. 414-325.000.

Gueguen, Claude: *See—*
Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel, 4,409,130., Cl. 502-211.000.

Guelden, Ronald H., to Western Electric Company, Incorporated. Electrical adapter with snap-fitted jack and hood. 4,408,819., Cl. 339-154.00A.

Gueneau, Michel, to Societe Nationale Elf Aquitaine Tour Aquitane. Heating installation for premises for dwelling or industrial use. 4,408,715., Cl. 237-2.00B.

Guillemin, Roger C. L.: *See—*
Ling, Nicholas C.; Guillemin, Roger C. L.; Ying, Shao-Yao; and Esch, Frederick S., 4,409,139., Cl. 260-112.00R.

Gulf Oil Corporation: *See—*
Gibson, William A.; and Ho, Ting C., 4,409,186., Cl. 422-131.000.

Gulf Research & Development Company: *See—*
Morganson, Neal E.; and Vayda, Adam V., 4,409,415., Cl. 585-525.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,409,404., Cl. 568-902.000.
Silver, Richard S., 4,409,329., Cl. 435-105.000.

Gundel, Jamos: *See—*
Benko, Pal; Bozsing, Daniel; Gundel, Jamos; and Magyar, Karoly, 4,409,219., Cl. 424-250.000.

Gurbst, Herbert S.; and Fulton, William, to Roth American, Inc. Foot support for lawn chair swing. 4,408,758., Cl. 272-85.000.

Gurney, Gerald W.: *See—*
Redmann, Jerry L., Jr.; and Gurney, Gerald W., 4,408,808., Cl. 308-187.000.

Gustafson, Gary B., to Eastman Kodak Company. Receiver sheet transport with alignment means. 4,408,866., Cl. 355-3.0TR.

Gusums Bruk AB: *See—*
Strom, Jan T., 4,408,638., Cl. 139-425.00A.

Gusyatsky, Iosif A.: *See—*
Azarevich, Gennady M.; Maximov, Jury V.; Akimov, Boris I.; and Gusyatsky, Iosif A., 4,408,472., Cl. 72-71.000.

Guth, Christian; and Binz, Jorg, to Ciba-Geigy Corporation. Process for dyeing or finishing textile fibre materials with foamed aqueous liquor containing ethylene oxide-propylene oxide block co-polymer. 4,408,995., Cl. 8-477.000.

Guthrie, Richard W.; and Byrne, Dale M., to United Technologies Corporation. Imaging system for hostile environment optical probe. 4,408,827., Cl. 350-96.100.

Gutierrez, Antonio: *See—*
Brois, Stanley J.; Gutierrez, Antonio; and Ryer, Jack, 4,409,114., Cl. 252-75.000.

Gutmann, James L.: *See—*
Jefferies, Steven R.; Gutmann, James L.; and Heatfield, Barry M., 4,409,332., Cl. 435-188.000.

GX-Holding AG: *See—*
Jaeger, Walter, 4,409,610., Cl. 358-12.000.

Gyurina, F. Dennis: *See—*
Smith, Edward F., III; and Gyurina, F. Dennis, 4,409,295., Cl. 428-591.000.

H & H Industries, Inc.: *See—*
Coy, Donald L.; and McEvers, Dale L., 4,408,506., Cl. 82-20.000.

Haaf, Franz: *See—*
Brandstetter, Franz; and Haaf, Franz, 4,409,363., Cl. 525-67.000.

Haag, Werner O.; and Huang, Tracy J., to Mobil Oil Corporation. Process for producing alkyl aromatic compounds. 4,409,412., Cl. 585-454.000.

Haas, Gunther; Plass, Ludolf; and Lohrberg, Karl, to Metallgesellschaft Aktiengesellschaft. Electrolytic cell. 4,409,086., Cl. 204-269.000.

Haas, Paul A.; and Stines, William B. Method for improved decomposition of metal nitrate solutions. 4,409,157., Cl. 264-0.500.

Haase, Harry. Double walled underground storage containers for fluids such as heating oil which endanger the ground water and a method for their manufacture. 4,408,420., Cl. 52-1.000.

Haataja, Bruce A., to Michigan Technological University, Board of Control of. Molded wood particle pallet having increased bending strength. 4,408,544., Cl. 108-53.300.

Hachisuka, Yoshiaki: *See—*
Kobari, Katsuo; and Hachisuka, Yoshiaki, 4,409,648., Cl. 363-54.000.

Hack, Adolf, to Emdener Strasse. Tablet press. 4,408,975., Cl. 425-231.000.

Hadley, Michael S., to Beecham Group Limited. Substituted benzamides. 4,409,225., Cl. 424-256.000.

Haeder, Wolfgang: *See—*
Boscher, Georg; and Haeder, Wolfgang, 4,409,430., Cl. 174-92.000.

Hafele KG: *See—*
Kubler, Eberhard, 4,408,923., Cl. 403-20.000.

Hagen, Glenn E.; and Gordon, Carroll K., to Sea Energy Corporation. Fluid coupled wave generator array with subsea structure. 4,408,454., Cl. 60-500.000.

Hagino, Michiyoshi: *See—*
Shimoda, Nobuyoshi; and Hagino, Michiyoshi, 4,408,790., Cl. 293-122.000.

Hainke, Hans U.: *See—*
Hainke, Volker; and Hainke, Hans U., 4,408,937., Cl. 411-42.000.

Hainke, Volker; and Hainke, Hans U., to Volker, Hainke. Anchor bolt. 4,408,937., Cl. 411-42.000.

Hale, John R., to RCA Corporation. Glass support rod for use in electron-gun mount assemblies. 4,409,279., Cl. 428-192.000.

Haley, Frank P.: *See—*
McTamaney, Louis S.; and Haley, Frank P., 4,408,943., Cl. 414-138.000.

Hall, Robert L.: *See—*
Fitzgerald, Robert W., Jr.; Hall, Robert L.; and Bickford, Gary P., 4,408,829., Cl. 350-96.290.

Halliburton Company: *See—*
Borchardt, John K.; and Brown, David L., 4,409,110., Cl. 252-8.55D.
Carney, Leroy L.; Loftin, Royal E.; Anderson, Thomas E.; and Vasquez, Guillermo, 4,409,108., Cl. 252-8.50C.
Rao, Prabhakar P., 4,409,662., Cl. 364-557.000.
Smith, Harry D., Jr.; Schultz, Ward E.; and Verbout, Jerry L., 4,409,481., Cl. 250-270.000.

Ham, George E., to Dow Chemical Company, The. Stabilized polycarbonate compositions. 4,409,349., Cl. 524-108.000.

Ham, William E.: *See—*
Kleinknecht, Hans P.; Ham, William E.; and Meier, Heinrich, 4,408,884., Cl. 356-355.000.

Hamel, Ernst: *See—*
Wenzel, Jurgen-Michael; Guderley, Werner; and Hamel, Ernst, 4,408,945., Cl. 414-325.000.

Hammerschmidt, Winrich B.: *See—*
Seidel, Hartmut; and Hammerschmidt, Winrich B., 4,408,401., Cl. 36-3.00B.

Hamon-Sobelco, S.A.: *See—*
Paquet, Andre J., 4,408,460., Cl. 60-678.000.

Hanamoto, Mark S.; and Tanaka, Steve K., to Bio-Rad Laboratories, Inc. Method for eliminating glucose dependent Schiff base effect from hemoglobin A_1 assay. 4,409,335., Cl. 436-67.000.

Haneishi, Yasuyuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Click stop device. 4,408,499., Cl. 74-527.000.

Hansen, Erling: *See—*
Berth, Jorgen; Hansen, Erling; Heaven, Malcolm D.; and Petersen, Tommy, 4,409,177., Cl. 264-531.000.

Hanslik, Wilhelm, to American Maplan Corporation. Double-worm extrusion press. 4,408,888., Cl. 366-83.000.

Hanson, Francis V.; Miller, Jan D.; and Oblad, Alex G., to University of Utah. Process for recovering products from tar sand. 4,409,090., Cl. 208-11.0LE.

Hara, Toshizo: *See—*
Sutoh, Shinji; Hara, Toshizo; Harada, Takeshi; and Eda, Masahiro, 4,408,660., Cl. 165-21.000.

Harada, Hiroshi: *See—*
Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, 4,409,030., Cl. 106-97.000.

Harada, Shigeo: *See—*
Tosima, Soitiro; and Harada, Shigeo, 4,409,333., Cl. 436-2.000.

Harada, Shinichi: *See—*
Furumoto, Michitake; and Harada, Shinichi, 4,408,593., Cl. 126-85.00R.

Harada, Takeshi: *See—*
Sutoh, Shinji; Hara, Toshizo; Harada, Takeshi; and Eda, Masahiro, 4,408,660., Cl. 165-21.000.

Harasaki, Hayathugu, to Toyo Kogyo Co., Ltd. Support column for automobile wheel suspension assembly. 4,408,794., Cl. 296-198.000.

Hardenbrook, James M., to Xerox Corporation. Apparatus for inducing an electrostatic image in a conductive member. 4,408,864., Cl. 355-3.0TE.

Hardouin, Claude: *See—*
Deprez, Michel; Fromion, Andre; Hardouin, Claude; and Vilas Boas, Jean C., 4,408,835., Cl. 350-117.000.

Hardt, David: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.

Hargis, Ivan G.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., 4,409,368., Cl. 525-314.000.

Harley-Davidson Motor Co., Inc.: *See—*
Huebner, Richard, 4,408,924., Cl. 403-23.000.

Harlow, Justin E.: *See—*
Ports, Kenneth A.; and Harlow, Justin E., 4,409,686., Cl. 382-8.000.

Harnischfeger Corporation: *See—*
Marsch, James E.; and Eckert, Herbert L., 4,408,746., Cl. 254-344.000.

Harreld, Donald R.: *See—*
Laske, Louis L.; and Harreld, Donald R., 4,408,643., Cl. 383-70.000.

Harris Corporation: *See—*
Bollinger, John G.; Nichols, Richard E.; and Delaruelle, Dale H., 4,408,483., Cl. 73-115.000.
Ports, Kenneth A.; and Harlow, Justin E., 4,409,686., Cl. 382-8.000.

Harris, Elbert E.: *See—*
Thorsett, Eugene D.; and Harris, Elbert E., 4,409,146., Cl. 260-239.30R.

Harris, Victor A. Exhaust brake valve unit. 4,408,627., Cl. 137-242.000.

Harris, William A., to Honeywell Inc. Interconnection of primary cells. 4,409,537., Cl. 320-7.000.

Harrison, Lynn: *See—*
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn, 4,409,638., Cl. 361-152.000.

Harrison, Thomas B. Ski protective device. 4,409,287., Cl. 428-343.000.

Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., to Continental Group, Inc., The. Blow molding method. 4,409,161., Cl. 264-40.100.

Harsco Corporation: *See—*
D'Alessio, Michael S.; and Sandler, Stanley A., 4,408,431., Cl. 52-690.000.
D'Alessio, Michael S., 4,408,922., Cl. 403-12.000.

Hart, David: *See—*
Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, 4,409,529., Cl. 318-653.000.

Harting, Stanley C.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Hartless, Ray L.: *See—*
Chandross, Edwin A.; and Hartless, Ray L., 4,409,318., Cl. 430-271.000.

Hartman, Marvis E.: *See—*
Dowbenko, Rostyslaw; Hartman, Marvis E.; and Hockswender, Thomas R., 4,409,376., Cl. 525-509.000.

Hartman, Paul R.; and Milam, Thomas B., to United Technologies Corporation. Mirror adjusting fixture. 4,408,832., Cl. 350-310.000.

Hartman, Seymour; and Brown, Timothy M., to Champion International Corporation. Method for scavenging aldehydes. 4,409,375., Cl. 525-505.000.

Hartmann, Albert: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,409,209., Cl. 424-177.000.

Hartwig, Carl S. M., to Atlas Copco Aktiebolag. Vehicle. 4,409,525., Cl. 318-139.000.

Haruhiko, Masuda: *See—*
Takashi, Nogami; and Haruhiko, Masuda, 4,408,814., Cl. 339-59.00M.

Harvey Hubbell Incorporated: *See—*
Neuroth, David H., 4,409,431., Cl. 174-103.000.

Hashimoto, Michitaka; and Fukui, Koichiro, to Showa Aluminum Corporation. Heat pipe. 4,408,655., Cl. 165-104.270.

Hassall, Cedric H.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,409,391., Cl. 549-39.000.

Hata, Shun-ichi: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Hatch, Donald M.; and Larsen, Richard J., to Hitco. High temperature consolidation process. 4,409,048., Cl. 156-155.000.

Hatcher, Charles S.; and Smith, Kenneth E., to Phillips Petroleum Company. Apparatus for drawing yarn. 4,408,376., Cl. 28-245.000.

Hatsuoka, Nobuyasu: *See—*
Yamada, Yoshiro; Hatsuoka, Nobuyasu; and Ashida, Shinzo, 4,409,026., Cl. 75-124.000.

Hatta, Yoshio: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kano, Toshiji; and Hatta, Yoshio, 4,409,074., Cl. 204-98.000.

Hattori, Mitsuhiro: *See—*
Nakayama, Shozo; Suzuki, Shigeru; and Hattori, Mitsuhiro, 4,408,962., Cl. 417-269.000.

Hattori, Nobuoto: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

Hauck, Bobbie W.: *See—*
Wenger, Lavon G.; and Hauck, Bobbie W., 4,408,725., Cl. 241-260.100.

Hauk, Rolf: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nag', Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-38.000.

Hauler, Peter; Heintz, Frieder; and Zabler, Erich, to Robert Bosch GmbH. Process and apparatus for operating an internal combustion engine. 4,408,589., Cl. 123-494.000.

Hauni-Werke Korber & Co. KG.: *See—*
Schumacher, Peter, 4,408,621., Cl. 131-282.000.

Haven, James T.; and Haven, Warren G. Dumping hopper. 4,408,946., Cl. 414-424.000.

Haven, Warren G.: *See—*
Haven, James T.; and Haven, Warren G., 4,408,946., Cl. 414-424.000.

Hawkins, David: *See—*
Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, 4,409,529., Cl. 318-653.000.

Hay, Robert R.: *See—*
Camis, Thomas; Spencer, Paul R.; Schwiebert, Erwin H.; and Hay, Robert R., 4,408,865., Cl. 355-3.0CH.

Hayama, Yoshihiro; and Hosokawa, Yuukou, to Tokyo Shibaura Denki Kabushiki Kaisha. Coil Manufacturing apparatus. 4,408,639., Cl. 140-71.500.

Hayashi, Hiroshi; Kiyota, Takao; and Shibukawa, Mitsuru, to Asahi Kasei Kogyo Kabushiki Kaisha. Dried, sterilized, gamma-globulin-fixed column and a process for preparing the same. 4,409,105., Cl. 210-679.000.

Hayashi, Nobuaki: *See—*
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.

Hayashi, Takayuki: *See—*
Hoshi, Yoshiyuki; and Hayashi, Takayuki, 4,409,156., Cl. 264-4.330.

Hayes, Thomas J. Road traffic actuated generator. 4,409,489., Cl. 290-1.00R.

Heap, James C., to Thrall Car Manufacturing Company. Center sill gondola car. 4,408,542., Cl. 105-406.00R.

Heatfield, Barry M.: *See—*
Jefferies, Steven R.; Gutmann, James L.; and Heatfield, Barry M., 4,409,332., Cl. 435-188.000.

Heath Farm Equipment: *See—*
Keller, Phillip D.; Urich, Oren D.; and Mahagan, Deroy E., 4,408,551., Cl. 111-85.000.

Heath, James H., to United Kingdom Atomic Energy Authority. Turbine flow meters. 4,408,498., Cl. 73-861.790.

Heaven, Malcolm D.: *See—*
Berth, Jorgen; Hansen, Erling; Heaven, Malcolm D.; and Petersen, Tommy, 4,409,177., Cl. 264-531.000.

Hecker, William C., to Chevron Research Company. Sulfur sorbent regeneration process. 4,409,123., Cl. 502-38.000.

Hecker, William C.: *See—*
Robinson, Richard C.; and Hecker, William C., 4,409,124., Cl. 502-5.000.

Heeger, Stephen E., to AMF Incorporated. Sequence controller with microprocessor. 4,409,649., Cl. 364-144.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Unsaturated polyesters containing dicyclopentadiene in the form of its esters and ethers. 4,409,360., Cl. 524-804.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Dicyclopentadiene modified polyesteramides containing endomethylenetetrahydrophthalyl functionality and process for preparing same. 4,409,371., Cl. 525-418.000.

Heimbach, Klaus-Jurgen; and Zultzke, Walter, to Leybold-Heraeus GmbH. Apparatus for regulating the evaporation rate of oxidizable substances in reactive vacuum deposition. 4,408,563., Cl. 118-692.000.

Heimberg, Manfred, to National Distillers and Chemical Corporation. Process for preparing high solids copolymer latices with low viscosity. 4,409,355., Cl. 524-458.000.

Heinicke, Ralph M., to Research Corporation of the University of Hawaii. Xeronine, a new alkaloid, useful in medical, food and industrial fields. 4,409,144., Cl. 260-236.500.

Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, to Hoechst Aktiengesellschaft. Pressure-resistant microcapsules with a polyamide shell and a polyurethane-polyurea inner mass and process for their manufacture. 4,409,201., Cl. 424-32.000.

Heinrich, Siegfried: *See—*
Stolzenbach, Heinrich; Heitzmann, Rudolf; and Heinrich, Siegfried, 4,409,340., Cl. 521-159.000.

Heintz, Frieder: *See—*
Hauler, Peter; Heintz, Frieder; and Zabler, Erich, 4,408,589., Cl. 123-494.000.

Heinz-Dieter Adomeit: *See—*
Adomeit, Heinz-Dieter; and Schulz, Volkmar, 4,408,802., Cl. 297-452.000.

Heinze, Gerhard: *See—*
Holzwarth, Friedrich; and Heinze, Gerhard, 4,409,046., Cl. 156-73.600.

Heitzmann, Rudolf: *See—*
Stolzenbach, Heinrich; Heitzmann, Rudolf; and Heinrich, Siegfried, 4,409,340., Cl. 521-159.000.

Hemperly, Richard E. Multiple selectable timer. 4,408,894., Cl. 368-93.000.

Henein, Nabil, to ITT Industries, Inc. Arrangement for assembling a working cylinder. 4,408,389., Cl. 29-715.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Wiemers, Norbert; and Albini, Italo, 4,409,373., Cl. 525-432.000.

Hens, Maurice: *See—*
Brewaeys, Luc; and Hens, Maurice, 4,408,693., Cl. 206-461.000.

Henzel, Richard P.: *See—*
Armour, Eugene A.; Henzel, Richard P.; and Mowrey, Rowland G., 4,409,315., Cl. 430-214.000.

Herberts GmbH: *See—*
Stolzenbach, Heinrich; Heitzmann, Rudolf; and Heinrich, Siegfried, 4,409,340., Cl. 521-159.000.

Herbstman, Sheldon, to Texaco Inc. Process of dehydrogenation of hydrocarbons. 4,409,417., Cl. 585-660.000.

Hermanns, Bernd; and Michalak, Stanislaw, to L. & C. Steinmuller GmbH. Heat storage mass for regenerative heat exchange. 4,408,659., Cl. 165-10.000.

Herndon, James A.; and Ask, Henry R., to United Technologies Corporation. Solid-state digital flight data recorder. 4,409,670., Cl. 364-900.000.

Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., to EC Erdolchemie GmbH; and Bayer Aktiengesellschaft. Process for the preparation of pure tert.-olefins. 4,409,421., Cl. 585-833.000.

Hettinger, Jr.; William P.: *See—*
Johnson, Charles A.; Ward, Clifford; Moore, Howard F.; and Hettinger, Jr.; William P., 4,409,092., Cl. 208-89.000.

Hewlett Packard Company: *See—*
Camis, Thomas; Spencer, Paul R.; Schwiebert, Erwin H.; and Hay, Robert R., 4,408,865., Cl. 355-3.0CH.
Sugihara, Noriyuki, 4,409,543., Cl. 324-57.00R.

Hey, Hansjorg: *See—*
Muller, Werner H.; Mack, Karl E.; and Hey, Hansjorg, 4,409,400., Cl. 568-346.000.

Hi-Shear Corporation: *See—*
Williamson, Herman L., 4,408,936., Cl. 411-3.000.

Hickman, Mark R., to Vee Arc Corporation. Gated asynchronous carrier modulation. 4,409,535., Cl. 318-811.000.

Higgins, Thomas E., to Union Carbide Corporation. Controllably moisturized mold resistant cellulosic food casings. 4,409,251., Cl. 426-413.000.

Hildebrecht, Harold V., to Tewmotor Corporation. Apparatus for suspending a trunnion mounted axle assembly from a vehicle. 4,408,775., Cl. 280-95.00R.

Hill, Terry E.: *See—*
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.

Himmele, Walter; and Hoffmann, Werner, to BASF Aktiengesellschaft. Tert.-butoxybutanals, tert.-butoxybutanols, bis-tert.-butoxypentanals and bis-tert.-butoxypentanols. 4,409,402., Cl. 568-496.000.

Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, to Hitachi, Ltd. Composition for fire retardant urethane foam. 4,409,341., Cl. 521-162.000.

Hirai, Koichi: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.

Hirai, Koji: *See—*
Kikuga, Toyoji; and Hirai, Koji, 4,409,374., Cl. 525-491.000.

Hiraki, Isao: *See—*
Oki, Takeo; and Hiraki, Isao, 4,409,072., Cl. 204-57.000.

Hirakura, Koji: *See—*
Ogata, Yoshihiro; Sakamoto, Koji; Takahashi, Harumi; and Hirakura, Koji, 4,408,863., Cl. 355-3.0TR.

Hirano, Koichi: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,409,457., Cl. 219-69.00M.

Hirano, Tsumoru: *See—*
Yagihara, Morio; Hirano, Tsumoru; Mihayashi, Keiji; and Ozawa, Takashi, 4,409,320., Cl. 430-381.000.

Hirano, Yasuhiro: *See—*
Eto, Yoshizumi; and Hirano, Yasuhiro, 4,409,627., Cl. 360-38.100.

Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Kawamura, Osamu, to Nippon Piston Ring Co., Ltd. Sliding member for use in an internal combustion engine. 4,409,294., Cl. 428-553.000.

Hirata, Hitoshi: *See—*
Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, 4,409,436., Cl. 381-15.000.

Hirata, Yoshiaki: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.

Hirota, Hideo: *See—*
Nishino, Hiroshi; Suzuki, Masayuki; and Hirota, Hideo, 4,409,125., Cl. 502-180.000.

Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., to Teletronics Pty, Limited. Porous pacemaker electrode tip. 4,408,604., Cl. 128-785.000.

Hisadome, Masanao, to Tokyo Shibaura Denki Kabushiki Kaisha. Electromagnetic contactor. 4,409,575., Cl. 335-160.000.

Hisatsune, Fumiyuki: *See—*
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,444., Cl. 200-144.00R.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,445., Cl. 200-144.00R.

Hitachi Chemical Company, Ltd.: *See—*
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Eto, Yoshizumi; and Hirano, Yasuhiro, 4,409,627., Cl. 360-38.100.

Hitachi Heating Appliances Co., Ltd.: *See—*
Oouchi, Keiji; Takoh, Isao; and Serizawa, Hisayuki, 4,409,452., Cl. 219-10.55E.

Hitachi, Ltd.: *See—*
Amada, Nobutaka; Nakagaki, Harushige; and Inoue, Shigeki, 4,409,559., Cl. 330-295.000.
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.
Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,408,840., Cl. 350-349.000.
Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, 4,409,506., Cl. 310-166.000.
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,409,520., Cl. 315-39.000.
Miyazaki, Kunio; Okosi, Yukio; Kumagai, Akira; and Suzuki, Hitoshi, 4,409,079., Cl. 204-192.00C.
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.
Shiraishi, Hiroshi, 4,409,317., Cl. 430-270.000.
Takai, Hideo, 4,408,541., Cl. 105-199.00R.
Takeuchi, Seizi; and Matsuda, Shimpei, 4,409,129., Cl. 502-185.000.
Wada, Kenichi; and Yamada, Naoki, 4,409,654., Cl. 364-200.000.

Hitco: *See—*
Hatch, Donald M.; and Larsen, Richard J., 4,409,048., Cl. 156-155.000.
Spain, Raymond G., 4,409,288., Cl. 428-367.000.

Ho, Ting C.: *See—*
Gibson, William A.; and Ho, Ting C., 4,409,186., Cl. 422-131.000.

Hochstein, Peter A. Tire condition monitor converter. 4,409,586., Cl. 340-58.000.

Hockswender, Thomas R.: *See—*
Dowbenko, Rostyslaw; Hartman, Marvis E.; and Hockswender, Thomas R., 4,409,376., Cl. 525-509.000.

Hodakowski, Leonard E., to Union Carbide Corporation. O-(2-Aryl-3-oxo-1-cyclohexenyl) phosphates. 4,409,153., Cl. 260-946.000.

Hodge, Edward B., to International Minerals & Chemical Corp. 6' Esters of zearalanol. 4,409,392., Cl. 549-270.000.

Hoechst Aktiengesellschaft: *See—*
Buhr, Gerhard; Ruckert, Hans; and Stahlhofen, Paul, 4,409,314., Cl. 430-192.000.
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.
Heinrich, Rudolf; Frensch, Heinz; and Albrecht, Konrad, 4,409,201., Cl. 424-32.000.
Michel, Wolfgang, 4,409,277., Cl. 428-156.000.
Muller, Werner H.; Mack, Karl E.; and Hey, Hansjorg, 4,409,400., Cl. 568-346.000.
Rewitzer, Siegfried, 4,408,438., Cl. 53-438.000.
Wiezer, Hartmut; and Pfahler, Gerhard, 4,409,348., Cl. 524-100.000.

Hoechst, Lonnie D.: *See—*
Albright, Larry E.; and Hoechst, Lonnie D., 4,408,672., Cl. 180-89.140.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Davis, Larry; and Klein, Joseph T., 4,409,230., Cl. 424-267.000
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,409,145., Cl. 260-239.0BD.
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,409,229., Cl. 424-267.000.

Hoek, Bertil: *See—*
Bolmgren, Jan; Hoek, Bertil; and Nilsson, Kenth, 4,409,602., Cl. 346-140.00R.

Hoek, Cornelis: *See—*
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,408,998., Cl. 23-293.00A.
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,409,016., Cl. 71-59.000.

Hofer, Alan; and Yama, Frank M., to Pickering & Company, Inc. Miniature sounder with multi-part tuned cavities. 4,409,588., Cl. 340-384.00R.

Hoffman, Bertil: *See—*
Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, 4,408,496., Cl. 73-728.000.

Hoffmann-La Roche Inc.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,409,391., Cl. 549-39.000.
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,409,390., Cl. 548-561.000.
Montavon, Marc; and Reiner, Roland, 4,409,387., Cl. 544-26.000.

Hoffmann, Werner: *See—*
Himmele, Walter; and Hoffmann, Werner, 4,409,402., Cl. 568-496.000.

Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Preheating glass batch. 4,409,011., Cl. 65-27.000.

Hokushin Electric Works, Ltd.: *See—*
Suzuki, Kazuie, 4,408,497., Cl. 73-861.170.

Holberger, Kenneth D.: *See—*
Wallach, Steven; Holberger, Kenneth D.; Keating, David L.; and Staudaher, Steven M., 4,409,655., Cl. 364-200.000.

Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Switch housing having recessed conductor terminals. 4,409,577., Cl. 335-202.000.

Holden, Graham: *See—*
Dey, Philip; Dunkley, Ronald; and Holden, Graham, 4,409,428., Cl. 174-43.000.

Holland, Ernest: *See—*
Darwood, Phillip I.; Holland, Ernest; Taylor, Peter M.; and Marley, Christopher, 4,408,399., Cl. 33-203.180.

Holland, Lawrence R., to United States of America, National Aeronautics and Space Administration. Apparatus and method for heating a material in a transparent ampoule. 4,408,658., Cl. 165-2.000.

Hollenbeck, Robert K.; and Rickard, Jimmy R., to General Electric Company. Start control arrangement for split phase induction motor. 4,409,532., Cl. 318-749.000.

Holley, Loraine K.: *See—*
Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., 4,408,604., Cl. 128-785.000.

Hollwarth, Armin. Sailing vehicle. 4,408,772., Cl. 280-1.000.

Holman, James L., Jr.; and Neumeier, Leander A., to United States of America, Interior. Recovery of metals from grinding sludges. 4,409,020., Cl. 75-0.50B.

Holmberg, Krister; and Nilsson, Ingvar, to EKA AB. Detergent compositions stable to chlorine separation, and agents for producing same. 4,409,117., Cl. 252-99.000.

Holmes, Mark; and Frauenglass, Elliott, to Loctite Corporation. Anti-galling lubricative composition. 4,409,111., Cl. 252-30.000.

Holmes, Richard G.: *See—*
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,408,558., Cl. 118-59.000.
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,409,270., Cl. 428-63.000.

Holroyd, Eric; and Perkins, David J. B., to W & A Bates Limited. Reinforced structures. 4,409,059., Cl. 156-397.000.

Holt, James F., to United States of America, Air Force. Hole matrix vertical junction solar cell. 4,409,423., Cl. 136-255.000.

Holubka, Joseph W., to Ford Motor Company. Novel tertiary alcohol-diblocked diisocyanate urea urethane oligomers and coating compositions comprising same. 4,409,380., Cl. 528-45.000.

Holubka, Joseph W., to Ford Motor Company. Novel diblocked diisocyanate urea urethane oligomers and coating compositions comprising same. 4,409,381., Cl. 528-45.000.

Holzwarth, Friedrich; and Heinze, Gerhard, to SORTIMAT Creuz & Co. GmbH. Method of and an apparatus for producing disposable syringes and the disposable syringe produced. 4,409,046., Cl. 156-73.600.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Saitoh, Masaaki; and Kameoka, Michitada, 4,408,795., Cl. 296-218.000.
Sakaoka, Hiromu, 4,408,576., Cl. 123-52.0MB.
Shimoda, Nobuyoshi; and Hagino, Michiyoshi, 4,408,790., Cl. 293-122.000.
Takahashi, Fumitaka; and Gotoh, Hiroshi, 4,408,490., Cl. 73-497.000.

Honda, Nobuyasu: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,409,312., Cl. 430-110.000.

Honeywell, Inc.: *See—*
Frimet, Stanley H.; and Meeks, Leighton A., 4,409,628., Cl. 360-73.000.
Harris, William A., 4,409,537., Cl. 320-7.000.
Kompelien, Arlon D., 4,409,552., Cl. 324-415.000.

Honjo, Yoshiaki, to Casio Computer Co., Ltd. Portable printing electronic calculator using multiple folded recording paper. 4,409,467., Cl. 235-58.0CF.

Hoover Universal, Inc.: *See—*
Bowman, James A., 4,408,799., Cl. 297-361.000.

Hoover, William J.: *See—*
Johnson, Lawrence A.; Hoover, William J.; and Deyoe, Charles W., 4,409,256., Cl. 426-598.000.

Hopkins, Walter: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., 4,409,244., Cl. 426-5.000.

Horie, Fujio: *See—*
Takiguchi, Michitaka; and Horie, Fujio, 4,408,554., Cl. 112-302.000.

Horii, Masahiro: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Horiuchi, Kunio: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.

Hornung, Helmut: *See—*
Edel, Hans J.; and Hornung, Helmut, 4,408,801., Cl. 297-433.000.

Horton Industries, Inc.: *See—*
Schilling, Hugh K.; and Raines, Charles D., 4,408,685., Cl. 192-85.00A.

Horvath, William. Automatic dispenser cap. 4,408,702., Cl. 222-212.000.

Horwath, John A.: *See—*
Albertson, Clarence E.; Horwath, John A.; and Lashua, Duane W., 4,409,298., Cl. 428-614.000.

Horyu, Sakae, to Canon Kabushiki Kaisha. Apparatus for indicating telephone line state. 4,409,437., Cl. 179-2.0DP.

Hoshi, Yoshiyuki; and Hayashi, Takayuki, to Fuji Photo Film Co., Ltd. Process for producing microcapsules. 4,409,156., Cl. 264-4.330.

Hoshino, Noriyuki: *See—*
Yano, Tadashi; and Hoshino, Noriyuki, 4,408,530., Cl. 101-415.100.

Hosiden Electronics Co., Ltd.: *See—*
Kamimura, Tomohiko, 4,409,442., Cl. 179-156.00R.

Hosokawa, Yuukou: *See—*
Hayama, Yoshihiro; and Hosokawa, Yuukou, 4,408,639., Cl. 140-71.500.

Hosonaga, Taketoshi: *See—*
Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, 4,408,798., Cl. 297-326.000.

Hosoya, Masahiro: *See—*
Takano, Toshimasa; Hosoya, Masahiro; and Murakami, Reiji, 4,408,862., Cl. 355-3.0DD.

Hotta, Hisashi: *See—*
Kitamura, Yoichi; Hotta, Hisashi; and Yurita, Chikara, 4,409,456., Cl. 219-64.000.

Hotta, Yuji: *See—*
Sato, Ryosuke; Hotta, Yuji; and Matsuura, Katsumi, 4,409,323., Cl. 430-544.000.

Howard, Dennis D.: *See—*
Zalucha, Denis J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,409,383., Cl. 528-499.000.

Howarth, Robert F., to United States of America, Navy. Widerange photomultiplier circuit. 4,409,474., Cl. 250-207.000.

Howe, David G., to United States of America, Navy. Composite superconductors. 4,409,297., Cl. 428-614.000.

Howlett, Brian: *See—*
Cairns, Hugh; Greenhalgh, Peter M.; and Howlett, Brian, 4,409,237., Cl. 424-283.000.

HPS Corporation: *See—*
Peacock, Roy N., 4,408,634., Cl. 137-630.120.

Hsu, Edward C.: *See—*
Wagner, John P.; and Hsu, Edward C., 4,409,078., Cl. 204-188.000.

Huang, Tracy J.: *See—*
Haag, Werner O.; and Huang, Tracy J., 4,409,412., Cl. 585-454.000.

Huber, John H., to AMP Incorporated. Multi-piece connector and cover means. 4,408,823., Cl. 339-208.000.

Huckins, Charles M.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 4,409,577., Cl. 335-202.000.

Huebert, James P.: *See—*
Diel, Robert McK.; and Huebert, James P., 4,408,518., Cl. 91-31.000.

Huebner, Richard, to Harley-Davidson Motor Co., Inc. Split collar. 4,408,924., Cl. 403-23.000.

Hugh Steeper Limited: *See—*
Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, 4,409,529., Cl. 318-653.000.

Hughes Aircraft Company: *See—*
Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., 4,409,260., Cl. 427-82.000.
Wiener-Avnear, Eliezer, 4,408,839., Cl. 350-347.00R.

Huibers, Derk T. A.: *See—*
Snell, George J.; and Huibers, Derk T. A., 4,409,416., Cl. 585-635.000.

Hukuda, Minolu; and Watanabe, Tsutomu, to Ricoh Co., Ltd. Transfer-printing sheet separating system for electrophotographic copying apparatus. 4,408,861., Cl. 355-3.0TR.

Humphrey, Lawrence F., to Stauffer Chemical Company. Continuous high pressure process for preparing phenylphosphonous dichloride. 4,409,152., Cl. 260-543.00P.

Hunt, V. Bruce. Multipoint packet data communication system using random access and collision detection techniques. 4,409,592., Cl. 340-825.500.

Hurley, Thomas M., to Monarch Marking Systems, Inc. Holster for labeler. 4,408,706., Cl. 224-192.000.

Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Fused-ring amino-pyrazines as bradycardiac agents. 4,409,220., Cl. 424-250.000.

Husky Injection Molding Systems Inc.: *See—*
Brown, Paul, 4,408,981., Cl. 425-589.000.

Huster, Lothar: *See—*
Beckerle, Heinz; Huster, Lothar; and Zondler, Rolf, 4,409,352., Cl. 524-405.000.

Huston, Ernest L.: *See—*
Sandrock, Gary D.; Huston, Ernest L.; and Liu, James, 4,409,180., Cl. 420-455.000.

Hutten, Hans M.: *See—*
Eichler, Helmut; Vorhagen, Friedrich W.; and Hutten, Hans M., 4,409,614., Cl. 358-76.000.

Hutzenlaub, Armin S. P.; and Schmidt, Willi, to Fa. Erwin Kampf GmbH & Co. Metal strip stretching mill. 4,408,474., Cl. 72-205.000.

Hyland, Joseph; and Wetherell, Joseph J. Dynamic toy apparatus. 4,408,413., Cl. 46-241.000.

Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Multiband refrigerated display case having a top access opening. 4,408,465., Cl. 62-82.000.

Ichinohe, Shoji; and Kasahara, Katsusuke, to Shin-Etsu Chemical Co., Ltd. Method for the finishing treatment of fabric materials. 4,409,267., Cl. 427-387.000.

Ichisaka, Teruo: *See—*
Yamaguchi, Kenzo; Ichisaka, Teruo; and Ikegami, Tadao, 4,409,084., Cl. 204-257.000.

ICI Australia Limited: *See—*
Serban, Alexander; Bird, Graham J.; and Cross, Lindsay E., 4,409,017., Cl. 71-94.000.

Ideno, Shigeru: *See—*
Nakamura, Kenji; and Ideno, Shigeru, 4,409,597., Cl. 346-35.000.

Igashira, Toshihiko: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,408,592., Cl. 123-625.000.

Iida, Makoto: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.

Iijima, Kazumi: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.

Iijima, Tetsuya; and Takahashi, Seiichi, to Nissan Motor Co., Ltd. Control for automobile air conditioning system. 4,408,713., Cl. 236-49.000.

Iijima, Tokuzo; Samejima, Yasushi; Kano, Toshiji; and Hatta, Yoshio, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for electrolysis of an aqueous alkali metal chloride solution. 4,409,074., Cl. 204-98.000.

Iijima, Toshifumi: *See—*
Onodera, Kaoru; Iijima, Toshifumi; and Fujimastu, Wataru, 4,409,321., Cl. 430-383.000.

Ike, Toshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for scanning a laser beam including means for focusing a scale scanning beam and a read/write scanning beam on the same facet of a polygon scanning mirror. 4,408,826., Cl. 350-6.800.

Ikeda, Tokuzo: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,409,282., Cl. 428-219.000.

Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, to Mita Industrial Co. Ltd. Dry developer for electrostatic image with Al or Ti alkoxide. 4,409,312., Cl. 430-110.000.

Ikeda, Yugo: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Ikegami, Tadao: *See—*
Yamaguchi, Kenzo; Ichisaka, Teruo; and Ikegami, Tadao, 4,409,084., Cl. 204-257.000.

Ikegami, Toshimasa, to Kabushiki Kaisha Suwa Seikosha. Correcting mechanism for hybrid display timepiece. 4,408,896., Cl. 368-185.000.

Ikezawa, Harumi: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.

Illinois Tool Works Inc.: *See—*
Graff, Henry W.; and Erickson, Lloyd A., 4,408,939., Cl. 411-112.000.

Imada, Akira: *See—*
Asai, Mitsuko; Shinagawa, Susumu; and Imada, Akira, 4,409,147., Cl. 260-245.20T.

Imaizumi, Taketo: *See—*
Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, 4,409,495., Cl. 307-290.000.

Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, to Hitachi, Ltd. Liquid crystal compositions containing pleochroic anthraquinone dyes, liquid crystal devices containing the compositions, and the dyes. 4,408,840., Cl. 350-349.000.

Imperial Chemical Industries PLC: *See—*
Swerdlow, Martin S., 4,409,285., Cl. 428-332.000.

Imura, Toshinori; and Tominaga, Shinji, to Minolta Camera Kabushiki Kaisha. Automatic focus adjusting device for use in a camera. 4,408,855., Cl. 354-25.000.

Inaba, Masao; and Kashigi, Kazuo, to Nippon Electric Co., Ltd. Digital video effects system employing a chroma-key tracking technique. 4,409,618., Cl. 358-183.000.

Inagaki, Mitsuo; Sasaya, Hideaki; and Ito, Seitoku, to Nippon Soken, Inc. Rotary compressor. 4,408,968., Cl. 418-15.000.

Incremona, Joseph H., to Minnesota Mining and Manufacturing Company. Lithographic printing plate with oleophilic area of radiation exposed adduct of diazo resin and sulfonated polymer. 4,408,532., Cl. 101-456.000.

Indian Explosives Limited: *See—*
Bhattacharyya, Dhirendra N.; Seshan, Srinivasachari; Campbell, John S.; and Sen, Soumendranath, 4,409,044., Cl. 149-2.000.

Industrie Pirelli S.p.A.: *See—*
Gallizia, Achille, 4,408,980., Cl. 425-501.000.

Information International, Inc.: *See—*
Richards, John S.; and DePaoli, Alan G., 4,409,621., Cl. 358-260.000.

Ing. C. Olivetti & C., S.p.A.: *See—*
Bernardis, Francesco, 4,408,907., Cl. 400-124.000.

Ingle, William M.: *See—*
Darnell, Robert D.; and Ingle, William M., 4,409,195., Cl. 423-342.000.

Innes, Robert A.: *See—*
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, 4,409,399., Cl. 564-473.000.

Inoue, Eiichi: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,409,308., Cl. 430-60.000.

Inoue, Hiroshi; and Tooyama, Nobuo, to Ricoh Company, Ltd. Liquid crystal display panels and process for their production. 4,409,268., Cl. 428-1.000.

Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,409,458., Cl. 219-69.00D.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM Method and apparatus with the controlled supply of a liquid machining medium into the gap. 4,409,458., Cl. 219-69.00D.

Inoue, Shigeki: *See—*
Amada, Nobutaka; Nakagaki, Harushige; and Inoue, Shigeki, 4,409,559., Cl. 330-295.000.

Inoue, Takehisa: *See—*
Iwayama, Kazuyoshi; and Inoue, Takehisa, 4,409,413., Cl. 585-481.000.

Institut Francais du Petrole: *See—*
Cosyns, Jean; and Durand, Daniel, 4,409,410., Cl. 585-259.000.

Institut Vysokikh Temperatur Akademii Nauk SSSR: *See—*
Abramian, Evgeny A., 4,409,492., Cl. 307-108.000.

Institute of Technology Precision Electrical Discharge Works: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,409,457., Cl. 219-69.00M.

Intel Corporation: *See—*
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, C. Neil, 4,409,259., Cl. 427-38.000.

International Business Machines: *See—*
Wallace, Leonard J., 4,408,906., Cl. 400-104.000.

International Business Machines Corporation: *See—*
Applegate, Steven L.; and Molloy, James J., 4,408,908., Cl. 400-120.000.
Colacino, James J.; and Leone, Ronald A., 4,409,319., Cl. 430-296.000.
Dibble, Eric P.; and Lynch, Thomas E., 4,409,071., Cl. 204-15.000.
Dorler, Jack A.; and Mosley, Joseph M., 4,409,498., Cl. 307-454.000.
Malaviya, Shashi D., 4,409,673., Cl. 365-180.000.

International Harvester Co.: *See—*
Gladich, Radisko S., 4,408,684., Cl. 192-53.00G.

International Minerals & Chemical Corp.: *See—*
Hodge, Edward B., 4,409,392., Cl. 549-270.000.

International Paper Company: *See—*
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,409,053., Cl. 156-287.000.

International Standard Electric Corporation: *See—*
Beckerle, Heinz; Huster, Lothar; and Zondler, Rolf, 4,409,352., Cl. 524-405.000.
Gerstle, Volker; Mauz, Gerhard; and Zondler, Rolf, 4,409,306., Cl. 430-28.000.
Graziani, Danio, 4,409,594., Cl. 343-399.000.

Internationale Patente Verwertungsgesellschaft m.b.H.: *See—*
Reumann, Franz, 4,409,581., Cl. 335-284.000.

Iowa State University Research Foundation, Inc.: *See—*
Winchip, Galen J., 4,408,509., Cl. 83-435.100.

Ishida, Tetsuhisa: *See—*
Yamamoto, Taizo; and Ishida, Tetsuhisa, 4,408,641., Cl. 141-82.000.

Ishida, Yasuo, to Takeda Chemical Industries, Ltd. Hexahydroisoindol derivatives, and their production and use. 4,409,018., Cl. 71-96.000.

Ishigaki, Tsuneo, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Solenoid actuator for electromagnetic valve. 4,409,580., Cl. 335-243.000.

Ishihara, Taketoshi: *See—*
Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, 4,408,847., Cl. 351-211.000.

Ishii, Hiroshi, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Method and apparatus for driving an ink jet printer head. 4,409,596., Cl. 346-1.100.

Ishii, Kenjiro: *See—*
Toriumi, Shiro; Ishii, Kenjiro; and Yamagishi, Seiichi, 4,408,732., Cl. 242-192.000.

Ishii, Tasuku. Fluid driven engine. 4,408,951., Cl. 415-36.000.

Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Multilayer color photographic light-sensitive materials. 4,409,324., Cl. 430-546.000.

Italfarmaco S.p.A.: *See—*
Cremonesi, Pietro; and Sportoletti, Giancarlo, 4,409,103., Cl. 210-638.000.

Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, to Hitachi, Ltd. Induction motor. 4,409,506., Cl. 310-166.000.

Ito, Seitoku: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; and Ito, Seitoku, 4,408,968., Cl. 418-15.000.

Ito, Shinji: *See—*
Araki, Ikuo; Kanazawa, Teruo; Ito, Shinji; and Sumikawa, Kenji, 4,408,534., Cl. 102-288.000.

Ito, Yosuke: *See—*
Umekawa, Osamu; Ito, Yosuke; and Katayama, Sakae, 4,409,353., Cl. 524-421.000.

ITT Industries, Inc.: *See—*
Henein, Nabil, 4,408,389., Cl. 29-715.000.
Luepertz, Hans-Henning, 4,408,457., Cl. 60-547.100.

Ivanov, Vasily A.: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.

Iwai, Hiroji; and Matsui, Hirotoshi, to Sharp Kabushiki Kaisha. Paper guide mechanism in a printer. 4,408,917., Cl. 400-637.200.

Iwamoto, Akito; and Sekizawa, Hidekazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for inspecting average size of fundamental patterns. 4,408,883., Cl. 356-355.000.

Iwamoto, Yoshihiko: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Iwashita, Tomonori: *See—*
Fukahori, Hidehiko; Iwashita, Tomonori; and Nakamura, Katsunori, 4,408,859., Cl. 354-274.000.

Iwata, Minoru: *See—*
Sato, Tadao; Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,409,193., Cl. 423-290.000.

Iwayama, Kazuyoshi; and Inoue, Takehisa, to Toray Industries, Incorporated. Conversion of xylenes containing ethyl benzene. 4,409,413., Cl. 585-481.000.

Jackson, Robert G.; and Yoon, Heeyoung, to Conoco Inc. Methane cold starter in alcohol fuel treatment and distribution method. 4,408,571., Cl. 123-3.000.

Jackson, Robert G.: *See—*
Yoon, Heeyoung; and Jackson, Robert G., 4,408,572., Cl. 123-3.000.

Jacobs, Jorn: *See—*
Schmalfeld, Jorg; Bruckner, Werner; Jacobs, Jorn; Greulich, H. S.; and Schlutter, A., 4,408,548., Cl. 110-347.000.

Jacquet, Bernard: *See—*
Gaetani, Quintino; Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,409,379., Cl. 526-230.500.

Jacuzzi Inc.: *See—*
Cohen, Carlos; and Raab, Alfred, 4,408,721., Cl. 239-417.000.

Jaeger, Walter, to GX-Holding AG. Method for reproducing polychrome images. 4,409,610., Cl. 358-12.000.

Jagenberg Werke AG: *See—*
Dropczynski, Hartmut, 4,408,727., Cl. 242-56.00R.

Jahnke, Bernd, to BBC Brown, Boveri & Company, Limited. Process for the non-cracking energy beam welding of high temperature shaped parts. 4,409,462., Cl. 219-121.0ED.

Jahrstorfer, George W.: *See—*
Nasvytis, Pius J.; and Jahrstorfer, George W., 4,408,953., Cl. 415-62.000.

Jakob, Gert; Gansert, Willi; Goetzke, Siegfried; and Ruttkowski, Lothar, to Robert Bosch GmbH. Environmentally protected electronic network structure and housing combination. 4,409,641., Cl. 361-386.000.

Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., to PLM Aktiebolag. Method for moulding an article from plastic material. 4,409,176., Cl. 264-527.000.

Jan, Gerald: *See—*
Lenoir, John; and Jan, Gerald, 4,409,143., Cl. 260-205.000.

Jansky, John: *See—*
Stofko, John, 4,409,170., Cl. 264-113.000.

Janssens, Werner J., to W. J. Janssens Industries (N.Z.) Limited. Edge banding means. 4,409,060., Cl. 156-497.000.

Japan Exlan Company Limited: *See—*
Takao, Seiji, 4,409,162., Cl. 264-41.000.

Jarvis, Henry F. Agricultural shares. 4,408,667., Cl. 172-722.000.

Jeans, Edward L., to Cadbury Schweppes PLC. Liquid dispensing valve. 4,408,701., Cl. 222-153.000.

Jefferies, Steven R.; Gutmann, James L.; and Heatfield, Barry M. Collagen-enzyme conjugates that exhibit no inflammatory response and method for making the same. 4,409,332., Cl. 435-188.000.

Jehring, Arnfried: *See—*
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, 4,408,529., Cl. 101-415.100.

Jelks, Edward C.; and Kerber, George L., to United States of America, Navy. Fabrication of submicron-wide lines with shadow depositions. 4,409,262., Cl. 427-99.000.

Jentzsch, Arndt: *See—*
Johne, Hans; Forster, Karl-Heinz; Jentzsch, Arndt; and Muller, Wolfgang, 4,408,528., Cl. 101-364.000.
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, 4,408,529., Cl. 101-415.100.

Jerabek, Bohumil. Chain saw. 4,408,393., Cl. 30-123.400.

Jeronimidis, Giorgio: *See—*
Chaplin, Christopher R.; Gordon, James E.; and Jeronimidis, Giorgio, 4,409,274., Cl. 428-112.000.

Jeruzal, Thomas M.; and Koski, Dennis G. Portable workbench. 4,408,642., Cl. 144-286.00A.

Jervis B. Webb Company: *See—*
Dehne, Clarence A., 4,408,540., Cl. 104-172.00B.

Jessee, Karen L.: *See—*
Clarady, Joseph F., Jr.; Jessee, Karen L.; and Bearden, Joe L., 4,408,881., Cl. 356-347.000.

Jeumont-Schneider Corporation: *See—*
Fromont, Jacques; and Plancon, Marcel, 4,408,470., Cl. 72-8.000.

Jimbo, Yoshihiro: *See—*
Kobayashi, Makoto; Yamamoto, Tetsuji; and Jimbo, Yoshihiro, 4,409,623., Cl. 358-261.000.

Jirkovsky, Ivo L., to American Home Products Corp. Pyrimido[1,6-a]indole derivatives. 4,409,224., Cl. 424-251.000.

Jobst Institute, Inc.: *See—*
Mummert, Thomas A., 4,408,599., Cl. 128-24.00R.

Jochym, Eric P., to General Electric Company. Blister-free direct bonding of metals to ceramics and metals. 4,409,278., Cl. 428-163.000.

Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., to Kasper Instruments, Inc. Apparatus for the automatic alignment of two superimposed objects, e.g. a semiconductor wafer and mask. 4,408,885., Cl. 356-401.000.

John, Leonard K. Graphite fibre violin. 4,408,516., Cl. 84-275.000.

John, Peter W. Process for enlargement of rock fractures. 4,408,663., Cl. 166-259.000.

John Wyeth and Brother Limited: *See—*
White, Alan C.; and Bradley, Gerald, 4,409,218., Cl. 424-248.550.

Johne, Hans; Forster, Karl-Heinz; Jentzsch, Arndt; and Muller, Wolfgang, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Printing equipment with screw controlled doctor blade. 4,408,528., Cl. 101-364.000.

Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Plate clamping device. 4,408,529., Cl. 101-415.100.

Johnson, Charles A.; Ward, Clifford; Moore, Howard F.; and Hettinger, Jr., William P., to Ashland Oil, Inc. Combination process for upgrading oil products of coal, shale oil and crude oil to produce jet fuels, diesel fuels and gasoline. 4,409,092., Cl. 208-89.000.

Johnson & Johnson Baby Products Company: *See—*
Passafiume, Anthony; and Pieniak, Heinz A., 4,409,049., Cl. 156-164.000.

Johnson, Lawrence A.; Hoover, William J.; and Deyoe, Charles W., to Edlong Corporation, The. Soymilk process. 4,409,256., Cl. 426-598.000.

Johnson, Marvin M.; Nowack, Gerhard P.; and Kukes, Semyon, to Phillips Petroleum Company. Isomerization process. 4,409,418., Cl. 585-667.000.

Jolly, Walter R.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,409,161., Cl. 264-40.100.

Jones, Thaddeus M., to Dresser Industries, Inc. Active voltage divider. 4,409,540., Cl. 323-369.000.

Joswig, Franz: *See—*
Bechthold, Paul; Joswig, Franz; and Lingenbach, Josef, 4,408,478., Cl. 73-24.000.

Jude Engineering, Inc.: *See—*
Christian, Robert F., 4,408,944., Cl. 414-216.000.
Wolff, Erland, 4,408,769., Cl. 277-105.000.

Jugan, Michael R.: *See—*
Nottingham, Lawrence D.; and Jugan, Michael R., 4,408,383., Cl. 29-453.000.

Jyojiki, Kasao: *See—*
Tokutomi, Seijiro; Nakamura, Kazuo; and Jyojiki, Kasao, 4,408,853., Cl. 354-25.000.

Kabushiki Kaisha Chuo Seisakusho: *See—*
Mizutani, Hiroshi, 4,409,461., Cl. 219-111.000.

Kabushiki Kaisha Daini Seikosha: *See—*
Tabata, Junichi, 4,409,538., Cl. 320-11.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Mishima, Toshio, 4,408,512., Cl. 84-1.030.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Sugino, Morihiko; and Saura, Eiji, 4,409,284., Cl. 428-304.400.
Yamada, Yoshiro; Hatsuoka, Nobuyasu; and Ashida, Shinzo, 4,409,026., Cl. 75-124.000.

Kabushiki Kaisha Miyanaga: *See—*
Miyanaga, Masaaki, 4,408,935., Cl. 408-206.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Ikegami, Toshimasa, 4,408,896., Cl. 368-185.000.
Ishii, Hiroshi, 4,409,596., Cl. 346-1.100.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakayama, Shozo; Suzuki, Shigeru; and Hattori, Mitsuhiro, 4,408,962., Cl. 417-269.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Asai, Kiyokazu; Oshima, Yujiro; Takeuchi, Akihiro; and Tokoro, Hiroharu, 4,408,479., Cl. 73-35.000.

Kaczmarek, Lynn M.: *See—*
Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., 4,408,692., Cl. 206-438.000.

Kadija, Igor V.; and Woodard, Kenneth E., Jr., to Olin Corporation. Diaphragm cells employing reticulate cathodes. 4,409,085., Cl. 204-257.000.

Kadota, Toshihiko: *See—*
Sawaki, Ryoichi; and Kadota, Toshihiko, 4,409,634., Cl. 360-137.000.

Kaeding, Warren W.: *See—*
Forbus, Nancy P.; and Kaeding, Warren W., 4,409,132., Cl. 502-62.000.

Kaiser, Gunter: *See—*
von Agris, Rudolf; Kaiser, Gunter; and Nysten, Bernhard, 4,409,052., Cl. 156-227.000.

Kako, Takuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Shaft sealing devices for hydraulic machines. 4,408,767., Cl. 277-27.000.

Kameoka, Michitada: *See—*
Saitoh, Masaaki; and Kameoka, Michitada, 4,408,795., Cl. 296-218.000.

Kameyama, Shuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a bipolar integrated circuit device with a self-alignment base contact. 4,408,388., Cl. 29-578.000.

Kamimura, Tomohiko, to Hosiden Electronics Co., Ltd. Headphone. 4,409,442., Cl. 179-156.00R.

Kaminaka, Nobuyuki: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,409,632., Cl. 360-123.000.

Kampe, Wolfgang: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,409,236., Cl. 424-275.000.

Kampf, Julian C.: *See—*
Profio, Mark V.; Libert, James T.; and Kampf, Julian C., 4,409,640., Cl. 361-197.000.

Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Magnetic head arrangement. 4,409,632., Cl. 360-123.000.

Kanazawa, Teruo: *See—*
Araki, Ikuo; Kanazawa, Teruo; Ito, Shinji; and Sumikawa, Kenji, 4,408,534., Cl. 102-288.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Fujiwara, Kazuaki; and Konishi, Akio, 4,409,350., Cl. 524-180.000.
Iijima, Tokuzo; Samejima, Yasushi; Kano, Toshiji; and Hatta, Yoshio, 4,409,074., Cl. 204-98.000.

Kaneko, Katumi: *See—*
Suzuki, Akira; Yoshikawa, Yukio; and Kaneko, Katumi, 4,408,856., Cl. 354-234.000.

Kanetsu Kogyo Kabushiki Kaisha: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.

Kanno, Ken-ichi; Gatayama, Tetsuya; and Koyama, Masao, to Tokyo Shibaura Denki Kabushiki Kaisha. Regeneration method of ion-selective electrode, and ion-selective electrode and ion-concentration analyzer containing means adapted to practice said method. 4,409,088., Cl. 204-402.000.

Kano, Toshiji: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kano, Toshiji; and Hatta, Yoshio, 4,409,074., Cl. 204-98.000.

Kanomata, Ichiro: *See—*
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,409,520., Cl. 315-39.000.

Kantor, Judith A.: *See—*
Feller, William F.; Kantor, Judith A.; Chirikjian, Jack G.; and Phillips, Terence M., 4,409,200., Cl. 436-516.000.

Kaplan, Laurie M. Orthodontic appliance. 4,408,988., Cl. 433-3.000.

Karinsky, Viktor N.; Musienko, Viktor T.; and Glazunov, Sergei G. Granulation apparatus. 4,408,971., Cl. 425-8.000.

Karm, Robert, to Martel, Catala & Cie. Double layer forming fabrics for use in paper making machines. 4,408,637., Cl. 139-425.00A.

Karp, Arthur; and Biggs, Gary A., to Varian Associates, Inc. TWT Interaction circuit with broad ladder rungs. 4,409,518., Cl. 315-3.500.

Karp, Arthur, to Varian Associates, Inc. TWT Slow-wave structure assembled from three ladder-like slabs. 4,409,519., Cl. 315-3.500.

Karpenko, Anatole N., to Anchor/Darling Valve Company. Reheater isolation device and chemical connector. 4,408,636., Cl. 138-94.000.

Kasahara, Katsusuke: *See—*
Ichinohe, Shoji; and Kasahara, Katsusuke, 4,409,267., Cl. 427-387.000.

Kasai, Masanao: *See—*
Okano, Kazumi; Nishigaki, Yuji; and Kasai, Masanao, 4,409,310., Cl. 430-95.000.

Kashigi, Kazuo: *See—*
Inaba, Masao; and Kashigi, Kazuo, 4,409,618., Cl. 358-183.000.

Kasper Instruments, Inc.: *See—*
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,408,885., Cl. 356-401.000.

Kassel, James W.: *See—*
Andersen, Steven C.; Penkauskas, Thomas P.; Kassel, James W.; and Newcomer, Stephen O., 4,409,656., Cl. 364-200.000.

Kasser, Alexander, to Technopulp A.G. Kraft paper. 4,409,065., Cl. 162-9.000.

Kastl, Alfons: *See—*
Schirk, Gunter; and Kastl, Alfons, 4,408,891., Cl. 366-265.000.

Kasuga, Akira: *See—*
Mizuno, Chiaki; Tamai, Yasuo; and Kasuga, Akira, 4,409,299., Cl. 428-694.000.
Ogawa, Hiroshi; Kasuga, Akira; Tamai, Yasuo; and Yamada, Yasuyuki, 4,409,291., Cl. 428-425.900.

Kasuga, Muneo: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.
Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, 4,408,870., Cl. 355-14.0SH.

Kataoka, Yoshiaki: *See—*
Namba, Mutsusuke; Suzue, Seisuke; Mizuno, Toshio; and Kataoka, Yoshiaki, 4,409,354., Cl. 524-431.000.

Katayama Chemical Works Co., Ltd.: *See—*
Umekawa, Osamu; Ito, Yosuke; and Katayama, Sakae, 4,409,353., Cl. 524-421.000.

Katayama, Sakae: *See—*
Umekawa, Osamu; Ito, Yosuke; and Katayama, Sakae, 4,409,353., Cl. 524-421.000.

Kato, Koji: *See—*
Kogo, Nobuhiko; Tsutsui, Yoshimitsu; Kato, Koji; and Kishigami, Hisao, 4,409,160., Cl. 264-40.100.

Kato, Wataru: *See—*
Tsukada, Kazuhiro; and Kato, Wataru, 4,409,233., Cl. 424-273.00R.

Kato, Yasuo: *See—*
Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, 4,408,847., Cl. 351-211.000.

Kato, Yoshiei; Nozaki, Tsutomu; and Nakanishi, Kyoji, to Kawasaki Steel Corporation. Top-and-bottom blown converter steel making process. 4,409,024., Cl. 75-60.000.

Katsuragi, Shigeo: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Kaufman, Jack W.: *See—*
Blake, Joseph W., III; and Kaufman, Jack W., 4,408,603., Cl. 128-325.000.

Kawabata, Kohji: *See—*
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,214., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,215., Cl. 424-246.000.

Kawabata, Takao, to Mitsubishi Denki Kabushiki Kaisha. Method of restarting induction motor and apparatus for carrying out the same. 4,409,533., Cl. 318-807.000.

Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, to Bristol-Myers Company. Antibiotic compound. 4,409,210., Cl. 424-177.000.

Kawai, Hisasi: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,408,592., Cl. 123-625.000.

Kawamura, Osamu: *See—*
Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Kawamura, Osamu, 4,409,294., Cl. 428-553.000.

Kawamura, Takao; and Masazumi, Yoshida, to Minolta Camera Kabushiki Kaisha; Kawamura, Takao; and Kyoto Ceramic Co., Ltd. Photosensitive member. 4,409,311., Cl. 430-95.000.

Kawasaki Steel Corporation: *See—*
Kato, Yoshiei; Nozaki, Tsutomu; and Nakanishi, Kyoji, 4,409,024., Cl. 75-60.000.

Kayaba Kogyo Kabushiki-Kaisha: *See—*
Mochizuki, Norihiro; and Kugimiya, Fusayoshi, 4,408,964., Cl. 417-310.000.

Keane, John F.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Keating, David L.: *See—*
Wallach, Steven; Holberger, Kenneth D.; Keating, David L.; and Staudaher, Steven M., 4,409,655., Cl. 364-200.000.

Keller, Arnold, to Waldemar Link GmbH & Co. Vario-head endoprosthesis. 4,408,360., Cl. 3-1.913.

Keller, Phillip D.; Urich, Oren D.; and Mahagan, Deroy E., to Heath Farm Equipment. Row planter. 4,408,551., Cl. 111-85.000.

Keller, Robert C., to General Motors Corporation. Dual outlet engine exhaust system. 4,408,675., Cl. 180-296.000.

Keller, Teddy M., to United States of America, Navy. Synthesis and polymerization of phthalonitrile monomers containing multiple phenoxy and sulfone linkages. 4,409,382., Cl. 528-173.000.

Kelsey-Hayes Company: *See—*
Becker, James; and Neill, Daniel L., 4,409,663., Cl. 364-561.000.

Kendall Company, The: *See—*
Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., 4,408,692., Cl. 206-438.000.
Toth, Michael R., 4,408,357., Cl. 2-114.000.

Kennecott Corporation: *See—*
Long, William D.; and Rottenkolber, Paul J., 4,408,959., Cl. 416-241.00B.

Kent, Preben, to Brunswick Corporation. High flow shroud check valve. 4,408,632., Cl. 137-516.290.

Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., to Monsanto Company. Attrition resistant metal/oxygen compositions and a process for their preparation. 4,409,127., Cl. 502-205.000.

Keppel, Robert A.: *See—*
Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,409,133., Cl. 502-354.000.

Kerber, George L.: *See—*
Jelks, Edward C.; and Kerber, George L., 4,409,262., Cl. 427-99.000.

Kerbs, Brad J.; and Lanter, Kent J., to Ralston Purina Company. Feed dispenser. 4,408,565., Cl. 119-52.00R.

Kern, Eckhart: *See—*
Pfalzgraf, Manfred; Kern, Eckhart; and Collonia, Harald, 4,408,581., Cl. 123-339.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Bechthold, Paul; Joswig, Franz; and Lingenbach, Josef, 4,408,478., Cl. 73-24.000.
Besocke, Karl-Heinz; and Berger, Siegfried, 4,409,509., Cl. 310-317.000.

Kernforschungsanlange Julich Gesellschaft mit beschrankter Haftung: *See—*
Forster, Siegfried, 4,408,984., Cl. 431-354.000.
Luft, Harald, 4,409,069., Cl. 204-1.00T.

Kessick, Michael A., to Research Council of Alberta. Alkali recycle process for recovery of heavy oils and bitumens. 4,409,091., Cl. 208-11.0LE.

Kessis, Theodore A.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Ketteringham, Terence A.; Lewis, Dennis L.; and Mayley, David E., to Associated Electrical Industries Limited. Apparatus for forming a filament coil of figure of eight conformation. 4,408,378., Cl. 28-289.000.

Khodov, Nikolai V.: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.

Khyarm, Khyarmo E.: *See—*
Min, Mart V.; Parve, Toomas E.; Khyarm, Khyarmo E.; and Pungas, Toom A., 4,409,555., Cl. 328-14.000.

Kiener, Heinz: *See—*
Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, 4,408,809., Cl. 308-187.100.

Kikuga, Toyoji; and Hirai, Koji, to Sumitomo Durez Company, Ltd. Color developer for pressure-sensitive copying paper. 4,409,374., Cl. 525-491.000.

Kikuno, Masayuki, to Sharp Kabushiki Kaisha. Wide screen LCD panel with electrical terminal connections. 4,408,836., Cl. 350-334.000.

Killian, Henry R. Rotary engine. 4,408,577., Cl. 123-55.0AA.

Kim, Hueng T., to B. F. Goodrich Company, The. Method and apparatus for extruding a cellular product. 4,409,165., Cl. 264-53.000.

Kimizuka, Yoshie: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.

Kimmel, David J.; and Lauterbach, John H. F., to AMP Incorporated. Electrical fuse and method of making same. 4,409,582., Cl. 337-231.000.

Kimura, Katsuhiko: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

Kimura, Kenji, to Olympus Optical Co., Ltd. Iris servo apparatus. 4,409,472., Cl. 250-201.000.

Kimura, Shigeru: *See—*
Kimura, Teiji; and Kimura, Shigeru, 4,408,372., Cl. 24-217.00R.

Kimura, Teiji; and Kimura, Shigeru, to Sony Corporation; and Nifco Inc. Coupler. 4,408,372., Cl. 24-217.00R.

Kimura, Yoshikazu: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.

King, Russell W. Radioactive material dose computer. 4,409,488., Cl. 250-432.0PD.

Kingsley, William, to Xerox Corporation. Raster scanning apparatus. 4,409,624., Cl. 358-285.000.

Kiriseko, Tadashi, to Fujitsu Limited. Method for producing a bipolar transistor utilizing an oxidized semiconductor masking layer in conjunction with an anti-oxidation mask. 4,408,387., Cl. 29-576.00E.

Kirschbaum, Nathan; and Sclafani, Augustus, to Grumman Aerospace Corporation. Landing gear door mud guard. 4,408,736., Cl. 244-100.00R.

Kish, Arthur S., to Murray Corporation. Device for assembling a hose and fitting. 4,408,381., Cl. 29-237.000.

Kishigami, Hisao: *See—*
Kogo, Nobuhiko; Tsutsui, Yoshimitsu; Kato, Koji; and Kishigami, Hisao, 4,409,160., Cl. 264-40.100.

Kislov, Vladimir G.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Kitamoto, Tatsuji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,409,281., Cl. 428-212.000.

Kitamura, Masuo: *See—*
Yoshikawa, Tsukasa; and Kitamura, Masuo, 4,408,697., Cl. 220-279.000.

Kitamura, Yoichi; Hotta, Hisashi; and Yurita, Chikara, to Toyo Seikan Kaisha, Ltd. Welded can and process for preparation thereof. 4,409,456., Cl. 219-64.000.

Kitao, Ikuo: *See—*
Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, 4,408,847., Cl. 351-211.000.

Kiyota, Takao: *See—*
Hayashi, Hiroshi; Kiyota, Takao; and Shibukawa, Mitsuru, 4,409,105., Cl. 210-679.000.

Kjoller, Hans O. S., to Telefonaktiebolaget L M Ericsson. Method and apparatus for inserting instructions in a control sequence in a stored program controlled telecommunications system. 4,409,651., Cl. 364-200.000.

Kleber, Peter, to Deutsche Forschungs- und Versuchsanstalt fur Luft. Apparatus for acceleration-free mounting of a body in a spacecraft. 4,408,740., Cl. 244-158.00R.

Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,409,230., Cl. 424-267.000.

Kleinewefers, Jaeggli AG: *See—*
Tschirner, Wolfgang, 4,408,362., Cl. 8-151.000.

Kleinknecht, Hans P.; Ham, William E.; and Meier, Heinrich, to RCA Corporation. Optical measurements of fine line parameters in integrated circuit processes. 4,408,884., Cl. 356-355.000.

Kleuskens, Engelina C.; Maessen, Johannes G. H.; and van de Mond, Theodorus J., to Stamicarbon, B.V. Catalyst reactivation. 4,409,122., Cl. 502-20.000.

Kline, Richard B., II: *See—*
Neumann, Leopold; and Kline, Richard B., II, 4,409,652., Cl. 364-200.000.
Neumann, Leopold; and Kline, Richard B., II, 4,409,669., Cl. 364-900.000.

Kloss, Henry E. Projection television tube and process for forming same. 4,409,515., Cl. 313-477.00R.

Knapp, Robert L., to American Seating Company. Office chairs. 4,408,800., Cl. 297-285.000.

Knecht, George W., to Midland-Ross Corporation. Terminator connector for shielded cables. 4,408,816., Cl. 339-143.00R.

Knecht, Heinz: *See—*
Meller, Theo; and Knecht, Heinz, 4,408,773., Cl. 280-611.000.

Knifton, John F.: *See—*
Lin, Jiang-Jen; and Knifton, John F., 4,409,405., Cl. 568-902.000.

Knight, David: *See—*
Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, 4,409,529., Cl. 318-653.000.

Knijnenburg, Johannus P. H.; and Verhoeven, Bernardus, to U.S. Philips Corporation. Gain compensated transistor amplifier. 4,409,558., Cl. 330-288.000.

Kobari, Katsuo; and Hachisuka, Yoshiaki, to Fanuc Ltd. Apparatus for preventing phase control mechanism malfunction. 4,409,648., Cl. 363-54.000.

Kobari, Sadami: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Kobayashi, Hidetoshi: *See—*
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,409,240., Cl. 424-319.000.

Kobayashi, Hisamine; and Miyashiro, Mutsumi, to Shikishima Tipton Mfg. Co., Ltd. Fully automatic barrel finishing machine. 4,408,417., Cl. 51-163.200.

Kobayashi, Hisashi; and Anderson, John E., to Union Carbide Corporation. Process for firing a furnace. 4,408,982., Cl. 431-10.000.

Kobayashi, Makoto; Yamamoto, Tetsuji; and Jimbo, Yoshihiro, to Nippon Telegraph & Telephone Public Corporation. Method and equipment for processing gray scale facsimile signal. 4,409,623., Cl. 358-261.000.

Kobayashi, Shigeru, to Nissan Motor Company, Ltd. Heating apparatus for motor vehicles. 4,408,714., Cl. 237-12.30C.

Kobinger, Walter: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.

Koblanski, John N., to Ocean Ecology Ltd. Ultrasound measuring instrument. 4,408,494., Cl. 73-646.000.

Kobylinski, Thaddeus P.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,409,404., Cl. 568-902.000.

Koch, Hans: *See—*
Bruhwiler, Eduard; and Koch, Hans, 4,408,461., Cl. 60-737.000.

Kocks Technik GmbH & Co.: *See—*
Brauer, Hans; and Demny, Werner, 4,408,476., Cl. 72-229.000.

Koehler, Rudolph, to Noma Canada Ltd. Multiple outlet and cover therefor. 4,408,813., Cl. 339-38.000.

Koehring GmbH: *See—*
Kuhn, Hans; and Viecenz, Arno, 4,408,668., Cl. 173-139.000.

Kogo, Nobuhiko; Tsutsui, Yoshimitsu; Kato, Koji; and Kishigami, Hisao, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for controlling the thickness of a film product. 4,409,160., Cl. 264-40.100.

Kohashi, Takahiro: *See—*
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.

Kohler, Armin; Schuster, Herbert; and Renner, Rudi, to Bayer Aktiengesellschaft. Sealing agent and lubricant for medium-pressure and high-pressure autoclaves. 4,409,187., Cl. 422-135.000.

Kohler Co.: *See—*
Rozek, Roy J., 4,408,361., Cl. 4-331.000.

Kohno, Mitsuo: *See—*
Matsuda, Kazuo; Kohno, Mitsuo; and Doi, Yoshinao, 4,409,339., Cl. 521-143.000.

Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, to Hitachi, Ltd. Microwave discharge ion source. 4,409,520., Cl. 315-39.000.

Kojima, Hiroaki, to Minolta Camera Kabushiki Kaisha. Control system for electrostatic recording apparatus. 4,408,871., Cl. 355-14.00R.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Wakabayashi, Hiroha..., 4,408,831., Cl. 350-269.000.

Kolbesen, Bernd, to Siemens Aktiengesellschaft. Method for cutting a semiconductor crystal into wafers. 4,409,075., Cl. 204-129.300.

Kolouch, Robert J.; and Michel, Rudolph H., to Du Pont de Nemours, E. I., and Company. Process for extruding a modified high molecular weight poly(ethylene terephthalate) resin. 4,409,167., Cl. 264-102.000.

Kolstedt, Mark W.: *See—*
Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., 4,408,692., Cl. 206-438.000.

Komatsu, Akitoshi: *See—*
Okamura, Yuichi; and Komatsu, Akitoshi, 4,408,531., Cl. 101-415.100.

Kompelien, Arlon D., to Honeywell Inc. Cyclic means with magnetic latch for checking switch integrity. 4,409,552., Cl. 324-415.000.

Kondo, Atsushige; and Kondo, Masakazu. Apparatus for automatically producing comforters. 4,408,552., Cl. 112-119.000.

Kondo, Masakazu: *See—*
Kondo, Atsushige; and Kondo, Masakazu, 4,408,552., Cl. 112-119.000.

Konishi, Akio: *See—*
Fujiwara, Kazuaki; and Konishi, Akio, 4,409,350., Cl. 524-180.000.

Konishi, Masataka: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,409,210., Cl. 424-177.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ezaki, Atsuo; and Murakami, Takeshi, 4,409,322., Cl. 430-523.000.
Fujii, Yozo; and Shiozawa, Takao, 4,408,867., Cl. 355-8.000.
Onodera, Kaoru; Iijima, Toshifumi; and Fujimastu, Wataru, 4,409,321., Cl. 430-383.000.
Sato, Ryosuke; Hotta, Yuji; and Matsuura, Katsumi, 4,409,323., Cl. 430-544.000.

Konther-Chamorro, Siegfried: *See—*
Konther, Siegfried; and Konther-Chamorro, Siegfried, 4,408,578., Cl. 123-56.00R.

Konther, Siegfried; and Konther-Chamorro, Siegfried. Piston engine as a combustion engine or as a compressor with opposed cylinders. 4,408,578., Cl. 123-56.00R.

Kontsov, Jury M.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Koon, Norman C., to United States of America, Navy. Amorphous transition metal-lanthanide alloys. 4,409,043., Cl. 148-403.000.

Koop, Hermann: *See—*
Bartholdsten, Dieter; Koop, Hermann; Schrode, Erhard; and Zielasek, Adelbert, 4,409,169., Cl. 264-107.000.

Koppe, Herbert: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.

Korb, George P. Hanger for rectangular-section downspouts. 4,408,742., Cl. 248-74.00R.

Koreicho, Wladimir, to Societe Anonyme de Telecommunications. System for guiding a missile by light beam. 4,408,734., Cl. 244-3.130.

Korf-Stahl AG: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-28.000.

Koski, Dennis G.: *See—*
Jeruzal, Thomas M.; and Koski, Dennis G., 4,408,642., Cl. 144-286.00A.

Kossoff, George; and Robinson, David E., to Commonwealth of Australia, The. Signal processing equipment for ultrasonic visualization. 4,408,492., Cl. 73-631.000.

Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic valve lift device. 4,408,580., Cl. 123-90.160.

Koval, Ivan A.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Kowal, Wieslaw M.: *See—*
Skinner, Geoffrey F.; and Kowal, Wieslaw M., 4,409,196., Cl. 423-359.000.

Koyama, Masao: *See—*
Kanno, Ken-ichi; Gatayama, Tetsuya; and Koyama, Masao, 4,409,088., Cl. 204-402.000.

Kozaki, Syuichi; Funada, Fumiaki; and Minezaki, Shigehiro, to Sharp Kabushiki Kaisha. Antireflection, liquid crystal, electrode and nonconductive layer. 4,408,837., Cl. 350-336.000.

Krabetz, Richard; Merger, Franz; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Oxidation catalyst, especially for the preparation of methacrylic acid by gas phase oxidation of methacrolein. 4,409,128., Cl. 502-211.000.

Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, to BASF Aktiengesellschaft. Copper complexes. 4,409,358., Cl. 524-547.000.

Kralik, Andrew J.: *See—*
Di Marco, Bernard; and Kralik, Andrew J., 4,409,573., Cl. 335-16.000.

Kramer, George H.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Kraus, Charles E., to Excelermatic Inc. Traction roller transmission. 4,408,502., Cl. 74-789.000.

Kraus, Charles E., to Excelermatic Inc. Traction roller transmission. 4,408,503., Cl. 74-798.000.

Kraus, Mark G., to Westinghouse Electric Corp. Electrical power system with fault tolerant control unit. 4,409,635., Cl. 361-62.000.

Krause, Helmfried; Wobbermin, Hubertus; and Geigle, Edgar, deceased (by Geigle, Brigitte, legal representative), to Degussa Aktiengesellschaft. Safety device for packagings which contain hydrogen emitting pyrophoric metallic catalysts. 4,409,185., Cl. 422-113.000.

Krautwurst, John. Dismountable furniture. 4,408,812., Cl. 312-256.000.

Kreibich, Willard H.: *See—*
Gilleo, Kenneth B.; and Kreibich, Willard H., 4,409,264., Cl. 427-265.000.

Kreinik, Stephen: *See—*
McMann, Renville H., Jr.; Kreinik, Stephen; and Novack, Martin M., 4,409,615., Cl. 358-111.000.

Krishnakumar, Suppayan M.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,409,161., Cl. 264-40.100.

Kubler, Eberhard, to Hafele KG. Fitting for connecting two vertically abutting bodies of furniture. 4,408,923., Cl. 403-20.000.

Kubler, Hermann: *See—*
Bauer, Karl; Dammann, Peter; Kubler, Hermann; and Lorenz, Hellmut, 4,408,448., Cl. 57-336.000.

Kubota Ltd.: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,409,025., Cl. 420-584.000.

Kubota, Minoru: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, 4,409,197., Cl. 423-415.00P.

Kudo, Ichiro: *See—*
Yabuhara, Hideo; and Kudo, Ichiro, 4,408,584., Cl. 123-440.000.

Kugimiya, Fusayoshi: *See—*
Mochizuki, Norihiro; and Kugimiya, Fusayoshi, 4,408,964., Cl. 417-310.000.

Kuhl, Henry Y. Article washing means with movable spray heads. 4,408,625., Cl. 134-144.000.

Kuhn, Dieter; Rach, Heinz-Dieter; Frerichs, Udo; and Pieper, Henner, to Continental Gummi-Werke Aktiengesellschaft. Vehicle wheel. 4,408,647., Cl. 152-330.0RF.

Kuhn, Hans; and Viecenz, Arno, to Koehring GmbH. Impact transfer device for power rams. 4,408,668., Cl. 173-139.000.

Kukes, Semyon: *See—*
Johnson, Marvin M.; Nowack, Gerhard P.; and Kukes, Semyon, 4,409,418., Cl. 585-667.000.

Kulkarni, Satish V.; and Stone, Richard G. Rimmed and edge thickened Stodola shaped flywheel. 4,408,500., Cl. 74-572.000.

Kumagai, Akira: *See—*
Miyazaki, Kunio; Okosi, Yukio; Kumagai, Akira; and Suzuki, Hitoshi, 4,409,079., Cl. 204-192.00C.

Kumasaka, Hideo: *See—*
Tanimura, Yusaburo; and Kumasaka, Hideo, 4,409,359., Cl. 524-575.000.

Kummer, Werner: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.

Kummerling, Rolf; Poos, Robert; Pentzien, Thomas; and Papierok, Karl-Heinz, to Mannesmann Aktiengesellschaft. Adjustable press tool. 4,408,477., Cl. 72-478.000.

Kuntz, Raymond: *See—*
Combes, Gilles; and Kuntz, Raymond, 4,408,892., Cl. 366-337.000.

Kuo, Charles Y., to CTS Corporation. Process for air firing oxidizable conductors. 4,409,261., Cl. 427-96.000.

Kurafuji, Setsuo; and Tanimoto, Kazuo, to Fujitsu Limited. Static memory circuit. 4,409,679., Cl. 365-227.000.

Kuraray Co., Ltd.: *See—*
Mori, Fumio; and Omura, Yoshiaki, 4,409,238., Cl. 424-304.000.
Takamatsu, Hideo; and Minatono, Shobu, 4,409,056., Cl. 156-334.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,409,240., Cl. 424-319.000.

Kurihara, Hiroshi, to Fujitsu Limited. Phase correction circuit employing bandpass filters. 4,409,562., Cl. 331-1.00A.

Kurozu, Shinichi, to Sumitomo Heavy Industries, Ltd. Method of producing low-sulfur, reduced, iron ore pellets. 4,409,022., Cl. 75-36.000.

Kurzrock, John W.; and Tramm, Peter C., to General Motors Corporation. Supersonic blading. 4,408,957., Cl. 416-237.000.

Kusano, Takuo; Masuda, Kouichi; and Namba, Masatoshi, to Nippon Light Metal Co., Ltd. Method of producing an aluminum wheel rim. 4,408,379., Cl. 29-159.100.

Kusche, David W., to Brunswick Corporation. Induction system for a two-cycle engine. 4,408,579., Cl. 123-73.00V.

Kuschel, Georg; and Reinhardt, Hartmut. Electrode arrangement for electrostatic deflection system. 4,409,487., Cl. 250-398.000.

Kusumgar, Rajal M.: *See—*
Froix, Michael F.; and Kusumgar, Rajal M., 4,409,370., Cl. 525-414.000.

Kuwata, Mitsuo: *See—*
Sakiyama, Kazuo; Kuwata, Mitsuo; and Oshiumi, Masaru, 4,409,077., Cl. 204-159.150.

Kyoto Ceramic Co., Ltd.: *See—*
Kawamura, Takao; and Masazumi, Yoshida, 4,409,311., Cl. 430-95.000.

L. & C. Steinmuller GmbH: *See—*
Hermanns, Bernd; and Michalak, Stanislaw, 4,408,659., Cl. 165-10.000.

Labatt Brewing Company Limited: *See—*
Stewart, Graham G.; Goring, Thomas E.; and Russell, Ingeborg, 4,409,246., Cl. 426-16.000.

Labelle, Henri M. R. Mounting assembly for a folding closure. 4,408,369., Cl. 16-102.000.

Laboratoire L. Lafon: *See—*
Lafon, Louis, 4,409,242., Cl. 424-326.000.

Labrum, Ervin D. Color correction adapter for photographic enlargers. 4,408,873., Cl. 355-36.000.

Lafon, Louis, to Laboratoire L. Lafon. 4-Phenoxy-3-hydroxybutyramidoxime derivatives. 4,409,242., Cl. 424-326.000.

Lafont, Larry J., to Conoco Inc. Valve modification for fluid pump valves. 4,408,629., Cl. 137-329.040.

Lagarde, Robert; and Vrisakis, Georges, to Rhone-Poulenc Industries. Organosilicic elastomers reinforced with improved precipitated silica particulates. 4,409,356., Cl. 524-492.000.

Laigle, Jean-Claude: *See—*
Combourieu, Michel; Laigle, Jean-Claude; and Busch, Norbert, 4,409,221., Cl. 424-250.000.

Lamarque, Etienne: *See—*
Deffayet, Jean; and Lamarque, Etienne, 4,408,538., Cl. 102-522.000.

Landau, Adela, to Macdermid Incorporated. Adhesion promoter for printed circuits. 4,409,037., Cl. 148-6.14R.

Lane Company, Inc., The: *See—*
Mizelle, Ned W., 4,408,796., Cl. 297-85.000.

Lang, Gunter: *See—*
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.
Lang, Gunther; and Wajaroff, Theodor, to Wella Aktiengesellschaft. Means for the aftertreatment of permanently deformed hair. 4,409,204., Cl. 424-70.000.
Lange, Peter M.: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.
Langer, Arthur W., Jr.; Doyle, Gerald; Burkhardt, Terry J.; and Looney, Ralph W., to Exxon Research and Engineering Co. Two stage olefin wax process. 4,409,409., Cl. 585-255.000.
Langer, Arthur W., Jr., to Exxon Research and Engineering Co. Preparation of linear olefin products. 4,409,414., Cl. 585-524.000.
Lanter, Kent J.: *See—*
Kerbs, Brad J.; and Lanter, Kent J., 4,408,565., Cl. 119-52.00R.
Larker, Hans; and Tegman, Ragnar, to ASEA Aktiebolag. Container for enclosing radioactive waste and a method for treating waste enclosed in the container. 4,409,029., Cl. 419-10.000.
Larsen, Richard J.: *See—*
Hatch, Donald M.; and Larsen, Richard J., 4,409,048., Cl. 156-155.000.
Larsen, Tor G.: *See—*
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,408,885., Cl. 356-401.000.
Larsson, Lars G.: *See—*
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,409,176., Cl. 264-527.000.
Lashua, Duane W.: *See—*
Albertson, Clarence E.; Horwath, John A.; and Lashua, Duane W., 4,409,298., Cl. 428-614.000.
Laske, Louis L.; and Harreld, Donald R., to Vonco Products, Inc. Plastic bags having a pressure resistant closure. 4,408,643., Cl. 383-70.000.
Laskey, Ben G. Press loader. 4,408,950., Cl. 414-749.000.
LaSpesa, Richard E.: *See—*
Ciesiel, Allen R.; LaSpesa, Richard E.; and Zolavvar, Ruperto B., 4,408,914., Cl. 400-208.000.
Last, Anthony J. Sonic liquid atomizer. 4,408,719., Cl. 239-102.000.
Lat, Geronimo E.: *See—*
Martinelli, Lawrence R.; and Lat, Geronimo E., 4,409,276., Cl. 428-142.000.
Latimer, John P., to Deepsea Ventures, Inc. Pivotable articulated support shoe for hydraulic nozzle. 4,408,404., Cl. 37-58.000.
Latos, Edwin J.; and Payne, John C., to UOP Inc. Corrosion inhibitors. 4,409,121., Cl. 252-389.00A.
Lautensleger, Richard W.; Bingham, George R.; and Trepanier, Peter J., to Armco Inc. Roof construction with stabilized Z-purlins. 4,408,423., Cl. 52-90.000.
Lauterbach, John H. F.: *See—*
Kimmel, David J.; and Lauterbach, John H. F., 4,409,582., Cl. 337-231.000.
Lawson, Charles L. Sod handling apparatus. 4,408,666., Cl. 172-19.000.
Lawson, John A.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.
Laybourne, Bernard D., to Chandler Evans, Inc. Jet pump with integral pressure regulator. 4,408,961., Cl. 417-189.000.
Layfield, James D., to Baker Perkins Inc. Centrifugal pelletizers. 4,408,972., Cl. 425-8.000.
Lear Siegler, Inc.: *See—*
Bassoff, Arthur B., 4,408,473., Cl. 72-108.000.
Leavitt, Richard A.: *See—*
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., 4,408,414., Cl. 47-1.00R.
Leblanc, Raymond F.; and Cummins, William T., to Teledyne Industries Inc. Shock cell product. 4,408,931., Cl. 405-213.000.
Lederman, Albert, to MSI Electronics Inc. Mercury-probe apparatus. 4,409,547., Cl. 324-158.00P.
Ledley, Robert S., to Georgetown University. Digital dental system and method. 4,409,616., Cl. 358-111.000.
Lee, Emerson H.: *See—*
Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,409,127., Cl. 502-205.000.
Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,409,133., Cl. 502-354.000.
Lee, Garland G., to General Electric Company. Compositions comprising thermoplastic resin and long chained fatty acid. 4,409,351., Cl. 524-322.000.
Lee, James K., to Eastman Kodak Company. Electromagnetic actuator having a compliant armature. 4,408,858., Cl. 354-234.000.
Lee, Norman J., to Matburn (Holdings) Limited. Hydraulic control valve mechanism. 4,408,633., Cl. 137-596.200.
Legros, Andre; and Chalesle, Andre, to Regie Nationale des Usines Renault. Engine vibration filtration system. 4,408,785., Cl. 285-49.000.
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., to Board of Trustees operating Michigan State University. Detection apparatus and method of use. 4,408,414., Cl. 47-1.00R.
Lehnhardt, William F.; and Orthoefer, Frank T., to A. E. Staley Manufacturing Company. Heat-gelling and foam-stabilizing enzymatically modified vegetable isolates. 4,409,248., Cl. 426-46.000.
Leiber, Heinz, to Robert Bosch GmbH. Speed-controlled servo-assisted steering apparatus. 4,408,673., Cl. 180-141.000.
Lelental, Mark; Rasch, Arthur A.; and Sullivan, David P., to Eastman Kodak Company. Electrically active inorganic interlayer for electrically activatable recording. 4,409,307., Cl. 430-31.000.
Lembke, Andreas: *See—*
Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, 4,409,245., Cl. 426-9.000.
Lenahan, Terrence A.: *See—*
Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., 4,409,263., Cl. 427-163.000.
Lenderking, Bruce N.: *See—*
Couch, Robert D.; and Lenderking, Bruce N., 4,408,495., Cl. 73-655.000.
Le Noane, Georges E.; and Nonclercq, Bernard G. Optical fibre submarine cable. 4,408,828., Cl. 350-96.230.
Lenoir, John; and Jan, Gerald, to Ciba-Geigy AG. Monoazo dyes containing phosphamic acid diester groups. 4,409,143., Cl. 260-205.000.
Lenski, Ralph; Peiler, Rolf W.; and Pauli, Klaus H., to Deere & Company. Conveyor arrangement for a combine harvester. 4,408,947., Cl. 414-526.000.
Lentz, Joe B. Electronic signal simulation device. 4,409,554., Cl. 328-14.000.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiski Fabrik Produktionsaktieselskab): *See—*
Arrigoni-Martelli, Edoardo, 4,409,222., Cl. 424-251.000.
Leon, Gonzalo S.; Fraize, John E.; and Fortier, Richard C., to Cabot Corporation. Method of densifying powders. 4,409,171., Cl. 264-120.000.
Leone, Ronald A.: *See—*
Colacino, James J.; and Leone, Ronald A., 4,409,319., Cl. 430-296.000.
Leone, Sam: *See—*
Bloom, Hanley D.; Bloom, Stanley; Perry, Fred E.; and Leone, Sam, 4,408,407., Cl. 40-607.000.
Leonov, Ivan A.; Smirnov, Boris V.; Mashinin, Vladimir V.; and Sharovatov, Viktor I. Orthocyclic coil winding machine. 4,408,726., Cl. 242-7.090.
Lepesant, Jean P.; and Tantot, Georges, to Societe IMAJE. High stability printing liquid, intended more particularly for printing by ink jet. 4,409,039., Cl. 106-20.000.
LeRoy, Charles F., to UOP Inc. Simulated moving bed separation process for high viscosity feed streams. 4,409,033., Cl. 127-46.200.
Le Stang, Jean-Claude; and Thomin, Georges, to Centre National d'Etudes Spatiales. Method and device for the transmission of electric power between parts turning at low speed. 4,409,493., Cl. 307-132.00R.
LeSuer, William M., to Lubrizol Corporation, The. Combinations of hydroxy amines and carboxylic dispersants as fuel additives. 4,409,000., Cl. 44-70.000.
Lesueur, Claude: *See—*
Sigwald, Jacques; and Lesueur, Claude, 4,408,451., Cl. 60-322.000.
Letuan, Phac: *See—*
Dahan, Pierre-Louis; and Letuan, Phac, 4,409,583., Cl. 340-22.000.
Leung, Danton K.; and Singh, Prithipal, to Syva Company. Valproate conjugation using dicarbonyls. 4,409,325., Cl. 435-7.000.
Leupold & Stevens, Inc.: *See—*
Gibson, Dale E., 4,408,842., Cl. 350-560.000.
Levenspiel, Octave; and Chan, Riley T. Countercurrent heat exchanger for two streams of solids using heat pipes. 4,408,656., Cl. 165-1.000.
Lever, Clyde J., Jr.: *See—*
Brown, Robert J.; and Lever, Clyde J., Jr., 4,408,443., Cl. 57-204.000.
Levine, Michael R. Thermostat with adaptive operating cycle. 4,408,711., Cl. 236-11.000.
Lewis, Dennis L.: *See—*
Ketteringham, Terence A.; Lewis, Dennis L.; and Mayley, David E., 4,408,378., Cl. 28-289.000.
Lewis, Philip C., to Southwestern Pipe, Inc. Integral fence post and cap. 4,408,748., Cl. 256-11.000.
Ley, Gregor: *See—*
Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, 4,409,358., Cl. 524-547.000.
Leybold Heraeus GmbH: *See—*
Forth, Hans-Joachim, 4,408,469., Cl. 62-514.00R.
Heimbach, Klaus-Jurgen; and Zultzke, Walter, 4,408,563., Cl. 118-692.000.
Liang, Po-lung; and Fisher, Alan R., to Ford Motor Company. Multiple ratio torque converter transmission with main transmission planetary gearing and a compound torque splitter planetary gear unit between the converter and the multiple ratio gearing. 4,408,501., Cl. 74-688.000.
Libby, Charles J., to Automatix Incorporated. Method and apparatus for image acquisition utilizing a concave, cylindrical reflector. 4,409,478., Cl. 250-236.000.
Libert, James T.: *See—*
Profio, Mark V.; Libert, James T.; and Kampf, Julian C., 4,409,640., Cl. 361-197.000.
Libit, Sidney M. Dispenser coffee cap. 4,408,703., Cl. 222-284.000.
Lichter, Robert J. Safe, and method and apparatus for building it. 4,408,545., Cl. 109-50.000.

Lichtner, Frederick W.; and Rose, Jean T., to Betz Laboratories, Inc. Gas scrubbing methods. 4,409,192., Cl. 423-242.000.
Lieb, Julian. Treatment of auto-immune and inflammatory diseases. 4,409,243., Cl. 424-330.000.
Liebschner, Fritz: *See—*
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, 4,408,529., Cl. 101-415.100.
Lien, Jih-chang: *See—*
Mohan Rao, G. R.; Stanczak, John S.; Lien, Jih-chang; and Bhatia, Shyam, 4,408,385., Cl. 29-576.00B.
Lill, Helmut; and Bartl, Knut, to Boehringer Mannheim GmbH. Stabilized thrombin preparation. 4,409,334., Cl. 436-8.000.
Lill, Helmut: *See—*
Bartl, Knut; Lill, Helmut; Roeschlau, Peter; and Ziegenhorn, Joachim, 4,409,327., Cl. 435-13.000.
Lillie, Christian: *See—*
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.
Lim, Franklin, to Damon Corporation. Preparation of substances with encapsulated cells. 4,409,331., Cl. 435-178.000.
Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Production of ethanol from methanol and synthesis gas. 4,409,405., Cl. 568-902.000.
Lindgren, Stig: *See—*
Camitz, Carl-Henning; and Lindgren, Stig, 4,408,747., Cl. 254-382.000.
Lindmo, Tore; and Steen, Harald B., to Ernst Leitz Wetzlar GmbH. Device for hydrodynamic focussing of a particle-suspension in a liquid flow cytophotometer. 4,408,877., Cl. 356-38.000.
Lindsey, William B., to Du Pont de Nemours, E. I., and Company. Viscose preparation using low concentration caustic. 4,409,384., Cl. 536-60.000.
Ling, Nicholas C.; Guillemin, Roger C. L.; Ying, Shao-Yao; and Esch, Frederick S., to Salk Institute for Biological Studies, The. Gonadostatin. 4,409,139., Cl. 260-112.00R.
Lingenbach, Josef: *See—*
Bechthold, Paul; Joswig, Franz; and Lingenbach, Josef, 4,408,478., Cl. 73-24.000.
Link, Paul E.: *See—*
Anderson, Mark A.; Balliett, Robert W.; Link, Paul E.; and Satchell, Donald P., 4,408,985., Cl. 432-1.000.
Liquid Dynamics, Inc.: *See—*
Packer, Martin R., 4,408,635., Cl. 138-30.000.
Lissy, Gunter J., to Nordson Corporation. Powder spray booth. 4,409,009., Cl. 55-302.000.
Litterini, Donald E., to Technical Rubber Company, Inc. Tire repair unit. 4,408,649., Cl. 152-367.000.
Littrell, J. Kerry, to Peabody Spunstrand, Inc. Sound attenuator. 4,408,679., Cl. 181-243.000.
Liu, James: *See—*
Sandrock, Gary D.; Huston, Ernest L.; and Liu, James, 4,409,180., Cl. 420-455.000.
Livigni, Russell A.: *See—*
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Agarwal, Sundar L., 4,409,368., Cl. 525-314.000.
Lo, Kwok S., to Wavetek. Pulse delay compensation for frequency synthesizer. 4,409,564., Cl. 331-16.000.
Loctite Corporation: *See—*
Holmes, Mark; and Frauenglass, Elliott, 4,409,111., Cl. 252-30.000.
Loda, Gary K.; and Farrell, Sherman R., to RPC Industries. Phase transition cooled window for broad beam electron gun. 4,409,511., Cl. 313-34.000.
Lodge & Shipley Company, The: *See—*
Glover, Charles G., 4,408,436., Cl. 53-247.000.
Lodico, Richard. Windshield wiper cleaning product. 4,409,116., Cl. 252-91.000.
Lofgren, Folke; and Soderstrom, Sven-Erik, to ASEA Aktiebolag. Fiber optic temperature-measuring apparatus. 4,409,476., Cl. 250-227.000.
Loftin, Royal E.: *See—*
Carney, Leroy L.; Loftin, Royal E.; Anderson, Thomas E.; and Vasquez, Guillermo, 4,409,108., Cl. 252-8.50C.
Logic Devices, Inc.: *See—*
Allen, Paul E., 4,408,960., Cl. 417-54.000.
Lohrberg, Karl: *See—*
Haas, Gunther; Plass, Ludolf; and Lohrberg, Karl, 4,409,086., Cl. 204-269.000.
Long, William B.: *See—*
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,408,820., Cl. 339-156.00R.
Long, William D.; and Rottenkolber, Paul J., to Kennecott Corporation; and Volkswagenwerk Aktiengesellschaft. Ceramic radial turbine wheel. 4,408,959., Cl. 416-241.00B.
Longwell, John P.; and Peters, William A., to Massachusetts Institute of Technology. Process for detoxifying coal tars. 4,409,094., Cl. 208-121.000.
Longyear Australia Pty. Ltd.: *See—*
Paech, Ivor N., 4,408,766., Cl. 277-3.000.
Looney, Judy A. Supportive shoe and insert. 4,408,402., Cl. 36-43.000.
Looney, Ralph W.: *See—*
Langer, Arthur W., Jr.; Doyle, Gerald; Burkhardt, Terry J.; and Looney, Ralph W., 4,409,409., Cl. 585-255.000.
Lord Corporation: *See—*
Zalucha, Denis J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,409,383., Cl. 528-499.000.
L'Oreal: *See—*
Gaetani, Quintino; Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,409,379., Cl. 526-230.500.
Lorenz, Hellmut: *See—*
Bauer, Karl; Dammann, Peter; Kubler, Hermann; and Lorenz, Hellmut, 4,408,448., Cl. 57-336.000.
Louie, Edmund A., to GTE Products Corporation. Cable tension meter. 4,408,925., Cl. 403-27.000.
Lovey, Raymond G.: *See—*
Bristol, James A.; and Lovey, Raymond G., 4,409,226., Cl. 424-256.000.
Lowis, Royce; and Tunbridge, Peter M., to U.S. Philips Corporation. Method of manufacturing an insulated-gate field-effect transistor. 4,408,384., Cl. 29-571.000.
Lubrizol Corporation, The: *See—*
LeSuer, William M., 4,409,000., Cl. 44-70.000.
Lucas Industries Limited: *See—*
Edwards, Roy E.; and Price, Anthony G., 4,408,805., Cl. 303-6.00A.
Ludwig, George C.: *See—*
Dodson, Daniel P.; and Ludwig, George C., 4,408,751., Cl. 267-120.000.
Luepertz, Hans-Henning, to ITT Industries, Inc. Mechanically controllable brake booster. 4,408,457., Cl. 60-547.100.
Luft, Harald, to Kernforschungsanlange Julich GmbH. Method of determining sulfur dioxide in gases and apparatus therefor. 4,409,069., Cl. 204-1.00T.
Luwa A.G.: *See—*
Rice, William T., III, 4,408,893., Cl. 366-339.000.
Lynch, Thomas E.: *See—*
Dibble, Eric P.; and Lynch, Thomas E., 4,409,071., Cl. 204-15.000.
Lyon Metal Products, Incorporated: *See—*
Steinke, Mark H., 4,408,928., Cl. 403-405.000.
Lyons, Charles E.; and Tung, Lu H., to Dow Chemical Company, The. Transparent impact resin and process for the preparation thereof. 4,409,369., Cl. 525-314.000.
M.A.N.—Roland Druckmaschinen Aktiengesellschaft: *See—*
Mathes, Josef, 4,408,526., Cl. 101-216.000.
Rebel, Herbert, 4,408,525., Cl. 101-183.000.
Macdermid Incorporated: *See—*
Landau, Adela, 4,409,037., Cl. 148-6.14R.
Machat, Jean-Yves: *See—*
Gerard, Francois; and Machat, Jean-Yves, 4,409,304., Cl. 429-158.000.
Machonis, John, Jr.: *See—*
Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,409,364., Cl. 525-74.000.
MacInnis, Martin B.: *See—*
Vanderpool, Clarence D.; and MacInnis, Martin B., 4,409,019., Cl. 75-0.5AA.
Mack, Karl E.: *See—*
Muller, Werner H.; Mack, Karl E.; and Hey, Hansjorg, 4,409,400., Cl. 568-346.000.
Mackay, Donald A. M.: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., 4,409,244., Cl. 426-5.000.
Witzel, Frank; DiNolfo, Mario A.; Rodney, Burton; and Mackay, Donald A. M., 4,409,202., Cl. 424-49.000.
Macklem, F. Sutherland. Colorimeter test kit apparatus. 4,409,182., Cl. 422-61.000.
Mactron, Inc.: *See—*
DeCamp, James E.; Arndt, Raymond J.; and Gruzewski, Ronald L., 4,408,562., Cl. 118-669.000.
Madan, Arun: *See—*
Ovshinsky, Stanford R.; and Madan, Arun, 4,409,605., Cl. 357-2.000.
Maeshima, Katsuyoshi: *See—*
Tomosada, Masahiro; and Maeshima, Katsuyoshi, 4,408,869., Cl. 355-14.00R.
Maessen, Johannes G. H.: *See—*
Kleuskens, Engelina C.; Maessen, Johannes G. H.; and van de Mond, Theodorus J., 4,409,122., Cl. 502-20.000.
Magnum Division of Tandon Corporation: *See—*
Puls, Norman M., 4,409,629., Cl. 360-99.000.
Maguire, James V. Expansion sleeve. 4,408,938., Cl. 411-71.000.
Magyar, Karoly: *See—*
Benko, Pal; Bozsing, Daniel; Gundel, Jamos; and Magyar, Karoly, 4,409,219., Cl. 424-250.000.
Mahagan, Deroy E.: *See—*
Keller, Phillip D.; Urich, Oren D.; and Mahagan, Deroy E., 4,408,551., Cl. 111-85.000.
Mahieu, Claude: *See—*
Gaetani, Quintino; Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,409,379., Cl. 526-230.500.
Maier-Laxhuber, Peter: *See—*
Alefeld, Georg; and Maier-Laxhuber, Peter, 4,408,468., Cl. 82-476.000.
Maine: *See—*
Fetchin, John A., 4,409,131., Cl. 502-263.000.
Maine, James W.: *See—*
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., 4,408,414., Cl. 47-1.00R.
Maja Maschinenfabrik Hermann Schill GmbH: *See—*
Schill, Herman, 4,408,519., Cl. 99-486.000.

Majima, Teiji, to Fujitsu Limited. Method of projecting circuit patterns. 4,408,875., Cl. 355-53.000.

Malaviya, Shashi D., to International Business Machines Corporation. Single isolation cell for DC stable memory. 4,409,673., Cl. 365-180.000.

Malom-Es Sutoipari Kutatointezet: *See—*
Solymes, Laszlo, 4,409,008., Cl. 55-261.000.

Maltsev, Vladimir I.: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.

Maltz, Javier E., to Etablissement Texcontor. Non-absorbable compounds of mucolytic activity, the process for their preparation, and therapeutic compositions which contain them as active principle. 4,409,138., Cl. 260-112.00R.

Mannesmann Aktiengesellschaft: *See—*
Frommann, Klaus, 4,409,265., Cl. 427-271.000.
Kummerling, Rolf; Poos, Robert; Pentzien, Thomas; and Papierok, Karl-Heinz, 4,408,477., Cl. 72-478.000.

Mannington Mills: *See—*
Wiley, John W.; Brower, Charles H.; and Wang, David, 4,409,280., Cl. 428-203.000.

Mansion Industries, Inc.: *See—*
Zieg, Steven A., 4,408,749., Cl. 256-67.000.

Mantis Excavators, Ltd.: *See—*
Witty, Brian H., 4,408,949., Cl. 414-694.000.

Marcamor, Inc.: *See—*
Brodbeck, Robert M., 4,409,440., Cl. 179-90.0BD.

Markarian, Paul M., to Sprague Electric Company. Capacitor cover-terminal assembly. 4,408,818., Cl. 339-147.00C.

Marley, Christopher: *See—*
Darwood, Phillip I.; Holland, Ernest; Taylor, Peter M.; and Marley, Christopher, 4,408,399., Cl. 33-203.180.

Marsch, James E.; and Eckert, Herbert L., to Harnischfeger Corporation. Hydraulically actuated winch assembly. 4,408,746., Cl. 254-344.000.

Marshall, Claude J., Jr., to Rockwell International Corporation. Composite wheel cover. 4,408,804., Cl. 301-37.00R.

Marshall, Samuel W. Generalized drifting oceanographic sensor. 4,408,488., Cl. 73-170.00A.

Martel, Catala & Cie: *See—*
Karm, Robert, 4,408,637., Cl. 139-425.00A.

Martensson, Anders K.: *See—*
Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., 4,408,682., Cl. 188-202.000.

Marti, Jordi: *See—*
Datta, Amitava; Davis, Lance A.; DeCristofaro, Nicholas J.; and Marti, Jordi, 4,409,041., Cl. 148-31.550.

Martin, Hans. Sports shoe or boot. 4,408,403., Cl. 36-115.000.

Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., to Hoechst-Roussel Pharmaceuticals, Inc. Process for preparing 4-phenyl-1,3-benzodiazepines. 4,409,145., Cl. 260-239.0BD.

Martin, Michael K., to Shell Oil Company. Process for forming oil-soluble product. 4,409,120., Cl. 525-280.000.

Martin, Roger: *See—*
Whitehead, Norman P.; Boness, Kenneth D.; and Martin, Roger, 4,409,617., Cl. 358-147.000.

Martinelli, Lawrence R.; and Lat, Geronimo E., to United States Gypsum Company. Metal article having three-dimensional wood grain and stainable coating. 4,409,276., Cl. 428-142.000.

Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Pump for supplying liquid fuel. 4,408,966., Cl. 417-356.000.

Maryland Cup Corporation: *See—*
Busse, Charles E., 4,409,045., Cl. 156-69.000.

Masao, Sasaki, to Oki Electric Industry Co., Ltd. Ink ribbon protecting mechanism in ink ribbon cartridge. 4,408,910., Cl. 400-207.000.

Masazumi, Yoshida: *See—*
Kawamura, Takao; and Masazumi, Yoshida, 4,409,311., Cl. 430-95.000.

Masco Corporation of Indiana: *See—*
Baker, William, 4,409,688., Cl. 455-165.000.

Maseki, Shinobu: *See—*
Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, 4,408,462., Cl. 60-330.000.

Mashinin, Vladimir V.: *See—*
Leonov, Ivan A.; Smirnov, Boris V.; Mashinin, Vladimir V.; and Sharovatov, Viktor I., 4,408,726., Cl. 242-7.090.

Mason, Robert J.: *See—*
Patton, Willard T.; and Mason, Robert J., 4,409,566., Cl. 333-26.000.

Massachusetts Institute of Technology: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.
Longwell, John P.; and Peters, William A., 4,409,094., Cl. 208-121.000.

Masters, Jeffrey; Saimbi, Manjit S.; and Webb, Roger J., to British Gas Corporation. Recuperative burners. 4,408,983., Cl. 431-116.000.

Masuda, Kouichi: *See—*
Kusano, Takuo; Masuda, Kouichi; and Namba, Masatoshi, 4,408,379., Cl. 29-159.100.

Masugi, Takashi: *See—*
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,214., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,215., Cl. 424-246.000.

Matburn (Holdings) Limited: *See—*
Lee, Norman J., 4,408,633., Cl. 137-596.200.

Mathes, Josef, to M.A.N.—Roland Druckmaschinen Aktiengesellschaft. No-play gear drive for printing machines. 4,408,526., Cl. 101-216.000.

Mathewson, Myron: *See—*
Murnane, Raymond J.; Gomore, Stephen C.; and Mathewson, Myron, 4,408,467., Cl. 62-296.000.

Matsubara, Noboru: *See—*
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,408,580., Cl. 123-90.160.

Matsuda, Kazuo; Kohno, Mitsuo; and Doi, Yoshinao, to Asahi Kasei Kogyo. Hydrophilic sulfonated polyolefin porous membrane and process for preparing the same. 4,409,339., Cl. 521-143.000.

Matsuda, Shimpei: *See—*
Takeuchi, Seizi; and Matsuda, Shimpei, 4,409,129., Cl. 502-185.000.

Matsui, Hiroshi; Sakami, Kazuo; Nishioka, Matsuo; and Onizawa, Takashi, to Matsushita Electric Industrial Co., Ltd. Pull-push switch. 4,409,448., Cl. 200-153.0LA.

Matsui, Hirotoshi: *See—*
Iwai, Hiroji; and Matsui, Hirotoshi, 4,408,917., Cl. 400-637.200.

Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Optical apparatus and method for reproducing information recorded in a magnetic recording medium. 4,409,631., Cl. 360-114.000.

Matsunaga, Isao: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Matsuo, Munetsugu: *See—*
Yokoyama, Hideo; Shimbashi, Ichiro; Sakurai, Koichi; and Matsuo, Munetsugu, 4,408,561., Cl. 118-72.000.

Matsushige, Takashi: *See—*
Mori, Toshinori; Tsuchikane, Yoshiyuki; and Matsushige, Takashi, 4,409,682., Cl. 369-3.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,409,632., Cl. 360-123.000.
Maruyama, Teruo, 4,408,966., Cl. 417-356.000.
Matsui, Hiroshi; Sakami, Kazuo; Nishioka, Matsuo; and Onizawa, Takashi, 4,409,448., Cl. 200-153.0LA.
Setsune, Kentaro; and Tanaka, Toshihide, 4,409,567., Cl. 333-151.000.

Matsuura, Katsumi: *See—*
Sato, Ryosuke; Hotta, Yuji; and Matsuura, Katsumi, 4,409,323., Cl. 430-544.000.

Matt. Hohner AG: *See—*
Deforeit, Christian J., 4,408,511., Cl. 84-1.010.

Matthews, Donald P., to Dow Chemical Co., The. 4-(((Heterocyclo)-thio)methyl)benzoic acids, esters and amides and their pharmaceutical use. 4,409,227., Cl. 424-263.000.

Mattia, Manlio M. Removal and concentration of organic vapors from gas streams. 4,409,006., Cl. 55-28.000.

Mattis, Donald J., to Sun Chemical Corporation. P. C. Board bobbin construction. 4,408,817., Cl. 339-147.00R.

Maurer, Donald D., to EMPI, Inc. Capacitive energy source and circuitry for powering medical apparatus. 4,408,607., Cl. 128-419.00R.

Mausner, Eberhard, to Robert Bosch GmbH. Apparatus for supplementary fuel metering in an internal combustion engine. 4,408,588., Cl. 123-489.000.

Mauz, Gerhard: *See—*
Gerstle, Volker; Mauz, Gerhard; and Zondler, Rolf, 4,409,306., Cl. 430-28.000.

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See—*
Scheid, Peter; and Slama, Heinrich, 4,409,482., Cl. 250-282.000.

Maximov, Jury V.: *See—*
Azarevich, Gennady M.; Maximov, Jury V.; Akimov, Boris I.; and Gusyatsky, Iosif A., 4,408,472., Cl. 72-71.000.

Mayer, Cornelius; Durrer, Jorg; and Weber, Ronald, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Method for indirectly laying a weapon and apparatus for the performance of the method. 4,409,468., Cl. 235-404.000.

Mayer, Rothkopf Industries, Inc.: *See—*
Quay, Earl R., 4,408,370., Cl. 19-105.000.
Quay, Earl R., 4,408,371., Cl. 19-114.000.

Mayley, David E.: *See—*
Ketteringham, Terence A.; Lewis, Dennis L.; and Mayley, David E., 4,408,378., Cl. 28-289.000.

Mazelsky, Bernard, to ARA, Inc. Variable energy absorbing system for crashworthy helicopter seats. 4,408,738., Cl. 244-122.00R.

Mazzafro, William J.: *See—*
Vora, Suresh M.; Mazzafro, William J.; Brian, Pierre L. T.; and Chen, Michael S. K., 4,409,064., Cl. 159-47.100.

McAfee, Catherine A.: *See—*
Santee, Harold P., 4,408,664., Cl. 166-263.000.

McAllister, Lawrence E.; and Dietrich, Herbert, to Fiber Materials, Inc. Fire retardant polymer resin. 4,409,361., Cl. 524-876.000.

McAllister (Sports Games) Limited: *See—*
McAllister, William, 4,408,761., Cl. 273-85.00R.

McAllister, William, to McAllister (Sports Games) Limited. Game and game devices. 4,408,761., Cl. 273-85.00R.

McCabria, Jack L., to Westinghouse Electric Corp. Self-cooled electrical machine with integrated fan and salient pole rotor. 4,409,502., Cl. 310-61.000.

McCormick & Company, Inc.: *See—*
Deline, G. Duane, 4,409,257., Cl. 426-651.000.

McCoy, James N. Gas gun assembly. 4,408,676., Cl. 181-113.000.

McElroy, Lucian G.; and Day, David R. Clamp for varying the hinging action of a fluid stripping bag. 4,409,035., Cl. 134-6.000.

McEvers, Dale L.: *See—*
Coy, Donald L.; and McEvers, Dale L., 4,408,506., Cl. 82-20.000.

McGibbon, Graeme, to Wiggins Teape Group Limited, The. Process for the manufacture of color developing material and product. 4,409,272., Cl. 428-98.000.

McGill, Howard L., to Schlumberger Technology Corporation. Rotary straddle tester apparatus with safety joint back-off clutch. 4,408,485., Cl. 73-155.000.

McIntire, Ronald A.: *See—*
Tyree, Charles N.; Fike, Lester L., Jr.; and McIntire, Ronald A., 4,409,443., Cl. 200-83.00N.

McKendrick, Lorne J. Method and apparatus for separating liquid and solid contaminants from a flowing gas. 4,409,005., Cl. 55-1.000.

McMann, Renville H., Jr.; Kreinik, Stephen; and Novack, Martin M., to Thomson-CSF Broadcast, Inc. Video imaging with automatically controlled radiation source. 4,409,615., Cl. 358-111.000.

McTamaney, Louis S.; and Haley, Frank P., to FMC Corporation. Ship-to-ship fluid transfer system. 4,408,943., Cl. 414-138.000.

Mechanical Technolgy Incorporated: *See—*
Rauch, Jeffrey S., 4,408,456., Cl. 60-518.000.

Meeks, Leighton A.: *See—*
Frimet, Stanley H.; and Meeks, Leighton A., 4,409,628., Cl. 360-73.000.

Mehdi, Mehdi G.: *See—*
Northcote, Reginald D.; and Mehdi, Mehdi G., 4,408,566., Cl. 122-4.00D.

Meier, Heinrich: *See—*
Kleinknecht, Hans P.; Ham, William E.; and Meier, Heinrich, 4,408,884., Cl. 356-355.000.

Meier, Jacques, to Ferag AG. Method and apparatus for gathering together sheets or the like into multi-sheet printed products, especially newspapers and magazines. 4,408,754., Cl. 270-52.000.

Meier, Jacques, to Ferag AG. Method and apparatus for forming multi-sheet printed products, especially newspapers and magazines. 4,408,755., Cl. 270-52.000.

Meinguss, Alain: *See—*
Basset, Jean-Claude; and Meinguss, Alain, 4,409,434., Cl. 178-22.190.

Meise, Gunther: *See—*
Unger, Herbert; and Meise, Gunther, 4,408,967., Cl. 417-571.000.

Meller, Theo; and Knecht, Heinz, to BOGE GmbH. Self pumping, level regulating apparatus for vehicles, especially automobiles. 4,408,773., Cl. 280-611.000.

Mena-Reyes, Manuel A.: *See—*
Walther, Mike C.; and Mena-Reyes, Manuel A., 4,408,920., Cl. 401-176.000.

Menault, Jacques; and Rodier, Henry, to Rhone-Poulenc-Textile. Cellulose-acrylonitrile polymer solutions, articles, and methods of making same. 4,409,289., Cl. 428-374.000.

Mengler, Claus-Dieter: *See—*
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, 4,409,394., Cl. 549-534.000.

Mennel, Gabriel B., to Sacilor Acieries et Laminoirs de Lorraine. Rolling mill rolls. 4,408,475., Cl. 72-221.000.

Mennicken, Gerhard: *See—*
Wieczorrek, Wolfhart; and Mennicken, Gerhard, 4,409,266., Cl. 427-302.000.

Merck & Co., Inc.: *See—*
Thorsett, Eugene D.; and Harris, Elbert E., 4,409,146., Cl. 260-239.30R.

Mergan, Leo M.; and Cordier, Jean-Pierre, to Belgonucleaire. Solidification of radioactive waste effluents. 4,409,137., Cl. 252-632.000.

Merger, Franz: *See—*
Krabetz, Richard; Merger, Franz; and Schwarzmann, Matthias, 4,409,128., Cl. 502-211.000.

Meridian Industries, Inc.: *See—*
Crouch, Bill W.; Sauer, William F.; and Zylka, Kenneth R., 4,408,437., Cl. 53-431.000.

Merriam, Marshall & Bicknell: *See—*
Condon, Edward L., 4,408,782., Cl. 283-70.000.

Merrick, James W., to General Dynamics Corporation. Electronic engine control. 4,408,582., Cl. 123-415.000.

Merrick, James W., to Automatic Controls, Corp. Ignition timing control. 4,408,583., Cl. 123-415.000.

Merten, Rudolf: *See—*
Rottmaier, Ludwig; Merten, Rudolf; Tima, Milan J.; and Michael, Dietrich, 4,409,347., Cl. 524-91.000.

Messer Griesheim GmbH: *See—*
Buschkens, Guido; and Nobis, Peter, 4,409,252., Cl. 426-396.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Beusse, Hans, 4,409,658., Cl. 364-424.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Schwaerzler, Hans, 4,408,737., Cl. 244-110.00D.

Metallgesellschaft Aktiengesellschaft: *See—*
Haas, Gunther; Plass, Ludolf; and Lohrberg, Karl, 4,409,086., Cl. 204-269.000.

Metallurgical, Inc.: *See—*
Upperman, Gary V.; and Withers, James C., 4,409,083., Cl. 204-245.000.

Metallwerk Max Brose GmbH & Co.: *See—*
Adomeit, Heinz-Dieter; and Schulz, Volkmar, 4,408,802., Cl. 297-452.000.

Metz, Pierre, to Thomson-CSF. Process for piloting and guiding projectiles in the terminal phase and a projectile comprising means for implementing this process. 4,408,735., Cl. 244-3.220.

Meyer, Charles R. Pulverizer device for handling liquids containing solid and semi-solid materials. 4,408,724., Cl. 241-46.170.

Meyer, Richard C.: *See—*
Neeper, Robert K.; and Meyer, Richard C., 4,409,530., Cl. 318-685.000.

Meyerhoefer, Carl E.: *See—*
Meyerhoefer, Carl H.; and Meyerhoefer, Carl E., 4,408,622., Cl. 132-73.000.

Meyerhoefer, Carl H.; and Meyerhoefer, Carl E., to Revlon, Inc. Fingernail extension. 4,408,622., Cl. 132-73.000.

Michael, Dietrich: *See—*
Rottmaier, Ludwig; Merten, Rudolf; Tima, Milan J.; and Michael, Dietrich, 4,409,347., Cl. 524-91.000.

Michalak, Stanislaw: *See—*
Hermanns, Bernd; and Michalak, Stanislaw, 4,408,659., Cl. 165-10.000.

Michaud, Alfred G.: *See—*
Bonnycastle, Joseph R.; Michaud, Alfred G.; and Rowley, Edward K., 4,409,155., Cl. 264-3.00R.

Michel, Rudolph H.: *See—*
Kolouch, Robert J.; and Michel, Rudolph H., 4,409,167., Cl. 264-102.000.

Michel, Wolfgang, to Hoechst Aktiengesellschaft. Visual information carrier comprising a flexible plastic sheet. 4,409,277., Cl. 428-156.000.

Michigan Technological University, Board of Control of: *See—*
Haataja, Bruce A., 4,408,544., Cl. 108-53.300.

Micro-Circuits Co., Inc.: *See—*
Bradley, Robert F.; and Bradley, Lindell P., 4,408,557., Cl. 116-206.000.

Midland-Ross Corporation: *See—*
Knecht, George W., 4,408,816., Cl. 339-143.00R.

Mihayashi, Keiji: *See—*
Yagihara, Morio; Hirano, Tsumoru; Mihayashi, Keiji; and Ozawa, Takashi, 4,409,320., Cl. 430-381.000.

Mihovch, John; and Blackwood, John, to Singer Company, The. Low torque direct dialing pattern selection mechanism. 4,408,553., Cl. 112-158.00A.

Mikami, Takashi: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,409,282., Cl. 428-219.000.

Milam, Thomas B.: *See—*
Hartman, Paul R.; and Milam, Thomas B., 4,408,832., Cl. 350-310.000.

Milkovich, Ralph, to Atlantic Richfield Company. Footwear-compounds from derivatized star-block copolymers. 4,409,357., Cl. 524-505.000.

Miller, Charles G.; and Stephens, James B. Curtain for shrouding welding operations. 4,408,834., Cl. 350-321.000.

Miller, Elbrige H. Safety latch for in swinging doors. 4,408,789., Cl. 292-268.000.

Miller, Jan D.: *See—*
Hanson, Francis V.; Miller, Jan D.; and Oblad, Alex G., 4,409,090., Cl. 208-11.0LE.

Miller, John W. V., to Owens-Illinois, Inc. Method and apparatus for monitoring a glass furnace. 4,409,012., Cl. 65-29.000.

Miller, Richard F., to Atlantic Richfield Company. Inhibiting polymerization of vinyl aromatic monomers. 4,409,408., Cl. 585-4.000.

Milliken Research Corporation: *See—*
Weitzel, Edward W., 4,409,273., Cl. 428-109.000.

Millmaster Onyx Group, Inc.: *See—*
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, 4,409,399., Cl. 564-473.000.

Milsom, Robert F.; Murray, Robert J.; and Flinn, Ian, to U.S. Philips Corporation. Surface acoustic wave filters. 4,409,571., Cl. 333-196.000.

Mimura, Fumio; and Asakawa, Hiroo, to Nichiei Distribution Systems, Inc.; and Nippon Kokan Kabushiki Kaisha. Binding device for elongated pipes. 4,408,741., Cl. 248-68.0CB.

Min, Mart V.; Parve, Toomas E.; Khyarm, Khyarmo E.; and Pungas, Toom A. Quadrature stepwave frequency converter. 4,409,555., Cl. 328-14.000.

Minamikawa, Yoshitugu: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, 4,409,197., Cl. 423-415.00P.

Minatono, Shobu: *See—*
Takamatsu, Hideo; and Minatono, Shobu, 4,409,056., Cl. 156-334.000.

Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, to Chichibu Cement Co., Ltd. Material for destroying concrete structures. 4,409,030., Cl. 106-97.000.

Minemoto, Isamu: *See—*
Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, 4,408,462., Cl. 60-330.000.

Minezaki, Shigehiro: *See—*
Kozaki, Syuichi; Funada, Fumiaki; and Minezaki, Shigehiro, 4,408,837., Cl. 350-336.000.

Minnesota Mining and Manufacturing Company: *See—*
Incremona, Joseph H., 4,408,532., Cl. 101-456.000.
Molenda, Robert P.; and Rabuse, George R., 4,409,057., Cl. 156-92.000.
Zeller-Pendrey, Jeanine I.; Skinner, Mark C.; and Morgan, David A., 4,409,316., Cl. 430-263.000.

Minolta Camera Kabushiki Kaisha: *See—*
Imura, Toshinori; and Tominaga, Shinji, 4,408,855., Cl. 354-25.000.
Kawamura, Takao; and Masazumi, Yoshida, 4,409,311., Cl. 430-95.000.
Kojima, Hiroaki, 4,408,871., Cl. 355-14.00R.
Toriumi, Shiro; Ishii, Kenjiro; and Yamagishi, Seiichi, 4,408,732., Cl. 242-192.000.

Minowa, Masahiro, to Epson Corporation. Thermal printer drive circuit. 4,409,600., Cl. 346-76.0PH.

Misaka, Yoshiharu; and Morita, Takamitsu, to Mitsubishi Chemical Industries Limited. Suspension polymerization process. 4,409,377., Cl. 526-93.000.

Misch, Carl E. Endodontic dental implant. 4,408,990., Cl. 433-224.000.

Misencik, John J.; and Clements, Alden K., to Westinghouse Electric Corp. Ground fault circuit interrupter with a unified test and reset switch mechanism. 4,409,574., Cl. 335-18.000.

Mishima, Toshio, to Kabushiki Kaisha Kawai Gakki Seisakusho; and Tokyo Shibaura Denki Kabushiki Kaisha. Tone source of rhythm. 4,408,512., Cl. 84-1.030.

Miskowicz, John S., to Gateway Industries, Inc. Buckle with integral push button spring and reaction portions. 4,408,373., Cl. 24-230.00A.

Mita Industrial Co. Ltd.: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,409,312., Cl. 430-110.000.

Mitono, Yoshiharu: *See—*
Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, 4,409,495., Cl. 307-290.000.

Mitsubishi Chemical Industries Limited: *See—*
Misaka, Yoshiharu; and Morita, Takamitsu, 4,409,377., Cl 526-93.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Kawabata, Takao, 4,409,533., Cl. 318-807.000.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,444., Cl. 200-144.00R.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,445., Cl. 200-144.00R.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, 4,409,197., Cl. 423-415.00P.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Kogo, Nobuhiko; Tsutsui, Yoshimitsu; Kato, Koji; and Kishigami, Hisao, 4,409,160., Cl. 264-40.100.
Yano, Tadashi; and Hoshino, Noriyuki, 4,408,530., Cl. 101-415.100.

Mitsui, Akio: *See—*
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,409,324., Cl. 430-546.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Asanuma, Tadashi; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 4,409,378., Cl. 526-125.000.

Miyanaga, Masaaki, to Kabushiki Kaisha Miyanaga. Metal borer. 4,408,935., Cl. 408-206.000.

Miyashiro, Mutsumi: *See—*
Kobayashi, Hisamine; and Miyashiro, Mutsumi, 4,408,417., Cl. 51-163.200.

Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, to Olympus Optical Company Limited. Collator with collate mode and job separation mode. 4,408,756., Cl. 271-288.000.

Miyashita, Kiyoshi: *See—*
Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, 4,408,870., Cl. 355-14.0SH.

Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, to UBE Industries, Ltd. Process for the production of glycollic acid esters. 4,409,395., Cl. 560-179.000.

Miyazaki, Kunio; Okosi, Yukio; Kumagai, Akira; and Suzuki, Hitoshi, to Hitachi, Ltd. Method of metallizing sintered ceramics. 4,409,079., Cl. 204-192.00C.

Mizelle, Ned W., to Lane Company, Inc., The. Mechanism for providing angular adjustability to legrest of recliner only when projected. 4,408,796., Cl. 297-85.000.

Mizuno, Chiaki; Tamai, Yasuo; and Kasuga, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,409,299., Cl. 428-694.000.

Mizuno, Toshio: *See—*
Namba, Mutsusuke; Suzue, Seisuke; Mizuno, Toshio; and Kataoka, Yoshiaki, 4,409,354., Cl. 524-431.000.

Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, to Nissan Motor Co., Ltd.; and Tachikawa Spring Co., Ltd. Vehicle seat structure for two-door type vehicle. 4,408,798., Cl. 297-326.000.

Mizutani, Hiroshi, to Kabushiki Kaisha Chuo Seisakusho. Electrical resistance welder for nails used in an automatic nailing machine. 4,409,461., Cl. 219-111.000.

Mobil Oil Corporation: *See—*
Bustin, Franz; and Bloomer, Charles K., 4,408,970., Cl. 425-72.00R.
Forbus, Nancy P.; and Kaeding, Warren W., 4,409,132., Cl. 502-62.000.
Givens, Wyatt W., 4,409,480., Cl. 250-252.100.
Haag, Werner O.; and Huang, Tracy J., 4,409,412., Cl. 585-454.000.
Norton, Lonnie J., 4,409,551., Cl. 324-349.000.
Rudnick, Leslie R., 4,409,089., Cl. 208-8.0LE.

Mobile Companies, Inc.: *See—*
Williams, Roger F., 4,409,034., Cl. 134-4.000.

Mochizuki, Norihiro; and Kugimiya, Fusayoshi, to Kayaba Kogyo Kabushiki-Kaisha. Vane pump. 4,408,964., Cl. 417-310.000.

Modrovich, Ivan E. Stabilized enzymatic solutions and method for determining total cholesterol in human serum. 4,409,326., Cl. 435-11.000.

Mohan Rao, G. R.; Stanczak, John S.; Lien, Jih-chang; and Bhatia, Shyam, to Texas Instruments Incorporated. Semiconductor integrated circuit with implanted resistor element in polycrystalline silicon layer. 4,408,385., Cl. 29-576.00B.

Moldavanov, Viktor P.: *See—*
Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P., 4,408,770., Cl. 277-140.000.

Molenda, Robert P.; and Rabuse, George R., to Minnesota Mining & Manufacturing Company. Staple supporting and removing strip. 4,409,057., Cl. 156-92.000.

Mollering, Hans: *See—*
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.

Molloy, James J.: *See—*
Applegate, Steven L.; and Molloy, James J., 4,408,908., Cl. 400-120.000.

Monarch Logging Company, Inc.: *See—*
Rochon, Robert W.; and Sneed, Joe W., Jr., 4,408,486., Cl. 73-155.000.

Monarch Marking Systems, Inc.: *See—*
Hurley, Thomas M., 4,408,706., Cl. 224-192.000.

Mondadori, Cesare, to Ciba-Geigy Corporation. Method of preventing and treating cerebral insufficiency. 4,409,212., Cl. 424-244.000.

Money, David K.: *See—*
Daly, Christopher N.; and Money, David K., 4,408,608., Cl. 128-421.000.
Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., 4,408,604., Cl. 128-785.000.

Monk, Robert J. System and method for repair of leaking storage tanks containing fluids which contaminate ground water. 4,408,628., Cl. 137-312.000.

Monsanto Company: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,409,365., Cl. 525-78.000.
Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,409,127., Cl. 502-205.000.
Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., 4,409,133., Cl. 502-354.000.
Wilkie, Arnold E., 4,408,445., Cl. 57-246.000.
Wilkie, Arnold E., 4,408,446., Cl. 57-246.000.

Montavon, Marc; and Reiner, Roland, to Hoffmann-La Roche Inc. Cephalosporin derivatives. 4,409,387., Cl. 544-26.000.

Montgomery, Melville G. Wave action energy generating system. 4,408,455., Cl. 60-505.000.

Moore, Howard F.: *See—*
Johnson, Charles A.; Ward, Clifford; Moore, Howard F.; and Hettinger, Jr.; William P., 4,409,092., Cl. 208-89.000.

Moore, Thomas W., to Reynolds Metals Company. Slag decarbonization with a phase inversion. 4,409,021., Cl. 75-10.00R.

Moore, William H. Process for producing cast iron. 4,409,028., Cl. 75-130.00R.

Morelli, Morello: *See—*
Prevedello, Aldo; Platone, Edoardo; and Morelli, Morello, 4,409,419., Cl. 585-611.000.

Morgan, Adolph A. Stick and peg game device. 4,408,764., Cl. 273-341.000.

Morgan, David A.: *See—*
Zeller-Pendrey, Jeanine I.; Skinner, Mark C.; and Morgan, David A., 4,409,316., Cl. 430-263.000.

Morganson, Neal E.; and Vayda, Adam V., to Gulf Research & Development Company. Olefin oligomerization using boron trifluoride and an alcohol-polyol cocatalyst. 4,409,415., Cl. 585-525.000.

Mori, Fumio; and Omura, Yoshiaki, to Kuraray Co., Ltd. Insecticides and insecticidal compositions. 4,409,238., Cl. 424-304.000.

Mori, Kouichi: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,408,592., Cl. 123-625.000.

Mori, Motoaki: *See—*
Suwabe, Isaku; and Mori, Motoaki, 4,409,058., Cl. 156-361.000.

Mori, Toshinori; Tsuchikane, Yoshiyuki; and Matsushige, Takashi, to Victor Company of Japan, Limited. Digital editing system for audio programs. 4,409,682., Cl. 369-3.000.

Morigaki, Masakazu: *See—*
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,409,324., Cl. 430-546.000.

Morino, Seiji: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,408,592., Cl. 123-625.000.

Morioka, Yoshihiro: *See—*
Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori, 4,409,613., Cl. 358-51.000.

Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori, 4,409,613., Cl. 358-51.000.

Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, to Hitachi, Ltd. Powder deposition to form pattern on light imaged photosensitive diazonium salt coating having salt of aromatic amine. 4,409,313., Cl. 430-144.000.

Morita, Kaoru: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Morita, Takamitsu: *See—*
Misaka, Yoshiharu; and Morita, Takamitsu, 4,409,377., Cl. 526-93.000.

Moriya, Mitsutoshi: *See—*
Naganoma, Masanori; Takemoto, Kazuaki; and Moriya, Mitsutoshi, 4,408,712., Cl. 236-13.000.

Morris, Hayden; and Christianson, Charles, to United States of America, Navy. Radiation detector and method of opaquing the mica window. 4,409,485., Cl. 250-374.000.

Morrison, Lowen R., Jr.; Elder, Melisse N.; and Phillips, John H., to Procter & Gamble Company, The. Recovery of noncaffeine solubles in an extract decaffeination process. 4,409,253., Cl. 426-424.000.

Morton, Michael S. Furnace construction. 4,408,567., Cl. 122-14.000.

Moskousky Institut Stali I Splavov: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.

Mosley, Joseph M.: *See—*
Dorler, Jack A.; and Mosley, Joseph M., 4,409,498., Cl. 307-454.000.

Moss, Elvis W.; and Shackelford, John T., to Brunswick Corporation. Star drag system for sping cast reels. 4,408,729., Cl. 242-84.50A.

Mostosi, Angelo, to SACE S.p.A. Costruzioni Elettromeccaniche. Electric switch. 4,409,572., Cl. 335-8.000.

Motegi, Shoji: *See—*
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.

Moteki, Tsutomu; Aoki, Kazuo; Yamaguchi, Kunihiro; and Yoshizaki, Michio, to Chisso Corporation. Polyolefin resin composition. 4,409,345., Cl. 524-13.000.

Motion Technology Corporation: *See—*
Steidle, Kurt A., 4,408,876., Cl. 355-54.000.

Motorali, Inc.: *See—*
Shacter, Stuart B., 4,409,561., Cl. 330-300.000.

Motorola, Inc.: *See—*
Bruce, William C., Jr., 4,409,653., Cl. 364-200.000.
Daniels, R. Gary; Bennett, Thomas H.; Musa, Fuad H.; and Wiles, Michael F., 4,409,671., Cl. 364-900.000.
Darnell, Robert D.; and Ingle, William M., 4,409,195., Cl. 423-342.000.
Davis, William F., 4,409,560., Cl. 330-296.000.
Eickerman, Curtis L.; and Ramsey, Arlie A., 4,409,501., Cl. 307-594.000.
Nordbrock, Raymond E.; and Sievers, Kirk A., 4,409,539., Cl. 322-28.000.
Smith, Gregory J., 4,409,494., Cl. 307-238.300.

Motz, Heinz D., to Friedrich Schroeder, Firma. Eyebolt. 4,408,941., Cl. 411-378.000.

Moulson, Thomas J.; and Greenzweig, John E., to Cargill Incorporated. Low shrink unsaturated polyester resinous composition. 4,409,344., Cl. 523-512.000.

Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, to Pierre Fabre S.A. Method of treating anxiety with 2'-(orthochlorobenzoyl)-4'-chloroglycylanilides, and compositions thereof. 4,409,241., Cl. 424-324.000.

Mowrey, Rowland G.: *See—*
Armour, Eugene A.; Henzel, Richard P.; and Mowrey, Rowland G., 4,409,315., Cl. 430-214.000.

MPD Technology Corporation: *See—*
Sandrock, Gary D.; Huston, Ernest L.; and Liu, James, 4,409,180., Cl. 420-455.000.

Mrazek, Franklin C.; and Battles, James E. Method of forming components for a high-temperature secondary electrochemical cell. 4,409,168., Cl. 264-104.000.

MSI Electronics Inc.: *See—*
Lederman, Albert, 4,409,547., Cl. 324-158.00P.
Shulman, Carl, 4,409,546., Cl. 324-158.00P.

MTU Motoren- und Turbinen-Union Friedrichshaften GmbH: *See—*
van Rinsum, Cornelis, 4,408,586., Cl. 123-446.000.

Mueller, Bruce, to Owens-Illinois, Inc. Reinforced plastic home canning ring. 4,408,694., Cl. 215-276.000.

Mukaida, Yutaka: *See—*
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,409,240., Cl. 424-319.000.

Mukoh, Akio: *See—*
Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,408,840., Cl. 350-349.000.

Muller, Werner H.; Mack, Karl E.; and Hey, Hansjorg, to Hoechst Aktiengesellschaft. Process for the preparation of cyclohexane-1,3-dione from δ-ketohexanoic acid ester. 4,409,400., Cl. 568-346.000.

Muller, Wolfgang: *See—*
Johne, Hans; Forster, Karl-Heinz; Jentzsch, Arndt; and Muller, Wolfgang, 4,408,528., Cl. 101-364.000.

Multicore Solders Limited: *See—*
Shend'ge, Vasant J.; and Thompson, Geoffrey S., 4,408,730., Cl. 242-96.000.

Mumford, George V.: *See—*
Fillmore, William E.; Mumford, George V.; and Smalley, Ned J., 4,408,700., Cl. 222-153.000.

Mummert, Thomas A., to Jobst Institute, Inc. Apparatus for pneumatically controlling a dynamic pressure wave device. 4,408,599., Cl. 128-24.00R.

Munson, Beauford E. Roller cone drill bit. 4,408,671., Cl. 175-377.000.

Murakami, Reiji: *See—*
Takano, Toshimasa; Hosoya, Masahiro; and Murakami, Reiji, 4,408,862., Cl. 355-3.0DD.

Murakami, Takashi: *See—*
Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, 4,408,798., Cl. 297-326.000.

Murakami, Takeshi: *See—*
Ezaki, Atsuo; and Murakami, Takeshi, 4,409,322., Cl. 430-523.000.

Murnane, Raymond J.; Gomore, Stephen C.; and Mathewson, Myron, to Carrier Corporation. Noise suppressing feeder tube for a refrigerant circuit. 4,408,467., Cl. 62-296.000.

Murray Corporation: *See—*
Kish, Arthur S., 4,408,381., Cl. 29-237.000.

Murray, Grant. Electrical manicuring device. 4,408,623., Cl. 132-73.600.

Murray, Joseph E., Jr.; and Sylvester, Paul J., to Polaroid Corporation. Ultrasonic transducer for use in a vibratory environment. 4,409,441., Cl. 179-111.00R.

Murray Ohio Manufacturing Co., The: *See—*
Elmy, Raymond L.; and Crabtree, Joe, 4,408,683., Cl. 192-11.000.

Murray, Robert J.: *See—*
Milsom, Robert F.; Murray, Robert J.; and Flinn, Ian, 4,409,571., Cl. 333-196.000.

Murtha, Timothy P., to Phillips Petroleum Company. Selective hydrogenation of organic materials. 4,409,401., Cl. 568-362.000.

Musa, Fuad H.: *See—*
Daniels, R. Gary; Bennett, Thomas H.; Musa, Fuad H.; and Wiles, Michael F., 4,409,671., Cl. 364-900.000.

Musienko, Viktor T.: *See—*
Karinsky, Viktor N.; Musienko, Viktor T.; and Glazunov, Sergei G., 4,408,971., Cl. 425-8.000.

Mutrux, Claude, to Ebauches Electroniques S.A. Electronic timepiece having a digital frequency correction circuit. 4,408,897., Cl. 368-200.000.

Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., to Unie Van Kunstmestfabrieken BV. Process for preparing thermally stable ammonium nitrate- containing granules. 4,408,998., Cl. 23-293.00A.

Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., to Unie Van Kunstmestfabrieken, B.V. Process for preparing thermally stable ammonium nitrate-containing granules of high bulk density. 4,409,016., Cl. 71-59.000.

Nabisco Brands, Inc.: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., 4,409,244., Cl. 426-5.000.
Danielson, Robert L.; and Bosco, Peter M., 4,409,255., Cl. 426-576.000.
Witzel, Frank; DiNolfo, Mario A.; Rodney, Burton; and Mackay, Donald A. M., 4,409,202., Cl. 424-49.000.

Nadkarni, Ramachandra A.; and Williams, Rollie B., to Exxon Research and Engineering Co. Coal and oil shale beneficiation process. 4,408,999., Cl. 44-1.0SR.

Nagai, Masahiko, to Ogawa Chemical Industries, Ltd. Detachable head member having slit structure. 4,408,921., Cl. 401-198.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Window comparator circuit. 4,409,497., Cl. 307-360.000.

Naganoma, Masanori; Takemoto, Kazuaki; and Moriya, Mitsutoshi, to Nippondenso Co., Ltd. Apparatus for controlling air conditioners for automobiles. 4,408,712., Cl. 236-13.000.

Nagasaka, Moritoshi: *See—*
Yamamoto, Hideyuki; Nishikawa, Waichi; and Nagasaka, Moritoshi, 4,409,465., Cl. 219-137.0PS.

Nagele, Ulrich: *See—*
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.

Nagl, Michael: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-38.000.

Naimer, Gundolf, to Payer-Lux Elektroprodukte Gesellschaft m.b.H. Electric shaver. 4,408,392., Cl. 30-34.100.

Nakagaki, Harushige: *See—*
Amada, Nobutaka; Nakagaki, Harushige; and Inoue, Shigeki, 4,409,559., Cl. 330-295.000.

Nakagawa, Nobuaki: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, to Takara Shuzo Co., Ltd. Polysaccharides having anticarcinogenic activity and method for producing same. 4,409,385., Cl. 536-123.000.

Nakajima, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Laser knife device. 4,408,602., Cl. 128-303.100.

Nakamura, Hisashi, to Diesel Kiki Co., Ltd. Injection timing control device for distributor-type fuel injection pumps. 4,408,591., Cl. 123-502.000.

Nakamura, Katsunori: *See—*
Fukahori, Hidehiko; Iwashita, Tomonori; and Nakamura, Katsunori, 4,408,859., Cl. 354-274.000.

Nakamura, Kazuo: *See—*
Tokutomi, Seijiro; Nakamura, Kazuo; and Jyojiki, Kasao, 4,408,853., Cl. 354-25.000.

Nakamura, Kenji; and Ideno, Shigeru, to Shimadzu Corporation. Line printer for recording analog signals. 4,409,597., Cl. 346-35.000.

Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori. SEPP-Based deflection control circuit. 4,409,613., Cl. 358-51.000.

Nakamura, Takashi: *See—*
Ishikawa, Takatoshi; Mitsui, Akio; Morigaki, Masakazu; and Nakamura, Takashi, 4,409,324., Cl. 430-546.000.
Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori, 4,409,613., Cl. 358-51.000.

Nakamura, Yasuo: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.

Nakamura, Yoshikatsu: *See—*
Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Kawamura, Osamu, 4,409,294., Cl. 428-553.000.

Nakanishi, Kyoji: *See—*
Kato, Yoshiei; Nozaki, Tsutomu; and Nakanishi, Kyoji, 4,409,024., Cl. 75-60.000.

Nakanishi Metal Works Co., Ltd.: *See—*
Wakabayashi, Takao, 4,408,539., Cl. 104-89.000.

Nakano, Masao: *See—*
Takemae, Yoshihiro; and Nakano, Masao, 4,409,677., Cl. 365-206.000.

Nakano, Tetsuya: *See—*
Ikeda, Toshimitsu; Honda, Nobuyasu; and Nakano, Tetsuya, 4,409,312., Cl. 430-110.000.

Nakao, Hisaji: *See—*
Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, 4,408,933., Cl. 408-8.000.

Nakayama, Shozo; Suzuki, Shigeru; and Hattori, Mitsuhiro, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor. 4,408,962., Cl. 417-269.000.

Nakayama, Shuzi, to Tokico, Ltd. Automatic welding apparatus. 4,409,459., Cl. 219-86.240.

Namba, Masatoshi: *See—*
Kusano, Takuo; Masuda, Kouichi; and Namba, Masatoshi, 4,408,379., Cl. 29-159.100.

Namba, Mutsusuke; Suzue, Seisuke; Mizuno, Toshio; and Kataoka, Yoshiaki, to Daikin Kogyo Co., Ltd. Fluorinated resin coating composition containing micaceous iron oxide. 4,409,354., Cl. 524-431.000.

Nasvytis, Pius J.; and Jahrstorfer, George W., to Chandler Evans Inc. High efficiency centrifugal pump. 4,408,953., Cl. 415-62.000.

NATEC Institut: *See—*
Seidel, Hartmut; and Hammerschmidt, Winrich B., 4,408,401., Cl. 36-3.00B.

National Distillers and Chemical Corporation: *See—*
Feldman, Julian, 4,409,406., Cl. 568-916.000.
Heimberg, Manfred, 4,409,355., Cl. 524-458.000.

National Institute for Researches in Inorganic Materials: *See—*
Sato, Tadao; Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, 4,409,193., Cl. 423-290.000.

Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., to International Paper Company. Process for making a container for storing food. 4,409,053., Cl. 156-287.000.

NCR Corporation: *See—*
Schnathorst, Vernon K.; and Bastian, Gary T., 4,409,680., Cl. 365-233.000.

Neal, Larry V. Plug for holes in walls. 4,408,429., Cl. 52-514.000.

Neeper, Robert K.; and Meyer, Richard C., to Beckman Instruments, Inc. Method and apparatus for stepper motor position control. 4,409,530., Cl. 318-685.000.

Neill, Daniel L.: *See—*
Becker, James; and Neill, Daniel L., 4,409,663., Cl. 364-561.000.

Nelson A. Taylor Co., Inc.: *See—*
Vickery, Donald P., 4,408,368., Cl. 15-243.000.

Nemets, Rusaam S.; Kislov, Vladimir G.; Gorbulev, Efim S.; Koval, Ivan A.; Eremenko, Boris S.; Brainman, Felix A.; Kontsov, Jury M.; Adamovich, Anatoly V.; Burov, Lev A.; and Moldavanov, Viktor P. Piston ring assembly with tangential expander. 4,408,770., Cl. 277-140.000.

Neumann, Leopold; and Kline, Richard B., II, to Siemens AG. Apparatus for processing digital signals. 4,409,652., Cl. 364-200.000.

Neumann, Leopold; and Kline, Richard B., II, to Siemens AG. Signal processing device. 4,409,669., Cl. 364-900.000.

Neumeier, Leander A.: *See—*
Holman, James L., Jr.; and Neumeier, Leander A., 4,409,020., Cl. 75-0.50B.

Neuroth, David H., to Harvey Hubbell Incorporated. Oil well cable. 4,409,431., Cl. 174-103.000.

New York Society for the Relief of the Ruptured and Crippled, Maintaining the Hospital for Special Surgery: *See—*
Burstein, Albert H.; and Bartel, Donald L., 4,408,359., Cl. 3-1.912.

Newcomer, Stephen O.: *See—*
Andersen, Steven C.; Penkauskas, Thomas P.; Kassel, James W.; and Newcomer, Stephen O., 4,409,656., Cl. 364-200.000.

Newton, Roger F.: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,409,213., Cl. 424-244.000.

Nichiei Distribution Systems, Inc.: *See—*
Mimura, Fumio; and Asakawa, Hiroo, 4,408,741., Cl. 248-68.0CB.

Nichiro Kogyo Company, Ltd.: *See—*
Suwabe, Isaku; and Mori, Motoaki, 4,409,058., Cl. 156-361.000.

Nichols-Homeshield, Inc.: *See—*
Verch, John T., 4,408,650., Cl. 160-121.00R.

Nichols, Richard E.: *See—*
Bollinger, John G.; Nichols, Richard E.; and Delaruelle, Dale H., 4,408,483., Cl. 73-115.000.

Nielsen, Henrik B.; and Nygaard, Nils H., to Danfoss A/S. Arrangement for controlling the driving and braking current of a brushless D.C. motor. 4,409,524., Cl. 318-138.000.

Niemann, Heinz, to Esge-Marby GmbH & Co. KG. Cycle carrier. 4,408,705., Cl. 224-39.000.

Nienart, Louis F.; Fehrman, Richard G.; and Wan, Chung-Chu, to Allied Corporation. Method for making serrated metal ribbon. 4,408,653., Cl. 164-463.000.

Nifco Inc.: *See—*
Kimura, Teiji; and Kimura, Shigeru, 4,408,372., Cl. 24-217.00R.

Nihon Tsushin Gijyutsu Kabushiki Kaisha: *See—*
Asano, Kiyomitsu; and Watanabe, Tetsuo, 4,408,909., Cl. 400-144.200.

Nikitas, Nick C., to Delta Electronic Manufacturing Corp. Coaxial connectors. 4,408,822., Cl. 339-177.00R.

Nilsson, Claes T.: *See—*
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,409,176., Cl. 264-527.000.

Nilsson, Ingvar: *See—*
Holmberg, Krister; and Nilsson, Ingvar, 4,409,117., Cl. 252-99.000.

Nilsson, Kenth; and Bolmgren, Jan, to Siemens Aktiengesellschaft. Mosaic recorder with reduced mechanical coupling. 4,409,601., Cl. 346-140.00R.

Nilsson, Kenth: *See—*
Bolmgren, Jan; Hoek, Bertil; and Nilsson, Kenth, 4,409,602., Cl. 346-140.00R.

Ninet, Jean-Louis; and Vaillant, Robert, to Societe Anonyme dite Ateliers et Chantiers de Bretagne-ACB. Device for damping impacts between a load and a floating support when the load is removed. 4,408,930., Cl. 405-209.000.

Nippon Carbureter Co., Ltd.: *See—*
Furumoto, Michitake; and Harada, Shinichi, 4,408,593., Cl. 126-85.00R.

Nippon Elanco Kabushiki Kaisha: *See—*
Yamamoto, Taizo; and Ishida, Tetsuhisa, 4,408,641., Cl. 141-82.000.

Nippon Electric Co., Ltd.: *See—*
Inaba, Masao; and Kashigi, Kazuo, 4,409,618., Cl. 358-183.000.
Nishiguchi, Yukihiro, 4,409,666., Cl. 364-710.000.
Watanabe, Hideaki, 4,409,622., Cl. 358-260.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Suzuki, Hideo, 4,408,514., Cl. 84-1.240.

Nippon Kogaku K.K.: *See—*
Terui, Nobuhiko; and Watanabe, Sakuji, 4,408,854., Cl. 354-25.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Mimura, Fumio; and Asakawa, Hiroo, 4,408,741., Cl. 248-68.0CB.
Ouchi, Chiaki; and Sampei, Tetsuya, 4,408,652., Cl. 164-459.000.

Nippon Light Metal Co., Ltd.: *See—*
Kusano, Takuo; Masuda, Kouichi; and Namba, Masatoshi, 4,408,379., Cl. 29-159.100.

Nippon Oil and Fats Co., Ltd.: *See—*
Araki, Ikuo; Kanazawa, Teruo; Ito, Shinji; and Sumikawa, Kenji, 4,408,534., Cl. 102-288.000.

Nippon Piston Ring Co., Ltd.: *See—*
Hiraoka, Takeshi; Nakamura, Yoshikatsu; and Kawamura, Osamu, 4,409,294., Cl. 428-553.000.

Nippon Soken, Inc.: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; and Ito, Seitoku, 4,408,968., Cl. 418-15.000.
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,408,580., Cl. 123-90.160.
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, 4,408,592., Cl. 123-625.000.

Nippon Steel Corporation: *See—*
Yokoyama, Hideo; Shimbashi, Ichiro; Sakurai, Koichi; and Matsuo, Munetsugu, 4,408,561., Cl. 118-72.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Kobayashi, Makoto; Yamamoto, Tetsuji; and Jimbo, Yoshihiro, 4,409,623., Cl. 358-261.000.
Takayashiki, Tetsuya; Usui, Taiji; and Sakurai, Tetsuma, 4,408,386., Cl. 29-576.00E.

Nippondenso Co., Ltd.: *See—*
Naganoma, Masanori; Takemoto, Kazuaki; and Moriya, Mitsutoshi, 4,408,712., Cl. 236-13.000.

Nisato, Dino; and Carminati, Paolo, to Sanofi. Andrexiant aminopiperidines intermediates thereto and drugs containing same. 4,409,228., Cl. 424-267.000.

Nishigaki, Yuji: *See—*
Okano, Kazumi; Nishigaki, Yuji; and Kasai, Masanao, 4,409,310., Cl. 430-95.000.

Nishiguchi, Yukihiro, to Nippon Electric Co., Ltd. Electronic desk-top calculator with indication function of stored data range. 4,409,666., Cl. 364-710.000.

Nishii, Michiharu; and Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Method of manufacturing a vacuum booster housing. 4,409,460., Cl. 219-93.000.

Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, to Olympus Optical Company Limited. Duplicating system comprising electrophotographic copying apparatus and option devices. 4,408,870., Cl. 355-14.0SH.

Nishikawa, Waichi: *See—*
Yamamoto, Hideyuki; Nishikawa, Waichi; and Nagasaka, Moritoshi, 4,409,465., Cl. 219-137.0PS.

Nishimura, Hideo: *See—*
Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, 4,408,933., Cl. 408-8.000.

Nishino, Hiroshi; Suzuki, Masayuki; and Hirota, Hideo, to Takeda Chemical Industries, Ltd. Process for producing activated fibrous carbon. 4,409,125., Cl. 502-180.000.

Nishioka, Akira: *See—*
Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, 4,409,436., Cl. 381-15.000.

Nishioka, Matsuo: *See—*
Matsui, Hiroshi; Sakami, Kazuo; Nishioka, Matsuo; and Onizawa, Takashi, 4,409,448., Cl. 200-153.0LA.

Nissan Motor Company, Limited: *See—*
Akimune, Yoshio; and Ambe, Satoshi, 4,409,135., Cl. 252-514.000.
Arima, Sumitsugu; Tsujimura, Harutoshi; and Fukunaga, Yukio, 4,409,584., Cl. 340-22.000.
Iijima, Tetsuya; and Takahashi, Seiichi, 4,408,713., Cl. 236-49.000.
Kobayashi, Shigeru, 4,408,714., Cl. 237-12.30C.
Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, 4,408,798., Cl. 297-326.000.
Yabuhara, Hideo; and Kudo, Ichiro, 4,408,584., Cl. 123-440.000.

Nobis, Peter: *See—*
Buschkens, Guido; and Nobis, Peter, 4,409,252., Cl. 426-396.000.

Noda, Sakuo: *See—*
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, 4,409,240., Cl. 424-319.000.

Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, to Toyo Jozo Kabushiki Kaisha. Peptides for assaying human parathyroid hormone. 4,409,141., Cl. 260-112.50R.

Noeske, Heinz O., to General Electric Company. Gas blast circuit breaker combining a magnetically driven rotating arc and a puffer induced gas blast. 4,409,447., Cl. 200-148.00A.

Noguchi, Fumio, to Shin Meiwa Industry Co., Ltd. Automatic position controlling apparatus. 4,409,650., Cl. 364-193.000.

Nolf, Jean-Marie E.; and Verschelde, Marc, to N.V. Raychem S.A. Splice case. 4,409,426., Cl. 174-21.00R.

Noma Canada Ltd.: *See—*
Koehler, Rudolph, 4,408,813., Cl. 339-38.000.

Nomura, Noboru: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,409,632., Cl. 360-123.000.

Nonclercq, Bernard G.: *See—*
Le Noane, Georges E.; and Nonclercq, Bernard G., 4,408,828., Cl. 350-96.230.

Nonogaki, Saburo: *See—*
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.

Nordbrock, Raymond E.; and Sievers, Kirk A., to Motorola Inc. Self-excitation for an alternator of the low-carbon steel rotor type. 4,409,539., Cl. 322-28.000.

Nordson Corporation: *See—*
Lissy, Gunter J., 4,409,009., Cl. 55-302.000.

Nordvall, Jan: *See—*
Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, 4,408,496., Cl. 73-728.000.

Norek, George G. Drawing table. 4,408,850., Cl. 353-122.000.

Norstrud, Iven R.: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 4,408,720., Cl. 239-149.000.

Northcote, Reginald D.; and Mehdi, Mehdi G., to Thorn Emi Energy Developments Limited. Boilers. 4,408,566., Cl. 122-4.00D.

Northern Engraving Corporation: *See—*
Gilleo, Kenneth B.; and Kreibich, Willard H., 4,409,264., Cl. 427-265.000.

Norton, Lonnie J., to Mobil Oil Corporation. Telluric survey electrode. 4,409,551., Cl. 324-349.000.

Nottingham, Lawrence D.; and Jugan, Michael R., to Westinghouse Electric Corp. Removable sleeve-to-shaft interlock for dynamoelectric machine. 4,408,383., Cl. 29-453.000.

Nouchi, Norimoto: *See—*
Kanai, Kenji; Kaminaka, Nobuyuki; Nouchi, Norimoto; and Nomura, Noboru, 4,409,632., Cl. 360-123.000.

Novack, Martin M.: *See—*
McMann, Renville H., Jr.; Kreinik, Stephen; and Novack, Martin M., 4,409,615., Cl. 358-111.000.

Novak, Danny E., to Phillips Petroleum Company. Control of a furnace. 4,408,569., Cl. 122-448.00R.

Novamet Inc.: *See—*
Weber, John H., 4,409,038., Cl. 148-12.70A.

Novotny, Carl F., to Allis-Chalmers Corporation. Gap adjusting eccentric pin for articulated seals of rotary kilns. 4,408,768., Cl. 277-84.000.

Nowack, Gerhard P.: *See—*
Johnson, Marvin M.; Nowack, Gerhard P.; and Kukes, Semyon, 4,409,418., Cl. 585-667.000.

Nozaki, Tsutomu: *See—*
Kato, Yoshiei; Nozaki, Tsutomu; and Nakanishi, Kyoji, 4,409,024., Cl. 75-60.000.

Nuckel, Klaus; and Schleuchardt, Manfred, to Postalia GmbH. Device for locking and aligning printing numeral rolls and a control cylinder. 4,408,524., Cl. 101-110.000.

Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, to Pioneer Electronic Corporation. Stereo pilot signal eliminating circuit for AM stereophonic receiver. 4,409,436., Cl. 381-15.000.

Nuway Manufacturing Company Limited: *See—*
Palmer, Deryk J., 4,408,365., Cl. 15-112.000.

N.V. Bekaert S.A.: *See—*
Baillievier, Freddy, 4,408,444., Cl. 57-237.000.

N.V. Raychem S.A.: *See—*
Nolf, Jean-Marie E.; and Verschelde, Marc, 4,409,426., Cl. 174-21.00R.

Nygaard, Nils H.: *See—*
Nielsen, Henrik B.; and Nygaard, Nils H., 4,409,524., Cl. 318-138.000.

Nysten, Bernhard: *See—*
von Agris, Rudolf; Kaiser, Gunter; and Nysten, Bernhard, 4,409,052., Cl. 156-227.000.

O.M.V. SpA: *See—*
Padovani, Pietro, 4,409,173., Cl. 264-210.200.

Oana, Yoshinori: *See—*
Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, 4,408,847., Cl. 351-211.000.

Obayashi, Akira: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.

Oblad, Alex G.: *See—*
Hanson, Francis V.; Miller, Jan D.; and Oblad, Alex G., 4,409,090., Cl. 208-11.0LE.

O'Brian, Rodney W., to Coal Industry (Patents) Ltd. Control systems for material treatment plant. 4,409,096., Cl. 209-10.000.

Ocean Ecology Ltd.: *See—*
Koblanski, John N., 4,408,494., Cl. 73-646.000.

Ogasawara, Satoru, to Fuji Xerox Co., Ltd. Method and apparatus for information reading in original document readers. 4,409,625., Cl. 358-288.000.

Ogata, Yoshihiro; Sakamoto, Koji; Takahashi, Harumi; and Hirakura, Koji, to Ricoh Company, Ltd. Transfer medium separating device. 4,408,863., Cl. 355-3.0TR.

Ogawa Chemical Industries, Ltd.: *See—*
Nagai, Masahiko, 4,408,921., Cl. 401-198.000.

Ogawa, Hiroshi; Kasuga, Akira; Tamai, Yasuo; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,409,291., Cl. 428-425.900.

Ogawa, Ryota: *See—*
Arai, Yasunori; and Ogawa, Ryota, 4,408,841., Cl. 350-425.000.

Ohashi, Junichi, to Toyo Rubber Industry Co., Ltd., The. Tubeless radial ply tire for heavy-duty vehicles. 4,408,648., Cl. 152-353.00C.

Ohba, Hiroshi; and Wakamatsu, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Drilling machine. 4,408,934., Cl. 408-51.000.

Ohba, Yasuhiro: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Ohi, Kunio: *See—*
Furuta, Naofumi; and Ohi, Kunio, 4,409,473., Cl. 250-206.000.

Ohkawa, Takehisa; and Yoda, Kuniichi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,409,300., Cl. 428-695.000.

Ohmi, Atsushi: *See—*
Nishii, Michiharu; and Ohmi, Atsushi, 4,409,460., Cl. 219-93.000.

Ohmura, Haruo: *See—*
Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, 4,408,933., Cl. 408-8.000.

Ohta, Hiroshi: *See—*
Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, 4,409,495., Cl. 307-290.000.

Ohyama, Kunio: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Oil Dynamics, Inc.: *See—*
Wilson, Brown L.; and Carle, Joseph T., 4,409,504., Cl. 310-87.000.

Oita, Jack I., to Standard Oil Company (Indiana). Method of analysis for determining very low sulfur levels in volatilizable samples. 4,409,336., Cl. 436-123.000.

Oka, Kozo, to Fuji Xerox Co., Ltd. Electrophotographic light-sensitive element. 4,409,309., Cl. 430-65.000.

Okamoto, Takaaki: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Okamura, Yuichi; and Komatsu, Akitoshi, to Tokyo Kikai Seisakusho Ltd. Blanket tensioning system in press. 4,408,531., Cl. 101-415.100.

Okano, Kazumi; Nishigaki, Yuji; and Kasai, Masanao, to Canon Kabushiki Kaisha. Surface doped inorganic electrophotographic photosensitive particles in binder. 4,409,310., Cl. 430-95.000.

Okano, Shuji: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,409,282., Cl. 428-219.000.

Okano, Takeshi: *See—*
Takubo, Takayuki; and Okano, Takeshi, 4,409,619., Cl. 358-224.000.

OKI Electric Industry Co., Ltd.: *See—*
Akuta, Masajiro, 4,409,438., Cl. 179-18.0HB.
Masao, Sasaki, 4,408,910., Cl. 400-207.000.
Takayashiki, Tetsuya; Usui, Taiji; and Sakurai, Tetsuma, 4,408,386., Cl. 29-576.00E.

Oki, Takeo; and Hiraki, Isao, to Osaka Lead Refinery Co., Ltd. Method of collecting lead from ashes containing lead compounds. 4,409,072., Cl. 204-57.000.

Okosi, Yukio: *See—*
Miyazaki, Kunio; Okosi, Yukio; Kumagai, Akira; and Suzuki, Hitoshi, 4,409,079., Cl. 204-192.00C.

Olin Corporation: *See—*
Kadija, Igor V.; and Woodard, Kenneth E., Jr., 4,409,085., Cl. 204-257.000.
Smith, Edward F., III; and Gyurina, F. Dennis, 4,409,295., Cl. 428-591.000.

Olympus Optical Co., Ltd.: *See—*
Kimura, Kenji, 4,409,472., Cl. 250-201.000.
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.
Nishikawa, Masaji; Miyashita, Kiyoshi; and Kasuga, Muneo, 4,408,870., Cl. 355-14.0SH.
Sawaki, Ryoichi; and Kadota, Toshihiko, 4,409,634., Cl. 360-137.000.
Ueda, Yasuhiro, 4,408,598., Cl. 128-4.000.
Utsugi, Mikio, 4,408,612., Cl. 128-660.000.
Yamasaki, Masafumi, 4,408,852., Cl. 354-24.000.

Omodei-Sale', Amedeo; Consonni, Pietro; and Galliani, Giulio, to Gruppo Lepetit S.p.A. 1,2,4-Triazole derivatives, and their use as antifertility agents. 4,409,388., Cl. 548-262.000.

Omura, Yoshiaki: *See—*
Mori, Fumio; and Omura, Yoshiaki, 4,409,238., Cl. 424-304.000.

OMYA GmbH: *See—*
Barthelmess, Ulrich, 4,409,097., Cl. 209-11.000.

Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals, Inc. Antidepressive and tranquilizing substituted 1,3-dihydrospiro[benzo(c)thiophene]s. 4,409,229., Cl. 424-267.000.

Onizawa, Takashi: *See—*
Matsui, Hiroshi; Sakami, Kazuo; Nishioka, Matsuo; and Onizawa, Takashi, 4,409,448., Cl. 200-153.0LA.

Ono, Hiroshi, to Gen Engineering Co., Ltd. Hearing aid suitable for use under noisy circumstance. 4,409,435., Cl. 381-71.000.

Onodera, Kaoru; Iijima, Toshifumi; and Fujimastu, Wataru, to Konishiroku Photo Industry Co., Ltd. Method for the reproduction of color image. 4,409,321., Cl. 430-383.000.

Onopchenko, Anatoli: *See—*
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, 4,409,399., Cl. 564-473.000.

Ooishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,408,733., Cl. 242-199.000.

Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Brush holder with coated clamp for dynamo-electric machine. 4,409,508., Cl. 310-239.000.

Oouchi, Keiji; Takoh, Isao; and Serizawa, Hisayuki, to Hitachi Heating Appliances Co., Ltd. High-frequency heating appliance. 4,409,452., Cl. 219-10.55E.

OPT Industries, Inc.: *See—*
Potash, Jerome, 4,409,569., Cl. 333-177.000.

Orain, Meidul, to Glaenzer Spicer. Articulation device for connecting a member to a shaft so that the member pivots and slides relative to the shaft. 4,408,806., Cl. 308-6.00R.

Orthoefer, Frank T.: *See—*
Lehnhardt, William F.; and Orthoefer, Frank T., 4,409,248., Cl. 426-46.000.

Osaka Lead Refinery Co., Ltd.: *See—*
Oki, Takeo; and Hiraki, Isao, 4,409,072., Cl. 204-57.000.

Osaka Transformer Co., Ltd.: *See—*
Yamamoto, Hideyuki; Nishikawa, Waichi; and Nagasaka, Moritoshi, 4,409,465., Cl. 219-137.0PS.

Osborne, Anne M. Card holding teaching device. 4,408,993., Cl. 434-430.000.

Oshima, Harumi, to Tokico Ltd. Disc brake. 4,408,681., Cl. 188-73.380.

Oshima, Yujiro: *See—*
Asai, Kiyokazu; Oshima, Yujiro; Takeuchi, Akihiro; and Tokoro, Hiroharu, 4,408,479., Cl. 73-35.000.

Oshiumi, Masaru: *See—*
Sakiyama, Kazuo; Kuwata, Mitsuo; and Oshiumi, Masaru, 4,409,077., Cl. 204-159.150.

Osman, Robert M., to Exxon Research & Engineering Co. Integrated cyclic scrubbing and condensate stripping process for the removal of gaseous impurities from gaseous mixtures. 4,409,191., Cl. 423-220.000.

Ouchi, Chiaki; and Sampei, Tetsuya, to Nippon Kokan Kabushiki Kaisha. Method of continuously casting nickel containing steel wherein surface cracks are prevented. 4,408,652., Cl. 164-459.000.

Outboard Marine Corporation: *See—*
Blanchard, Clarence E., 4,408,994., Cl. 440-53.000.

Ovshinsky, Stanford R.; and Madan, Arun, to Energy Conversion Devices, Inc. Amorphous semiconductors equivalent to crystalline semiconductors. 4,409,605., Cl. 357-2.000.

Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., to United States of America, Air Force. Acoustic amplitude-threshold target ranging system. 4,408,533., Cl. 102-211.000.

Owens-Corning Fiberglas Corporation: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,011., Cl. 65-27.000.

Owens-Illinois, Inc.: *See—*
Aust, John J., 4,408,710., Cl. 229-15.000.
Fillmore, William E.; Mumford, George V.; and Smalley, Ned J., 4,408,700., Cl. 222-153.000.
Miller, John W. V., 4,409,012., Cl. 65-29.000.
Mueller, Bruce, 4,408,694., Cl. 215-276.000.
Taylor, Randle W.; and Davey, Richard G., 4,409,014., Cl. 65-170.000.

Owens, Joe M. Advancement apparatus for concrete screed. 4,408,978., Cl. 425-456.000.

Oyler, John F., to Dravo Corporation. Circular traveling grate machine for process requiring minimum gas leakage. 4,408,987., Cl. 432-137.000.

Ozawa, Takashi: *See—*
Yagihara, Morio; Hirano, Tsumoru; Mihayashi, Keiji; and Ozawa, Takashi, 4,409,320., Cl. 430-381.000.

Ozeki, Fumitaka: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

Pacer Technology and Resources, Inc.: *See—*
Stock, Hugh J., 4,408,699., Cl. 222-149.000.

Packer, Martin R., to Liquid Dynamics, Inc. Hydropneumatic pulse interceptor. 4,408,635., Cl. 138-30.000.

Padovani, Pietro, to O.M.V. SpA. Process and apparatus for the manufacture of objects of crystalline polystyrene. 4,409,173., Cl. 264-210.200.

Paech, Ivor N., to Longyear Australia Pty. Ltd. Rotary seal apparatus with dual self-centering annular face seals. 4,408,766., Cl. 277-3.000.

Pai, Yang-Kuang. Manhole structure. 4,408,421., Cl. 52-20.000.

Paley, William S.: *See—*
Redmore, Derek; and Paley, William S., 4,409,151., Cl. 260-502.50E.

Palmer, Deryk J., to Nuway Manufacturing Company Limited. Mats. 4,408,365., Cl. 15-112.000.

Papantoniou, Christos: *See—*
Gaetani, Quintino; Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,409,379., Cl. 526-230.500.

Papierok, Karl-Heinz: *See—*
Kummerling, Rolf; Poos, Robert; Pentzien, Thomas; and Papierok, Karl-Heinz, 4,408,477., Cl. 72-478.000.

Pappalardo, Massimo: *See—*
Assenza, Donello; and Pappalardo, Massimo, 4,409,510., Cl. 310-334.000.

Paquet, Andre J., to Hamon-Sobelco, S.A. Heating system for a steam turbine energy producing plant. 4,408,460., Cl. 60-678.000.

Parant, Jean-Paul, to Societe Anonyme dite Compagnie General d'Electricite. Vitreous material and semiconductor component incorporating same. 4,409,292., Cl. 428-428.000.

Park, Pyong K., to Ford Aerospace & Communications Corporation. Stripline slot array. 4,409,595., Cl. 343-771.000.

Parker, Ellery: *See—*
Cherukuri, Subraman R.; Friello, Dominick R.; Hopkins, Walter; Parker, Ellery; and Mackay, Donald A. M., 4,409,244., Cl. 426-5.000.

Parker, Ray A., Jr., to Phillips Petroleum Company. Apparatus for the recovery of thermoplastic from piping for reprocessing. 4,408,976., Cl. 425-301.000.

Parkins, Ian C. N. W., to Dow Mac Concrete Limited. Moulding reinforced concrete articles. 4,409,159., Cl. 264-39.000.

Parkison, Richard G.: *See—*
Swiers, Richard H.; and Parkison, Richard G., 4,408,745., Cl. 251-357.000.

Parry, John, to South Wales Switchgear Limited. Electrical switchgear. 4,409,446., Cl. 200-147.00R.

Parve, Toomas E.: *See—*
Min, Mart V.; Parve, Toomas E.; Khyarm, Khyarmo E.; and Pungas, Toom A., 4,409,555., Cl. 328-14.000.

Passafiume, Anthony; and Pieniak, Heinz A., to Johnson & Johnson Baby Products Company. Method and apparatus for effecting intermittent securement of a stretched elastic member to a moving web. 4,409,049., Cl. 156-164.000.

Pastor, Ricardo C.; Chew, Remedios K.; and Gorre, Luisa E., to Hughes Aircraft Company. Process for low-temperature surface layer oxidation of a semiconductor substrate. 4,409,260., Cl. 427-82.000.

Paszner, Laszlo; and Chang, Pei-Ching, to Thermoform Bau-Und Forschungsgesellschaft. Organosolv delignification and saccharification process for lignocellulosic plant materials. 4,409,032., Cl. 127-37.000.

Patel, Raman: *See—*
Coran, Aubert Y.; and Patel, Raman, 4,409,365., Cl. 525-78.000.

Pathfinder Auto Lamp Company: *See—*
Graff, Henry W.; and Erickson, Lloyd A., 4,408,939., Cl. 411-112.000.

Patton, Willard T.; and Mason, Robert J., to RCA Corporation. Coaxial line to waveguide coupler. 4,409,566., Cl. 333-26.000.

Pauli, Klaus H.: *See—*
Lenski, Ralph; Peiler, Rolf W.; and Pauli, Klaus H., 4,408,947., Cl. 414-526.000.

Paxson, Timm E., to Shell Oil Company. Asymmetric hydrogenation of tetra-substituted olefinic acids and derivatives. 4,409,397., Cl. 562-496.000.

Payer-Lux Elektroprodukte Gesellschaft m.b.H.: *See—*
Naimer, Gundolf, 4,408,392., Cl. 30-34.100.

Payne, John C.: *See—*
Latos, Edwin J.; and Payne, John C., 4,409,121., Cl. 252-389.00A.

Peabody Coal Company: *See—*
Smith, Jimmy B., 4,409,067., Cl. 201-1.000.

Peabody Spunstrand, Inc.: *See—*
Littrell, J. Kerry, 4,408,679., Cl. 181-243.000.

Peacock, Roy N., to HPS Corporation. Gate stop valve. 4,408,634., Cl. 137-630.120.

Peck, Timothy R.: *See—*
Belcher, Samuel L.; Peck, Timothy R.; and Smith, Roger D., 4,409,455., Cl. 219-10.810.

Pehr, Harald, to Pehr Holding Gesellschaft. Lightweight construction element. 4,409,271., Cl. 428-71.000.

Pehr Holding Gesellschaft: *See—*
Pehr, Harald, 4,409,271., Cl. 428-71.000.

Peiler, Rolf W.: *See—*
Lenski, Ralph; Peiler, Rolf W.; and Pauli, Klaus H., 4,408,947., Cl. 414-526.000.

Penkauskas, Thomas P.: *See—*
Andersen, Steven C.; Penkauskas, Thomas P.; Kassel, James W.; and Newcomer, Stephen O., 4,409,656., Cl. 364-200.000.

Pennwalt Corporation: *See—*
Bertell, Jerome W., 4,409,113., Cl. 252-42.000.

Pentzien, Thomas: *See—*
Kummerling, Rolf; Poos, Robert; Pentzien, Thomas; and Papierok, Karl-Heinz, 4,408,477., Cl. 72-478.000.

Performance Industries, Inc.: *See—*
Boyesen, Eyvind, 4,408,674., Cl. 180-227.000.

Perkin-Elmer Corp., The: *See—*
Quick, Donald L., 4,409,087., Cl. 204-298.000.

Perkins, David J. B.: *See—*
Holroyd, Eric; and Perkins, David J. B., 4,409,059., Cl. 156-397.000.

Perkins, J. E. Steven, to Philip Morris Incorporated. Vibratory pneumatic tobacco feeder. 4,408,619., Cl. 131-108.000.

Perrig, Max, to Sandoz Ltd. Process for dyeing cotton with reactive dyes in weakly alkaline dye-bath(pH 8.0–8.8). 4,408,997., Cl. 8-532.000.

Perry, Fred E.: *See—*
Bloom, Hanley D.; Bloom, Stanley; Perry, Fred E.; and Leone, Sam, 4,408,407., Cl. 40-607.000.

Peschl, Ivan A. S. Z. Universal blending silo. 4,408,889., Cl. 366-113.000.

Peters, Kenneth D., to UOP Inc. Catalytic reforming process. 4,409,095., Cl. 208-134.000.

Peters, Wendell R.: *See—*
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,408,533., Cl. 102-211.000.

Peters, William A.: *See—*
Longwell, John P.; and Peters, William A., 4,409,094., Cl. 208-121.000.

Petersen, Alfred W., to Stauffer Chemical Company. Method of separating magnesium from wet process superphosphoric acid. 4,409,194., Cl. 423-321.00R.

Petersen, Christian C., to Polaroid Corporation. Electric motor having improved operating characteristics. 4,409,505., Cl. 310-90.000.

Petersen, Christian C., to Polaroid Corporation. Method and apparatus which change magnetic forces of a linear motor. 4,409,576., Cl. 335-170.000.

Petersen, Tommy: *See—*
Berth, Jorgen; Hansen, Erling; Heaven, Malcolm D.; and Petersen, Tommy, 4,409,177., Cl. 264-531.000.

Peterson, William E., to Rockwell International Corporation. Directional ultrasonic transducers. 4,408,493., Cl. 73-643.000.

Petrolite Corporation: *See—*
Redmore, Derek; and Paley, William S., 4,409,151., Cl. 260-502.50E.

Petruck, Gerd-Michael; and Wambach, Paul R., deceased (by Wambach, Christa, heiress), to Bayer Aktiengesellschaft. Process for the preparation of 1,3,5-trichlorobenzene. 4,409,407., Cl. 570-202.000.

Petz, Gunter. System for connecting the edge areas of thin-walled bodies. 4,408,787., Cl. 285-305.000.

Peuker, Karl, to Fag Kugelfischer Georg Schafer & Co. Method of and device for determining the boiling point of a liquid. 4,408,902., Cl. 374-27.000.

Pez, Guido P., to Allied Corporation. Process of hydrogenating benzenes and group IVa metal hydride catalysts therefor. 4,409,411., Cl. 585-275.000.

Pfahler, Gerhard: *See—*
Wiezer, Hartmut; and Pfahler, Gerhard, 4,409,348., Cl. 524-100.000.

Pfalzgraf, Manfred; Kern, Eckhart; and Collonia, Harald, to VDO Adolf Schindling AG. Device for controlling the speed of travel and regulating the idling speed of automotive vehicles with an Otto engine. 4,408,581., Cl. 123-339.000.

PHB Weserhutte Aktiengesellschaft: *See—*
Wenzel, Jurgen-Michael; Guderley, Werner; and Hamel, Ernst, 4,408,945., Cl. 414-325.000.

Phelps, Paul S. Disassemblable jack knife. 4,408,394., Cl. 30-157.000.

Philip Morris Incorporated: *See—*
Perkins, J. E. Steven, 4,408,619., Cl. 131-108.000.

Phillips, Bobby M., to Eastman Kodak Company. Spinneret orifice cross-sections. 4,408,977., Cl. 425-382.200.

Phillips, John H.: *See—*
Morrison, Lowen R., Jr.; Elder, Melisse N.; and Phillips, John H., 4,409,253., Cl. 426-424.000.

Phillips Petroleum Company: *See—*
Hatcher, Charles S.; and Smith, Kenneth E., 4,408,376., Cl. 28-245.000.
Johnson, Marvin M.; Nowack, Gerhard P.; and Kukes, Semyon, 4,409,418., Cl. 585-667.000.
Murtha, Timothy P., 4,409,401., Cl. 568-362.000.
Novak, Danny E., 4,408,569., Cl. 122-448.00R.
Parker, Ray A., Jr., 4,408,976., Cl. 425-301.000.
Van Pool, Joe; and Potts, Mack F., 4,409,420., Cl. 585-723.000.

Phillips, Terence M.: *See—*
Feller, William F.; Kantor, Judith A.; Chirikjian, Jack G.; and Phillips, Terence M., 4,409,200., Cl. 436-516.000.

Pichler, Ludwig: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, 4,409,235., Cl. 424-273.00R.

Pickering & Company, Inc.: *See—*
Hofer, Alan; and Yama, Frank M., 4,409,588., Cl. 340-384.00R.

Pieniak, Heinz A.: *See—*
Passafiume, Anthony; and Pieniak, Heinz A., 4,409,049., Cl. 156-164.000.

Pieper, Henner: *See—*
Kuhn, Dieter; Rach, Heinz-Dieter; Frerichs, Udo; and Pieper, Henner, 4,408,647., Cl. 152-330.0RF.

Pierre Fabre S.A.: *See—*
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,409,241., Cl. 424-324.000.

Pines, Richard J.: *See—*
Naugle, George H.; Gordon, Robert L.; and Pines, Richard J., 4,409,053., Cl. 156-287.000.

Pinkstaff, Carlos D., to Technicare Corporation. Brake assembly for rotatable scintillation detector. 4,409,484., Cl. 250-363.00S.

Pioneer Electronic Corporation: *See—*
Numata, Tatsuo; Nishioka, Akira; and Hirata, Hitoshi, 4,409,436., Cl. 381-15.000.

Pitney Bowes Inc.: *See—*
Yarm, Jay M., 4,408,757., Cl. 271-311.000.

Pittman, John B., to Brunswick Corporation. Anti-reverse actuator mechanism. 4,408,728., Cl. 242-84.20A.

Plancon, Marcel: *See—*
Fromont, Jacques; and Plancon, Marcel, 4,408,470., Cl. 72-8.000.

Plass, Ludolf: *See—*
Haas, Gunther; Plass, Ludolf; and Lohrberg, Karl, 4,409,086., Cl. 204-269.000.

Plastona (John Waddington) Ltd: *See—*
Ward, Peter, 4,409,178., Cl. 264-544.000.

Platone, Edoardo: *See—*
Prevedello, Aldo; Platone, Edoardo; and Morelli, Morello, 4,409,419., Cl. 585-611.000.

PLM Aktiebolag: *See—*
Jakobsen, Kjell M.; Nilsson, Claes T.; and Larsson, Lars G., 4,409,176., Cl. 264-527.000.

Plummer, Walter A., III. Radio frequency shielding jacket for multiple ribbon cables. 4,409,427., Cl. 174-36.000.

Pochan, Darlyn F.: *See—*
Swigert, J. Kirk; and Pochan, Darlyn F., 4,409,598., Cl. 346-74.200.

Pocock, John F. E.: *See—*
Harry, Ieuan L.; Krishnakumar, Suppayan M.; Jolly, Walter R.; Beck, Martin H.; and Pocock, John F. E., 4,409,161., Cl. 264-40.100.

Podell, Allen F., to Cuisinarts, Inc. Motor speed control circuit providing armature current sensing and feedback action for each half cycle and control circuit reducing energy consumption of induction motors when running under no load and light loading. 4,409,528., Cl. 318-345.00D.

Poe, David T., to General Motors Corporation. Venting system for electric storage battery. 4,409,302., Cl. 429-88.000.

Pohl, Karl-Heinz, to Siemon Company, The. Conductor insertion tool and method. 4,408,391., Cl. 29-861.000.

Polaroid Corporation: *See—*
Murray, Joseph E., Jr.; and Sylvester, Paul J., 4,409,441., Cl. 179-111.00R.
Petersen, Christian C., 4,409,505., Cl. 310-90.000.
Petersen, Christian C., 4,409,576., Cl. 335-170.000.

Pollard, John K., Jr., to American Hoechst Corporation. Material and method for removing immunoglobulins from whole blood. 4,409,330., Cl. 435-178.000.

Polygram GmbH: *See—*
Bartholdsten, Dieter; Koop, Hermann; Schrode, Erhard; and Zielasek, Adelbert, 4,409,169., Cl. 264-107.000.

Pommer, Ernst-Heinrich: *See—*
Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, 4,409,358., Cl. 524-547.000.
Pooch, Gerhard; and von der Neyen, Hans-Juergen, to Siemens Aktiengesellschaft. Circuit for synchronizing a transmitting-receiving station to a data network of a digital communication system. 4,409,684., Cl. 375-116.000.
Poos, Robert: *See—*
Kummerling, Rolf; Poos, Robert; Pentzien, Thomas; and Papierok, Karl-Heinz, 4,408,477., Cl. 72-478.000.
Ports, Kenneth A.; and Harlow, Justin E., to Harris Corporation. Method of serialization of dice. 4,409,686., Cl. 382-8.000.
Postalia GmbH: *See—*
Nuckel, Klaus; and Schleuchardt, Manfred, 4,408,524., Cl. 101-110.000.
Potash, Jerome, to OPT Industries, Inc. Filter circuits having transformers as filter elements. 4,409,569., Cl. 333-177.000.
Potts, Mack F.: *See—*
Van Pool, Joe; and Potts, Mack F., 4,409,420., Cl. 585-723.000.
Povh, Dusan: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.
PPG Industries, Inc.: *See—*
Dowbenko, Rostyslaw; Hartman, Marvis E.; and Hockswender, Thomas R., 4,409,376., Cl. 525-509.000.
Richards, Raymond G., 4,409,541., Cl. 324-51.000.
PQ Corporation: *See—*
Spivak, Bruce D., 4,409,158., Cl. 264-8.000.
President and Fellows of Harvard College: *See—*
Fossel, Eric T.; and Delayre, Jean L., 4,409,550., Cl. 324-300.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for producing ethanol using said novel catalyst system. 4,409,404., Cl. 568-902.000.
Prevedello, Aldo; Platone, Edoardo; and Morelli, Morello, to Anic S.p.A. Process for preparing 2,5-dimethyl-2,4-hexadiene. 4,409,419., Cl. 585-611.000.
Price, Anthony G.: *See—*
Edwards, Roy E.; and Price, Anthony G., 4,408,805., Cl. 303-6.00A.
Price, William F., Sr. Flip-flop turbine vane module. 4,408,956., Cl. 416-119.000.
Procter & Gamble Company, The: *See—*
Morrison, Lowen R., Jr.; Elder, Melisse N.; and Phillips, John H., 4,409,253., Cl. 426-424.000.
Professional Staff Association of the Rancho Los Amigos Hospital, Inc.: *See—*
Axelgaard, Jens, 4,408,609., Cl. 128-421.000.
Profio, Mark V.; Libert, James T.; and Kampf, Julian C., to Square D Company. Abort cycle timer. 4,409,640., Cl. 361-197.000.
Profitt, James A.: *See—*
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,409,229., Cl. 424-267.000.
Promagco Limited: *See—*
Smedley, Dennis; and Spare, Noel C., 4,408,651., Cl. 164-316.000.
Prominski, Guenter: *See—*
Coenen, Alfred; Schroeder, Manfred; and Prominski, Guenter, 4,409,198., Cl. 423-462.000.
Propster, Mark A.: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,011., Cl. 65-27.000.
Pugh, Paul F. Method for transporting low temperature heat long distances. 4,408,657., Cl. 165-1.000.
Puls, Norman M., to Magnum Division of Tandon Corporation. Mechanism for centering and clamping a floppy disc. 4,409,629., Cl. 360-99.000.
Pungas, Toom A.: *See—*
Min, Mart V.; Parve, Toomas E.; Khyarm, Khyarmo E.; and Pungas, Toom A., 4,409,555., Cl. 328-14.000.
Pusterhofer, Ronald J., to Advance Brushes, Inc. End brush. 4,408,367., Cl. 15-180.000.
Putnam, Alan R.: *See—*
Lehle, Fredric R.; Maine, James W.; Grossman, David; Leavitt, Richard A.; and Putnam, Alan R., 4,408,414., Cl. 47-1.00R.
Qualeatti, Gail M.; and Germanas, Dalia, to UOP Inc. Process for the reduction of unsaturated carboxylic acids. 4,409,148., Cl. 260-409.000.
Quay, Earl R., to Mayer, Rothkopf Industries, Inc. Short fiber feed system for sliver high pile fabric knitting machines. 4,408,370., Cl. 19-105.000.
Quay, Earl R., to Mayer, Rothkopf Industries, Inc. Self-cleaning doffer wire. 4,408,371., Cl. 19-114.000.
Quick, Donald L., to Perkin-Elmer Corp., The. Wafer detection circuitry for high vacuum use. 4,409,087., Cl. 204-298.000.
Quietlite International, Inc.: *See—*
Elliott, William J., 4,409,522., Cl. 315-308.000.
Qvarnstrom, Bengt G. L., to Stora Kopparbergs Bergslags Aktiebolag. Method for transplanting of seedlings. 4,408,549., Cl. 111-2.000.
R. R. Donnelley & Sons Company: *See—*
Detterman, Don E.; Danhoff, Ronald S.; and Wheeler, William E., 4,408,780., Cl. 281-15.00R.
Raab, Alfred: *See—*
Cohen, Carlos; and Raab, Alfred, 4,408,721., Cl. 239-417.000.
Rabuse, George R.: *See—*
Molenda, Robert P.; and Rabuse, George R., 4,409,057., Cl. 156-92.000.
Rach, Heinz-Dieter: *See—*
Kuhn, Dieter; Rach, Heinz-Dieter; Frerichs, Udo; and Pieper, Henner, 4,408,647., Cl. 152-330.0RF.
Ragan, Marshall P., to FMC Corporation. Beam projector for wheel aligner. 4,408,879., Cl. 356-155.000.
Raines, Charles D.: *See—*
Schilling, Hugh K.; and Raines, Charles D., 4,408,685., Cl. 192-85.00A.
Rajendren, Richard B., to Aeration Industries, Inc. Liquid aerating device. 4,409,100., Cl. 210-219.000.
Ralston Purina Company: *See—*
Kerbs, Brad J.; and Lanter, Kent J., 4,408,565., Cl. 119-52.00R.
Ramsey, Arlie A.: *See—*
Eickerman, Curtis L.; and Ramsey, Arlie A., 4,409,501., Cl. 307-594.000.
Randolph, Travis M.; and Schreiner, Charles P. Three wheel vehicle. 4,408,776., Cl. 280-261.000.
Rao, Prabhakar P., to Halliburton Company. Programmable digital temperature controller. 4,409,662., Cl. 364-557.000.
Rapson, W. Howard: *See—*
Reeve, Douglas W.; and Rapson, W. Howard, 4,409,066., Cl. 162-88.000.
Rasberger, Michael, to Ciba-Geigy Corporation. Compositions stabilized by 6-amino-dibenz[d,g][1,3,2]dioxaphosphocines. 4,409,346., Cl. 524-83.000.
Rasch, Arthur A.: *See—*
Lelental, Mark; Rasch, Arthur A.; and Sullivan, David P., 4,409,307., Cl. 430-31.000.
Raskin, S.A.: *See—*
Duruz, Louis; and Strehl, Jean-Marc, 4,409,463., Cl. 219-121.0LG.
Raskob, Richard L. Two-wheel cart. 4,408,774., Cl. 280-47.260.
Rauch, Jeffrey S., to Mechanical Technolgy Incorporated. Free-piston Stirling engine power control. 4,408,456., Cl. 60-518.000.
Raychem A/S: *See—*
Berth, Jorgen; Hansen, Erling; Heaven, Malcolm D.; and Petersen, Tommy, 4,409,177., Cl. 264-531.000.
RCA Corporation: *See—*
Chase, Thomas L.; and Ehemann, George M., Jr., 4,408,851., Cl. 354-1.000.
D'Amato, Ralph J., 4,409,513., Cl. 313-348.000.
Ferguson, James M.; Chen, Thomas Y.; and Gibson, Walter G., 4,409,626., Cl. 358-338.000.
Hale, John R., 4,409,279., Cl. 428-192.000.
Kleinknecht, Hans P.; Ham, William E.; and Meier, Heinrich, 4,408,884., Cl. 356-355.000.
Patton, Willard T.; and Mason, Robert J., 4,409,566., Cl. 333-26.000.
Sechi, Franco N., 4,409,557., Cl. 330-277.000.
Shefer, Joshua; and Catanese, Carmen A., 4,409,514., Cl. 313-449.000.
Tosima, Soitiro; and Harada, Shigeo, 4,409,333., Cl. 436-2.000.
Ready Brush, Inc.: *See—*
Walther, Mike C.; and Mena-Reyes, Manuel A., 4,408,920., Cl. 401-176.000.
Rebel, Herbert, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Arrangement for low-vibration sheet transfer between printing units on multi-color printing presses. 4,408,525., Cl. 101-183.000.
Redlich, Robert W. Instruments for measurement of carrier power and antenna impedance in AM broadcasting. 4,409,544., Cl. 324-57.00R.
Redmann, Jerry L., Jr.; and Gurney, Gerald W., to C. L. Frost & Son, Inc. Relubricatable double row bearing. 4,408,808., Cl. 308-187.000.
Redmore, Derek; and Paley, William S., to Petrolite Corporation. N,N-Dimethylene phosphonic acids of alkylene diamines. 4,409,151., Cl. 260-502.50E.
Reeve, Douglas W.; and Rapson, W. Howard, to Erco Industries Limited. Bleaching procedure using chlorine dioxide and chlorine solutions. 4,409,066., Cl. 162-88.000.
Regie Nationale des Usines Renault: *See—*
Legros, Andre; and Chalesle, Andre, 4,408,785., Cl. 285-49.000.
Rousseau, Christian, 4,409,585., Cl. 340-52.00R.
Reidy, John J.: *See—*
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.
Reimert, Larry E., to Vetco, Inc. Production casing tieback connector assembly. 4,408,784., Cl. 285-24.000.
Reiner, Roland: *See—*
Montavon, Marc; and Reiner, Roland, 4,409,387., Cl. 544-26.000.
Reinhardt, Hartmut: *See—*
Kuschel, Georg; and Reinhardt, Hartmut, 4,409,487., Cl. 250-398.000.
Relyea, Richard D., to Aerobitronics, Inc. Interactive exercise device. 4,408,613., Cl. 128-670.000.
Relyea, Richard D.: *See—*
Reneau, J. R.; and Relyea, Richard D., 4,408,759., Cl. 272-131.000.
Reneau, J. R.; and Relyea, Richard D., to Bullseye Gun Centers, Inc. Total resistance gym. 4,408,759., Cl. 272-131.000.
Renner, Rudi: *See—*
Kohler, Armin; Schuster, Herbert; and Renner, Rudi, 4,409,187., Cl. 422-135.000.
Renz, Klaus: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.
Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,408,374., Cl. 24-230.00A.

Research Corporation: *See—*
Feller, William F.; Kantor, Judith A.; Chirikjian, Jack G.; and Phillips, Terence M., 4,409,200., Cl. 436-516.000.
Research Corporation of the University of Hawaii: *See—*
Heinicke, Ralph M., 4,409,144., Cl. 260-236.500.
Research Council of Alberta: *See—*
Kessick, Michael A., 4,409,091., Cl. 208-11.0LE.
Reumann, Franz, to Internationale Patente Verwertungsgesellschaft m.b.H. Process and apparatus for magnetizing, on both sides, the surfaces of bodies to be magnetized. 4,409,581., Cl. 335-284.000.
Reuter, Alfred, to Gebruder Linck Maschinenfabrik und Eisengiesserei "Gatterlinck". Apparatus for cutting boards from tree trunks. 4,408,510., Cl. 83-869.000.
Revlon, Inc.: *See—*
Meyerhoefer, Carl H.; and Meyerhoefer, Carl E., 4,408,622., Cl. 132-73.000.
Rewitzer, Siegfried, to Hoechst Aktiengesellschaft. Process and apparatus for pressing, packing and hooping fibrous material in bale form. 4,408,438., Cl. 53-438.000.
Reynolds Metals Company: *See—*
Moore, Thomas W., 4,409,021., Cl. 75-10.00R.
Rheological Systems, Inc.: *See—*
Brown, Robert, 4,409,063., Cl. 156-542.000.
Rhodes, Edward: *See—*
Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K., 4,408,568., Cl. 122-379.000.
Rhone-Poulenc Industries: *See—*
Lagarde, Robert; and Vrisakis, Georges, 4,409,356., Cl. 524-492.000.
Rhone-Poulenc-Textile: *See—*
Menault, Jacques; and Rodier, Henry, 4,409,289., Cl. 428-374.000.
Riblet, Leslie A.; and Eison, Michael S. Anxiolytic method. 4,409,223., Cl. 424-251.000.
Ricard, Claude F. Methods and taximeters for calculating a taxi fare. 4,409,685., Cl. 377-20.000.
Ricaud, Pierre, to Societe Nationale Industrielle Aerospatiale. Process and device for the derivation of an analog electric signal. 4,409,667., Cl. 364-732.000.
Rice, William T., III, to Luwa A.G. Motionless mixing device. 4,408,893., Cl. 366-339.000.
Richards, John S.; and DePaoli, Alan G., to Information International, Inc. Method and apparatus for compacting and decompacting character in accordance with a variety of methods. 4,409,621., Cl. 358-260.000.
Richards, Raymond G., to PPG Industries, Inc. Method of and apparatus for determining continuity of an electrical conductor. 4,409,541., Cl. 324-51.000.
Richardson, Frank; and Campbell, Allan H., to Twin-Cee Limited. Wall mounted paper towel handling unit. 4,408,811., Cl. 312-37.000.
Richmond, James M., to Akzona Incorporated. Fabric softening compounds and method. 4,409,109., Cl. 252-8.800.
Rickard, Jimmy R.: *See—*
Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,409,532., Cl. 318-749.000.
Ricoh Co., Ltd.: *See—*
Asano, Kiyomitsu; and Watanabe, Tetsuo, 4,408,909., Cl. 400-144.200.
Hukuda, Minolu; and Watanabe, Tsutomu, 4,408,861., Cl. 355-3.0TR.
Inoue, Hiroshi; and Tooyama, Nobuo, 4,409,268., Cl. 428-1.000.
Ogata, Yoshihiro; Sakamoto, Koji; Takahashi, Harumi; and Hirakura, Koji, 4,408,863., Cl. 355-3.0TR.
Ries, Gunter, to Siemens Aktiengesellschaft. Cryogenically stabilized superconductor in cable form for large currents and alternating field stresses. 4,409,425., Cl. 174-15.00S.
Rieter Machine Works Limited: *See—*
Schenkel, Eduard, 4,408,731., Cl. 242-131.000.
Rinehart, John R. Taxidermy fish body insert piece and method of making it. 4,408,992., Cl. 434-296.000.
Rinner, Bernhard: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-38.000.
Riom Laboratories - Cerm S.A.: *See—*
Combourieu, Michel; Laigle, Jean-Claude; and Busch, Norbert, 4,409,221., Cl. 424-250.000.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. GnRH antagonists. 4,409,208., Cl. 424-177.000.
Robert Bosch GmbH: *See—*
Hauler, Peter; Heintz, Frieder; and Zabler, Erich, 4,408,589., Cl. 123-494.000.
Jakob, Gert; Gansert, Willi; Goetzke, Siegfried; and Ruttkowski, Lothar, 4,409,641., Cl. 361-386.000.
Leiber, Heinz, 4,408,673., Cl. 180-141.000.
Mausner, Eberhard, 4,408,588., Cl. 123-489.000.
Wissmann, Michael, 4,408,587., Cl. 123-454.000.
Roberts, Thomas L.: *See—*
Brester, Robert R.; and Roberts, Thomas L., 4,408,508., Cl. 83-397.000.
Roberts, Victor D., to General Electric Company. Fluorescent lamp with reduced electromagnetic interference. 4,409,521., Cl. 315-57.000.
Robinet, Jules P.: *See—*
Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F., 4,408,695., Cl. 220-3.300.
Robinson, David E.: *See—*
Kossoff, George; and Robinson, David E., 4,408,492., Cl. 73-631.000.
Robinson, Morris D. Controlled-folding and controlled-unfolding multiple section platform assembly. 4,408,948., Cl. 414-545.000.
Robinson, Richard C.; and Hecker, William C., to Chevron Research Company. Process for regenerating sulfur sorbent by oxidation and leaching. 4,409,124., Cl. 502-5.000.
Rochon, Robert W.; and Sneed, Joe W., Jr., to Monarch Logging Company, Inc. Bell nipple densitometer method and apparatus. 4,408,486., Cl. 73-155.000.
Rockwell International Corporation: *See—*
Marshall, Claude J., Jr., 4,408,804., Cl. 301-37.00R.
Peterson, William E., 4,408,493., Cl. 73-643.000.
Rockwell, Leon G. Flue gas heat recovery system. 4,408,716., Cl. 237-55.000.
Roder, Albert: *See—*
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, 4,409,328., Cl. 435-25.000.
Rodier, Henry: *See—*
Menault, Jacques; and Rodier, Henry, 4,409,289., Cl. 428-374.000.
Rodney, Burton: *See—*
Witzel, Frank; DiNolfo, Mario A.; Rodney, Burton; and Mackay, Donald A. M., 4,409,202., Cl. 424-49.000.
Roeschlau, Peter: *See—*
Bartl, Knut; Lill, Helmut; Roeschlau, Peter; and Ziegenhorn, Joachim, 4,409,327., Cl. 435-13.000.
Rogers Holster Co., Inc.: *See—*
Rogers, William H., 4,408,707., Cl. 224-239.000.
Rogers, Ralph W., Jr.: *See—*
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,409,036., Cl. 148-2.000.
Rogers, William H., to Rogers Holster Co., Inc. Revolver reloader holster. 4,408,707., Cl. 224-239.000.
Rohner, Joachim, to W. Schlafhorst & Co. Method and device for joining an upper thread to a lower thread. 4,408,442., Cl. 57-22.000.
Rollinger, Bernt: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-38.000.
Roman, Steven A., to Shell Oil Company. Preparation of (1R, cis)-oxyimino-substituted cyclo-propanecarboxylic acids. 4,409,398., Cl. 562-506.000.
Romanski, John G., to United States of America, Air Force. Aimpoint selection processor. 4,409,661., Cl. 364-516.000.
Roscher, Gunter: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.
Rose, Gerald D.: *See—*
Torrey, Rodney J.; Astemborski, Dennis; Carner, Marshall A.; and Rose, Gerald D., 4,409,007., Cl. 55-112.000.
Rose, Jean T.: *See—*
Lichtner, Frederick W.; and Rose, Jean T., 4,409,192., Cl. 423-242.000.
Rosenberg, Larry: *See—*
Zinky, William; and Rosenberg, Larry, 4,408,874., Cl. 355-52.000.
Ross, Don O. Ladder support assembly. 4,408,680., Cl. 182-68.000.
Rossmann, Christian: *See—*
Burger, Helga; and Rossmann, Christian, 4,409,119., Cl. 252-156.000.
Roth American, Inc.: *See—*
Gurbst, Herbert S.; and Fulton, William, 4,408,758., Cl. 272-85.000.
Rottenkolber, Paul J.: *See—*
Long, William D.; and Rottenkolber, Paul J., 4,408,959., Cl. 416-241.00B.
Rottmaier, Ludwig; Merten, Rudolf; Tima, Milan J.; and Michael, Dietrich, to Bayer Aktiengesellschaft. Flame-proof polyamide moulding compositions. 4,409,347., Cl. 524-91.000.
Rousseau, Christian, to Regie Nationale Des Usines Renault. System governing the position of a sensor. 4,409,585., Cl. 340-52.00R.
Rowley, Edward K.: *See—*
Bonnycastle, Joseph R.; Michaud, Alfred G.; and Rowley, Edward K., 4,409,155., Cl. 264-3.00R.
Roxlo, Charles B.: *See—*
Salour, Michael M.; and Roxlo, Charles B., 4,408,464., Cl. 62-514.00R.
Roy, Jean-Joseph: *See—*
Gleize, Jacques; and Roy, Jean-Joseph, 4,408,677., Cl. 181-121.000.
Royal Business Machines, Inc.: *See—*
Frechette, Thomas E., 4,408,913., Cl. 400-208.000.
Rozek, Roy J., to Kohler Co. Diverter valve. 4,408,361., Cl. 4-331.000.
RPC Industries: *See—*
Loda, Gary K.; and Farrell, Sherman R., 4,409,511., Cl. 313-34.000.
Ruckert, Hans: *See—*
Buhr, Gerhard; Ruckert, Hans; and Stahlhofen, Paul, 4,409,314., Cl. 430-192.000.
Rud. Biere Maschinen Und Apparatebau AG: *See—*
Bieri, Rudolf, 4,408,688., Cl. 198-500.000.
Rudnick, Leslie R., to Mobil Oil Corporation. Coal liquefaction and resid processing with lignin. 4,409,089., Cl. 208-8.0LE.
Rumennik, Vladimir, to Xerox Corporation. Normally-on enhancement mode MOSFET with negative threshold gating. 4,409,607., Cl. 357-23.000.
Russell, David B., to Dennison Manufacturing Company. Apparatus for stretching of fasteners. 4,408,979., Cl. 425-383.000.

Russell, Ingeborg: *See—*
Stewart, Graham G.; Goring, Thomas E.; and Russell, Ingeborg, 4,409,246., Cl. 426-16.000.

Ruttkowski, Lothar: *See—*
Jakob, Gert; Gansert, Willi; Goetzke, Siegfried; and Ruttkowski, Lothar, 4,409,641., Cl. 361-386.000.

Ryan, Edward J., to United Technologies Corporation. Method for applying abradable material to a honeycomb structure and the product thereof. 4,409,054., Cl. 156-293.000.

Ryer, Jack: *See—*
Brois, Stanley J.; Gutierrez, Antonio; and Ryer, Jack, 4,409,114., Cl. 252-75.000.

Rynberk, Robert W., to Valley View Specialties Co. Fountain construction with lighting means. 4,408,717., Cl. 239-18.000.

SAB Industri AB: *See—*
Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., 4,408,682., Cl. 188-202.000.

SACE S.p.A. Costruzioni Elettromeccaniche: *See—*
Mostosi, Angelo, 4,409,572., Cl. 335-8.000.

Sacilor Acieries et Laminoirs de Lorraine: *See—*
Mennel, Gabriel B., 4,408,475., Cl. 72-221.000.

Sailor Pen Co., Ltd., The: *See—*
Tanaka, Toshiaki, 4,408,973., Cl. 425-139.000.

Saimbi, Manjit S.: *See—*
Masters, Jeffrey; Saimbi, Manjit S.; and Webb, Roger J., 4,408,983., Cl. 431-116.000.

Saito, Etsuro, to Sony Corporation. Information signal recording and/or reproducing apparatus and a recording jacket for use therewith. 4,409,630., Cl. 360-99.000.

Saitoh, Masaaki; and Kameoka, Michitada, to Honda Giken Kogyo Kabushiki Kaisha. Hinge device for a detachable roof panel in an automobile. 4,408,795., Cl. 296-218.000.

Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Wakabayashi, Hiroharu, to Kokusai Denshin Denwa Co., Ltd. Optical switch. 4,408,831., Cl. 350-269.000.

Sakaguchi, Hiroo: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.

Sakai, Kazushige: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, to Aisin Warner Kabushiki Kaisha; and Toyota Jidosha Kogyo Kabushiki Kaisha. Pressure regulating device for use in an automatic transmission. 4,408,462., Cl. 60-330.000.

Sakami, Kazuo: *See—*
Matsui, Hiroshi; Sakami, Kazuo; Nishioka, Matsuo; and Onizawa, Takashi, 4,409,448., Cl. 200-153.0LA.

Sakamoto, Koji: *See—*
Ogata, Yoshihiro; Sakamoto, Koji; Takahashi, Harumi; and Hirakura, Koji, 4,408,863., Cl. 355-3.0TR.

Sakaoka, Hiromu, to Honda Giken Kogyo Kabushiki Kaisha. Intake system of an internal combustion engine. 4,408,576., Cl. 123-52.0MB.

Sakata Shokai, Ltd.: *See—*
Sakiyama, Kazuo; Kuwata, Mitsuo; and Oshiumi, Masaru, 4,409,077., Cl. 204-159.150.

Sakiyama, Kazuo; Kuwata, Mitsuo; and Oshiumi, Masaru, to Sumitomo Chemical Co., Ltd.; and Sakata Shokai, Ltd. Ultraviolet radiation curable coating composition. 4,409,077., Cl. 204-159.150.

Sakudo, Noriyuki: *See—*
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,409,520., Cl. 315-39.000.

Sakurai, Koichi: *See—*
Yokoyama, Hideo; Shimbashi, Ichiro; Sakurai, Koichi; and Matsuo, Munetsugu, 4,408,561., Cl. 118-72.000.

Sakurai, Tetsuma: *See—*
Takayashiki, Tetsuya; Usui, Taiji; and Sakurai, Tetsuma, 4,408,386., Cl. 29-576.00E.

Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., to Moskousky Institut Stali I Splavov. Fluidized bed apparatus. 4,409,101., Cl. 210-266.000.

Salk Institute for Biological Studies, The: *See—*
Ling, Nicholas C.; Guillemin, Roger C. L.; Ying, Shao-Yao; and Esch, Frederick S., 4,409,139., Cl. 260-112.00R.
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,409,208., Cl. 424-177.000.

Salour, Michael M.; and Roxlo, Charles B., to United States of America, Air Force. Dewar cooling chamber for semiconductor platelets. 4,408,464., Cl. 62-514.00R.

Samejima, Yasushi: *See—*
Iijima, Tokuzo; Samejima, Yasushi; Kano, Toshiji; and Hatta, Yoshio, 4,409,074., Cl. 204-98.000.

Samowich, Joseph J. Decorative laminate. 4,409,275., Cl. 428-138.000.

Sampei, Tetsuya: *See—*
Ouchi, Chiaki; and Sampei, Tetsuya, 4,408,652., Cl. 164-459.000.

Sampson, John D.; and Sparrow, David J. W., to Coal Industry (Patents) Limited. Mixing equipment. 4,408,886., Cl. 366-13.000.

Sanders Associates, Inc.: *See—*
Carl, Norman J., 4,409,477., Cl. 250-227.000.
White, Ronald P., 4,409,681., Cl. 367-166.000.

Sandler, Stanley A.: *See—*
D'Alessio, Michael S.; and Sandler, Stanley A., 4,408,431., Cl. 52-690.000.

Sandoz Ltd.: *See—*
Perrig, Max, 4,408,997., Cl. 8-532.000.
Wicki, Heinz, 4,409,142., Cl. 260-160.000.

Sandrock, Gary D.; Huston, Ernest L.; and Liu, James, to MPD Technology Corporation. Process for manufacturing rare earth intermetallic hydridable compounds. 4,409,180., Cl. 420-455.000.

Sandvik Aktiebolag: *See—*
Wiredal, Harry A. I., 4,408,669., Cl. 175-258.000.

Sankyo Company, Limited: *See—*
Tsukada, Kazuhiro; and Kato, Wataru, 4,409,233., Cl. 424-273.00R.

Sanofi: *See—*
Nisato, Dino; and Carminati, Paolo, 4,409,228., Cl. 424-267.000.

Santee, Harold P., to Santee, Jack H.; Santee, Robert P.; and McAfee, Catherine A. Secondary oil recovery method. 4,408,664., Cl. 166-263.000.

Santee, Jack H.: *See—*
Santee, Harold P., 4,408,664., Cl. 166-263.000.

Santee, Robert P.: *See—*
Santee, Harold P., 4,408,664., Cl. 166-263.000.

Sarin, Vinod K.; and Buljan, Sergej-Tomislav, to GTE Laboratories Incorporated. Carbonitride coated silicon nitride cutting tools. 4,409,003., Cl. 51-295.000.

Sarin, Vinod K.; Buljan, Sergej-Tomislav; and D'Angelo, Charles, to GTE Laboratories Incorporated. Carbonitride coated composite silicon nitride cutting tools. 4,409,004., Cl. 51-295.000.

Sarnoff, Stanley J., to Survival Technology, Inc. Emergency electrode. 4,408,610., Cl. 128-642.000.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; and Ito, Seitoku, 4,408,968., Cl. 418-15.000.

Sasseen, Marvin W. Novelty item of a cigarette extinguishing ashtray. 4,408,620., Cl. 131-236.000.

Satchell, Donald P.: *See—*
Anderson, Mark A.; Balliett, Robert W.; Link, Paul E.; and Satchell, Donald P., 4,408,985., Cl. 432-1.000.

Sater, Bernard L. High intensity solar cell. 4,409,422., Cl. 136-244.000.

Sato, Mikio: *See—*
Imazeki, Shuji; Mukoh, Akio; and Sato, Mikio, 4,408,840., Cl. 350-349.000.

Sato, Ryosuke; Hotta, Yuji; and Matsuura, Katsumi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,409,323., Cl. 430-544.000.

Sato, Tadao; Endo, Tadashi; Fukunaga, Osamu; and Iwata, Minoru, to National Institute for Researches in Inorganic Materials. Process for preparing cubic boron nitride. 4,409,193., Cl. 423-290.000.

Sattler, Heinrich: *See—*
Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,408,723., Cl. 241-19.000.

Sauer, Werner: *See—*
Franck, Klaus; Sauer, Werner; and Wiesmann, Herbert L., 4,408,797., Cl. 297-218.000.

Sauer, William F.: *See—*
Crouch, Bill W.; Sauer, William F.; and Zylka, Kenneth R., 4,408,437., Cl. 53-431.000.

Sauerland, Werner: *See—*
Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,408,723., Cl. 241-19.000.

Saura, Eiji: *See—*
Sugino, Morihiko; and Saura, Eiji, 4,409,284., Cl. 428-304.400.

Sauter, Robert: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Sauter, Robert; Grell, Wolfgang; Kobinger, Walter; and Pichler, Ludwig, 4,409,220., Cl. 424-250.000.

Savidge, David H.: *See—*
Garner, Henry C.; Broadbent, Jack; Savidge, David H.; and Wadsworth, Eric, 4,409,549., Cl. 324-262.000.

Sawaki, Ryoichi; and Kadota, Toshihiko, to Olympus Optical Company Limited. Tape recorder. 4,409,634., Cl. 360-137.000.

Scandia Packaging Machinery Company: *See—*
Anderson, Andrew W., 4,408,439., Cl. 53-461.000.

Scandinavian Lancers Aktiebolag: *See—*
Andersson, Kjell; and Forsell, Ragnar, 4,408,750., Cl. 266-216.000.

Schacle, Charles V., to Bendix Corporation, The. Wind turbine blade. 4,408,958., Cl. 416-237.000.

Schaich, Josef. Method and apparatus for forming fuel-air mixture in an internal combustion engine. 4,408,574., Cl. 123-26.000.

Schaper, Helmut, to Braunschweigische Maschinenbauanstalt AG. Continuously operable sugar centrifugal and method for improving the purity of the produced sugar. 4,409,031., Cl. 127-19.000.

Schaper, Siegfried; Wimmer, Anton; and Dommes, Werner, to Audi NSU Auto Union Aktiengesellschaft. Method for making connecting rods for internal combustion engines. 4,408,380., Cl. 29-156.50A.

Scheef, Hans-Volker: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.

Scheid, Peter; and Slama, Heinrich, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Stabilization control for a mass spectrometer. 4,409,482., Cl. 250-282.000.

Schelli, William; and Sindelar, William E., to Danly Machine Corporation. Power press with automatic die changing system. 4,408,521., Cl. 100-229.00R.

Schenkel, Eduard, to Rieter Machine Works Limited. Creel for a spinning machine. 4,408,731., Cl. 242-131.000.

Scherer, Erich. Circuit arrangement for producing a low frequency alternating current. 4,409,565., Cl. 331-40.000.

Schering AG: *See—*
Goldmann, Helmut, 4,409,082., Cl. 204-213.000.

Schering Corporation: *See—*
Bristol, James A.; and Lovey, Raymond G., 4,409,226., Cl. 424-256.000.

Scherrer, Fernand. Section constituting an outer longitudinal element or moulding of a false ceiling or a false wall. 4,408,433., Cl. 52-738.000.

Schill, Herman, to Maja Maschinenfabrik Hermann Schill GmbH. Apparatus for slicing bacon or the like. 4,408,519., Cl. 99-486.000.

Schilling, Hugh K.; and Raines, Charles D., to Horton Industries, Inc. Fluid set and spring released clutch. 4,408,685., Cl. 192-85.00A.

Schippers, Heinz, to Barmag Barmer Maschinenfabrik AG. Stuffing chamber texturizing process. 4,408,377., Cl. 28-250.000.

Schippers, Heinz: *See—*
Bauer, Karl; Schippers, Heinz; and Dammann, Peter, 4,408,449., Cl. 57-340.000.

Schirk, Gunter; and Kastl, Alfons, to Agfa-Gevaert AG. Arrangement for developing photographic layer carriers. 4,408,891., Cl. 366-265.000.

Schleppinghoff, Bernhard: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.

Schleuchardt, Manfred: *See—*
Nuckel, Klaus; and Schleuchardt, Manfred, 4,408,524., Cl. 101-110.000.

Schlotterbeck, Dietrich: *See—*
Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, 4,409,358., Cl. 524-547.000.

Schlueter, William B.; and Debuque, Ignacio D., Jr. System and method for superheated-water injection system (SWIS). 4,408,573., Cl. 123-25.00P.

Schlumberger Technology Corporation: *See—*
Fitzgerald, Robert W., Jr.; Hall, Robert L.; and Bickford, Gary P., 4,408,829., Cl. 350-96.290.
McGill, Howard L., 4,408,485., Cl. 73-155.000.

Schlutter, A.: *See—*
Schmalfeld, Jorg; Bruckner, Werner; Jacobs, Jorn; Greulich, H. S.; and Schlutter, A., 4,408,548., Cl. 110-347.000.

Schmalfeld, Jorg; Bruckner, Werner; Jacobs, Jorn; Greulich, H. S.; and Schlutter, A. Pulverized coal combustion method and apparatus. 4,408,548., Cl. 110-347.000.

Schmelzer, Henry. Homogeneous blends of a trans-isomer of polyisoprene. 4,409,366., Cl. 525-221.000.

Schmidhammer, Ludwig: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.

Schmidt, Jacob D. Hingeless safe door assembly. 4,408,546., Cl. 109-75.000.

Schmidt, Karl-Heinz: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.

Schmidt, Willi: *See—*
Hutzenlaub, Armin S. P.; and Schmidt, Willi, 4,408,474., Cl. 72-205.000.

Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, to Chemplex Company. Adhesive blends and composite structures comprising acid or anhydride modified PE + hope + polypropylene. 4,409,364., Cl. 525-74.000.

Schnathorst, Vernon K.; and Bastian, Gary T., to NCR Corporation. High speed write control for synchronous registers. 4,409,680., Cl. 365-233.000.

Schoeffler, William N. Impact cam subassembly for drills. 4,408,670., Cl. 175-298.000.

Scholl, Albert S. Trim knife. 4,408,396., Cl. 30-294.000.

Schoolman, Arnold. Eyeglass frame with structural spare key. 4,408,844., Cl. 351-158.000.

Schott, Lawrence A. AC Frequency and phase synchronizer. 4,409,491., Cl. 307-77.000.

Schreiner, Charles P.: *See—*
Randolph, Travis M.; and Schreiner, Charles P., 4,408,776., Cl. 280-261.000.

Schrode, Erhard: *See—*
Bartholdsten, Dieter; Koop, Hermann; Schrode, Erhard; and Zielasek, Adelbert, 4,409,169., Cl. 264-107.000.

Schroder, Beverly, personal representative: *See—*
Schroder, Leonard E.; Schroder, Leonard D.; Schroder, Billy D., deceased; and Schroder, Beverly, personal representative, 4,409,104., Cl. 210-673.000.

Schroder, Billy D., deceased: *See—*
Schroder, Leonard E.; Schroder, Leonard D.; Schroder, Billy D., deceased; and Schroder, Beverly, personal representative, 4,409,104., Cl. 210-673.000.

Schroder, Leonard D.: *See—*
Schroder, Leonard E.; Schroder, Leonard D.; Schroder, Billy D., deceased; and Schroder, Beverly, personal representative, 4,409,104., Cl. 210-673.000.

Schroder, Leonard E.; Schroder, Leonard D.; Schroder, Billy D., deceased; and by Schroder, Beverly, personal representative. Method of regenerating molecular sieve material. 4,409,104., Cl. 210-673.000.

Schroeder, Manfred: *See—*
Coenen, Alfred; Schroeder, Manfred; and Prominski, Guenter, 4,409,198., Cl. 423-462.000.

Schuch, Gerhard: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.

Schultz, Ward E.: *See—*
Smith, Harry D., Jr.; Schultz, Ward E.; and Verbout, Jerry L., 4,409,481., Cl. 250-270.000.

Schulwitz, Bruno: *See—*
Herwig, Jens; Schulwitz, Bruno; Schleppinghoff, Bernhard; Scheef, Hans-Volker; and Lange, Peter M., 4,409,421., Cl. 585-833.000.

Schulz, Volkmar: *See—*
Adomeit, Heinz-Dieter; and Schulz, Volkmar, 4,408,802., Cl. 297-452.000.

Schumacher, Heinz: *See—*
Kraft, Helmut; Schumacher, Heinz; Pommer, Ernst-Heinrich; Schlotterbeck, Dietrich; and Ley, Gregor, 4,409,358., Cl. 524-547.000.

Schumacher, Peter, to Hauni-Werke Korber & Co. KG. Apparatus for transferring cigarettes or the like. 4,408,621., Cl. 131-282.000.

Schumann, Gunter: *See—*
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, 4,408,529., Cl. 101-415.100.

Schuster, Herbert: *See—*
Kohler, Armin; Schuster, Herbert; and Renner, Rudi, 4,409,187., Cl. 422-135.000.

Schwaerzler, Hans, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschrankter Haftung. Method and apparatus enabling a horizontal landing of a flying body. 4,408,737., Cl. 244-110.00D.

Schwarzmann, Matthias: *See—*
Krabetz, Richard; Merger, Franz; and Schwarzmann, Matthias, 4,409,128., Cl. 502-211.000.

Schweinfurter, Friedrich. Lateral channel pump. 4,408,952., Cl. 415-53.00T.

Schwiebert, Erwin H.: *See—*
Camis, Thomas; Spencer, Paul R.; Schwiebert, Erwin H.; and Hay, Robert R., 4,408,865., Cl. 355-3.0CH.

Scifres, Donald R.: *See—*
Sprague, Robert A.; and Scifres, Donald R., 4,409,479., Cl. 250-237.00G.

Sciuto, Michael N. Stringed instrument conversion kit employing combined bridge/tuning mechanism. 4,408,515., Cl. 84-267.000.

Sclafani, Augustus: *See—*
Kirschbaum, Nathan; and Sclafani, Augustus, 4,408,736., Cl. 244-100.00R.

SCM Corporation: *See—*
Smith, Michael H., 4,408,915., Cl. 400-290.000.
Smith, Michael H., 4,408,918., Cl. 400-697.100.

Scott, Robert G., to United States of America, Air Force. Altimeter code converter. 4,409,587., Cl. 340-347.0DD.

Sea Energy Corporation: *See—*
Hagen, Glenn E.; and Gordon, Carroll K., 4,408,454., Cl. 60-500.000.

Sechi, Franco N., to RCA Corporation. Bandpass filter with an active element. 4,409,557., Cl. 330-277.000.

Seidel, Hartmut; and Hammerschmidt, Winrich B., to NATEC Institut. One-piece, washable and sterilizable plastic shoe. 4,408,401., Cl. 36-3.00B.

Seidel, William C.; and Staikos, Dimitri N., to Du Pont de Nemours, E. I., and Company. Indirect electrochemical furan synthesis. 4,409,076., Cl. 204-130.000.

Seiderman, Maurice. Ionically coagulated hydrophilic polyelectrolyte contact lens. 4,408,845., Cl. 351-160.00H.

Seki, Norio: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Wakabayashi, Hiroharu, 4,408,831., Cl. 350-269.000.

Sekizawa, Hidekazu: *See—*
Iwamoto, Akito; and Sekizawa, Hidekazu, 4,408,883., Cl. 356-355.000.

Selbertinger, Ernst: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.

Semrow, Carolyn M.: *See—*
Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., 4,408,692., Cl. 206-438.000.

Sen, Soumendranath: *See—*
Bhattacharyya, Dhirendra N.; Seshan, Srinivasachari; Campbell, John S.; and Sen, Soumendranath, 4,409,044., Cl. 149-2.000.

Seng, Stephen: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,011., Cl. 65-27.000.

Sentrol, Inc.: *See—*
Holce, Thomas J.; and Huckins, Charles M., 4,409,577., Cl. 335-202.000.

Senyitko, Erwin J., to DBS, Inc. Electric imprinter with roller platen positional control. 4,408,523., Cl. 101-56.000.

Serban, Alexander; Bird, Graham J.; and Cross, Lindsay E., to ICI Australia Limited. Herbicidal isoquinolinoxy- or isoquinolinamino-phenoxy alkane carboxylic acid derivatives. 4,409,017., Cl. 71-94.000.

Serizawa, Hisayuki: *See—*
Oouchi, Keiji; Takoh, Isao; and Serizawa, Hisayuki, 4,409,452., Cl. 219-10.55E.

Seshan, Srinivasachari: *See—*
Bhattacharyya, Dhirendra N.; Seshan, Srinivasachari; Campbell, John S.; and Sen, Soumendranath, 4,409,044., Cl. 149-2.000.

Setsune, Kentaro; and Tanaka, Toshihide, to Matsushita Electric Industrial Co., Ltd. Surface acoustic wave device. 4,409,567., Cl. 333-151.000.

Severinsson, Lars M.; Beijbom, Peter; and Martensson, Anders K., to SAB Industri AB. Rail vehicle slack adjuster. 4,408,682., Cl. 188-202.000.

Sexsmith, Frederick H.: *See—*
Zalucha, Denis J.; Sexsmith, Frederick H.; and Howard, Dennis D., 4,409,383., Cl. 528-499.000.

Shackelford, John T.: *See—*
Moss, Elvis W.; and Shackelford, John T., 4,408,729., Cl. 242-84.50A.

Shacter, Stuart B., to Motorali, Inc. Operational amplifier output stage driven by a single ended gain stage. 4,409,561., Cl. 330-300.000.

Shafley, William K.: *See—*
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.

Sharovatov, Viktor I.: *See—*
Leonov, Ivan A.; Smirnov, Boris V.; Mashinin, Vladimir V.; and Sharovatov, Viktor I., 4,408,726., Cl. 242-7.090.

Sharp Kabushiki Kaisha: *See—*
Iwai, Hiroji; and Matsui, Hirotoshi, 4,408,917., Cl. 400-637.200.
Kikuno, Masayuki, 4,408,836., Cl. 350-334.000.
Kozaki, Syuichi; Funada, Fumiaki; and Minezaki, Shigehiro, 4,408,837., Cl. 350-336.000.
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Shauger, Herbert A., to Fischer & Porter Company. Electronic totalizer. 4,409,660., Cl. 364-510.000.

Shearhart, Billy G., to Sooner Oil Tools, Inc. Retrievable packer for oil well casing. 4,408,662., Cl. 166-124.000.

Sheem, Sang K., to United States of America, Navy. Optical gyroscope with time dependent wavelength. 4,408,882., Cl. 356-350.000.

Shefer, Joshua; and Catanese, Carmen A., to RCA Corporation. Electron gun with improved beam forming region. 4,409,514., Cl. 313-449.000.

Shekter, Robert J. Ski and a ski binding. 4,408,779., Cl. 280-607.000.

Shell Internationale Research Maatschappij B.V.: *See—*
Wood, Derek A., 4,409,150., Cl. 260-465.00D.

Shell Oil Company: *See—*
Blytas, George C., 4,409,199., Cl. 423-573.00G.
Dominguez, Manuel F.; and Ferguson, Joseph E., 4,408,570., Cl. 122-510.000.
Martin, Michael K., 4,409,120., Cl. 525-280.000.
Paxson, Timm E., 4,409,397., Cl. 562-496.000.
Roman, Steven A., 4,409,398., Cl. 562-506.000.

Shelton, William S., to ACF Industries, Incorporated. High pressure sealing connection with metal seal. 4,408,771., Cl. 277-206.00R.

Shend'ge, Vasant J.; and Thompson, Geoffrey S., to Multicore Solders Limited. Portable wire dispenser. 4,408,730., Cl. 242-96.000.

Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, to Symbol Technologies, Inc. Narrow-bodied, single-and twin-windowed portable laser scanning head for reading bar code symbols. 4,409,470., Cl. 235-472.000.

Sheth, Harshad V.: *See—*
Cordea, James N.; and Sheth, Harshad V., 4,409,027., Cl. 75-128.00W.

Shibukawa, Mitsuru: *See—*
Hayashi, Hiroshi; Kiyota, Takao; and Shibukawa, Mitsuru, 4,409,105., Cl. 210-679.000.

Shida, Mitsuzo: *See—*
Schmukler, Seymour; Machonis, John, Jr.; and Shida, Mitsuzo, 4,409,364., Cl. 525-74.000.

Shikishima Tipton Mfg. Co., Ltd.: *See—*
Kobayashi, Hisamine; and Miyashiro, Mutsumi, 4,408,417., Cl. 51-163.200.

Shimadzu Corporation: *See—*
Nakamura, Kenji; and Ideno, Shigeru, 4,409,597., Cl. 346-35.000.

Shimbashi, Ichiro: *See—*
Yokoyama, Hideo; Shimbashi, Ichiro; Sakurai, Koichi; and Matsuo, Munetsugu, 4,408,561., Cl. 118-72.000.

Shimek, Daniel C.: *See—*
Shimek, Ronald J.; and Shimek, Daniel C., 4,408,594., Cl. 126-121.000.

Shimek, Ronald J.; and Shimek, Daniel C. Fireplace heated grate. 4,408,594., Cl. 126-121.000.

Shimizu, Akira: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, to Canon Kabuskiki Kaisha. Photoconductive member with two amorphous silicon layers. 4,409,308., Cl. 430-60.000.

Shimizu, Taketo: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.

Shimoda, Nobuyoshi; and Hagino, Michiyoshi, to Honda Giken Kogyo Kabushiki Kaisha. Shock-absorbing bumper for vehicles. 4,408,790., Cl. 293-122.000.

Shimodaira, Tadayoshi, to Epson Corporation. Ink ribbon winding and reversing assembly. 4,408,911., Cl. 400-208.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Ichinohe, Shoji; and Kasahara, Katsusuke, 4,409,267., Cl. 427-387.000.

Shin-Etsu Polymer Co., Ltd.: *See—*
Takashi, Nogami; and Haruhiko, Masuda, 4,408,814., Cl. 339-59.00M.

Shin Meiwa Industry Co., Ltd.: *See—*
Noguchi, Fumio, 4,409,650., Cl. 364-193.000.

Shinagawa, Susumu: *See—*
Asai, Mitsuko; Shinagawa, Susumu; and Imada, Akira, 4,409,147., Cl. 260-245.20T.

Shindo, Minoru: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Shiomura, Tetsunosuke: *See—*
Asanuma, Tadashi; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 4,409,378., Cl. 526-125.000.

Shiozawa, Takao: *See—*
Fujii, Yozo; and Shiozawa, Takao, 4,408,867., Cl. 355-8.000.

Shipley, Randall S.; and Birkelbach, Donald F., to Dow Chemical Company, The. Ultra high efficiency catalyst for polymerizing olefins. 4,409,126., Cl. 502-169.000.

Shirai, Shigeru: *See—*
Shimizu, Isamu; Shirai, Shigeru; and Inoue, Eiichi, 4,409,308., Cl. 430-60.000.

Shiraishi, Hiroshi, to Hitachi, Ltd. Radiation sensitive coating composition. 4,409,317., Cl. 430-270.000.

Shiraki, Yasuyuki: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Shively, Charles D., to Cooper Laboratories, Inc. Ophthalmic solution. 4,409,205., Cl. 424-78.000.

Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Ishigaki, Tsuneo, 4,409,580., Cl. 335-243.000.

Showa Aluminum Corporation: *See—*
Hashimoto, Michitaka; and Fukui, Koichiro, 4,408,655., Cl. 165-104.270.

Shuey, John R.: *See—*
Eaby, Daniel G.; Long, William B.; and Shuey, John R., 4,408,820., Cl. 339-156.00R.

Shulman, Carl, to MSI Electronics Inc. Mercury probe and method. 4,409,546., Cl. 324-158.00P.

Sibley, Howard W.: *See—*
Bzdula, Joseph A.; and Sibley, Howard W., 4,409,362., Cl. 525-54.500.

Siby, Sture: *See—*
Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, 4,408,496., Cl. 73-728.000.

Sickles, Ralph A. Slide machine loading apparatus. 4,408,849., Cl. 353-103.000.

Sidey, Roger, to United States of America, Air Force. Pore pressure probe assembly and two-stage emplacement thereof. 4,408,481., Cl. 73-73.000.

Sidey, Roger: *See—*
Basford, Robert; Hart, David; Hawkins, David; Knight, David; and Sidey, Roger, 4,409,529., Cl. 318-653.000.

Siemens AG: *See—*
Neumann, Leopold; and Kline, Richard B., II, 4,409,652., Cl. 364-200.000.
Neumann, Leopold; and Kline, Richard B., II, 4,409,669., Cl. 364-900.000.

Siemens Aktiengesellschaft: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.
Bolmgren, Jan; Hoek, Bertil; and Nilsson, Kenth, 4,409,602., Cl. 346-140.00R.
Boscher, Georg; and Haeder, Wolfgang, 4,409,430., Cl. 174-92.000.
Friemert, Horst, 4,408,624., Cl. 134-133.000.
Kolbesen, Bernd, 4,409,075., Cl. 204-129.300.
Nilsson, Kenth; and Bolmgren, Jan, 4,409,601., Cl. 346-140.00R.
Pooch, Gerhard; and von der Neyen, Hans-Juergen, 4,409,684., Cl. 375-116.000.
Ries, Gunter, 4,409,425., Cl. 174-15.00S.

Siemens-Allis, Inc.: *See—*
Di Marco, Bernard; and Kralik, Andrew J., 4,409,573., Cl. 335-16.000.

Siemon Company, The: *See—*
Pohl, Karl-Heinz, 4,408,391., Cl. 29-861.000.

Sierra Survival Company, Inc.: *See—*
Axton, Hoyt W.; and Bailey, Corey B., 4,409,644., Cl. 362-200.000.

Sievers, Kirk A.: *See—*
Nordbrock, Raymond E.; and Sievers, Kirk A., 4,409,539., Cl. 322-28.000.

Sigel, Bernard; Semrow, Carolyn M.; Kolstedt, Mark W.; Arkans, Edward J.; and Kaczmarek, Lynn M., to Kendall Company, The. Sterile cover for instrument. 4,408,692., Cl. 206-438.000.

Sigwald, Jacques; and Lesueur, Claude, to Automobiles Peugeot; and Automobiles Citroen. Rotating joint for an exhaust pipe of an automobile vehicle. 4,408,451., Cl. 60-322.000.

Silberzahn, Helmut. Container sterilization. 4,409,188., Cl. 422-303.000.

Silver, Richard S., to Gulf Research & Development Company. Saccharification method. 4,409,329., Cl. 435-105.000.

Simkovitz, Mark D., to Wayne State University. Variable size character generator. 4,409,591., Cl. 340-731.000.

Simons, Charles R. Gameboard and carrying case. 4,408,763., Cl. 273-286.000.

Sindelar, William E.: *See—*
Schelli, William; and Sindelar, William E., 4,408,521., Cl. 100-229.00R.

Singer Company, The: *See—*
Mihovch, John; and Blackwood, John, 4,408,553., Cl. 112-158.00A.
Voza, Alfonse N., 4,408,640., Cl. 141-1.000.

Singer, Herbert B., to Charles Stark Draper Laboratory, Inc., The. Compression molding of porous retainers. 4,408,807., Cl. 308-187.000.

Singh, Prithipal: *See—*
Leung, Danton K.; and Singh, Prithipal, 4,409,325., Cl. 435-7.000.

Sinter Limited: *See—*
Caratsch, Hans-Peter, 4,408,560., Cl. 118-69.000.

Sitzler, Hans-Dietrich: *See—*
Wons, Hubert; and Sitzler, Hans-Dietrich, 4,408,520., Cl. 100-93.00P.

Skalsky, Michael: *See—*
Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., 4,408,604., Cl. 128-785.000.

Skarnells, David B. Fishing lure retriever. 4,408,411., Cl. 43-17.200.

Skarvada, Thomas, to Crane Co. Digital wheel speed sensor. 4,409,664., Cl. 364-565.000.

SKF Industries, Inc.: *See—*
Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, 4,408,809., Cl. 308-187.100.

Skinner, Geoffrey F.; and Kowal, Wieslaw M., to Foster Wheeler Energy Corporation. Synthesis gas for ammonia production. 4,409,196., Cl. 423-359.000.

Skinner, Mark C.: *See—*
Zeller-Pendrey, Jeanine I.; Skinner, Mark C.; and Morgan, David A., 4,409,316., Cl. 430-263.000.

Skobel, Max. Releasable connector. 4,408,375., Cl. 24-230.00R.

Slama, Heinrich: *See—*
Scheid, Peter; and Slama, Heinrich, 4,409,482., Cl. 250-282.000.

Sloan, Francis J. Combination flashlight and auxiliary power pack. 4,409,645., Cl. 362-200.000.

Slough, Carlton M., to Texaco Inc. System for monitoring a cathodically protected structure. 4,409,080., Cl. 204-196.000.

Slough, Carlton M.; and Colling, Edwin L., Jr., to Texaco Inc. Paraffin monitor. 4,409,553., Cl. 324-445.000.

Sloupensky, Jiri; and Tyl, Miloslay, to Vyzkumny ustav bavlnarskyu. Method of and system for controlling the operation of open-end spinning machines. 4,408,447., Cl. 57-263.000.

Smalley, Ned J.: *See—*
Fillmore, William E.; Mumford, George V.; and Smalley, Ned J., 4,408,700., Cl. 222-153.000.

Smedley, Dennis; and Spare, Noel C., to Promagco Limited. Hot chamber die-casting. 4,408,651., Cl. 164-316.000.

Smirnov, Boris V.: *See—*
Leonov, Ivan A.; Smirnov, Boris V.; Mashinin, Vladimir V.; and Sharovatov, Viktor I., 4,408,726., Cl. 242-7.090.

Smith, Donald P. Combined microwave and impingement heating apparatus. 4,409,453., Cl. 219-10.55A.

Smith, Edward F., III; and Gyurina, F. Dennis, to Olin Corporation. Electrical connector material. 4,409,295., Cl. 428-591.000.

Smith, Gregory J., to Motorola, Inc. Reset circuit for data latches. 4,409,494., Cl. 307-238.300.

Smith, Harry D., Jr.; Schultz, Ward E.; and Verbout, Jerry L., to Halliburton Company. Method for simultaneous measurement of thermal neutron decay components. 4,409,481., Cl. 250-270.000.

Smith International Inc.: *See—*
Gruller, David L., 4,408,783., Cl. 285-3.000.

Smith, James V., Jr.: *See—*
Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., 4,409,263., Cl. 427-163.000.

Smith, Jimmy B., to Peabody Coal Company. Quenching method and apparatus. 4,409,067., Cl. 201-1.000.

Smith, Kenneth E.: *See—*
Hatcher, Charles S.; and Smith, Kenneth E., 4,408,376., Cl. 28-245.000.

Smith, Michael H., to SCM Corporation. Reverse tab control system for typewriters. 4,408,915., Cl. 400-290.000.

Smith, Michael H., to SCM Corporation. Halfspace control system for electronic typewriter with correction register. 4,408,918., Cl. 400-697.100.

Smith, Robert E.; and Bissell, Eugene R. Substrates and method for determining enzymes. 4,409,140., Cl. 260-112.50R.

Smith, Roger D.: *See—*
Belcher, Samuel L.; Peck, Timothy R.; and Smith, Roger D., 4,409,455., Cl. 219-10.810.

Sneed, Joe W., Jr.: *See—*
Rochon, Robert W.; and Sneed, Joe W., Jr., 4,408,486., Cl. 73-155.000.

Snell, George J.; and Huibers, Derk T. A. Lignin cracking process using fast fluidized bed reactions. 4,409,416., Cl. 585-635.000.

Societe Anonyme de Telecommunications: *See—*
Koreicho, Wladimir, 4,408,734., Cl. 244-3.130.

Societe Anonyme dite: Alsthom-Atlantique: *See—*
Combes, Gilles; and Kuntz, Raymond, 4,408,892., Cl. 366-337.000.

Societe Anonyme dite Ateliers et Chantiers de Bretagne-ACB: *See—*
Ninet, Jean-Louis; and Vaillant, Robert, 4,408,930., Cl. 405-209.000.

Societe Anonyme dite: Ceraver: *See—*
Willem, Michel; and Gamet, Lucien, 4,409,432., Cl. 174-172.000.
Willem, Michel, 4,409,433., Cl. 174-172.000.

Societe Anonyme dite Compagnie General d'Electricite: *See—*
Parant, Jean-Paul, 4,409,292., Cl. 428-428.000.

Societe Anonyme dite Compagnie Lyonnaise de Transmissions Optiques: *See—*
Grenat, Bernard, 4,409,154., Cl. 264-1.500.

Societe Chimique des Charbonnages-CDF Chimie: *See—*
Decroix, Jean-Claude, 4,409,286., Cl. 428-332.000.

Societe IMAJE: *See—*
Lepesant, Jean P.; and Tantot, Georges, 4,409,039., Cl. 106-20.000.

Societe Nationale Elf Aquitaine Tour Aquitane: *See—*
Gueneau, Michel, 4,408,715., Cl. 237-2.00B.

Societe Nationale Industrielle Aerospatiale: *See—*
Ricaud, Pierre, 4,409,667., Cl. 364-732.000.

Societe Suisse pour l'Industrie Horlogere Management Services, S.A.: *See—*
Gagnebin, Gaston, 4,408,901., Cl. 368-321.000.
Vuilleumier, Cyril; and Erni, Bruno, 4,408,898., Cl. 368-220.000.

Soderstrom, Sven-Erik: *See—*
Lofgren, Folke; and Soderstrom, Sven-Erik, 4,409,476., Cl. 250-227.000.

Solar 77 S.p.A.: *See—*
Caputo, Carmelo, 4,409,490., Cl. 290-4.00D.

Solymes, Laszlo, to Malom-Es Sutoipari Kutatointezet. Dust disposal cyclones. 4,409,008., Cl. 55-261.000.

Soma, Hiromi: *See—*
Tabayashi, Isao; Soma, Hiromi; and Fukutomi, Hiroshi, 4,409,040., Cl. 106-20.000.

Sommeria, Marcel R. Transistor motor control. 4,409,527., Cl. 318-341.000.

Sondergeld, Manfred A. J., to Du Pont de Nemours, E. I., and Company. Etching solution for etching of photopolymeric films. 4,409,115., Cl. 252-79.100.

Sonobond Ultrasonics, Inc.: *See—*
Devine, Janet, 4,409,659., Cl. 364-475.000.

Sony Corporation: *See—*
Kimura, Teiji; and Kimura, Shigeru, 4,408,372., Cl. 24-217.00R.
Saito, Etsuro, 4,409,630., Cl. 360-99.000.
Yamauchi, Hiroyuki; and Yamagami, Tamotsu, 4,409,526., Cl. 318-254.000.
Yasumura, Masayuki, 4,409,523., Cl. 315-371.000.

Sools, Franciscus G. P.: *See—*
Van Der Sande, Johannes H. M.; Sools, Franciscus G. P.; and Campbell, Ronald J., 4,409,517., Cl. 313-631.000.

Sooner Oil Tools, Inc.: *See—*
Shearhart, Billy G., 4,408,662., Cl. 166-124.000.

Soraya, Sorayapour; Feld, Gundolf; and Wacker, Fredy, to Stahlwerke Rochling-Burbach GmbH. Method for thermal treatment of wire lashings and a continuous-heating furnace for performance of the method. 4,408,986., Cl. 432-6.000.

SORTIMAT Creuz & Co. GmbH: *See—*
Holzwarth, Friedrich; and Heinze, Gerhard, 4,409,046., Cl. 156-73.600.

South Wales Switchgear Limited: *See—*
Parry, John, 4,409,446., Cl. 200-147.00R.

Southwestern Pipe, Inc.: *See—*
Lewis, Philip C., 4,408,748., Cl. 256-11.000.

Southwire Company: *See—*
Baldasarri, Giuseppe, 4,408,903., Cl. 374-121.000.

Spain, Raymond G., to Hitco. Epoxy resin emulsion finishes for carbon fibers. 4,409,288., Cl. 428-367.000.

Spangle, Lloyd B., to Dow Chemical Company, The. Apparatus and method for measuring the expansion properties of a cement composition. 4,408,489., Cl. 73-432.00R.

Spare, Noel C.: *See—*
Smedley, Dennis; and Spare, Noel C., 4,408,651., Cl. 164-316.000.

Sparrow, David J. W.: *See—*
Sampson, John D.; and Sparrow, David J. W., 4,408,886., Cl. 366-13.000.

Spencer, Paul R.: *See—*
Camis, Thomas; Spencer, Paul R.; Schwiebert, Erwin H.; and Hay, Robert R., 4,408,865., Cl. 355-3.0CH.

Sperry Corporation: *See—*
Butler, L. Dennis; and Wells, J. Dwayne, 4,408,942., Cl. 414-24.500.
Tanski, William J., 4,409,570., Cl. 333-187.000.
Wesner, Charles R., 4,409,639., Cl. 361-167.000.

Spivak, Bruce D., to PQ Corporation. Spray drying method of preparing hollow fibers. 4,409,158., Cl. 264-8.000.

Sportoletti, Giancarlo: *See—*
Cremonesi, Pietro; and Sportoletti, Giancarlo, 4,409,103., Cl. 210-638.000.

Sprague Electric Company: *See—*
Edson, Douglas M., 4,409,642., Cl. 361-433.000.

Markarian, Paul M., 4,408,818., Cl. 339-147.00C.
Sprague, Robert A.; and Scifres, Donald R., to Xerox Corporation. Optical cursor control device. 4,409,479., Cl. 250-237.00G.
Spurrell, Roworth A. J.; Camm, Alan J.; and Ward, David E., to Telectronics Pty. Ltd. Rate related tachycardia control pacer. 4,408,606., Cl. 128-419.0PG.
Square D Company: *See—*
Profio, Mark V.; Libert, James T.; and Kampf, Julian C., 4,409,640., Cl. 361-197.000.
Squire, Edward N., to Du Pont de Nemours, E. I., and Company. Oligomers of perfluoro(2,2-dimethyl-1,3-dioxole) and their fluorination products. 4,409,393., Cl. 549-448.000.
SRI International: *See—*
Weaver, Charles S.; and Chittenden, Constance T., 4,408,614., Cl. 128-680.000.
Stahle, Helmut; Koppe, Herbert; Kummer, Werner; Kobinger, Walter; Lillie, Christian; and Pichler, Ludwig, to C. H. Boehringer Sohn. Substituted 7-(2,6-dibromo-4-methyl-phenyl)-2,3-dihydro-imidazo[1,2-a]imidazoles, compositions and use. 4,409,235., Cl. 424-273.00R.
Stahlhofen, Paul: *See—*
Buhr, Gerhard; Ruckert, Hans; and Stahlhofen, Paul, 4,409,314., Cl. 430-192.000.
Stahlwerke Rochling-Burbach GmbH: *See—*
Soraya, Sorayapour; Feld, Gundolf; and Wacker, Fredy, 4,408,986., Cl. 432-6.000.
Staikos, Dimitri N.: *See—*
Seidel, William C.; and Staikos, Dimitri N., 4,409,076., Cl. 204-130.000.
Stamicarbon, B.V.: *See—*
Brasz, Albert J. H.; and Wallink, Hermanus A., 4,409,164., Cl. 264-50.000.
Kleuskens, Engelina C.; Maessen, Johannes G. H.; and van de Mond, Theodorus J., 4,409,122., Cl. 502-20.000.
Stanczak, John S.: *See—*
Mohan Rao, G. R.; Stanczak, John S.; Lien, Jih-chang; and Bhatia, Shyam, 4,408,385., Cl. 29-576.00B.
Standard Car Truck Company: *See—*
Geyer, Robert P., 4,408,810., Cl. 308-226.000.
Standard Microsystems Corporation: *See—*
Zapisek, John M.; and Giulekas, Gus, 4,409,499., Cl. 307-468.000.
Standard Oil Company (Indiana): *See—*
Oita, Jack I., 4,409,336., Cl. 436-123.000.
Stanek, Jaroslav: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,409,209., Cl. 424-177.000.
State Industries, Inc.: *See—*
Daniels, Joseph C., 4,408,689., Cl. 206-45.170.
Staudaher, Steven M.: *See—*
Wallach, Steven; Holberger, Kenneth D.; Keating, David L.; and Staudaher, Steven M., 4,409,655., Cl. 364-200.000.
Stauffer Chemical Company: *See—*
Freiberg, Ashley H., 4,409,211., Cl. 424-203.000.
Humphrey, Lawrence F., 4,409,152., Cl. 260-543.00P.
Petersen, Alfred W., 4,409,194., Cl. 423-321.00R.
Steag Aktiengesellschaft: *See—*
Adrian, Fritz; Sattler, Heinrich; and Sauerland, Werner, 4,408,723., Cl. 241-19.000.
Steen, Harald B.: *See—*
Lindmo, Tore; and Steen, Harald B., 4,408,877., Cl. 356-38.000.
Steidle, Kurt A., to Motion Technology Corporation. Method and apparatus for microfilming documents of varied length. 4,408,876., Cl. 355-54.000.
Steilen, Ronald M., to Deere & Company. Feed cup assembly with flexible metering gate. 4,408,704., Cl. 222-312.000.
Steinhaus GmbH: *See—*
Wolff, Kurt, 4,409,099., Cl. 209-399.000.
Steinke, Mark H., to Lyon Metal Products, Incorporated. Connector having bending means. 4,408,928., Cl. 403-405.000.
Stelmack, Lawrence A., to Acton Research Corporation. Vacuum ultraviolet reflectance filter. 4,408,825., Cl. 350-1.700.
Stelson, Kim A.: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.
Stenger, Antoine: *See—*
Mouzin, Gilbert; Cousse, Henri; and Stenger, Antoine, 4,409,241., Cl. 424-324.000.
Stenzel, Wolfgang; and Cohnen, Erich, to Beiersdorf Aktiengesellschaft. Substituted aryloxyamino propanols, and process for their use. 4,409,231., Cl. 424-272.000.
Stephens, James B.: *See—*
Miller, Charles G.; and Stephens, James B., 4,408,834., Cl. 350-321.000.
Steuben, Ronald G. Automatically connecting hitch. 4,408,778., Cl. 280-509.000.
Stevens, James W., to British Aerospace Public Limited Company. Method of forming articles by plating. 4,409,070., Cl. 204-4.000.
Stewart, Graham G.; Goring, Thomas E.; and Russell, Ingeborg, to Labatt Brewing Company Limited. Yeast strain for fermenting high plato value worts. 4,409,246., Cl. 426-16.000.
Stinehelfer, Jonathan J., to Fairchild Camera & Instrument Corporation. Address gate for memories to protect stored data, and to simplify memory testing, and method of use thereof. 4,409,675., Cl. 365-201.000.
Stines, William B.: *See—*
Haas, Paul A.; and Stines, William B., 4,409,157., Cl. 264-0.500.
Stock, Hugh J., to Pacer Technology and Resources, Inc. Dispensing tip for cyanoacrylate adhesives. 4,408,699., Cl. 222-149.000.
Stofko, John, to Jansky, John. Production of composite products by consolidation using pressure and convection heating. 4,409,170., Cl. 264-113.000.
Stoft, Paul E.: *See—*
Johannsmeier, Karl-Heinz; Stoft, Paul E.; and Larsen, Tor G., 4,408,885., Cl. 356-401.000.
Stolzenbach, Heinrich; Heitzmann, Rudolf; and Heinrich, Siegfried, to Herberts GmbH. Heat-curable coating composition, its use and process for coating substrates. 4,409,340., Cl. 521-159.000.
Stone, Richard G.: *See—*
Kulkarni, Satish V.; and Stone, Richard G., 4,408,500., Cl. 74-572.000.
Stora Kopparbergs Bergslags Aktiebolag: *See—*
Qvarnstrom, Bengt G. L., 4,408,549., Cl. 111-2.000.
Strasser, Rudolf: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.
Strehl, Jean-Marc: *See—*
Duruz, Louis; and Strehl, Jean-Marc, 4,409,463., Cl. 219-121.0LG.
Streich, Robert E.: *See—*
Dornberger, Georg C. E.; and Streich, Robert E., 4,409,042., Cl. 148-129.000.
Stricker, Herbert, to Boehringer Ingelheim GmbH. Transdermal release system for pharmaceutical preparation. 4,409,206., Cl. 424-81.000.
Strom, Jan T., to Gusums Bruk AB. Forming fabric. 4,408,638., Cl. 139-425.00A.
Stuckas, Kenneth J., to Teledyne Industries, Inc. Fuel control system. 4,408,585., Cl. 123-440.000.
Stuemky, Robert E., to Gates Rubber Company, The. Ferrule, coupling and coupling process. 4,408,786., Cl. 285-256.000.
Stumpf, Harry C.: *See—*
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., 4,409,036., Cl. 148-2.000.
Stuntz, Gordon: *See—*
Bearden, Roby, Jr.; and Stuntz, Gordon, 4,409,093., Cl. 208-108.000.
Sturman, Oded E.; Grill, Benjamin; and Harrison, Lynn. Integrated latching actuators. 4,409,638., Cl. 361-152.000.
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, to Mitsubishi Gas Chemical Company, Inc. Process for producing sodium percarbonate. 4,409,197., Cl. 423-415.00P.
Sugawara, Koko: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,409,210., Cl. 424-177.000.
Sugihara, Noriyuki, to Hewlett-Packard Company. Impedance meter. 4,409,543., Cl. 324-57.00R.
Sugino, Morihiko; and Saura, Eiji, to Kabushiki Kaisha Kobe Seiko Sho. Porous moldings made of accumulated mass of stringy or thready extrudates. 4,409,284., Cl. 428-304.400.
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, to Kubota Ltd. Heat resistant cast iron-nickel-chromium alloy. 4,409,025., Cl. 420-584.000.
Sugiura, Yoshinori, to Canon Kabushiki Kaisha. Image fixing device. 4,408,559., Cl. 118-60.000.
Suhler, Sidney A.: *See—*
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,408,533., Cl. 102-211.000.
Sullivan, David P.: *See—*
Lelental, Mark; Rasch, Arthur A.; and Sullivan, David P., 4,409,307., Cl. 430-31.000.
Sullivan, Patrick F. Cab-mounted fairing. 4,408,792., Cl. 296-1.00S.
Sumikawa, Kenji: *See—*
Araki, Ikuo; Kanazawa, Teruo; Ito, Shinji; and Sumikawa, Kenji, 4,408,534., Cl. 102-288.000.
Sumitomo Chemical Co., Ltd.: *See—*
Sakiyama, Kazuo; Kuwata, Mitsuo; and Oshiumi, Masaru, 4,409,077., Cl. 204-159.150.
Sumitomo Durez Company, Ltd.: *See—*
Kikuga, Toyoji; and Hirai, Koji, 4,409,374., Cl. 525-491.000.
Sumitomo Heavy Industries, Ltd.: *See—*
Kurozu, Shinichi, 4,409,022., Cl. 75-36.000.
Sun Chemical Corporation: *See—*
Mattis, Donald J., 4,408,817., Cl. 339-147.00R.
Sung, Rodney L.; Sweeney, William M.; and Crawford, Wheeler C., to Texaco Inc. Gasoline compositions containing amino alkanoic acids as detergents. 4,409,001., Cl. 44-71.000.
Sunx Limited: *See—*
Furuta, Naofumi; and Ohi, Kunio, 4,409,473., Cl. 250-206.000.
Superior Graphite Co.: *See—*
Goldberger, William M., 4,409,073., Cl. 204-67.000.
Survival Technology, Inc.: *See—*
Sarnoff, Stanley J., 4,408,610., Cl. 128-642.000.
Sutoh, Shinji; Hara, Toshizo; Harada, Takeshi; and Eda, Masahiro, to Diesel Kiki Company, Ltd. Vehicle humidity control apparatus for preventing fogging of windows. 4,408,660., Cl. 165-21.000.
Sutter, Gerald, to Teichgraeber, Richard K. Telescoping cylinder stabilizer. 4,408,424., Cl. 52-115.000.
Sutton, Leonard, to Baker Perkins Holdings Limited. Wrapping machines. 4,408,435., Cl. 53-225.000.
Suwabe, Isaku; and Mori, Motoaki, to Nichiro Kogyo Company, Ltd. Band type strapping machine. 4,409,058., Cl. 156-361.000.

Suzue, Seisuke: *See—*
Namba, Mutsusuke; Suzue, Seisuke; Mizuno, Toshio; and Kataoka, Yoshiaki, 4,409,354., Cl. 524-431.000.
Suzuki, Akira; Yoshikawa, Yukio; and Kaneko, Katumi, to Copal Company Limited. Device for locking a blade driver in an electronic shutter. 4,408,856., Cl. 354-234.000.
Suzuki, Hideo, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument having portaments property. 4,408,514., Cl. 84-1.240.
Suzuki, Hitoshi: *See—*
Miyazaki, Kunio; Okosi, Yukio; Kumagai, Akira; and Suzuki, Hitoshi, 4,409,079., Cl. 204-192.00C.
Suzuki, Kazuie, to Hokushin Electric Works, Ltd. Electromagnetic flowmeter for measuring ferromagnetic slurries. 4,408,497., Cl. 73-861.170.
Suzuki, Masayuki: *See—*
Nishino, Hiroshi; Suzuki, Masayuki; and Hirota, Hideo, 4,409,125., Cl. 502-180.000.
Suzuki, Osamu: *See—*
Ooishi, Kengo; and Suzuki, Osamu, 4,408,733., Cl. 242-199.000.
Suzuki, Shigeru: *See—*
Nakayama, Shozo; Suzuki, Shigeru; and Hattori, Mitsuhiro, 4,408,962., Cl. 417-269.000.
Svantesson & Andersson Mekaniska (SAMEK) AB: *See—*
Svantesson, Gustav I., 4,408,644., Cl. 150-55.000.
Svantesson, Gustav I., to Svantesson & Andersson Mekaniska (SAMEK) AB. Drinking cup. 4,408,644., Cl. 150-55.000.
Swales, Doris, heir: *See—*
Swales, Frank, deceased; and Swales, Doris, heir, 4,408,536., Cl. 102-379.000.
Swales, Frank, deceased; and Swales, Doris, heir, to United States of America, Navy. Method of re-entry body separation and ejection. 4,408,536., Cl. 102-379.000.
Swan, Richard L. Cold-weather sports glove. 4,408,358., Cl. 2-161.00A.
Swartz, Jerome: *See—*
Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, 4,409,470., Cl. 235-472.000.
Sweeney, William M.: *See—*
Sung, Rodney L.; Sweeney, William M.; and Crawford, Wheeler C., 4,409,001., Cl. 44-71.000.
Swerdlow, Martin S., to Imperial Chemical Industries PLC. Surface-modifying coating compositions. 4,409,285., Cl. 428-332.000.
Swiers, Richard H.; and Parkison, Richard G., to American Standard, Inc. Swivel valve. 4,408,745., Cl. 251-357.000.
Swift, Harold E.; Innes, Robert A.; and Onopchenko, Anatoli, to Millmaster Onyx Group, Inc. Process for producing aliphatic amines. 4,409,399., Cl. 564-473.000.
Swigert, J. Kirk; and Pochan, Darlyn F., to Xerox Corporation. Magnetic imaging. 4,409,598., Cl. 346-74.200.
Sylvester, Paul J.: *See—*
Murray, Joseph E., Jr.; and Sylvester, Paul J., 4,409,441.,Cl. 179-111.00R.
Symbol Technologies, Inc.: *See—*
Shepard, Howard M.; Barkan, Edward D.; and Swartz, Jerome, 4,409,470., Cl. 235-472.000.
Syntex (U.S.A.) Inc.: *See—*
Yu, Cheng-Der, 4,409,239., Cl. 424-305.000.
Syva Company: *See—*
Leung, Danton K.; and Singh, Prithipal, 4,409,325., Cl. 435-7.000.
Szczurek, Marian: *See—*
Uhlig, Klaus; Szczurek, Marian; Vilacha, Carlos; and Beckmann, Juergen, 4,408,631., Cl. 137-380.000.
Szewczyk, Richard S., to USM Corporation. Machine tool indexing mechanism. 4,408,507., Cl. 82-36.00A.
Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Charge control circuit. 4,409,538., Cl. 320-11.000.
Tabata, Shunsaku: *See—*
Furuta, Tadaaki; and Tabata, Shunsaku, 4,409,106., Cl. 210-732.000.
Tabayashi, Isao; Soma, Hiromi; and Fukutomi, Hiroshi, to Dainippon Ink and Chemicals Inc. Ink for use in ink-jet printer. 4,409,040., Cl. 106-20.000.
Tachikawa Spring Co., Ltd.: *See—*
Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, 4,408,798., Cl. 297-326.000.
Tagami, Mutsukazu: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.
Takada, Haruhiko, to Diesel Kiki Co., Ltd. Vane compressor having improved rotor supporting means. 4,408,969., Cl. 418-93.000.
Takahashi, Fumitaka; and Gotoh, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Angular velocity sensor. 4,408,490., Cl. 73-497.000.
Takahashi, Harumi: *See—*
Ogata, Yoshihiro; Sakamoto, Koji; Takahashi, Harumi; and Hirakura, Koji, 4,408,863., Cl. 355-3.0TR.
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, to Bridgeport Tire Co. Ltd.; and Institute of Technology Precision Electrical Discharge Works. System for manufacturing tire molding metal molds with electrical discharge machining. 4,409,457., Cl. 219-69.00M.
Takahashi, Makoto: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,409,025., Cl. 420-584.000.
Takahashi, Masamitsu, to Bankoku Needle Manufacturing Co., Ltd. Needle holder. 4,408,691., Cl. 206-382.000.
Takahashi, Noriyoshi: *See—*
Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, 4,409,506., Cl. 310-166.000.
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.
Takahashi, Seiichi: *See—*
Iijima, Tetsuya; and Takahashi, Seiichi, 4,408,713., Cl. 236-49.000.
Takahashi, Yukio, to Fujitsu Limited. Semiconductor memory. 4,409,674., Cl. 365-190.000.
Takai, Hideo, to Hitachi, Ltd. Bogie truck car body support system. 4,408,541., Cl. 105-199.00R.
Takamatsu, Hideo; and Minatono, Shobu, to Kuraray Co., Ltd. Curable sealing composition. 4,409,056., Cl. 156-334.000.
Takano, Ikuo; Umino, Hiroshi; and Fujiwara, Junji, to Tokyo Shibaura Denki Kabushiki Kaisha. Operating mechanism for use in a circuit breaker. 4,409,449., Cl. 200-153.0SC.
Takano, Toshimasa; Hosoya, Masahiro; and Murakami, Reiji, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing apparatus for electrostatic copying machine. 4,408,862., Cl. 355-3.0DD.
Takao, Seiji, to Japan Exlan Company Limited. Process for producing acrylonitrile separation membranes in fibrous form. 4,409,162., Cl. 264-41.000.
Takara Shuzo Co., Ltd.: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.
Takashi, Nogami; and Haruhiko, Masuda, to Shin-Etsu Polymer Co., Ltd. Electric connector of press-contact holding type. 4,408,814., Cl. 339-59.00M.
Takasugi, Hisashi: *See—*
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,214., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,215., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,409,217., Cl. 424-246.000.
Takasugi, Tsuneji; and Umezawa, Seiji, to Citizen Watch Company Limited. Joint structure of bezel and watch body. 4,408,900., Cl. 368-295.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, to Fujisawa Pharmaceutical, Co., Ltd. 7-Acylamino-3-vinylcephalosporanic acid derivatives and processes for the preparation thereof. 4,409,214., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, to Fujisawa Pharmaceutical Co., Ltd. 7-Acylamino-3-substituted cephalosporanic acid derivatives and processes for the preparation thereof. 4,409,215., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, to Fujisawa Pharmaceutical Co., Ltd. Cephem compounds. 4,409,217., Cl. 424-246.000.
Takayashiki, Tetsuya; Usui, Taiji; and Sakurai, Tetsuma, to Oki Electric Industry Co., Ltd.; and Nippon Telegraph and Telephone Public Corporation. Method of manufacturing semiconductor integrated circuit devices. 4,408,386., Cl. 29-576.00E.
Takeda Chemical Industries, Ltd.: *See—*
Asai, Mitsuko; Shinagawa, Susumu; and Imada, Akira, 4,409,147., Cl. 260-245.20T.
Ishida, Yasuo, 4,409,018., Cl. 71-96.000.
Nishino, Hiroshi; Suzuki, Masayuki; and Hirota, Hideo, 4,409,125., Cl. 502-180.000.
Takei, Akihiko: *See—*
Minegishi, Keiichi; Akiba, Tokuji; Harada, Hiroshi; Takei, Akihiko; and Abe, Motoshi, 4,409,030., Cl. 106-97.000.
Takemae, Yoshihiro, to Fujitsu Limited. Dynamic semiconductor memory device. 4,409,672., Cl. 365-149.000.
Takemae, Yoshihiro; and Nakano, Masao, to Fujitsu Limited. Semiconductor integrated circuit device. 4,409,677., Cl. 365-206.000.
Takemae, Yoshihiro; and Baba, Fumio, to Fujitsu Limited. Semiconductor memory device. 4,409,678., Cl. 365-206.000.
Takemoto, Kazuaki: *See—*
Naganoma, Masanori; Takemoto, Kazuaki; and Moriya, Mitsutoshi, 4,408,712., Cl. 236-13.000.
Takemura, Yasuhiko; and Akutsu, Fumihiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic scanning apparatus. 4,408,491., Cl. 73-626.000.
Takeuchi, Akihiro: *See—*
Asai, Kiyokazu; Oshima, Yujiro; Takeuchi, Akihiro; and Tokoro, Hiroharu, 4,408,479., Cl. 73-35.000.
Takeuchi, Seizi; and Matsuda, Shimpei, to Hitachi, Ltd. Method of manufacturing catalyst. 4,409,129., Cl. 502-185.000.
Takeuchi, Yasuhiro: *See—*
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,408,580., Cl. 123-90.160.
Takiguchi, Michitaka; and Horie, Fujio, to Brother Kogyo Kabushiki Kaisha. Automatic needle thread control apparatus. 4,408,554., Cl. 112-302.000.
Takikawa, Yoshio: *See—*
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.
Takita, Hitoshi; Mukaida, Yutaka; Noda, Sakuo; and Kobayashi, Hidetoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Derivatives of dihydroxybenzoic acid and pharmaceutical composition thereof. 4,409,240., Cl. 424-319.000.

Takizawa, Masaaki: *See—*
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,408,580., Cl. 123-90.160.

Takoh, Isao: *See—*
Oouchi, Keiji; Takoh, Isao; and Serizawa, Hisayuki, 4,409,452., Cl. 219-10.55E.

Takubo, Takayuki; and Okano, Takeshi, to Victor Company of Japan, Limited. Television camera with an electronic view finder. 4,409,619., Cl. 358-224.000.

Tamai, Yasuo: *See—*
Mizuno, Chiaki; Tamai, Yasuo; and Kasuga, Akira, 4,409,299., Cl. 428-694.000.
Ogawa, Hiroshi; Kasuga, Akira; Tamai, Yasuo; and Yamada, Yasuyuki, 4,409,291., Cl. 428-425.900.

Tamasovics, John F.: *See—*
Balkwill, G. Russell; Robinet, Jules P.; and Tamasovics, John F., 4,408,695., Cl. 220-3.300.

Tanabe, Osamu: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.

Tanaka, Sadao: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.

Tanaka, Steve K.: *See—*
Hanamoto, Mark S.; and Tanaka, Steve K., 4,409,335., Cl. 436-67.000.

Tanaka, Toshiaki, to Sailor Pen Co., Ltd., The. Injection molding machine. 4,408,973., Cl. 425-139.000.

Tanaka, Toshihide: *See—*
Setsune, Kentaro; and Tanaka, Toshihide, 4,409,567., Cl. 333-151.000.

Taniguchi, Tsutomu: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.

Tanimoto, Kazuo: *See—*
Kurafuji, Setsuo; and Tanimoto, Kazuo, 4,409,679., Cl. 365-227.000.

Tanimura, Yusaburo; and Kumasaka, Hideo, to Toyo Seikan Kaisha, Ltd. Sealing compound for can ends. 4,409,359., Cl. 524-575.000.

Taniuchi, Masahiko: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Tanner, Milton R., to Central Plants, Inc. Process for removing contaminants from a stream of methane gas. 4,409,102., Cl. 210-603.000.

Tano, Mikio, to Dai Nippon Insatsu Kabushiki Kaisha. Carton's depressed line height measuring device. 4,408,487., Cl. 13-159.000.

Tanski, William J., to Sperry Corporation. Separated substrate acoustic wave device. 4,409,570., Cl. 333-187.000.

Tantot, Georges: *See—*
Lepesant, Jean P.; and Tantot, Georges, 4,409,039., Cl. 106-20.000.

Tarcsay, Lajos: *See—*
Baschang, Gerhard; Tarcsay, Lajos; Hartmann, Albert; and Stanek, Jaroslav, 4,409,209., Cl. 424-177.000.

Taverna, Andrea, to Gabbrielli Impianti di Gabbrielli Franco & C.s.a.s. Apparatus for transferring articles from one conveying line to another conveying line whose directions are angularly spaced. 4,408,686., Cl. 198-433.000.

Taylor, Carl R.: *See—*
Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., 4,409,263., Cl. 427-163.000.

Taylor, Kenneth E., to United Technologies Corporation. Induction furnace having improved thermal profile. 4,409,451., Cl. 219-10.49R.

Taylor, Peter M.: *See—*
Darwood, Phillip I.; Holland, Ernest; Taylor, Peter M.; and Marley, Christopher, 4,408,399., Cl. 33-203.180.

Taylor, Randle W.; and Davey, Richard G., to Owens-Illinois, Inc. Constant oil to water ratio shear spray system. 4,409,014., Cl. 65-170.000.

TDK Electronics Co., Ltd.: *See—*
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,409,300., Cl. 428-695.000.

Technical Rubber Company, Inc.: *See—*
Litterini, Donald E., 4,408,649., Cl. 152-367.000.

Technicare Corporation: *See—*
Pinkstaff, Carlos D., 4,409,484., Cl. 250-363.00S.

Technopulp A.G.: *See—*
Kasser, Alexander, 4,409,065., Cl. 162-9.000.

Tedeschi, Anthony: *See—*
Chapman, James S.; and Tedeschi, Anthony, 4,408,753., Cl. 269-8.000.

Tegman, Ragnar: *See—*
Larker, Hans; and Tegman, Ragnar, 4,409,029., Cl. 419-10.000.

Teichgraeber, Richard K.: *See—*
Sutter, Gerald, 4,408,424., Cl. 52-115.000.

Teikoku Chuck Co., Ltd.: *See—*
Yamane, Yasuhide, 4,408,522., Cl. 100-295.000.

Telectronics Pty. Ltd.: *See—*
Daly, Christopher N.; and Money, David K., 4,408,608., Cl. 128-421.000.
Spurrell, Roworth A. J.; Camm, Alan J.; and Ward, David E., 4,408,606., Cl. 128-419.0PG.

Teledyne Industries Inc.: *See—*
Leblanc, Raymond F.; and Cummins, William T., 4,408,931., Cl. 405-213.000.
Stuckas, Kenneth J., 4,408,585., Cl. 123-440.000.

Telefonaktiebolaget L M Ericsson: *See—*
Kjoller, Hans O. S., 4,409,651., Cl. 364-200.000.

Teletronics Pty, Limited: *See—*
Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., 4,408,604., Cl. 128-785.000.

Teletype Corporation: *See—*
Ciesiel, Allen R.; LaSpesa, Richard E.; and Zolavvar, Ruperto B., 4,408,914., Cl. 400-208.000.

Tell, Mayo B.: *See—*
Bryan, James S.; Gaster, Ivan; Tell, Mayo B.; and Dunn, Claude, 4,408,395., Cl. 30-179.000.

Tenney, John B., Jr., to United States of America, National Aeronautics and Space Administration. Prosthetic occlusive device for an internal passageway. 4,408,597., Cl. 128-1.00R.

Terachi, Junichi: *See—*
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,444., Cl. 200-144.00R.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,445., Cl. 200-144.00R.

Terashima, Shigeo: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.

Terkanian, Harry. Power converter using a resonant circuit. 4,409,647., Cl. 363-27.000.

Terrase, Leon J. Sacrificial anode. 4,409,081., Cl. 204-197.000.

Terui, Nobuhiko; and Watanabe, Sakuji, to Nippon Kogaku K.K. Automatic focus detecting apparatus of a camera. 4,408,854., Cl. 354-25.000.

Tewmotor Corporation: *See—*
Hildebrecht, Harold V., 4,408,775., Cl. 280-95.00R.

Texaco Inc.: *See—*
Herbstman, Sheldon, 4,409,417., Cl. 585-660.000.
Lin, Jiang-Jen; and Knifton, John F., 4,409,405., Cl. 568-902.000.
Slough, Carlton M., 4,409,080., Cl. 204-196.000.
Slough, Carlton M.; and Colling, Edwin L., Jr., 4,409,553., Cl. 324-445.000.
Sung, Rodney L.; Sweeney, William M.; and Crawford, Wheeler C., 4,409,001., Cl. 44-71.000.

Texas Instruments Incorporated: *See—*
Mohan Rao, G. R.; Stanczak, John S.; Lien, Jih-chang; and Bhatia, Shyam, 4,408,385., Cl. 29-576.00B.
Tubbs, Graham S., 4,409,665., Cl. 364-707.000.

Thermacore, Inc.: *See—*
Eastman, George Y.; Ernst, Donald M.; and Thomas, Warren E., 4,408,661., Cl. 165-164.000.

Thermoform Bau-Und Forschungsgesellschaft: *See—*
Paszner, Laszlo; and Chang, Pei-Ching, 4,409,032., Cl. 127-37.000.

Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., to Coulter Systems Corporation. Digital plate maker system and method. 4,408,868., Cl. 355-14.00R.

Thomas, Gareth J.: *See—*
Broadhurst, Michael J.; Hassall, Cedric H.; and Thomas, Gareth J., 4,409,391., Cl. 549-39.000.

Thomas, George L.; and Graff, William A., to General Electric Company. Rounded end halogen lamp with exhaust tube having different glass. 4,409,516., Cl. 313-579.000.

Thomas, Warren E.: *See—*
Eastman, George Y.; Ernst, Donald M.; and Thomas, Warren E., 4,408,661., Cl. 165-164.000.

Thomin, Georges: *See—*
Le Stang, Jean-Claude; and Thomin, Georges, 4,409,493., Cl. 307-132.00R.

Thompson, Donnie. Apparatus for washing an aloe vera leaf. 4,408,364., Cl. 15-21.00D.

Thompson, Geoffrey S.: *See—*
Shend'ge, Vasant J.; and Thompson, Geoffrey S., 4,408,730., Cl. 242-96.000.

Thompson, Raymond D., to Deere & Company. Compact, planar, multi-directional vibration attenuator seat support. 4,408,744., Cl. 248-636.000.

Thomson-Brandt: *See—*
Deffayet, Jean; and Lamarque, Etienne, 4,408,538., Cl. 102-522.000.

Thomson-CSF: *See—*
Metz, Pierre, 4,408,735., Cl. 244-3.220.

Thomson-CSF Broadcast, Inc.: *See—*
McMann, Renville H., Jr.; Kreinik, Stephen; and Novack, Martin M., 4,409,615., Cl. 358-111.000.

Thoratec Laboratories Corporation: *See—*
Ward, Robert S., Jr.; and Beckham, Donald R., 4,409,172., Cl. 264-209.200.

Thorn Emi Energy Developments Limited: *See—*
Northcote, Reginald D.; and Mehdi, Mehdi G., 4,408,566., Cl. 122-4.00D.

Thorsett, Eugene D.; and Harris, Elbert E., to Merck & Co., Inc. Substituted caprolactam derivatives as antihypertensives. 4,409,146., Cl. 260-239.30R.

Thrall Car Manufacturing Company: *See—*
Heap, James C., 4,408,542., Cl. 105-406.00R.

Threlkeld, John H.: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 4,408,720., Cl. 239-149.000.

Tibbits, John L.: *See—*
Thomas, E. Raymond; Cahill, Lysle D.; Tibbits, John L.; Fraser, Kenneth D.; Keane, John F.; Harting, Stanley C.; Kramer, George H.; Duke, Ronald J.; Kessis, Theodore A.; Butler, John C.; Frank, Gary L.; and Lawson, John A., 4,408,868., Cl. 355-14.00R.

Tima, Milan J.: *See—*
Rottmaier, Ludwig; Merten, Rudolf; Tima, Milan J.; and Michael, Dietrich, 4,409,347., Cl. 524-91.000.

TLV Co., Ltd.: *See—*
Fujiwara, Katsuji, 4,408,626., Cl. 137-185.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Fujii, Shigeo; Ikeda, Tokuzo; Mikami, Takashi; and Okano, Shuji, 4,409,282., Cl. 428-219.000.

Tokan Kogyo Co., Ltd.: *See—*
Yoshikawa, Tsukasa; and Kitamura, Masuo, 4,408,697., Cl. 220-279.000.

Tokarz, Richard D. Temperature profile detector. 4,408,904., Cl. 374-137.000.

Tokico, Ltd.: *See—*
Nakayama, Shuzi, 4,409,459., Cl. 219-86.240.
Oshima, Harumi, 4,408,681., Cl. 188-73.380.

Tokiguchi, Katsumi: *See—*
Koike, Hidemi; Sakudo, Noriyuki; Tokiguchi, Katsumi; and Kanomata, Ichiro, 4,409,520., Cl. 315-39.000.

Tokoro, Hiroharu: *See—*
Asai, Kiyokazu; Oshima, Yujiro; Takeuchi, Akihiro; and Tokoro, Hiroharu, 4,408,479., Cl. 73-35.000.

Tokutomi, Seijiro; Nakamura, Kazuo; and Jyojiki, Kasao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detecting device. 4,408,853., Cl. 354-25.000.

Tokyo Kikai Seisakusho Ltd.: *See—*
Okamura, Yuichi; and Komatsu, Akitoshi, 4,408,531., Cl. 101-415.100.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, 4,408,847., Cl. 351-211.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Enjoji, Susumu, 4,408,611., Cl. 128-660.000.
Hayama, Yoshihiro; and Hosokawa, Yuukou, 4,408,639., Cl. 140-71.500.
Hisadome, Masanao, 4,409,575., Cl. 335-160.000.
Ike, Toshio, 4,408,826., Cl. 350-6.800.
Iwamoto, Akito; and Sekizawa, Hidekazu, 4,408,883., Cl. 356-355.000.
Kako, Takuya, 4,408,767., Cl. 277-27.000.
Kameyama, Shuichi, 4,408,388., Cl. 29-578.000.
Kanno, Ken-ichi; Gatayama, Tetsuya; and Koyama, Masao, 4,409,088., Cl. 204-402.000.
Mishima, Toshio, 4,408,512., Cl. 84-1.030.
Nagano, Katsumi, 4,409,497., Cl. 307-360.000.
Ohba, Hiroshi; and Wakamatsu, Shigeo, 4,408,934., Cl. 408-51.000.
Takano, Ikuo; Umino, Hiroshi; and Fujiwara, Junji, 4,409,449., Cl. 200-153.0SC.
Takano, Toshimasa; Hosoya, Masahiro; and Murakami, Reiji, 4,408,862., Cl. 355-3.0DD.
Takemura, Yasuhiko; and Akutsu, Fumihiko, 4,408,491., Cl. 73-626.000.
Torii, Akiomi, 4,408,458., Cl. 60-660.000.
Tsunoda, Sachio, 4,408,452., Cl. 60-398.000.

Tominaga, Shinji: *See—*
Imura, Toshinori; and Tominaga, Shinji, 4,408,855., Cl. 354-25.000.

Tomita, Koji: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,409,210., Cl. 424-177.000.

Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, to Toyoda Koki Kabushiki Kaisha. Contact detecting apparatus. 4,408,933., Cl. 408-8.000.

Tomosada, Masahiro; and Maeshima, Katsuyoshi, to Canon Kabushiki Kaisha. Digital display device controlled by a microcomputer. 4,408,869., Cl. 355-14.00R.

Tomov, Nenad R.: *See—*
Angerer, Herman F.; and Tomov, Nenad R., 4,409,301., Cl. 429-27.000.

Tooyama, Nobuo: *See—*
Inoue, Hiroshi; and Tooyama, Nobuo, 4,409,268., Cl. 428-1.000.

Toray Industries, Incorporated: *See—*
Iwayama, Kazuyoshi; and Inoue, Takehisa, 4,409,413., Cl. 585-481.000.

Torii, Akiomi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric power generating system. 4,408,458., Cl. 60-660.000.

Toriumi, Shiro; Ishii, Kenjiro; and Yamagishi, Seiichi, to Minolta Camera Kabushiki Kaisha. Strip film handling device. 4,408,732., Cl. 242-192.000.

Torme, Helen M. Window moisture and air flow control device. 4,408,425., Cl. 52-171.000.

Torrey, Rodney J.; Astemborski, Dennis; Carner, Marshall A.; and Rose, Gerald D., to Eriez Manufacturing Company. Precipitator rapper. 4,409,007., Cl. 55-112.000.

Tosima, Soitiro; and Harada, Shigeo, to RCA Corporation. Method for the evaluation of solderability. 4,409,333., Cl. 436-2.000.

Toth, Michael R., to Kendall Company, The. Disposable garment. 4,408,357., Cl. 2-114.000.

Toy, Albert; Constantino, Louis L.; and Evans, Donald B., to United States of America, Army. Method for batch production of isostatically pressed calcium powder discs. 4,409,174., Cl. 264-313.000.

Toyo Jozo Kabushiki Kaisha: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Toyo Kogyo Co., Ltd.: *See—*
Harasaki, Hayathugu, 4,408,794., Cl. 296-198.000.

Toyo Rubber Industry Co., Ltd., The: *See—*
Ohashi, Junichi, 4,408,648., Cl. 152-353.00C.

Toyo Seikan Kaisha, Ltd.: *See—*
Kitamura, Yoichi; Hotta, Hisashi; and Yurita, Chikara, 4,409,456., Cl. 219-64.000.
Tanimura, Yusaburo; and Kumasaka, Hideo, 4,409,359., Cl. 524-575.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Tomita, Tamaki; Nakao, Hisaji; Nishimura, Hideo; Eto, Kunihiko; and Ohmura, Haruo, 4,408,933., Cl. 408-8.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kosuda, Toru; Takeuchi, Yasuhiro; Matsubara, Noboru; and Takizawa, Masaaki, 4,408,580., Cl. 123-90.160.
Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, 4,408,462., Cl. 60-330.000.

Tramm, Peter C.: *See—*
Kurzrock, John W.; and Tramm, Peter C., 4,408,957., Cl. 416-237.000.

Tremont, Samuel J.; Keppel, Robert A.; Lee, Emerson H.; and Davis, George D., to Monsanto Company. Attrition resistant bismuth-containing metal/oxygen compositions and a process for their preparation. 4,409,133., Cl. 502-354.000.

Tremont, Samuel J.: *See—*
Keppel, Robert A.; Tremont, Samuel J.; Lee, Emerson H.; and Davis, George D., 4,409,127., Cl. 502-205.000.

Trepanier, Peter J.: *See—*
Lautensleger, Richard W.; Bingham, George R.; and Trepanier, Peter J., 4,408,423., Cl. 52-90.000.

Tromble, Ralph D.: *See—*
Carter, Gordon V.; and Tromble, Ralph D., 4,408,432., Cl. 52-718.000.

TRW Inc.: *See—*
Drutchas, Gilbert H., 4,408,963., Cl. 417-283.000.

Trybulski, Eugene J.: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,409,390., Cl. 548-561.000.

Tschirner, Wolfgang, to Kleinewefers, Jaeggli AG. Method for continuously treating strand-like textile material in vertical loops. 4,408,362., Cl. 8-151.000.

Tsentralny Nauchno-Issledovatelsky Institut Kozhevenno-Obuvnoi Promyshlennosti: *See—*
Zhuravlev, Vadim F.; and Belov, Alexei G., 4,408,482., Cl. 73-75.000.

Tsuchie, Takanori: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.

Tsuchikane, Yoshiyuki: *See—*
Mori, Toshinori; Tsuchikane, Yoshiyuki; and Matsushige, Takashi, 4,409,682., Cl. 369-3.000.

Tsuda, Hiroshi: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.

Tsuji, Kiyoshi: *See—*
Takaya, Takao; Takasugi, Hisashi; Chiba, Toshiyuki; and Tsuji, Kiyoshi, 4,409,217., Cl. 424-246.000.

Tsuji, Yashuhiro; Wakabayashi, Kiyoshige; and Watanabe, Mitsuo, to Chugai Seiyaku Kabushiki Kaisha. Laser nephelometric system. 4,408,880., Cl. 356-338.000.

Tsujimura, Harutoshi: *See—*
Arima, Sumitsugu; Tsujimura, Harutoshi; and Fukunaga, Yukio, 4,409,584., Cl. 340-22.000.

Tsukada, Kazuhiro; and Kato, Wataru, to Sankyo Company, Limited. Highly concentrated preparations of dopa compounds. 4,409,233., Cl. 424-273.00R.

Tsunoda, Sachio, to Tokyo Shibaura Denki Kabushiki Kaisha. Pumping-up hydroelectric power plants. 4,408,452., Cl. 60-398.000.

Tsutsui, Yoshimitsu: *See—*
Kogo, Nobuhiko; Tsutsui, Yoshimitsu; Kato, Koji; and Kishigami, Hisao, 4,409,160., Cl. 264-40.100.

Tsuzuku, Susumu: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.

Tubbs, Graham S., to Texas Instruments Incorporated. Turn-off-processor between keystrokes. 4,409,665., Cl. 364-707.000.

Tunbridge, Peter M.: *See—*
Lowis, Royce; and Tunbridge, Peter M., 4,408,384., Cl. 29-571.000.

Tung, Lu H.: *See—*
Lyons, Charles E.; and Tung, Lu H., 4,409,369., Cl. 525-314.000.

Turley, Alfred P., to Westinghouse Electric Corp. Radiant energy differential sensor system. 4,409,483., Cl. 250-332.000.

Twin-Cee Limited: *See—*
Richardson, Frank; and Campbell, Allan H., 4,408,811., Cl. 312-37.000.

Tyl, Miloslay: *See—*
Sloupensky, Jiri; and Tyl, Miloslay, 4,408,447., Cl. 57-263.000.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,408,465., Cl. 62-82.000.
Tyree, Charles N.; Fike, Lester L., Jr.; and McIntire, Ronald A., to Fike Metal Products Corporation. Pressure responsive electrical switching apparatus. 4,409,443., Cl. 200-83.00N.
UBE Industries, Ltd.: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.
Uchida, Hiroyuki: *See—*
Nakajima, Kazuo; Hirata, Yoshiaki; Uchida, Hiroyuki; Kimizuka, Yoshie; Taniguchi, Tsutomu; Obayashi, Akira; and Tanabe, Osamu, 4,409,385., Cl. 536-123.000.
Uchikawa, Nobutaka: *See—*
Asanuma, Tadashi; Uchikawa, Nobutaka; and Shiomura, Tetsunosuke, 4,409,378., Cl. 526-125.000.
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, to Kanetsu Kogyo Kabushiki Kaisha. Magnetic chuck. 4,408,752., Cl. 269-8.000.
Uchino, Shoichi: *See—*
Morishita, Hajime; Kohashi, Takahiro; Nonogaki, Saburo; Akagi, Motoo; Hayashi, Nobuaki; and Uchino, Shoichi, 4,409,313., Cl. 430-144.000.
Uda, Taizo: *See—*
Miyazaki, Haruhiko; Hirai, Koichi; Uda, Taizo; Nakamura, Yasuo; Ikezawa, Harumi; and Tsuchie, Takanori, 4,409,395., Cl. 560-179.000.
Ueberschaer, Horst: *See—*
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, 4,409,394., Cl. 549-534.000.
Ueda, Yasuhiro, to Olympus Optical Co., Ltd. Endoscope with an air-liquid suction device. 4,408,598., Cl. 128-4.000.
Uhlig, Klaus; Szczurek, Marian; Vilacha, Carlos; and Beckmann, Juergen. Wedge-type tap for the sterile sampling of liquids. 4,408,631., Cl. 137-380.000.
Ujiie, Nikio: *See—*
Mizushima, Yoichi; Hosonaga, Taketoshi; Murakami, Takashi; and Ujiie, Nikio, 4,408,798., Cl. 297-326.000.
Umekawa, Osamu; Ito, Yosuke; and Katayama, Sakae, to Katayama Chemical Works Co., Ltd. Easily dispersible composition for water soluble polymer. 4,409,353., Cl. 524-421.000.
Umezawa, Seiji: *See—*
Takasugi, Tsuneji; and Umezawa, Seiji, 4,408,900., Cl. 368-295.000.
Umino, Hiroshi: *See—*
Takano, Ikuo; Umino, Hiroshi; and Fujiwara, Junji, 4,409,449., Cl. 200-153.0SC.
Unger, Herbert; and Meise, Gunther, to WABCO Fahrzeugbremsen GmbH. Piston cylinder and head for compressors. 4,408,967., Cl. 417-571.000.
Unie Van Kunstmestfabrieken BV: *See—*
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,408,998., Cl. 23-293.00A.
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,409,016., Cl. 71-59.000.
Union Carbide Corporation: *See—*
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Wagner, Eric R., deceased; and Wagner, Maria M., executrix, 4,409,342., Cl. 523-202.000.
Billig, Ernst; and Bryant, David R., 4,409,149., Cl. 260-429.00R.
Higgins, Thomas E., 4,409,251., Cl. 426-413.000.
Hodakowski, Leonard E., 4,409,153., Cl. 260-946.000.
Kobayashi, Hisashi; and Anderson, John E., 4,408,982., Cl. 431-10.000.
United Kingdom Atomic Energy Authority: *See—*
Heath, James H., 4,408,498., Cl. 73-861.790.
Whitehead, Norman P.; Boness, Kenneth D.; and Martin, Roger, 4,409,617., Cl. 358-147.000.
United States Gypsum Company: *See—*
Brooke, Michael E.; and Wendt, Alan C., 4,408,428., Cl. 52-489.000.
Martinelli, Lawrence R.; and Lat, Geronimo E., 4,409,276., Cl. 428-142.000.
United States of America
Air Force: *See—*
Gowan, John G., 4,408,833., Cl. 350-310.000.
Holt, James F., 4,409,423., Cl. 136-255.000.
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,408,533., Cl. 102-211.000.
Romanski, John G., 4,409,661., Cl. 364-516.000.
Salour, Michael M.; and Roxlo, Charles B., 4,408,464., Cl. 62-514.00R.
Scott, Robert G., 4,409,587., Cl. 340-347.0DD.
Sidey, Roger, 4,408,481., Cl. 73-73.000.
Army: *See—*
Toy, Albert; Constantino, Louis L.; and Evans, Donald B., 4,409,174., Cl. 264-313.000.
Interior: *See—*
Borrowman, S. Ralph; Altringer, Paulette B.; and Brooks, Parkman T., 4,409,189., Cl. 423-54.000.
Holman, James L., Jr.; and Neumeier, Leander A., 4,409,020., Cl. 75-0.50B.
National Aeronautics and Space Administration: *See—*
Holland, Lawrence R., 4,408,658., Cl. 165-2.000.
Tenney, John B., Jr., 4,408,597., Cl. 128-1.00R.
Navy: *See—*
Howarth, Robert F., 4,409,474., Cl. 250-207.000.
Howe, David G., 4,409,297., Cl. 428-614.000.
Jelks, Edward C.; and Kerber, George L., 4,409,262., Cl. 427-99.000.
Keller, Teddy M., 4,409,382., Cl. 528-173.000.
Koon, Norman C., 4,409,043., Cl. 148-403.000.
Morris, Hayden; and Christianson, Charles, 4,409,485., Cl. 250-374.000.
Sheem, Sang K., 4,408,882., Cl. 356-350.000.
Swales, Frank, deceased; and Swales, Doris, heir, 4,408,536., Cl. 102-379.000.
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.
Wutherich, Hermann A., 4,408,830., Cl. 350-247.000.
Yoder, Max N., 4,409,608., Cl. 357-51.000.
U.S. Philips Corporation: *See—*
Bates, Terence, 4,409,486., Cl. 250-396.0ML.
Beelaard, Wilhelmus A. J.; and Vink, Nicolaas G., 4,409,578., Cl. 335-210.000.
Knijnenburg, Johannus P. H.; and Verhoeven, Bernardus, 4,409,558., Cl. 330-288.000.
Lowis, Royce; and Tunbridge, Peter M., 4,408,384., Cl. 29-571.000.
Milsom, Robert F.; Murray, Robert J.; and Flinn, Ian, 4,409,571., Cl. 333-196.000.
Van Der Sande, Johannes H. M.; Sools, Franciscus G. P.; and Campbell, Ronald J., 4,409,517., Cl. 313-631.000.
Van Kessel, Theodorus J., 4,409,556., Cl. 330-75.000.
Wagenaar, Kornelis J.; De Graaff, Hendrik C.; and Appels, Johannes A., 4,409,606., Cl. 357-13.000.
Warmuth, Leo, 4,409,612., Cl. 358-24.000.
United Technologies Corporation: *See—*
Clarady, Joseph F., Jr.; Jessee, Karen L.; and Bearden, Joe L., 4,408,881., Cl. 356-347.000.
Guthrie, Richard W.; and Byrne, Dale M., 4,408,827., Cl. 350-96.100.
Hartman, Paul R.; and Milam, Thomas B., 4,408,832., Cl. 350-310.000.
Herndon, James A.; and Ask, Henry R., 4,409,670., Cl. 364-900.000.
Ryan, Edward J., 4,409,054., Cl. 156-293.000.
Taylor, Kenneth E., 4,409,451., Cl. 219-10.49R.
Unitek Corporation: *See—*
Cleary, James D., 4,408,989., Cl. 433-7.000.
University of Utah: *See—*
Hanson, Francis V.; Miller, Jan D.; and Oblad, Alex G., 4,409,090., Cl. 208-11.0LE.
UOP Inc.: *See—*
Latos, Edwin J.; and Payne, John C., 4,409,121., Cl. 252-389.00A.
LeRoy, Charles F., 4,409,033., Cl. 127-46.200.
Peters, Kenneth D., 4,409,095., Cl. 208-134.000.
Qualeatti, Gail M.; and Germanas, Dalia, 4,409,148., Cl. 260-409.000.
Upperman, Gary V.; and Withers, James C., to Metallurgical, Inc. Cell with composite anode for electrolytic production of magnesium. 4,409,083., Cl. 204-245.000.
Urich, Oren D.: *See—*
Keller, Phillip D.; Urich, Oren D.; and Mahagan, Deroy E., 4,408,551., Cl. 111-85.000.
Urino, Yoshiteru: *See—*
Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, 4,409,633., Cl. 360-127.000.
Urmy, Charles W., Jr., to Dresser Industries, Inc. Lubricant, slow speed, high load. 4,409,112., Cl. 252-33.400.
USM Corporation: *See—*
Szewczyk, Richard S., 4,408,507., Cl. 82-36.00A.
Usui, Taiji: *See—*
Takayashiki, Tetsuya; Usui, Taiji; and Sakurai, Tetsuma, 4,408,386., Cl. 29-576.00E.
Utsugi, Mikio, to Olympus Optical Co., Ltd. Ultrasonic scanning device for examining viscera. 4,408,612., Cl. 128-660.000.
V. L. Churchill Limited: *See—*
Darwood, Phillip I.; Holland, Ernest; Taylor, Peter M.; and Marley, Christopher, 4,408,399., Cl. 33-203.180.
Vaillant, Robert: *See—*
Ninet, Jean-Louis; and Vaillant, Robert, 4,408,930., Cl. 405-209.000.
Vale, Wylie W., Jr.: *See—*
Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,409,208., Cl. 424-177.000.
Valley View Specialties Co.: *See—*
Rynberk, Robert W., 4,408,717., Cl. 239-18.000.
van Berkum, Petrus A.: *See—*
Hirshorn, Michael S.; Skalsky, Michael; van Berkum, Petrus A.; Holley, Loraine K.; and Money, David K., 4,408,604., Cl. 128-785.000.
Vandegraaf, Johannes J., to General Electric Company. Phase locked loop frequency synthesizer with frequency compression loop. 4,409,563., Cl. 331-11.000.
van de Mond, Theodorus J.: *See—*
Kleuskens, Engelina C.; Maessen, Johannes G. H.; and van de Mond, Theodorus J., 4,409,122., Cl. 502-20.000.
van der Lely, Cornelis. Time clock for recording the identification of a person. 4,409,657., Cl. 364-401.000.

Vanderpool, Clarence D.; and MacInnis, Martin B., to GTE Products Corporation. Method for producing cobalt metal powder. 4,409,019., Cl. 75-0.5AA.
Van Der Sande, Johannes H. M.; Sools, Franciscus G. P.; and Campbell, Ronald J., to U.S. Philips Corporation. High-pressure discharge lamp with envelope lead-through structure. 4,409,517., Cl. 313-631.000.
van der Wiel, Adrianus W., to Vredestein N.V. Fender, respectively plug for a fender. 4,408,556., Cl. 114-219.000.
van Drumpt, Jan D.: *See—*
Beijleveld, Wilhelmus M.; and van Drumpt, Jan D., 4,409,367., Cl. 525-277.000.
Vangermain, Erwin; Mengler, Claus-Dieter; Elm, Rainer; Ueberschaer, Horst; and Brauckmann, Wilhelm, to Chemische Werke Huls AG. Supported silver catalysts mixed with promoter metal compounds for the production of ethylene oxide. 4,409,394., Cl. 549-534.000.
Van Hulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., to General Mills, Inc. Method for preparing sugar coated, puffed snacks upon microwave heating. 4,409,250., Cl. 426-242.000.
Van Kessel, Theodorus J., to U.S. Philips Corporation. Amplifier arrangement with very low distortion. 4,409,556., Cl. 330-75.000.
Van Kesteren, John, Jr. Apparatus for packing and compressing fresh spinach, or the like. 4,408,440., Cl. 53-527.000.
Van Leirsburg, Dean A., to Chevron Research Company. Extracting cobalt from spent hydroprocessing catalysts with cyanide. 4,409,190., Cl. 423-150.000.
Van Manen, Dick T., to Voplex Corporation. Method for molding a composite foamed resin pull strap. 4,409,163., Cl. 264-45.500.
Van Pool, Joe; and Potts, Mack F., to Phillips Petroleum Company. Relief system. 4,409,420., Cl. 585-723.000.
van Rinsum, Cornelis, to MTU Motoren- und Turbinen-Union Friedrichshaften GmbH. Fuel injection pump. 4,408,586., Cl. 123-446.000.
Varano, Joseph J.: *See—*
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,408,558., Cl. 118-59.000.
Faber, Dolan D.; Holmes, Richard G.; and Varano, Joseph J., 4,409,270., Cl. 428-63.000.
Varen Technology: *See—*
Vaughan, Ronald J., 4,409,403., Cl. 568-678.000.
Varian Associates, Inc.: *See—*
Karp, Arthur; and Biggs, Gary A., 4,409,518., Cl. 315-3.500.
Karp, Arthur, 4,409,519., Cl. 315-3.500.
Varshney, Ramesh C., to Fairchild Camera & Instrument Corporation. Method and means for diagnostic testing of CCD memories. 4,409,676., Cl. 365-201.000.
Vasquez, Guillermo: *See—*
Carney, Leroy L.; Loftin, Royal E.; Anderson, Thomas E.; and Vasquez, Guillermo, 4,409,108., Cl. 252-8.50C.
Vaughan, Quentin D., to Visual Graphics Corporation. Combined storing, transporting, exposing and processing apparatus for camera. 4,408,872., Cl. 355-28.000.
Vaughan, Ronald J., to Varen Technology. Oxyalkylation process. 4,409,403., Cl. 568-678.000.
Vautier, Daniel: *See—*
Bousquet, Jacques; Gueguen, Claude; and Vautier, Daniel, 4,409,130., Cl. 502-211.000.
Vayda, Adam V.: *See—*
Morganson, Neal E.; and Vayda, Adam V., 4,409,415., Cl. 585-525.000.
VDO Adolf Schindling AG: *See—*
Pfalzgraf, Manfred; Kern, Eckhart; and Collonia, Harald, 4,408,581., Cl. 123-339.000.
Veazey, Enrique M.: *See—*
Cardenas, Luis F.; and Veazey, Enrique M., 4,409,013., Cl. 65-163.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Johne, Hans; Forster, Karl-Heinz; Jentzsch, Arndt; and Muller, Wolfgang, 4,408,528., Cl. 101-364.000.
Johne, Hans; Jentzsch, Arndt; Schumann, Gunter; Jehring, Arnfried; and Liebschner, Fritz, 4,408,529., Cl. 101-415.100.
Vee Arc Corporation: *See—*
Hickman, Mark R., 4,409,535., Cl. 318-811.000.
Velvac, Inc.: *See—*
Brester, Robert R.; and Roberts, Thomas L., 4,408,508., Cl. 83-397.000.
Verbout, Jerry L.: *See—*
Smith, Harry D., Jr.; Schultz, Ward E.; and Verbout, Jerry L., 4,409,481., Cl. 250-270.000.
Verch, John T., to Nichols-Homeshield, Inc. Roll-down window insulation. 4,408,650., Cl. 160-121.00R.
Verhoeven, Bernardus: *See—*
Knijnenburg, Johannus P. H.; and Verhoeven, Bernardus, 4,409,558., Cl. 330-288.000.
Vernam, William D.; Rogers, Ralph W., Jr.; and Stumpf, Harry C., to Aluminum Company of America. Aluminum alloy sheet product suitable for heat exchanger fins and method. 4,409,036., Cl. 148-2.000.
Verschelde, Marc: *See—*
Nolf, Jean-Marie E.; and Verschelde, Marc, 4,409,426., Cl. 174-21.00R.
Vetco, Inc.: *See—*
Reimert, Larry E., 4,408,784., Cl. 285-24.000.
Vickery, Donald P., to Nelson A. Taylor Co., Inc. Chimney cleaning device. 4,408,368., Cl. 15-243.000.
Victor Company of Japan, Limited: *See—*
Mori, Toshinori; Tsuchikane, Yoshiyuki; and Matsushige, Takashi, 4,409,682., Cl. 369-3.000.
Takubo, Takayuki; and Okano, Takeshi, 4,409,619., Cl. 358-224.000.
Victor Equipment Company: *See—*
Zwicker, Roger D., 4,409,002., Cl. 48-180.00F.
Viecenz, Arno: *See—*
Kuhn, Hans; and Viecenz, Arno, 4,408,668., Cl. 173-139.000.
Vilacha, Carlos: *See—*
Uhlig, Klaus; Szczurek, Marian; Vilacha, Carlos; and Beckmann, Juergen, 4,408,631., Cl. 137-380.000.
Vilas Boas, Jean C.: *See—*
Deprez, Michel; Fromion, Andre; Hardouin, Claude; and Vilas Boas, Jean C., 4,408,835., Cl. 350-117.000.
Vink, Nicolaas G.: *See—*
Beelaard, Wilhelmus A. J.; and Vink, Nicolaas G., 4,409,578., Cl. 335-210.000.
Visidyne, Inc.: *See—*
Zehnpfennig, Theodore F., 4,409,475., Cl. 250-224.000.
Visual Graphics Corporation: *See—*
Vaughan, Quentin D., 4,408,872., Cl. 355-28.000.
Vitro Tec Fideicomiso: *See—*
Cardenas, Luis F.; and Veazey, Enrique M., 4,409,013., Cl. 65-163.000.
Vitus, Francis J.; Hargis, Ivan G.; Livigni, Russell A.; and Aggarwal, Sundar L., to General Tire & Rubber Company, The. Preparation of star polymers. 4,409,368., Cl. 525-314.000.
Vlahos-Gottschalk Research Corp., Now Ultimatte Corp.: *See—*
Vlahos, Petro, 4,409,611., Cl. 358-22.000.
Vlahos, Petro, to Vlahos-Gottschalk Research Corp., Now Ultimatte Corp. Encoded signal color image compositing. 4,409,611., Cl. 358-22.000.
Voest-Alpine AG: *See—*
Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, 4,409,023., Cl. 75-38.000.
Vogel, Gerald J.: *See—*
Garin, Torunn A.; and Vogel, Gerald J., 4,409,254., Cl. 426-540.000.
Vogt, Willy, to Bucher-Guyer AG. Method of producing fireproof bricks. 4,409,166., Cl. 264-72.000.
Volker, Hainke: *See—*
Hainke, Volker; and Hainke, Hans U., 4,408,937., Cl. 411-42.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Long, William D.; and Rottenkolber, Paul J., 4,408,959., Cl. 416-241.00B.
von Agris, Rudolf; Kaiser, Gunter; and Nysten, Bernhard, to William Prym-Werke KG. Method of manufacturing a two-wing dress-shielding element. 4,409,052., Cl. 156-227.000.
Vonco Products, Inc.: *See—*
Laske, Louis L.; and Harreld, Donald R., 4,408,643., Cl. 383-70.000.
von der Neyen, Hans-Juergen: *See—*
Pooch, Gerhard; and von der Neyen, Hans-Juergen, 4,409,684., Cl. 375-116.000.
Voplex Corporation: *See—*
Van Manen, Dick T., 4,409,163., Cl. 264-45.500.
Vora, Suresh M.; Mazzafro, William J.; Brian, Pierre L. T.; and Chen, Michael S. K., to Air Products and Chemicals, Inc. Process for concentrating sulfuric acid in an evaporator. 4,409,064., Cl. 159-47.100.
Vorhagen, Friedrich W.: *See—*
Eichler, Helmut; Vorhagen, Friedrich W.; and Hutten, Hans M., 4,409,614., Cl. 358-76.000.
Voza, Alfonse N., to Singer Company, The. Method and apparatus for filling a container. 4,408,640., Cl. 141-1.000.
Vredestein N.V.: *See—*
van der Wiel, Adrianus W., 4,408,556., Cl. 114-219.000.
Vrisakis, Georges: *See—*
Lagarde, Robert; and Vrisakis, Georges, 4,409,356., Cl. 524-492.000.
Vuilleumier, Cyril; and Erni, Bruno, to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Positioning mechanism for a center wheel. 4,408,898., Cl. 368-220.000.
Vyatchinov, Viktor P.: *See—*
Salikhov, Zufar G.; Ivanov, Vasily A.; Vyatchinov, Viktor P.; Maltsev, Vladimir I.; Grozdev, Sergei S.; and Khodov, Nikolai V., 4,409,101., Cl. 210-266.000.
Vyzkumny ustav bavlnarskyu: *See—*
Sloupensky, Jiri; and Tyl, Miloslay, 4,408,447., Cl. 57-263.000.
W & A Bates Limited: *See—*
Holroyd, Eric; and Perkins, David J. B., 4,409,059., Cl. 156-397.000.
W. J. Janssens Industries (N.Z.) Limited: *See—*
Janssens, Werner J., 4,409,060., Cl. 156-497.000.
W. Schlafhorst & Co.: *See—*
Rohner, Joachim, 4,408,442., Cl. 57-22.000.
WABCO Fahrzeugbremsen GmbH: *See—*
Unger, Herbert; and Meise, Gunther, 4,408,967., Cl. 417-571.000.
Wachi, Yasuyuki: *See—*
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.
Wacker-Chemie GmbH: *See—*
Dempf, Dominik; Schmidhammer, Ludwig; Dummer, Gerhard; Roscher, Gunter; Schmidt, Karl-Heinz; Selbertinger, Ernst; and Strasser, Rudolf, 4,409,396., Cl. 560-245.000.
Wacker, Fredy: *See—*
Soraya, Sorayapour; Feld, Gundolf; and Wacker, Fredy, 4,408,986., Cl. 432-6.000.

Wada, Kenichi; and Yamada, Naoki, to Hitachi, Ltd. Data processor adapted for interruption to an instruction stream. 4,409,654., Cl. 364-200.000.

Wada, Shinji; Oana, Yoshinori; Kitao, Ikuo; Kato, Yasuo; and Ishihara, Taketoshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Refractory power measuring device. 4,408,847., Cl. 351-211.000.

Wadsworth, Eric: *See—*
Garner, Henry C.; Broadbent, Jack; Savidge, David H.; and Wadsworth, Eric, 4,409,549., Cl. 324-262.000.

Wagemans, Gerardus M. C.: *See—*
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,408,998., Cl. 23-293.00A.
Mutsers, Stanislaus M. P.; Hoek, Cornelis; and Wagemans, Gerardus M. C., 4,409,016., Cl. 71-59.000.

Wagenaar, Kornelis J.; De Graaff, Hendrik C.; and Appels, Johannes A., to U.S. Philips Corporation. High breakdown voltage semiconductor device. 4,409,606., Cl. 357-13.000.

Wagle, Joseph A.; and Wagle, Joseph H. Wind operated wheel. 4,408,955., Cl. 416-119.000.

Wagle, Joseph H.: *See—*
Wagle, Joseph A.; and Wagle, Joseph H., 4,408,955., Cl. 416-119.000.

Wagner, Eric R., deceased: *See—*
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Wagner, Eric R., deceased; and Wagner, Maria M., executrix, 4,409,342., Cl. 523-202.000.

Wagner, John P.; and Hsu, Edward C., to Exxon Research and Engineering Co. Methods and apparatus for electrostatically resolving emulsions. 4,409,078., Cl. 204-188.000.

Wagner, Maria M., executrix: *See—*
Ancker, Fred H.; Ashcraft, Arnold C., Jr.; Wagner, Eric R., deceased; and Wagner, Maria M., executrix, 4,409,342., Cl. 523-202.000.

Wajaroff, Theodor: *See—*
Lang, Gunther; and Wajaroff, Theodor, 4,409,204., Cl. 424-70.000.

Wakabayashi, Hiroharu: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Wakabayashi, Hiroharu, 4,408,831., Cl. 350-269.000.

Wakabayashi, Kiyoshige: *See—*
Tsuji, Yashuhiro; Wakabayashi, Kiyoshige; and Watanabe, Mitsuo, 4,408,880., Cl. 356-338.000.

Wakabayashi, Takao, to Nakanishi Metal Works Co., Ltd. Overhead conveyor. 4,408,539., Cl. 104-89.000.

Wakamatsu, Shigeo: *See—*
Ohba, Hiroshi; and Wakamatsu, Shigeo, 4,408,934., Cl. 408-51.000.

Waldemar Link GmbH & Co.: *See—*
Keller, Arnold, 4,408,360., Cl. 3-1.913.

Waldmann, Hermann: *See—*
Becker, Michael; Fendt, Alfons; Povh, Dusan; Renz, Klaus; Schuch, Gerhard; and Waldmann, Hermann, 4,409,542., Cl. 324-57.00Q.

Wallace, Leonard J., to International Business Machines. High speed on-demand processor for pressure sensitive labels. 4,408,906., Cl. 400-104.000.

Wallach, Steven; Holberger, Kenneth D.; Keating, David L.; and Staudaher, Steven M., to Data General Corporation. Hierarchial memory ring protection system using comparisons of requested and previously accessed addresses. 4,409,655., Cl. 364-200.000.

Wallink, Hermanus A.: *See—*
Brasz, Albert J. H.; and Wallink, Hermanus A., 4,409,164., Cl. 264-50.000.

Wallis, Christopher J.: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,409,213., Cl. 424-244.000.

Walser, Armin: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,409,390., Cl. 548-561.000.

Walsh, Peter, to Duro-Test Corporation. Incandescent electric lamp with etalon type transparent heat mirror. 4,409,512., Cl. 313-113.000.

Walter, Lothar; Ernst, Horst M.; Brandenstein, Manfred; Kiener, Heinz; and Friedrich, Wolfgang, to SKF Industries, Inc. Seal, especially for wheel bearing arrangements for vehicles. 4,408,809., Cl. 308-187.100.

Walther, Mike C.; and Mena-Reyes, Manuel A., to Ready Brush, Inc. Pocket toothbrush. 4,408,920., Cl. 401-176.000.

Wambach, Christa, heiress: *See—*
Petruck, Gerd-Michael; and Wambach, Paul R., deceased, 4,409,407., Cl. 570-202.000.

Wambach, Paul R., deceased: *See—*
Petruck, Gerd-Michael; and Wambach, Paul R., deceased, 4,409,407., Cl. 570-202.000.

Wan, Chung-Chu: *See—*
Nienart, Louis F.; Fehrman, Richard G.; and Wan, Chung-Chu, 4,408,653., Cl. 164-463.000.

Wang, David: *See—*
Wiley, John W.; Brower, Charles H.; and Wang, David, 4,409,280., Cl. 428-203.000.

Wangler, Alfred; and Fiedler, Otto K. Construction elements and joint connections for a deformable structure as well as deformable line, plane and three-dimensional structures. 4,408,430., Cl. 52-585.000.

Ward, Brian L., to Allegheny Ludlum Steel Corporation. Rapidly cast alloy strip having dissimilar portions. 4,409,296., Cl. 428-610.000.

Ward, Clifford: *See—*
Johnson, Charles A.; Ward, Clifford; Moore, Howard F.; and Hettinger, Jr.; William P., 4,409,092., Cl. 208-89.000.

Ward, David E.: *See—*
Spurrell, Roworth A. J.; Camm, Alan J.; and Ward, David E., 4,408,606., Cl. 128-419.0PG.

Ward, John; and Austin, Robert E., to Ametek, Inc. Paint brush bristles. 4,409,372., Cl. 525-425.000.

Ward, Peter, to Plastona (John Waddington) Ltd. Formation of beaded edges on plastics materials articles. 4,409,178., Cl. 264-544.000.

Ward, Robert S., Jr.; and Beckham, Donald R., to Thoratec Laboratories Corporation. Device and method for fabricating multi-layer tubing using a freely suspended mandrel. 4,409,172., Cl. 264-209.200.

Warmuth, Leo, to U.S. Philips Corporation. Circuit arrangement for separating the components of a PAL color television signal. 4,409,612., Cl. 358-24.000.

Warner-Lambert Company: *See—*
Eoga, Anthony B. J., 4,409,118., Cl. 252-99.000.

Watanabe, Hideaki, to Nippon Electric Co., Ltd. Method of skipping all-white blocks by interposing a white signal piece between two adjacent blocks which are not consecutive in an original facsimile signal. 4,409,622., Cl. 358-260.000.

Watanabe, Hisashi; Urino, Yoshiteru; and Aotsu, Shinichi, to Akai Electric Company Limited. Mn-Zn Single crystalline ferrite head and a method of making the same. 4,409,633., Cl. 360-127.000.

Watanabe, Kazuaki: *See—*
Sakakibara, Shiro; Maseki, Shinobu; Watanabe, Kazuaki; and Minemoto, Isamu, 4,408,462., Cl. 60-330.000.

Watanabe, Kazuyoshi: *See—*
Yasuda, Takeshi; and Watanabe, Kazuyoshi, 4,409,599., Cl. 346-76.0PH.

Watanabe, Masatoshi: *See—*
Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, 4,409,506., Cl. 310-166.000.

Watanabe, Mitsuo: *See—*
Tsuji, Yashuhiro; Wakabayashi, Kiyoshige; and Watanabe, Mitsuo, 4,408,880., Cl. 356-338.000.

Watanabe, Sakuji: *See—*
Terui, Nobuhiko; and Watanabe, Sakuji, 4,408,854., Cl. 354-25.000.

Watanabe, Shojiro, to Fuji Photo Film Co., Ltd. Recording materials. 4,408,781., Cl. 282-27.500.

Watanabe, Susumu: *See—*
Noda, Toshiharu; Morita, Kaoru; Kobari, Sadami; Nakagawa, Nobuaki; Watanabe, Susumu; Katsuragi, Shigeo; Ohyama, Kunio; and Taniuchi, Masahiko, 4,409,141., Cl. 260-112.50R.

Watanabe, Tetsuo: *See—*
Asano, Kiyomitsu; and Watanabe, Tetsuo, 4,408,909., Cl. 400-144.200.

Watanabe, Tsutomu: *See—*
Hukuda, Minolu; and Watanabe, Tsutomu, 4,408,861., Cl. 355-3.0TR.

Wavetek: *See—*
Lo, Kwok S., 4,409,564., Cl. 331-16.000.

Wayne State University: *See—*
Simkovitz, Mark D., 4,409,591., Cl. 340-731.000.

Weaver, Charles S.; and Chittenden, Constance T., to SRI International. Blood pressure measurement with Korotkov sound artifact information detection and rejection. 4,408,614., Cl. 128-680.000.

Webb, R. Davis, Jr.: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.

Webb, Roger J.: *See—*
Masters, Jeffrey; Saimbi, Manjit S.; and Webb, Roger J., 4,408,983., Cl. 431-116.000.

Weber, John H., to Novamet Inc. Method of producing Al-Li alloys with improved properties and product. 4,409,038., Cl. 148-12.70A.

Weber, Ralph; Rollinger, Bernt; Hauk, Rolf; Nagl, Michael; and Rinner, Bernhard, to Korf-Stahl AG; and Voest-Alpine AG. Process for directly making liquid pig-iron from coarse iron ore. 4,409,023., Cl. 75-38.000.

Weber, Ronald: *See—*
Mayer, Cornelius; Durrer, Jorg; and Weber, Ronald, 4,409,468., Cl. 235-404.000.

Weidler, Charles H., to AMP Incorporated. Wire-in-slot terminal. 4,408,824., Cl. 339-258.00R.

Weitzel, Edward W., to Milliken Research Corporation. Scrim fabric and product. 4,409,273., Cl. 428-109.000.

Wella Aktiengesellschaft: *See—*
Lang, Gunther; and Wajaroff, Theodor, 4,409,204., Cl. 424-70.000.

Welland, David R., to DBX, Inc. Operational rectifier and bias generator. 4,409,500., Cl. 307-490.000.

Wells, J. Dwayne: *See—*
Butler, L. Dennis; and Wells, J. Dwayne, 4,408,942., Cl. 414-24.500.

Wendt, Alan C.: *See—*
Brooke, Michael E.; and Wendt, Alan C., 4,408,428., Cl. 52-489.000.

Wenger, Lavon G.; and Hauck, Bobbie W., to Wenger Manufacturing. Screw and head assembly for processing whole grains and cellulosic materials. 4,408,725., Cl. 241-260.100.

Wenger Manufacturing: *See—*
Wenger, Lavon G.; and Hauck, Bobbie W., 4,408,725., Cl. 241-260.100.

Wenk, Rolf A., to Wilh, Wenk AG. Bone compression plate. 4,408,601., Cl. 128-92.00D.

Wenzel, Jurgen-Michael; Guderley, Werner; and Hamel, Ernst, to PHB Weserhutte Aktiengesellschaft. Stationary or mobile receiving bunker. 4,408,945., Cl. 414-325.000.

Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Mayer, Cornelius; Durrer, Jorg; and Weber, Ronald, 4,409,468., Cl. 235-404.000.

Werner, Walter M., to AMP Incorporated. Axial crimp connection device. 4,408,926., Cl. 403-310.000.

Wesner, Charles R., to Sperry Corporation. Solenoid driver circuit. 4,409,639., Cl. 361-167.000.

West, John: *See—*
Gossard, David C.; West, John; Stelson, Kim A.; Allison, Blair; Webb, R. Davis, Jr.; and Hardt, David, 4,408,471., Cl. 72-21.000.

Western Electric Co., Inc.: *See—*
Aloisio, Charles J., Jr.; Lenahan, Terrence A.; Smith, James V., Jr.; and Taylor, Carl R., 4,409,263., Cl. 427-163.000.
Brown, Robert J.; and Lever, Clyde J., Jr., 4,408,443., Cl. 57-204.000.
Chapman, James S.; and Tedeschi, Anthony, 4,408,753., Cl. 269-8.000.
Dornberger, Georg C. E.; and Streich, Robert E., 4,409,042., Cl. 148-129.000.
Guelden, Ronald H., 4,408,819., Cl. 339-154.00A.

Westinghouse Electric Corp.: *See—*
Campbell, Ira J., 4,408,382., Cl. 29-426.100.
Couch, Robert D.; and Lenderking, Bruce N., 4,408,495., Cl. 73-655.000.
Godwin, Gurney L., 4,409,507., Cl. 310-205.000.
Kraus, Mark G., 4,409,635., Cl. 361-62.000.
McCabria, Jack L., 4,409,502., Cl. 310-61.000
Misencik, John J.; and Clements, Alden K., 4,409,574., Cl. 335-18.000.
Nottingham, Lawrence D.; and Jugan, Michael R., 4,408,383., Cl. 29-453.000.
Turley, Alfred P., 4,409,483., Cl. 250-332.000.

Westmoreland Plastics Company: *See—*
Crosson, William J., 4,408,696., Cl. 220-3.600.

Westvaco Corporation: *See—*
Chaplin, Christopher R.; Gordon, James E.; and Jeronimidis, Giorgio, 4,409,274., Cl. 428-112.000.

Westveer, Robert C., to General Signal Corporation. Hydraulic control system. 4,408,453., Cl. 60-445.000.

Wetherell, Joseph J.: *See—*
Hyland, Joseph; and Wetherell, Joseph J., 4,408,413., Cl. 46-241.000.

Wheeler, William E.: *See—*
Detterman, Don E.; Danhoff, Ronald S.; and Wheeler, William E., 4,408,780., Cl. 281-15.00R.

White, Alan C.; and Bradley, Gerald, to John Wyeth and Brother Limited. Analgesic method. 4,409,218., Cl. 424-248.550.

White, Lahroy A., Jr. Loudspeaker enclosure. 4,408,678., Cl. 181-199.000.

White, Mark L.: *See—*
Broyles, Howard F.; White, Mark L.; and Dipprey, Neil F., 4,408,595., Cl. 126-424.000.

White, Ronald P., to Sanders Associates, Inc. Transducer. 4,409,681., Cl. 367-166.000.

Whitehead, Norman P.; Boness, Kenneth D.; and Martin, Roger, to United Kingdom Atomic Energy Authority. Information processing. 4,409,617., Cl. 358-147.000.

Wich, Thomas J., to General Motors Corporation. Electromagnetic unit fuel injector. 4,408,718., Cl. 239-88.000.

Wicki, Heinz, to Sandoz Ltd. Disazo compounds having a 5-amino or hydroxy-3-carboxy or methyl-1-substituted phenylphyrazole coupling component radical. 4,409,142., Cl. 260-160.000.

Widehn, Ake: *See—*
Dahle, Orvar; Hoffman, Bertil; Nordvall, Jan; Siby, Sture; and Widehn, Ake, 4,408,496., Cl. 73-728.000.

Wieczorrek, Wolfhart; and Mennicken, Gerhard, to Bayer Aktiengesellschaft. Process for the shatterproof coating of glass surfaces. 4,409,266., Cl. 427-302.000.

Wiemers, Norbert; and Albini, Italo, to Henkel Kommanditgesellschaft auf Aktien. Adhesive compositions based upon thermoplastic polyamides. 4,409,373., Cl. 525-432.000.

Wiener-Avnear, Eliezer, to Hughes Aircraft Company. Twisted nematic liquid light valve with birefringence compensation. 4,408,839., Cl. 350-347.00R.

Wiesmann, Herbert L.: *See—*
Franck, Klaus; Sauer, Werner; and Wiesmann, Herbert L., 4,408,797., Cl. 297-218.000.

Wiezer, Hartmut; and Pfahler, Gerhard, to Hoechst Aktiengesellschaft. Poly-bis-triazinylaminotriazinylamines, their preparation and their use as light stabilizers for plastics, and plastics which have been stabilized with them. 4,409,348., Cl. 524-100.000.

Wiggins Teape Group Limited, The: *See—*
McGibbon, Graeme, 4,409,272., Cl. 428-98.000.

Wiles, Michael F.: *See—*
Daniels, R. Gary; Bennett, Thomas H.; Musa, Fuad H.; and Wiles, Michael F., 4,409,671., Cl. 364-900.000.

Wiley, John W.; Brower, Charles H.; and Wang, David, to Mannington Mills. Decorative surface coverings. 4,409,280., Cl. 428-203.000.

Wilh, Wenk AG: *See—*
Wenk, Rolf A., 4,408,601., Cl. 128-92.00D.

Wilkhahn, Wilkening & Hahne GmbH & Co.: *See—*
Franck, Klaus; Sauer, Werner; and Wiesmann, Herbert L., 4,408,797., Cl. 297-218.000.

Wilkie, Arnold E., to Monsanto Company. Twisted singles apparel yarn. 4,408,445., Cl. 57-246.000.

Wilkie, Arnold E., to Monsanto Company. Singles carpet yarn. 4,408,446., Cl. 57-246.000.

Willem, Michel; and Gamet, Lucien, to Societe Anonyme dite: Ceraver. Binding retaining an electrical conductor in a circumferential groove around a rigid insulator. 4,409,432., Cl. 174-172.000.

Willem, Michel, to Societe Anonyme dite: Ceraver. Binding for retaining an electrical conductor in a top groove on a rigid insulator which also has a circumferential groove. 4,409,433., Cl. 174-172.000.

Willett, Harold A., to Cameco Industries, Inc. Interconnected, adjustable height topper and gathering arm system for sugar cane harvesters, etc. 4,408,441., Cl. 56-14.300.

William Prym-Werke KG: *See—*
von Agris, Rudolf; Kaiser, Gunter; and Nysten, Bernhard, 4,409,052., Cl. 156-227.000.

Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., to United States of America, Navy. Underwater excavator. 4,408,405., Cl. 37-62.000.

Williams, James H., to Borden, Inc. Wood composites of low formaldehyde emission. 4,409,293., Cl. 428-524.000.

Williams, James W.: *See—*
Berti, John C.; and Williams, James W., 4,409,687., Cl. 455-7.000.

Williams, Roger F., to Mobile Companies, Inc. Cryogenic cleaning process. 4,409,034., Cl. 134-4.000.

Williams, Rollie B.: *See—*
Nadkarni, Ramachandra A.; and Williams, Rollie B., 4,408,999., Cl. 44-1.0SR.

Williamson, Herman L., to Hi-Shear Corporation. Torque-limited threaded locking fastener, and method for setting the same. 4,408,936., Cl. 411-3.000.

Wilson, Brown L.; and Carle, Joseph T., to Oil Dynamics, Inc. Tandem connected submersible oil well pump motors. 4,409,504., Cl. 310-87.000.

Wimmer, Anton: *See—*
Schaper, Siegfried; Wimmer, Anton; and Dommes, Werner, 4,408,380., Cl. 29-156.50A.

Winchip, Galen J., to Iowa State University Research Foundation, Inc. Cantilevered sliding table. 4,408,509., Cl. 83-435.100.

Wiredal, Harry A. I., to Sandvik Aktiebolag. Means for drilling. 4,408,669., Cl. 175-258.000.

Wise, Richard M., to General Tire & Rubber Company, The. Adhesion of rubber to glass fibers. 4,409,290., Cl. 428-378.000.

Wise, Richard M., to General Tire & Rubber Company, The. Adhesion of rubber to glass fibers. 4,409,343., Cl. 523-206.000.

Wissmann, Michael, to Robert Bosch GmbH. Fuel injection system. 4,408,587., Cl. 123-454.000.

Withers, James C.: *See—*
Upperman, Gary V.; and Withers, James C., 4,409,083., Cl. 204-245.000.

Witty, Brian H., to Mantis Excavators, Ltd. Mechanical digger. 4,408,949., Cl. 414-694.000.

Witzel, Frank; DiNolfo, Mario A.; Rodney, Burton; and Mackay, Donald A. M., to Nabisco Brands, Inc. Breath freshener composition and method. 4,409,202., Cl. 424-49.000.

Witzel, Homer D. Axial flow rotary separator. 4,408,618., Cl. 130-23.000.

Wobbermin, Hubertus: *See—*
Krause, Helmfried; Wobbermin, Hubertus; and Geigle, Edgar, deceased, 4,409,185., Cl. 422-113.000.

Wolf, Erich; Lembke, Andreas; and Deininger, Rolf, to Chimicasa GmbH. Protection of microorganisms against bacteriophage virus attacks. 4,409,245., Cl. 426-9.000.

Wolff, Erland, to Jude Engineering, Inc. Stuffing box with outer flexible tube to allow shaft gyratory movements. 4,408,769., Cl. 277-105.000.

Wolff, Kurt, to Steinhaus GmbH. Sieve deck for sifting machines. 4,409,099., Cl. 209-399.000.

Wolff, Martin J.; and Falvo, Joseph S., to Dart Industries Inc. Corn buttering and salting apparatus. 4,408,919., Cl. 401-12.000.

Wons, Hubert; and Sitzler, Hans-Dietrich, to G. Siempelkamp GmbH & Co. Apparatus for measuring platen-press bend in platen press. 4,408,520., Cl. 100-93.00P.

Wood, Derek A., to Shell Internationale Research Maatschappij B.V. Preparation of cyanobenzyl cyclopropane carboxylates. 4,409,150., Cl. 260-465.00D.

Woodard, Kenneth E., Jr.: *See—*
Kadija, Igor V.; and Woodard, Kenneth E., Jr., 4,409,085., Cl. 204-257.000.

Woodward, Thomas R., to Burroughs Corporation. Programmable multiplexer. 4,409,683., Cl. 370-112.000.

Worf, Douglas L. Heat exchange system. 4,408,596., Cl. 126-428.000.

Worm, Manfred: *See—*
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 4,409,145., Cl. 260-239.0BD.

Wutherich, Hermann A., to United States of America, Navy. Multidirectional translator mechanism. 4,408,830., Cl. 350-247.000.

Wynnyckyj, John R.; Rhodes, Edward; and Chambers, Allan K. Furnace wall ash monitoring system. 4,408,568., Cl. 122-379.000.

Xerox Corporation: *See—*
Goffe, Wiliam L., 4,409,603., Cl. 346-155.000.
Hardenbrook, James M., 4,408,864., Cl. 355-3.0TE.
Kingsley, William, 4,409,624., Cl. 358-285.000.
Rumennik, Vladimir, 4,409,607., Cl. 357-23.000.
Sprague, Robert A.; and Scifres, Donald R., 4,409,479., Cl. 250-237.00G.
Swigert, J. Kirk; and Pochan, Darlyn F., 4,409,598., Cl. 346-74.200.

Yabuhara, Hideo; and Kudo, Ichiro, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,408,584., Cl. 123-440.000.
Yagihara, Morio; Hirano, Tsumoru; Mihayashi, Keiji; and Ozawa, Takashi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,409,320., Cl. 430-381.000.
Yama, Frank M.: *See—*
Hofer, Alan; and Yama, Frank M., 4,409,588., Cl. 340-384.00R.
Yamada, Naoki: *See—*
Wada, Kenichi; and Yamada, Naoki, 4,409,654., Cl. 364-200.000.
Yamada, Yasuyuki: *See—*
Ogawa, Hiroshi; Kasuga, Akira; Tamai, Yasuo; and Yamada, Yasuyuki, 4,409,291., Cl. 428-425.900.
Yamada, Yoshiro; Hatsuoka, Nobuyasu; and Ashida, Shinzo, to Kabushiki Kaisha Kobe Seiko Sho. Spring steel for vehicles. 4,409,026., Cl. 75-124.000.
Yamagami, Tamotsu: *See—*
Yamauchi, Hiroyuki; and Yamagami, Tamotsu, 4,409,526., Cl. 318-254.000.
Yamagata, Shinji: *See—*
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,444., Cl. 200-144.00R.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, 4,409,445., Cl. 200-144.00R.
Yamagishi, Seiichi: *See—*
Toriumi, Shiro; Ishii, Kenjiro; and Yamagishi, Seiichi, 4,408,732., Cl. 242-192.000.
Yamaguchi, Kenzo; Ichisaka, Teruo; and Ikegami, Tadao, to Chlorine Engineers Corp. Ltd. Electrolytic cell for ion exchange membrane method. 4,409,084., Cl. 204-257.000.
Yamaguchi, Kunihiro: *See—*
Moteki, Tsutomu; Aoki, Kazuo; Yamaguchi, Kunihiro; and Yoshizaki, Michio, 4,409,345., Cl. 524-13.000.
Yamaji, Kazunori: *See—*
Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori, 4,409,613., Cl. 358-51.000.
Nakamura, Takashi; Morioka, Yoshihiro; Yamaji, Kazunori; Nakamura, Takashi; Morioka, Yoshihiro; and Yamaji, Kazunori, 4,409,613., Cl. 358-51.000.
Yamakawa, Norio: *See—*
Ooki, Norihiro; Takahashi, Noriyoshi; Wachi, Yasuyuki; Takikawa, Yoshio; Yamakawa, Norio; and Motegi, Shoji, 4,409,508., Cl. 310-239.000.
Yamamoto, Hideyuki; Nishikawa, Waichi; and Nagasaka, Moritoshi, to Osaka Transformer Co., Ltd. Pulse arc welding method and device in which pulse current and background current have a constant current characteristic. 4,409,465., Cl. 219-137.0PS.
Yamamoto, Shu: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Wakabayashi, Hiroharu, 4,408,831., Cl. 350-269.000.
Yamamoto, Taizo; and Ishida, Tetsuhisa, to Nippon Elanco Kabushiki Kaisha. Apparatus for filling viscous substances into hard gelatin capsules. 4,408,641., Cl. 141-82.000.
Yamamoto, Tetsuji: *See—*
Kobayashi, Makoto; Yamamoto, Tetsuji; and Jimbo, Yoshihiro, 4,409,623., Cl. 358-261.000.
Yamanaka, Hideaki: *See—*
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,214., Cl. 424-246.000.
Takaya, Takao; Takasugi, Hisashi; Masugi, Takashi; Yamanaka, Hideaki; and Kawabata, Kohji, 4,409,215., Cl. 424-246.000.
Yamane, Yasuhide, to Teikoku Chuck Co., Ltd. Device for securing dies. 4,408,522., Cl. 100-295.000.
Yamaoka, Kishihiro. Continuous kneader. 4,408,887., Cl. 366-75.000.
Yamasaki, Masafumi, to Olympus Optical Company Ltd. Automatic exposure controller for camera of TTL direct photometry type. 4,408,852., Cl. 354-24.000.
Yamashita, Seizi: *See—*
Ito, Motoya; Fujimoto, Noboru; Takahashi, Noriyoshi; Watanabe, Masatoshi; and Yamashita, Seizi, 4,409,506., Cl. 310-166.000.
Yamauchi, Hiroyuki; and Yamagami, Tamotsu, to Sony Corporation. Brushless DC motor. 4,409,526., Cl. 318-254.000.
Yamazaki, Masaru: *See—*
Miyashita, Kiyoshi; Kasuga, Muneo; Shimizu, Akira; Ozeki, Fumitaka; Tsuda, Hiroshi; Kimura, Katsuhiko; Hattori, Nobuoto; Amemiya, Norio; and Yamazaki, Masaru, 4,408,756., Cl. 271-288.000.
Yamazaki, Shunpei. Photoelectric conversion semiconductor and manufacturing method thereof. 4,409,134., Cl. 252-501.100.
Yamazaki, Tamotsu: *See—*
Fujimura, Yasuo; Tanaka, Sadao; Matsunaga, Isao; Shiraki, Yasuyuki; Ikeda, Yugo; Yamazaki, Tamotsu; Ohba, Yasuhiro; Hata, Shun-ichi; Shindo, Minoru; and Sakai, Kazushige, 4,409,234., Cl. 424-273.00N.
Yanagisawa, Kiyoshi: *See—*
Uchikune, Mamoru; Yanagisawa, Kiyoshi; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,408,752., Cl. 269-8.000.
Yano, Tadashi; and Hoshino, Noriyuki, to Mitsubishi Jukogyo Kabushiki Kaisha. Automatic printing plate exchange system. 4,408,530., Cl. 101-415.100.
Yarm, Jay M., to Pitney Bowes Inc. Sheet separating device. 4,408,757., Cl. 271-311.000.
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, to Sharp Kabushiki Kaisha. Optical bar code reader. 4,409,469., Cl. 235-463.000.
Yasuda, Takeshi; and Watanabe, Kazuyoshi, to Casio Computer Co., Ltd. Printing control device for thermal printer. 4,409,599., Cl. 346-76.0PH.
Yasuda, Yasushi: *See—*
Enomoto, Hiromu; Mitono, Yoshiharu; Yasuda, Yasushi; Imaizumi, Taketo; and Ohta, Hiroshi, 4,409,495., Cl. 307-290.000.
Yasumura, Masayuki, to Sony Corporation. Pincushion distortion correction apparatus. 4,409,523., Cl. 315-371.000.
Yates, Jan B.: *See—*
Williams, Harry S.; Yates, Jan B.; Reidy, John J.; Faccini, Ernest; Hill, Terry E.; and Shafley, William K., 4,408,405., Cl. 37-62.000.
Yatsunami, Kenrow: *See—*
Yasuda, Syoichi; Okamoto, Takaaki; Yatsunami, Kenrow; Terashima, Shigeo; Horii, Masahiro; Iwamoto, Yoshihiko; and Amasaki, Kiyotsugu, 4,409,469., Cl. 235-463.000.
Ying, Shao-Yao: *See—*
Ling, Nicholas C.; Guillemin, Roger C. L.; Ying, Shao-Yao; and Esch, Frederick S., 4,409,139., Cl. 260-112.00R.
Yoda, Kuniichi: *See—*
Ohkawa, Takehisa; and Yoda, Kuniichi, 4,409,300., Cl. 428-695.000.
Yoder, Max N., to United States of America, Navy. Recessed interdigitated integrated capacitor. 4,409,608., Cl. 357-51.000.
Yogev, Amnon. Heat storage pond and power plant using same. 4,408,459., Cl. 60-641.800.
Yokono, Hitoshi: *See—*
Hira, Yasuo; Tsuzuku, Susumu; Iida, Makoto; Gotoh, Masao; Yokono, Hitoshi; Kimura, Yoshikazu; and Iijima, Kazumi, 4,409,341., Cl. 521-162.000.
Yokoyama, Hideo; Shimbashi, Ichiro; Sakurai, Koichi; and Matsuo, Munetsugu, to Nippon Steel Corporation. Dual-purpose plant for producing cold rolled steel sheet and hot-dip galvanized steel sheet. 4,408,561., Cl. 118-72.000.
Yonkers, Edward, to Data Packaging Corporation. Ribbon cartridge with shield. 4,408,912., Cl. 400-208.000.
Yoon, Heeyoung; and Jackson, Robert G., to Conoco Inc. Ether cold starter in alcohol fuel treatment and distribution apparatus and method. 4,408,572., Cl. 123-3.000.
Yoon, Heeyoung: *See—*
Jackson, Robert G.; and Yoon, Heeyoung, 4,408,571., Cl. 123-3.000.
Yoshida, Junichi, to Casio Computer Co., Ltd. Round-off apparatus for data processors. 4,409,668., Cl. 364-745.000.
Yoshikawa, Tsukasa; and Kitamura, Masuo, to Tokan Kogyo Co., Ltd. Opening means having cutting guide. 4,408,697., Cl. 220-279.000.
Yoshikawa, Yukio: *See—*
Suzuki, Akira; Yoshikawa, Yukio; and Kaneko, Katumi, 4,408,856., Cl. 354-234.000.
Yoshimoto, Teruo: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,409,025., Cl. 420-584.000.
Yoshinaga, Toru; Igashira, Toshihiko; Mori, Kouichi; Kawai, Hisasi; and Morino, Seiji, to Nippon Soken, Inc. Ignition system for internal combustion engines. 4,408,592., Cl. 123-625.000.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,409,444., Cl. 200-144.00R.
Yoshiyasu, Hajimu; Hisatsune, Fumiyuki; Yamagata, Shinji; and Terachi, Junichi, to Mitsubishi Denki Kabushiki Kaisha. Circuit breaker. 4,409,445., Cl. 200-144.00R.
Yoshizaki, Michio: *See—*
Moteki, Tsutomu; Aoki, Kazuo; Yamaguchi, Kunihiro; and Yoshizaki, Michio, 4,409,345., Cl. 524-13.000.
Ystebo, Stuart. Storage bin floor structure. 4,408,426., Cl. 52-245.000.
Yu, Cheng-Der, to Syntex (U.S.A.) Inc. Propylene glycol diester solutions of PGE-type compounds. 4,409,239., Cl. 424-305.000.
Yu, Kenneth K.: *See—*
Bohr, Mark T.; Yu, Kenneth K.; Chwang, Ronald J. C.; and Berglund, C. Neil, 4,409,259., Cl. 427-38.000.
Yui, Tomoyuki: *See—*
Sugano, Junichiro; Yui, Tomoyuki; Minamikawa, Yoshitugu; Fujimoto, Tsuneo; and Kubota, Minoru, 4,409,197., Cl. 423-415.00P.
Yurita, Chikara: *See—*
Kitamura, Yoichi; Hotta, Hisashi; and Yurita, Chikara, 4,409,456., Cl. 219-64.000.
Zabler, Erich: *See—*
Hauler, Peter; Heintz, Frieder; and Zabler, Erich, 4,408,589., Cl. 123-494.000.
Zalucha, Denis J.; Sexsmith, Frederick H.; and Howard, Dennis D., to Lord Corporation. Thermally-responsive polymeric materials. 4,409,383., Cl. 528-499.000.
Zapisek, John M.; and Giulekas, Gus, to Standard Microsystems Corporation. High-speed merged plane logic function array. 4,409,499., Cl. 307-468.000.
Zehnpfennig, Theodore F., to Visidyne, Inc. Spatial frequency filter. 4,409,475., Cl. 250-224.000.
Zeller-Pendrey, Jeanine I.; Skinner, Mark C.; and Morgan, David A., to Minnesota Mining and Manufacturing Company. Resistively heatable photothermographic element with strippable layer. 4,409,316., Cl. 430-263.000.
Zhuravlev, Vadim F.; and Belov, Alexei G., to Tsentralny Nauchno-Issledovatelsky Institut Kozhevenno-Obuvnoi Promyshlennosti. Method and apparatus for the determination of moisture content of fibrous and granular materials. 4,408,482., Cl. 73-75.000.

Zieg, Steven A., to Mansion Industries, Inc. Variable pitch railing and system. 4,408,749., Cl. 256-67.000.
Ziegenhorn, Joachim; Bartl, Knut; Roder, Albert; Lang, Gunter; Mollering, Hans; and Nagele, Ulrich, to Boehringer Mannheim GmbH. Method and reagent for the determination of glycerol. 4,409,328., Cl. 435-25.000.
Ziegenhorn, Joachim: *See—*
Bartl, Knut; Lill, Helmut; Roeschlau, Peter; and Ziegenhorn, Joachim, 4,409,327., Cl. 435-13.000.
Zielasek, Adelbert: *See—*
Bartholdsten, Dieter; Koop, Hermann; Schrode, Erhard; and Zielasek, Adelbert, 4,409,169., Cl. 264-107.000.
Zilch, Gregory W., to Donn Incorporated. Framing system for demountable walls or the like. 4,408,427., Cl. 52-481.000.
Zinky, William; and Rosenberg, Larry, to Computervision Corporation. Projection aligner with specific means for bending mirror. 4,408,874., Cl. 355-52.000.
Zolavvar, Ruperto B.: *See—*
Ciesiel, Allen R.; LaSpesa, Richard E.; and Zolavvar, Ruperto B., 4,408,914., Cl. 400-208.000.
Zondler, Rolf: *See—*
Beckerle, Heinz; Huster, Lothar; and Zondler, Rolf, 4,409,352., Cl. 524-405.000.
Gerstle, Volker; Mauz, Gerhard; and Zondler, Rolf, 4,409,306., Cl. 430-28.000.
Zultzke, Walter: *See—*
Heimbach, Klaus-Jurgen; and Zultzke, Walter, 4,408,563., Cl. 118-692.000.
Zwicker, Roger D., to Victor Equipment Company. Utility torch having head mixer. 4,409,002., Cl. 48-180.00F.
Zylka, Kenneth R.: *See—*
Crouch, Bill W.; Sauer, William F.; and Zylka, Kenneth R., 4,408,437., Cl. 53-431.000.
501 Compagnie Internationale pour l'Informatique Cii-Honeywell Bull (Societe Anonyme): *See—*
Deprez, Michel; Fromion, Andre; Hardouin, Claude; and Vilas Boas, Jean C., 4,408,835., Cl. 350-117.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF OCTOBER, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bartholomew, Ralph L.: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 31,411., Cl. 252-501.100.

Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., to General Electric Company. Radiation curable inks. Re. 31,411., Cl. 252-501.100.

Bowden, William L.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., Re. 31,414., Cl. 429-101.000.

Crist, Norman B. Universal recessed wall cabinet. Re. 31,409., Cl. 312-242.000.

Czech, Joachim; and Sieghart, Hans D., to Czech, Joachim. Dispenser for paste-like products with a manually actuatable piston. Re. 31,408., Cl. 222-341.000.

Dey, Arabinda N.; Miller, John S.; and Bowden, William L., to Duracell Inc. Electrolyte salts for non aqueous electrochemical cells. Re. 31,414., Cl. 429-101.000.

Duracell Inc.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., Re. 31,414., Cl. 429-101.000.

General Electric Company: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 31,411., Cl. 252-501.100.

Gould Inc.: *See—*
Jaggard, Arthur M., Re. 31,413., Cl. 429-27.000.

Gray, Thomas J., to Olin Corporation. Raney alloy coated cathode for chlor-alkali cells. Re. 31,410., Cl. 204-290.00R.

Hatano, Yoshihiro; and Yamamoto, Kenji, to Yamamoto Kagaku Gosei Kabushiki Kaisha. Pressure-and-heat-sensitive copying paper. Re. 31,412., Cl. 428-537.000.

Jaggard, Arthur M., to Gould Inc. Gas depolarized electrochemical cells and method of assembly. Re. 31,413., Cl. 429-27.000.

Lucas, Gary M.: *See—*
Bolon, Donald A.; Lucas, Gary M.; and Bartholomew, Ralph L., Re. 31,411., Cl. 252-501.100.

Miller, John S.: *See—*
Dey, Arabinda N.; Miller, John S.; and Bowden, William L., Re. 31,414., Cl. 429-101.000.

Olin Corporation: *See—*
Gray, Thomas J., Re. 31,410., Cl. 204-290.00R.

Price, David B.; and Shine, Wathena L., to Scovill Inc. Convenience food toaster operable at different wattage levels. Re. 31,415., Cl. 219-494.000.

Scovill Inc.: *See—*
Price, David B.; and Shine, Wathena L., Re. 31,415., Cl. 219-494.000.

Shine, Wathena L.: *See—*
Price, David B.; and Shine, Wathena L., Re. 31,415., Cl. 219-494.000.

Sieghart, Hans D.: *See—*
Czech, Joachim; and Sieghart, Hans D., Re. 31,408., Cl. 222-341.000.

Yamamoto Kagaku Gosei Kabushiki Kaisha: *See—*
Hatano, Yoshihiro; and Yamamoto, Kenji, Re. 31,412., Cl. 428-537.000.

Yamamoto, Kenji: *See—*
Hatano, Yoshihiro; and Yamamoto, Kenji, Re. 31,412., Cl. 428-537.000.

LIST OF REEXAM PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

I.B.P. Industrie Buitoni Perugina S.p.A.: *See—*
Mangano, Santi F., B1 4,287,216., Cl. 426-96.000.

Mangano, Santi F., to I.B.P. Industrie Buitoni Perugina S.p.A. Chocolate confection containing carbonated hard candy crystals dispersed therein. B1 4,287,216., 10-11-83, Cl. 426-96.000.

Nady, John. Wireless transmission system. B1 4,215,431., 10-11-83, Cl. 455-43.000.

Nippon Electric Co., Ltd.: *See—*
Ueda, Kazuyoshi, B1 4,266,236., Cl. 357-34.000.

Ueda, Kazuyoshi, to Nippon Electric Co., Ltd. Transistor having emitter resistors for stabilization at high power operation. B1 4,266,236., 10-11-83, Cl. 357-34.000.

LIST OF DESIGN PATENTEES

Advertising Displays Company: *See—*
Zaro, Marvin, 270,881., Cl. D6-181.000.

Aggarwal, Raj K.: *See—*
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 270,947., Cl. D24-57.000.

Allen, Philip R.: *See—*
Porter, Terence F.; and Allen, Philip R., 270,937., Cl. D23-97.000.

Allgeyer, David F.; Johnson, Philip P.; and Gilliom, John W., to UMC Industries, Inc. Disposable pan for heating and serving food. 270,887., 10-11-83, Cl. D7-359.000.

Allware Agencies Limited: *See—*
McCain, Lawrence G., 270,942., Cl. D23-158.000.

American Home Products Corporation: *See—*
Cassini, Oleg L., 270,888., Cl. D7-137.000.
Cassini, Oleg L., 270,889., Cl. D7-137.000.

American Optical Corporation: *See—*
Maryyanek, Richard D.; and Zdrok, Joseph Z., 270,957., Cl. D29-7.000.

Analtech, Incorporated: *See—*
Felton, Herman R., 270,902., Cl. D10-81.000.

APM Corporation: *See—*
Morse, Milton, 270,910., Cl. D14-66.000.

Applied Power Inc.: *See—*
Sessody, Donald W., 270,912., Cl. D15-7.000.

Astergard, Bror O. Game board. 270,922., 10-11-83, Cl. D21-31.000.

Baillod, Frederic. Storage container for small articles. 270,896., 10-11-83, Cl. D9-349.000.

Bebb, Hubert: *See—*
Denton, William S., Jr.; Shell, Donald P.; and Bebb, Hubert, 270,949., Cl. D25-6.000.

Bliss & Laughlin Industries Incorporated: *See—*
Hawes, Daniel D.; and Massey, Edward W., 270,963., Cl. D34-40.000.

Bovenizer, Patrick J.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 270,917., Cl. D17-9.000.

Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., to Raytheon Company. Tray for microwave steaming utensil. 270,893., 10-11-83, Cl. D7-409.000.

Branom, Donald F. Game target. 270,920., 10-11-83, Cl. D21-5.000.

Brauer, Lisa. Simulative pacifier. 270,946., 10-11-83, Cl. D24-45.000.

Brossier, Jean-Michel. Backpacker's tent. 270,928., 10-11-83, Cl. D21-253.000.

Brown Group Recreational Products, Inc.: *See—*
Carlson, Harold W., 270,927., Cl. D21-244.000.

Carlson, Harold W., to Brown Group Recreational Products, Inc. Child's outdoor play gym. 270,927., 10-11-83, Cl. D21-244.000.

Casablanca Fan Company, Inc.: *See—*
Dennis, Warren E., 270,943., Cl. D23-163.000.

Cassini, Oleg L., to American Home Products Corporation. Fork or similar article. 270,888., 10-11-83, Cl. D7-137.000.

Cassini, Oleg L., to American Home Products Corporation. Fork or similar article. 270,889., 10-11-83, Cl. D7-137.000.

Chan, Kai C.: *See—*
Lee, Man H.; Lee, Moon W.; Lin, Ping N.; and Chan, Kai C., 270,930., Cl. D22-19.000.

Cheplo, Nandor J. Camera grip. 270,916., 10-11-83, Cl. D16-47.000.

Comunity Tectonics, Inc.: *See—*
Denton, William S., Jr.; Shell, Donald P.; and Bebb, Hubert, 270,949., Cl. D25-6.000.

Cryar, Bobby G. Tree stand. 270,951., 10-11-83, Cl. D25-62.000.

Daiwa Seiko, Inc.: *See—*
Iinuma, Kanji; and Kameda, Yasuhisa, 270,933., Cl. D22-25.000.
Iinuma, Kanji, 270,934., Cl. D22-25.000.
Yamamoto, Shigeru; and Nakamura, Hideo, 270,931., Cl. D22-23.000.
Yamamoto, Shigeru, 270,932., Cl. D22-24.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 270,872., Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 270,873., Cl. D3-71.000.

Dennis, Warren E., to Casablanca Fan Company, Inc. Cover plate for ceiling fans. 270,943., 10-11-83, Cl. D23-163.000.

Denton, William S., Jr.; Shell, Donald P.; and Bebb, Hubert, to Comunity Tectonics, Inc. Building structure. 270,949., 10-11-83, Cl. D25-6.000.

Eli Lilly and Company: *See—*
Hostetler, Van B., 270,944., Cl. D24-08.000.

Endt, Evert, to Thomson-CSF. Keyboard. 270,911., 10-11-83, Cl. D14-100.000.

Esposito, Christopher. Ridge construction for a greenhouse. 270,940., 10-11-83, Cl. D23-153.000.

Everson, D. Randall. Combined toilet tank and aquarium. 270,936., 10-11-83, Cl. D23-49.000.

Falloon, Robert: *See—*
Williamson, John; and Falloon, Robert, 270,918., Cl. D17-20.000.

Felton, Herman R., to Analtech, Incorporated. Chromatography chamber. 270,902., 10-11-83, Cl. D10-81.000.

Fohl, Timothy, to GTE Products Corporation. Dual socket flash adapter for camera. 270,915., 10-11-83, Cl. D16-42.000.

Foster Airdata Systems, Inc.: *See—*
Foster, George B.; Gibbs, Paul D.; and Smyser, Michael A., 270,901., Cl. D10-74.000.

Foster, George B.; Gibbs, Paul D.; and Smyser, Michael A., to Foster Airdata Systems, Inc. Face plate and controls for an aeronautical radio navigation device. 270,901., 10-11-83, Cl. D10-74.000.

Gibbs, Paul D.: *See—*
Foster, George B.; Gibbs, Paul D.; and Smyser, Michael A., 270,901., Cl. D10-74.000.

Gilliom, John W.: *See—*
Allgeyer, David F.; Johnson, Philip P.; and Gilliom, John W., 270,887., Cl. D7-359.000.

Giroflex-Entwicklungs AG: *See—*
Ochsner, Koni, 270,874., Cl. D6-31.000.

Gonzales, Omar; and Kobel, George B. Folding cooking grill. 270,892., 10-11-83, Cl. D7-336.000.

GTE Products Corporation: *See—*
Fohl, Timothy, 270,915., Cl. D16-42.000.

Haggard, Merry: *See—*
Haggard, Robert E., 270,894., Cl. D8-01.000.

Haggard, Robert E., to Haggard, Merry. Tree guard. 270,894., 10-11-83, Cl. D8-01.000.

Hahn, Heinz W.: *See—*
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 270,947., Cl. D24-57.000.

Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 270,924., Cl. D21-122.000.

Hannon, William B. Nail clipper with clipping emptying chamber. 270,955., 10-11-83, Cl. D28-60.000.

Hartman Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 270,872., Cl. D3-71.000.
Katz, Ira R.; and Davis, Robert P., 270,873., Cl. D3-71.000.

Hass, William H.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 270,917., Cl. D17-9.000.

Hawes, Daniel D.; and Massey, Edward W., to Bliss & Laughlin Industries Incorporated. Storage basket for food products. 270,963., 10-11-83, Cl. D34-40.000.

Hawkins, Larry S.; LaFollette, William A., Jr.; and Maza, Dale T., to Rubbermaid Commercial Products Inc. Mop bucket. 270,961., 10-11-83, Cl. D32-53.000.

Herbst, Walter B.: *See—*
Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., 270,893., Cl. D7-409.000.

Hickey, Larry G., to Tropitone Furniture Co., Inc. Chair. 270,877., 10-11-83, Cl. D6-56.000.

Holloway, William R. Shingle stripper. 270,895., 10-11-83, Cl. D8-89.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ikeda, Yutaka; and Pollard, Truman, 270,876., Cl. D6-48.000.

Hostetler, Van B., to Eli Lilly and Company. Cannula male adaptor plug extractor. 270,944., 10-11-83, Cl. D24-08.000.

Huang, Roger. Combined clock and thermometer desk set. 270,899., 10-11-83, Cl. D10-2.000.

Hultberg, Ake A. Corner junction element. 270,883., 10-11-83, Cl. D6-246.000.

Ichikawa, Kuniharu: *See—*
Mizobata, Yoshio; and Ichikawa, Kuniharu, 270,954., Cl. D28-35.000.

Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 270,909., 10-11-83, Cl. D14-30.000.

Iinuma, Kanji; and Kameda, Yasuhisa, to Daiwa Seiko, Inc. Fishing reel. 270,933., 10-11-83, Cl. D22-25.000.

Iinuma, Kanji, to Daiwa Seiko, Inc. Fishing reel. 270,934., 10-11-83, Cl. D22-25.000.

Ikeda, Yutaka; and Pollard, Truman, to Honda Giken Kogyo Kabushiki Kaisha. Automobile seat. 270,876., 10-11-83, Cl. D6-48.000.

Interdica S.A.: *See—*
Kanoui, Joseph, 270,900., Cl. D10-23.000.

J. C. Hallman Manufacturing Co. Limited: *See—*
Martell, Detlef, 270,962., Cl. D34-23.000.

Jacobson, Jon O. Wall mountable bicycle support. 270,879., 10-11-83, Cl. D6-114.000.

James River-Dixie/Northern, Inc.: *See—*
Nemura, Dennis J.; and Wathen, John M., Jr., 270,898., Cl. D9-429.000.
Wathen, John M., Jr., 270,886., Cl. D7-28.000.

Janome Sewing Machine Co. Ltd.: *See—*
Kosugi, Ziro, 270,913., Cl. D15-69.000.

Jensen, Richard W.: *See—*
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., 270,917., Cl. D17-9.000.

Johnson, Philip P.: *See—*
Allgeyer, David F.; Johnson, Philip P.; and Gilliom, John W., 270,887., Cl. D7-359.000.

Johnson, William H., to Shenandoah Manufacturing Co. Inc. Solid fuel burning stove unit for use as fireplace insert or free-standing heater. 270,938., 10-11-83, Cl. D23-97.000.

Kabushiki Kaisha Aiky Group: *See—*
Watanabe, Senzo, 270,925., Cl. D21-191.000.

Kameda, Yasuhisa: *See—*
Iinuma, Kanji; and Kameda, Yasuhisa, 270,933., Cl. D22-25.000.

Kanoui, Joseph, to Interdica S.A. Alarm clock. 270,900., 10-11-83, Cl. D10-23.000.

Katz, Ira R.; and Davis, Robert P., to Hartman Luggage Company. Luggage. 270,872., 10-11-83, Cl. D3-71.000.

Katz, Ira R.; and Davis, Robert P., to Hartman Luggage Company. Luggage. 270,873., 10-11-83, Cl. D3-71.000.

Klawitter, Ronald R., to Handi-Pac, Inc. Toy razor. 270,924., 10-11-83, Cl. D21-122.000.

Kobel, George B.: *See—*
Gonzales, Omar; and Kobel, George B., 270,892., Cl. D7-336.000.

Kohn, Irving. Utensil holder for use by arthritic patients or the like. 270,945., 10-11-83, Cl. D24-34.000.

Kosugi, Ziro, to Janome Sewing Machine Co. Ltd. Sewing machine. 270,913., 10-11-83, Cl. D15-69.000.

Kronberg, Richard E. Ladies spats. 270,869., 10-11-83, Cl. D2-267.000.

LaFollette, William A., Jr.: *See—*
Hawkins, Larry S.; LaFollette, William A., Jr.; and Maza, Dale T., 270,961., Cl. D32-53.000.

Langtry, Jerry. Combination knife and pipe tamper. 270,953., 10-11-83, Cl. D27-51.000.

Lee, Man H.; Lee, Moon W.; Lin, Ping N.; and Chan, Kai C. Electronic insect killer. 270,930., 10-11-83, Cl. D22-19.000.

Lee, Moon W.: *See—*
Lee, Man H.; Lee, Moon W.; Lin, Ping N.; and Chan, Kai C., 270,930., Cl. D22-19.000.

Lin, Chiang-Lee. Electric desk fan. 270,941., 10-11-83, Cl. D23-155.000.

Lin, Ping N.: *See—*
Lee, Man H.; Lee, Moon W.; Lin, Ping N.; and Chan, Kai C., 270,930., Cl. D22-19.000.

Logsdon, Duane D. Expansion coupling for plastic pipe. 270,935., 10-11-83, Cl. D23-43.000.

Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 270,890., 10-11-83, Cl. D7-137.000.

Martell, Detlef, to J. C. Hallman Manufacturing Co. Limited. Combined creeper and tool caddy. 270,962., 10-11-83, Cl. D34-23.000.

Martinez, Carlos M., to Monturas y Fornituras, S.A. Spray. 270,956., 10-11-83, Cl. D28-91.100.

Maryyanek, Richard D.; and Zdrok, Joseph Z., to American Optical Corporation. Respirator. 270,957., 10-11-83, Cl. D29-7.000.

Mason & Porter Limited: *See—*
Porter, Terence F.; and Allen, Philip R., 270,937., Cl. D23-97.000.

Massey, Edward W.: *See—*
Hawes, Daniel D.; and Massey, Edward W., 270,963., Cl. D34-40.000.

Matsushita Electric Works, Ltd.: *See—*
Mizobata, Yoshio; and Ichikawa, Kuniharu, 270,954., Cl. D28-35.000.
Maza, Dale T.: *See—*
Hawkins, Larry S.; LaFollette, William A., Jr.; and Maza, Dale T., 270,961., Cl. D32-53.000.
McCain, Lawrence G., to Allware Agencies Limited. Combined ceiling fan and light. 270,942., 10-11-83, Cl. D23-158.000.
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., to Sybron Corporation. Unitary, disposable filter unit. 270,947., 10-11-83, Cl. D24-57.000.
Migirian, George. Drum. 270,919., 10-11-83, Cl. D17-22.000.
Mizobata, Yoshio; and Ichikawa, Kuniharu, to Matsushita Electric Works, Ltd. Hair setting apparatus. 270,954., 10-11-83, Cl. D28-35.000.
Monturas y Fornituras, S.A.: *See—*
Martinez, Carlos M., 270,956., Cl. D28-91.100.
Morgan, David. Game board. 270,921., 10-11-83, Cl. D21-15.000.
Morse, Milton, to APM Corporation. Telephone cover device. 270,910., 10-11-83, Cl. D14-66.000.
Muller, Frohmut: *See—*
Vogel, Sonke; and Muller, Frohmut, 270,903., Cl. D10-91.000.
Muse Music Company Limited: *See—*
Williamson, John; and Falloon, Robert, 270,918., Cl. D17-20.000.
Nader, Philip L., to Wang Laboratories, Inc. Cartridge for protective film overlay of a recording head in a xerographic printer. 270,914., 10-11-83, Cl. D16-32.000.
Nakamura, Hideo: *See—*
Yamamoto, Shigeru; and Nakamura, Hideo, 270,931., Cl. D22-23.000.
Nemura, Dennis J.; and Wathen, John M., Jr., to James River-Dixie/-Northern, Inc. Food container. 270,898., 10-11-83, Cl. D9-429.000.
Nespor, Ronald R. Tow truck vehicle body. 270,905., 10-11-83, Cl. D12-14.000.
Newton, Sharon: *See—*
Walls, Diann D.; and Newton, Sharon D., 270,950., Cl. D25-19.000.
Newton, Sharon D.: *See—*
Walls, Diann D.; and Newton, Sharon D., 270,950., Cl. D25-19.000.
Ochsner, Koni, to Giroflex-Entwicklungs AG. Chair or similar article. 270,874., 10-11-83, Cl. D6-31.000.
Oneida Ltd.: *See—*
Manderfield, Ellen B., 270,890., Cl. D7-137.000.
Orr, Jack. Visual aid unit for trailer hitch alignment. 270,906., 10-11-83, Cl. D12-162.000.
Oy Mk-Tuote AB: *See—*
Taivalvuo, Auvo, 270,885., Cl. D6-256.000.
Tavela, Heikki, 270,884., Cl. D6-247.000.
Parise, Carl; and Parise, Michael, to Parise and Sons, Inc. Wet/dry vacuum cleaner. 270,960., 10-11-83, Cl. D32-21.000.
Parise, Michael: *See—*
Parise, Carl; and Parise, Michael, 270,960., Cl. D32-21.000.
Parise and Sons, Inc.: *See—*
Parise, Carl; and Parise, Michael, 270,960., Cl. D32-21.000.
Peterson, Charles A. Combined lighter holder and pipe smoker's tool. 270,952., 10-11-83, Cl. D27-51.000.
Peterson, Richard H.; Bovenizer, Patrick J.; Jensen, Richard W.; and Hass, William H., to Peterson, Richard H. Compact pedal board for electronically-operated musical instruments. 270,917., 10-11-83, Cl. D17-9.000.
Pioneer Kabushiki Kaisha: *See—*
Iijima, Takekazu, 270,909., Cl. D14-30.000.
Poland, Alpheus B. Holder for rod shaped articles. 270,880., 10-11-83, Cl. D6-125.000.
Pollard, Truman: *See—*
Ikeda, Yutaka; and Pollard, Truman, 270,876., Cl. D6-48.000.
Porter, Terence F.; and Allen, Philip R., to Mason & Porter Limited. Stove. 270,937., 10-11-83, Cl. D23-97.000.
Raheb, Bill J. Deck of playing cards with segmented numbers. 270,923., 10-11-83, Cl. D21-45.000.
Raytheon Company: *See—*
Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., 270,893., Cl. D7-409.000.
Revlon, Inc.: *See—*
Scalice, John J., 270,897., Cl. D9-395.000.
Rigney, James J. Horseshoe. 270,958., 10-11-83, Cl. D30-35.000.
Rigney, James J. Horseshoe. 270,959., 10-11-83, Cl. D30-35.000.
Rubbermaid Commercial Products Inc.: *See—*
Hawkins, Larry S.; LaFollette, William A., Jr.; and Maza, Dale T., 270,961., Cl. D32-53.000.
S-Scor Corporation: *See—*
Say, Sam L., 270,948., Cl. D24-59.000.
Sabatella, Ralph. Collapsible toothbrush holder. 270,878., 10-11-83, Cl. D6-94.000.
Salisbury, Thomas E.: *See—*
Bowen, Robert F.; Herbst, Walter B.; and Salisbury, Thomas E., 270,893., Cl. D7-409.000.
Say, Sam L., to S-Scor Corporation. Combined collector and holder for a patient resusciation suction pump. 270,948., 10-11-83, Cl. D24-59.000.
Scalice, John J., to Revlon, Inc. Bottle. 270,897., 10-11-83, Cl. D9-395.000.
Sessody, Donald W., to Applied Power Inc. Hydraulic pump. 270,912., 10-11-83, Cl. D15-7.000.
Shasteen Industries, Inc.: *See—*
Shasteen, James F.; and Shasteen, Philip W., 270,929., Cl. D22-13.000.
Shasteen, James F.; and Shasteen, Philip W., to Shasteen Industries, Inc. Handgun case. 270,929., 10-11-83, Cl. D22-13.000.
Shasteen, Philip W.: *See—*
Shasteen, James F.; and Shasteen, Philip W., 270,929., Cl. D22-13.000.
Shell, Donald P.: *See—*
Denton, William S., Jr.; Shell, Donald P.; and Bebb, Hubert, 270,949., Cl. D25-6.000.
Shenandoah Manufacturing Co. Inc.: *See—*
Johnson, William H., 270,938., Cl. D23-97.000.
Simpson, John F. Swim fin. 270,926., 10-11-83, Cl. D21-239.000.
Smyser, Michael A.: *See—*
Foster, George B.; Gibbs, Paul D.; and Smyser, Michael A., 270,901., Cl. D10-74.000.
Sony Corporation: *See—*
Sumita, Kaoru, 270,908., Cl. D14-6.000.
Spina, Louis V. Mounting fixture for a mannequin head. 270,904., 10-11-83, Cl. D11-164.000.
Spurr, Chris T. Electric scaler and peeler. 270,891., 10-11-83, Cl. D7-139.000.
Stehlik, Richard C. Log holder. 270,939., 10-11-83, Cl. D23-138.500.
Sumita, Kaoru, to Sony Corporation. Tape player. 270,908., 10-11-83, Cl. D14-6.000.
Sybron Corporation: *See—*
Mehra, Ravinder C.; Hahn, Heinz W.; and Aggarwal, Raj K., 270,947., Cl. D24-57.000.
Taivalvuo, Auvo, to Oy Mk-Tuote AB. Clothes hanger. 270,885., 10-11-83, Cl. D6-256.000.
Tavela, Heikki, to Oy Mk-Tuote AB. Clothes hanger. 270,884., 10-11-83, Cl. D6-247.000.
Thompson, Robert V. Ottoman. 270,875., 10-11-83, Cl. D6-36.000.
Thomson-CSF: *See—*
Endt, Evert, 270,911., Cl. D14-100.000.
Tilles, Harvey G. Athletic shoe. 270,870., 10-11-83, Cl. D2-309.000.
Tropitone Furniture Co., Inc.: *See—*
Hickey, Larry G., 270,877., Cl. D6-56.000.
UMC Industries, Inc.: *See—*
Allgeyer, David F.; Johnson, Philip P.; and Gilliom, John W., 270,887., Cl. D7-359.000.
Vogel & Halke: *See—*
Vogel, Sonke; and Muller, Frohmut, 270,903., Cl. D10-91.000.
Vogel, Sonke; and Muller, Frohmut, to Vogel & Halke. Infant scale. 270,903., 10-11-83, Cl. D10-91.000.
Walls, Diann D.; and Newton, Sharon D., to Newton, Sharon. Discoteque building structure. 270,950., 10-11-83, Cl. D25-19.000.
Wang Laboratories, Inc.: *See—*
Nader, Philip L., 270,914., Cl. D16-32.000.
Watanabe, Senzo, to Kabushiki Kaisha Aiky Group. Physical exerciser. 270,925., 10-11-83, Cl. D21-191.000.
Wathen, John M., Jr., to James River-Dixie/Northern, Inc. Dish. 270,886., 10-11-83, Cl. D7-28.000.
Wathen, John M., Jr.: *See—*
Nemura, Dennis J.; and Wathen, John M., Jr., 270,898., Cl. D9-429.000.
Williamson, John; and Falloon, Robert, to Muse Music Company Limited. Capo for a stringed musical instrument. 270,918., 10-11-83, Cl. D17-20.000.
Wilson, Arlie J. Picture frame. 270,882., 10-11-83, Cl. D6-234.000.
Wright, Wendy M. Knitting stand. 270,871., 10-11-83, Cl. D3-23.000.
Yamamoto, Shigeru; and Nakamura, Hideo, to Daiwa Seiko, Inc. Fishing rod handle component. 270,931., 10-11-83, Cl. D22-23.000.
Yamamoto, Shigeru, to Daiwa Seiko, Inc. Line guide for fishing rod or the like. 270,932., 10-11-83, Cl. D22-24.000.
Younes, David T. Self-elevating line testing vessel for offshore oil lines or the like. 270,907., 10-11-83, Cl. D12-316.000.
Zaro, Marvin, to Advertising Displays Company. Diplay unit. 270,881., 10-11-83, Cl. D6-181.000.
Zdrok, Joseph Z.: *See—*
Maryyanek, Richard D.; and Zdrok, Joseph Z., 270,957., Cl. D29-7.000.

LIST OF PLANT PATENTEES

Jackson & Perkins Company: *See—*
Warriner, William A., 5,118, Cl. 10.000.
Warriner, William A., 5,119, Cl. 15.000.
Warriner, William A., 5,120, Cl. 20.000.
Moore, Ralph S., to Sequoia Nursery. Rose plant. 5,117, 10-11-83, Cl. 7.000.
Sequoia Nursery: *See—*
Moore, Ralph S., 5,117, Cl. 7.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant Jacmat. 5,118, 10-11-83, Cl. 10.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant 71-1172. 5,119, 10-11-83, Cl. 15.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant 72-12551. 5,120, 10-11-83, Cl. 20.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 11, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

66 4,408,355
87 4,408,356
114 4,408,357
161 A 4,408,358

CLASS 3

1.912 4,408,359
1.913 4,408,360

CLASS 4

331 4,408,361

CLASS 8

151 4,408,362
477 4,408,995
490 4,408,996
532 4,408,997

CLASS 10

1 B 4,408,363

CLASS 13

159 4,408,487

CLASS 15

21 D 4,408,364
112 4,408,365
180 4,408,367
243 4,408,368
321 4,408,366

CLASS 16

102 4,408,369

CLASS 19

105 4,408,370
114 4,408,371

CLASS 23

293 A 4,408,998

CLASS 24

217 R 4,408,372
230 A 4,408,373
4,408,374
230 R 4,408,375

CLASS 28

245 4,408,376
250 4,408,377
289 4,408,378

CLASS 29

156.5 A 4,408,380
159.1 4,408,379
237 4,408,381
426.1 4,408,382
453 4,408,383
571 4,408,384
576 B 4,408,385
576 E 4,408,386
4,408,387
578 4,408,388
715 4,408,389
822 4,408,390
861 4,408,391

CLASS 30

34.1 4,408,392
123.4 4,408,393
157 4,408,394
179 4,408,395
294 4,408,396

CLASS 33

174 T 4,408,397
180 R 4,408,398
203.18 4,408,399

CLASS 34

4 4,408,400

CLASS 36

3 B 4,408,401
43 4,408,402
115 4,408,403

CLASS 37

58 4,408,404
62 4,408,405

CLASS 40

19 4,408,406
607 4,408,407
617 4,408,408

CLASS 42

50 4,408,409
90 4,408,410

CLASS 43

17.2 4,408,411

CLASS 44

1 SR 4,408,999
70 4,409,000
71 4,409,001

CLASS 46

89 4,408,412
241 4,408,413

CLASS 47

1 R 4,408,414
40.5 4,408,415

CLASS 48

180 F 4,409,002

CLASS 49

168 4,408,416

CLASS 51

163.2 4,408,417
288 4,408,418
295 4,409,003
4,409,004
429 4,408,419

CLASS 52

1 4,408,420
20 4,408,421
72 4,408,422
90 4,408,423
115 4,408,424
171 4,408,425
245 4,408,426
481 4,408,427
489 4,408,428
514 4,408,429
585 4,408,430
690 4,408,431
718 4,408,432
738 4,408,433
745 4,408,434

CLASS 53

225 4,408,435
247 4,408,436
431 4,408,437
438 4,408,438
461 4,408,439
527 4,408,440

CLASS 55

1 4,409,005
28 4,409,006
112 4,409,007
261 4,409,008
302 4,409,009

CLASS 56

14.3 4,408,441

CLASS 57

22 4,408,442
204 4,408,443
237 4,408,444
246 4,408,445
4,408,446
263 4,408,447
336 4,408,448
340 4,408,449

CLASS 59

88 4,408,450

CLASS 60

322 4,408,451
330 4,408,462
398 4,408,452
445 4,408,453
500 4,408,454
505 4,408,455
518 4,408,456
547.1 4,408,457
641.8 4,408,459
660 4,408,458
678 4,408,460
737 4,408,461

CLASS 62

3 4,408,463
82 4,408,465
208 4,408,466
296 4,408,467
514 R 4,408,464
4,408,469

CLASS 65

26 4,409,010
27 4,409,011
29 4,409,012
163 4,409,013
170 4,409,014

CLASS 71

28 4,409,015
59 4,409,016
94 4,409,017
96 4,409,018

CLASS 72

8 4,408,470
21 4,408,471
71 4,408,472
108 4,408,473
205 4,408,474
221 4,408,475
229 4,408,476
478 4,408,477

CLASS 73

24 4,408,478
35 4,408,479
40.7 4,408,480
73 4,408,481
75 4,408,482
115 4,408,483
149 4,408,484
155 4,408,485
4,408,486
170 A 4,408,488
432 R 4,408,489
497 4,408,490
626 4,408,491
631 4,408,492
643 4,408,493
646 4,408,494
655 4,408,495
728 4,408,496
861.17 4,408,497
861.79 4,408,498

CLASS 74

527 4,408,499
572 4,408,500
688 4,408,501
789 4,408,502
798 4,408,503

CLASS 75

0.5 AA 4,409,019
0.5 B 4,409,020
10 R 4,409,021
36 4,409,022
38 4,409,023
60 4,409,024
124 4,409,026
128 W 4,409,027
130 R 4,409,028

CLASS 81

59.1 4,408,504
98 4,408,505

CLASS 82

20 4,408,506
36 A 4,408,507
476 4,408,468

CLASS 83

397 4,408,508
435.1 4,408,509
869 4,408,510

CLASS 84

1.01 4,408,511
1.03 4,408,512
1.15 4,408,513
1.24 4,408,514
267 4,408,515
275 4,408,516
345 4,408,517

CLASS 91

31 4,408,518

CLASS 99

486 4,408,519

CLASS 100

93 P 4,408,520
229 R 4,408,521
295 4,408,522

CLASS 101

56 4,408,523
110 4,408,524
183 4,408,525
216 4,408,526
350 4,408,527
364 4,408,528
415.1 4,408,529
4,408,530
4,408,531
456 4,408,532

CLASS 102

211 4,408,533
288 4,408,534
305 4,408,535
379 4,408,536
395 4,408,537
522 4,408,538

CLASS 104

89 4,408,539
172 B 4,408,540

CLASS 105

199 R 4,408,541
406 R 4,408,542

CLASS 106

20 4,409,039
4,409,040
97 4,409,030

CLASS 108

24 4,408,543
53.3 4,408,544

CLASS 109

50 4,408,545
75 4,408,546

CLASS 110

234 4,408,547
347 4,408,548

CLASS 111

2 4,408,549
4,408,550
85 4,408,551

CLASS 112

119 4,408,552
158 A 4,408,553
302 4,408,554

CLASS 114

150 4,408,555
219 4,408,556

CLASS 116

206 4,408,557

CLASS 118

59 4,408,558
60 4,408,559
69 4,408,560
72 4,408,561
669 4,408,562
692 4,408,563

CLASS 119

14.08 4,408,564
52 R 4,408,565

CLASS 122

4 D 4,408,566
14 4,408,567
379 4,408,568
448 R 4,408,569
510 4,408,570

CLASS 123

3 4,408,571
4,408,572
25 P 4,408,573
26 4,408,574
41.35 4,408,575
52 MB 4,408,576
55 AA 4,408,577
56 R 4,408,578
73 V 4,408,579
90.16 4,408,580
339 4,408,581
415 4,408,582
4,408,583
440 4,408,584
4,408,585
446 4,408,586
454 4,408,587
489 4,408,588
494 4,408,589
502 4,408,590
4,408,591
625 4,408,592

CLASS 126

85 R 4,408,593
121 4,408,594
424 4,408,595
428 4,408,596

CLASS 127

19 4,409,031
37 4,409,032
46.2 4,409,033

CLASS 128

1 R 4,408,597
4 4,408,598
24 R 4,408,599
80 R 4,408,600
92 D 4,408,601
303.1 4,408,602
325 4,408,603
402 4,408,605
419 PG 4,408,606
419 R 4,408,607
421 4,408,608
4,408,609
642 4,408,610
660 4,408,611
4,408,612
670 4,408,613
680 4,408,614
696 4,408,615
731 4,408,616
735 4,408,617
785 4,408,604

CLASS 130

23 4,408,618

CLASS 131

108 4,408,619
236 4,408,620
282 4,408,621

CLASS 132

73 4,408,622
73.6 4,408,623

CLASS 134

4 4,409,034
6 4,409,035
133 4,408,624
144 4,408,625

CLASS 136

244 4,409,422
255 4,409,423
258 4,409,424

CLASS 137

185 4,408,626
242 4,408,627
312 4,408,628
329.04 4,408,629
340 4,408,630
380 4,408,631
516.29 4,408,632
596.2 4,408,633
630.12 4,408,634

CLASS 138

30 4,408,635
94 4,408,636

CLASS 139

425 A 4,408,637
4,408,638

CLASS 140

71.5 4,408,639

CLASS 141

1 4,408,640
82 4,408,641

CLASS 144

286 A 4,408,642

CLASS 148

2 4,409,036
6.14 R 4,409,037
12.7 A 4,409,038
31.55 4,409,041
129 4,409,042
403 4,409,043

CLASS 149

2 4,409,044

CLASS 150

55 4,408,644

CLASS 152

172 4,408,645
179 4,408,646
330 RF 4,408,647
353 C 4,408,648
367 4,408,649

CLASS 156

69 4,409,045
73.6 4,409,046
92 4,409,057
138 4,409,047
155 4,409,048
164 4,409,049
172 4,409,050
212 4,409,051
227 4,409,052
287 4,409,053
293 4,409,054
307.5 4,409,055
334 4,409,056
361 4,409,058
397 4,409,059
497 4,409,060
502 4,409,061
518 4,409,062
542 4,409,063

CLASS 159

47.1 4,409,064

CLASS 160

121 R 4,408,650

CLASS 162

9 4,409,065
88 4,409,066

CLASS 164

316 4,408,651
459 4,408,652
463 4,408,653

CLASS 165

1 4,408,656
4,408,657
2 4,408,658
10 4,408,654
4,408,659
21 4,408,660
104.27 4,408,655
164 4,408,661

CLASS 166

124 4,408,662
259 4,408,663
263 4,408,664
266 4,408,665

CLASS 172

19 4,408,666
722 4,408,667

CLASS 173

139 4,408,668

CLASS 174

15 S	4,409,425
21 R	4,409,426
36	4,409,427
43	4,409,428
	4,409,429
92	4,409,430
103	4,409,431
172	4,409,432
	4,409,433

CLASS 175

258	4,408,669
298	4,408,670
377	4,408,671

CLASS 178

22.19	4,409,434

CLASS 179

2 DP	4,409,437
18 HB	4,409,438
84 C	4,409,439
90 BD	4,409,440
111 R	4,409,441
156 R	4,409,442

CLASS 180

89.14	4,408,672
141	4,408,673
227	4,408,674
296	4,408,675

CLASS 181

113	4,408,676
121	4,408,677
199	4,408,678
243	4,408,679

CLASS 182

68	4,408,680

CLASS 188

73.38	4,408,681
202	4,408,682

CLASS 192

11	4,408,683
53 G	4,408,684
85 A	4,408,685

CLASS 198

433	4,408,686
491	4,408,687
500	4,408,688

CLASS 200

83 N	4,409,443
144 R	4,409,444
	4,409,445
147 R	4,409,446
148 A	4,409,447
153 LA	4,409,448
153 SC	4,409,449
159 B	4,409,450

CLASS 201

1	4,409,067

CLASS 202

85	4,409,068

CLASS 204

1 T	4,409,069
4	4,409,070
15	4,409,071
57	4,409,072
67	4,409,073
98	4,409,074
129.3	4,409,075
130	4,409,076
159.15	4,409,077
188	4,409,078
192 C	4,409,079
196	4,409,080
197	4,409,081
213	4,409,082
245	4,409,083
257	4,409,084
	4,409,085
269	4,409,086
290 R	Re.31,410
298	4,409,087
402	4,409,088

CLASS 206

45.17	4,408,689
222	4,408,690
382	4,408,691
438	4,408,692
461	4,408,693

CLASS 208

8 LE	4,409,089
11 LE	4,409,090
	4,409,091
89	4,409,092
108	4,409,093
121	4,409,094
134	4,409,095

CLASS 209

10	4,409,096
11	4,409,097
172.5	4,409,098
399	4,409,099

CLASS 210

219	4,409,100
266	4,409,101
603	4,409,102
638	4,409,103
673	4,409,104
679	4,409,105
732	4,409,106
758	4,409,107

CLASS 215

276	4,408,694

CLASS 219

10.49 R	4,409,451
10.55 A	4,409,453
10.55 E	4,409,452
	4,409,454
10.81	4,409,455
64	4,409,456
69 D	4,409,458
69 M	4,409,457
86.24	4,409,459
93	4,409,460
111	4,409,461
121 ED	4,409,462
121 LG	4,409,463
136	4,409,464
137 PS	4,409,465
137 R	4,409,466
494	Re.31,415

CLASS 220

3.3	4,408,695
3.6	4,408,696
279	4,408,697
306	4,408,698

CLASS 222

149	4,408,699
153	4,408,700
	4,408,701
212	4,408,702
284	4,408,703
312	4,408,704
341	Re.31,408

CLASS 224

39	4,408,705
192	4,408,706
239	4,408,707

CLASS 228

139	4,408,708
183	4,408,709

CLASS 229

15	4,408,710

CLASS 235

58 CF	4,409,467
404	4,409,468
463	4,409,469
472	4,409,470
492	4,409,471

CLASS 236

11	4,408,711
13	4,408,712
49	4,408,713

CLASS 237

2 B	4,408,715
12.3 C	4,408,714
55	4,408,716

CLASS 239

18	4,408,717
88	4,408,718
102	4,408,719
149	4,408,720
417	4,408,721
453	4,408,722

CLASS 241

19	4,408,723
46.17	4,408,724
260.1	4,408,725

CLASS 242

7.09	4,408,726
56 R	4,408,727
84.2 A	4,408,728
84.5 A	4,408,729
96	4,408,730
131	4,408,731
192	4,408,732
199	4,408,733

CLASS 244

3.13	4,408,734
3.22	4,408,735
100 R	4,408,736
110 D	4,408,737
122 R	4,408,738
137 R	4,408,739
158 R	4,408,740

CLASS 248

68 CB	4,408,741
74 R	4,408,742
285	4,408,743
636	4,408,744

CLASS 250

201	4,409,472
206	4,409,473
207	4,409,474
224	4,409,475
227	4,409,476
	4,409,477
236	4,409,478
237 G	4,409,479
252.1	4,409,480
270	4,409,481
282	4,409,482
332	4,409,483
363 S	4,409,484
374	4,409,485
396 ML	4,409,486
398	4,409,487
432 PD	4,409,488

CLASS 251

357	4,408,745

CLASS 252

8.5 C	4,409,108
8.55 D	4,409,110
8.8	4,409,109
30	4,409,111
33.4	4,409,112
42	4,409,113
75	4,409,114
79.1	4,409,115
91	4,409,116
99	4,409,117
	4,409,118
156	4,409,119
389 A	4,409,121
501.1	Re.31,411
	4,409,134
514	4,409,135
540	4,409,136
632	4,409,137

CLASS 254

344	4,408,746
382	4,408,747

CLASS 256

11	4,408,748
67	4,408,749

CLASS 260

112 R	4,409,138
	4,409,139
112.5 R	4,409,140
	4,409,141
160	4,409,142
205	4,409,143
236.5	4,409,144
239 BD	4,409,145
239.3 R	4,409,146
245.2 T	4,409,147
409	4,409,148
429 R	4,409,149
465 D	4,409,150
502.5 E	4,409,151
543 P	4,409,152
946	4,409,153

CLASS 264

0.5	4,409,157
1.5	4,409,154
3 R	4,409,155
4.33	4,409,156
8	4,409,158
39	4,409,159
40.1	4,409,160
	4,409,161
41	4,409,162
45.5	4,409,163
50	4,409,164
53	4,409,165
72	4,409,166
102	4,409,167
104	4,409,168
107	4,409,169
113	4,409,170
120	4,409,171
209.2	4,409,172
210.2	4,409,173
313	4,409,174
517	4,409,175
527	4,409,176
531	4,409,177
544	4,409,178

CLASS 266

216	4,408,750

CLASS 267

120	4,408,751

CLASS 269

8	4,408,752
	4,408,753

CLASS 270

52	4,408,754
	4,408,755

CLASS 271

288	4,408,756
311	4,408,757

CLASS 272

85	4,408,758
131	4,408,759

CLASS 273

73 D	4,408,760
85 R	4,408,761
121 A	4,408,762
286	4,408,763
341	4,408,764

CLASS 277

3	4,408,765
	4,408,766
27	4,408,767
84	4,408,768
105	4,408,769
140	4,408,770
206 R	4,408,771

CLASS 280

1	4,408,772
47.26	4,408,774
95 R	4,408,775
261	4,408,776
461 A	4,408,777
509	4,408,778
607	4,408,779
611	4,408,773

CLASS 281

15 R	4,408,780

CLASS 282

27.5	4,408,781

CLASS 283

70	4,408,782

CLASS 285

3	4,408,783
24	4,408,784
49	4,408,785
256	4,408,786
305	4,408,787
419	4,408,788

CLASS 290

1 R	4,409,489
4 D	4,409,490

CLASS 292

268	4,408,789

CLASS 293

122	4,408,790

CLASS 294

1 R	4,408,791

CLASS 296

1 S	4,408,792
181	4,408,793
198	4,408,794
218	4,408,795

CLASS 297

85	4,408,796
218	4,408,797
285	4,408,800
326	4,408,798
361	4,408,799
433	4,408,801
452	4,408,802

CLASS 301

5.7	4,408,803
37 R	4,408,804

CLASS 303

6 A	4,408,805

CLASS 307

77	4,409,491
108	4,409,492
132 R	4,409,493
238.3	4,409,494
290	4,409,495
296 R	4,409,496
360	4,409,497
454	4,409,498
468	4,409,499
490	4,409,500
594	4,409,501

CLASS 308

6 R	4,408,806
187	4,408,807
	4,408,808
187.1	4,408,809
226	4,408,810

CLASS 310

61	4,409,502
75 D	4,409,503
87	4,409,504
90	4,409,505
166	4,409,506
205	4,409,507
239	4,409,508
317	4,409,509
334	4,409,510

CLASS 312

37	4,408,811
242	Re.31,409
256	4,408,812

CLASS 313

34	4,409,511
113	4,409,512
348	4,409,513
449	4,409,514
477 R	4,409,515
579	4,409,516
631	4,409,517

CLASS 315

3.5	4,409,518
	4,409,519
39	4,409,520
57	4,409,521
308	4,409,522
371	4,409,523

CLASS 318

138	4,409,524
139	4,409,525
254	4,409,526
341	4,409,527
345 D	4,409,528
631	4,409,531
653	4,409,529
685	4,409,530
749	4,409,532
807	4,409,533
811	4,409,534
	4,409,535

CLASS 320

2	4,409,536
7	4,409,537
11	4,409,538

CLASS 322

28	4,409,539

CLASS 323

369	4,409,540

CLASS 324

51	4,409,541
57 Q	4,409,542
57 R	4,409,543
	4,409,544
107	4,409,545
158 P	4,409,546
	4,409,547
168	4,409,548
262	4,409,549
300	4,409,550
349	4,409,551
415	4,409,552
445	4,409,553

CLASS 328

14	4,409,554
	4,409,555

CLASS 330

75	4,409,556
277	4,409,557
288	4,409,558
295	4,409,559
296	4,409,560
300	4,409,561

CLASS 331

1 A	4,409,562
11	4,409,563
16	4,409,564
40	4,409,565

CLASS 333

26	4,409,566
151	4,409,567
156	4,409,568
177	4,409,569
187	4,409,570
196	4,409,571

CLASS 335

8	4,409,572
16	4,409,573
18	4,409,574
160	4,409,575
170	4,409,576
202	4,409,577
210	4,409,578
216	4,409,579
243	4,409,580
284	4,409,581

CLASS 337

231	4,409,582

CLASS 339

38	4,408,813
59 M	4,408,814
95 R	4,408,815
143 R	4,408,816
147 C	4,408,818
147 R	4,408,817
154 A	4,408,819
156 R	4,408,820
177 R	4,408,821
	4,408,822
208	4,408,823
258 R	4,408,824

CLASS 340

22	4,409,583
	4,409,584
52 R	4,409,585
58	4,409,586
347 DD	4,409,587
384 R	4,409,588
396	4,409,589
533	4,409,590
731	4,409,591
825.5	4,409,592
	4,409,593

CLASS 343

399	4,409,594
771	4,409,595

CLASS 346

1.1	4,409,596
35	4,409,597
74.2	4,409,598
76 PH	4,409,599
	4,409,600
140 R	4,409,601
	4,409,602
155	4,409,603
159	4,409,604

CLASS 350

1.7	4,408,825
6.8	4,408,826
96.10	4,408,827
96.23	4,408,828
96.29	4,408,829
117	4,408,835
247	4,408,830
269	4,408,831
310	4,408,832
	4,408,833
	4,408,834
321	4,408,836
334	4,408,837
336	4,408,838
347 E	4,408,839
347 R	4,408,840
349	4,408,841
425	4,408,842
560	

CLASS 351

153	4,408,843
158	4,408,844
160 H	4,408,845
203	4,408,846
211	4,408,847

CLASS 353

11	4,408,848
103	4,408,849
122	4,408,850

CLASS 354

1	4,408,851
24	4,408,852
25	4,408,853
	4,408,854
	4,408,855
234	4,408,856
	4,408,857
	4,408,858
274	4,408,859
293	4,408,860

CLASS 355

3 CH	4,408,865

3 DD	4,408,862
3 TE	4,408,864
3 TR	4,408,861
	4,408,863
	4,408,866
8	4,408,867
14 R	4,408,868
	4,408,869
	4,408,871
14 SH	4,408,870
28	4,408,872
36	4,408,873
52	4,408,874
53	4,408,875
54	4,408,876

CLASS 356

38	4,408,877
43	4,408,878
155	4,408,879
338	4,408,880
347	4,408,881
350	4,408,882
355	4,408,883
	4,408,884
401	4,408,885

CLASS 357

2	4,409,605
13	4,409,606
23	4,409,607
34	B1 4,266,236
51	4,409,608
55	4,409,609

CLASS 358

12	4,409,610
22	4,409,611
24	4,409,612
51	4,409,613
76	4,409,614
111	4,409,615
	4,409,616
147	4,409,617
183	4,409,618
224	4,409,619
228	4,409,620
260	4,409,621
	4,409,622
261	4,409,623
285	4,409,624
288	4,409,625
338	4,409,626

CLASS 360

38.1	4,409,627
73	4,409,628
99	4,409,629
	4,409,630
114	4,409,631
123	4,409,632
127	4,409,633
137	4,409,634

CLASS 361

62	4,409,635
87	4,409,636
119	4,409,637
152	4,409,638
167	4,409,639
197	4,409,640
386	4,409,641
433	4,409,642

CLASS 362

157	4,409,643
200	4,409,644
	4,409,645
319	4,409,646

CLASS 363

27	4,409,647
54	4,409,648

CLASS 364

144	4,409,649
193	4,409,650
200	4,409,651
	4,409,652
	4,409,653
	4,409,654
	4,409,655
	4,409,656
401	4,409,657
424	4,409,658
475	4,409,659
510	4,409,660
516	4,409,661
557	4,409,662
561	4,409,663
565	4,409,664
707	4,409,665
710	4,409,666
732	4,409,667
745	4,409,668
900	4,409,669
	4,409,670
	4,409,671

CLASS 365

149	4,409,672
180	4,409,673
190	4,409,674
201	4,409,675
	4,409,676
206	4,409,677
	4,409,678
227	4,409,679
233	4,409,680

CLASS 366

13	4,409,886
75	4,408,887
83	4,409,888
113	4,408,889
155	4,408,890
265	4,408,891
337	4,408,892
339	4,408,893

CLASS 367

166	4,409,681

CLASS 368

93	4,408,894
118	4,408,895
185	4,408,896
200	4,408,897
220	4,408,898
273	4,408,899
295	4,408,900
321	4,408,901

CLASS 369

3	4,409,682

CLASS 370

112	4,409,683

CLASS 374

27	4,408,902
121	4,408,903
137	4,408,904
157	4,408,905

CLASS 375

116	4,409,684

CLASS 376

302	4,409,179

CLASS 377

20	4,409,685

CLASS 381

15	4,409,436
71	4,409,435

CLASS 382

8	4,409,686

CLASS 383

70	4,408,643

CLASS 400

104	4,408,906
120	4,408,908
124	4,408,907
144.2	4,408,909
207	4,408,910
208	4,408,911
	4,408,912
	4,408,913
	4,408,914
290	4,408,915
613.2	4,408,916
637.2	4,408,917
697.1	4,408,918

CLASS 401

12	4,408,919
176	4,408,920
198	4,408,921

CLASS 403

12	4,408,922
20	4,408,923
23	4,408,924
27	4,408,925
310	4,408,926
320	4,408,927
405	4,408,928

CLASS 405

166	4,408,929
209	4,408,930
213	4,408,931
227	4,408,932

CLASS 408

8	4,408,933
51	4,408,934
206	4,408,935

CLASS 411

3	4,408,936
42	4,408,937
71	4,408,938
112	4,408,939
258	4,408,940
378	4,408,941

CLASS 414

24.5	4,408,942
138	4,408,943
216	4,408,944
325	4,408,945
424	4,408,946
526	4,408,947
545	4,408,948
694	4,408,949
749	4,408,950

CLASS 415

36	4,408,951
53 T	4,408,952
62	4,408,953

CLASS 416

9	4,408,954
119	4,408,955
	4,408,956
237	4,408,957
	4,408,958
241 B	4,408,959

CLASS 417

54	4,408,960
189	4,408,961
269	4,408,962
283	4,408,963
310	4,408,964
331	4,408,965
356	4,408,966
571	4,408,967

CLASS 418

15	4,408,968
93	4,408,969

CLASS 419

10	4,409,029

CLASS 420

455	4,409,180
502	4,409,181
584	4,409,025

CLASS 422

61	4,409,182
68	4,409,183
99	4,409,184
113	4,409,185
131	4,409,186
135	4,409,187
303	4,409,188

CLASS 423

54	4,409,189
150	4,409,190
220	4,409,191
242	4,409,192
290	4,409,193
321 R	4,409,194
342	4,409,195
359	4,409,196
415 P	4,409,197
462	4,409,198
573 G	4,409,199

CLASS 424

32	4,409,201
49	4,409,202
61	4,409,203
70	4,409,204
78	4,409,205
81	4,409,206
114	4,409,207
177	4,409,208
	4,409,209
	4,409,210
203	4,409,211
244	4,409,212
	4,409,213
246	4,409,214
	4,409,215
	4,409,216
	4,409,217
248.55	4,409,218
250	4,409,219
	4,409,220
	4,409,221
251	4,409,222
	4,409,223
	4,409,224
256	4,409,225
	4,409,226
263	4,409,227
267	4,409,228
	4,409,229
	4,409,230
272	4,409,231
	4,409,232
273 N	4,409,234
273 R	4,409,233
	4,409,235
275	4,409,236
283	4,409,237
304	4,409,238
305	4,409,239
319	4,409,240
324	4,409,241
326	4,409,242
330	4,409,243

CLASS 425

8	4,408,971
	4,408,972
72 R	4,408,970
139	4,408,973
194	4,408,974
231	4,408,975
301	4,408,976
382.2	4,408,977
383	4,408,979
456	4,408,978
501	4,408,980
589	4,408,981

CLASS 426

5	4,409,244
9	4,409,245
16	4,409,246
41	4,409,247
46	4,409,248
96	B1 4,287,216
100	4,409,249
242	4,409,250
396	4,409,252
413	4,409,251
424	4,409,253
540	4,409,254
576	4,409,255
598	4,409,256
651	4,409,257

CLASS 427

38	4,409,258
	4,409,259
82	4,409,260
96	4,409,261
99	4,409,262
163	4,409,263
265	4,409,264
271	4,409,265
302	4,409,266
387	4,409,267

CLASS 428

1	4,409,268
50	4,409,269
63	4,409,270
71	4,409,271
98	4,409,272
109	4,409,273
112	4,409,274
138	4,409,275
142	4,409,276
156	4,409,277
163	4,409,278
192	4,409,279
203	4,409,280
212	4,409,281
219	4,409,282
272	4,409,283
304.4	4,409,284
332	4,409,285
	4,409,286
343	4,409,287
367	4,409,288
374	4,409,289
378	4,409,290
425.9	4,409,291
428	4,409,292
524	4,409,293
537	Re.31,412
553	4,409,294
591	4,409,295
610	4,409,296
614	4,409,297
	4,409,298
694	4,409,299
695	4,409,300

CLASS 429

27	Re.31,413
	4,409,301
88	4,409,302
101	Re.31,414
105	4,409,303
158	4,409,304

CLASS 430

22	4,409,305
28	4,409,306
31	4,409,307
60	4,409,308
65	4,409,309
95	4,409,310
	4,409,311
110	4,409,312
144	4,409,313
192	4,409,314
214	4,409,315
263	4,409,316
270	4,409,317
271	4,409,318
296	4,409,319
381	4,409,320
383	4,409,321
523	4,409,322
544	4,409,323
546	4,409,324

CLASS 431

10	4,408,982
116	4,408,983
354	4,408,984

CLASS 432

1	4,408,985
6	4,408,986
137	4,408,987

CLASS 433

3	4,408,988
7	4,408,989
30	4,408,991
224	4,408,990

CLASS 434

296	4,408,992
430	4,408,993

CLASS 435

7	4,409,325
11	4,409,326
13	4,409,327
25	4,409,328
105	4,409,329
178	4,409,330
	4,409,331
188	4,409,332

CLASS 436

2	4,409,333
8	4,409,334
67	4,409,335
123	4,409,336
516	4,409,200

CLASS 440

53	4,408,994

CLASS 455

7	4,409,687
43	B1 4,215,431
165	4,409,688

CLASS 501

66	4,409,337

CLASS 502

5	4,409,124
20	4,409,122
38	4,409,123
62	4,409,132
169	4,409,126
180	4,409,125
185	4,409,129
205	4,409,127
211	4,409,128
	4,409,130
263	4,409,131
354	4,409,133

CLASS 521

59	4,409,338
143	4,409,339
159	4,409,340
162	4,409,341

CLASS 523

202	4,409,342
206	4,409,343
512	4,409,344
513	4,409,345
83	4,409,346
91	4,409,347
100	4,409,348
108	4,409,349
180	4,409,350
322	4,409,351
405	4,409,352
421	4,409,353
431	4,409,354
458	4,409,355
492	4,409,356
505	4,409,357
547	4,409,358
575	4,409,359
804	4,409,360
876	4,409,361

CLASS 525

54.5	4,409,362
67	4,409,363
74	4,409,364
78	4,409,365
221	4,409,366
277	4,409,367
280	4,409,120
314	4,409,368
	4,409,369
414	4,409,370
418	4,409,371
425	4,409,372
432	4,409,373
491	4,409,374
505	4,409,375
509	4,409,376

CLASS 526

93	4,409,377
125	4,409,378
230.5	4,409,379

CLASS 528

45	4,409,380
	4,409,381
173	4,409,382
499	4,409,383

CLASS 536

60	4,409,384
123	4,409,385

CLASS 544

26	4,409,387

CLASS 548

262	4,409,388
342	4,409,389
561	4,409,390

CLASS 549

39	4,409,391
270	4,409,392
448	4,409,393
534	4,

CLASSIFICATION OF DESIGNS

D2—	267	270,869	D7—	256	270,885		74	270,901	D17—	9	270,917		25	270,933	D25—	6	270,949
	309	270,870		28	270,886		81	270,902		20	270,918			270,934		19	270,950
D3—	23	270,871		137	270,888		91	270,903		22	270,919	D23—	43	270,935		62	270,951
	71	270,872			270,889	D11—	164	270,904	D21—	5	270,920		49	270,936	D27—	51	270,952
		270,873			270,890	D12—	14	270,905		15	270,921		97	270,937			270,953
D6—	31	270,874		139	270,891		162	270,906		31	270,922			270,938	D28—	35	270,954
	36	270,875		336	270,892		316	270,907		45	270,923		138.5	270,939		60	270,955
	48	270,876		359	270,887	D14—	6	270,908		122	270,924		153	270,940		91.1	270,956
	56	270,877		409	270,893		30	270,909		191	270,925		155	270,941	D29—	7	270,957
	94	270,878	D8—	01	270,894		66	270,910		239	270,926		158	270,942	D30—	35	270,958
	114	270,879		89	270,895		100	270,911		244	270,927		163	270,943			270,959
	125	270,880	D9—	349	270,896	D15—	7	270,912		253	270,928	D24—	08	270,944	D32—	21	270,960
	181	270,881		395	270,897		69	270,913	D22—	13	270,929		34	270,945		53	270,961
	234	270,882		429	270,898	D16—	32	270,914		19	270,930		45	270,946	D34—	23	270,962
	246	270,883	D10—	2	270,899		42	270,915		23	270,931		57	270,947		40	270,963
	247	270,884		23	270,900		47	270,916		24	270,932		59	270,948			

CLASSIFICATION OF PLANTS

P.—	7	5,117	10	5,118	15	5,119	20	5,120			

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,408,658	4,408,416	4,409,519		4,408,832		4,409,621		4,408,610
	4,409,021	4,408,429	4,409,528		4,408,864	18 :	4,408,355		4,408,742
	4,409,107	4,408,500	4,409,530		4,408,872		4,408,373		4,409,045
4 :	4,409,494	4,408,513	4,409,564		4,408,881		4,408,412		4,409,200
	4,409,560	4,408,536	4,409,589		4,409,536		4,408,542		4,409,257
6 :	4,408,366	4,408,564	4,409,595		4,409,582		4,408,724		4,409,297
	4,408,480	4,408,570	4,409,607		4,409,637		4,408,955		4,409,332
	4,408,493	4,408,595	4,409,611		4,409,686		4,408,957		4,409,372
	4,408,545	4,408,609	4,409,643	13 :	4,408,443		4,409,015		4,409,483
	4,408,614	4,408,636	4,409,675		4,408,903		4,409,223		4,409,568
	4,408,632	4,408,646	4,409,676		4,408,956		4,409,227		4,409,616
	4,408,834	4,408,657	4,215,431		4,409,263		4,409,261		4,409,661
	4,408,839	4,408,699	08 : 4,408,551	15 :	4,409,144		4,409,302	25 :	Re.31,414
	4,408,846	4,408,738	4,408,634	16 :	4,408,865		4,409,351		4,408,357
	4,408,860	4,408,749	4,408,786	17 :	4,408,396		4,409,392		4,408,464
	4,408,942	4,408,769	4,409,104		4,408,425		4,409,540		4,408,471
	4,408,944	4,408,779	4,409,440		4,408,466		4,409,649		4,408,616
	4,408,965	4,408,784	4,409,628		4,408,521		4,409,688		4,408,788
	4,409,172	4,408,830	4,409,680		4,408,562	19 :	4,408,509		4,408,807
	4,409,174	4,408,845	09 : Re.31,410		4,408,575		4,408,704		4,408,818
	4,409,190	4,408,874	4,408,359		4,408,643		4,408,720		4,408,822
	4,409,208	4,408,885	4,408,391		4,408,684		4,408,744		4,408,825
	4,409,239	4,408,894	4,408,410		4,408,692		4,408,746		4,408,912
	4,409,249	4,408,925	4,408,571		4,408,703		4,408,778		4,408,979
	4,409,288	4,408,936	4,408,757		4,408,717		4,409,384		4,409,003
	4,409,370	4,408,938	4,408,817		4,408,743		4,409,579		4,409,004
	4,409,427	4,408,943	4,408,913		4,408,762	20 :	4,408,424		4,409,094
	4,409,439	4,408,946	4,408,918		4,408,764		4,408,484		4,409,116
	4,409,518	4,408,948	4,409,054		4,408,782		4,408,518		4,409,171
	4,409,592	4,408,950	4,409,131		4,408,810		4,408,725		4,409,283
	4,409,629	4,408,989	4,409,179		4,408,850	21 :	4,408,432		4,409,441
	4,409,638	4,409,048	4,409,182		4,408,914		4,408,745		4,409,450
	4,409,644	4,409,087	4,409,243		4,408,928		4,408,799		4,409,451
	4,409,664	4,409,102	4,409,244		4,408,939		4,408,908		4,409,475
9 :	4,408,915	4,409,123	4,409,255		4,408,978		4,409,034		4,409,478
	4,408,953	4,409,124	4,409,295		4,409,049		4,409,092		4,409,500
	4,408,960	4,409,139	4,409,431		4,409,095		4,409,098		4,409,505
	4,408,961	4,409,140	4,409,574		4,409,109		4,409,293		4,409,515
	4,409,037	4,409,177	4,409,615		4,409,113		4,409,532		4,409,535
	4,409,111	4,409,181	4,409,670		4,409,121	22 :	4,408,441		4,409,550
01 :	4,408,585	4,409,211	10 : 4,409,076		4,409,148		4,408,454		4,409,570
	4,408,985	4,409,260	4,409,386		4,409,168		4,408,488		4,409,576
04 :	4,408,605	4,409,325	11 : 4,409,485		4,409,170		4,408,629		4,409,587
	4,408,849	4,409,326	12 : 4,408,445		4,409,205		4,408,670		4,409,604
	4,409,042	4,409,330	4,408,446		4,409,248		4,408,819		4,409,647
	4,409,195	4,409,335	4,408,505		4,409,251		4,409,081		4,409,652
	4,409,501	4,409,403	4,408,573		4,409,276		4,409,093		4,409,655
	4,409,561	4,409,454	4,408,618		4,409,298		4,409,184		4,409,669
05 :	4,408,879	4,409,474	4,408,666		4,409,336	23 :	4,409,361	26 :	4,408,414
06 :	4,408,398	4,409,477	4,408,707		4,409,364		4,409,642		4,408,453
	4,408,407	4,409,479	4,408,789		4,409,424	24 :	4,408,402		4,408,465
	4,408,411	4,409,488	4,408,803		4,409,527		4,408,455		4,408,473
	4,408,415	4,409,511	4,408,827		4,409,539		4,408,515		4,408,501

4,408,540
4,408,544
4,408,557
4,408,642
4,408,675
4,408,711
4,408,716
4,408,718
4,408,722
4,408,776
4,408,800
4,408,804
4,408,808
4,408,963
4,408,972
4,408,990
4,409,005
4,409,035
4,409,226
4,409,369
4,409,380
4,409,381
4,409,491
4,409,548
4,409,586
4,409,591
4,409,605
4,409,663
27 : 4,408,363
4,408,426
4,408,532
4,408,594
4,408,600
4,408,607
4,408,685
4,408,774
4,409,057
4,409,100
4,409,250
4,409,316
4,409,344
4,409,537
4,409,552
4,409,656
28 : 4,408,680
4,408,848
29 : 4,408,406
4,408,565
4,408,620
4,408,753
4,408,844
4,408,991
4,409,020
4,409,047
4,409,133
4,409,151
4,409,443
30 : 4,408,671
4,409,068
31 : 4,408,993
32 : 4,408,358
4,409,522
33 : 4,408,567
4,409,161
4,409,303
4,409,681
34 : 4,408,375
4,408,390

4,408,439
4,408,553
4,408,625
4,408,640
4,408,653
4,408,702
4,408,763
4,408,905
4,409,041
4,409,078
4,409,089
4,409,114
4,409,118
4,409,132
4,409,136
4,409,145
4,409,146
4,409,180
4,409,191
4,409,229
4,409,230
4,409,280
4,409,318
4,409,342
4,409,366
4,409,390
4,409,409
4,409,411
4,409,412
4,409,414
4,409,416
4,409,447
4,409,512
4,409,514
4,409,546
4,409,557
4,409,566
4,409,569
4,409,645
35 : 4,408,463
4,408,546
36 : Re.31,411
4,408,368
4,408,413
4,408,422
4,408,431
4,408,456
4,408,467
4,408,507
4,408,597
4,408,603
4,408,615
4,408,622
4,408,709
4,408,736
4,408,816
4,408,838
4,408,857
4,408,858
4,408,866
4,408,890
4,408,920
4,408,922
4,408,959
4,408,970
4,408,982
4,408,988
4,409,001

4,409,038
4,409,051
4,409,053
4,409,063
4,409,071
4,409,152
4,409,163
4,409,202
4,409,203
4,409,254
4,409,275
4,409,278
4,409,307
4,409,315
4,409,319
4,409,337
4,409,362
4,409,375
4,409,417
4,409,470
4,409,489
4,409,498
4,409,499
4,409,521
4,409,534
4,409,547
4,409,588
4,409,590
4,409,593
4,409,598
4,409,603
4,409,624
4,409,673
37 : 4,408,395
4,408,527
4,408,596
4,408,635
4,408,796
4,408,893
4,408,906
4,408,996
38 : 4,408,672
39 : Re.31,413
Re.31,415
4,408,367
4,408,381
4,408,405
4,408,418
4,408,423
4,408,427
4,408,436
4,408,506
4,408,523
4,408,558
4,408,599
4,408,649
4,408,687
4,408,694
4,408,700
4,408,706
4,408,710
4,408,765
4,408,775
4,408,780
4,408,868
4,408,931
4,409,000
4,409,009

4,409,011
4,409,012
4,409,014
4,409,027
4,409,055
4,409,073
4,409,083
4,409,165
4,409,253
4,409,270
4,409,290
4,409,343
4,409,355
4,409,365
4,409,368
4,409,406
4,409,422
4,409,423
4,409,455
4,409,484
4,409,502
4,409,516
4,409,544
4,409,573
40 : 4,408,489
4,408,569
4,408,662
4,408,664
4,408,728
4,408,729
4,409,110
4,409,401
4,409,418
4,409,420
4,409,504
4,409,662
41 : 4,408,656
4,408,792
4,408,842
4,408,954
4,409,259
4,409,577
42 : 4,408,356
4,408,382
4,408,383
4,408,495
4,408,504
4,408,572
4,408,661
4,408,674
4,408,696
4,408,758
4,408,760
4,408,815
4,408,820
4,408,821
4,408,823
4,408,824
4,408,851
4,408,926
4,408,987
4,409,006
4,409,007
4,409,019
4,409,036
4,409,064
4,409,158

4,409,192
4,409,279
4,409,329
4,409,338
4,409,357
4,409,376
4,409,383
4,409,393
4,409,399
4,409,404
4,409,415
4,409,513
4,409,626
4,409,635
4,409,659
4,409,660
4,409,683
43 : 4,408,698
44 : 4,408,919
45 : 4,408,370
4,408,371
4,408,376
4,408,751
4,409,273
4,409,554
47 : 4,408,394
4,408,397
4,408,683
4,408,689
4,408,977
4,409,028
4,409,067
4,409,085
4,409,157
48 : 4,408,364
4,408,385
4,408,419
4,408,485
4,408,486
4,408,502
4,408,503
4,408,533
4,408,577
4,408,582
4,408,583
4,408,613
4,408,623
4,408,628
4,408,676
4,408,678
4,408,748
4,408,759
4,408,771
4,408,783
4,408,791
4,408,829
4,408,927
4,408,929
4,408,932
4,408,976
4,408,999
4,409,002
4,409,033
4,409,050
4,409,080
4,409,108
4,409,112

4,409,120
4,409,126
4,409,127
4,409,186
4,409,199
4,409,256
4,409,262
4,409,287
4,409,349
4,409,360
4,409,371
4,409,397
4,409,398
4,409,405
4,409,408
4,409,453
4,409,480
4,409,481
4,409,507
4,409,551
4,409,553
4,409,653
4,409,665
4,409,671
49 : 4,408,665
4,409,090
4,409,189
4,409,194
51 : 4,408,404
4,408,440
4,408,459
4,408,619
4,408,882
4,409,043
4,409,331
4,409,382
4,409,563
4,409,608
4,409,639
4,409,687
53 : Re.31,409
4,408,408
4,408,679
4,408,739
4,408,873
4,408,777
4,408,904
4,408,958
4,409,269
54 : 4,409,149
4,409,153
4,409,167
55 : 4,408,361
4,408,428
4,408,437
4,408,483
4,408,508
4,408,550
4,408,579
4,408,650
4,408,768
4,408,924
4,408,940
4,408,992
4,408,994
4,409,264
4,409,640

DESIGN PATENTS

1 : 270,927
6 : 270,928
01 : 270,951
05 : 270,887
06 : 270,876
270,877
270,878
270,926
270,935
270,936
270,942
270,943

270,945
270,948
270,952
10 : 270,902
15 : 270,955
17 : 270,917
270,920
18 : 270,944
19 : 270,950
22 : 270,880
25 : 270,893

270,915
270,946
270,957
26 : 270,919
270,953
27 : 270,869
270,895
29 : 270,924
32 : 270,960
34 : 270,886
270,910

270,914
270,923
36 : 270,881
270,888
270,889
270,890
270,897
270,904
270,940
270,947
37 : 270,870

39 : 270,901
270,929
270,958
270,959
270,963
42 : 270,898
270,905
45 : 270,875
47 : 270,872
270,873
270,882

270,949
48 : 270,891
270,892
270,906
51 : 270,916
270,938
270,939
270,961
53 : 270,879
270,894
55 : 270,912

PLANT PATENTS

6 : 5,119
5,120
06 : 5,117
5,118

U.S. GOVERNMENT PRINTING OFFICE : O—1983

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

Vol. 1031, No. 1

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

OCTOBER 10, 1989



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

October 18, 1983 Volume 1035 Number 3

CONTENTS

		Page
Patent and Trademark Office Notices		
Patent Cooperation Treaty (PCT) Information	1035 OG	16
Reissue Applications Filed	1035 OG	16
Request for Reexamination Filed	1035 OG	16
Public Advisory Committee for Trade Affairs Notice of Open Meeting	1035 OG	16
Notice of Availability for Licensing	1035 OG	17
Patent Certificates of Correction	1035 OG	18
Disclaimers	1035 OG	18
Dedication	1035 OG	18
Disclaimer and Dedication	1035 OG	18
Attorney Disciplinary Rules	1035 OG	19
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1035 OG	21
Condition of Patent Applications	1035 OG	22
Reexaminations		915
Reissue Patents Granted (31,416)		917
Plant Patents Granted (5,121)		921
Patents Granted		
General and Mechanical (4,409,689)		923
Chemical (4,410,329)		1149
Electrical (4,410,756)		1265
Design Patents Granted (270,964)		1357
Index of Patentees		PI 1
Indices of Reissue, Reexamination, Design and Plant Patentees		PI 50
Classification of		
Patents (Including Reissues and Reexaminations)		PI 53
Designs and Plants		PI 56
Geographical Index of Residence of Inventors		
Patents (Including Reissues)		PI 57
Designs and Plants		PI 58
Change of Address Form and Subscription Order Form		Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,145,818, Re. S.N. 519,572, Filed Aug. 2, 1983, Cl. 34/10, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, Hanspeter Kulling, Owner of Record: *Aeromatic AG, Muttenz, Switzerland,* Attorney or Agent: Lawrence I. Lerner, Ex. Gp.: 344

4,145,818, Re. S.N. 519,573, Filed Aug. 2, 1983, Cl. 34/10, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, Hanspeter Kulling, Owner of Record: *Aeromatic AG, Muttenz, Switzerland,* Attorney or Agent: Lawrence I. Lerner, Ex. Gp.: 344

4,181,193, Re. S.N. 519,752, Filed Aug. 2, 1983, Cl. 181/185, SOUND PROJECTION SYSTEM, Timothy Peter Isaac, Owner of Record: *Turbosound Group Ltd., Cambridgeshire, England,* Attorney or Agent: Richard L. Mayer, et al., Ex. Gp.: 211

4,255,539, Re. S.N. 506,788, Filed June 22, 1983, Cl. 525/330, METHOD OF PREPARING SULFUR-MODIFIED POLYCHLOROPRENE, Paul Branlard, et al., Owner of Record: *Distugil, Nevilly-sur-Seine, France,* Attorney or Agent: Norman H. Steppo, Ex. Gp.: 144

4,278,049, Re. S.N. 512,714, Filed July 11, 1983, Cl. 119/153.5, ANIMAL FEEDER, Larry R. van Dusseldorp, Owner of Record: *Marting Mfg., Inc., Britt, Iowa,* Attorney or Agent: Herbert C. Brinkman, et al., Ex. Gp.: 333

4,281,763, Re. S.N. 519,679, Filed Aug. 2, 1983, Cl. 206/530, TWO-PIECE HARDSHELL SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE, Joseph A. Pace, Owner of Record: *R. P. Scherer Corp., Bethlehem, Pa.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 241

4,282,420, Re. S.N. 519,628, Filed Aug. 2, 1983, Cl. 219/146.24, WELDING ELECTRODE, Kenneth E. Banks, Owner of Record: *Alloy Rods, Inc., Hanover, Pa.,* Attorney or Agent: John K. Williamson, et al., Ex. Gp.: 213

4,321,038, Re. S.N. 516,098, Filed July 22, 1983, Cl. 433/136, BRAIDED GINGIVAL RETRACTION CORD, Don D. Porteous, Owner of Record: *Van R. Dental Products, Inc., Los Angeles, Calif.,* Attorney or Agent: Donald Diamond, Ex. Gp.: 333

4,325,761, Re. S.N. 519,574, Filed Aug. 2, 1983, Cl. 156/69, TWO-PIECE HARDSHELL, SOLUBLE AND DIGESTIBLE LIQUID CONTAINING GELATIN CAPSULE, Joseph A. Pace, Owner of Record: *R. P. Scherer Corp., Troy, Mich.* Attorney or Agent: George B. Newitt, Ex. Gp.: 161

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

No Publications This Issue

Public Advisory Committee for Trademark Affairs
Notice of Open Meeting

In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee meeting:

The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 5:00 p.m. on Nov. 2, 1983, at the Sheraton Crystal City Hotel, 1800 Jefferson Davis Hwy., Arlington, Va.

The agenda for the meeting is as follows:

(1) Finances of the Trademark Operation
(2) Trademark Automation Developments
(3) Trademark Operation Statistical Review
(4) Operations of the Trademark Trial and Appeal Board
(5) Quality of Examination, Training and Review
(6) General Activities of the Trademark Examining Operation

The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come first-served basis. If time permits, oral comments by the public of three (3) minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed.

Copies of the minutes will be available upon request.

For further information, contact Ellen J. Seeherman, Office of the Assistant Commissioner for Trademarks, Rm. CP3-11C17, Patent and Trademark Office, Washington, D.C. 20231. Telephone: 703-557-7464.

GERALD J. MOSSINGHOFF,
Assistant Secretary and Commissioner of Patents and Trademarks.

Sept. 19, 1983.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-311,587 (4,395,959). HAND APPARATUS FOR CONTINUOUS INJECTION OF CHEMICALLY-IMPREGNATED FILAMENT.
SN 6-506,482. METHOD FOR OBTAINING A PURIFIED FRACTION FROM A MIXTURE USING MAGNETIC FLUID.

DEPARTMENT OF THE AIR FORCE

SN 6-486,125. METHOD OF MAKING A HIGH STABILITY QUARTZ CRYSTAL OSCILLATOR.
SN 6-470,749. VERTICAL LAUNCH ALIGNMENT TRANSFER APPARATUS.
SN 6-471,078. ECCENTRICALLY TIGHTENED LATCH DEVICE.
SN 6-475,417. STORAGE CABINET TRAVEL LOCK.
SN 6-484,107. METHOD AND APPARATUS FOR SIGNALLING ON-LINE FAILURE DETECTION.
SN 6-486,127. SCANNING BEAM BEAMRIDER MISSILE GUIDANCE SYSTEM.
SN 6-486,130. LIQUID REACTANT CHEMICAL PUMP.
SN 6-488,249. AMINE SALTS AS BONDING AGENTS.
SN 6-490,948. PULSE CODE MODULATION RATE CONVERTER.
SN 6-499,581. POROUS CATALYTIC METAL PLATE DEGENERATION BED IN A GAS GENERATOR.
SN 6-499,593. NON-OBSTRUCTING LASER BEAM SAMPLING METER.
SN 6-499,735. INTEGRATED DIELECTRIC WAVEGUIDE RADAR FRONT END DEVICE.
SN 6-502,419. METHOD AND APPARATUS FOR USING A PHOTOACOUSTIC EFFECT FOR CONTROLLING VARIOUS PROCESSES UTILIZING LASER AND ION BEAMS, AND THE LIKE.
SN 6-502,907. RECOIL TRANSDUCER FIXTURE.
SN 6-504,767. AN EFFICIENT OPTICAL DESIGN FOR A MATCHED FILTER CORRELATOR.
SN 6-506,934. WAVEFORM DESIGN FOR OPTIMIZED AMBIGUITY RESPONSE.
SN 6-507,886. DUAL GUNN DIODE SELF-OSCILLATING MIXER.
SN 6-508,791. IMPULSE AUTOCORRELATION FUNCTION COMUNICATIONS SYSTEM.
SN 6-508,957. METHOD OF PROTECTING OPTICAL FIBRE AGAINST STRESS CORROSION.
SN 6-511,423. OPTICAL FIBER SPLICE SLED.
SN 6-511,811. RADIATION SCANNING AND DETECTION SYSTEM.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-228,681 (4,395,635). GAMMA RAY COINCIDENCE ANALYSIS SYSTEM.
SN 6-352,599 (4,396,628). ANTIVIRAL ACTIVITIES OF DANSYLCADAVERINE AND CLOSELY RELATED COMPOUNDS.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 18, 1983

D. 268,871	4,376,516	4,389,119	4,396,020
D. 269,913	4,376,976	4,389,721	4,396,456
4,022,127	4,379,784	4,389,776	4,396,738
4,141,494	4,379,825	4,389,786	4,397,018
4,256,829	4,379,879	4,390,200	4,397,037
4,298,362	4,380,695	4,390,423	4,397,079
4,310,283	4,381,190	4,390,591	4,397,269
4,343,827	4,381,745	4,391,138	4,397,365
4,348,735	4,381,882	4,392,733	4,397,748
4,349,324	4,381,992	4,392,834	4,398,050
4,350,545	4,382,131	4,392,891	4,398,265
4,358,114	4,382,484	4,392,998	4,398,373
4,358,411	4,382,765	4,393,008	4,398,442
4,358,981	4,383,249	4,393,140	4,398,490
4,361,617	4,383,409	4,393,258	4,398,581
4,365,436	4,384,060	4,393,864	4,398,626
4,365,576	4,384,468	4,393,868	4,398,770
4,368,467	4,385,360	4,394,521	4,399,028
4,369,065	4,385,675	4,394,651	4,399,035
4,369,317	4,386,054	4,394,682	4,399,397
4,369,381	4,386,085	4,394,762	4,399,851
4,369,709	4,387,015	4,395,019	4,399,902
4,371,645	4,387,147	4,395,115	4,399,958
4,371,690	4,388,047	4,395,529	4,400,763
4,374,540	4,388,933	4,395,600	
4,376,191	4,388,977	4,395,970	

Disclaimers

Des. 259,242.—*Tyrell T. Gilb,* Berkeley, Calif. CONNECTOR FOR WOOD MEMBERS. Patent dated May 19, 1981. Disclaimer filed July 13, 1981, by the assignee, *Simpson Manufacturing Co., Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,730,137.—*Paul Luscher* and *Ben A. Hudson,* Shelby and *Billie W. Childers,* Forest City, N.C. APPARATUS FOR COATING ANX IMPREGNATING TEXTURIZED YARN. Patent dated May 1, 1973. Disclaimer filed Aug. 17, 1983, by the assignee, *PPG Industries, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,820,531.—*Roman Szpur,* Dayton, Ohio MEDICAL ELECTRODE. Patent dated June 28, 1974. Disclaimer filed Aug. 25, 1983, by the assignee, *NDM Corp.*

Hereby enters this dislcaimer to all claims of said patent.

4,041,172.—*Charles B. Barlow,* Chamberley, England. COMPOSITIONS AND METHODS FOR COMBATING INSECT PESTS OR FUNGAL PESTS OF PLANTS. Patent dated Aug. 9, 1977. Diclaimer filed Aug. 5, 1983, by the assignee, *Imperial Chemical Industries PLC.*

Hereby enters this disclaimer to claims 1, 2, 3, 6, 8 and 11 of said patent.

4,128,603.—*Arthur Katchman,* Delmar and *Gim F. Lee, Jr.,* Albany, N.Y. COMPOSITIONS COMPRISING POLYPHENYLENE ETHER AND RUBBER MODIFIED POLYSTYRENE. Patent dated Dec. 5, 1978. Disclaimer filed Aug. 12, 1983, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 13 and 14 of said patent.

4,268,138.—*Richard J. Coppa,* Westwood, *Seymour Ellin,* Chestnut Hill, and *John W. Stempeck,* Reading, Mass. FOLLOW FOCUS FLASH ARRANGEMENT. Patent dated May 19, 1981. Disclaimer filed Aug. 23, 1983, by the assignee, *Polaroid Corp.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

Dedication

3,268,351.—*Warren G. van Dorn,* Columbus, Ohio XEROGRAPHIC FIXING METHOD AND APPARATUS. Patent dated Aug. 23, 1966. Dedication filed Oct. 21, 1982, by the assignee, *Xerox Corp.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimer and Dedication

3,851,654.—*Federick P. Kober,* Bayside, N.Y. SELF CONTAINED ELECTROCHEMICAL HEAT SOURCE. Patent dated Dec. 3, 1974. Disclaimer and Dedication filed, June 23, 1983, by the assignee, *Chem-E-Watt Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 1 and 2

[Docket No. 30719-138]

Attorney Disciplinary Rules

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rule; extension of comment period and further public hearing.

SUMMARY: The Patent and Trademark Office is extending the comment period and setting a further public hearing on the proposed Attorney Disciplinary Rules published in the Federal Register of August 11, 1983. The extension and further hearing respond to a request brought on behalf of a committee of the American Patent Law Association.

DATES: Written comments must be received on or before November 9, 1983. Oral testimony will be received at a public hearing to be held November 9, 1983, beginning at 9:00 AM. Requests to present oral testimony should be received by November 2, 1983.

ADDRESS: Address written comments to the Commissioner of Patents and Trademarks, Washington, D. C. 20231, marked to the attention of William Feldman. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and transcripts of the public hearing held on September 29, 1983, and the further hearing to be held on November 9, 1983, will be available for public inspection in Room 11A13 of Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: William Feldman, by telephone at (703) 557-2012 or by mail marked to his attention and addressed as indicated above.

SUPPLEMENTARY INFORMATION: Patent and Trademark Office issued a notice of proposed rulemaking, published in the Federal Register of August 11, 1983 (48 FR 36478) and in the Official Gazette of September 20, 1983 (1034 O.G. 39, 1034 TMOG 33). The notice proposes to update the rules of practice concerning the standards of conduct applicable to persons practicing before the Office, and to spell out the disciplinary enforcement procedures in greater detail in the rules. The notice set September 29, 1983, as the closing date for comments and scheduled a public hearing for that date. Comments have been received and the hearing was held as scheduled. However, in response to the request made on behalf of a committee of the American Patent Law Association, the Patent and Trademark Office is extending the comment period to November 9, 1983, and scheduling a further hearing on November 9, 1983. Any person desiring to do so may submit written comments up to that date and/or present oral testimony at the further hearing to be held that date.

Date: September 30, 1983

Donald J. Quigg
Deputy Commissioner of
Patents and Trademarks

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas....	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive

Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REEXAMINATIONS

OCTOBER 18, 1983

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,648,768 (130th)

HEAT-EXCHANGER COMPONENTS

Günter Schöll, Paudo, Switzerland, assignor to Bio-Energy Systems, Inc., Ellenville, N.Y.

Reexamination Request No. 90/000,293, Nov. 22, 1982.

Reexamination Certificate for Patent No. 3,648,768, issued Mar. 14, 1972, Ser. No. 32,659, Apr. 28, 1970.

Claims priority, application Fed. Rep. of Germany, May 22, 1969, 1926187; Jul. 25, 1969, 1937783; Sep. 25, 1969, 1948407

Int. Cl.[3] **F28F** *1/16, 9/04, 1/22*

U.S. Cl. 165—171

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–20** having been finally determined to be unpatentable, are cancelled.

New claims **21–38** are added and determined to be patentable.

21. For use in a heat exchanger wherein a medium flows through heat exchanger means comprising

(a) a plurality of generally flat integrally extruded plastic unitary elements arranged in a common plane and each comprising

i. a plurality of a thin walled parallel pipes of circular cross section, and

ii. interconnecting webs between adjacent pipes;

(b) the webs at each end of each element being cut away from projecting pipe ends; and

(c) a pair of headers each having a series of parallel spaced bores with which the projecting pipes at opposite ends of each element communicate.

REISSUES

OCTOBER 18, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

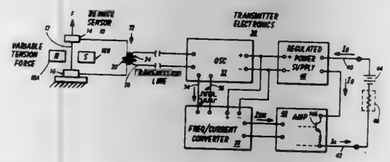
Re. 31,416
ELECTRIC SIGNAL TRANSMITTER FOR VIBRATING-WIRE SENSOR

Everett O. Olsen, Wrentham; Donald C. Simpson, Norton, and David A. Richardson, Sheldonville, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Original No. 4,118,977, dated Oct. 10, 1978, Ser. No. 732,129, Oct. 13, 1976. Application for reissue Jun. 19, 1980, Ser. No. 161,123

Int. Cl.³ G01L *1/10*

U.S. Cl. 73—862.59 **33 Claims**



33. Industrial process instrument apparatus for developing an electrical signal responsive to the value of a process condition at a field measurement location, said process condition being represented at said measurement location by a force proportional to the value of such condition; said instrument apparatus comprising:

a relatively thin, elongate element at said measurement location, said element being formed of a material dimensioned to provide lateral bending flexibility;

means for supporting said element in a tensioned state providing for resonant lateral vibration of said element, the tension of said element being variable in accordance with changes in the value of said condition, thereby to alter correspondingly the resonant vibratory frequency of said element;

a first two wire line coupled at one end thereof to said elongate element;

electronic means coupled to the other end of said first two-wire line and including wire-excitation means for producing oscillatory electrical energy to be supplied over said first two-wire line to said vibratory element and to produce an a-c signal corresponding to the frequency of vibration;

a second two-wire line coupled at one end thereof to said electronic means;

d-c power supply means coupled to the other end of said second two-wire line to produce a flow of d-c current therethrough to supply all of the electrical power of said electronic means; and

control means responsive to the frequency of said a-c signal for controllably altering said d-c current so as to produce a signal representing the frequency of vibration of said element, thereby to represent said force applied to said element.

Re. 31,417
SEALING SYSTEM FOR SHUTOFF ELEMENTS

Richard Huber, Vienna, Austria, assignor to Klinger AG, Zug, Switzerland

Original No. 3,945,390, dated Mar. 23, 1976, Ser. No. 458,427, Apr. 5, 1974. Application for reissue Apr. 15, 1980, Ser. No. 140,641

Int. Cl.³ F16K *25/00*

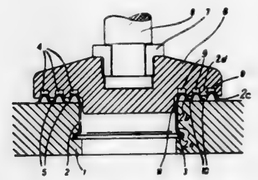
U.S. Cl. 137—1 **18 Claims**

1. A sealing system for a shutoff element comprising housing and blocking members of the shutoff element,

an annular metallic sealing element extending between said housing and blocking members [and sealingly connected to one of said members] *and having a contact portion defined as all the area clamped between said members by a closing movement of said blocking member with at least one of the inner and outer peripheries of said sealing element not connected to said housing member or said blocking member,*

said [annular sealing element] *contact portion* having a thin walled [portion which is] *construction of substantially the same thickness throughout, and being* elastically deformable under a closing force between said housing and blocking members and [extends] *extending* through an annular width of said sealing element *with a wall thickness of said entire contact portion to allow deformation of said contact portion,*

at least two annular supporting areas on each of said housing and blocking members which under the closing force



make sealing linear contact with and deform said thin walled *contact* portion of said sealing element,

and free spaces for deformation of said thin walled *contact* portion therein, under the maximal closing force, on opposite sides of said thin walled *contact* portion from each of said annular supporting areas and enclosed by said thin walled *contact* portion and said other member than said member making the linear contact at the annular supporting area [,]. [said annular supporting areas adjacent each of said free spaces for deformation, and said spaces on a member extending substantially parallel to said supporting areas on said same member.]

Re. 31,418
METERING APPARATUS FOR PLASTIC MATERIALS

Alfons Tschritter, Mittelbuchen near Hanau, Fed. Rep. of Germany, assignor to Colortronic Reinhard & Co., K.G., Friedrichsdorf, Fed. Rep. of Germany

Original No. 3,814,296, dated Jun. 4, 1974, Ser. No. 328,097, Jan. 30, 1973. Application for reissue Mar. 3, 1982, Ser. No. 354,399

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1972, 2214982

Int. Cl.³ G01F *11/24*

U.S. Cl. 222—220 **8 Claims**



7. A metering device for kneadable masses and the like comprising a supply bin having a floor, a rotatable feed disc with cogs

projecting into the bin disposed on said floor, a rotatable ejection disc having teeth engaging said cogs to form a metering chamber between cogs, said teeth being arranged to force the content of the metering chamber out a discharge opening in the bin, a cover plate covering the metering chamber and projecting into the supply bin, the cover plate closing the top of the metering chamber adjacent the discharge opening, the cogs extending to the coverplate, their height being equal to the height of the teeth of the ejection disc whereby during the metering a closed metering chamber is formed, means for allowing kneadable mass between the teeth to escape in a direction other than to the discharge opening during engagement of the teeth with cogs, and wherein the coverplate is sloped at the entry side to avoid overloading of the metering chamber.

Re. 31,419

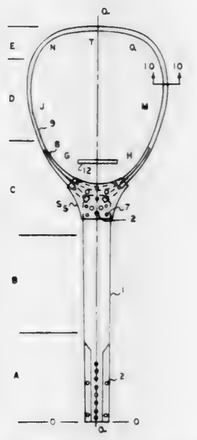
TENNIS RACKET

Jack L. Frolow, 448 Dewey St., Long Branch, N.J. 07740

Original No. 4,165,071, dated Aug. 21, 1979, Ser. No. 646,848, Jan. 5, 1976. Application for reissue Jan. 28, 1981, Ser. No. 229,776

Int. Cl.³ A63B *49/02*

U.S. Cl. 273—73 C **116 Claims**



1. A complete tennis racket comprising at least a frame having a head portion supporting a string netting in a plane, and a handle portion having a grip portion suitably adapted for the hand to grip; said netting having a length along the longitudinal axis of said frame greater than 9 inches and a width along an axis perpendicular to said longitudinal axis greater than 7.5 inches; said racket having a weight W in ounces; a center of percussion located at a distance Cp in inches from the end of the grip portion, when tested in accordance with test 4 of FIG. 40 herein before defined, said center of percussion taken about a pivot located at the end of the grip portion, said pivot having an axis perpendicular to the longitudinal axis of said frame and parallel to the plane of said string netting; said racket having a length L in inches from the end of the grip portion to the end of the head portion; said racket having a center of gravity located a distance C_g in inches from the end of the grip portion; said racket having a first moment of inertia I_s in ounce inches squared about said pivot and I_s is directly proportional to the product of C_p, C_g, W given by the formula $I_s=(C_p)(C_g)(W)$; said racket characterized in that the magnitude of Cp divided by the magnitude of L given by the formula C_p/L is greater than 0.71; and the magnitude of the weight W is less than 10.7 ounces.

Re. 31,420

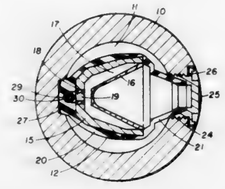
POWDERED METAL CASING FOR PERFORATING CHARGE AND ITS METHOD OF MANUFACTURE

Glenn B. Christopher, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Original No. 4,220,687, dated Sep. 2, 1980, Ser. No. 887,567, Mar. 17, 1978. Application for reissue Aug. 23, 1982, Ser. No. 410,748

Int. Cl.³ B22F *3/00*; E21B *43/26, 43/111*

U.S. Cl. 428—546 **4 Claims**



1. A shaped charge casing formed solely of a green compact consisting of powdered metal sufficiently compressed to [form a jet] *confine energy released* upon explosion of said shaped charge while being reduced to a powder by said explosion.

Re. 31,421

BUILDING ELEMENTS AND THEIR PREPARATION

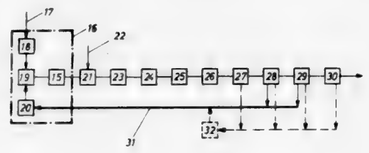
Felix Wehrmann, Vienna; Rene-Hagen Voelki, Maria Enzersdorf, and Edwin Wojta, Aigen, all of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

Original No. 4,191,667, dated Mar. 4, 1980, Ser. No. 890,015, Mar. 24, 1978. Application for reissue Sep. 8, 1981, Ser. No. 300,250

Claims priority, application Austria, Mar. 25, 1977, 2084/77

Int. Cl.³ C08J *11/00*; C08K *7/26*

U.S. Cl. 521—42 **9 Claims**



11. *A building material element having good mechanical properties made by (1) mixing expanded vermiculite and 5 to 30% by weight of the vermiculite of recycled material, (2) coating the mixture with a binder, (3) forming the coated mixture into a press cake and (4) press heating the press cake to a density of at least 600 Kg/m³, the said recycled material being granular or powdered material resulting from trimming and/or dust material resulting from grinding a building material element resulting from the process of steps (1) to (4) above.*

Re. 31,422

HYDROPHILIC POLYMERS AND CONTACT LENSES OF HIGH WATER CONTENT

Samuel Loshaek, and Chah M. Shen, both of Chicago, Ill., assignors to Schering Corporation, Kenilworth, N.J.

Original No. 4,182,802, dated Jan. 8, 1980, Ser. No. 864,275, Dec. 27, 1977. Application for reissue Dec. 9, 1981, Ser. No. 328,961

Int. Cl.³ C08F *212/08*; G02C *7/04*

U.S. Cl. 526—264 **13 Claims**

1. A contact lens adapted for extended wear hydrated to a water content of about 60% to 95% and having an oxygen permeability of at least about

$$15 \times 10^{-11} \frac{\text{cm}^2 \text{ ml } O_2}{\text{sec ml mm Hg}},$$

a tensile strength of at least about 2 kg/cm², [and an elongation at break of at least 40%] consisting essentially of the *free radical initiated bulk* polymerization reaction product of at least one hydrophilic monomer, at least one hydrophobic monomer and at least one cross-linking monomer, the major hydrophilic monomer being *vinyl pyridine or* an N-vinyl heterocyclic monomer selected from N-vinyl pyrrolidone, N-vinyl succinimide, N-vinyl-ε-caprolactam, [N-vinyl pyridine,] N-vinyl glutarimide, or mixtures thereof *in a concentration of at least about 75% by weight*, the major hydrophobic monomer being selected from styrene, ring-substituted styrenes, or mixtures thereof *in a concentration of about 5% to 25% by weight*, and the cross-linking monomer being selected from monomers containing two or more polymerizable double bonds per monomer unit, *the percents by weight being based on the total weight of monomers exclusive of cross-linking monomer.*

Re. 31,423

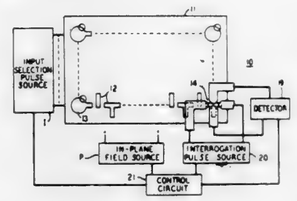
MAGNETIC DOMAIN DETECTOR

Walter Strauss, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Original No. 3,609,720, dated Sep. 28, 1971, Ser. No. 882,900, Dec. 8, 1969. Application for reissue Mar. 15, 1973, Ser. No. 341,490

Int. Cl.³ G11C *19/08, 7/00*

U.S. Cl. 365—9 **16 Claims**



7. A magnetic bubble domain system in which said bubble domains can be non-destructively sensed, comprising:

a magnetic medium capable of supporting single wall magnetic bubble domains;

sensing means located adjacent said medium for detecting said bubble domains when the magnetic flux of said domains intercepts said sensing means, said magnetic flux being sufficient to change the electrical properties of said sensing means, wherein said sensing means comprises a sensing element whose properties depend upon the magnetic flux thereacross,

means for establishing current flow through said sensing element, and

means to detect said change of said properties of said sensing element.

PLANT PATENTS

GRANTED OCTOBER 18, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,121

ROSE PLANT JACGOLD OF THE HYBRID TEA CLASS

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 1, 1982, Ser. No. 353,521
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—15 1 Claim

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of deep yellow, pointed buds born on long straight stems, with glossy mildew resistent foliage, no prickles on rachises.

5,122

ROSE PLANT 75-20031 JACDEW

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Mar. 8, 1982, Ser. No. 355,713
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—28 1 Claim

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its floribunda habit plant, with mildew resistant foliage, bearing orange-red, non-fragrant blooms.

5,123

PEACH TREE - N.J. F-2 CULTIVAR

Catherine H. Bailey, Englishtown, and L. Fredric Hough, Cream Ridge, both of N.J., assignors to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.

Filed Apr. 7, 1982, Ser. No. 366,231
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—42 1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described, characterized by (a) the abundant formation of highly blushed red skinned fruit having a distinctive vertically compressed oblate configuration and freestone white flesh of mild flavor, (b) a vigorous and spreading growth habit, (c) exceptional winter hardiness of the fruit buds, and (d) improved tolerance to bacterial leaf spot.

5,124

GENETIC DWARF PEACH TREE - ANDERGEN CULTIVAR

Norman Bradford, LeGrand, Calif., assignor to Stark Brothers Nurseries and Orchards Company, Louisiana, Mo.

Filed Feb. 12, 1982, Ser. No. 348,413
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree substantially as illustrated and described, characterized by (a) genetic dwarf growth characteristics which form a dense tree growth which is spreading to drooping, (b) medium vigor, (c) stocky and shaggy branches and trunk, (d) large acutely pointed elongated leaves which are of medium thickness and color, and (e) early ripening firm medium sized highly colored globuse fruit of good eating quality.

PATENTS

GRANTED OCT. 18, 1983

ERRATA

For CLASS	See PATENT NO.
383–060	4,410,026
383–062	4,410,130
384–109	4,410,220
356–001	4,410,261
420–584	4,410,362
206–000	4,410,441
502–159	4,410,448
502–024	4,410,449
502–022	4,410,450
502–110	4,410,451
502–060	4,410,452
502–253	4,410,453
502–306	4,410,454
502–327	4,410,455
436–542	4,410,506
525–533	4,410,675
548–543	4,410,726
358–335	4,410,761
381–015	4,410,762
364–513	4,410,763
364–513	4,410,764

PATENTS

GRANTED OCTOBER 18, 1983

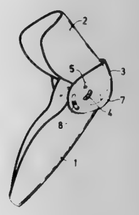
GENERAL AND MECHANICAL

4,409,689

PIVOT MEANS FOR A LEG GUARD

Klas Buring, Tulegatan 27, S-852 35 Sundsvall; Lars Eghamn, PL 2392, S-864 00 Matfors; Jannes Sigurdsson, Hedvägen 8, and Rolf Ahlman, Box 6403, both of S-792 00 Mora, all of Sweden

Filed May 10, 1982, Ser. No. 376,696
Claims priority, application Sweden, May 19, 1981, 8103133
Int. Cl.³ A41D *13/00*; A61F *3/00*
U.S. Cl. 2—22 **4 Claims**



1. Pivot means for a leg guard of the kind comprising a first shell-like section (**1**) and second shell-like section (**2**) arranged so as to overlap each other at least partially and pivotally connected together by pivot means; and a cupped part arranged to overlap the first section and the second section and intended to protect the knee of the wearer, characterized in that the first section (**1**) is pivotally connected to the second section (**2**) by means of two mutually coaxial first pivot pins (**4**) arranged on each side of the leg guard; that the cupped part (**3**) is pivotally connected to the second section (**2**) by means of two mutually coaxial pivot pins (**5**) arranged on both sides of the leg guard at a distance from the first pivot pins; and that each of two coaxial guide pins (**8**) joined to the first section (**1**) is arranged to slide in hole means (**10**) in the cupped part (**3**), the arrangement being such that when the leg guard is bent said second pivot pins (**5**) cause the cupped part (**3**) to move in the longitudinal direction of the leg guard and pivoting movement of the cupped part around the second pivot pins (**5**) is guided by guide means formed by the guide pins (**8**) and associated hole means (**10**).

4,409,690

INTRAOCULAR LENSES

Lowell A. Gess, 111 15th Ave., East, Alexandria, Minn. 56308

Filed Sep. 24, 1981, Ser. No. 305,384
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**



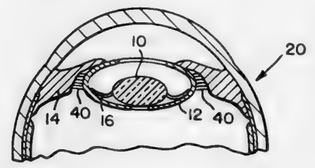
1. In an intraocular lens implant having a lens body and at least two fixation elements connected to the lens body in circumferentially spaced relation to each other, the improvement residing in a configuration of one of the fixation elements enhancing in-situ suturing of the implant, including a stem portion connected to the lens body and a terminal head portion connected to the stem portion in radially spaced relation to the lens body, said terminal head portion having a radially inner edge extending laterally from the stem portion and a radially outer distal edge spaced from the inner edge, the terminal head portion being formed with a suture holding aperture spaced between the edges and suture guiding means extending between the aperture and at least one of the edges, said guiding means including a slit extending from the aperture to the inner edge substantially at the stem portion.

4,409,691

FOCUSSABLE INTRAOCULAR LENS

Chauncey F. Levy, 1299 Portland Ave., Rochester, N.Y. 14621

Filed Nov. 2, 1981, Ser. No. 317,240
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **5 Claims**



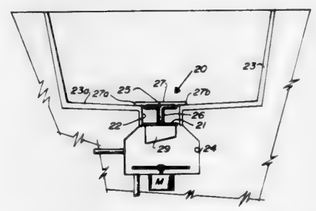
1. An intraocular lens capable of providing accommodation comprising a lens element, and spring biasing means operative between said lens element and the ciliary body when the lens element is implanted for alternately moving the lens element bodily all parts in the same direction toward a first position relative to the fovea when the ciliary body is relaxed and bodily all parts in the same direction toward a second position farther from the fovea in response to contraction of the ciliary body.

4,409,692

SCRAPER-PROTECTOR FOR USE WITH GARBAGE DISPOSAL UNIT

Virginia V. Ness, P.O. Box 1078, Ross, Calif. 94957

Continuation-in-part of Ser. No. 250,105, Apr. 4, 1981. This application Oct. 28, 1982, Ser. No. 437,348
Int. Cl.³ F03C *1/26*; A47L *25/00*
U.S. Cl. 4—286 **8 Claims**



1. A garbage-disposal scraper-protector for use with a garbage disposal unit and a sink having a generally cylindrical drain opening leading to said garbage disposal unit, comprising:

a disk adapted to fit loosely in a lower portion of the drain opening of the sink and providing a plurality of narrow openings enabling water to flow at all times from said sink into said garbage disposal unit, while preventing the pas-

sage of silverware and kitchen implements into said garbage disposal unit,

a handle having a narrow stem extending up from the top of said disk and a thin, narrow, flat cross-member extending horizontally across the upper end of said stem and long enough to bridge said drain opening and provide the sole support for said disk and prevent said disk from falling through said drain opening, while the flatness of said cross-member enables the cross-member to lie at substantially the level of the sink around said drain opening, and

a short, flexible scraper secured to and extending down from the bottom of said disk a distance only slightly below said drain opening and well above the operating portions of said garbage disposal unit.

4,409,693

BUBBLE BATH DEVICE

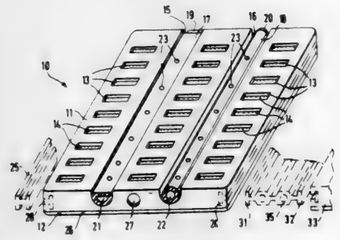
Peter Baumann, Schulstr. 9, CH-8280 Kreuzlingen/TG, Switzerland

Filed Apr. 21, 1982, Ser. No. 370,184

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116199

Int. Cl.³ A47K *3/00*

U.S. Cl. 4—543 **10 Claims**



1. A bubble bath device, comprising:

at least one device body defining a substantially box-like continuous air chamber having at least one substantially flat surface, the surface having a plurality of rows of air exit holes of a first, relatively smaller size for producing a first type of bubble treatment; and,

tubular conduits, each having a small cross-section relative to the chamber and each having air exit holes of a second, relatively larger size for producing a second type of bubble treatment.

4,409,694

ELECTRONIC CONTROL DEVICE FOR LIQUIDS

John P. Barrett, Sr., 879 Harbor Island, Clearwater, Fla. 33515, and Daniel R. Schulz, Crystal Beach, Fla., assignors to John P. Barrett, Sr., Clearwater, Fla.

Filed Sep. 30, 1982, Ser. No. 428,921

Int. Cl.³ A47K *3/00*

U.S. Cl. 4—545 **8 Claims**

1. Control circuit for a bathtub having a hot water conduit and a cold water conduit and shower, drain and water heater, comprising in combination:

temperature switch means for selecting the desired temperature of the water;

level switch means for selecting the level of liquid within the bathtub;

function switch means for selecting a bath or a shower function;

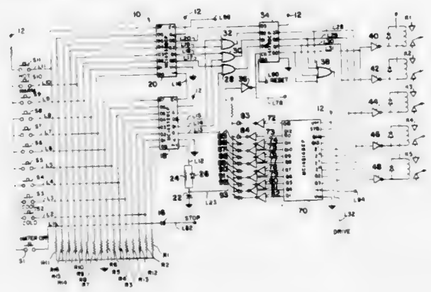
level sensor means for sensing the actual level of liquid within said bathtub;

means connecting said temperature switch means to control water flow from the hot and cold water conduits into the bathtub;

level comparator means comparing level switch means and said level sensor for controlling the water flow and draining of the bathtub to maintain the water level in accordance with said level switch means;

temperature sensor means for sensing the temperature of the water within the bathtub;

memory means for storing the value of the temperature of the water within the bathtub upon the water level reaching a preestablished point;



heater comparator means for comparing the water temperature within the bathtub with the value of the temperature stored in said memory means; and

means connecting the output of said heater comparator means for controlling the water heater in the bathtub to maintain the water temperature in accordance with the value of the water temperature stored in said memory means.

4,409,695

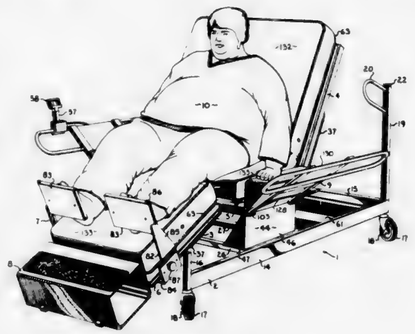
ADJUSTABLE BED FOR MORBIDLY OBESE PATIENTS

Bruce L. Johnston, Shawnee, and Bill D. Raines, Mission, both of Kans., assignors to Burke, Inc., Mission, Kans.

Filed Jul. 7, 1981, Ser. No. 231,175

Int. Cl.³ A61G *7/10*

U.S. Cl. 5—68 **10 Claims**



1. An adjustable bed comprising:

(a) a ground engaging frame;

(b) a mattress support including a head section, a center section, and a foot section, each section being pivotally interconnected and having opposite sides;

(c) said center section being mounted to said frame with said head and foot sections swingably attached to said center section for respective relative raising and lowering;

(d) a sidearm having one end pivotally attached to said center section at a side thereof and having a pivot connection with rotation locking means to selectively position said sidearm in an upright position against said center section and an outwardly swung position in an upwardly inclined relation to said center section;

(e) said sidearm having a remote end adapted for providing support to confine a patient on said bed and to provide additional restive area when in said outwardly swung position;

(f) said sidearm pivot connection including a bearing support member and a pivot pin extending through said sidearm one end and said bearing support;

(g) said bearing support having at least two catch portions thereon; and

(h) a catch arm affixed to said side arm and having an end portion receivable in a selected one said catch portion for maintaining said side arm in a selected one of said upright position and outwardly swung position.

4,409,696

APPARATUS FOR CARRYING A PERSON IN SITTING CONDITION

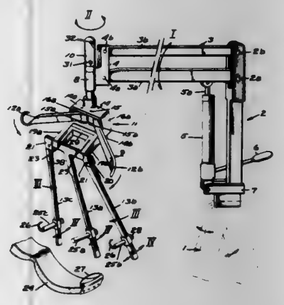
Johannes P. Bakker, Van Galenlaan 28, 3941 VD Doorn, Netherlands

Filed Feb. 13, 1981, Ser. No. 234,188

Claims priority, application Netherlands, Feb. 14, 1980, 8000939

Int. Cl.³ A61G *7/08*

U.S. Cl. 5—81 B **13 Claims**



1. Apparatus for carrying a person in a sitting condition, comprising:

an upper carrying web or strap having two opposite ends and being of sufficient length that, when looped under the person's arms and around the back of the person the two opposite ends thereof become disposed substantially to the front of the person's under arms;

respective engagement means provided on each of said opposite ends of said upper carrying strap;

a lower carrying web or strap having two opposite ends and being of sufficient length that when looped under the person's lower thighs in the vicinity of the person's back the two opposite ends thereof become disposed respectively laterally to the left and right of the person's lower thighs;

respective engagement means provided on each of said opposite ends of said lower carrying strap;

a support frame;

a carrying lever;

means mounting the carrying lever to the support frame in cantilever fashion, so that the carrying lever has a free end;

a support member including a housing;

means suspending the support member housing from said carrying lever free end;

said support member including two arms projecting laterally beside one another generally forwardly towards the person and each being provided with a respective forwardly-located engagement means constructed and arranged for cooperative securement to a corresponding respective said engagement means of said upper carrying strap;

each arm having a rearward portion pivotally connected to said support member housing about a respective generally vertical axis whereby said forwardly-located engagement means are movable generally laterally towards and away from one another;

means acting between said support member and said arms for tending to maximally spread said forwardly-located engagement means laterally apart yet permit such portion of the weight of the person being carried that is incumbent upon said upper carrying web to draw said forwardly-located engagement means relatively closer together whereby said upper carrying web tends to become wrapped about more of the girth of the person's thorax;

said support member further including two laterally spaced respective rod means projecting downwardly from means connecting respective one ends of said rod means to said support member; and

each said rod means being provided distally of the respective one end thereof with a respective engagement means constructed and arranged for cooperative securement to a corresponding respective said engagement means of said lower carrying strap.

4,409,697

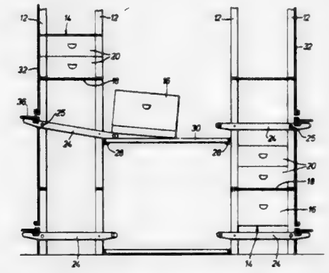
BEEHIVE RACK

Dirk M. Bouwens, Ivy Green Farm, London Rd., Wymondham, Norfolk, England

Filed Dec. 7, 1981, Ser. No. 328,043

Int. Cl.³ A01K *47/00*

U.S. Cl. 6—6 **8 Claims**



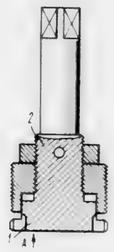
1. A beehive rack comprising a frame for carrying a brood chamber below a queen excluder and a honey chamber above the queen excluder, wherein means are provided fixedly to mount the queen excluder to the frame in order to support the honey chamber, the frame including a movable member which in a first position can support the brood chamber with the top of the latter located against the queen excluder, and means enabling lowering of said movable frame member to a second position in which the brood chamber is withdrawable from beneath the queen excluder for inspection purposes, including a facing to the frame which is formed with an aperture for alignment with a bee access aperture in the brood chamber, a closure member for said frame facing aperture, means movably supporting the closure member on the frame, and means whereby the closure member is moved to close said frame facing aperture when the movable frame member is lowered to its second position, said aperture remaining closed by said closure member independently of any withdrawing movement of the brood chamber.

4,409,698

TAP FOR PRESSING ELASTIC THREAD PROFILES

Gennady A. Toropov, ulitsa Mironova, 17, kv. 45; Stepan P. Shamenko, prospekt Geroev, 33, korpus 1, kv. 45, and Valery G. Badyaev, ulitsa Yuria Savchenko, 1, "A", kv. 76, all of Dnepropetrovsk, U.S.S.R.

PCT No. PCT/SU80/00105, § 371 Date Jul. 22, 1981, § 102(e) Date Jul. 22, 1981, PCT Pub. No. WO81/01672, PCT Pub. Date Jun. 25, 1981
PCT Filed Jun. 26, 1980, Ser. No. 285,113
Claims priority, application U.S.S.R., Dec. 10, 1979, 2844301
Int. Cl.³ B23G *7/02*
U.S. Cl. 10—152 T **2 Claims**



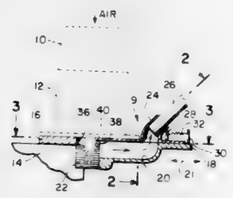
1. A tap for pressing elastic thread profiles, comprising
a shank including a groove forming portion for forming a helical groove;
a thread forming portion threadedly carried on said shank and having a thread pitch thereof equal to that of the groove forming portion, the crests of the thread forming portion axially displaced from those of the groove forming portion; and
a stop member positioned on said shank;
said thread forming portion movable axially along said shank between said stop member and said groove forming portion.

4,409,699

POWER TOOL WASTE COLLECTOR

Arnold E. Moorhouse, 81 East End Ave., Hicksville, N.Y. 11801

Filed Aug. 21, 1981, Ser. No. 294,529
Int. Cl.³ A47L *9/06*
U.S. Cl. 15—415 R **2 Claims**



1. A power tool waste collector which comprises:
(a) a base affixed to a power tool having an aperture, a vacuum hose neck and track;
(b) a platform having an aperture and a flat air chamber that is level with the said base and is slidably attached by a track in said base;
(c) a first post affixed to the rear of the base;
(d) a second post affixed to the rear of the platform;
(e) a tension spring attached between the first post and the second post to keep the platform against the workpiece; and
(f) a vacuum hose attached to the vacuum hose neck to vacuum waste created by the power tool.

4,409,700

SURFACE CLEANING DEVICE

Raymond F. Sullivan, Los Altos, Calif., assignor to Hepta Corporation, Los Altos, Calif.

Filed Jun. 15, 1981, Ser. No. 274,038
Int. Cl.³ A47L *13/12*
U.S. Cl. 15—121 **1 Claim**



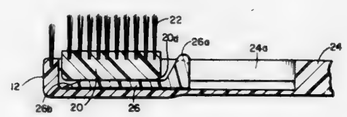
1. A surface cleaning device comprising: an elongated handle having a pair of opposed ends; a first extension and a second extension secured to respective ends of the handle and extending outwardly therefrom on one side of the handle, each extension being at an acute angle with reference to the longitudinal axis of the handle; a first, hollow holding element secured to the outer end of the first extension; a wiper member extending into said first holding element and projecting outwardly therefrom in a direction substantially perpendicular to the longitudinal axis of the handle; a second, hollow holding element secured to the outer end of the second extension; a body of absorbent material, said body having a portion extending into said second holding element and projecting outwardly therefrom in a direction substantially perpendicular to the longitudinal axis of the handle, said handle adapted to be held by the hand and to be moved so as to move the wiper member and the body simultaneously along and in engagement with a surface to be cleaned, the length of the handle being in the range of 5 to 7 inches to allow the handle to be grasped by the hand in a manner to permit full control by the hand of the wiper member and the body at the same time during movement of the wiper member and the body simultaneously along and in engagement with the surface to be cleaned.

4,409,701

TOOTHBRUSH

Robert Perches, 6124 Santa Monica Blvd., Los Angeles, Calif. 90038

Filed Aug. 5, 1982, Ser. No. 405,589
Int. Cl.³ A46B *9/04*
U.S. Cl. 15—167 R **7 Claims**



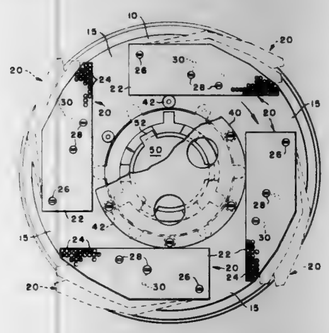
1. In a toothbrush, comprising:
(a) a head, including a top surface having a slot extending into a bottomed hollow space therewithin;
(b) at least one row of first bristles embedded in and extending from the head adjacent its slotted surface;
(c) a member, a lower portion of which is movably accommodated in the hollow space of the head, its upper portion being crested by a row of second bristles and projects through and above the slot in the surface of the head alongside the first row of bristles;
(d) a handle extending from the head of the toothbrush, having a longitudinal grooved portion leading into the hollow space in the head;
(e) a pusher, accommodated longitudinally movable within the grooved portion of the handle and the hollow space in the head, capable of raising the member, and the row of second bristles crested thereon above the level of the row of first bristles, when pushed forwardly and beneath the member, respectively releasing the member, when withdrawn therefrom, for gravitation to the bottom of the hollow space in the head.

4,409,702

UNIVERSAL BRUSH PLATE ASSEMBLY

Robert S. Brown, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Continuation of Ser. No. 272,879, Jun. 12, 1981, abandoned. This application Aug. 24, 1982, Ser. No. 411,045
Int. Cl.³ A47L *11/164*
U.S. Cl. 15—180 **9 Claims**



1. A scrubbing plate assembly for use on a carpet scrubbing machine, comprising:
(a) an annular mounting plate having at least one side adapted for mounting scrubbing elements thereon, said mounting plate being further adapted for attachment to a carpet scrubbing machine;
(b) a plurality of scrubbing elements, positioned about the perimeter of said mounting plate on one side thereof, each of said scrubbing elements further comprising a rigid back and flexible bristles extending from one side of said back, said back having a pivoting point of attachment whereby said back may be attached to said mounting plate, and a mounting aperture which may be made to align with any one of a series of cooperating mounting apertures in said mounting plate when any of said scrubbing elements is pivoted about its said pivoting point of attachment, and
(c) means to secure rigidly each of said scrubbing elements when its respective said mounting aperture carried by said rigid back and one of said series of cooperating mounting apertures in said mounting plate are aligned.

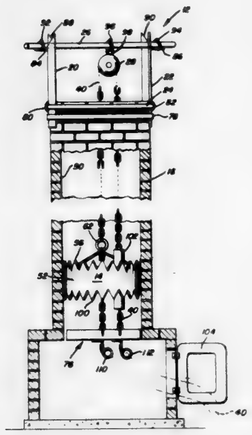
4,409,703

CREOSOTE CUTTER

Leland D. Marcellus, P.O. Box 657, Unadilla, N.Y. 13849

Filed Feb. 9, 1981, Ser. No. 232,556
Int. Cl.³ F23J *3/00*
U.S. Cl. 15—249 **4 Claims**

1. A chimney cleaning apparatus for removing accumulations of creosote, carbon and the like from an interior flue portion of a chimney, said apparatus comprising:
cutter bar means operably movable within said flue portion to effect said removing of said accumulations, said cutter bar means being provided with a substantially hollow interior portion so as to permit smoke and other products of combustion to travel through and past said cutter bar means, thereby to permit said cutter bar means to be permanently retained within said flue portion of said chimney while a combustion process is occurring therein, said cutter bar means further including a suspension line support means positioned substantially centrally within said hollow interior portion of said cutter bar means and a suspension line guide means fixedly secured to said cutter bar means, said cutter bar means further including serrated edges to further facilitate said removing of said accumulations, said serrated edges including two independent sets of serrations respectively provided on topmost and bottommost edges of said cutter bar means, said serrations being substantially oppositely directed from one another on said topmost and bottommost edges of said cutter bar means, such direction of said two independent sets of serrations resulting in said serrations pointing in an axial direction of movement of said cutter bar means;
mounting bracket means attachable by banding means to a topmost portion of said chimney, said mounting bracket means including upstanding support means directly attachable to said topmost portion of said chimney, and



carrying bar means fixedly securable to said upstanding support means, said carrying bar means extending across said topmost portion of said chimney and having a pulley means substantially centrally attached thereto;
suspension means operably associated with said pulley means and serving to both support and facilitate a movement of said cutter bar means within said flue portion, said suspension means including a length of fire-resistant line having first and second ends, said first and second ends being respectively attached to said suspension line support means so as to form a continuous loop, with said loop being directed through said pulley means and said suspension line guide means; and
interior bracket support means selectively fixedly securable within a bottommost interior flue portion of said chimney, said interior bracket support means including first and second guide means through which said loop is guidingly directed, thereby to facilitate a movement of said loop while substantially reducing a likelihood of entanglement, thus to permit said operator to move said cutter bar means in both up and down directions within said flue portion of said chimney.

4,409,704

PROCESS FOR TREATING MEAT

John B. Seiffhart, 867 Kramer Dr., Lodi, Calif. 95240

Filed Dec. 5, 1980, Ser. No. 213,554
Int. Cl.³ A22C 9/00
U.S. Cl. 17—45 14 Claims

1. A process for treating a quantity of meat pieces to raise myosin to the surface of the meat and increase fluid and additive absorption and retention comprising

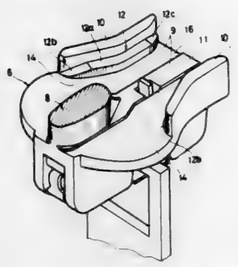
tumbling the meat pieces in a partially loaded container having an interior cavity with a substantially rectangular vertical cross-section by rotating the container about an axis perpendicular to said cross-section whereby the meat tumbles over itself and cycles from a top portion of the mass of meat pieces in the container to a bottom portion of the mass while simultaneously shaking the container and the meat up and down with a reciprocating motion in the plane of said cross-section whereby the meat pieces are alternately compressed and relieved while being shook.

4,409,705

SLIDER FOR A SLIDE FASTENER

Saburo Yuunaga, Lahn Marbach, Fed. Rep. of Germany, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,613
Claims priority, application Japan, Jun. 14, 1980, 55-83430[U]
Int. Cl.³ A44B 19/00
U.S. Cl. 24—205.16 R 5 Claims



1. A slider for a slide fastener having a pair of rows of fastener elements having upper and lower leg portions and coupling head portions, comprising:

(a) a pair of parallel spaced wings joined at their front end to define a generally Y-shaped guide channel for the passage of a pair of rows of fastener elements of the slide fastener, one of said wings having a base portion and a pair of flanges projecting respectively from opposite lateral edges of said base portion; and

(b) a pair of raised corner ledges on the inner face of said base portion of said one wing adjacent said flanges respectively each of said corner ledges extending along an inner face of the base portion of the respective flange throughout its length and having a fastener-element pressure surface engageable with upper leg portions of one of the pair of rows of fastener elements, each fastener-element pressure surface being disposed opposite to outer end surfaces of the upper leg portions of the respective fastener element row;

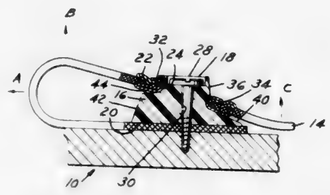
(c) each said corner ledge being chamfered at its front end to define a front sloping surface which is inclined relative to said base portion and joins said pressure surface.

4,409,706

STUD AND EYELET FASTENER

Charles D. Clendinen, 152 Lodewyck, Mt. Clemens, Mich. 48043

Continuation-in-part of Ser. No. 255,370, Apr. 20, 1981, and a continuation-in-part of Ser. No. 340,203, Jan. 18, 1982. This application Jan. 18, 1982, Ser. No. 340,204
Int. Cl.³ A44B 17/00
U.S. Cl. 24—208 A 11 Claims



1. A fastener comprising, in combination:

a stud;

means providing an eyelet seat at one side of the stud;

means providing an eyelet latching shoulder at the opposite side of the stud from the seat;

an eyelet having an aperture dimensioned to telescope over the stud and rest at one side on said seat with the eyelet encircling the stud and being pivotable on the seat between an unlatched position wherein it is removable from the stud, and a latched position lower on the stud than the unlatched position and caught at its opposite side beneath the latching shoulder;

said aperture being dimensioned to provide an interference fit between the eyelet and stud as the eyelet is pivoted on said seat between latched and unlatched positions between latched and unlatched positions; and

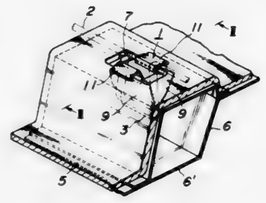
said stud and/or eyelet yielding within the elastic limit to permit pivoting of the eyelet through said interference fit to be caught beneath or released from the latching shoulder.

4,409,707

RETAINER

Masakazu Muraishi, Higashimurayama, and Kimio Sawazaki, Fussa, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 22, 1980, Ser. No. 199,133
Claims priority, application Japan, Oct. 26, 1979, 54-149431
Int. Cl.³ A44B 17/00
U.S. Cl. 24—214 5 Claims



1. A retainer for securing an article to be arranged within a cabin of a vehicle to a vehicle body panel consisting of a relatively thin open section member comprising a main body which consists of plastics material and is adapted to be inserted into an opening in a panel forming a portion of the vehicle body, said main body being provided on its outer surface with a first projection which is urged against the upper surface of the panel around the opening, and a flexible second projection which is pressed into, and passed through the opening to engage with the lower surface of the panel around the opening, said main body being hollow and defining therein a space with an open top end and a bottom end which is closed at least when a portion of said article is inserted into the space through the open top end, said main body being provided on its inner surface with a flexible third projection which prevents withdrawal of said portion of the article inserted into the space in the main body, said main body consisting of two pieces which are connected to each other through a thin-walled hinge which forms the bottom portion of the main body and which closes the bottom end of the space in the main body, the two pieces being provided with parting surfaces, one of which is formed as a ridge while the other of which is formed as a groove to receive therein the ridge.

4,409,708

PIPE CLAMP WITH IMPROVED RETAINING LUGS

William L. Hauffe, Warrensburg, Ill., assignor to Mueller Co., Decatur, Ill.

Filed Jun. 12, 1981, Ser. No. 273,184
Int. Cl.³ B65D 63/02; F16L 55/16
U.S. Cl. 24—279 24 Claims



1. A pipe clamp including a flexible metal band means for encircling a pipe, the band means having at least a pair of spaced ends arranged to be drawn toward one another, a pair of metal lugs, each of said lugs having means for retaining one of the respective ends of said band means, and bolt means for drawing said lugs together to tighten said band means about the pipe, the improvement in said retaining means comprising:

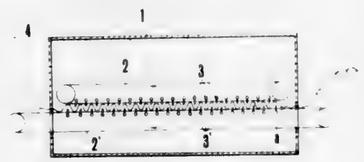
each of said lugs having a pair of ductile jaws cast in an open position and having a mouth for receiving one of said ends of the band means therebetween and arranged to be closed after insertion of the one end of said band means, one jaw of said lug having at least one projection thereon, the other jaw of said lug having at least one recess therewithin for receiving the projection with the end of the band means therebetween when the jaws of said lug are closed, said projection and said recess being dimensioned to provide a space therebetween when said jaws are closed and said projection being eccentrically positioned with respect to said recess to provide a portion of the space between said projection and said recess of less thickness than a thickness of said band means whereby said band means is reduced in thickness in said portion when said jaw members are closed and a remainder portion of the space between said projection and said recess of at least a thickness equal to the thickness of said band means.

4,409,709

APPARATUS FOR CONTINUOUS UNTWISTING AND CRIMPING OF A CLOTH

Yoshikazu Sando; Hiroshi Ishidoshiro, and Matsuo Minakata, all of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Division of Ser. No. 150,063, May 15, 1980, Pat. No. 4,339,856. This application Dec. 31, 1981, Ser. No. 336,039
Claims priority, application Japan, May 16, 1979, 54-64986; Jun. 1, 1979, 54-74401; Jul. 11, 1979, 54-95176; Aug. 24, 1979, 54-116521; Aug. 30, 1979, 54-119590
Int. Cl.³ D06C 29/00
U.S. Cl. 28—155 3 Claims



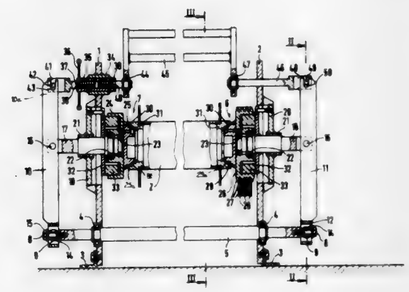
1. An apparatus for continuously untwisting and crimping a cloth, comprising a treating chamber, a pair of endless conveyers located in said treating chamber one positioned above the other and forming a gap therebetween to serve as a cloth passage, a plurality of jet pipes each having a series of nozzles for jetting a high pressure fluid into the cloth passage, said jet pipes arranged in a zigzag manner up and down on both outer sides of the gap within said net conveyers so that said nozzles direct the jets of high pressure fluid through said net conveyers into the gap, the plurality of said jet pipes is divided into two groups, with said jet pipes in each group disposed in parallel, the pipes in one of said groups extending approximately perpendicularly of said net conveyers and the other said group extending lengthwise of said net conveyers, and said two groups of jet pipes arranged alternating with one another along the length of said net conveyers.

4,409,710

APPARATUS FOR CLAMPING AND UNCLAMPING A WARP BEAM IN A BEAM WARPING MACHINE

Wilhelm Kofler, Uzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Aug. 26, 1980, Ser. No. 181,490
Claims priority, application Switzerland, Sep. 21, 1979, 8533/79
Int. Cl.³ D02H 5/00
U.S. Cl. 28—196 7 Claims



1. An apparatus for clamping and unclamping a warp beam in a beam warping machine, comprising:

a beam warping machine;

centering and entrainment means provided for said warp beam for supporting said warp beam in said beam warping machine;
two axially displaceably mounted stub shafts;
each of said stub shafts having an inner end cooperating with said centering and entrainment means;
two levers located in a predetermined plane;
each of said levers having opposed ends;
means for hingedly connecting each stub shaft with a related one of said levers between the opposed ends thereof;
means for synchronously and axially symmetrically pivoting said levers simultaneously towards and away from one another;
means including said two levers and said pivoting means for said two levers for defining a closed hinge parallelogram arrangement;
said closed hinge parallelogram arrangement having two pairs of opposite substantially parallel sides;
said two levers forming one of the pairs of said opposite substantially parallel sides of said closed hinge parallelogram arrangement;
the other pair of opposite parallel sides of said hinge parallelogram arrangement having a first side containing at opposite ends thereof pivot shaft means for said two levers; and
said other pair of opposite parallel sides having a second side containing said means for synchronously and axially symmetrically pivoting said levers simultaneously towards and away from one another.

3. An apparatus for clamping and unclamping a warp beam in a beam warping machine, comprising:
a beam warping machine;
centering and entrainment means provided for said warp beam for supporting said warp beam in said beam warping machine;
two axially displaceably mounted stub shafts;
each of said stub shafts having an inner end cooperating with said centering and entrainment means;
two levers located in a predetermined plane;
means for hingedly connecting each stub shaft with a related one of said levers;
means for synchronously and axially symmetrically pivoting said levers simultaneously towards and away from one another;
said beam warping machine contains a stationary part;
said means for pivoting said levers comprises a threaded sleeve rotatably mounted in said stationary part of the beam warping machine;
means for pivotably supporting said levers for pivotal movement about a related pivot shaft;
said threaded sleeve serving to pivot each of said levers about its related pivot shaft;
said threaded sleeve having opposite internal threads;
threaded spindles inserted into meshing engagement with the opposite internal threads of said threaded sleeve;
said threaded spindles extending essentially parallel to a connection line between said pivot shafts of said levers; and
means for hingedly connecting each threaded spingle with a related one of both levers.

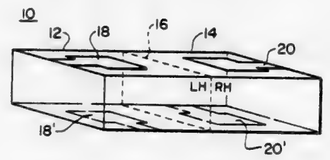
4,409,711

METHOD OF FABRICATING ACCELERATION RESISTANT CRYSTAL RESONATORS

Arthur Ballato, Long Branch, and John R. Vig, Colts Neck, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 196,508, Oct. 14, 1980, Pat. No. 4,365,182. This application Sep. 29, 1982, Ser. No. 426,349
Int. Cl.³ H04R *17/00*
U.S. Cl. 29—25.35 **10 Claims**

1. Method of making acceleration resistant resonators from a single quartz plate that is optically twinned into a left-handed (LH) quartz portion and a right-handed (RH) quartz portion, said method including the steps of
(A) forming a resonator plate such that the effective thickness of the (LH) portion is substantially the same as the effective thickness of the (RH) portion,
(B) mounting and bonding the resonator plate to be support structure of a crystal resonator enclosure,
(C) depositing a pair of electrodes onto the (LH) portion and a pair of electrodes onto the (RH) portion,



(D) adjusting the thicknesses of the two pairs of electrodes so that the resonant frequency of the resonator on the (LH) portion is substantially the same as the resonant frequency of the resonator on the (RH) portion,
(E) interconnecting the pairs of electrodes to each other and to an oscillator circuit so that in-phase vibration of the two portions is assured, and
(F) hermetically sealing the enclosure.

4,409,712

METHOD FOR MAKING A STYLUS HAVING A GRAPHITE ELECTRODE

Hideaki Takehara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Jun. 1, 1981, Ser. No. 268,888
Claims priority, application Japan, May 30, 1980, 55-72517
Int. Cl.³ H01G *5/24*; G11B *3/44*
U.S. Cl. 29—25.42 **5 Claims**

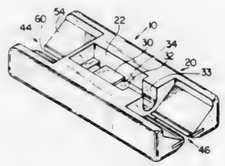
1. A method for making a stylus having a graphite electrode comprising the steps of heating a body of diamond in a vacuum or inert gas environment containing a small amount of oxygen at a predetermined elevated temperature to cause carbon atoms of the diamond body to form a layer of graphite on the surface of said diamond body and shaping the graphite layer into an electrode of a desired width.

4,409,713

ELECTRICAL CONNECTOR APPLICATION TOOL

James J. Johnston, Old Saybrook, Conn., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 18, 1980, Ser. No. 188,557
Int. Cl.³ B25F *1/00*; H02G *1/14*
U.S. Cl. 29—33 M **15 Claims**



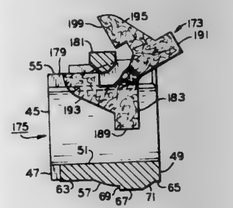
1. An electrical connector application tool for applying an electrical connector assembly to an electrical cable, the connector assembly including having a cavity therein opening through its rear wall, insert means adapted to be received within the cavity for securing the connector assembly in connected relation to the cable, the insert means in partial assembly within the housing projecting rearwardly from the cavity and beyond the rear wall of the housing, and means for securing the insert means in the housing in response to movement of the insert means for its partially assembled forwardly into the cavity and to its fully assembled position, said tool comprising a tool body formed from a single piece of material and having first recess therein opening outwardly through its outer surface and at least partially defined by fixed spaced apart side and end walls, restraining means defined by side walls of said first recess for receiving a partially assembled connector assembly therebetween and restraining it to move in at least a rearward direction relative to the tool body, a first abutment defined by a forwardly facing wall of said first recess in the path of rearward movement of the partially assembled connector assembly relative to the tool body for engaging a rear wall of said insert means, first fulcrum means defined by a rearwardly facing wall of said first recess spaced forwardly of said first abutment a distance greater than the length of said partially assembled connector assembly as measured from the front wall of the housing to the rear wall of the insert means for supporting a prying element in a first position wherein an end portion of the prying element is inserted between said first fulcrum means and the forward end of the housing to move the housing rearwardly relative to the tool body in response to prying movement of the prying element whereby to force said insert means toward its position of assembly within said cavity, and second fulcrum means on said tool body spaced rearwardly of said first fulcrum means and located closer to said first fulcrum than to said first abutment means for supporting the prying element in a second position to move the housing rearwardly relative to the tool body in response to prying movement of the prying element.

4,409,714

METHODS OF ASSEMBLING A WICK AND BEARING

Eldon R. Cunningham, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Aug. 20, 1981, Ser. No. 294,748
Int. Cl.³ H02K *15/14*; B21D *53/10*
U.S. Cl. 29—148.4 L **14 Claims**



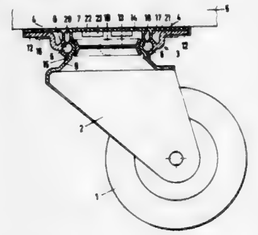
1. A method of assembling a unitary lubricant impregnable wick and a bearing, the bearing including a body having a pair of opposite ends with a peripheral portion interposed therebetween, a bore extending generally axially through the body intersecting with the opposite ends thereof, slot means extending generally radially through the body intersecting with the opposite ends and the bore along the entire axial length thereof, and a bridge means on the body between the opposite ends and spaced radially outwardly of the bore for spanning the slot means, the wick including a generally axially extending wiping section having a pair of opposite end portions thereon, a pair of spreadable fingers disposed generally in side-by-side relation and extending generally perpendicular to the wiping section between the opposite end portions, an opening through the wick, and a passage between the fingers and intersecting with the opening, the method comprising the steps of:
spreading apart the fingers of the wick;
opening the passage between the fingers upon the spreading apart thereof;
aligning the opened passage generally with the slot means adjacent one of the opposite ends of the bearing body;
moving the opened passage into the slot means toward the bridge means from the one opposite end of the bearing body;
entering one of the fingers and one of the opposite end portions of the wiping section of the wick through the one opposite end of the bearing body into the bore thereof and passing the other of the fingers adjacent the peripheral surface of the bearing body and at least in part over the bridge means generally during the moving step;
guiding the one finger from the bore into the slot means between the other end of the bearing body and the bridge means;
turning the wick at least in part in the slot means generally about the bridge means to dispose the opening in the wick at least in part adjacent the bridge means and to locate the wiping section in the slot means with the opposite end portions of the wiping sections extending through the slot means axially beyond the opposite ends of the bearing body and returning the fingers at least in part toward the side-by-side relation thereof beyond the peripheral surface of the bearing body so as to generally close the passage between the fingers and capture within the opening in releasable engagement therewith at least a part of the bridge means.

4,409,715

METHOD FOR MAKING A CASTOR ASSEMBLY

Hendrikus J. M. Timmer, Tiel, Netherlands, assignor to SKF Industrial Trading & Development, B.V., Netherlands

Continuation of Ser. No. 131,503, Mar. 18, 1980, abandoned, which is a division of Ser. No. 814,349, Jul. 11, 1977, Pat. No. 4,213,225. This application Jan. 15, 1982, Ser. No. 339,680
Claims priority, application Netherlands, Jul. 9, 1976, 7607602
Int. Cl.³ B60B *33/00*; B21K *1/04*
U.S. Cl. 29—148.4 A **5 Claims**



1. A method for making a castor assembly having an upper fixing plate and a swivelling fork connected to a wheel comprising the steps of splitting the edge of a central aperture in a plate member forming the fixing plate, forming the edge to define a race for rolling elements, forming the remainder of said plate member to a cup shape including an edge flange disposed in a plane surface spaced axially from said race and covering the fixing plate with a cover having extensions cooperating with said edge flange.

4,409,716

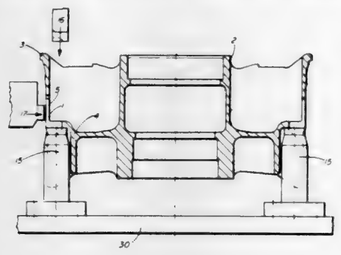
METHOD AND APPARATUS FOR PRODUCING A CAST WHEEL BODY

Urs Büttiker, Löhningen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Continuation of Ser. No. 91,825, Nov. 6, 1979, abandoned. This application Dec. 22, 1981, Ser. No. 333,475
Claims priority, application Switzerland, Nov. 9, 1978, 11512/78
Int. Cl.³ B21D *53/30*
U.S. Cl. 29—159 R **4 Claims**

1. A method for producing a wheel body of iron/carbon cast

material, said wheel body consisting of a central axis of rotation and of spoke heads arranged in a distributed manner circumferentially around said axis with supports arranged therein for hammerhead bolts which are used to fasten a rim on said wheel body, said bolts being inserted from outside said wheel body through an angular slot for said bolts which extends through a wall for said bolt and through a supporting wall for the head of said bolt defined by the wheel body, which supporting wall extends generally parallel to said axis and approximately perpendicularly relative to said wall for said bolt, said bolts when tightened being nonrotatably held against said wall for said bolt, said method comprising the steps of: casting said slot in said wheel body with an angle piece which may be pushed outwardly and arranging said wheel body with said axis arranged in a generally vertical orientation in apparatus including a movable tool which is movable vertically in a direction generally parallel to said axis with said angle piece



being arranged within the path of movement of said vertically movable tool; placing said wheel body for processing horizontally on a rotatable sliding table having pin-shaped vertical supports provided in a number and arrangement corresponding with the number and arrangement of said spoke heads; moving said sliding table toward a stationary centering device and subsequently lowering said vertically movable tool adjacent said supporting wall almost to the level of said angle piece; applying a horizontally movable push member against said wheel body in a direction extending generally radially relative to said axis to move said wheel body toward said tool and moving said tool further downwardly in a direction generally parallel to said axis in order to, first, break out said angle piece, secondly, deburr said wall for said bolt and, thirdly, calibrate said wall to a specified thickness; and thereafter moving said tool out of said wheel body, retracting said sliding table, rotating said sliding table to a subsequent spoke head and again inserting said tool to process a subsequent spoke head.

4,409,717

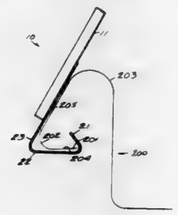
SWEDGING TOOL STRUCTURE AND USE

David W. Boozer, Douglasville, Ga., assignor to Atlantic Building Systmes Inc., Atlanta, Ga.

Filed Apr. 20, 1981, Ser. No. 255,858

Int. Cl.³ B21D *3/16, 1/00*; B23P *7/00*; B21J *13/08*

U.S. Cl. 29—402.19 **15 Claims**



1. A hand tool for acting upon a female seam of a standing seam roof panel, the female seam having an end edge, first and second bends substantially parallel to the end edge, and first and second straight portions between the end edge and the first bend, and the first and second bends, respectively; said tool comprising:

a handle portion;

first, second, and third surface means of a seam-engaging portion;

means for attaching said handle portion to said third surface means;

said first surface means for engaging the end edge of a female seam, and being disposed remote from said handle portion;

said second surface means extending substantially parallel to a female seam first straight portion, and being disposed between said first and third surface means;

said third surface means extending substantially parallel to and for supporting a female seam second straight portion, so that as said handle portion is rotated with said first surface means engaging the end edge of a female seam, the female seam is bent about the second bend while the first bend and the end edge of the female seam remain in original condition; and

said handle and seam-engaging portions being of stiffer material than that of portions of said female seam of said standing seam roof panel to be bent thereby.

12. A method of acting upon a female seam of a standing seam roof panel, the female seam having an end edge, first and second bends substantially parallel to the end edge, and first and second straight portions between the end edge and the first bend, and the first and second bends, respectively; said method comprising the steps of:

(a) placing a hand tool in operative association with the female seam end edge and first and second straight portions;

(b) maintaining the end edge and first bend of the female seam in their original condition while rotating the hand tool to effect bending of the female seam about the second bend, the hand tool having operative portions stiffer than the second bend of the female seam; and

(c) removing the hand tool from operative association with the female seam once the desired degree of bend of the female seam second bend has been achieved.

4,409,718

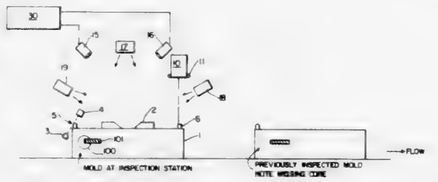
ELECTRO-OPTICAL AND ROBOTIC CASTING QUALITY ASSURANCE

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto, Ltd., Canada

Filed Jun. 15, 1981, Ser. No. 273,385

Int. Cl.³ B23Q *17/00*

U.S. Cl. 29—407 **11 Claims**



1. A method for automatically controlling machining of a casting in an automated process for producing a plurality of castings, said method comprising the steps of:

painting a background paint onto the casting,

removing said paint with a laser to provide a bar coded serial number,

electro-optically inspecting said casting and producing output data in accordance therewith,

storing, in memory, said output data produced by inspecting said casting and said serial number and,

automatically reading said serial number at a machining station to provide access to said casting data in memory, and

automatically controlling machining of said casting by a machine at said machining station in accordance with said casting data.

4,409,719

METHOD OF PIERCING AND RIVETING FASTENER TO A PANEL

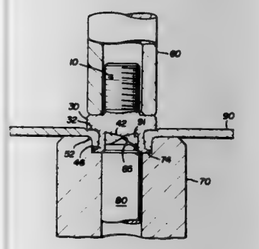
Rudolf R. M. Müller, Frankfurt, Fed. Rep. of Germany, assignor to Multifastener Corporation, Detroit, Mich.

Filed Jan. 28, 1981, Ser. No. 229,274

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1980, 3003908

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432 **4 Claims**



1. A method of attaching a metal fastener to a panel, said metal fastener having an enlarged fastener head portion and a self-piercing riveting end portion, said self-piercing riveting end portion including a central recess enclosed by a self-riveting wall on opposed sides of said recess, the distal end of said wall having a sharp internal piercing edge adjacent said recess, said recess termination in a bottom wall having a convex, generally conical central portion, the method comprising the following steps:

(a) locating said fastener on a panel with said self-riveting wall distal end engaging said panel opposite a die member,

(b) forcing said fastener toward said die member by engaging said enlarged head portion, said wall piercing edge piercing a slug from said panel into said central recess, and

(c) simultaneous deforming said self-riveting wall distal end outwardly relative to said central recess, deforming said panel slug against said convex generally conical recess bottom wall, thereby compressing said panel slug outwardly against the internal surface of said opposed sides of said wall, and deforming the pierced edge of said panel from the plane of said panel toward said deformed wall distal end against the external surface of said self-riveting wall, and locking said deformed pierced panel edge between said fastener enlarged head portion and said outwardly deformed self-riveting wall distal end.

4,409,720

DUAL FUNCTION, SINGLE STROKE PRESSING DEVICE

Joseph E. Boudreau, 19 Lincoln St., Trumbull, Conn. 06611

Filed Nov. 18, 1980, Ser. No. 208,049

Int. Cl.³ B25C *7/00*

U.S. Cl. 29—432.1 **26 Claims**

1. In an apparatus including one press ram and means for reciprocally moving said ram through sequential pressing and retracting strokes, a pressing device for performing at least two pressing operations on at least one workpiece in a single pressing stroke of said ram, said device comprising:

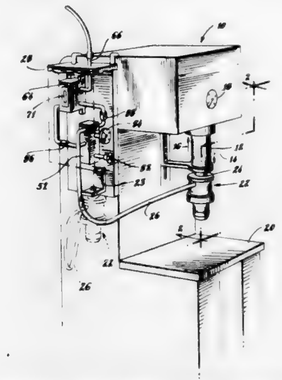
a housing mountable for reciprocal movement with said press ram;

first and second tools mounted at one end of said housing and each having a working end protruding in the general direction of said pressing stroke from said one end, said housing defining a piston chamber and said first tool being formed with a piston slidable in said piston chamber in the general direction of said pressing and retracting strokes to mount said first tool for reciprocal movement between an extended position with its working end protruding farther from said housing than said second tool working end, and a retracted position with its working end protruding less far from said housing than said second tool working end;

means for storing fluid;

means for pressurizing fluid in said storing means and being operable independently of said ram moving means;

means for supplying the pressurized fluid along one path from said storing means to said piston chamber to normally hold said first tool in said extended position; and



means for relieving the pressure of fluid in said piston chamber and thereafter returning fluid along a second path to said storing means when the pressure applied by said first tool working end to said workpiece, in response to movement thereof with said ram and said housing by said ram moving means, reaches a predetermined pressure during an initial portion of a pressing stroke, thereby permitting said first tool to move to said retracted position and permitting said second tool working end to thereafter press said workpiece, in response to further movement thereof with said ram and said housing by said ram moving means, during the remaining portion of the pressing stroke.

4,409,721

MACHINE TOOL WITH AUTOMATIC TOOL CHANGE FUNCTION

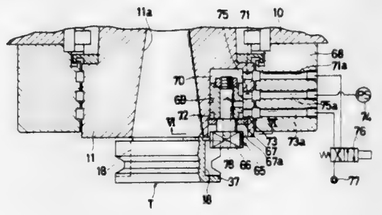
Tamaki Tomita, Okazaki; Kenichi Munekata, Kariya; Fumihiko Ohkoshi, Anjo, and Toshifumi Hasegawa, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 17, 1981, Ser. No. 322,271

Claims priority, application Japan, Nov. 21, 1980, 55/164806

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 **4 Claims**



1. A machine tool with an automatic tool change function

having a tool spindle rotatably supported and capable of receiving a tool at one end thereof, comprising:

tool support means for rotatably supporting at least one tool having a first and second key-way formed thereon and for selective insertion and removal of said at least one tool into and from said spindle, respectively;

a movable key movably guided in said spindle and having a width smaller than that of said first and second key-ways formed on said tool;

control means responsive to a tool change command for rotating said spindle at a predetermined speed permitting key-engagement;

operating means for causing relative movement between said tool support means and said spindle for tool change operation with said spindle being rotated at said predetermined speed;

first means for confirming that said spindle has reached a first predetermined position during rotation thereof at said predetermined speed;

second means for confirming that said spindle has reached a second predetermined position during rotation thereof at said predetermined speed, wherein said operating means further comprises means responsive to said first confirming means for causing relative movement between said tool support means and said spindle in a direction parallel to the axis of said spindle to remove said at least one tool from said spindle; and

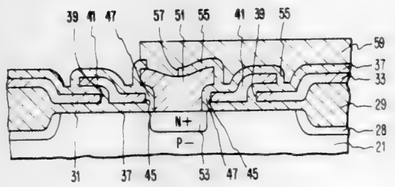
means for withdrawing said movable key prior to insertion of said tool into said spindle and for moving said movable key outwardly into engagement with a predetermined key-way of said first and second key-ways in response to operation of said second confirming means.

4,409,722

BORDERLESS DIFFUSION CONTACT PROCESS AND STRUCTURE

Robert C. Dockerty, Wappingers Falls, N.Y., and Paul L. Garbarino, Ridgefield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,722
Int. Cl.³ H01L *21/225, 21/265*
U.S. Cl. 29—571 **7 Claims**



1. A method of making an electrical contact to a semiconductor device which is formed on a silicon substrate comprising the steps of:

providing as part of said device a gate structure including an insulating layer and a gate electrode of doped polycrystalline silicon;

forming in the formation of two parallel gates an opening through said insulating layer and gate electrode to said substrate in the area designated to be a self-aligned diffused region;

subjecting said device to a thermal oxidation which results in a thicker silicon dioxide layer on said gate electrodes than on the surface of said substrate where said contact is to be made;

etching said silicon dioxide layer from said surface while etching only a portion of said thicker silicon dioxide layer; and

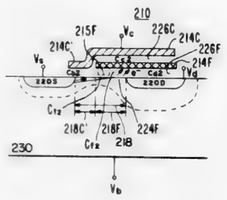
forming an electrical contact layer of conductive material on said surface and over said thicker silicon dioxide layer wherein said electrical contact layer is above at least a portion of said gate electrode.

4,409,723

METHOD OF FORMING NON-VOLATILE EPROM AND EEPROM WITH INCREASED EFFICIENCY

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Continuation-in-part of Ser. No. 137,764, Apr. 7, 1980, Pat. No. 4,328,565. This application Sep. 8, 1980, Ser. No. 184,739
Int. Cl.³ H01L *21/283, 21/31*
U.S. Cl. 29—571 **33 Claims**



1. The method of forming a semiconductor device which comprises:

forming a masking oxide on a silicon substrate to a selected thickness;

opening windows in this oxide through to the underlying substrate in the form of long strips;

placing a selected impurity in the substrate through said windows to form a plurality of souce-drain regions;

oxidizing the substrate to a selected thickness in said windows thereby to from a step in the silicon for use in further processing;

removing all oxide from the substrate;

forming a gate insulation of a selected thickness over the surface of the substrate, said gate insulation being less than 1500 Angstroms thick over said source-drain regions;

forming polycrystalline silicon over the gate insulation to a selected thickness;

doping said polycrystalline silicon with a selected impurity to a selected conductivity;

forming said doped polycrystalline silicon into a plurality of strips, each strip being parallel to and directly over part of a uniquely corresponding source-drain region and also overlying a portion of the semiconductor substrate adjacent to said source-drain region;

forming insulation of selected thickness over the exposed surfaces of each strip of polycrystalline silicon;

forming a second conductive layer to a selected thickness on said insulation;

forming the second conductive layer into a second plurality of strips substantially perpendicular to the previously formed polycrystalline silicon strips formed parallel to the source-drain regions; and

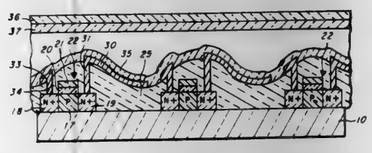
implanting a selected impurity in that portion of the semiconductor substrate not covered by said first plurality of strips or said second plurality of strips, thereby to form channel stop regions in the field of the structure.

4,409,724

METHOD OF FABRICATING DISPLAY WITH SEMICONDUCTOR CIRCUITS ON MONOLITHIC STRUCTURE AND FLAT PANEL DISPLAY PRODUCED THEREBY

Aloysious F. Tasch, Jr.; Perry A. Penz, both of Richardson; John M. Pankratz, Plano, and Hon W. Lam, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 3, 1980, Ser. No. 202,899
Int. Cl.³ H01L *21/268, 21/28*
U.S. Cl. 29—571 **26 Claims**



1. A process of fabricating a semiconductor structure comprising:

forming a plurality of islands of polycrystalline semiconductor material disposed in spaced relation to each other on a substrate;

subjecting said polycrystalline semiconductor islands to focused energy from a source thereof wherein the focused energy is at an intensity sufficient to cause recrystallization of the polycrystalline semiconductor material of said islands;

converting the polycrystalline semiconductor material in said islands to crystalline semiconductor material having an enhanced electron mobility characteristic in response to the focused energy impinging thereon causing recrystallization thereof;

removing any regions untreated by focused energy and focused energy-induced distorted regions from each of said islands of crystalline semiconductor material; and

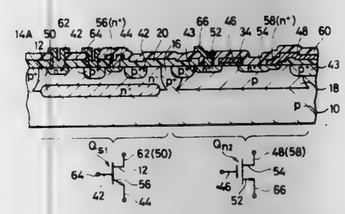
fabricating electronic devices in respective crystalline semiconductor islands.

4,409,725

METHOD OF MAKING SEMICONDUCTOR INTEGRATED CIRCUIT

Tadahiko Hotta, and Terumoto Nonaka, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 7, 1981, Ser. No. 309,428
Claims priority, application Japan, Oct. 16, 1980, 55-144617; Oct. 16, 1980, 55-144618
Int. Cl.³ H01L *21/22, 21/306, 29/76*
U.S. Cl. 29—571 **5 Claims**



1. A method of making a semiconductor integrated circuit including a static induction transistor and an insulated-gate type field effect transistor both having an identical conductivity type of their channels, comprising:

(a) a step of preparing a semiconductor substrate having a principal surface containing therein an island-like semiconductor region having a first conductivity type and a semiconductor well region having a second conductivity type opposite to said first conductivity type; and

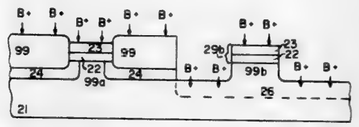
(b) a step of forming, in said semiconductor well region, first a channel stopper semiconductor region and thereafter forming an active semiconductor area of said insulated-gate type field effect transistor, and of concurrently forming, above said island-like semiconductor region in the same processes of forming said channel stopper semiconductor region and said active semiconductor area respectively, first a semiconductor gate region and thereafter either a semiconductor source or drain region of said static induction transistor.

4,409,726

METHOD OF MAKING WELL REGIONS FOR CMOS DEVICES

Philip Shiota, 14270 Old Wood Rd., Saratoga, Santa Clara, Calif. 95070

Filed Apr. 8, 1982, Ser. No. 366,511
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **5 Claims**



1. The method of forming a well region of a first conductivity type within a substrate of a second conductivity type opposite said first conductivity type comprising the steps of:

forming a layer of oxide on said substrate;

forming a layer of nitride on said layer of oxide;

patterning said layers of oxide and nitride to define the to-be-formed active regions;

introducing dopants of said second conductivity type into said substrate other than in said to-be-formed active regions;

forming field oxide on said substrate other than in said to-be-formed active regions;

forming a mask on said substrate defining the to-be-formed well region;

removing that portion of said field oxide which lies within said to-be-formed well region;

removing that portion of said substrate within said to-be-formed well region which contains said dopants of said second conductivity type;

introducing dopants of said first conductivity type into said to-be-formed well region; and

forming field oxide within said well region other than in said active area, wherein said field oxide within said well region is formed at a low temperature, thereby preventing substantial diffusion of said dopants of said first conductivity type.

4,409,727

METHODS OF MAKING NARROW CHANNEL FIELD EFFECT TRANSISTORS

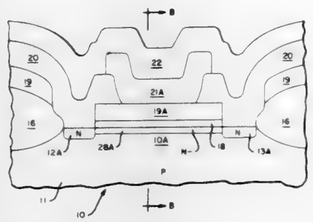
Philip A. Dalton, Jr., Kettering, Ohio, and Lowell C. Bergstedt, San Francisco, Calif., assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 94,121, Nov. 14, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 425,770
Int. Cl.³ H01L *21/223, 21/265*
U.S. Cl. 29—571 **5 Claims**

1. A method of forming a pair of narrow channel conductor-insulator-semiconductor devices on a semiconductor substrate of selected conductivity-type comprising:

forming in said substrate a pair of narrow channel regions on

opposite sides of a central region doped with impurities of said selected conductivity-type; and



forming on said substrate a pair of separate conductor-insulator gate structures each overlying one of said narrow channel regions.

4,409,728

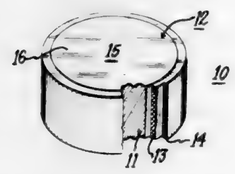
METHOD OF MAKING A STABLE HIGH VOLTAGE DC VARISTOR

Howard F. Ellis, Stephentown, N.Y., and James S. Kresge, Pittsfield, Mass., assignors to General Electric Company, N.Y.

Division of Ser. No. 201,182, Oct. 27, 1980, Pat. No. 4,317,101. This application Jun. 15, 1981, Ser. No. 274,030

Int. Cl.³ H01C *17/02*

U.S. Cl. 29—613 **5 Claims**



1. A method for providing a zinc oxide varistor having stable electrical characteristics when subjected to DC voltages comprising the steps of:

applying a glass collar to the outer perimeter of a zinc oxide varistor disc;

applying a pair of metal electrodes on opposite surfaces of said disc;

heat treating the collared disc by raising said disc to a temperature of about 750° C. for one hour;

cooling the heated collared disc to less than 400° C.;

coating an insulating material on the surface of said glass collar; and

heating the heated collared disc to an elevated temperature up to 500° C. to cure the insulating coating.

4,409,729

METHOD OF MAKING SPIRAL WOUND FUSE BODIES

Nitin Shah, Taylor, Mich., assignor to Littelfuse, Inc., Des Plaines, Ill.

Division of Ser. No. 194,778, Oct. 7, 1980. This application Nov. 19, 1981, Ser. No. 322,745

Int. Cl.³ H01H *69/02*

U.S. Cl. 29—623 **4 Claims**

1. A method of mass producing fuse bodies for slow blowing fuses comprising the steps of first forming a limp dead yarn from individual twisted together strands of insulating filaments coated with a binding material which can leave a conductive residue under fuse blowing conditions, winding said yarn upon a spool, removing said binding material from said yarn while wound on said spool and, unwinding said yarn from said spool and immediately spiral winding fuse wire upon the progressively unwinding yarn to form a self-supporting elongated body of yarn encompassed by fuse wire.



4,409,730

METHOD FOR FABRICATING MULTI-ELEMENT ANODE STRUCTURES FOR ELECTROCHEMICAL CELLS

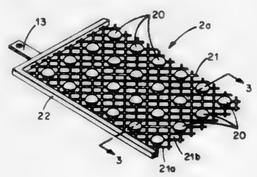
Franz Goebel, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 9, 1981, Ser. No. 319,813

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.³ H01M *4/08*

U.S. Cl. 29—623.5 **20 Claims**



1. A method for fabricating an anode structure for an electrochemical cell comprising the steps of:

positioning a plurality of discrete lithium anode pellets in a spaced-apart pattern adjacent to a metal screen of a predetermined thickness; and

pressing the plurality of lithium anode pellets into the metal screen so as to be embedded within the screen and physically secured thereto.

4,409,731

FIXTURE FOR REMOVING AND REPLACING SHRUNK-ON SLEEVES ON A SHAFT

Ira J. Campbell, East Bradford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1981, Ser. No. 332,565

Int. Cl.³ B23P *19/00*

U.S. Cl. 29—800 **10 Claims**

1. A fixture for removing and replacing shrunk-on sleeves on a shaft, said fixture comprising:

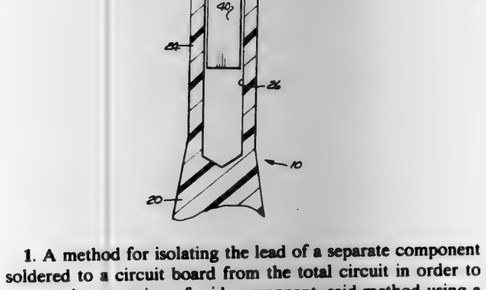
a first portion having a U-shaped opening which fits over the shaft without contacting the shaft;

a second portion having a U-shaped opening which fits over the shaft without contacting the shaft;

the first and second portions being electrically insulated from each other so as not to allow circulating currents therethrough and fastened together to form an opening which fits over the shaft without contacting the shaft;

a plurality of studs electrically insulated from and fastened to the first and second portions;

the studs being cooperatively associated to engage the sleeve and support the sleeve in the fixture;



a fluid cooled induction coil disposed to encircle the sleeve;

a member attached to the first portion, the member having means for receiving leads for moving and lifting the fixture and sleeve, whereby the sleeve can be induction heated and easily removed and replaced in a shrunk-on fit on a shaft.

4,409,732

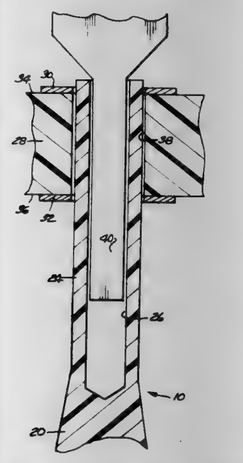
CIRCUIT ISOLATOR

Gary D. Poff, Fontana, Calif., assignor to John Grant, Brea and Darryl J. Trulin, Upland, both of, Calif.

Filed Jan. 5, 1981, Ser. No. 222,384

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—825 **1 Claim**



1. A method for isolating the lead of a separate component soldered to a circuit board from the total circuit in order to inspect the operation of said component, said method using a generally elongated isolator device having an isolator sleeve at one end forming an isolator cavity, said method comprising the steps of:

removing the solder from the interface of said lead and said circuit on said board;

aligning said isolator sleeve with said lead in said board;

pushing said sleeve onto said lead to enclose said lead within said isolator cavity; and

simultaneously forcing said sleeve completely through said board to electrically isolate said lead from said circuit on said circuit board.

4,409,733

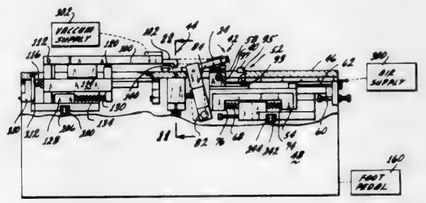
MEANS AND METHOD FOR PROCESSING INTEGRATED CIRCUIT ELEMENT

James C. Alemanni, Oceanside, Calif., assignor to Integrated Machine Development, Escondido, Calif.

Filed Jan. 26, 1981, Ser. No. 228,603

Int. Cl.³ H01R *43/00*; **B23P** *23/00*

U.S. Cl. 29—827 **20 Claims**



1. The method of separating an integrated circuit element from an integral flat pack frame and inserting it in a carrier, comprising:

(a) delivering said frame to a cutting station with said integrated circuit element in a selected clocked orientation,

(b) separating said integrated circuit element from said frame thereby forming a separated integrated circuit element,

(c) positioning a carrier at a packing station and transferring said separated integrated circuit element from said cutting station to said packing station while maintaining said selected clocked orientation by picking it up out of said cutting station by generally vertical movement, moving it generally horizontally to above said packing station, and putting it down into said carrier at said packing station by generally vertical movement, and

(d) accomplishing the above in a continuous cycle of operations from start to finish.

8. The improvement in means for processing an integrated circuit element singly formed within an integral flatpack frame by separating the integrated circuit element from the frame and inserting the integrated circuit element in a selected clocked orientation into a carrier, said integrated circuit element having a central integrated circuit instrumentality and a series of leads extending from opposite sides of said instrumentality, comprising:

(a) a cutting station and delivery means, both of said station and said delivery means being mounted on structure means, said delivery means operative to deliver said frame to said cutting station with said integrated circuit element in said selected clocked orientation,

(b) shearing means mounted on said structure means and located at said cutting station operative to separate said integrated circuit element from said frame and thereby to form a separated integrated circuit element,

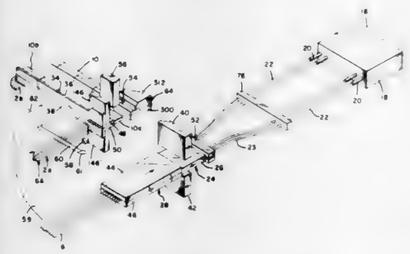
(c) a packing station and a carrier, both of said packing station and said carrier being mounted on said structure means, said carrier positioned at said packing station and packing means operative to transfer said separated integrated circuit element from said cutting station to said packing station and to pack said separated integrated circuit element into said carrier while maintaining said selected clocked orientation, and

(d) control means automatically sequentially operating said delivery, shearing and packing means in each cycle of operation.

4,409,734
HARNESS MAKING APPARATUS AND METHOD

Nathan A. Baraglia, Algonquin; Robert Eitzinger, Lincolnshire, and Kimber T. Vought, Wauconda, all of Ill., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 18, 1981, Ser. No. 235,407
Int. Cl.³ H01R 43/04; B23P 19/00
U.S. Cl. 29—861 23 Claims



1. Apparatus for serially manufacturing electrical harnesses of the type comprising at least one multi-contact electrical connector and a plurality of electrical contact terminals therein, said terminals being arranged in side-by-side relationship in a row, each of said conductors being connected to one of said terminals in a conductor connecting portion of said one terminal, said apparatus being of the type having feed roll means for feeding a plurality of conductors in side-by-side coplanar relationship along a conductor feed path, a cutting station on said conductor feed path, said cutting station being located downstream, relative to the direction of conductor feed, from said roll means, and a conductor connecting station proximate to said cutting station, said conductor connecting station being spaced laterally from said conductor feed path, and having connecting means for connecting conductors to terminals in a connector positioned in said connecting station, said apparatus being characterized in that:

said apparatus has upstream and downstream conductor guides proximate to said cutting station, said upstream guide extending upstream from said cutting station and said downstream wire guide extending downwstream from said cutting station, said upstream and downwstream guides having opposed ends, said guides being relatively movable parallel to said conductor feed path between adjacent positions and remote positions, said opposed ends of said guides being substantially against each other when said guides are in said adjacent positions and being separated from each other by a gap when said guides are in said remote positions,

severing means in said cutting station comprising normally open severing blades located in a plane which extends normally of said conductor feed path and which lies within said gap, said severing blades being movable to a closed position to cut said conductors and thereby produce a plurality of leads having their trailing ends in said gap and extending through said downstream guide,

trailing end transferring means having clamping means for clamping the conductors in side-by-side coplanar relationship, the trailing end transferring means being movable along a transfer path which intersects the conductor feed path in the gap and and extends to the connecting station and

actuating and control means effective during each operating cycle to position said guides in said adjacent positions to thereafter actuate said feed roll means thereby to feed said conductors along said feed path, to thereafter move said guides to said remote positions, to thereafter cause said transferring means to move into said gap between said opposed ends of said guides and clamp said conductors to thereafter close said severing blades and cut said conductors, to thereafter transfer said trailing ends of said leads to said connecting station, and thereafter to actuate said connecting means to connect said trailing ends to said terminals in said connector and thereby produce one of said harnesses.

18. A method of serially manufacturing electrical harnesses of the type comprising a least one multi-contact electrical connector and a plurality of conductors, said connector having a plurality of electrical contact terminals therein, said terminals being arranged in side-by-side relationship in a row, each of said conductors being connected to one of said terminals in a conductor connecting portion of said one terminal, said method comprising the steps of:

feeding a plurality of said conductors in side-by-side coplanar relationship along a conductor feed path through upstream and downstream, relative to the direction of conductor feed, conductor guides which are against each other,

moving said conductor guides relatively away from each other along said conductor feed path thereby forming a gap between said guides with said conductors extending across said gap,

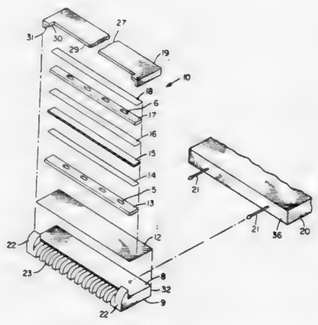
gripping said conductors in said gap at a location proximate to said downstream guide and severing said conductors at a location between said upstream guide and the location at which said conductors are gripped,

transferring the severed lead conductors laterally of their axes to a connecting station and connecting the cut ends of said conductors to terminals in a connector at said connecting station.

4,409,735
SAFETY RAZOR

Cyril A. Cartwright, Monroe; James S. Emmett, Ansonia; Arthur E. Michael, Middletown; Anthony J. Peleckis, Trumbull, and Ernest M. Symes, Guilford, all of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 871,917, Jan. 24, 1978, abandoned, which is a division of Ser. No. 715,272, Aug. 18, 1976, Pat. No. 4,069,580. This application Dec. 6, 1978, Ser. No. 966,918
Int. Cl.³ B26B 21/00, 21/54
U.S. Cl. 30—47 14 Claims

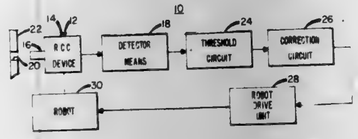


1. A razor blade assembly comprising a flexible seat member having a substantially planar surface, a flexible blade having a sharpened cutting edge disposed on the seat member surface, a flexible guard member located forwardly of the cutting edge, a flexible cap member on the blade having a forward margin located rearwardly of the cutting edge, the seat, guard, blade and cap member being yieldingly bonded together and being flexible about an axis parallel to the plane of the blade and perpendicular to its cutting edge wherein said assembly is capable of deflecting substantially arcuately about said axis to a curvature having a radius of above five inches or less in response to a force within the range of about 0.018 to four pounds applied to the longitudinal midpoint of said assembly.

4,409,736
NULL SEEKING SYSTEM FOR REMOTE CENTER COMPLIANCE DEVICE

Donald S. Seltzer, Arlington, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jul. 31, 1981, Ser. No. 288,981
Int. Cl.³ G01B 5/25
U.S. Cl. 33—169 C 16 Claims



1. A null seeking control system for a remote center compliance device having a fixed portion and operator means movable relative thereto, comprising:

detector means for sensing the position of the operator means of an RCC device relative to the fixed portion of that RCC device;

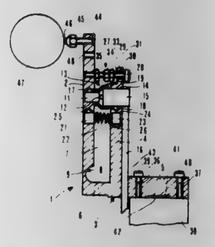
a threshold circuit means responsive to said detector means for determining for at least one degree of freedom whether the operator means is at a null region, offset in a first direction or offset in a second direction relative to said fixed portion of the RCC device; and

a correction circuit, responsive to said threshold circuit, for providing an error correction signal to maintain the null position of said operator means relative to said fixed portion of said RCC device.

4,409,737
GAUGING HEAD FOR CHECKING LINEAR DIMENSIONS OF MECHANICAL PIECES

Guido Golinelli, Bologna, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio (BO), Italy

Filed Jul. 16, 1981, Ser. No. 283,887
Claims priority, application Italy, Jul. 25, 1980, 3485 A/80
Int. Cl.³ G01B 7/28
U.S. Cl. 33—172 E 14 Claims



1. A gauging head for checking linear dimensions of mechanical pieces comprising:

an integral member including: a first section defining a measurement arm, a second section defining arm supporting means and a third section connecting the first section and the second section, the third section defining fulcrum means consisting substantially of a portion of reduced thickness permitting pivotal movements of the first section with respect to the second section, about a geometrical axis substantially perpendicular to the arm, the arm extending substantially along a longitudinal direction and having an end integrally connected with said portion and a free end;

a feeler fixed at the free end of the measurement arm, for contacting the piece to be checked;

a transducer including: two mutually movable elements fixed to the measurement arm and the second section, respectively, and sealing means coupled to said mutually movable elements, at least one of the two mutually movable elements being adjustably fixed to the measurement arm or the second section, respectively, the transducer being adapted to provide a signal representative of the position of the measurement arm with respect to the second section, the second section being adjacent to the first section;

an adjustable limiting device fixed to at least one of said first and second sections and adapted to cooperate with the other of said first and second sections for limiting the pivotal movements of the first section;

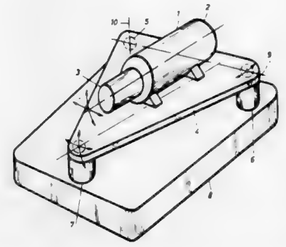
spring means including a spring having two ends coupled to the measurement arm and the second section, respectively, for urging the arm to pivot about the fulcrum means, the spring means including adjustment means for adjusting the thrust of the spring; and

locking means for directly locking at least one of said second and third sections to an external support, the second and third sections defining a plurality of holes for permitting locking of the gauging head in different positions with respect to the external support.

4,409,738
ARRANGEMENT FOR ADJUSTABLY MOUNTING AN OPTICAL DIRECTION INDICATOR

Ake C. Renander, Hovas, and Rune P. S. Samuelsson, Angered, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Oct. 9, 1981, Ser. No. 310,326
Int. Cl.³ G01C 1/00
U.S. Cl. 33—281 2 Claims



1. Arrangement for adjustably mounting an optical direction indicator such as a sighting telescope (1) with associated base (4) on a substructure (8) provided with three attachment points (5,6,7), adjustable for giving the direction indicator a prescribed direction in relation to the substructure, the improvement wherein

the first attachment point 5 comprises a fixed ball means (11) allowing universal movement of the base (4) about the first attachment point (5), the second attachment point (6) comprises a ball means (22) adapted for movement in an arc with its center at the first attachment point (5) and with the arc approximately in a plane through the three attachment points (5,6,7),

the third attachment point (7) comprises a ball means (31) adapted for displacement by a first setting means (34) substantially at right angles to the plane through the three attachment points (5,6,7) for pivoting the base (4) and the direction indicator (1) about an axis (9) through the first and second attachment points (5,6), and also by a second setting means (37) for displacing said ball means (31) in an

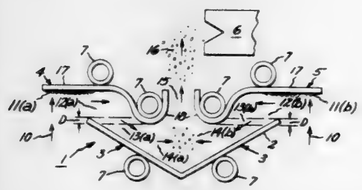
arc with its center at the first attachment point (5) and with the arc approximately in the plane through the three attachment points (5,6,7) for pivoting the base (4) and the direction indicator (1) about an axis (10) through the fixed ball means 5 at right-angles to said plane, said first setting means (34) including a graduated, setting screw (34) acting directly on the ball means (31) of the third attachment point, (7) said second setting means (37) including a second graduated setting screw (37) connected to the ball means (31) of the third attachment point by a rigid member (35) universally pivotable at the second setting screw (37) and at the ball means (31).

4,409,739

EROSION RESISTANT GAS DISTRIBUTOR AND A METHOD FOR MINIMIZING EROSION

Masayoshi Kuwata, Ballston Lake, and Fred W. Staub, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 2, 1981, Ser. No. 298,698
Int. Cl.³ F26B *3/08*
U.S. Cl. 34—10 **15 Claims**



1. An erosion resistance gas distributor for fluidizing a bed of particulate matter with a particulate laden gas stream, comprising:

(a) a pair of baffles laterally disposed and spaced from each other to form a gas passage therebetween, said passage having a gas input side and a gas output side adapted to provide gas flow communication with said bed of particulate matter; and

(b) a trough disposed on said gas input side of said passage, spaced from said pair of baffles to form a means for gas communication between said gas input side of said passage and an input side of said gas distributor in order to fluidize said bed of particulate matter and to direct entering gas to flow through said means for gas communication in a direction substantially parallel to said baffles before entering said passage; wherein the surfaces facing said trough of each of said pair of baffles are flat and outwardly perpendicular to a vertical extension through the lateral margins of said trough.

4,409,740

YELLOWCAKE (U_3O_8) DUST, WATER AND HEAT RECOVERY PROCESS AND APPARATUS

Dennis D. Sousek, Littleton, Colo., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 30, 1981, Ser. No. 316,558
Int. Cl.³ F26B *5/00*
U.S. Cl. 34—11 **36 Claims**

1. In the production of a substantially dry yellowcake product from a slurry composed of yellowcake particles and an evaporable fluid, a process for the recovery of heat, evaporable fluid and yellowcake particles, normally lost in heated off-gases produced by drying of the slurry in a yellowcake dryer comprising:

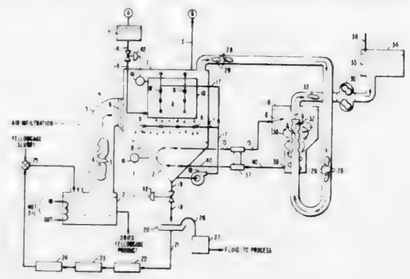
drawing the off-gases produced in the yellowcake dryer into a condenser, the off-gases consisting of a mixture of condensable gases, noncondensable gases and entrained yellowcake particles;

condensing the off-gases by means of a fluid spray whereby the heat contained in the off-gases is transferred to the spray fluid raising the temperature thereof;

recovering the heat transferred to the spent spray fluid in which the entrained yellowcake particles and condensate are not contained thereby cooling the spent spray fluid;

collecting the cooled spent spray fluid in a condenser sump and separating it into three streams;

discharging the first stream into a fluid containing bleed chamber through which the noncondensable gases and esaped condensable gases remaining in the condenser after condensation of the off-gases are drawn by means of a suction thereby cleaning the noncondensable gases and



recovering any residual yellowcake particles entrained therewith and condensing the escaped condensable gases;

continuously cross-circulating the fluid contained in the bleed chamber with the cooled spent spray liquid in the condenser sump;

exhausting the cleaned noncondensable gases;

directing the second stream to the fluid spray; and

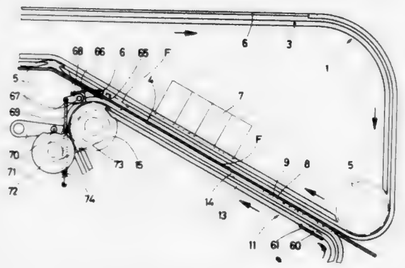
discharging the third stream into a thickener having a thickened underflow consisting of recovered yellowcake particles, the underflow being recombined with the slurry to be dried, thereby recovering the yellowcake particles contained therein.

4,409,741

CONVEYOR DEVICE FOR TRANSFERRING FRESHLY PRINTED SHEETS

Antonio Bonomi, Lausanne, Switzerland, assignor to De La Rue Giori S.A., Switzerland

Filed May 1, 1981, Ser. No. 259,668
Claims priority, application Switzerland, May 5, 1980, 3472/80
Int. Cl.³ F26B *13/12*; B65H *29/04*
U.S. Cl. 34—162 **12 Claims**



1. A conveyor device for transferring freshly printed sheets from a printing machine to an output stack, which comprises a first system of two parallel endless chains, transverse means extending between said chains for supporting and actuating a series of clips for alternately gripping and releasing the leading edge of the sheet to be transferred, said first endless chain system comprising a predetermined rectilinear section and

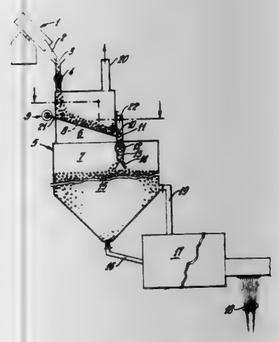
means for driving the chains continuously, a second system of two parallel endless chains, transverse means extending between said chains for supporting and actuating another series of clips for alternately gripping and releasing the trailing edge of the sheet to be transferred as it enters said rectilinear section, said second system also comprising a predetermined rectilinear section parallel and adjacent to said predetermined rectilinear section of said first system and being driven at the same linear speed as said first section, means for producing a slight backward movement of the clips of said second system with respect to those of the first system for stretching the sheet tautly and keeping the sheet in this condition throughout its travel through said rectilinear section, means mounted on said chains of the second system for supporting the clips thereof in such a way that said clips can be moved in relation to the chains of said second system in the longitudinal direction, said support means being responsive to a control device for movement from a first position in which the sheet is stretched to a second position in which the sheet is slackened and a frame comprising side members secured by means of said side members to the inner faces of the two chains of said second system, said side members comprising guide means for said support means and carrying a rotary shaft rigid with a push-arm and with a control lever provided with a first roller follower, said support means comprising on the one hand a bracket in which a transverse shaft carrying the clips of said second system and a clip actuating lever provided with a second roller follower are rotatably mounted, and on the other hand a plurality of stop members adapted to cooperate with the outer ends of said clips of said second system, and a return spring for urging said support means to said first position in which the sheets are tensioned, said support means being movable as a consequence of an angular movement of said control lever engaging said push-arm against the force of said return spring to said second position, cam means being carried by the frame structure of the device and adapted to actuate said first and second roller followers whereby said clips of said second system are firstly opened before penetrating into said rectilinear section, whereafter said support means is moved to said second position and said clips are reclosed, said support means being moved back to said first position.

4,409,742

APPARATUS FOR PREDRYING PELLETIZED MATERIAL

Charles M. Hohman, Granville; Mark A. Propster, Gahanna, and Stephen Seng, Frazeysburg, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 216,465, Dec. 15, 1980, Pat. No. 4,332,603.
This application Feb. 1, 1982, Ser. No. 344,343
Int. Cl.³ F26B *17/26*
U.S. Cl. 34—168 **4 Claims**



1. Apparatus for drying glass batch pellets comprising:

a. a chamber comprised of a predrying section and a preheating section;

b. gas conduit means opening into said preheating section and gas conduit means opening from said predrying section;

c. pellet introduction conduit means opening into said predrying section and pellet removal conduit means opening from said preheating section; and,

d. an oscillating grate positioned in open communication between said pellet introduction conduit means and said predrying section, said grate being substantially equal in width to the width of the predrying section, the gas flow area through said predrying section being substantially less than the gas flow area through said preheating section.

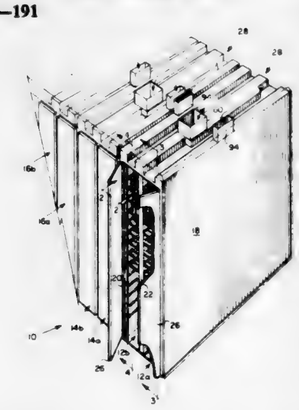
2. The apparatus of claim 1 in which said grate is comprised of a plurality of spaced members positioned to form a gas flow velocity therethrough greater than the gas flow velocity through said preheating section and greater than the gas flow velocity at the entrance to said predrying section.

4,409,743

PERFORATED WALLS AND DUCT SYSTEM

Knud Jespersen, R.R. #1, Terracotta, Ontario; Guy E. Buller-Colthurst, 308 Silverstone Dr., Rexdale, Ontario, and Hans L. Bergner, 3199 Folkway Dr., Mississauga, Ontario, all of Canada

Continuation of Ser. No. 963,954, Nov. 27, 1978, abandoned.
This application Sep. 17, 1980, Ser. No. 188,167
Int. Cl.³ F26B *21/06*
U.S. Cl. 34—191 **17 Claims**



10. An air flow wall structure for use in the construction of chambers for processing meat products, said wall structure comprising:

a wall having two generally vertical sides defining a hollow interior enclosure between said two sides;

a plurality of removable separate generally vertical wall panel members forming a said side of said wall and being separable from the other said side of said wall;

a plurality of separate upper and lower panel support means mounted at spaced locations within such hollow interior of such wall for engaging upper and lower panel edges and for releasably supporting respective said wall panel members in position in said wall whereby one said panel member may be removed without disturbing another such panel member;

partition means extending between said two sides of said wall dividing said hollow interior into separate compartments;

duct means communicating with said compartments;

air passages in said wall panel members whereby air may flow from, or into, said compartments; and

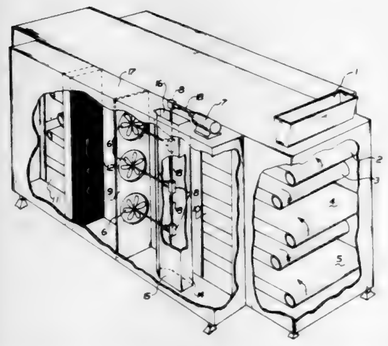
damper means in at least some of said duct means for controlling flow of air therein.

4,409,744

PROPELLER FAN DRIVE

Lloyd F. Sturgeon, Oreland, and Paul E. Smith, Philadelphia, both of Pa., assignors to Proctor & Schwartz, Inc., Horsham, Pa.

Filed Jun. 8, 1981, Ser. No. 271,549
Int. Cl.³ F26B *13/06*
U.S. Cl. 34—207 **5 Claims**



1. An assembly comprising a chamber defining a passageway for fan driven fluid, fan means for driving said fluid, fan drive transmission means connected to said fan means, and an enclosure located within said chamber wherein said enclosure comprises:

a substantially vertical means for isolating said fan drive transmission means from said fan driven fluid, said means for isolating comprising upper and lower opening means vertically spaced apart above and below said transmission means, the upper opening means being open to the ambient at a point above the chamber, the lower opening means being open to the ambient at a point below the chamber, the opening means being adapted to allow circulation of ambient air by convection from the lower of said opening means past said fan drive transmission means and out the upper of said opening means without any substantial contact with said fan driven fluid.

4,409,745

INSOLE SYSTEM FOR SHOE WITH REMOVABLY-MOUNTED HEEL

Nicola Musci, Caracas, Venezuela, assignor to Fratelli Musci, Caracas, Venezuela

Continuation-in-part of Ser. No. 300,515, Sep. 9, 1981. This application Feb. 26, 1982, Ser. No. 352,881
Int. Cl.³ A43B *13/28, 21/36*
U.S. Cl. 36—24.5 **12 Claims**

1. An insole system for a shoe with a removably-mounted heel,

said insole system comprising:

a unitary insole/heel jack unit having a relatively thin body portion shaped to laterally substantially cover the upper side of the bottom wall of the shoe upper from the back of the heel forwards at least to the arch, said body portion being anatomically-mimetically shaped by being generally upwardly concave/downwardly convex so as to have an upwardly-projecting marginal rim that runs rearwardly at least from the inside of the arch, around back of the heel and forwards at least to the outside of the arch;

said unitary insole/heel jack unit further including a heel jack unitarily formed with said body portion so as to protrude downwardly therefrom centrally of the heel;

said heel jack including means for removably mounting a shoe heel thereto;

said unitary insole/heel jack unit being constituted by a molding of an upper layer and a lower layer of fibrous



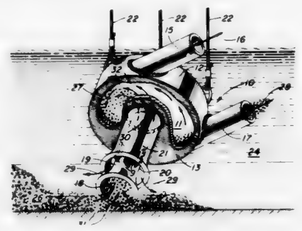
sheet material with a lens-like pocket of plastic resin encapsulated between them, both layers of sheet material being facially connected to said pocket of plastic resin, the lower of said layers of sheet material having an opening therethrough centrally of the heel; said heel jack being constituted by an integral downward protuberance of said plastic resin from said pocket.

4,409,746

VORTEX INJECTION DREDGING APPARATUS AND METHOD

Jeffrey L. Beck, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Feb. 5, 1981, Ser. No. 231,637
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—58 **2 Claims**



1. A dredging apparatus for removing solid material from a body of fluid comprising:

(a) a chamber having a substantially circular cross section and an axis normal to said cross section;

(b) first inlet means through said chamber periphery, said inlet means axis normal to a diameter of said circular cross section;

(c) first outlet means through said chamber periphery, said outlet means axis normal to a diameter of said circular cross section;

(d) suction inlet means through said chamber substantially coaxially aligned with said chamber axis;

(e) fluid outlet means through said chamber substantially coaxially aligned with said chamber axis;

(f) support means for positioning said suction inlet in said body of fluid in a manner to move said fluid and said solid material to be dredged, into said suction inlet;

(g) means for communicating a high pressure fluid to said first inlet; and

(h) means for communicating fluid mixed with dredged material from said first outlet means,

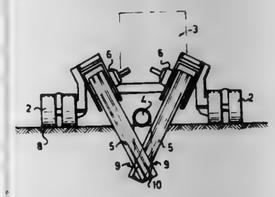
whereby said suction inlet means will pick up solid material and fluid and communicate same through said first outlet and communicating means to a remote location.

4,409,747

DIGGING APPARATUS

Willem P. Kaldenbach, The Hague, Netherlands, assignor to Panama Overseas Shipping Corporation Inc., Willemstad, Netherlands Antilles

Filed Sep. 10, 1980, Ser. No. 185,817
Claims priority, application Netherlands, Sep. 13, 1979, 7906840
Int. Cl.³ E02F *5/06*
U.S. Cl. 37—69 **9 Claims**



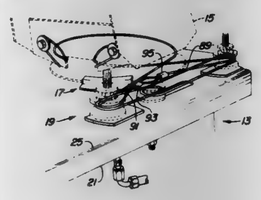
1. An apparatus for digging a trench under a pipeline or cable which has been placed on the sea bottom, the apparatus comprising a carriage, means for moving the carriage along the pipeline on the sea bottom and two forward digging chains, each digging chain being movable from a first position so as to be inclined with respect to the direction of movement of the carriage to a second position so as to be substantially at right angles to the direction of movement of the carriage, at least one of the digging chains being disposed on each side of the pipeline to be buried and extending at an angle under the pipeline and to the other side thereof, the digging chains being mounted on the carriage at their upper ends so that their lower ends define two points on a line extending beneath the pipeline or cable and so that at least a portion of the lower end of each chain extends laterally beyond the other chain when viewed in the direction of the trench, the digging chains being arranged one behind the other in the direction of movement of the carriage, whereby a trench with an undercut slope at both sides is dug.

4,409,748

SNOWBLOWER HYDRAULIC CHUTE ROTATION ASSEMBLY

David A. Westimayer, Horicon, Wis., assignor to Deere & Company, Moline, Ill.

Filed Sep. 29, 1982, Ser. No. 427,393
Int. Cl.³ E01H *5/09*
U.S. Cl. 37—261 **5 Claims**



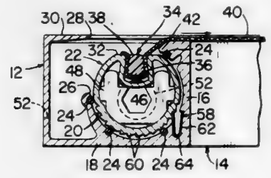
1. In combination with a snowblower having a housing open along one side to receive snow and means for impelling said snow from said housing and a chute rotatably mounted to said housing for directing said impelled snow, a hydraulic chute rotation assembly comprising: a frame having a top surface containing a slot, a first and second pulley rotatably mounted to said top surface of said frame in fixed location having a longitudinally extending slot located generally between said pulleys, a hydraulic cylinder fixably mounted to said frame, said cylinder having a displacable cylinder arm, a third pulley rotatably mounted to said cylinder arm and located generally between said first and second pulleys above said slot, said third pulley being mounted to said cylinder arm such that motion of said cylinder arm causes said third pulley to travel in a path defined by said slot, and said frame being fixably mounted to said housing, cable means for communicating said chute and said hydraulic cylinder including a cable communicating with said pulleys such that displacement of said third pulley by said hydraulic cylinder alters the relative lengths of said cable relative to said pulleys resulting in rotation of said chute.

4,409,749

STRETCH FRAME

Kaino J. Hamu, 25142 Wandering La., El Toro, Calif. 92630

Filed Sep. 8, 1981, Ser. No. 300,220
Int. Cl.³ D06C *3/08*
U.S. Cl. 38—102.3 **28 Claims**



1. In a stretch frame from stressing sheet material edgewise, the combination comprising:

a sheet tensioning roller,

a frame structure including bearing means engaging the external surface of said roller along a substantial portion of its length and rotatably supporting the roller for turning of the roller on its longitudinal axis,

sheet gripping means on said roller for gripping an edge of said sheet material whereby rotation of said roller in one direction with the opposite edge of the material fixed to the frame stresses the material edgewise between said edges, and

readily accessible means for rotating said roller.

4,409,750

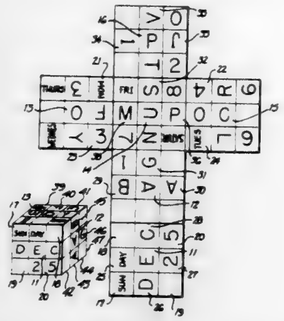
CALENDER FORMED FROM A CUBE PUZZLE

Marvin A. Silbermintz, New York, N.Y., assignor to Ideal Toy Corporation, Secaucus, N.J.

Filed Aug. 18, 1981, Ser. No. 293,902
Int. Cl.³ G09D *3/06*; A63F *9/08*
U.S. Cl. 40—107 **15 Claims**

7. A calendar formed from a cube puzzle having a plurality of small cubies operatively interconnected to permit manipulation of the cubies and movement thereof from face to face forming a portion of the surface of the cube puzzle; and predetermined legible indicia on at least some of said cubie faces;

said indicia being arranged in a predetermined relation on the cubies, such that the date, month abbreviation and name of any



day in a year may be displayed on a face of the cube puzzle by manipulation of said cubies.

4,409,751

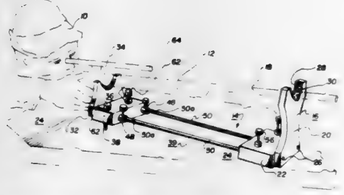
FIREARM SUPPORT

Richard M. Goda, and Raymond N. Goda, both of c/o 701 Smithfield St., Pittsburgh, Pa. 15222

Continuation of Ser. No. 114,503, Jan. 23, 1980, abandoned, which is a continuation of Ser. No. 9,746, Feb. 5, 1979, abandoned, which is a continuation of Ser. No. 880,711, Feb. 23, 1978, abandoned. This application Aug. 28, 1981, Ser. No. 297,243

Int. Cl.³ F41C *29/00*

U.S. Cl. 42—94 **3 Claims**



1. A firearm support, comprising:

(a) a barrel support assembly comprising

(1) a barrel support riser for pivotally supporting the barrel of the firearm, and

(2) a barrel support base adapted to be supported by a support surface and rigidly affixed to said barrel support riser for stabilizing said barrel support riser;

(b) a stock support assembly comprising

(1) a stock support riser for removably supporting the stock of the firearm, and

(2) a stock support base adapted to be supported by a support surface and rigidly affixed to said stock support riser for stabilizing said stock support riser; and

(c) adjusting means for adjustably fixing the relative lateral position of said stock support assembly and said barrel support assembly comprising at least one slider rod threadably engaging said barrel support assembly and slidably extending through said stock support assembly.

4,409,752

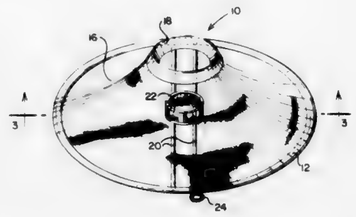
CRAB TRAP AND METHODS FOR MAKING AND USING

George L. Anderson, 8527 Arpe Crescent, Delta, British Columbia, Canada V4C 3Y2

Filed Apr. 27, 1981, Ser. No. 257,796

Int. Cl.³ A01K *71/00*

U.S. Cl. 43—102 **36 Claims**



31. A generally frustoconical crab trap comprising:

(a) a substantially circular, endless loop defining the perimeter of the bottom of the trap and having a substantially corrosion-resistant exterior, the loop causing the trap to sink when used;

(b) a net encircling the loop and defining a net bottom and sides of the frustoconical trap; and

(c) a circular buoyant collar substantially of closed-cell foam, which has the net cast within it, defining an unrestricted top entryway within the circumference of the collar so that crabs can enter the trap, the trap floating above the bottom when the trap is used;

(d) a detachable bait box positionable in the trap's volume through the collar; and

(e) a means attached to the loop for raising and lowering the trap,

wherein (1) the loop, net, and collar define a volume capable of retaining crabs which enter the trap through the collar, (2) the trap presents an equally attractive profile to the crabs which approach the trap across the net from any direction, (3) the net has a mesh size over which mature crabs may readily walk to approach the collar from any direction, the mesh being between about 1/16–¾ inch in size, (4) the trap being collapsible for flat storage, (5) the collar being the sole entryway to the trap, and (6) the buoyancy of the collar being sufficient to self-erect the trap in use by providing at least four pounds positive buoyancy.

4,409,753

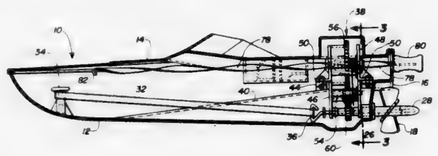
POWERED TOY BOAT

Bruce M. D'Andrade, Whitehouse Station, N.J., and Fun S. Mak, Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 30, 1982, Ser. No. 373,423

Int. Cl.³ A63H *23/02*

U.S. Cl. 46—93 **10 Claims**



1. A toy boat including in combination, a hull, a gear train having a supporting frame mounted within said hull adjacent the stern end thereof, a helical type spiral rod extending longitudinally within said hull and extending through a slot in one first clutch member engageable with a first gear of said gear train for rotation of said first gear in opposite directions of rotation when said spiral rod is reciprocated respectively in opposite directions, a propeller supported exteriorally of the stern end of said hull upon one end of a drive shaft supported by bearings within said supporting frame, fixed anchor means adjacent the bow of said hull, an elongated readily twistable elastic band connected at one end of said anchor means and the other end of said band being connected to the other end of said drive shaft, a drive gear in said train connected to said drive shaft, a second gear in said gear train interengageable between said first gear and drive gear, and a second clutch interconnected between said propeller and drive shaft operable to permit manual restraint of said propeller against rotation when winding of said band is occurring, whereby when said spiral rod is pulled outwardly relative to said hull said first clutch member drivingly engages said first gear to activate said gear train to rotate said drive gear in a direction to wind said elastic band while said propeller is manually restrained from rotation and said spiral rod when sequentially pushed inwardly operating to disconnecting said first clutch to render said gear train motionless and coengaging members of said second clutch being engaged to prevent the twisted elastic band from unwinding, followed by repeating said foregoing cycle until the band is wound to a desired amount.

4,409,754

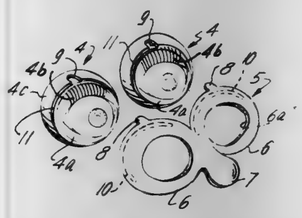
SOFT DOLL HEAD WITH SLEEPING EYES

Claude R. M. Moreau, 8506 60th Ave., Elmhurst, N.Y. 11373

Continuation of Ser. No. 86,584, Oct. 19, 1979. This application Apr. 24, 1981, Ser. No. 257,229

Int. Cl.³ A63H *3/40*

U.S. Cl. 46—169 A **5 Claims**



1. A soft doll head having sleeping eyes and comprising a soft, resilient, unitary core of substantially the shape of a doll head having a pair of spaced, longitudinally extending cavities therein arranged with their longitudinal axes in parallel, an elongated sleeping eye module in each cavity with the movable eye thereof facing outwardly, an outer covering enclosing said core onto which the features of a doll face can be applied, said outer covering having a pair of eye holes in registry with said eyes, and intermediary means between said core and said outer covering for securing said eye modules in place relative to each other, said intermediary means comprising a pair of annular members secured to said outer covering, said annular members and said eye modules having cooperating means for securing said eye modules in said annular members with the movable eyes of said eye members protruding through the openings of said annular members and the annular members being on either side of and integral with a nose portion, said members and nose portion forming a mask means, wherein said eyeholes are formed by cutting a plurality of tongue portions in said outer covering and folding said tongue portions under said outer covering, said tongues being secured to said annular members of said mask means.

4,409,755

HAND HELD LIQUID HERBICIDE APPLICATOR

Mitchell E. Maddock, Rte. 1, Box 24AA, Florence, Ariz. 85232

Continuation-in-part of Ser. No. 240,779, Mar. 5, 1981, Pat. No. 4,357,779, which is a continuation-in-part of Ser. No. 94,715, Nov. 16, 1979, Pat. No. 4,291,491, which is a continuation-in-part of Ser. No. 72,147, Sep. 4, 1979, Pat. No. 4,305,224. This application May 18, 1981, Ser. No. 264,636

Int. Cl.³ A01M *21/00*

U.S. Cl. 47—1.5 **10 Claims**



1. A hand-held liquid herbicide applicator for wipingly applying the liquid herbicide on undesired vegetation growing at ground level comprising:

(a) an elongated, straight tubular handle for holding at a forwardly and downwardly extending angle which defines a normal application position, said tubular handle constituting a reservoir and having a bore which is open at the top for receiving the liquid herbicide;

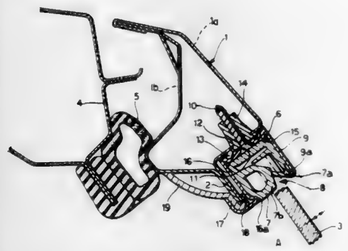
(b) a flow control valve means coupled to the lower end of the tubular handle so as to extend coaxially therefrom, said flow control valve means including valve adjustment means normal to the axis of the tubular handle for controlling the flow rate of the liquid herbicide from the bore of the tubular handle; and

(c) an elongated applicator head including,

I. an elongated tubular dispenser conduit one end of which is coupled to said flow control valve means co-axially with said tubular handle for receiving the liquid herbicide therefrom, said dispenser conduit having a bend so as to extend angularly with respect to the longitudinal axis of said tubular handle so as to lie in a substantially horizontal plane when said tubular handle is in its normal application position, said dispenser conduit having its other end closed and having a plurality of longitudinally aligned apertures formed in spaced increments along its bottom through which the liquid herbicide will exit said dispenser conduit,

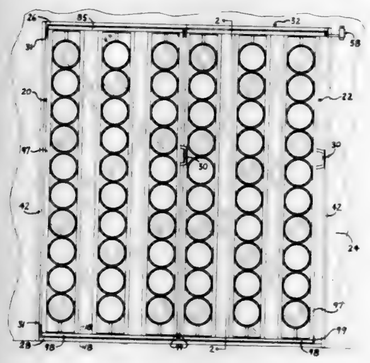
II. a sponge assembly carried on said dispenser conduit for absorbingly receiving the liquid herbicide from said dispenser conduit for wiping application on the undesired vegetation, said sponge assembly including, an elongated resilient sleeve demountably mounted on said dispenser conduit in frictional movement restraining contiguous engagement with the periphery of said dispenser conduit, said sleeve having a plurality of longitudinally aligned apertures formed in spaced increments therealong and in coaxial alignment with the apertures of said dispenser conduit, an elongated synthetic sponge affixed on at least a portion of the periphery of said sleeve for absorbingly receiving the liquid herbicide which is flowable through the aligned apertures of said dispenser conduit and said sleeve.

4,409,756
STRUCTURE FOR SUPPORTING AND GUIDING WINDOW PANES OF VEHICLE BODIES
Carlo Audenino, Trofarello, and Mario Barbero, Turin, both of Italy, assignors to Fiat Auto S.p.A., Turin, Italy
Filed May 12, 1981, Ser. No. 262,879
Int. Cl.³ E06B 7/16
U.S. Cl. 49—440 **1 Claim**



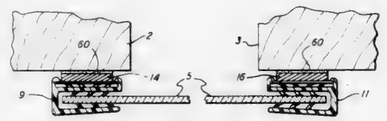
1. A support and guide structure for a side window of a motor vehicle body comprising a frame defining a window opening wherein said frame is formed by two half-shells which are welded together and has an end portion at which the half-shells are joined which projects inwardly of said window opening in a plane substantially parallel to the plane of the window opening, a channel-shaped member fixed along side of said frame and having a base wall and two opposing side walls defining between them a channel facing inwardly of said frame, the side wall of said channel-shaped member which is designed to be inside the motor vehicle in use having an appendage which is turned over at least part of said edge portion at which said half-shells are joined, a sealing strip housed within said channel and having a pair of lips which define between them a seat for receiving and guiding an edge portion of a window pane with said seat being displaced from the longitudinal center-line of said channel towards the side wall of the channel shaped member which is designed to be outside the motor vehicle in use and a surround facing inwardly of the vehicle to act as a protection and embellishment wherein said surround is provided with an internal side portion interposed between said edge portion and said appendage.

4,409,757
SECURITY LATCH ASSEMBLY
John Daugherty, 3611 Bangor St., S.E., Washington, D.C. 20020
Filed Jul. 29, 1981, Ser. No. 288,262
Int. Cl.³ E05D 13/04
U.S. Cl. 49—449 **34 Claims**



1. A security rod assembly for use with closures located in top and bottom tracks, at least a first and second of said closures being slidable between an open and a closed position in said tracks, said security rod assembly comprising:
an elongated rod member swingably attached to the top track such that it has an up position and a down position,
wherein when said rod member is in the down position said rod member extends between the edge of said first closure and the edge of the opening preventing said first closure from being slid from the closed position to the open position, and when said rod member is in the up position it does not interface with the sliding of said first closure,
an end member attached to said rod member such that when said rod member is in the down position said end member engages said second door in a manner such that said second closure cannot be slid,
a latching assembly attached to a wall adjacent to said closures, and,
an extension member attached to said rod member and extending beyond said closures to said latching assembly,
wherein said extension member engages said latching assembly to hold said rod member in the up and down positions.

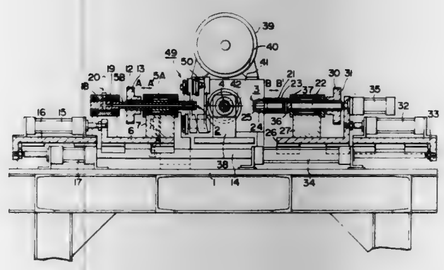
4,409,758
PERIMETER STRIP FOR MAGNETICALLY ATTRACTABLE EXTRUDED PLASTIC WINDOW SYSTEM
Albert Dickerson; John Szlag, both of Columbus, Ohio, and John Reyle, Teaneck, N.J., assignors to Plaskolite, Inc., Columbus, Ohio
Filed Mar. 12, 1981, Ser. No. 243,188
Int. Cl.³ E06B 3/32; E05B 65/04
U.S. Cl. 49—463 **8 Claims**



1. In an auxiliary window system for a prime window, in which system:
(1) a perimeter strip is applied to the edge of a glazing pane along a portion of the perimeter thereof, receiving a portion of the pane edge in a longitudinally extending channel therein, which channel in cross-section is formed by upper and lower channel forming segments of an integral member; and
(2) the perimeter strip includes a magnetically attractable means adjacent and essentially parallel to the channel forming segment of the perimeter strip, which magnetically attractable means longitudinally co-extends along an outer surface of said channel forming segment; and
(3) said magnetically attractable means is for attachment with respect to corresponding magnetic attraction means applied adjacent the perimeter of the prime window,
the improved perimeter strip which includes:
(4) longitudinally extending inwardly facing resilient gaskets on the inner surfaces of the pane edge receiving channel formed by the upper and lower cross-sectional segments of the integral perimeter strip member; and
(5) resilient gasket feather means integrally applied to an outer surface of the channel forming segment of the perimeter strip member on a side of the channel forming segment facing the magnetically attractable means which is adjacent thereto, said gasket feather means (a) longitudinally coextending along said outer surface (b) in a sealing relationship with said magnetically attractable means and (c) providing a flexibly tensioned relationship between said channel forming segment and the magnetically attractable means adjacent thereto.

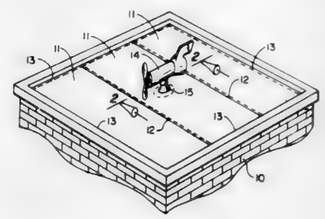
4,409,759
Patent Not Issued For This Number

4,409,760
METHOD FOR THE MANUFACTURE OF LENS-LIKE ARTICLES AND THE LIKE
Yoshiaki Nagaura, No. 391-2, Tonoharu, Oaza, Chikushino-shi, Fukuoka-ken, Japan
Filed Jul. 21, 1980, Ser. No. 170,450
Claims priority, application Japan, Aug. 2, 1979, 54-99650; Aug. 4, 1979, 54-99627; Aug. 16, 1979, 54-105340; Mar. 3, 1980, 55-27599; Mar. 4, 1980, 55-27597; Mar. 11, 1980, 55-32052; May 1, 1980, 55-59255
Int. Cl.³ B24B 1/00, 13/00
U.S. Cl. 51—284 R **2 Claims**



1. A method of making a lens having opposite spherical surfaces comprising:
providing a pair of work piece holders which each have a center axis and which each extend substantially coaxially along a reference center axis, a first of the work holders adapted to clamp a work piece and rotate the work piece about the first work holder center axis and a second of the work holders adapted to hold a work piece surface by suction and rotate the work piece about the second work holder center axis;
holding a work piece with the first work holder;
rotating the work piece with the first work holder;
machining one side of the work piece to form a first spherical surface on the work piece centered about the reference center axis and a center line of the work piece;
stopping rotation of the work piece;
moving the first work holder with respect to the second work holder along the first work holder axis to bring the work piece first spherical surface into contact with the second work holder with the center line of the work piece corresponding with the center axis of the second work holder;
attracting the work piece to and retaining the work piece on the second work holder directly from the said first work holder by suction with the center line of the work piece corresponding with the center axis of the second work holder;
disengaging the work piece from the first work holder and moving the first and second work holders apart along the reference center axis; and
machining an opposite side of the work piece to form a second spherical surface thereon centered about the reference center axis and the work piece center line.

4,409,761
ROOF CONSTRUCTION SYSTEM HOLDING ROOF MEMBRANES IN PLACE BY SUCTION FORCES
Thomas J. Bechtel, 18737 T.R. 133, Kenton, Ohio 43326
Filed Apr. 3, 1981, Ser. No. 255,067
Int. Cl.³ E04F 17/04
U.S. Cl. 52—1 **1 Claim**

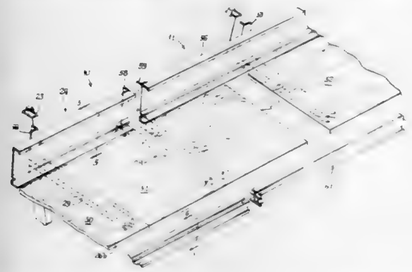


1. A roof system comprising
a roof surface,
a roof membrane positioned on said roof surface,
a suction inlet located between said roof membrane and said roof surface,
a housing rotatably connected to said suction inlet, a shaft mounted in said housing positioned parallel to the plane of said roof surface,
an exhaust fan mounted on said shaft,
and means for operating said exhaust fan comprising a windmill attached to said shaft and positioned on the exterior of said housing.

4,409,762
ROW STRUCTURE FOR TELESCOPING SEATING SYSTEMS AND METHOD OF ASSEMBLING SAME
David W. Raymond, Champaign, Ill., assignor to American Seating Company, Grand Rapids, Mich.
Filed Feb. 23, 1981, Ser. No. 236,877
Int. Cl.³ E04H 3/12
U.S. Cl. 52—9 **14 Claims**

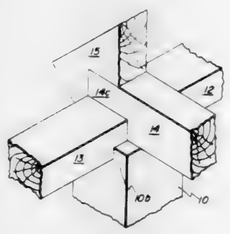
1. In a telescoping seating system including a plurality of rows adapted for movement between an extended use position

in which the rows are in tiered relation and a retracted use position in which the rows are in nested relation and generally vertically aligned, each row including an understructure and a deck carried by said understructure, the improvement comprising: a riser beam attached to the upper portion of said understructure and including a first panel receiving slot; footrest panel material having a rear edge received and held by said first slot of said riser beam and including a forward edge, said panel material being continuous from said rear edge to said forward edge; a structural nose beam defining a second slot opening in a horizontal direction toward the rear of said system and receiving the forward edge of said footrest panel material;



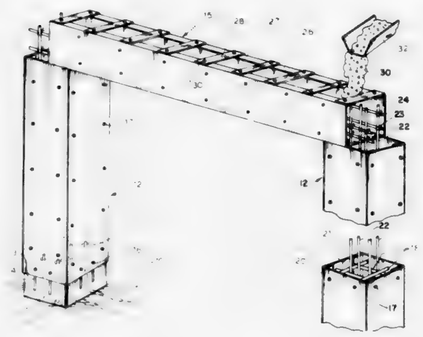
connecting arms for connecting said nose beam to said riser beam; and fastener tightening means securing said nose beam to said connecting arms for forcing said rear and forward edges of said panel material respectively into tight engagement with said first and second slots on said riser beam and said nose beam respectively to thereby clamp said footrest panel material against the web of said riser and to force said panel material against vertical movement by said first and second slots, said panel material being in compression in a fore-and-aft direction against a corresponding tensile force in said arms and thereby forming an integral part of a horizontal truss together with said riser beam, said nose beam and said connecting arms.

4,409,763
POST AND BEAM BUILDING
Robert J. Rydeen, Box 207, Main St., Fremont, N.H. 03044
Filed Mar. 23, 1981, Ser. No. 246,612
Int. Cl.³ E04C *1/24*
U.S. Cl. 52—93 **17 Claims**



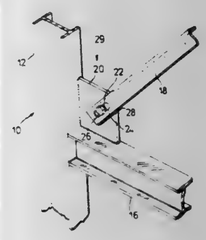
1. An improved post and beam building comprising:
(a) a first post;
(b) a first beam parallel to an exterior wall of the building and resting on said first post;
(c) a second beam aligned with said first beam and resting on said first beam; and
(d) a third beam orthogonal to said first and second beams, resting on both said first post and said second beam, and laterally abutting portions of said first and second beams, the longitudinal section of said third beam resting on said first post having a cross section substantially undiminished from the cross section of the main portion of said beam.

4,409,764
SYSTEM AND METHOD FOR REINFORCED CONCRETE CONSTRUCTION
John A. Wilnau, Orlando, Fla., assignor to Ennis H. Proctor; Donald C. Proctor and Donald C. Page, all of Ormond Beach, Fla.
Continuation-in-part of Ser. No. 711,060, Aug. 2, 1976, abandoned, and Ser. No. 827,960, Aug. 27, 1977, abandoned, each is a continuation of Ser. No. 593,371, Jul. 7, 1975, abandoned. This application Jun. 21, 1978, Ser. No. 917,550
Int. Cl.³ E04B *1/19*
U.S. Cl. 52—127.3 **6 Claims**



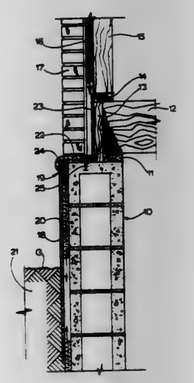
1. A system for building a structural framework on a foundation, comprising
(a) a plurality of elongated metal shells of rectangular cross section,
(b) means for securing certain of said shells to the foundation in horizontally spaced vertical positions defining the columns of the framework,
(c) others of said shells being supported on said column shells in horizontally extending relation defining the beams of the framework,
(d) means permanently securing adjacent ends of said beam shells together and to the adjacent said column shells with the interiors of adjacent said shells in interconnecting relation,
(e) a plurality of reinforcing bars extending the full length of the interior of each of said shells,
(f) means holding said reinforcing bars within each said shell in predetermined spaced relation with each other and with the inner surface of said shell,
(g) reinforcing bars extending in bridging relation across each joint between adjacent said shells and in connected relation with said reinforcing bars within said adjacent shells,
(h) said beam shells being open along the upper sides thereof to receive fluid concrete in sufficient quantity to fill the interiors thereof and of said column shells below said beam shells and to cooperate with said reinforcing bars in retaining said shells in rigidly interconnected relation defining the structural framework,
(i) means compressing the opposed side walls of each of said beam shells to predetermined concave curvatures, and
(j) said compressing means having:
(aa) predetermined limited yield characteristics providing for substantial flattening of said side walls in response to the hydrostatic pressure of fluid concrete substantially filling said beam shells;
(bb) waler means engaging each of said opposed side walls of said column shells,
(cc) a plurality of band means of limited yieldability spaced vertically in encircling relation with said column shells and said waler means, and
(dd) means holding said band means in predetermined tension calculated to balance the hydrostatic pressure developed by fluid concrete substantially filling said column shells with said opposed side walls substantially flat.

4,409,765
EARTH-QUAKE PROOF BUILDING CONSTRUCTION
Avtar S. Pall, Centre for Building Studies, Concordia University, 1455 de Maisonneuve Blvd. W., Montreal, Que., Canada H3G 1M8
Filed Jun. 24, 1980, Ser. No. 162,394
Int. Cl.³ E02D *27/34*
U.S. Cl. 52—167 **11 Claims**



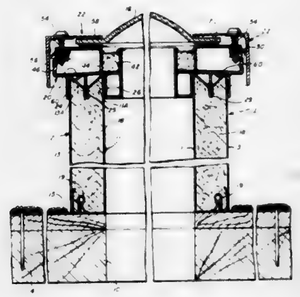
1. A building having first and second spaced apart structural members, a third member connecting said first and second members to form a frame, a brace extending in the plane of said frame and connected thereto, said brace having a slip joint surfaces exhibiting substantial frictional characteristics, said slip joint being constructed of opposed members secured to said frame, said slip joint including friction members in said opposed members and clamping means for forcing said opposed and friction members together to define a slippage interface for relative motion between the surfaces upon the application of a force tending to induce such motion of a large magnitude typically experienced during an earth-quake, said clamping means comprising a portion of said brace located inside said friction members and moveable to bear them against said opposed members on movement of said brace.

4,409,766
THERMAL INSULATION STRUCTURE
Phillip W. Blackmore, Camalachie, Canada, assignor to Fiberglas Canada Inc., Toronto, Canada
Filed Apr. 13, 1981, Ser. No. 253,271
Int. Cl.³ E04B *1/62*
U.S. Cl. 52—169.11 **19 Claims**



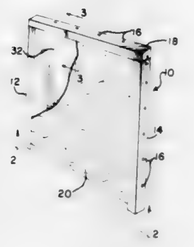
1. For use in a thermal insulation structure to be applied to the exterior of an above-grade portion of a building basement wall and comprising thermal insulation means adapted to become secured to the wall to thus form a thermally insulating layer on the exterior thereof: protective sheet means, comprising, in combination:
(a) a sheet section discrete from thermal insulation means and having a predetermined height;
(b) holding means for holding solely an upper margin portion of the sheet section in a position such that said thermal insulation means is sandwiched between the exterior of a basement wall and said sheet section, when the sheet section is applied;
(c) said holding means including a fastener engagement portion adapted for engagement by fastener means for securing said holding means to a basement wall at a location spaced from the plane defined by exterior of a basement wall;
(d) said predetermined height of the protective sheet section being selected to be in excess of the height of the above-grade portion of a basement wall to which the protective sheet section is to be applied, to secure that, on application, the sheet section extends below ground level;
whereby said sheet section, when installed, is held in a position generally parallel with a basement wall solely by a fastener means remote from exterior of the wall, and by a back fill.

4,409,767
SKYLIGHT CONSTRUCTION
Arthur P. Jentoft, Kennebunkport, and Paul A. Couture, Emery Mills, both of Me., assignors to Wasco Products, Inc., Sanford, Me.
Continuation-in-part of Ser. No. 923,245, Jul. 10, 1978, abandoned. This application Mar. 30, 1981, Ser. No. 249,072
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—200 **21 Claims**



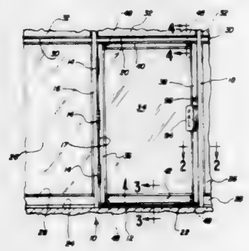
1. A skylight construction for an opening in a building comprising;
a curb frame extending about the opening and having means for receiving a means for securing the frame in place about the opening,
translucent or transparent means covering the opening and extending at its edges to the curb frame,
means for retaining the covering means on the curb frame,
said curb frame being constructed of a rigid thermoplastic and having associated therewith at least one gasket for sealing between the curb frame, and support means for the curb frame including inner and outer metal wall members defining therebetween a void space that may be filled with insulation,
said curb frame having inner and outer recesses for receiving said respective inner and outer metal wall members and being defined at least in part by a common wall forming a thermal break between said inner and outer metal wall members.

4,409,768
PREFABRICATED WALL PANEL
Joseph Boden, 341 Timber View Dr., Oak Brook, Ill. 60521
Continuation-in-part of Ser. No. 155,488, Jun. 2, 1980, abandoned. This application Mar. 2, 1981, Ser. No. 239,324
Int. Cl.³ E04C *2/20*
U.S. Cl. 52—309.4 **13 Claims**



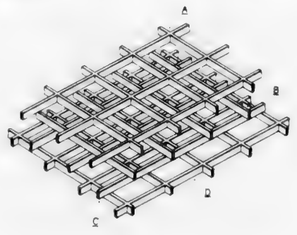
1. A prefabricated load bearing wall panel for constructing the walls of a building comprising:
(a) at least two vertical support members in parallel spaced relationship, each of said vertical members including at least one longitudinal flange projecting generally inward toward the opposite vertical member;
(b) a first horizontal support member attached between the upper ends of said vertical support members, a second horizontal support member disposed parallel to said first member and secured to said vertical members, the first and second horizontal members defining a general rectangular framework enclosing a space therebetween, said second horizontal support member is secured to said vertical members intermediate the ends of the latter to define vertical legs extending beyond said framework for securing said wall panel to the building; and
(c) a light-weight, rigid foam insulating panel integrally molded to said vertical support members and said flanges substantially filling the space enclosed by said framework, said foam panel comprising a liquid foam which adheres to said vertical members and said flanges, said foam solidifying to form a self-supporting panel defining first and second faces of solidified foam.

4,409,769
HEAT INSULATED ENTRANCE
Ronald E. Redman, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.
Filed Aug. 25, 1980, Ser. No. 180,624
Int. Cl.³ E04B *5/52*
U.S. Cl. 52—475 **30 Claims**



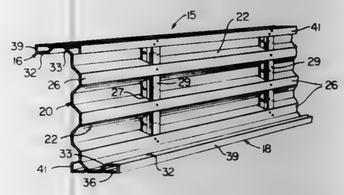
1. A cladded, insulated frame member assembly for buildings comprising:
an elongated frame member of metal having a wall face with a rib along one edge;
a spacer formed of heat insulating material including hook means along one edge in interengaged, hooked relation with said rib and having an opposite edge; and
an elongated metal cladding element having hook means along one edge in interengaged, hooked relation with said opposite edge of said spacer and having a rib element with a deformable portion adapted to be deformed into holding engagement with said one edge of said spacer for securing said cladding element in the assembly,
said rib element positioned between opposite outer edges of said cladding element and including a deflectable rib for providing said holding engagement with said spacer hook means on said rib of said frame member,
said cladding element including an opposite edge portion projecting beyond said rib element away from said frame member,
said opposite edge portion of said cladding element including means for supporting one face of an edge portion of a panel supported by said frame member assembly,
said opposite edge portion of said cladding element including a flange parallel and spaced apart from said rib, and
filler means inserted between said flange and rib.

4,409,770
VACUUM INSULATION SPACER
Genbee Kawaguchi, 8-3, Higashitamade 1-chome, Nishinari-ku, Osaka-City, Osaka, and Kiyoshi Nagai, 10-15, Mondoni-shimachi, Nishinomiya-City, Hyogo-Prefecture, both of Japan
Filed Oct. 22, 1980, Ser. No. 199,170
Claims priority, application Japan, Feb. 6, 1980, 55-12527
Int. Cl.³ B65D *25/18, 90/02*; E04C *2/36*
U.S. Cl. 52—666 **1 Claim**



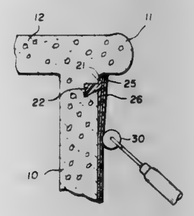
1. A vacuum insulation spacer for use between an upper surface and a lower surface of a vacuum insulation structure, said spacer having at least four supporting levels, each level comprising a plurality of members made from an insulating material and having a substantially rectangular cross section, each level including members which are not parallel to members included in an adjacent level, each level being positioned with respect to an adjacent level so that contact between any two levels occurs only between members of a first level and members which are not parallel with respect thereto in an adjacent level, said contact occuring at contact points between the levels, said four levels being positioned with respect to one another such that no two contact points are aligned in a dimension perpendicular to the plane of said levels, said nonalignment of said contact points serving to increase the resistance of said spacer to heat transfer both by lengthening the heat transfer path between said upper surface and said lower surface of said vacuum insulation structure and by reducing the degree of physical contact between adjacent levels.

4,409,771
SHEET METAL BEAM
Colin F. Lowe, 5214 Sanford, Houston, Tex. 77035
Continuation-in-part of Ser. No. 104,286, Dec. 12, 1979, Pat. No. 4,329,824. This application Dec. 18, 1980, Ser. No. 217,709
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.³ E04B *1/18*
U.S. Cl. 52—729 **24 Claims**



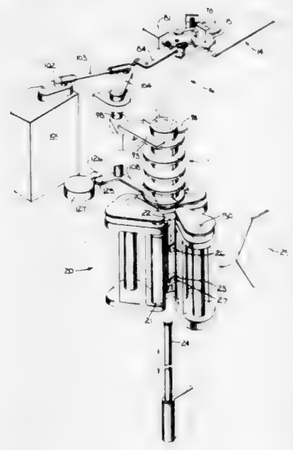
1. An improved elongated beam adapted for use in constructing a building and having a substantially high strength/-weight ratio, said beam comprising a sheet metal panel forming a first upper flange portion integrally connected to a first lower flange portion by a web portion disposed generally perpendicular to said flange portions, said web portion having a plurality of vertically spaced and longitudinally extending stiffening ribs providing said web portion with a generally corrugated vertical cross-sectional configuration, a second upper flange portion and a second lower flange portion connected to the corresponding said first upper and lower flange portions, a plurality of longitudinally spaced strut members extending generally vertically adjacent said web portion, said strut members including means projecting laterally into said ribs, and means rigidly connecting said strut members to at least one of each of said upper and lower flange portions and to said web portion for positively maintaining said corrugated configuration of said web portion.

4,409,772
METHOD OF LINING CONCRETE IN-GROUND SWIMMING POOL
John D. Boyack, 101 Gillette Rd., Spencerport, N.Y. 14559
Filed Sep. 14, 1981, Ser. No. 301,956
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—746 **5 Claims**



1. A method of lining a concrete, in-ground swimming pool, said method comprising:
a. making a first saw cut about ¾ inches deep in said concrete around the upper rim of said pool below the coping for said pool;
b. making a second saw cut about ¾ inches deep in said concrete following said first saw cut but inclined relative to said first saw cut so said first and second cuts diverge with increasing depth into said concrete;
c. cleaning out a dovetail shaped recess formed in said concrete by said first and second saw cuts;
d. applying a mixture of polyester resin and glass fibers to fill said dovetail recess and cover over a narrow band of said concrete around said upper rim of said pool in the region of said dovetail recess to form a bonding surface locked to said recess;
e. sanding said bonding surface smooth after said polyester resin sets; and
f. lining said pool with glass fiber mats coated with polyester resin bonded to said bonding surface to form a waterproof liner supported by said concrete serving as a mold.

4,409,773
COIN WRAPPING MACHINE
Charles T. Bergman, and Robert L. Zwieg, both of Watertown, Wis., assignors to Brandt, Inc., Watertown, Wis.
Filed Apr. 14, 1981, Ser. No. 253,917
Int. Cl.³ B65B *57/14, 57/11*
U.S. Cl. 53—54 **15 Claims**



1. In a coin wrapping machine having a coin dispensing and counting mechanism for delivering a predetermined quantity of coins seriatum to a discharge chute, stacking means adapted to receive coins from said discharge chute to form a stack of coins, and wrapping means below and vertically aligned with said discharge chute adapted to receive a stack of coins from said stacking means and to form a wrapper about the stack, wherein said stacking means comprises:
an open stacking tube;
a support for said tube which is movable between an operative position in which the open top of said tube is disposed at the exit of the reject chute and a discharge position displaced laterally from said operative position;
a coin collector at said discharge position;
a detector for determining the formation of an improper stack in said tube; and
means for shifting said support to said reject position to reject said coins from said tube into said collector in response to said detector only when said detector determines the formation of an improper stack.

4,409,774

EQUIPMENT FOR COVERING A STACK OF GOODS WITH A SHRINK-WRAP

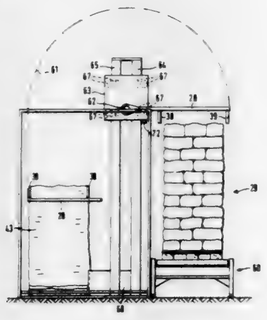
Rainer Hannen, Goch, Fed. Rep. of Germany, assignor to MSK Verpackungs-Systeme GmbH, Kalkar-Wissel, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,213

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1979, 2951086

Int. Cl.³ B65B *43/46, 43/60, 57/00, 59/02*

U.S. Cl. 53—77 **10 Claims**



1. Equipment for covering a stack of goods with a shrink-wrap, comprising:

a. a vertically displaceable lift carriage;

b. guide means for said carriage;

c. means for vertically displacing said carriage;

d. a substantially horizontal support connected to said carriage, said support rotatable substantially 180° around a vertically displaceable horizontal axis coincident with said support;

e. means for rotating said horizontal support; and,

f. shrink-wrap gripping and releasing means connected to said horizontal support and displaceable and rotatable therewith for transferring said shrink-wrap from a first position on one side of said guide means to a second position on an opposed side of said guide means.

4,409,775

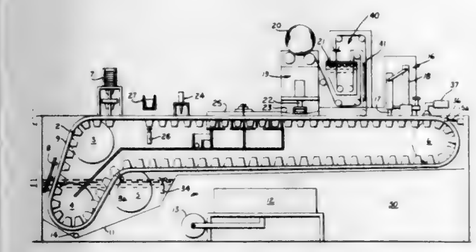
APPARATUS FOR THE ASEPTIC PACKING OF HIGH ACID FOOD

Aaron L. Brody, Dunwoody, Ga., and William E. Archibald, Oklahoma City, Okla., assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 973,681, Dec. 27, 1978, abandoned, which is a continuation-in-part of Ser. No. 826,352, Aug. 22, 1977, Pat. No. 4,152,464. This application Oct. 15, 1980, Ser. No. 197,037

Int. Cl.³ B65B *3/02, 55/10*

U.S. Cl. 53—167 **16 Claims**



1. In an apparatus for the aseptic packaging of food in preformed plastic cups and including conveying means for carrying said cups through a bath of sterilizing liquid whereby said cups are inverted and immersed in a bath of sterilizing liquid, removed therefrom and said liquid is allowed to drain from said cups and said cups are turned to an upright position, drying means for removing residual sterilizing liquid from the flange sealing areas of said cups, filling means for adding pre-sterilized food to said cups, cover element delivery means for supplying a cover element to each of said cups, sealing means for heat sealing said cover element to each of said cups, ejecting means for removing said cups from said conveying means, the improvement wherein

(a) said conveying means comprises carrier plates joined together to form an endless belt conveying means for carrying said cups through said apparatus and having orifices for receiving said cups, said orifices being shaped to conform with the shape of the cup sealing flanges,

(b) multiple spray means located at a point where said cups are submerged in said bath of sterilizing liquid, said spray means mounted at fixed location above and below the surface of said sterilizing liquid in said bath and arranged to spray liquid into said cups to prevent formation of air pockets or bubbles in said cups,

(c) said drying means comprises jets of sterile inert gas directed at the sealing flanges of said cups and being located downstream from the point where said cups emerge from said sterilant bath,

(d) said drying, filling and sealing means are located inside an enclosure means having means for introducing inert gas into said enclosure means, said enclosure means arranged to maintain an interior atmosphere of sterile inert gas at a pressure slightly above atmospheric pressure, and

(e) microbiological barrier means is provided following said sealing means, said barrier means serving to separate the interior of said enclosure means from the outside atmosphere and comprising a curtain of liquid sterilant effective to maintain the sterility of the atmosphere inside said enclosure means.

4,409,776

METHOD AND APPARATUS FOR PACKING ARTICLES WITH COMPOSITE STRETCHED FILMS

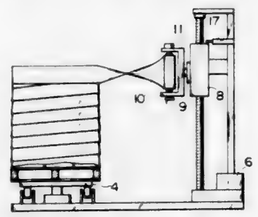
Akira Usui, Kakegawa, Japan, assignor to Shinwa Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 30, 1981, Ser. No. 279,212

Claims priority, application Japan, Dec. 13, 1980, 55-176261

Int. Cl.³ B65B *11/04*

U.S. Cl. 53—399 **12 Claims**



1. A method of packing an article comprising the steps of:

feeding a continuous composite stretchable film web having a longitudinal axis parallel to its feeding direction from a supply roll, one surface of said web being adhesive, while the other surface being nonadhesive;

wrapping said composite film web under tension or in a stretched state about said article to form a first layer with the nonadhesive surface in contact with said article;

inverting said supply roll to thereby twist said film web about an axis parallel to said longitudinal axis so that the adhesive surface faces the article; and wrapping said inverted composite film web about said first layer with said adhesive surface in contact with said first layer, and cutting said film web wrapped around the article from the supply roll.

4,409,777

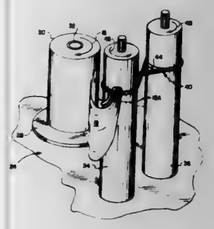
WEB THREADING APPARATUS

Kenneth D. White, Grapevine, and William R. Watson, Jr., De Soto, both of Tex., assignors to Infra Pak (Dallas), Inc., Dallas, Tex.

Filed Apr. 1, 1981, Ser. No. 250,061

Int. Cl.³ B65B *11/04, 13/02;* **G03B** *1/56*

U.S. Cl. 53—587 **2 Claims**



1. In a process for automatically wrapping stretchable wrapping material around a plurality of units placed on a rotatable turntable in order to unitize the units, wherein the stretchable material is pulled from a feedstock roll and prestretched by a pair of rollers disposed between the feedstock roll and the units and defining upstream and downstream rollers, the improvement comprising:

(a) pulling a leading end of said wrapping material from said feedstock roll;

(b) securing said leading end of said wrapping material to the upstream one of said rollers by a mechanism which constrains the wrapping material to pass into engagement with both the upstream and downstream rollers;

(c) rotating the said rollers to advance said leading end toward said turntable;

(d) interrupting the rotation of said rollers when said leading end has advanced to a location past the downstream roller;

(e) releasing the said leading end from said mechanism and from engagement with said downsteam roller;

(f) thereafter advancing said leading end to a location immediately adjacent said plurality of units; and

(g) securing said leading end to at least one of said units.

4,409,778

CROP COLLECTING APPARATUS

James B. McNaught, St. Germain en Laye, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/GB80/00223, § 371 Date Aug. 31, 1981, § 102(e) Date Aug. 31, 1981, PCT Pub. No. WO81/01938, PCT Pub. Date Jul. 23, 1981

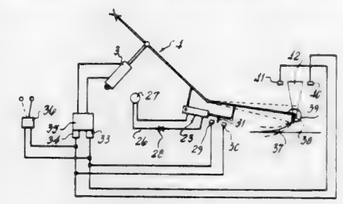
PCT Filed Dec. 19, 1980, Ser. No. 299,034

Claims priority, application United Kingdom, Jan. 10, 1980, 8000916

Int. Cl.³ A01D *41/06, 45/00*

U.S. Cl. 56—10.2 **4 Claims**

1. Crop collecting apparatus comprising a platform adapted for pivotal up and down movement about an axis that is located at the rear of the platform and extends transversely with respect to the direction of usual forward motion of the apparatus, the platform comprising a leading section and a rear section hinged together about an intermediate transverse axis extending parallel to said rear axis, primary actuation means provided to pivot the platform about the rear axis so as to raise and lower the platform relative to the ground, secondary actuation means connected between the leading and rear sections of the platform so as to positively control pivoting of the leading section within a pre-set angular range of movement relative to the rear section; first sensor means that senses when the leading section reaches the limits of the pre-set angular range, second sensor means that senses the height of the leading section above the ground, and platform height control means simultaneously connected to both the first and second sensor means to control operation of the primary and secondary actuation means in a manner dependent upon operation of said first and second sensor means so that in use the leading section is pivoted within said pre-set angular range and the whole platform is respectively raised and lowered when the leading section reaches the upper and lower limits of said angular range of movement, thereby to maintain the leading section at a predetermined height above the ground.



4,409,779

LAWN MOWER WITH COMBINED CLUTCH AND SELF BIASING BRAKE

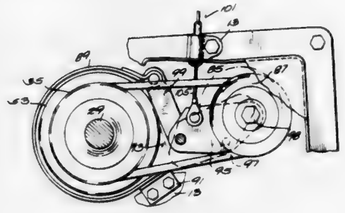
F. Eugene Bent, Oneida, and Irvin M. White, Galesburg, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 171,415, Jul. 23, 1980, Pat. No. 4,307,558. This application Aug. 17, 1981, Ser. No. 293,355

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

Int. Cl.³ A01D *69/10*

U.S. Cl. 56—11.3 **9 Claims**



1. A rotary lawn mower comprising a housing, pulley means rotatably supported by and mounted in said housing, a blade assembly connected to said pulley means for rotation thereby and including a cutter blade, and a brake drum fixed relative to said cutter blade, an endless member trained around said pulley means, an idler pulley around which said endless member is trained, means mounting said idler pulley on said housing for movement between a first position locating said idler pulley to remove slack from said endless belt, and a second position locating said idler pulley to permit slack in said endless member, a brake band anchored at one end to said housing and movable between a braking position engageable with said brake drum and a non-holding position, said brake band being fabricated of resilient material and being self-biasing into said braking position, said brake band also being connected to said idler pulley so as to bias said idler pulley to said second position, and means adapted to be operated by a user for displacing said idler pulley to said first position and said brake band to

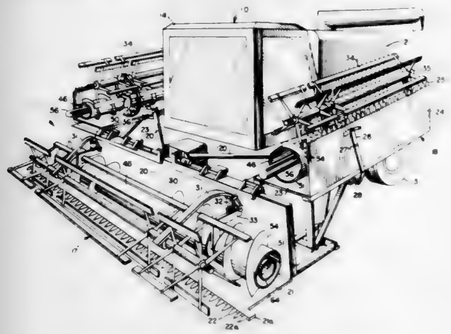
said non-braking position against the biasing action of said brake band.

4,409,780

FOLDING HEADER ASSEMBLY

Timothy K. Beougher, Manhattan; Joaquim A. Pipoli, Wichita; Karl K. Visser; Russell B. Bauck, both of Manhattan, and Tony K. Lippert, Clay Center, all of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Mar. 11, 1982, Ser. No. 357,137
Int. Cl.³ A01B *73/00*
U.S. Cl. 56—228 **36 Claims**



1. A folding header assembly for combines and the like comprising a center section and a pair of wing sections; said center section being adapted for horizontal attachment across the front of a combine and said wing sections being normally disposed at opposite ends of said center section and in general horizontal alignment therewith; a pair of vertically-spaced upper and lower hinge assemblies disposed at each end of said center section between said center section and said wing sections; each hinge assembly having hinge elements capable of being coupled and uncoupled; and actuating means connected to each pair of upper and lower hinge assemblies for selectively coupling only one of the assemblies of each pair while uncoupling the other of the assemblies of each pair; said wing sections being pivotally movable upwardly and downwardly about the pivot axes of the lower hinge assemblies of each pair, when said lower hinge assemblies are coupled and said upper hinge assemblies are uncoupled, to allow said wing sections to travel over uneven terrain; said wing sections being foldable upwardly about the pivot axes of said upper hinge assemblies, when said upper hinge assemblies are coupled and said lower hinge assemblies are uncoupled, to reduce the width of said header assembly in transit.

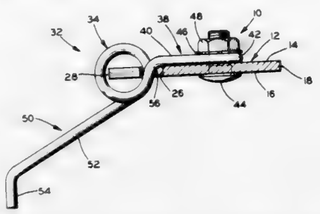
4,409,781

THATCHING TOOL FOR ROTARY LAWN MOWER

George H. Blackstone, Toledo, Ohio, assignor to Arnold Industries, Inc., Toledo, Ohio

Filed Aug. 3, 1981, Ser. No. 289,308
Int. Cl.³ A01D *55/18*
U.S. Cl. 56—295 **4 Claims**

1. In combination, an elongated supporting bar having central means to be engaged by a drive shaft of a motor of a rotary power lawn mower, said bar having an elongate notch extending parallel to the trailing edge at each end of said bar, said notch terminating in a slanted edge extending from the side of said notch away from the trailing edge to the trailing edge of the bar and forming a shank at the trailing edge extending toward said central means, a thatching tooth at each end of said supporting bar, each of said teeth having a resilient coil portion received over the corresponding shank, attaching means at one end of said coil portion to be attached to said supporting bar, and a ground-engaging portion at the other end of said coil portion extending downwardly from said supporting bar at an angle of 130°-160° to the direction of rotation of said bar, said attaching means comprising a straight end portion extending



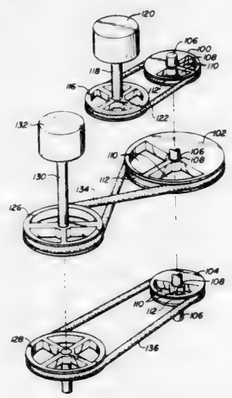
from said coil portion, and said tooth having a weakened portion in the form of a notch where said coil portion and said straight portion meet.

4,409,782

MULTIPLE-PATTERN TREE SHAKING MECHANISM

Rod Westergaard, Ceres; Lou Morton, Bakersfield, and Ken Zeiders, Merced, all of Calif., assignors to Westech Hydraulics, Ceres and Tenneco West, Bakersfield, both of, Calif.

Filed Jan. 20, 1982, Ser. No. 340,935
Int. Cl.³ A01D *46/26*
U.S. Cl. 56—328 TS **12 Claims**



1. In a tree shaker having a mobile frame and means for engaging a tree, an improved shaker mechanism comprising:
a shaft secured to the engaging means;
at least three eccentric weights rotatably mounted on the shaft; and
means for rotating each of the weights alone or in combination with one another, said means being capable of reversing the rotational direction of at least one of the weights without changing the rotational direction of the other weights.

4,409,783

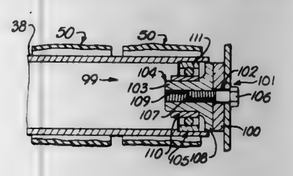
ROTARY BALER WITH IMPROVED ROLLER MOUNTS FOR ENDLESS BELT REPLACEMENT

Melvin V. Gaeddert, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Aug. 24, 1981, Ser. No. 295,844
Int. Cl.³ A01D *59/00*; **F16C** *13/00*
U.S. Cl. 56—341 **9 Claims**

1. In a rotary baler having a pair of upright sidewalls spanned by a series of transverse rollers which support endless driven belts looped around the rollers in a manner to engage and coil up crop material into a bale during operation of the

belts, an improved mount for at least one end of each of said rollers comprising:
an element having an enlargement disposed externally of the sidewall proximal to said one end of the roller, and an elongated externally threaded element portion projecting inwardly through said proximal sidewall;
means rotatably mounting said one end of the roller on said element portion in spaced relation to said proximal sidewall said mounting means including a member configured



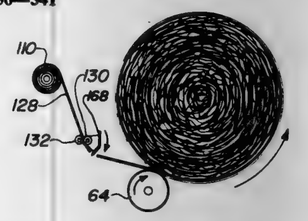
to present an internally threaded bore therein for threadably receiving said portion; and
a spacer on said element portion between said one end of the roller and the proximal sidewall,
said element portion being removable through said proximal sidewall, and said spacer being removable from between said one end of the roller and said proximal sidewall to present a gap through which said belts may be passed during replacement thereof.

4,409,784

METHOD OF WRAPPING ROLL BALES WITH PLASTIC FILM

Robert M. VanGinhoven, Lancaster; Shaun A. Seymour, New Holland, and Harry C. Eberly, Narvon, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 257,054, Apr. 24, 1981, Pat. No. 4,366,665. This application Jan. 21, 1982, Ser. No. 341,378
Int. Cl.³ A01D *91/00*
U.S. Cl. 56—341 **1 Claim**



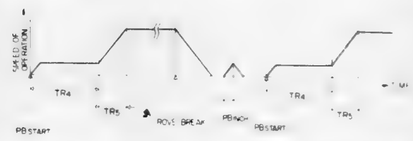
1. A method of wrapping a roll bale of crop material with plastic film comprising the steps of:
(a) holding the end of a supply roll of plastic film between feed rolls during formation of a roll bale;
(b) delivering the end of the supply roll of plastic film to the outer surface of a completed roll bale by operating a control means to energize an electric clutch in order to drive the feed rolls;
(c) wrapping at least one full layer of the plastic film around the roll bale by driving the feed rolls while rotating the roll bale; and
(d) severing the plastic film at a location between the roll bale and the feed rolls by operating the control means to deenergize the electric clutch in order to stop the feed rolls and to simultaneously deenergize a solenoid in order to permit a cutoff bar to be moved to a severing position into contact with the plastic film while continuing to rotate the roll bale.

4,409,785

METHOD OF STARTING A FLYER FRAME

Katsumi Nakane, Okazaki, and Hideo Hirano, Kariya, both of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 6, 1981, Ser. No. 261,287
Claims priority, application Japan, May 16, 1980, 55-65839
Int. Cl.³ D01H *7/50*
U.S. Cl. 57—78 **4 Claims**



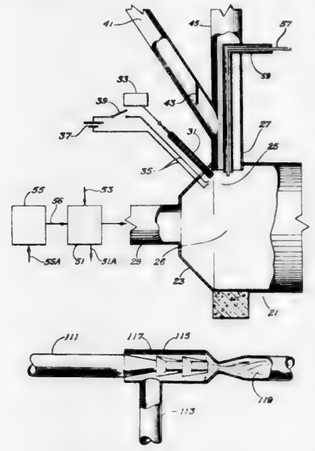
1. A method of starting a flyer frame, comprising the steps of effecting a cushion starting of the flyer frame and then allowing the normal speed operation of the flyer frame, wherein before the cushion starting is commenced, the flyer frame is driven for a predetermined time period at an operation speed which is lower than the normal operation speed of the flyer frame.

4,409,786

WOOD BURNING SYSTEM AND METHOD

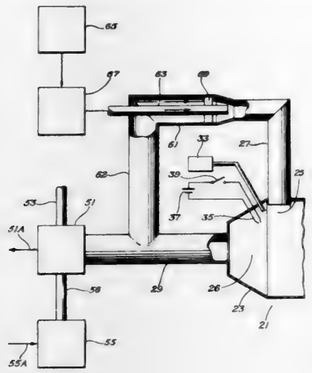
Joseph T. Hamrick, Roanoke, and Leslie C. Rose, Rocky Mount, both of Va., assignors to Biomass Energy Systems, Incorporated, Fort Worth, Tex.

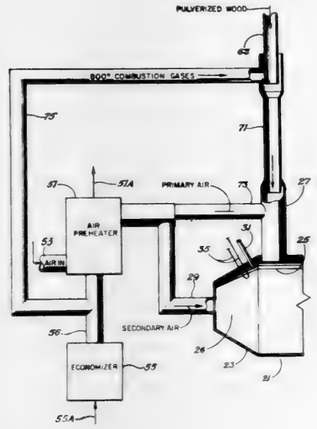
Continuation-in-part of Ser. No. 811,950, Jun. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 788,426, Apr. 18, 1977, abandoned. This application Mar. 21, 1979, Ser. No. 22,520
Int. Cl.³ F02C *3/26*
U.S. Cl. 60—39.464 **9 Claims**



1. A system for burning fibrous particles, comprising:
a combustion chamber;
a turbine;
injecting means for feeding fibrous particles into the combustion chamber in a substantially continuous manner;
pyrolysis means for pre-combustion heating the particles as the particles are being fed into the combustion chamber and for pyrolyzing at least some of the particles to form pyrolysis products, said pyrolysis products being fed into the combination chamber with unpyrolyzed particles;
said pyrolysis means including an air compressor mechani-

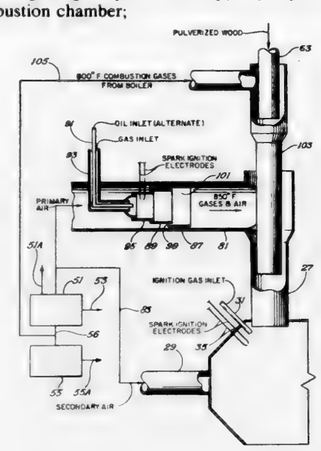
cally driven by the turbine and means for mixing compressed air with the particles as the particles are being fed into the combustion chamber, said pyrolysis means further

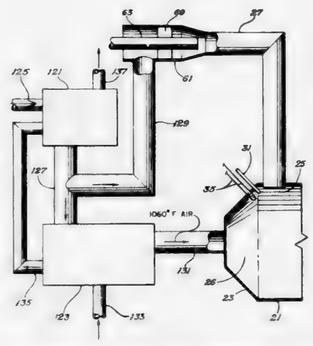




including means for heating the compressed air before mixing of the compressed air with the particles, the means for heating the compressed air including means for passing the compressed air over an exterior surface of the combustion chamber;

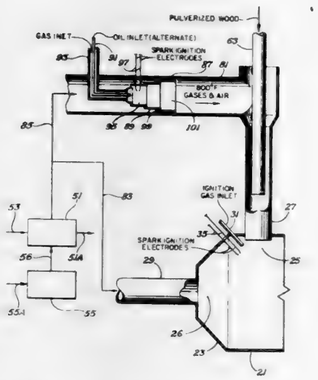
means for igniting the particles and pyrolysis products in the combustion chamber;





means for injecting air into the combustion chamber for enabling combustion of the particles and pyrolysis products therein to form combustion gases; and,

means for injecting the combustion gases into the turbine.



4,409,787

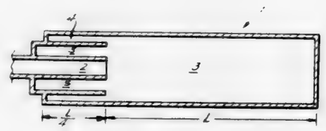
ACOUSTICALLY TUNED COMBUSTOR

Michael A. Davi; Lewis B. Davis, Jr., both of Schenectady, and Edward P. Hopkins, East Berne, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,341

Int. Cl.³ F02G *1/00*

U.S. Cl. 60—39.77 **5 Claims**



1. A stationary gas turbine combustor comprising, in combination;

a fuel nozzle for producing a flame which produces variable pressure waves which propagate from said flame;

a combustion chamber receiving said fuel nozzle at one end thereof and extending axially away from said fuel nozzle; and

pressure wave interference means fixed within the interior of said combustor and disposed in the path of said variable pressure waves to modify the intensity of said pressure waves and the location of their nodes, said pressure wave interference means comprising a quarter wave length reflection chamber at said one end extending substantially axially away from said combustion chamber.

4,409,788

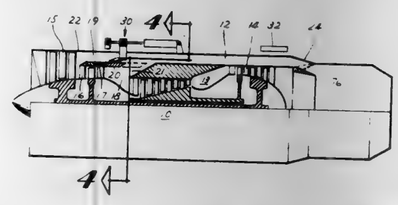
ACTUATION SYSTEM FOR USE ON A GAS TURBINE ENGINE

Dudley O. Nash, and Thomas S. Clayton, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 32,330, Apr. 23, 1979, abandoned. This application Apr. 9, 1981, Ser. No. 252,687

Int. Cl.³ F02K *3/075*

U.S. Cl. 60—226.3 **11 Claims**



1. An actuation system for axially actuating an annular translating member internally mounted within a cylindrical outer casing of a gas turbine engine through which airflow passes, wherein said actuation system comprises:

a plurality of circumferentially spaced crankshafts extending through said casing for transmitting rotational movement;

actuating means for partially rotating at least one of said crankshafts;

means for inducing synchronous partial rotation of the plurality of crankshafts upon partial rotation of said one of said crankshafts, said means comprising:

(a) an arcuate synchronizing yoke extending around at least a portion of the outer circumference of said casing and having a rectangular, hollow, cross section;

(b) a plurality of first crank arms each having an end thereof fixedly attached to respective ones of said crankshafts for rotation therewith;

(c) a plurality of link arms each having one end pivotally attached to an opposite end of a respective one of said first crank arms, and an opposite end pivotally attached to said arcuate synchronizing yoke, said link arms being aligned substantially tangentially with said yoke;

(d) yoke mounting means comprising a plurality of pairs of concentric arcuate guide tracks fixedly mounted on opposite axial sides of said yoke; and a plurality of cooperating rollers each positioned between a pair of said guide tracks and each rotatably connected to a bracket fixedly mounted on said casing; and

means connecting each of said crankshafts to said translating member for causing translation of said member upon rotation of said crankshafts.

4,409,789

POWER STEERING SYSTEM

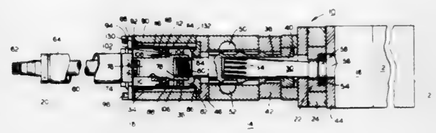
Howard C. Hansen, and Willard L. Chichester, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 3, 1980, Ser. No. 202,923

Int. Cl.³ F16D *31/02;* B62D *5/04, 5/06*

U.S. Cl. 60—384 **17 Claims**

1. A power steering system comprising a hydraulic pump for supplying pressurized fluid to a steer device, a servo motor for operating said pump, a reduction gear box disposed between said servo motor and said pump, a steering shaft assembly through which steering commands are initiated, means for detecting the direction and intensity of the steering commands initiated through said steering shaft assembly and for activating



said servo motor to operate said pump when the steering commands are detected, and control means for maintaining the speed and torque of said servo motor at desired levels, said servo motor, said pump, said means for detecting the steering commands, and said steering shaft assembly being in coaxial alignment.

4,409,790

MECHANICALLY CONTROLLED BRAKE BOOSTER

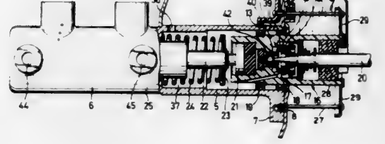
Hermann Seip, Bad Vilbel, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 238,797

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012454

Int. Cl.³ B60T *13/00;* F15B *9/10*

U.S. Cl. 60—547.1 **15 Claims**



1. A mechanically controlled brake booster for automotive vehicles comprising:

a low-pressure casing having at least one movable wall disposed therein subdividing said casing into a low-pressure chamber and a working chamber;

a reinforcement tube disposed in and extending axially of said casing having one end connected to one transverse end wall of said casing adjacent said low-pressure chamber and the other end connected to the other transverse end wall of said casing adjacent said working chamber and a splash-board of said vehicles, said tube being an extension of a master brake cylinder housing;

a pressure control valve disposed in a control housing, said control housing being disposed in and slidably sealed to the inner wall of said tube, said control housing abutting a master cylinder piston contained in said master cylinder housing for actuation thereof; and

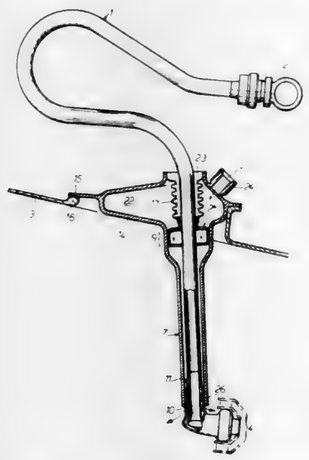
a transmission device fastened to said movable wall and said control housing to mechanically couple said movable wall to said control casing; said transmission device extending from said movable wall through said work chamber and said other end wall substantially parallel of said control housing.

4,409,791

INJECTION DEVICE FOR THE COMBUSTION CHAMBER OF TURBINE ENGINES

Gerard E. A. Jourdain, Saintry sur Seine, and Marcel R. Soligny, Chevilly-Larue, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.L.M.A.", Paris, France

Filed Dec. 4, 1980, Ser. No. 212,748
Claims priority, application France, Dec. 13, 1979, 79 30553
Int. Cl.³ F02C *7/22*
U.S. Cl. 60—740 **2 Claims**



1. An injection device for the combustion chamber of a turbine engine and in particular a device linking a fuel intake manifold on the outside of the engine casing with an injector head mounted on the combustion chamber, characterized in that it consists of a first tube connected to the intake manifold and carrying the fuel to the injector head, a second tube approximately coaxial with the first tube and surrounding and spaced from said first tube between the casing and the injector head, one of the ends of the second tube being attached to the casing, said tubes being placed radially in the casing, guidance means arranged between the first and the second tube and including a sealing element comprising a sleeve with elastic, corrugated walls attached by one of its ends to the first tube in the region of the passage of the first tube into the casing, the end of the second tube, attached to the casing, defining a chamber having two passages: a first passage for the first fuel intake tube, with the sealing element being secured between the first tube and the first passage, and a second passage for the admission of a cooling fluid, the guidance means having passages for the cooling fluid, the second tube comprising two parts of different diameters, the part with the larger diameter cooperating with the guidance means in order to allow the longitudinal displacement of said tube, at least one injector head cooperating with a cap integral with the combustion chamber, by means of a projection on said injector head.

4,409,792

HYDRAULIC POSITIONING SYSTEM FOR HIGH-IMPACT APPLICATIONS

Andrew Nowak, Portland, Oreg., assignor to Fluid-Air Components, Inc., Portland, Oreg.

Division of Ser. No. 144,694, Apr. 28, 1980, Pat. No. 4,335,993. This application Dec. 18, 1981, Ser. No. 332,256
Int. Cl.³ F01B *9/00*
U.S. Cl. 60—414 **15 Claims**

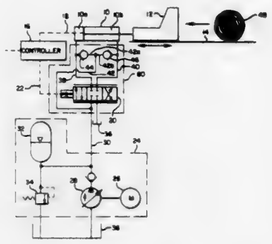
1. A hydraulic positioning system for movably positioning a member subject to impact loading, said system comprising:

(a) hydraulic motor means having a chamber for receiving hydraulic fluid under pressure for moving said member in a predetermined direction in response to the introduction of hydraulic fluid under pressure into said chamber;

(b) a source of pressurized hydraulic fluid for supplying hydraulic fluid under pressure to said chamber, said source of pressurized hydraulic fluid including shock absorbing means containing pressurized hydraulic fluid;

(c) first fluid conduit means interconnecting said source of pressurized hydraulic fluid with said chamber for conducting said fluid to said chamber, said first fluid conduit means having fluid control valve means interposed therein for selectively permitting or preventing the flow of said fluid from said source of pressurized hydraulic fluid to said chamber through said first fluid conduit means;

(d) second fluid conduit means interconnecting said source of pressurized hydraulic fluid with said chamber in parallel relationship with said first fluid conduit means and bypassing said control valve means;



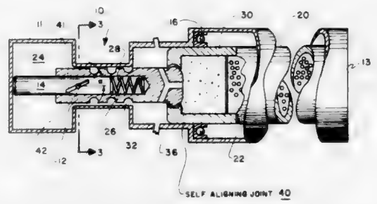
(e) said second fluid conduit means having one-way valve means interposed therein for preventing the flow of hydraulic fluid through said second fluid conduit means from said source of pressurized hydraulic fluid toward said chamber, said one-way valve means having means responsive to differences between the pressures of hydraulic fluid in said chamber and at said source of pressurized hydraulic fluid respectively for permitting the flow of fluid through said one-way valve means and said second fluid conduit means from said chamber toward said source of pressurized hydraulic fluid when the pressure of hydraulic fluid in said chamber exceeds the pressure of hydraulic fluid at said source of pressurized hydraulic fluid by a predetermined amount.

4,409,793

DUAL PNEUMATIC VOLUME FOR CRYOGENIC COOLER

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1982, Ser. No. 369,775
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **9 Claims**



1. A means for controlling the movement of a free displacer in a cryogenic cooler comprising:

an enclosed cooler housing having a regenerator-displacer with a first pneumatic piston rigidly attached thereto which extends through a passageway into an ambient temperature end of said cooler housing and a regenerator-matrix within said free displacer at a cold end of said cooler housing wherein the mating surfaces between said first pneumatic piston and said passageway forms an effective frictional seal between said ambient temperature end and said cold end wherein a working fluid in said cold end has alternating pressure waves applied thereto from a remote compressor to move said free displacer reciprocally within said enclosed cooler housing; and

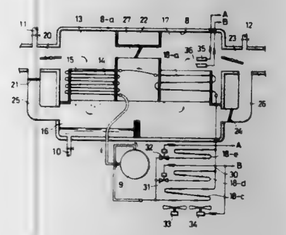
a dual pneumatic volume means in said ambient temperature end to limit movement of said free displacer at its extreme ends of reciprocal movement to provide pneumatic braking in the form of flat displacer waveform dwell times, said dual pneumatic volume means comprised of a pneumatic bounce volume into which said first pneumatic piston extends and a pneumatic spring volume formed inside said first pneumatic piston between a second pneumatic piston moveably positioned along an inside surface of said first pneumatic piston and extending to said enclosed cooler housing at the end of said pneumatic bounce volume wherein compressin within said pneumatic spring volume during the compression cycle of said working fluid and expansion within said pneumatic spring volume during the expansion cycle of said working fluid causes pneumatic braking of said free displacer at the top dead center and bottom dead center to provide flat displacer waveforms.

4,409,794

APPARATUS FOR ADJUSTING TRACE WATER CONTENT OF RICE-KOJI, WHEAT-KOJI, WHEAT BRAN-KOJI, STEAMED RICE, STEEPED RICE AND THE LIKE

Masanobu Kitani, 17-15, Nagasaki 2-chome, Toshima-ku, Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,699
Claims priority, application Japan, Jun. 11, 1980, 55-077637; Jun. 25, 1981, 56-097569
Int. Cl.³ F25D *25/00*
U.S. Cl. 62—98 **4 Claims**



1. An apparatus for adjusting the trace content of a rice-koji, wheat-koji, wheat bran-koji, steamed rice, steeped rice and the like, comprising:

a water content adjusting, koji-producing chamber having net plates disposed therein, an air exhaust portion at the upper portion thereof and an air introduction portion at the lower end thereof;

an air circulating route connecting said air exhaust portion and said air introduction portion; and

a heat pump comprising a compressor, a condensor, and an evaporator, arranged in series and disposed at an intermediate portion of said air circulating route whereby the freezing cycle of said heat pump causes said evaporator to have a cooling and thus dehydrating function and said condensor to have a heating function;

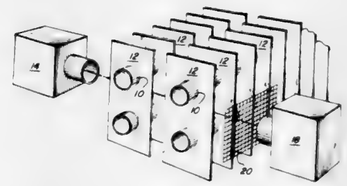
wherein a first portion of said condensor is disposed in the airstream of said air circulating route and a second portion of said condensor is disposed outside the airstream of said air circulating route and wherein said evaporator is disposed in the airstream of said air circulating route upstream of said first portion of said condensor, both of said portions of said condensor being connected in series with said evaporator and said compressor.

4,409,795

DEMAND DEFROST SYSTEM

Henry R. Krueger, Yorba Linda, Calif., assignor to Russell Coil Company, Brea, Calif.

Continuation-in-part of Ser. No. 250,856, Apr. 3, 1981, abandoned, which is a continuation of Ser. No. 53,689, Jul. 2, 1979, abandoned. This application Jun. 8, 1981, Ser. No. 271,288
Int. Cl.³ F25D *21/02*
U.S. Cl. 62—140 **34 Claims**



1. In a cooling system with a heat exchanger having a plurality of fins arranged in generally parallel relationship and having coils containing cooling fluid, for cooling air in the vicinity of the exchanger, a demand defrost system for detecting the existence of frost build-up on the planar surfaces of the heat exchanger fins and for initiating a defrost cycle in response thereto comprising:

means at a first peripheral location of said heat exchanger for generating a detection signal and directing said signal along and through a plurality of portions of said heat exchanger along a direct path which passes through the central portion of the heat exchanger between adjacent parallel fins, said path being oriented in a plane generally parallel to said adjacent parallel fins, said detection signal having a characteristic with varies in direct response to build-up of frost on any one of said portions of the planar surfaces of said adjacent parallel fins of the heat exchanger along said path;

means at the end of said path, and at a second peripheral location of said heat exchanger opposed from said first peripheral location, for sensing said variation in said detection signal characteristic and for producing a control signal in response to said characteristic achieving a selected value;

means responsive to the control signal for discontinuing cooling operation of the cooling system and for initiating a defrost cycle; and

means responsive to failure of said detection signal generating means for precluding initiation of said defrost cycle.

4,409,796

REVERSIBLE CYCLE HEATING AND COOLING SYSTEM

Ralph H. Fisher, Newport News, Va., assignor to Rutherford C. Lake, Jr.; Hayters Enterprises, Inc. and John E. Duberg, all of Newport News, Va.

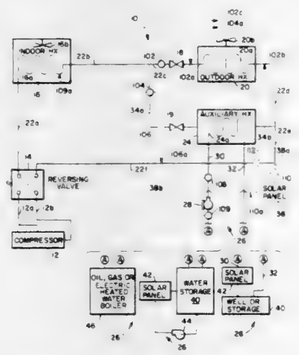
Filed Mar. 5, 1982, Ser. No. 355,123
Int. Cl.³ F25B *13/00, 27/02*
U.S. Cl. 62—160 **11 Claims**

1. A reversible mode heating and cooling system for heating and cooling an interior space, comprising:

(a) compressor means for compressing vaporous refrigerant;

(b) indoor heat exchange means arranged in heat exchange relationship with air in said interior space for condensing refrigerant and heating said air during the heating mode

and evaporating refrigerant and cooling said air during the cooling mode;
(c) refrigerant expansion means;
(d) outdoor heat exchange means arranged in heat exchange relationship with outdoor ambient air for evaporating refrigerant during the heating mode and condensing refrigerant during the cooling mode;
(e) refrigerant flow reversing means for providing mode means heating and cooling from the system by refrigerant flow direction selection;
(f) auxiliary heat exchange means for evaporating refrigerant during the heating mode and condensing refrigerant during the cooling mode, said auxiliary heat exchange means arranged in a series flow relationship with said outdoor heat exchange means and downstream thereof during the heating mode;
(g) refrigerant conduit means connecting said compressor means, indoor heat exchange means, refrigerant expansion means, outdoor heat exchange means, auxiliary heat exchange means and refrigerant flow reversing means in a series flow relationship to form a reversible heating and cooling system for transferring heat via a fluid refrigerant between said indoor heat exchange means and said outdoor and auxiliary heat exchange means;
(h) bypass refrigerant conduit means connected in a parallel flow relationship with said outdoor heat exchange means and in a series flow relationship with said auxiliary heat



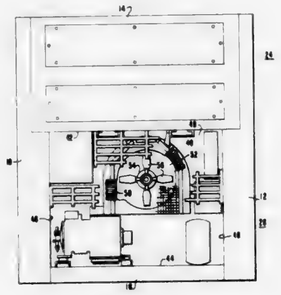
exchange means for selectively by-passing said outdoor heat exchange means and directing at least a part of said refrigerant flow through said auxiliary heat exchange means in parallel flow relationship with refrigerant flow through said outdoor heat exchange means;
(i) storage means for storing a heat exchange fluid;
(j) connecting means connecting said storage means and said auxiliary heat exchange means for circulating a heat exchange fluid and exchanging heat between said storage means and said auxiliary heat exchange means;
(k) first control means for controlling the extent of heat exchange fluid flow between said storage means and said auxiliary heat exchange means, said first control means including a first temperature sensor disposed for sensing the temperature of air after being heated by condensing refrigerant in said indoor heat exchange means during the heating mode and first valve means in said connecting means, said first control means including means for adjustably operating said first valve means in said connecting means to allow heat exchange fluid flow therethrough when the temperature sensed by said first temperature sensor is less than a predetermined value during the heating mode;
(l) second control means for selectively allowing the flow of refrigerant through said bypass refrigerant conduit means and said connecting means, said second control means including a second temperature sensor disposed for sensing the temperature of outdoor ambient air during the heating mode and second valve means in said bypass refrigerant conduit means and third valve means in said connecting means, said second control means including means for operating said second valve means in said bypass refrigerant conduit means to allow refrigerant flow therethrough and said third valve means in said connecting means to allow heat exchange fluid flow therethrough when the temperature sensed by said second temperature sensor is less than a predetermined value during the heating mode.

4,409,797

CONDENSER COIL AND FAN MOUNT FOR A TRANSPORT REFRIGERATION UNIT

Donald D. King, Chanhassen, and John E. Rudd, Bloomington, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Jun. 10, 1982, Ser. No. 387,053
Int. Cl.³ B60H *3/04*
U.S. Cl. 62—239 **5 Claims**



1. In a transport refrigeration unit of the type having a condenser section having a back wall and containing an inverted U-shaped refrigerant condenser coil, and an electric motor driven propeller fan in said coil to draw condenser air through said coil from the top and sides into the central space in said coil, a coil and motor-fan mounting arrangement comprising:
structural header means at both of the opposite ends of the legs of said coil;
plate means extending sideways between said header means and extending in a front-to-rear direction for the front-to-rear depth of said coil;
means securing the ends of said plate means to said header means;
a motor bracket rigidly secured at each of its opposite sides to said plate means to form one assembly therewith;
means securing said one assembly to said back wall of said condenser section;
said coil, motor-fan, plate means and bracket means comprising a unitary assembly adapted to be installed and removed as such, and with said plate means further functioning to prevent flow up into said central space from below.

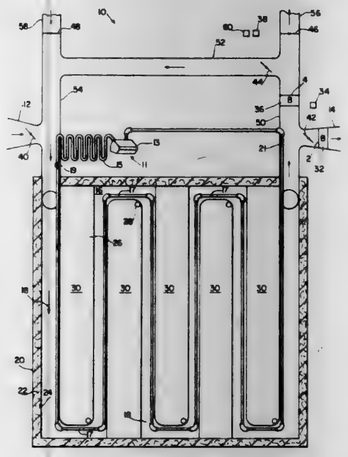
4,409,798

ENERGY-SAVING COOLING SYSTEM

Shao W. Yuan, 6701 Montour Dr., Falls Church, Va. 22043

Continuation-in-part of Ser. No. 218,800, Dec. 22, 1980, Pat. No. 4,346,569, which is a continuation-in-part of Ser. No. 951,518, Oct. 13, 1978, Pat. No. 4,240,268. This application Aug. 28, 1981, Ser. No. 297,263
Int. Cl.³ F25D *23/12*
U.S. Cl. 62—260 **4 Claims**

1. A system for storing and utilizing cold comprising: a heat-insulated chamber (16), insulating means (22) surrounding said chamber for keeping ambient heat out of said chamber and for keeping cold from escaping from within said chamber; container means (30) placed within said chamber and containing therein a heat-transfer medium in the liquid phase form, said medium having the property of transforming from the liquid state to the solid state with the liberation of a substantially constant amount of heat and of transforming from the solid state to the liquid state with the absorption of substantially the same amount of heat; and dual means (2,11) for removing heat from said container means, said dual means comprising:



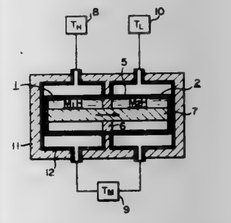
a. circulation means (2) for circulating natural cold ambient air into said chamber around said container means, and finally, out of said chamber, so that the heat-transfer medium therein changes from the liquid to the solid phase; and
b. refrigeration means (11) including a compressor (13), a condenser (15) and cooling coil means (17) containing a refrigerant, said cooling coil means removing heat from said heat transfer medium contained in said container means.

4,409,799

HEAT PUMP DEVICE

Tomoyoshi Nishizaki, Suita; Minoru Miyamoto, Kusatsu; Kazuaki Miyamoto, Amagasaki; Ken Yoshida, Ibaraki; Katuhiko Yamaji, and Yasushi Nakata, both of Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 12, 1981, Ser. No. 320,741
Claims priority, application Japan, Nov. 13, 1980, 55-160527; Nov. 13, 1980, 55-160528; Dec. 29, 1980, 55-185355
Int. Cl.³ F25B *00/00*
U.S. Cl. 62—467 R **8 Claims**



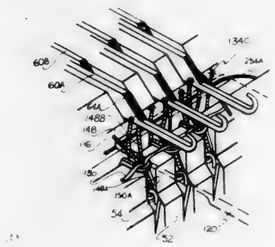
1. A heat pump device comprising a closed receptacle divided into a first chamber and a second chamber, means forming a hydrogen flow passage extending through the two chambers, said hydrogen flow passage permitting the flow of hydrogen, but rejecting the flow of metal hydrides, between the two chambers and being made at least partly of a porous material permeable to hydrogen and elastically deformable in response to an applied pressure, a first metal hydride filled in the first chamber and a second metal hydride filled in the second chamber, and means for externally heating and cooling the first chamber and the second chamber separately whereby the first chamber can be maintained at high temperature T_H or intermediate temperature T_M and the second chamber can be maintained at intermediate temperature T_M or low temperature T_L, said heat pump device being adapted to perform a heat transfer process comprising heating the first metal hydride to release hydrogen therefrom, conducting the released hydrogen to said hydrogen flow passage, allowing the second metal hydride to occlude the released hydrogen exothermically, then cooling the first metal hydride, allowing the second metal hydride to release hydrogen endothermically, conducting the released hydrogen to said hydrogen flow passage and allowing the first metal hydride to occlude the released hydrogen exothermically.

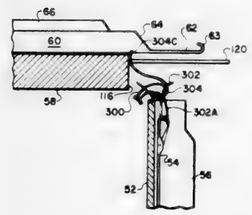
4,409,800

METHOD OF AND APPARATUS FOR KNITTING CUT-PILE FABRIC

Alan Gutschmit, Troy, and Paul W. York, Asheboro, both of N.C., assignors to Monarch Knitting Machinery Corp., Glendale, N.Y. and Monatex S.A., Neuchatel, Switzerland

Continuation-in-part of Ser. No. 905,021, May 11, 1978, abandoned. This application Dec. 8, 1980, Ser. No. 213,872
Int. Cl.³ D04B *9/12*
U.S. Cl. 66—9 R **40 Claims**





1. A method of knitting a cut-pile fabric on a circular knitting machine having a circle of movable knitting needles and a circle of yarn cutting elements movable transversely of and between said needles, each said yarn cutting element having a yarn engaging hook, a yarn cutting edge spaced from said hook and a non-cutting yarn supporting surface extending therebetween, said method comprising progressively feeding body yarn to said needles and feeding pile yarn to said needles and cutting elements, and progressively manipulating said needles

and cutting elements respectively transversely to engage and manipulate said body and pile yarns to form knit fabric courses having stitches of said body yarn, having said pile yarn associated and anchored in said body yarn stitches, and having pile loops of said pile yarn extending therefrom, each said manipulating including forming stitches of said body yarn on said needles, associating said pile yarn with said body yarn stitches and forming pile loops of said pile yarn on said cutting elements, and casting off said needles said body yarn stitches and said associated pile yarn to anchor said pile yarn in said body yarn stitches while distending and retaining said pile loops on said cutting elements with said hooks thereof, and, periodically during said feeding and manipulating, further manipulating said cutting elements transversely of said needles to cause said cutting edges of said cutting elements to sever said retained pile loops subsequent to the casting off of said pile yarn and said body yarn stitches in which said pile yarn is anchored thereby to form cut pile ends.

4,409,801

NEEDLE SELECTING METHOD AND APPARATUS IN FLAT KNITTING MACHINE

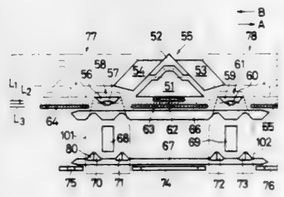
Masahiro Shima, Wakayamashi, Japan, assignor to Shima Idea Center Co., Inc., Japan

PCT No. PCT/JP79/00248, § 371 Date May 28, 1981, § 102(e) Date May 28, 1981, PCT Pub. No. WO81/00869, PCT Pub. Date Apr. 2, 1981

PCT Filed Sep. 28, 1979, Ser. No. 269,046

Int. Cl.³ D04B *7/00*

U.S. Cl. 66—75.1 **13 Claims**



1. A method for selecting needles in a flat knitting machine including a carriage and at least one lock, which comprises arranging needle selecting members on both the front and rear sides of the one lock in both directions of travel of the carriage, preliminarily selecting and dividing needles into two groups by a succeeding rear needle selecting member and further selecting and dividing one of said two groups divided by said preliminary needle selection, into two groups by a preceding front needle selecting member at the time of reversing of the moving direction of the carriage.

4,409,802

WARP-KNIT STRINGER TAPE FOR SLIDE FASTENERS

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 9, 1981, Ser. No. 328,953

Claims priority, application Japan, Dec. 16, 1980, 55-180519[U]

Int. Cl.³ D04B *23/08*

U.S. Cl. 66—193 **7 Claims**

1. A warp-knit stringer tape for slide fasteners comprising:

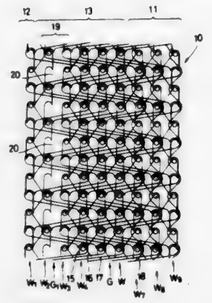
(a) a warp-knit structure including a longitudinal marginal edge portion adapted to support a row of coupling elements thereon, said warp-knit structure comprising:

(i) a plurality of first threads knit as chain stitches and each forming one wale,

(ii) a plurality of second threads knit in a stitch pattern forming wales and each interconnecting two adjacent wales, and

(iii) a plurality of third threads each extending coursewise across and interconnecting at least three wales, and

(b) said warp-knit structure further including a coarse region



extending longitudinally therethrough within portion other than said longitudinal marginal edge portion, said coarse region being devoid of at least one of said second threads.

4,409,803

APPARATUS FOR THE PARTING OF HIDE HAIR

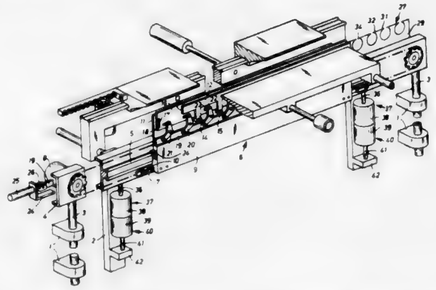
Herbert Dietrich, Kaiserslautern, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Apr. 2, 1982, Ser. No. 364,892

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1981, 3113834

Int. Cl.³ C14B *15/00*

U.S. Cl. 69—27 **9 Claims**



1. A device for parting hair on a hide to form a furrow comprising:

a hide hair divider adapted to extend in a plane normal to a hide;

drive means connected to said divider for moving said divider in a direction parallel to the plane and across a hide;

said divider formed of a plurality of webs each having an upstream terminating wedge-shaped point and a downstream section in said direction, each web having a limiting edge between each upstream point and downstream section extending substantially parallel to said direction, an upstream point of each web forming a gap with a downstream section of each adjacent web.

4,409,804

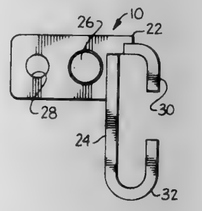
VEHICLE ANTI-THEFT LOCKING DEVICE

Mark P. Sork, 24091 Juaneno, Mission Viejo, Calif. 92691

Filed Apr. 1, 1981, Ser. No. 249,815

Int. Cl.³ B62H *5/12, 5/14;* **E05B** *65/12, 71/00*

U.S. Cl. 70—14 **6 Claims**



4. Apparatus for locking an associated motor vehicle having a first part which is a spoked sprocket which rotates during powered movement of the associated motor vehicle and a second discrete part which is disposed proximate to the first part, the first part rotating with respect to the second part, which consists of:

first and second elongated members;

first means for pivotally mounting said first member to said second member for movement between first and second positions;

second means on said first and second members cooperating with the first part of the associated motor vehicle, said second means being dimensioned and configured for (1) interfering relationship of said members with the other of the first and second parts of the associated motor vehicle when installed on the motor vehicle in said first position and (2) non-interfering relationship in said second position;

said second means constituting respective first and second axial extremities on said first and second members, said first and second axial extremities cooperating to substantially surround and positively engage at least a portion of the spoked sprocket, one of said axial extremities being generally U-shaped and the other of said axial extremities being generally L-shaped;

third means in said first and second members for cooperation with an associated padlock to prevent relative pivotal motion therebetween; and

said first and second members including a generally planar portion and said generally planar portions of said first and second members being disposed in generally planar contact.

4,409,805

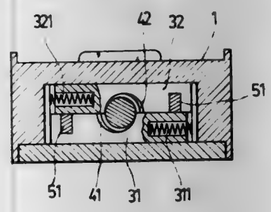
KEY OPERATED LOCK

Tzu-Cheng Wang, 4th Floor, 117 Fu-Kong St., Shilin, Taipei, Taiwan

Filed Jan. 28, 1982, Ser. No. 343,449

Int. Cl.³ E05B *67/36*

U.S. Cl. 70—32 **5 Claims**



1. A key operated lock comprising, a lock body; a retractable lock bar, operable by an external pressure, disposed in said body having a head portion; two locking plates abutted one another in said body and biassd by two separate springs parallelly and opposite to one another, each of said locking plates having an opening adjacent to one another, said openings jointly forming a throughhole for gripping said head portion to place the lock in its locking position, the shape of said throughhole being variable upon movement of said locking plates between a gripping position and releasing position; a key operated release means provided on said locking plates for moving said locking plates against the biassing action of said springs to make said throughhole vary to its releasing position so that the lock bar is released.

4,409,806

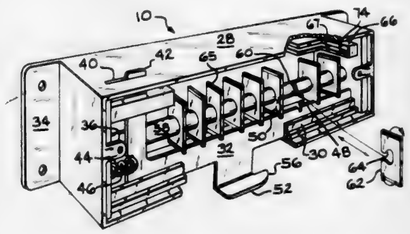
LOCKING SYSTEM USING CODABLE MAGNETIC CARDS

Robert L. Propst, Bellevue, Wash., assignor to Herman Miller, Inc., Zeeland, Mich.

Filed May 12, 1981, Ser. No. 262,841

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—276 **21 Claims**



1. A magnetic lock apparatus adapted to be operated by a properly encoded magnetic card, said apparatus comprising:

a longitudinally movable elongated plate member made of non-magnetic material and having means forming a plurality of longitudinally spaced recesses thereon and

a plurality of tumbler members spaced apart and pivotable about a common axis which is substantially parallel to said plate member, each said tumbler member being biased into engagement, respectively, in an associated one of said recesses to prevent relative movement of said plate member, and each said tumbler member being magnetically fixed so as to establish north and south magnetic poles thereon, said magnetic poles being operable to pivot said tumbler members out of engagement in said recesses when said magnetic card is placed adjacent said tumbler members.

4,409,807

MASTER-KEY PISTON LOCK

Paul Lipschutz, Croissy, France, assignor to Sodex-Magister Societe d'Exploitation des Brevets Neiman, Croissy, France

Filed Jul. 13, 1981, Ser. No. 282,572

Claims priority, application France, Jul. 23, 1980, 80 16187

Int. Cl.³ E05B *19/06, 27/04, 35/10*

U.S. Cl. 70—340 **1 Claim**

1. In combination a master-key lock and a notched master key comprising:

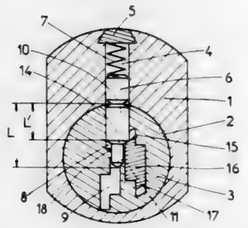
(a) a stator having a cylindrical rotor bore therein, which stator is provided with radial holes opening into the rotor bore,

(b) stator pistons provided respectively in the radial holes in said stator and being spring-loaded towards said rotor bore,

(c) a cylindrical rotor rotatable in the rotor bore of said stator, said rotor having radial holes for axial alignment respectively with the radial holes in the stator, each radial

hole in said rotor having a first portion having a diameter corresponding to the diameter of the radial holes in the stator and a second portion of smaller diameter, a first axial key passage into which there open extremities of the second portions of said radial holes in the rotor, and a second key passage separate from said first axial key passage into which second key passage there opens a peripheral portion of each of said first portion of the radial holes in the rotor, and

(d) right circular cylindrical rotor pistons slidable respectively in the radial holes of the rotor, each rotor piston having a first portion having a sliding fit within the first portion of corresponding radial hole and a second portion having a sliding fit within the second portion of said corresponding radial hole, said rotor pistons each having a



frusto-conical shoulder between said first and second portions thereof with which shoulder there can co-operate the notches of the master-key, the floors of the key notches being inclined to the plane of the master key at the same angle as said shoulders, whereby on insertion into said first key passage of a key equipped with appropriate coded notches the latter co-operate with the inner extremities of said rotor pistons in such manner that the outer extremity of each of the rotor pistons is flush with the peripheral surface of the rotor thus permitting rotation of the rotor and on alternative insertion of a notched master-key into said second key passage the notches of the master-key co-operate with the shoulders on said rotor pistons to bring the latter in alignment with the rotor periphery to permit rotation of the rotor.

4,409,808

PROCESS FOR THE PRODUCTION OF BLISTERS

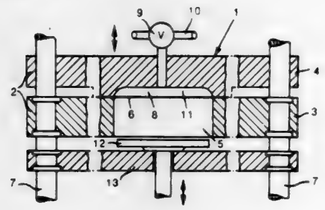
Werner Festag, and Hans-Ueli Müller, both of Schaffhausen, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 20,216, Mar. 14, 1979, Pat. No. 4,266,416. This application Dec. 29, 1980, Ser. No. 220,815

Claims priority, application Switzerland, Mar. 31, 1978, 3460/78

Int. Cl.³ B21D *26/04*

U.S. Cl. 72—60 **13 Claims**



1. Process for the manufacture of blisters which have high barrier properties using a metal-plastic composite foil which can be deep drawn, in particular an aluminum-plastic composite foil, which comprises fixedly and immovably holding said foil in a clamping facility having at least two separable parts and a closed chamber therein and a pipeline communicating with said closed chamber, wherein the closed chamber is formed together with the foil immovably held in the clamping facility, pre-stretching said foil to form a pendant bubble in a first step by applying pressure to the foil via a fluid medium from said pipeline to said closed chamber, and then shaping said foil into the blister form in a second step including a shaping means operatively associated with said foil for shaping said foil, thereby obtaining improved blister depth in the finally shaped product, wherein the clamping facility has a second chamber opposed to said chamber and wherein the pre-stretching is carried out in the direction counter to that experienced by the foil in the final shaping.

4,409,809

DUAL MOTION PRESS

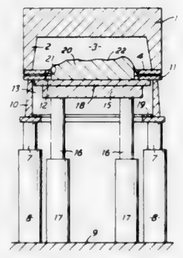
John A. F. Buchanan, Worcester, England, assignor to Superform Metals Ltd., England

Filed Apr. 20, 1981, Ser. No. 255,397

Claims priority, application United Kingdom, Apr. 10, 1981, 8111290

Int. Cl.³ B21D *22/10*

U.S. Cl. 72—60 **6 Claims**



1. A machine for use in forming ductile metal sheets into shaped bodies having first and second open-ended annular chambers, means for relatively moving the chambers while maintaining their open ends in register with one another between a position in which the open ends are spaced apart to permit a metal sheet to be inserted therebetween and a position in which the open ends clamp the periphery of the sheet in a gas tight manner therebetween, a mould plate in the first chamber arranged to carry a mould on a surface thereof nearest the second chamber, means for moving the mould plate independently of both chambers in directions parallel with the directions of relative movement between the chambers from a first position in which it constitutes a gas tight sealed base for the first chamber to a second position in which a mould carried by the plate extends within the open end of the second chamber.

4,409,810

PROCESS FOR MANUFACTURING SEAMLESS METAL TUBES

Tateo Yamada, Amagasaki, Japan, assignor to Sumitomo Kinzoku Kogyo Kabushiki Kaisha, Osaka, Japan

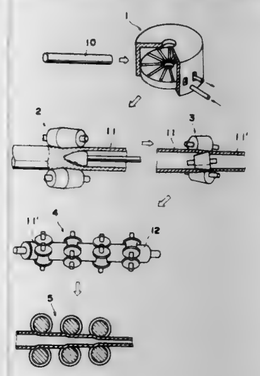
Filed Jul. 9, 1981, Ser. No. 281,902

Claims priority, application Japan, Jul. 18, 1980, 55-98949

Int. Cl.³ B21B *19/06*

U.S. Cl. 72—68 **5 Claims**

1. A process for manufacturing seamless metal tubes which comprises the steps of piercing a billet in a piercing mill to form a hollow shell, subjecting the said shell to rolling to equalize the wall thickness by means of a rotary mill having 3 rolls



without any internal tools and thereafter reducing the wall thickness of said shell in an elongating mill.

4,409,811

PROCESS AND A SPINNING LATHE FOR PRODUCING WHEEL RIMS

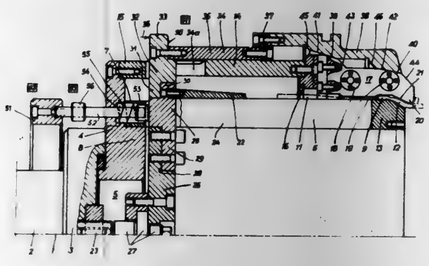
Walter Bosch, Ostfildern, Fed. Rep. of Germany, assignor to Bohner & Koehle GmbH & Co., Esslingen, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,865

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024744

Int. Cl.³ B21H *1/10*

U.S. Cl. 72—82 **19 Claims**



1. A process for making a wheel rim having a snap-in groove on one side, wherein there is provided a tubular blank having ends of different diameters and, located therebetween, a coned part for forming an eventual inner wall of the snap-in groove, an outer cylindrical part is provided at the smaller diameter end of the coned part, the blank is slipped onto a mandril, which is coned at one end thereof with the same cone form as the coned part of the rim blank, the cylindrical part of said blank being kept clear of said mandril and extending beyond said one end thereof, the blank is then gripped by means of an outer chuck, and then at least one spinning roller having an outline corresponding to the desired form of the rim is moved axially against the smaller diameter end of the said blank whereby the outer cylindrical end part is upset and bent outwards against the outer chuck, by which it is supported, for producing the outer wall of the snap-in groove.

4,409,812

METHOD OF AND APPARATUS FOR PRODUCING METALLIC TAPE

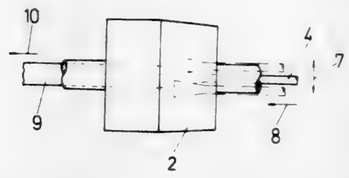
Keiichiro Yoshida, No. 641, Mobara, Mobara City, Chiba Prefecture 297, Japan

Filed Aug. 15, 1980, Ser. No. 178,635

Claims priority, application Japan, Oct. 31, 1979, 54-141881

Int. Cl.³ B21B *39/14*

U.S. Cl. 72—189 **2 Claims**



1. A method of producing a metallic tape from a wire material comprising the steps of:

reciprocatingly rotating a pair of opposed rolling and pressing members which are in a mounted position through a predetermined angle in opposite directions to each other;

reciprocatingly moving said wire material in a lateral direction perpendicular to the direction of feeding thereof while keeping it parallel to the direction of feeding and with a periodicity the same as that of said reciprocatory rotation of said rolling and pressing members; and

intermittently feeding a constant length of said wire material at the moments said wire material is out from between said rolling and pressing members, whereby said wire material is rolled and pressed into a metallic tape.

4,409,813

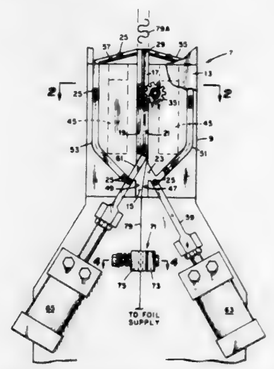
METHOD AND APPARATUS FOR CORRUGATING STRIPS

Jack R. Day, Oak Ridge, and Charles H. Curtis, Kingston, both of Tenn., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Oct. 27, 1981, Ser. No. 315,380

Int. Cl.³ B21C *37/02*; B21D *13/02*

U.S. Cl. 72—190 **12 Claims**



1. Apparatus for forming corrugations in a length of metallic foil, comprising:

(a) a plurality of cylindrical rollers for forming corrugations in said foil,

(b) a body formed with a vertical passage having an expanded lower section and a reduced upper section, the latter having a width defined by opposed parallel sidewalls, said width being more than one roller diameter and less than two roller diameters,

(c) means for positioning a length of said foil under selected tension in said passage, the faces of said foil confronting said sidewalls,

(d) first reciprocatable roller-supporting means for conveying a first roller across the lower part of said passage to engage the roller with a transverse section of a face of said length of foil and convey the first-roller-engaged section to an elevated position alongside one of said walls, and

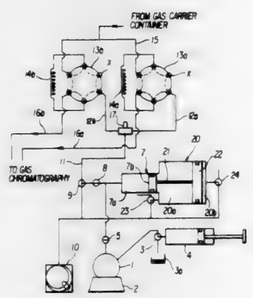
(e) second reciprocatable roller-supporting means for conveying a second roller across the lower part of said passage to engage it with a transverse section of the other face of said length of foil and convey the second-roller-engaged section to an elevated position alongside the other of said walls where it displaces the first-roller-engaged section out of its elevated position and upwardly in said passage.

4,409,814

GAS EXTRACTING DEVICE

Hideo Onuma, and Shigeo Kobayashi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 6, 1981, Ser. No. 232,354
Int. Cl.³ G01N *31/00*
U.S. Cl. 73—19 **8 Claims**



1. A gas extracting device for extracting gas suspended in a liquid from the liquid, comprising;

vessel means for separating gas suspended in the liquid from the liquid,

means for storing the gas,

means for drawing in the gas from the vessel means and for exhausting the gas to the gas storing means, said means for drawing including a piston device comprising a disk and cylinder wherein said disk is movable reciprocally in said cylinder,

means for actuating the means for drawing in and exhausting the gas, said actuating means comprising a second piston device which is larger than said first piston device and includes a second disk and a second cylinder wherein said second disk is movable reciprocally in said cylinder,

a vacuum pump connected to the vessel means, the gas storing means, and the means for drawing in and exhausting the gas, and

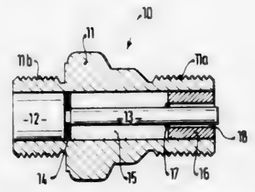
means for selectively intercommunicating the vessel means, the means for drawing in and exhausting the gas, the gas storing means and the vacuum pump, whereby said gas is extracted from said vessel means to said means for storing by repeated actuation of said piston device and repeated actuation of said means for selectively intercommunicating.

4,409,815

COMBUSTION PROCESS SENSOR ARRANGEMENT

Rainer Burkel, Asperg, Fed. Rep. of Germany; Cornelius Peter, Paris, France, and Klaus Muller, Tamm, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Postfach, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 314,529
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042454
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **8 Claims**



1. Combustion process sensor arrangement to determined the physical processes occurring in the combustion space of a combustion chamber of an internal combustion engine having

a housing (**11**) having a combustion chamber end portion adapted to be fitted into the engine facing the combustion chamber,

and a light guide extending through the housing to transmit light from the interior of the combustion chamber during operation of the engine,

wherein the light guide comprises

a window (**12**) melted into an opening formed in the housing remote from the combustion end portion;

and a quartz-glass rod (**13**) facing the window and being positioned in light-transmitting relationship thereto, and extendingtowards the combustion end portion,

and wherein the window (**12**) and the quartz-glass rod are coaxially arranged within the housing (**11**);

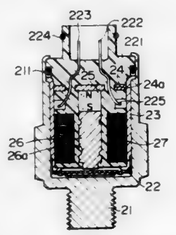
and an elastic element (**14, 19**) is provided interposed between the window and said quartz-glass rod.

4,409,816

KNOCK DETECTING APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Hiroaki Yamaguchi, Anjo; Tadashi Hattori, and Yoshinori Ootsuka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 11, 1981, Ser. No. 291,945
Claims priority, application Japan, Sep. 19, 1980, 55-130966
Int. Cl.³ G01L *23/22*
U.S. Cl. 73—35 **11 Claims**



1. A knock detecting apparatus for an internal combustion engine comprising:

a main body fixed to said engine and adapted to be vibrated as a unit with said engine;

a vibration member supported by said main body and provided with a vibratory portion which has a resonance frequency in the range of frequency of knock of said engine, at least a part of said vibratory portion having a multi-layered structure consisting of two or more layers to adjust and optimize the degree of peak of resonance of said vibratory portion; and

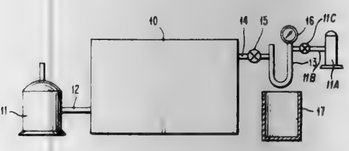
means disposed in the vicinity of said vibratory portion and adapted for detecting the vibration of said vibratory portion.

4,409,817

VACUUM LEAK DETECTOR AND METHOD

David Edwards, Jr., 7 Brown's La., Bellport, N.Y. 11713

Filed Mar. 25, 1981, Ser. No. 247,613
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **19 Claims**



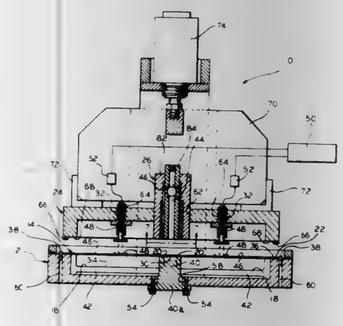
1. Apparatus for leak detection in a vacuum system which comprises a moisture trap vessel, a tube connecting said vessel to said vacuum system, a valve in said tube, a sensitive low pressure gauge for measuring the pressure in said vessel, and means for capturing moisture entering said vessel so that the residual water vapor pressure therein is negligible.

4,409,818

SEAL TESTING DEVICE AND METHOD

Ihor Wyslotsky, Oakbrook Terrace, and Franklin E. Baker, Jr., West Chicago, both of Ill., assignors to Donald F. Shiff, Eden Prarie, Minn.

Filed Feb. 19, 1982, Ser. No. 351,122
Int. Cl.³ G01M *3/36*
U.S. Cl. 73—49.3 **18 Claims**



18. A method for testing the integrity and strength of a seal, comprising:

providing a pre-sealed package formed of two films joined together to form a continuous seal, said two films extending outwardly of said seal to define a marginal edge portion of said pre-sealed package;

providing an opening outwardly of said continuous seal in one of said two films of said pre-sealed package;

sealing said marginal edge portion in spaced relation to said continuous seal and outwardly of said opening in said one film of said pre-sealed package;

injecting a fluid through said opening in said one film after said marginal edge portion of said pre-sealed package has been sealed; and

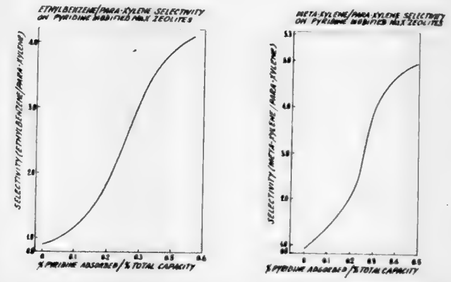
sensing any passage of said fluid through said continuous seal into said pre-sealed package.

4,409,819

METHOD OF DETERMINING, AS A PROPERTY OF AN ADSORBENT, THE SELECTIVITY FOR ONE COMPONENT OF A LIQUID CHARGE COMPOSITION WITH RESPECT TO A REFERENCE COMPONENT OF SAID CHARGE COMPOSITION

William Smolin, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 152,865, May 23, 1980, Pat. No. 4,351,981.
This application May 14, 1982, Ser. No. 378,162
Int. Cl.³ G01N *33/00*
U.S. Cl. 73—61.1 R **3 Claims**



1. The method of determining, as a property of an adsorbent, the selectivity for one component of a liquid charge composition with respect to a reference component of said charge composition with comprises

(i) adding to said liquid charge composition a known weight of an essentially inert liquid component which is not appreciably adsorbed from the liquid charge composition by said adsorbent in the presence of said liquid charge composition thereby forming a test liquid composition;

(ii) equilibrating said test liquid composition at ambient temperature in the presence of said adsorbent thereby forming an equilibrium liquid in the presence of said adsorbent;

(iii) determining the % concentration, in said equilibrium liquid, of said essentially inert liquid component, said reference component, and at least one other component, the selectivity for which is to be determined with respect to said reference component;

(iv) determining the weight in said equilibrium liquid of said reference component and said other component, from the concentration of each in the equilibrium liquid and the weight of essentially inert component present in the equilibrium liquid;

(v) determining the capacity weights of said reference component and said other component which are adsorbed per unit weight of adsorbent by the difference between the weight of said reference component of said other component in the charge and in the equilibrium liquid divided by the weight of adsorbent;

(vi) determining the ratio between concentration of said reference component and of said other component which is adsorbed; and

(vii) determining the selectivity of said component with respect to said reference component by dividing the ratio of the concentration of said other component which is adsorbed to the concentration of said reference component which is adsorbed by the ratio of concentration of said other component in the equilibrium liquid to the concentration of said reference component in the equilibrium liquid, said selectivity determined at ambient temperature being useful for separations at elevated temperature.

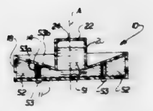
4,409,820

APPARATUS AND METHOD FOR USE IN QUANTITATIVE ANALYSIS OF A FLUID SUSPENSION

Irwin Nash, 200 Fountain St., New Haven, Conn. 06515

Filed Jun. 17, 1981, Ser. No. 274,482
Int. Cl.³ G01N *9/30, 33/48*
U.S. Cl. 73—61.4 **11 Claims**





1. Apparatus for use in the quantitative analysis of a blood sample having a red blood cell component, a buffy coat and a plasma component, comprising

an annular fluid chamber circumscribing a central spin axis, the annular fluid chamber including annular, axially spaced apart side walls extending away from the central spin axis and an annular end wall spaced radially from the central spin axis and joining the annular, axially spaced apart side walls,

means communicating with the fluid chamber for allowing a sample of a blood sample to be deposited in the annular fluid chamber,

said annular, axially spaced apart side walls and said annular end wall defining therebetween a volume measuring space which circumscribes the central spin axis and increases geometrically as it extends away from the central spin axis, the volume measuring space (i) extending radially outward to the annular end wall, (ii) including the entire space between the space apart side walls and (iii) being sufficient to completely contain at least the red blood cell and buffy coat components of the blood sample,

the geometry of the fluid chamber guiding the red blood cell and buffy coat components of a blood sample in the fluid chamber into the volume measuring space and the geometry of the volume measuring space causing the components in the volume measuring space to separate therein into distinct concentric annular volumes of substantially fixed radial extent which extend outwardly to the annular end wall with each component within the volume measuring space filling a portion of the volume measuring space extending between the side walls and having a radial extent that is geometrically proportional to the relative amount of that component to the other components of the fluid suspension sample within the volume measuring space when said fluid chamber is spun about said central spin axis, so that measurements of the radial extent of the annular volumes in the volume measuring space can be used to determine the relative amounts of the red blood cell and buffy coat components in the volume measuring space,

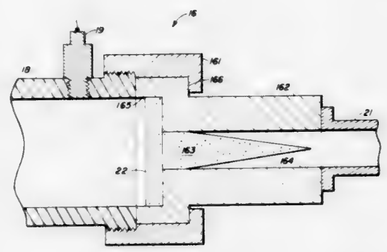
at least one of said annular, axially spaced apart side walls being translucent over the entire radial extent of the volume measuring space, thereby making the volume space translucent, and allowing the components of a blood sample in the volume measuring space to be measured therethrough.

4,409,821

SOLID PROPELLANT MEASUREMENT SYSTEM

James W. Battles, and H. Bernard Mathes, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 10, 1981, Ser. No. 291,757
Int. Cl.³ G01L *5/13*
U.S. Cl. 73—116 **8 Claims**



1. Apparatus for measuring propellant combustion comprising:

a propellant grain holder;

a propellant gas load connected to said propellant grain holder;

a source of millimeter wavelength microwave energy having a predetermined electrical output impedance;

coupling means connected between said source of microwave energy and said propellant grain holder, said coupling means being configured to match the electrical output impedance of said source of millimeter wavelength microwave energy to the impedance of said propellant grain holder; and

circuit means connected to said source of millimeter wavelength microwave energy for comparing the millimeter wavelength microwave energy coupled to said propellant grain holder and millimeter wavelength energy reflected from a propellant grain held in said propellant grain holder.

4,409,822

IONIC PICKUP FOR THE TRANSIT TIME BETWEEN AN EMISSION AREA AND A RECEIVING AREA

Roger Bariol, Olivet; Jackie Lecomte, Orleans, and Jean-Marie Bouvet, Boulogne Billancourt, all of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 29, 1981, Ser. No. 306,761
Claims priority, application France, Sep. 30, 1980, 80 20896
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **6 Claims**

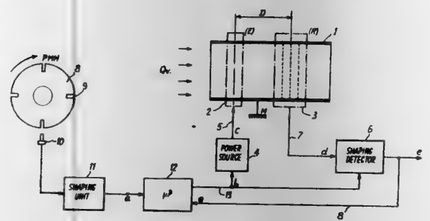
1. An ionic air-flow transducer for measuring the transit time of a stream of ionized particles between an emission station and a receiving station respectively associated with a high-voltage pulse generator and a detector, wherein a triggering mechanism, a shaping circuit and a control circuit related to the position of an engine crankshaft is used to obtain an electrical signal which depends on average volume flow (Qv), comprising:

the receiving station including shielding and flow regulation means which passes said stream of ionized, particles and is disposed upstream and downstream of said detector for shielding said detector and regulating said air flow; and

means for moving said detector and associated shielding and flow regulating means with respect to the direction of the steam of ionized particles;

wherein said shielding and flow regulation means comprises:

two fine-mesh metallic grids arranged in parallel on respective sides of the detector; and



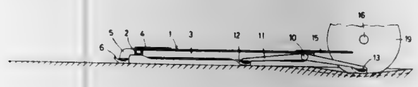
metallic shims for supporting said grids, said shims being longitudinally adjustable.

4,409,823

APPARATUS FOR MEASURING AND RECORDING DEFLECTIONS

Jean-Claude Gressin, Herrenschwanden, Switzerland, assignor to Map SA, Bern, Switzerland

Filed Jun. 23, 1980, Ser. No. 162,264
Claims priority, application Switzerland, Jun. 21, 1979, 5819/79
Int. Cl.³ E01C *23/01;* G01L *5/12*
U.S. Cl. 73—146 **13 Claims**



1. Apparatus for static testing of a road surface, comprising:

a rigid beam means having first and second ends and a longitudinal axis extending therebetween;

support means coupled to the first end of said beam means for supporting said first end of said beam means on a road surface;

at least one measuring arm having a first end pivotally coupled to said first end of said beam means for rotation about an axis, said measuring arm having a second end which comprises a feeler for resting on said road surface at a test location, said measuring arm being capable of rotational movement with respect to said rigid beam means upon deformation of said road surface at said test location; and

a rocker lever means pivotally coupled to the second end of said beam means and extending substantially along said longitudinal axis, said lever means being coupled to pivotally support said beam means on a road surface at a point substantially in the middle of the length of said lever means and having a road contacting support disposed at each end of said lever means, said feeler and one of said road contacting supports of said rocker lever means being located between the first and second end of said beam means.

4,409,824

FATIGUE GAUGE FOR DRILL PIPE STRING

Mamdouh M. Salama; Michael W. Joosten; Wiley E. Zimmerman, all of Ponca City, Okla., and Rhea W. Bockhorst, Morgantown, W. Va., assignors to Conoco Inc., Ponca City, Okla.

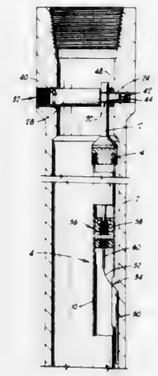
Filed Sep. 14, 1981, Ser. No. 301,994
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **21 Claims**

20. An apparatus for recording stress in a drill pipe which is to be lowered into and extracted from a well, comprising:

detector means for detecting stress in said drill pipe at a plurality of times and for generating electrical signals corresponding to the detected stress, each of said electrical signals representing an individual stress measurement;

recording means, disposable in said drill pipe prior to said drill pipe being lowered into said well, for electronically retaining digital signals representative of said corresponding electrical signals until said drill pipe is extracted from said well; and

transmitting means, disposable in said drill pipe prior to said drill pipe being lowered into said well, for transmitting said digital signals to an external device connectible to said apparatus only after said drill pipe has been extracted from said well.



4,409,825

DOWN HOLE STEAM QUALITY MEASUREMENT

William L. Martin, Ponca City, and S. Randall Whitt, Oklahoma City, both of Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jul. 6, 1981, Ser. No. 280,536
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—155 **22 Claims**

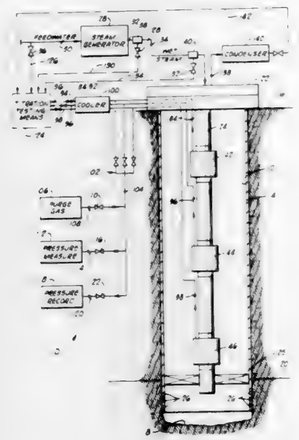
16. A system for determining a quality of wet steam at a predetermined depth within a well through which said wet steam flows, comprising:

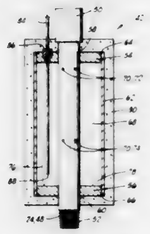
a tubing string in place within said well for conducting said wet steam through said well;

separating means, attached to said tubing at said predetermined depth within said well, for separating a sample of liquid water from said wet steam while preventing any substantial condensation of said wet steam in said separating means;

a sample tube means, having a lower end communicated with said separating means and having an upper end ex-

tending out of said well, for flowing said sample out of said well; and





measuring means for receiving said sample from said sample tube means and for measuring a concentration of dissolved solids in said sample.

4,409,826

APPARATUS FOR TEST-FIRING SMALL-ARMS AND HAND-GUNS

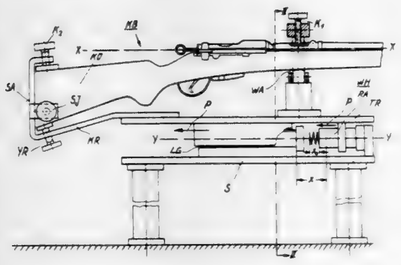
Fritz Wenger, Neugutstrasse 61, 8600 Dübendorf, Switzerland

Filed Jul. 20, 1981, Ser. No. 285,000

Claims priority, application Switzerland, Aug. 20, 1980, 6293/80

Int. Cl.³ G01M *19/00*

U.S. Cl. 73—167 **9 Claims**



1. Apparatus for test-firing a weapon having a stock and a barrel while allowing at least a part of the recoil force of the weapon to be absorbed by an operator's body, said apparatus comprising a weapon-holder for holding the weapon, said weapon-holder having a part engageable by an operator's body so that the operator's body absorbs the recoil force, base means for supporting said weapon-holder, and mounting means for mounting said weapon-holder on said base means and for allowing sliding displacement of said weapon-holder upon firing of the weapon relative to said base means in a first direction, said mounting means being inoperative to resist said sliding displacement for a first period of time during which the recoil force is absorbed by the operator'body, said mounting means further comprising recoil-absorbing means operative to resist movement of said weapon-holder in the first direction for a second period of time, said apparatus further including alignment means for aligning the barrel of the weapon parallel with the first direction.

4,409,827

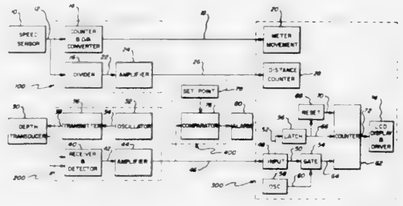
COMBINED MARINE INSTRUMENT AND DISPLAY THEREFOR

Ronald R. Overs, E. Amherst, N.Y.

Filed Jan. 26, 1982, Ser. No. 343,012

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—181 **9 Claims**



1. A combined knotmeter, distance/log meter and depth meter comprising:

first sensing means for developing a first signal as a function of the speed of a marine vessel;

first control circuit means for developing a speed and distance output signal in response to said first signal;

second circuit means for developing a second signal as a function of water depth;

second control circuit means responsive to said second signal for developing a water depth output signal;

an integrated meter housing including a dial face;

first, second and third indicators supported by said housing and visible through said dial face;

first, second and third actuators for respectively driving said first second and third indicators in response to said respective speed, distance and depth output signals;

said housing includes a casing and a rear panel removably attached to said casing; and

said first, second and third indicators are supported by said rear panel for movement therewith.

4,409,828

GAS FLOW MEASURING DEVICE

Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Hisasi Kawai, Toyohashi, and Tsuneyuki Egami, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 7, 1981, Ser. No. 252,005

Claims priority, application Japan, Apr. 11, 1980, 55-48191

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **5 Claims**

1. A gas flow measuring device comprising:

pipe means for flowing a gas whose flow rate is to be measured;

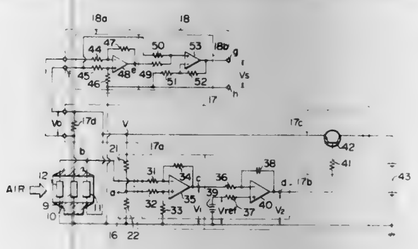
an electric heater disposed within said pipe means;

a first temperature dependent resistor disposed within said pipe means downstream of said electric heater;

a second temperature dependent resistor disposed within said pipe means, at a position suffering substantially no influence of heat from said electric heater; and

a measuring circuit connected to said first and second temperature dependent resistors and to said electric heater to generate an output voltage indicative of the flow rate of the gas depending on the resistance values of said first and second temperature dependent resistors;

said measuring circuit including a first reference resistor and a second reference resistor constituting a bridge circuit together with said first and second temperature dependent



resistors; a voltage control circuit connected to said bridge circuit and said electric heater, for controlling a heater voltage applied to said electric heater so as to maintain a voltage difference between opposite terminals of said bridge circuit at a constant value; and output computing means, connected to said voltage control circuit, responsive to said heater voltage and a heater current flowing through said electric heater, for generating said output voltage by summing a first value proportional to said heater voltage and a second value proportional to said heater current, to substantially eliminate the effects of ambient temperature on said output voltage.

4,409,829

VOLUME FLOW SENSOR OF THE GEAR WHEEL MOTOR TYPE

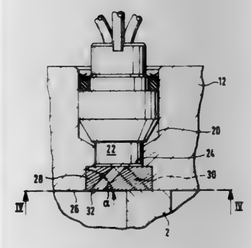
Werner Weber, Werdohl, Fed. Rep. of Germany, assignor to Kracht Pumpen-und Motorenfabrik GmbH & Co. KG, Werdohl, Fed. Rep. of Germany

Filed Nov. 25, 1981, Ser. No. 325,019

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3045043

Int. Cl.³ G01F *3/10, 15/00*

U.S. Cl. 73—261 **8 Claims**



1. A volume flow sensor of the gear wheel motor type having a pair of circular gear wheels which are mounted in a housing therefor to rotate freely in fixed axles without contact with walls of said housing and at least one non-magnetic inset in a part of said housing in the region of the teeth of one of said gear wheels, said inset having two poles of substantial magnetic conductivity extending through said inset from one end surface thereof to the other, the ends of the poles at one end surface of said inset being adjacent said gear wheel teeth and situated substantially on the same diameter of said gear wheel and the ends of the poles at the other end surface of said inset being adjacent field plates of a field plate differential sensor, said poles arranged in said inset with the ends of said poles which pass through said one end surface of said inset being at a greater distance apart than the ends of said poles which pass through said other end surface of said inset.

4,409,830

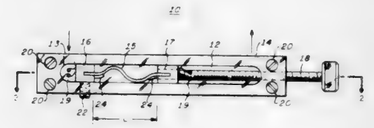
WAVE VELOCITY DETECTING SCHEMES FOR TRAVELING WAVE FLOW METER

Joannes M. M. de Jong, West Ford; Richard L. Earle, Mendon, and Richard K. Somes, Berlin, all of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jun. 1, 1981, Ser. No. 268,940

Int. Cl.³ G01F *3/20*

U.S. Cl. 73—269 **8 Claims**



1. A positive displacement flow meter comprising:

means for conducting fluid;

flexure means for undulating in response to fluid flow within said conducting means; and

means for detecting the velocity of propagation of a traveling wave associated with said undulating flexure means.

4,409,831

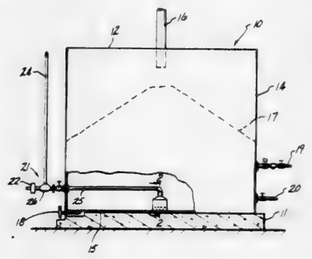
LIQUID LEVEL INDICATOR APPARATUS

Edward F. Graham, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 1, 1982, Ser. No. 344,418

Int. Cl.³ G01F *23/00*

U.S. Cl. 73—290 R **7 Claims**



1. Apparatus for use in measuring the liquid level adjacent the bottom of a slurry vessel comprising:

a. a fluid-flow conduit extending into the vessel and having a lower portion positioned generally vertical therein and terminating in an open end adjacent the bottom of the vessel;

b. a liquid level indicator connected to the conduit outside of the vessel;

c. an open-topped, first fluid container having a bottom and sides that extend upwardly from the container bottom to a predetermined height, said container extending about the lower portion of said conduit and having the bottom thereof juxtaposed to the open end of said conduit; and

d. a second container having a top portion sealingly fastened to and fitting about the open-ended conduit and a bottom portion, the second container further contacting the bot-

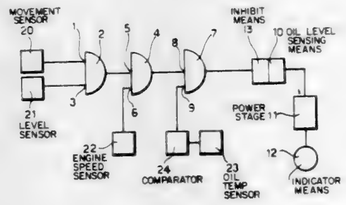
tom of the slurry vessel with its bottom portion and having a side surface connecting the top portion and the bottom portion, the side surface further being perforated adjacent the bottom portion at a height less than the predetermined height of the first fluid retaining container to permit liquid to pass therethrough and enter the first fluid retaining container when the liquid in the slurry vessel is above the predetermined height of the first fluid retaining container to permit the liquid level indicator to indicate liquid levels in the slurry vessel above the predetermined height whereby said containers prevent said conduit from becoming plugged with insolubles.

4,409,832

DEVICE FOR AUTOMATICALLY INDICATING AN INSUFFICIENT LEVEL OF AUTOMATIC FLUID

Oscar Konjedic, Beinasco; Paolo Carrara, and Enzo Fabris, both of Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Jul. 1, 1981, Ser. No. 279,293
Claims priority, application Italy, Jul. 9, 1980, 68082 A/80
Int. Cl.³ B60K *41/04*
U.S. Cl. 73—292 **5 Claims**



1. In a motor vehicle provided with an engine and an automatic gearbox, a device for automatically indicating an insufficient level of oil in said gearbox, said device comprising:
- a first sensor arranged to produce a first enable signal when said vehicle is stationary,
- a second sensor arranged to produce a second enable signal when said vehicle is on the level,
- a third sensor arranged to produce a third enable signal when the speed of engine rotation is at a predetermined value,
- first and second gearbox-oil sensing means respectively arranged to sense the temperature and the level of oil in said gearbox and to generate respective output signals in dependence thereon,
- indicator means operable to indicate an insufficient level of oil in said gearbox; and
- control means connected to said sensors, to said sensing means, and to said indicator means and operative to cause operation of said indicator means only when all three said enable signals are present and said output signals from the sensing means indicate that the level of oil in said gearbox is insufficient at the oil temperature prevailing.

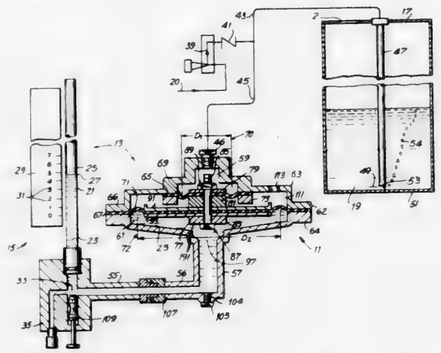
4,409,833

DIAPHRAGM MANOMETER

Roger Thomson, Bayshore, and Edward Weik, Williston Park, both of N.Y., assignors to Petrometer Corporation, New Hyde Park, N.Y.

Filed Aug. 21, 1981, Ser. No. 295,110
Int. Cl.³ G01F *23/16*
U.S. Cl. 73—302 **15 Claims**

1. A system for measuring the level of a stored liquid in a tank comprising:
- (a) means for providing a pressure proportional to the tank hydrostatic pressure exerted by said stored liquid,
- (b) means for altering said pressure by a predetermined ratio to an altered pressure,
- (c) means for transmitting said altered pressure to a column of gauge fluid so as to displace said column to a level proportional to said altered pressure,
- (d) said column being calibrated so as to provide a reading corresponding to said level, whereby the altering of said pressure permits the use of a lightweight, relatively non-toxic gauge fluid,
- (e) said means for altering said pressure including a housing having opposite ends, and a pair of opposed diaphragms secured to each other in fixed spaced relation provided in



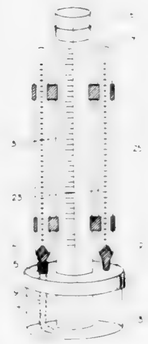
said housing, said diaphragms defining with said housing a first chamber between the first of said diaphragms and one of said housing ends and a second chamber between the second of said diaphragms and the other of said housing ends,
- (f) said means for providing a proportional pressure being connected to said first chamber, and
- (g) said altered pressure being transmitted from said second chamber to said column.

4,409,834

EVAPOPSYCHROMETER

Lancelot I. Kethley, 840 York St., #8, Oakland, Calif. 94610

Filed Jun. 15, 1981, Ser. No. 273,339
Int. Cl.³ G01N *1/04*
U.S. Cl. 73—336 **4 Claims**



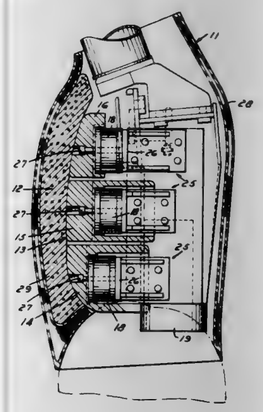
1. An evapopsychrometer having the combination of an evaporimeter with a psychrometer, each of which shares at least one element of the other, for simultaneous measurement of wet and dry bulb temperature and rate of evaporation, said combination comprising;
- a thermometer of said psychrometer having a bulb covered by one end of a wick;
- a feeder for containing water in closed space into which an opposite end of said wick is extensible; said feeder having a lid means to enclose the top of the feeder and having a hole presenting a rim in the lid means;
- said bulb covered by said one end of said wick seated sealingly on said rim to limit the portion of the wick exposed to ambient atmosphere;
- said portion of said wick useable to evaporate said water supplied from said feeder;
- said evaporimeter having a reservoir means calibrated to measure water evaporated from said portion of said wick;
- whereby said evaporimeter shares said portion of said wick with said psychorometer to establish evaporation from the same exact surface area for both the evaporimeter and psychrometer, whereby said portion is said at least one element.

4,409,835

DUMMY CHEST LOAD DISTRIBUTION TRANSDUCER

Roger P. Daniel, Dearborn, and Carl D. Yost, Ann Arbor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1981, Ser. No. 289,017
Int. Cl.³ G01N *33/00*
U.S. Cl. 73—432 R **5 Claims**



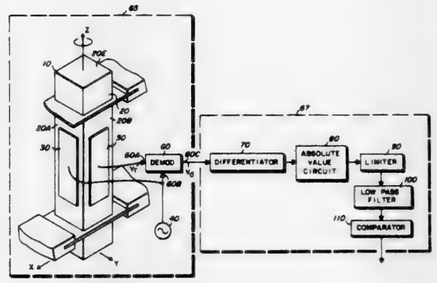
1. A chest transducer for measuring the gross load distribution and direction of loading of a vehicle passenger restraint system on the thorax of an anthropomorphic dummy;
the chest transducer comprising:
- a simulated rib cage supported on a simulated thoracic spine of the anthropomorphic dummy;
- the simulated rib cage approximating the size and shape of a human rib cage and being constructed and arranged to isolate forces applied to the lower rib cage structure from those applied to the remainder of the thorax;
- a padding of firm load-deflection properties capable of simulating compression of the frontal wall of the chest by components of the vehicle passenger restraint system;
- and multi-directional load measurement cells mounted on the simulated thoracic spine and coupled in a plurality of key supportive locations to the rib cage to sense the forces applied to the latter.

4,409,836

APPARATUS AND METHOD FOR DETECTING THE CESSATION OF MOTION OF A BODY

Richard A. Comroe, East Dundee; Michael D. Kotzin, Hoffman Estates, and Anthony P. van den Heuvel, Arlington Heights, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1981, Ser. No. 321,342
Int. Cl.³ G01P *9/04*
U.S. Cl. 73—504 **6 Claims**



1. An apparatus for detecting when a moving body assumes a substantially motionless state comprising:
- rate of turn sensor means attached to said body for generating a rate of turn signal exhibiting an amplitude which is proportional to the rate of turn of said body;
- differentiator means, electrically coupled to said sensor means, for differentiating said rate of turn signal to generate a differentiated signal;
- absolute value circuit means, electrically coupled to said differentiator means, for generating an absolute value signal equal to the absolute value of said differentiated signal;
- limiter means, electrically coupled to said absolute value circuit means, for limiting the amplitude of said absolute value signal to a predetermined signal level, thereby generating a limited signal;
- filtering means, electrically coupled to said limiter means, for filtering said limited signal, thereby generating an filtered signal, and
- comparator means, electrically coupled to said filter means, for generating a first signal when said filtered signal is less than a predetermined voltage level to indicate that said body is substantially motionless.

4,409,837

METHOD FOR MEASURING THE RESONANCE OF ROCK MATERIAL

William L. Medlin, and Lucien Masse, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

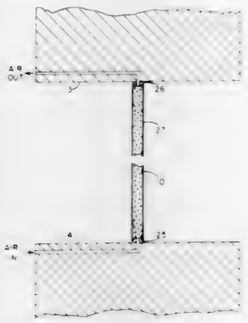
Filed Dec. 30, 1980, Ser. No. 221,479
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—579 **1 Claim**

1. A method for measuring resonance of rock material for varying pore fluid contents, comprising the step of:
- (a) horizontally supporting a rock sample between a pair of masses which are vertically suspended by flexible means from a fixed support member,
- (b) injecting said rock sample with a liquid in a vacuum system to increase its pore fluid content to a 100% liquid saturation,
- (c) applying a sinusoidal frequency through a magnet-coil driving member to at least one of said masses, thereby forming a harmonic oscillator with the rock sample acting as a spring element connecting the masses,
- (d) detecting the relative displacements of said masses as a measure of determining the resonant frequency of the

injected rock sample and masses for said 100% liquid saturation,

(e) passing air through said rock sample to reduce the pore fluid content by a first increment from said 100% liquid saturation to provide an incremental gas/liquid saturation,

(f) detecting the relative displacements of said masses as a



measure of determining the resonant frequency of the injected rock sample and masses for said first increment of reduction from said 100% liquid saturation, and

(g) repeating steps (e) and (f) for a plurality of incremental reductions in the liquid saturation of said rock sample to provide a plurality of incremental gas/liquid saturation resonance measurements.

4,409,838

ULTRASONIC DIAGNOSTIC DEVICE

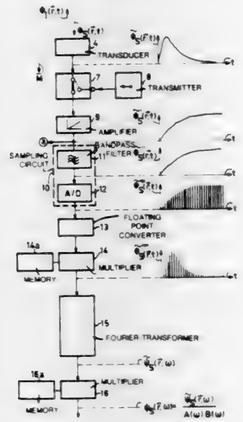
Hermann Schomberg, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,463

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024995

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—602 **16 Claims**



1. A device for determining the internal structure of a body by means of ultrasonic waves which penetrate the body comprising:

acoustic transducer means for periodically emitting pulses of planar acoustic waves having a large-bandwidth frequency spectrum into the body, for receiving echos of the waves which are scattered in the body and for forming measurement signals which represent the emitted and received waves;

one or more signal processing paths which include:

i. means for calculating the Fourier transform of the measurement signals and

ii. means for calculating the frequency spectra of the waves by multiplying the Fourier transform of the measurement signal by correction factors which comprise the product of the frequency spectrum of the emitted acoustic waves in the vicinity of the transducer means and a frequency dependent transmission function of the transducer means;

means which directly calculate the distribution of the refractive index within the body from the frequency spectra; and

means for displaying the calculated distribution.

4,409,839

ULTRASOUND CAMERA

Jon C. Taenzer, Palo Alto, Calif., assignor to Siemens AG, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 281,967

Int. Cl.³ G01N *29/04;* **A61B** *10/00*

U.S. Cl. 73—625 **10 Claims**



1. An ultrasonic apparatus, comprising:

(a) focusing means for focusing ultrasound waves;

(b) an diverging acoustic mirror positioned behind said focusing means and containing a reflecting surface; and

(c) an ultrasound detector containing a plurality of elongated detector elements;

wherein said reflecting surface of said diverging acoustic mirror reflects converging ultrasound waves from said focusing means such that the beams arriving so as to focus on a single point are diverged such as to focus along a focal line and wherein said ultrasound detector is positioned at said focal line for receiving said diverged ultrasound waves from said diverging acoustic mirror.

4,409,840

VIBRATING VANE PRESSURE GAUGE

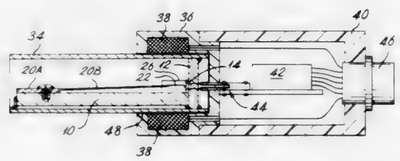
Griffith T. Roberts, Llantrisant, Wales, assignor to National Research Development Corporation, London, England

Filed Mar. 24, 1982, Ser. No. 361,255

Claims priority, application United Kingdom, Mar. 30, 1981, 8109823

Int. Cl.³ G01L *9/12*

U.S. Cl. 73—704 **8 Claims**



1. A vibrating vane pressure gauge comprises a planar vane of electrically conductive material supported by vibration-permitting support means and having at least one electrically conductive extension extending away from the vane across a substantial length of the vane;

an enclosure in which the vane can vibrate perpendicular to its plane, the distances in the plane of the vane between the vane edges and the enclosure being small in comparison with the vane dimensions;

connecting means for connecting the enclosure to a gas or vapour atmosphere;

vibration means for vibrating the vane;

and sensing means for sensing the decay of the vibration when the vibration means is deactivated.

4,409,841

FATIGUE DAMAGE INDICATORS

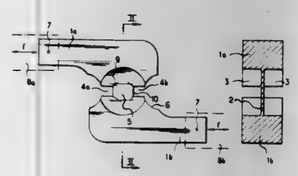
Michel Archer, La Celle-St. Cloud, France, assignor to Societe Anonyme: Stas Societe Technique d'Accessories Specialises, Sartrouville, France

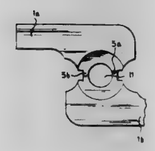
Filed Dec. 30, 1980, Ser. No. 221,212

Claims priority, application France, Jan. 3, 1980, 80 00342; Jul. 31, 1980, 80 17225; Dec. 12, 1980, 80 26727

Int. Cl.³ G01B *11/20;* **G01N** *3/00, 19/00;* **G01L** *5/00*

U.S. Cl. 73—762 **13 Claims**





1. A fatigue damage indicator comprising:

a first comparatively thick member;

a second comparatively thick member; and

a comparatively thin plate interconnecting the first and second thick members so disposed that stresses applied to the first and second members are applied to the thin plate as a shear stress, and having two slots each extending in the direction of applied stress to the first and second members, a predetermined fatigue stress serving to crack the comparatively thin plate starting from the slots and displace a part thereof from its initial location relative to the first and second members, the thin plate comprising respective tabs upstanding from the thin plate at the blind ends of said slots.

4,409,842

STRUCTURAL INFORMATION DETECTOR

David R. Scott, Lancaster, Calif., and Thomas S. Rhoades, Colorado Springs, Colo., assignors to Scott Science & Technology, Inc., Lancaster, Calif.

Continuation-in-part of Ser. No. 265,031, May 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 86,772, Oct. 22, 1979, Pat. No. 4,287,511. This application Apr. 26, 1982, Ser. No. 371,321

Int. Cl.³ G01L *1/24*

U.S. Cl. 73—800 **4 Claims**

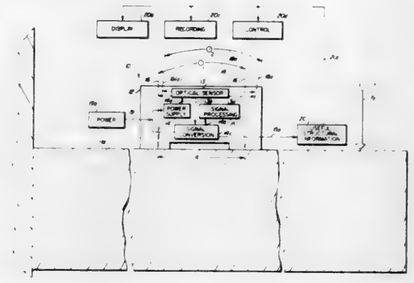
1. A structural information detector for collecting and interpreting data reflecting the effect of at least one of a plurality of forces acting on a structure, said structural information detector comprising, in combination:

(a) a housing adapted to be attached to the surface of said structure;

(b) optical means within said housing for

(i) detecting the relative orientation of spaced surface coordinate vectors of said structure, and

(ii) generating primary signals in response to changes in said orientation;



(c) circuit means within said housing for converting said primary signals to a form usable by signal-processing electronics; and

(d) signal-processing electronics means within said housing, including computational software, for processing said converted primary signals to secondary signals, which embody useful information which directly indicates the effect of at least one of a plurality of forces acting on said structure.

4,409,843

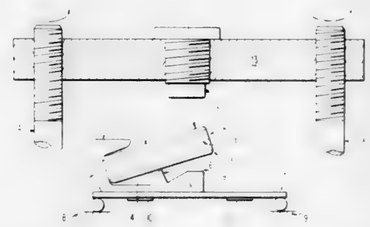
DEVICE FOR MEASURING TABLET BREAKING FORCE

Joseph J. Urban, Richboro, Pa., and Norman L. Henderson, Gladstone, N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Mar. 11, 1982, Ser. No. 357,109

Int. Cl.³ G01N *3/20;* **B26F** *3/00*

U.S. Cl. 73—851 **6 Claims**



1. A device for measuring the force required to break a tablet, wherein the device comprises:

(a) tablet holding means comprising a base, a tablet splitting edge in the base and an area of holding a tablet in an inclined cantilevered position such that at least a portion of the cantilevered segment of the tablet extends over the tablet splitting edge;

(b) means for exerting a force substantially perpendicular to a portion of the cantilevered segment of the tablet extending over the splitting edge to thereby create a moment of force about the tablet splitting edge sufficient to break the tablet; and

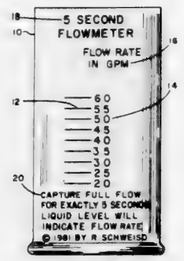
(c) means for measuring the force required to break the tablet.

4,409,844

FLOW RATE MEASURING DEVICE

Robert J. Schweiso, 1028 Edmonds Ct., Sunnyvale, Calif. 94087

Filed Aug. 21, 1981, Ser. No. 295,102
Int. Cl.³ G01F *1/00, 9/00*
U.S. Cl. 73—861 **9 Claims**



1. A flow rate measuring device comprising: a non-through-flowing receptacle for collecting samples of a flowing media; graduations on said receptacle expressing the volume of flow per basic time period; and a legend, also on said receptacle, specifying a sample collection period that is different from the expressed basic time period; wherein the actual volume at each graduation is different from the expressed volume by the ratio between the sample collection period and the basic time period.

4,409,845

CALIBRATING BAG FOR USE ON DISPENSER NOZZLES

Charles J. Stufflebam, 214 Redwood Ct., Lee's Summit, 64023, and Spencer D. Hamer, 10220 Locust, Kansas City, both of Mo. 64131

Filed May 1, 1981, Ser. No. 259,464
Int. Cl.³ G01F *1/00, 9/00*
U.S. Cl. 73—861 **2 Claims**



1. A calibration device for determining the nozzle output of agricultural sprayers comprising:

(a) an elongate, flexible, throw-away bag of translucent plastic sheet material having a thickness in the range of 2 to 5 mils;

(b) said bag having front and rear walls, opposite side edges and top and bottom portions, said walls being joined together at said bottom portion and along said side edges to provide an open interior cavity for receiving a quantity of liquid spray material dispensed from said nozzle;

(c) said top portion including spaced arm portions extending upwardly along said side edges and providing a U-shaped opening for fastening about a spray boom and suspending said bag therefrom;

(d) said front wall having a plurality of indicia thereon to measure the quantity of liquid spray material dispensed into said bag and including horizontal indicia corresponding to a liquid quantity measurement and longitudinal indicia corresponding to the speed of travel of the applicator vehicle whereby a level of liquid quantity corresponds to a combined indicia disclosing a total quantity of liquid spray material as dispensed during a specific time period;

(e) said bag includes one group of horizontal and longitudinal indicia adjacent one side edge and indicating one quantity of liquid per land unit broadcast rate and specifying a precise time period for the operation of the liquid spray applicator and a second group of horizontal and longitudinal indicia adjacent the other side edge of said bag and indicating a separate quantity of liquid per land unit broadcast rate and specifying a separate precise time period for the operation of the liquid spray applicator; and

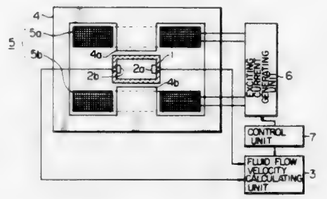
(f) each of said indicia groups including a plurality of horizontal indicia marks indicating quantity of liquid dispensed and a plurality of longitudinal indicia lines indicating the speed of travel of the applicator vehicle.

4,409,846

ELECTROMAGNETIC FLOW METER

Kazuo Ueno, Chita, Japan, assignor to Aichi Tokei Denki Co., Ltd., Chita, Japan

Filed Aug. 6, 1980, Ser. No. 175,611
Claims priority, application Japan, Feb. 8, 1979, 54-13916; Mar. 16, 1979, 54-31596
Int. Cl.³ G01F *1/60*
U.S. Cl. 73—861.17 **14 Claims**



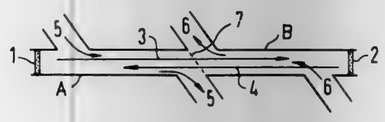
12. In an electromagnetic flow meter having: a pipe of non-magnetic and non-conductive material through which conductive fluid flows; a pair of electrodes which are provided oppositely on said pipe orthogonal to the flow direction of said fluid and in contact with said fluid; a magnetic circuit for introducing magnetic flux in the direction orthogonal to the flow direction and a straight line connecting said electrodes, an exciting coil for producing said magnetic flux to be introduced into said magnetic circuit; an exciting current generating unit for generating exciting current to be supplied to said exciting coil; and a fluid flow velocity calculating unit for calculating fluid flow velocity on the basis of the voltage produced between said electrodes due to said magnetic flux and the fluid flow; said electromagnetic flow meter comprising: a control unit for controlling said exciting current generating unit and said fluid flow calculating unit in such a manner that said exciting current generating unit intermittently produces said exciting current with an alternately reversed polarity and a short time duration and said fluid flow velocity calculating unit calculates the velocity of the fluid flow only during a predetermined constant period from a point in time when the residual flux retained by said magnetic circuit, after extinguishing said exciting current, reaches a stable state to a point in time when the subsequent exciting current is initiated, wherein the arrangement of said magnetic circuit and said exciting coil is substantially symmetrical with respect to a straight line connecting said pair of electrodes.

4,409,847

ULTRASONIC MEASURING ARRANGEMENT FOR DIFFERENTIAL FLOW MEASUREMENT, PARTICULARLY FOR MEASUREMENT OF FUEL CONSUMPTION IN MOTOR VEHICLES WITH A FUEL RETURN LINE

Valentin Magori, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,504
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1980, 3036457
Int. Cl.³ G01F *1/66*
U.S. Cl. 73—861.28 **13 Claims**



1. Apparatus for measuring the differential flow rate between a forward fluid flow to a user station and a return fluid flow from said user station comprising a forward tube means for conducting forward flow therethrough, a return tube means for conducting return flow therethrough, means for providing an ultrasonic wave measuring path between said forward and return tube means including a common partition wall means, permeable to ultrasonics, for preventing flow communication between said forward and return tube means and closed at opposed ends by a first ultrasonic transducer formed on said forward tube means and a second ultrasonic transducer formed on said return tube means, said first ultrasonic transducer transmitting a first ultrasonic wave through said forward flow and said return flow in succession to said second ultrasonic transducer, and said second ultrasonic transducer transmitting a second ultrasonic wave through said return flow and said forward flow in succession to said first ultrasonic transducer, whereby the difference in transit times along said wave measuring path for said first and second ultrasonic waves is used to determine the differential flow rate.

13. A method of ultrasonically measuring the rate of fluid consumption at a user station comprising:

providing a forward fluid flow line to said user station and a return fluid flow line from said user station,

providing an ultrasonic wave measuring path running between said forward and return flow lines, including a common partition wall means, permeable to ultrasonics, for preventing flow communication between said forward and return flow lines,

placing first and second ultrasonic transducers at opposed ends of said wave measuring path and facing one another,

issuing a first ultrasonic wave from said first transducer through said forward flow line and said return flow line in succession to said second transducer,

issuing a second ultrasonic wave from said second transducer through said return flow line and said forward flow line in succession to said first transducer, and

determining the fluid consumption rate from the difference in transit times along said wave measuring path for said first and second ultrasonic waves.

4,409,848

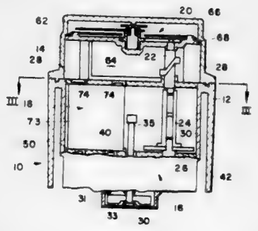
METER READOUT WITH DC MOTOR IMPULSE GENERATOR

Paul D. Lutz, Grand Haven, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Filed Jul. 30, 1981, Ser. No. 288,315
Int. Cl.³ G01F *1/00, 15/14*
U.S. Cl. 73—861.28 **17 Claims**

1. An improved fluid flow generator device having a casing, measuring means mounted to said casing including a rotating gear mounted thereon, each revolution of said rotating gear being responsive to a defined volume of flow through said meter, registry means mounted remotely from said meter for providing a visual readout of said volume of flow through said meter, and impulse generating means for converting the movement of said rotating gear into pulses of electrical energy for actuating said registry means, said generating means including a directional reversing gear driven in a driven direction by said rotating gear during only a portion of each revolution of said rotating gear, and biasing means for biasing said directional reversing gear opposite said drive direction by said biasing means;

the improvement comprising:



a DC electric motor having a shaft operatively connected to said reversing gear, said electric motor including an armature having three poles or coils, said armature being mounted on said shaft and having a first commutator element rotatable therewith and connected to the coils of said armature, a stationary commutator element having normal power input leads connected thereto, and electric circuitry connecting the normal input leads of said electric motor to said registry means,

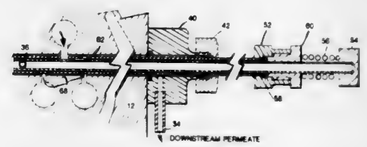
whereby when said biasing means rapidly rotates said reversing gear, said shaft and armature rapidly rotate so that said electric motor generates to said normal leads an output signal transmitted through said electric circuitry to actuate said registry means.

4,409,849

PROBE FOR COLLECTING TEST PERMEATE FROM A MULTIPLE-MEMBRANE MODULE

Martin Roos, Burlington, Mass., assignor to Abcor, Inc., Wilmington, Mass.

Filed Feb. 10, 1982, Ser. No. 347,559
Int. Cl.³ G01N *1/16*
U.S. Cl. 73—863.82 **12 Claims**



9. A method of collecting test permeate from a multiple-membrane module having a straight permeate-collection passageway and a plurality of spaced-apart, individual permeate passageways which discharge permeate into the permeate-collection passageway, which method comprises:

(a) inserting an elongated test probe, comprising spaced-apart, concentric, inner and outer tubes, into the permeate-collection passageway a defined distance, the test probe at the one end having a pair of spaced-apart, peripheral, resilient O-rings and a radial passageway in the outer tube, the test probe in position defining a downstream

permeate passageway, an upstream permeate passageway and a test permeate passageway;

(b) forcing the O-rings peripherally and radially outwardly, to extend beyond the diameter of the outer tube and into a fluid-sealing relationship with the interior wall surface of the permeate-collection passageway just above and below the individual permeate passageways where permeate is to be collected; and

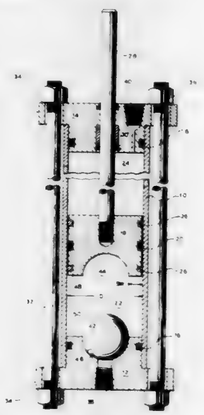
(c) withdrawing test permeate from the sealed, individual permeate passageways by withdrawal of the test permeate through the radial passageway between the O-rings and from the test probe, while withdrawing upstream and downstream permeate from the upstream and downstream permeate passageways of the test probe.

4,409,850

PORTABLE SAMPLE VESSEL

Ted E. Zeck, P.O. Box 176, Snyder, Tex. 79549

Filed Mar. 4, 1982, Ser. No. 354,734
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—864.62 **1 Claim**



1. A cell for collecting samples of liquified gasses having

a. a cylindrical container with an inside diameter having

(i) a sample end, and

(ii) a charge end,

(iii) each of which is closed,

b. a piston in the container,

c. a sample port at the sample end for introducing samples into the container between the sample end and the piston,

d. a charge port in the charge end for introducing an inert gas charge into the container between the charge end and the piston, and

e. a ball in the container between the sample end and the piston;

wherein the improvement comprises:

f. the ball having a diameter over half the inside diameter of the cylinder,

g. the piston and sample end having hemispherical recesses into which the ball snugly fits, said hemispherical recesses coaxial with the cylinder, and

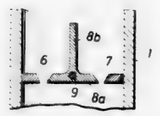
h. shoulders around the recesses both radially extending from and symmetrical about the axis of the cylinder, each shoulder having a width of less than one half the diameter of the ball so that the ball cannot rest on the shoulder but enters the recesses upon discharge of sample from the container.

4,409,851

OSCILLATING VANE FLOWMETER

Per S. Bahrton, Stamstigen 13, S-181 47 Lidingö, Sweden

Filed Oct. 20, 1981, Ser. No. 313,083
Claims priority, application Sweden, Oct. 24, 1980, 8007504
Int. Cl.³ G01F *1/20, 1/66*
U.S. Cl. 73—861.21 **9 Claims**



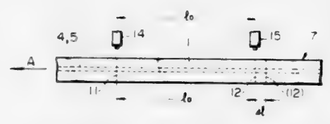
3. A flowmeter according to claim 1 or 2, characterized in that the profile of each of the projections (6, 7) has the shape of a knife edge, the tip of which is close to its upstream face.

4,409,852

METHOD OF MEASURING STRETCH OF CONVEYOR BELT

Isao Suzuki, and Haruyuki Serikawa, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,068
Claims priority, application Japan, Sep. 8, 1980, 55-124214
Int. Cl.³ G01L *5/10*
U.S. Cl. 73—862.39 **3 Claims**



1. Method of measuring the stretch of a conveyor belt, wherein opposite ends of a belt having steel cord cores embedded therein in the longitudinal direction thereof are joined to each other, including;

previously providing magnetic marks at two positions spaced apart a given distance from each other and interposing a joint of said steel cord cores of the conveyor belt therebetween;

disposing two magnetic sensors spaced apart a given distance from each other in the running direction of said conveyor belt, in adjacent but non-contacting relation to said conveyor belt;

detecting a period of time during which either one of said two magnetic marks moves across said two magnetic sensors during running of said conveyor belt and measuring the running speed of said conveyor belt based on said period of time and a distance across said two magnetic sensors;

detecting also during running of said conveyor belt a time at which one of the magnetic marks in front in the running direction of the conveyor belt reaches one of the magnetic sensors in front in the running direction of the conveyor belt and a time at which the other of the magnetic marks in the rear in the running direction of the conveyor belt reaches the other of the magnetic sensors in the rear in the running direction of the conveyor belt, and measuring a difference in time therebetween; and

calculating the value of the stretch between said magnetic marks of the conveyor belt based on said measured running speed of the conveyor belt, said measured difference

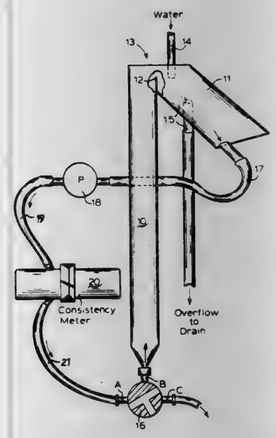
in time, a ratio between the distance across said magnetic marks and the distance across said magnetic sensors.

4,409,853

PULP SAMPLING SYSTEM

Richard R. Chase, Savannah, Ga., and Franklin N. Rhoad, Bluffton, S.C., assignors to Union Camp Corporation, Wayne, N.J.

Filed Aug. 17, 1981, Ser. No. 293,481
Int. Cl.³ D21F *1/08*
U.S. Cl. 73—863 **5 Claims**



1. A device for obtaining an exact volume of a sample of a pulp suspension having a desired consistency and concentration for testing comprising:

a sample chamber designed to hold a specified volume of suspension, the said chamber having an opening at the top for the suspension to flow out and an opening at the bottom for suspension to flow in whereby the suspension can circulate through the chamber;

an outlet tube at the top of the chamber with a weir interposed between the chamber and the outlet tube over which the suspension can flow from the top of the chamber into the outlet tube, the said outlet tube having an outlet to permit the suspension to flow from the outlet tube;

a pump to circulate the suspension which can be turned off to stop circulation;

overflow means to exhaust any excess from the circulating suspension;

a consistency meter having a readout to show the consistency of the suspension going through the meter;

a three-way valve connected to the bottom of the chamber which can be turned to permit the suspension to flow into the chamber, the flow of suspension to be stopped, or to be drained from the chamber;

the said outlet tube, pump, consistency meter, three-way valve and the bottom of the chamber being interconnected so that the pump can circulate suspension continuously through the chamber and meter;

means to add pulp and water to the circulating suspension as needed until the meter readout shows the consistency of the suspension has reached a reading targeted for the tests to be performed;

and

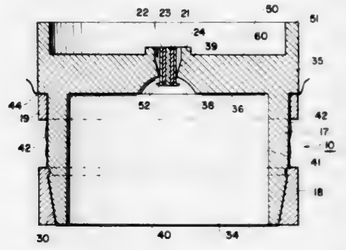
means to drain the volume of suspension from the chamber for testing after the circulation and flow of suspension into the chamber has stopped.

4,409,854

SAMPLE CUP WITH VENTING MEANS FOR USE IN X-RAY SPECTROSCOPY

Michael C. Solazzi, Eastchester, N.Y., assignor to Chemplex Industries, Inc., Eastchester, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,533
Int. Cl.³ G01N *1/10*
U.S. Cl. 73—864.91 **10 Claims**



1. A sample cup for retaining a specimen to be subjected to spectrochemical analysis, comprising:

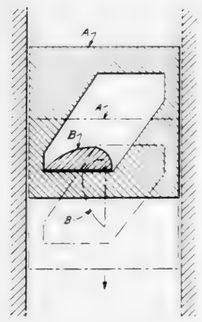
a cup shaped member (10) having a closed bottom (35) and an opened top (34), with the top surface (36) of said closed bottom (35) of said member (10) having a recessed section (39) of a first diameter nearer the bottom surface (60) of said closed bottom (35) and tapering to a smaller diameter then said first, facing and in direct communication with said opened top (34), whereby the thickness of said closed bottom (35) at said recessed section (52) is relatively thin, a plunger (21) extending transversely from the bottom surface (60) of said closed bottom (35) and located below said recess, whereby when said plunger is pushed towards said opened top said thin portion of said closed bottom is ruptured with the sides of said plunger being captured within said recessed portion to prevent the plunger from falling through said top opening.

4,409,855

MOTION TO ROTARY MOTION

Martin Kokus, R.D. #4, Box 48, Ebensburg, Pa. 15931

Filed Apr. 9, 1982, Ser. No. 340,356
Int. Cl.³ F16H *25/14*
U.S. Cl. 74—55 **1 Claim**



1. A machine which translates linear reciprocating motion to rotating motion comprising:

a reciprocating part having an opening, said opening having opposed, rectilinear side surfaces which are parallel to each other and inclined relative to the direction of motion of said reciprocating part; and,

a rotating part which includes a shaft having a cam secured

thereto that rotates within the opening in the reciprocating part;

the reciprocating and rotating parts being shaped such that

(a) the side surfaces engage the cam and rotate it 180 degrees every time the reciprocating part moves through one half of its reciprocating cycle;

(b) a line connecting the point of contact between the two parts and the axis of rotation of the rotating part will always be perpendicular to the direction of motion of the reciprocating part; and,

(c) the contact between the two parts is always pure rolling contact.

4,409,856

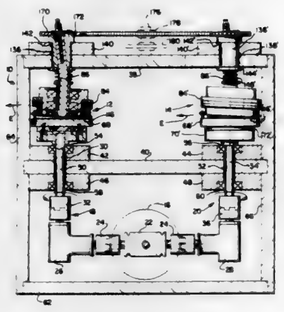
PROPULSION SYSTEM

Fred de Weaver, III, 1403 Tampa Ave., Dayton, Ohio 45408

Filed Jan. 29, 1981, Ser. No. 229,681

Int. Cl.³ F16H *27/00*

U.S. Cl. 74—84 R **24 Claims**



1. An apparatus for converting rotary motion into linear motion comprising:

a frame;

at least one lower member having a camming surface and mounted to said frame to rotate about a first axis;

said lower member including lower non-metallic damping means isolating said camming surface from the remainder of said lower member;

at least one upper member positioned above said lower member and mounted to said frame to rotate about a second axis skewed to said first axis;

said upper member including a bottom rim, a portion of which engages said camming surface of said lower member at a point thereon;

said upper member including upper non-metallic damping means isolating said bottom rim from the remainder of said upper member;

means for rotating said lower member about said first axis; and

means carried by said lower member for engaging and driving said upper member such that rotation of said lower member said rotating means causes said upper member to rotate about said second axis in the same direction as said lower member, thereby creating unbalanced centrifugal forces which result in a first linear force substantially normal to said first axis.

4,409,857

TRANSMISSIONS

Jean J. Lasoen, Ville Preux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

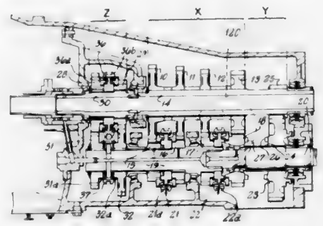
PCT No. PCT/EP80/00054, § 371 Date Mar. 23, 1981, § 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/00313, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 15, 1980, Ser. No. 253,745

Claims priority, application United Kingdom, Jul. 23, 1979, 7925590

Int. Cl.³ F16H *5/06, 3/38, 3/08*

U.S. Cl. 74—337.5 **11 Claims**



1. A transmission ratio selecting mechanism including a ratio selector means, first and second ratio coupling members (36*b*, 37) movable to couple associated gear wheels (28, 29:31, 32) with first (30) and second (19) shafts respectively to select a number of ratios of an associated transmission, and linkage means (65, 63, 54, 61, 62, 59, 57, 60:65, 63, 64, 70, 71, 68, 67, 69) for moving the ratio coupling members in response to movement of the ratio selector means, the ratio selecting mechanism being characterised in that the linkage means includes disconnecting means (72, 73, 63, 64) for disconnecting one (37) of the ratio coupling members from the selector means during selection of at least one of the transmission ratios, the selecting mechanism being arranged so that for the selection of said at least one ratio both the ratio coupling members (36*b*, 37) are initially moved axially of their respective shafts (30, 19) in synchronism in the same direction by the selector means so that one coupling member (37) couples one of the associated gear wheels (31, 32) with one (19) of the shafts thus completing the first part of the selection of said at least one ratio, the disconnecting means is then operated, and selection of said at least one ratio is completed by further movement of only the other (36*b*) coupling member axially of its respective shaft (30) in the opposite direction in response to further movement of the selector means to couple another of the associated gear wheels (28, 29) with the other shaft (30), the selector means being arranged to return the ratio coupling members to synchronism on movement of the selector means to select another ratio.

4,409,858

TRANSMISSIONS

Jean J. Lasoen, Ville Preux, France, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

PCT No. PCT/EP80/00055, § 371 Date Mar. 23, 1981, § 102(e) Date Mar. 17, 1981, PCT Pub. No. WO81/00292, PCT Pub. Date Feb. 5, 1981

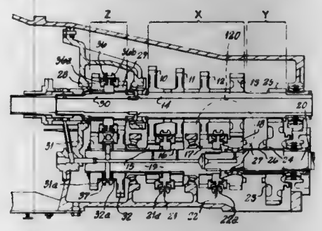
PCT Filed Jul. 15, 1980, Ser. No. 253,746

Claims priority, application United Kingdom, Jul. 23, 1979, 7925589

Int. Cl.³ F16H *5/06, 3/08*

U.S. Cl. 74—337.5 **14 Claims**

1. A vehicle transmission assembly having parallel input (30), output (19) and idler (35) shafts each provided with a first gear wheel (28, 31, 34) and a second gear wheel (29, 32, 33), the first gear wheels (28, 31) on the input and output shafts being in constant mesh and the first gear wheel (34) on the idler shaft being in constant mesh with the input shaft first gear wheel (28) alone, the second gear wheels (29, 32) on the input and output shafts also being in constant mesh and the second gear wheel (33) on the idler shaft being in constant mesh with output shaft second gear wheel (32) alone, first clutch means (36) for alternatively coupling the input shaft first or second gear wheel to the input shaft, second clutch means (37) for alternatively coupling the output shaft first or second gear wheel to the output shaft, and control means (65, 63, 64, 61, 62, 59, 57, 60:65, 63, 64, 70, 71, 68, 67, 69) for engaging the first and second clutch means in order to obtain a number of different output



shaft ratios, said assembly being characterised in that one (36) of the first and second clutch means is a synchromesh clutch unit and the other (37) of said first and second clutch means is a non-synchromesh clutch unit, in that the first and second gear wheels (34, 33) of the idler shaft are fixedly rotatable therewith, and in that the control means (65, 63, 64, 61, 62, 59, 57, 60:65, 63, 70, 71, 68, 67, 69) is operable to ensure that the non-synchromesh clutch unit (37) is engaged before the synchromesh clutch unit (36) on the selection of each output shaft ratio.

4,409,859

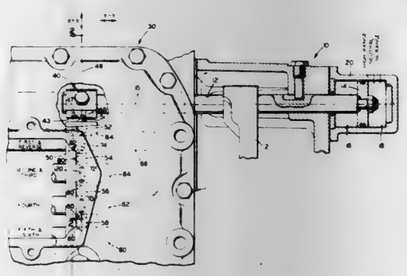
SHIFT-RAIL INTERLOCK BRACKET FOR COMPOUND TRANSMISSION

James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed Apr. 30, 1981, Ser. No. 259,129

Int. Cl.³ G05G *5/10*

U.S. Cl. 74—477 **11 Claims**



1. In a compound transmission comprising a main and an auxiliary gear box, wherein said main gear box includes a shift interlock system comprising a plurality of interlock elements, said transmission further comprising an auxiliary shift rail extending between and into each of said gear boxes; an improvement comprising an interlock bracket in fixed engagement with said shift rail, said bracket comprising means for activating said shift interlock system, said bracket further comprising means for engaging a portion of a shift interlock element, whereby said auxiliary shift rail is restrained against axial movement, said shift interlock element comprising means for ejection of said portion of said shift interlock element from said means for engaging said element, whereby said auxiliary shift rail is released for axial movement thereof, said bracket further comprising means for preventing axial movement of at least one main shift rail positioned within said main gearbox, wherein said means for engaging a portion of said shift interlock element comprises a recess within said bracket.

4,409,860

APPARATUS FOR PRECISELY MOVING A TABLE

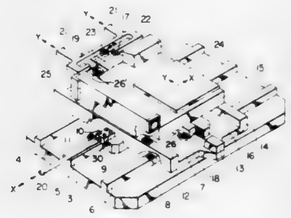
Shigeo Moriyama, Hachioji; Masaaki Ito, Kokubunji, and Tatsuo Harada, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 138,095

Claims priority, application Japan, Apr. 6, 1979, 54-41108

Int. Cl.³ G05G *11/00*; A47B *11/00*

U.S. Cl. 74—479 **11 Claims**



1. An apparatus for precisely moving a table, comprising:

rectilinear drive means respectively fixed and disposed on X- and Y-coordinate axes;

a movable member;

guide means for constraining the motion of said movable member in the direction of one of the X- and Y-axes by the motion of said rectilinear drive means in the one axial direction and for constraining its motion in the direction of the other axis by the rectilinear motion of said rectilinear drive means in the other axial direction; and

coupling means coupling said movable member and said rectilinear drive means with a backlash in at least one of the X- and Y-axial directions;

wherein said movable member is constructed of an X-axial movable table which has its motion in the X-axial direction constrained by the motion of the X-axial rectilinear drive means, and a Y-axial movable table which has its motion in the Y-axial direction constrained by the motion of the Y-axial rectilinear drive means; and

wherein the coupling means includes two rollers whose respective rotary shafts are fastened to a part of said Y-axial movable table, and a rod which extends in the X-axial direction and which is held between said two rollers with a spacing which provides said backlash.

4,409,861

DIAL TYPE WIRE CONTROL DEVICE

Yukio Sakurai, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Dec. 15, 1980, Ser. No. 216,311

Claims priority, application Japan, Dec. 17, 1979, 54-173418

Int. Cl.³ F16C *1/10*; G05G *1/08, 1/04*

U.S. Cl. 74—501 R **5 Claims**

1. A dial type wire control device for controlling a subject, comprising:

a dial member;

a drum;

means for connecting the dial member with the drum so that the dial member and the drum can rotate synchronously;

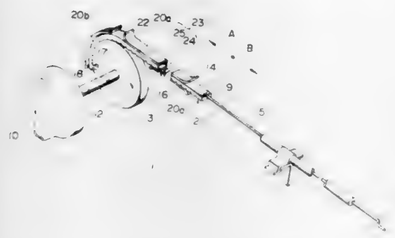
a wire having one end thereof connected to the subject; and

a flexible strap or band having one end thereof connected to the other end of the wire, the other end of the band being fixed to an outer peripheral portion of the drum in such a manner that the strap or band can be wound onto the periphery of the drum when the drum rotates in one direc-

tion, and the strap or band can be unwound from the periphery of the drum when the drum rotates in the opposite direction;

a number of indentations formed on the inner surface of the strap or band, said indentations engaging the drum;

means positioned apart from said drum for locking the strap or band by selectively urging the locking means to be engaged with the indentations of the strap or band;



guide means placed adjacent the periphery of the drum for guiding the strap or band in such a manner that the guide means faces the periphery of the drum to prevent the band or strap from buckling when the band or strap is unwound from the drum; and

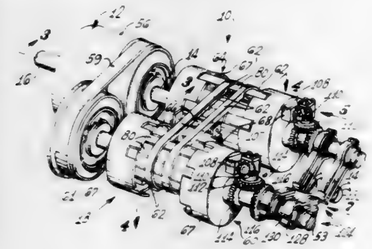
said indentations each running across the band for serving as relief grooves to permit the band to easily flex when it is wrapped around the drum.

4,409,862

VARIABLE SPEED ROTARY POWER TRANSMISSION

John S. Adkins, 2217 Main St., Santa Monica, Calif. 90405

Filed Mar. 23, 1981, Ser. No. 246,278
Int. Cl.³ F16H *37/00*
U.S. Cl. 74—689 **9 Claims**



1. A variable speed rotary power transmission, comprising:

a planetary gear train having a first gear, a second gear, and a cage all on a common axis, and at least one planet gear carried by said cage and meshed between said first and second gears for planetary motion about said axis;

power output means connected for rotational driving by said first gear;

power input means connected for rotatably driving in one direction one of said cage, and said second gear; and

a variable speed drive assembly connected for rotatably driving the remaining one of said cage and said second gear in the same rotational direction as said power input means and through a range of rotational speeds such that said power output means is driven at a continuously variable speed ranging from a speed in a first rotational direction through zero to a speed in a second, opposite rotational direction;

said variable speed drive assembly comprising a first variable diameter sheave assembly connected for rotational driving by said power input means, a second variable diameter sheave assembly connected for rotationally driving the remaining one of said cage and said second gear, belt means for transmitting rotational motion between said first and second sheave assemblies, and control means for varying the effective diameters of said first and second sheave assemblies generally inversely with respect to each other;

each of said first and second sheave assemblies comprising a pair of facing rotatable housing members, a plurality of pulley segments extending longitudinally between said housing members and including means carried by said housing members for rotation therewith and radial sliding movement with respect thereto, a pair of facing scroll members disposed respectively adjacent the inboard faces of said housing members and rotatable together with respect to said housing members, said scroll members each having formed therein a spiraled recess presented toward the adjacent scroll member, said pulley segments each including tab means at opposite ends each received in the spiraled recess of the adjacent scroll member;

each of said first and second sheave assemblies further including first gear means connected to one of said scroll members for rotation therewith, and second gear means meshed with said first gear means and rotationally carried with one of said housing members, said second gear means including a bevel gear rotatable with one of said housing members and orbital about the axis of rotation thereof, and first and second independently rotatable differential gears in meshing engagement with said bevel gear;

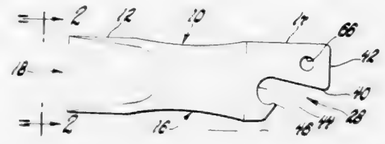
said control means including means for effecting relative rotation between said first and second differential gears of said first and second sheave assemblies for rotating said bevel gears meshed therewith in rotational directions to correspondingly rotate said scroll members of said first and second sheave assemblies in generally opposite directions to inversely vary the radial positions of said pulley segments of said first and second sheave assemblies and thereby variably drive the remaining one of said cage and second gear through a range of rotational speeds.

4,409,863

COMBINED TAB-TOP CAN OPENER

John J. Anderson, 320 Gibson, South Lyon, Mich. 48178

Filed Dec. 3, 1981, Ser. No. 327,102
Int. Cl.³ B67B *7/40, 7/44*
U.S. Cl. 81—3.1 R **2 Claims**



1. An opener for a can top having tabs or the like for opening the cans to which they are attached by mechanical action, comprising:

a hollow tubular member having a first section, a second section, and a hollow central handle section intermediate said first and said second sections;

said first section being formed integrally with said central handle section and being formed as a flattened portion of said tubular member extending outwardly from one end of said hollow central handle section to form a first pair of facing spaced substantially parallel members;

said second section being formed integrally with said central handle section and being formed as a flattened portion of said tubular member extending outwardly from a second end of said hollow central handle section;

the major portion of the opposing elements defining the wall of said first section portion of said hollow tubular member being parallel to each other and spaced from each other to form a relatively narrow oblong chamber therein, as contrasted with said central handle section;

said oblong chamber of said first section extending inwardly thereof towards said central handle section;

the major portion of the opposing elements defining the wall of said second flattened section being in intimate contact with each other to form a substantially flat solid extension from said central handle section, and forming a relatively rigid section as contrasted with said first section, and contrasted with said central handle section;

the opposing elements defining the wall of said central handle portion being all spaced a substantial distance from each other, as contrasted with the spacing of the opposing elements of the major portions defining the walls of said tubular member within said first and within said second sections, and forming a substantially hollow rotund central handle section of said opener;

the oblong chamber of said first section being formed to receive a flip top can tab sufficiently to operate the latter tab through rotation of said opener;

said second flattened section being provided with a hook-like recess for use in opening a can top;

said first section, said second section, and said central handle section being formed of a single piece of tubing;

said hook-like recess being formed by a flat ledge portion extending inwardly from the outer end of said flattened second section inwardly substantially parallel to the major axis of said tubular member;

said ledge portion merging into a re-entrantly curved portion terminating in a second flat ledge-like portion extending substantially parallel to the first;

said second ledge-like portion terminating inwardly from the latter said end a substantial distance; and

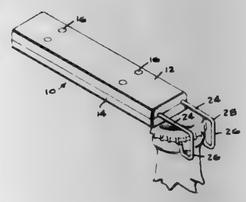
the whole forming a hook-like indentation in said flattened section section for use in opening a can top.

4,409,864

BOTTLE OPENER

Thomas Gaskins, Cypress Knee Museum, Palmdale, Fla. 33944

Filed Apr. 12, 1982, Ser. No. 368,022
Int. Cl.³ B67B *7/16*
U.S. Cl. 81—3.46 R **4 Claims**



1. A bottle opener comprising:

a handle member; and

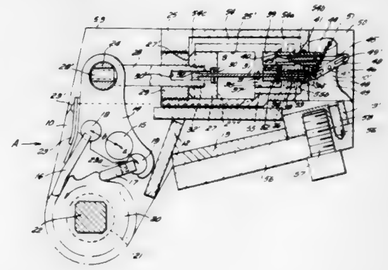
a cap engaging member mounted on said handle member and including a cantilever arm extending outwardly from said handle member, a lift arm extending substantially perpendicularly from said cantilever arm and lift hook means on an end of said lift arm comprising a hook arm extending transversely from said lift arm and an outer hook tooth extending transversely from said hook arm toward said cantilever arm and having a canted upper end surface defining an upper pointed edge positionable against a bottle under a flute of a bottle cap with the canted surface engaging the inner surface of the cap and wherein said outer hook tooth, said lift arm, and said hook arm and said cantilever arm are unitarily formed of metal and wherein said cantilever arm, said lift arm, said first hook arm and said outer hook tooth are dimensioned so that said cantilever arm can extend over the upper surface of a bottle cap on a bottle with the lift arm extending downwardly along the side of the bottle cap to position the upper pointed edge of the outer hook tooth beneath the peripheral lip of the bottle cap so that relative tilting movement between the handle member and the bottle causes the canted upper end surface to forcefully engage the bottle cap to cam it outwardly and upwardly to lift same from the bottle.

4,409,865

CONTINUOUS RATCHET DRIVE

Wilhelm F. Krautter, Portland, Pa., and John K. Junkers, Saddle River, N.J., assignors to Unex Corporation, Montclair, N.J.

Filed Jan. 15, 1981, Ser. No. 225,407
Int. Cl.³ B25B *13/46*
U.S. Cl. 81—57.39 **1 Claim**



1. A continuous fluid-operated ratchet drive for a wrench or the like comprising support means; a ratchet gear mounted on said support means turnable about a first pivot axis; lever means pivotable about a second pivot axis extending laterally from and parallel to said first pivot axis; fluid-operated cylinder and piston means comprising a cylinder, a piston reciprocatably arranged in said cylinder along a forward stroke and a return stroke and a piston rod fixed at one end to said piston and projecting with its other end in a sealed manner through one end of said cylinder and connected to said lever means distant from said second pivot axis, whereby during said forward stroke of said piston the pressure fluid acts on one end face thereof and during the return stroke on an annular piston face, the area of which is reduced by the cross section of the piston rod as compared to the area of said one piston face, so that the force with which the piston is moved during the return stroke is smaller than that at which it is moved during said forward stroke; and at least one pair of drive pawl means having free ends adapted to engage teeth of said ratchet gear, said pair of drive pawl means being mounted at one end thereof opposite said free ends on said lever means tiltable about tilting axes located spaced from and respectively to opposite sides of said second pivot axis and wherein the distance of the tilting axis of one of said drive pawl means from said pivot axis to the distance of said pivot axis from the tilting axis of the other driven pawl means is in reverse ratio to said forces at which said piston is moved during its forward and its return stroke, whereby said ratchet gear is turned in one direction and with the same force during the forward as well as during the return stroke of said piston in said cylinder.

4,409,866

TOOL HANDLE WITH CONTOURED THROUGH PASSAGEWAY AND SPRING BIASED TRIGGER

Joan McBride, 559 Chestnut Street, Westwood, N.J. 07675

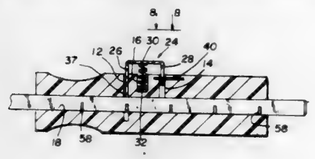
Filed Dec. 28, 1981, Ser. No. 334,577
Int. Cl.³ B25G *1/04*
U.S. Cl. 81—177 A **7 Claims**

1. A tool handle having a through passageway adapted for

securing a selected and inserted shank portion of a tool, said tool handle sized for grasping and manipulating by a user and when grasped having a trigger mechanism incorporated in and extending from said handle and as and when actuated to allow insertion, adjustment and/or withdrawal of said shank portion of a tool in said passageway, said shank portion of the tool characterized as having a substantially uniform cross section in that portion that is insertable and carried by the through passageway in the tool handle, a plurality of substantially alike grooves formed in said tool shank portion of a tool slidable and removably mountable in the passageway in the tool handle, these grooves substantially alike and selectively spaced at substantially right angles to the longitudinal axis of the tool, said tool handle and trigger mechanism including:

(a) a tool handle body member having a through passageway which is generally parallel with or is in coincidence with the longitudinal axis of said body member, said passageway having a generally uniform cross section therethrough and with at least one flat surface therein said passageway disposed to slidably receive and retain a shank portion of a tool so as to provide a contiguous relationship of these surfaces so that in mounted condition the shank portion of a tool is positively turned and moved with and by manipulation of the tool handle body member;

(b) a trigger carried in and by said tool handle, this trigger having a generally U-shape including two extending leg portions and with a first forward leg portion longer than the other, said first longer leg portion having an aperture formed therethrough, said aperture shaped and sized to slidably pass a shank portion of a tool insertable and movable in said passageway, this first longer leg portion of the trigger disposed to be slidable and guided in a slot formed



in the tool handle body member, said slot and first leg portion extending transversely of and through said passageway, this trigger also having a second leg portion spaced from said first leg portion, this second leg portion a shorter leg portion substantially parallel to the first longer leg portion and slidable and guidable in a second slot formed in the tool handle body member;

(c) bias means carried by and in the tool handle body member and providing an outwardly directed bias;

(d) a bridge portion disposed and extending between said extending first and second leg portions, this bridge portion adapted to receive and retain said bias means so as to move said trigger outwardly, and

(e) restraining means fixedly carried by the tool handle and disposed to engage said second trigger leg portion while permitting inward movement of the first and second leg portions of the trigger in said guide and retaining slots to bring said aperture in the first leg portion of the trigger in way of the through passageway in the tool handle so that an insertable portion of a portion of a tool shank may be moved in and out of the passageway and with said restraining means including a small metal pin mounted in a hole formed in the tool handle body and with said metal pin engaging compatible means formed in said second leg portion, this restraining means adapted to inhibit and limit the outward movement of the trigger while retaining the trigger in and on the tool handle body member and to prevent loss of said trigger and bring the lower portion of the first leg and the form aperture therethrough in way of and into a groove to lock the shank portion of a tool in the desired position in the passageway of the tool handle body member.

4,409,867

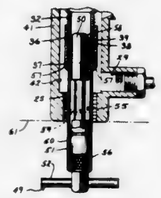
ADJUSTABLE CONSTANT LEVEL OILER AND TOOL FOR MAKING OILER ADJUSTMENTS

Frank J. Lyden, 3300 Lindbergh Dr., Manitowoc, Wis. 54220

Division of Ser. No. 110,180, Jan. 7, 1980, Pat. No. 4,342,376. This application Jun. 15, 1981, Ser. No. 273,473

Int. Cl.³ G05D *9/02*

U.S. Cl. 81—436 **3 Claims**



1. For use with a constant level oiler having a nozzle assembly and a bottom opening providing access to the nozzle assembly, said nozzle assembly including a tubular member supported in the oiler and being threaded exteriorly, an internally threaded spout member engageable on the free end of said tubular member and projecting axially downward beyond the end of the tubular member, and a hollow lock nut threadedly engaged within the spout member and adapated to abut on the end of the tubular member to lock the spout member relative to the tubular member; a spout member adjustment tool insertable through the bottom opening of the oiler and including a wrench engageable within the opening of the lock nut, a sleeve on said wrench engageable with the spout, said wrench and sleeve being separately manipulatable to first rotate the lock nut and thereby free the spout member for rotation, rotate the spout member to effect adjusting movement vertically to a new position of atljustment, and thereafter rotate the lock nut to again abut the end of the tubular member and thereby relock the spout member in its newly adjusted position.

4,409,868

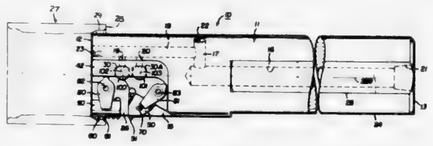
THREADING TOOL AND METHOD

David R. Huddle, Windsor, Canada, and Robert L. Coleman, Berkley, Mich., assignors to The Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 253,700, Apr. 13, 1981, abandoned. This application Mar. 23, 1983, Ser. No. 476,638

Int. Cl.³ B23P *15/48*

U.S. Cl. 82—1 C **16 Claims**



1. A cutting tool comprising:

toolholder means having a first cutting element mounting pocket formed at a peripheral surface of the toolholder means at one end thereof, and a second cutting element mounting pocket axially spaced rearwardly from the first pocket;

a multi-toothed thread chaser insert positioned in the first pocket so as to present a plurality of cutting teeth extending beyond the peripheral surface transversely to a longitudinal axis of the toolholder means;

a single tooth thread chaser insert having a finishing cutting tooth of a width narrower than the widths of the cutting teeth of the multi-toothed thread chaser insert, the single toothed thread chaser positioned in the second pocket so as to present the single finishing cutting tooth extending beyond the peripheral surface transversely to the longitudinal axis to an extent further than any of the teeth of the multi-toothed thread chaser insert; and

means for clamping the multi-toothed thread chaser insert and the single toothed thread chaser insert in their respective mounting pockets.

4,409,869

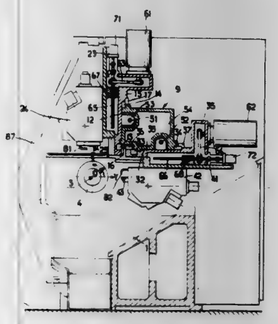
HORIZONTAL-SPINDLE LATHE

Marcel Berly, Verriere le Buisson, France, assignor to H. Ernault-Somua, Velizyvillacoublay, France

Filed Apr. 13, 1981, Ser. No. 253,387

Int. Cl.³ B23B *3/06, 3/16*

U.S. Cl. 82—2 R **6 Claims**



1. A horizontal spindle lathe comprising,

a frame,

a workpiece spindle headstock rigidly secured to said frame,

a workpiece spindle rotatably mounted in said headstock and having a horizontal axis,

a single elongated bed rigidly supported by said frame and extending in parallel relation with said workpiece spindle axis, said bed being located within the dihedral angle formed by two geometrical half planes extending horizontally to the rear of and vertically upwardly from said axis of said workpiece spindle and having a front longitudinal face and a bottom longitudinal face,

a pair of front slideways extending longitudinally on said front face and a pair of bottom slideways extending longitudinally on said bottom face of said bed,

and a front and bottom cutting tool-carrying carriage mounted for sliding movement on each of said front and bottom slideways.

4,409,870

APPARATUS FOR CONTINUOUSLY CUTTING AND REMOVING THIN TRIM STRIPS FROM A PRINTED WEB

Milan Rynik, Scarsdale, N.Y., and John Nickel, Passaic, N.J., assignors to Blava In-line, Inc., Carlstadt, N.J.

Filed Sep. 15, 1980, Ser. No. 187,054

Int. Cl.³ B26D *7/18*

U.S. Cl. 83—100 **10 Claims**

1. Apparatus in-line with a web press for continuously cutting and removing thin trim strips from a moving web to form web products, the apparatus being capable of cutting and removing such trim strips having a width as small as 1/16 of an inch, the apparatus including:

a frame;

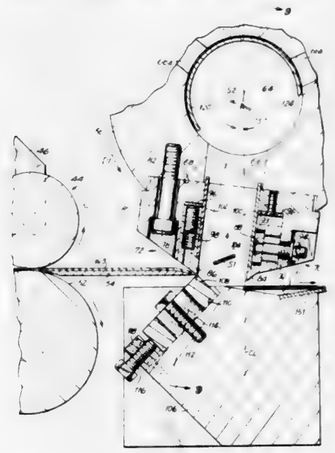
a cutting cylinder operating on the web at a cutting area, the cylinder having an elongated bore and a number of gaps leading to said bore;

means for rotating said cutting cylinder on the frame;

pairs of knives on the cutting cylinder for cutting the web, each pair of knives defining an opening leading into a gap and then into said bore;

means for mounting the knives of each pair of knives on the cutting cylinder so as to enable adjustment of the width of the gap between said knives, the knives being mounted so as to provide a gap between them greater than the width of the trim strip intended to be cut;

the rotating means driving the knives at a speed greater then the speed of the moving web at the cutting area;



means for feeding web to the cutting cylinder so that the knives cut trim strips continuously in said web at a cutting area to form web products; and

means for directing an air flow through the opening at the cutting area so as to move cut strips at the cutting area into the gap between the cutting knives and then into the bore of the cutting cylinder.

4,409,871

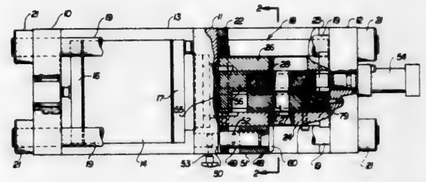
SHEAR FOR BAR STOCK

David H. Neumann, Brooklyn Hts., Ohio, assignor to Automation Development Corporation, Mentor, Ohio

Filed Aug. 18, 1981, Ser. No. 294,187

Int. Cl.³ B23D *21/00*

U.S. Cl. 83—104 **19 Claims**



1. A horizontal shear for bar stock or the like comprising first and second horizontally spaced bolsters, a hydraulic actuator mounted on the side of said first bolster remote from said second bolster, a die assembly mounted between said bolsters, and means to clamp said bolsters toward each other; said die assembly including a die set yoke positioned against each bolster, a pair of spaced and parallel side retaining plates extending between said yokes, said plates and yokes providing mating surfaces cooperating to position and retain said plates when said bolsters are clamped toward each other, a fixed die secured to one of said side plates, a movable die positioned between the other of said side plates and said fixed die for horizontal movement relative thereto, and a movable die sup-

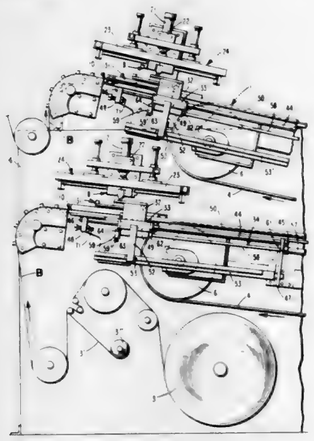
port rail engaging the lower side of said movable die and extending between said yokes, said support rail and yokes providing mating surfaces which interengage to position and support said rail when said bolsters are clamped toward each other, said support rail having a width at least about as narrow as the width of said movable die and spaced laterally from adjacent parts of said die assembly to provide openings through which debris is free to fall out of said die assembly; said actuator being operatively connected to move said movable die for operation of said shear.

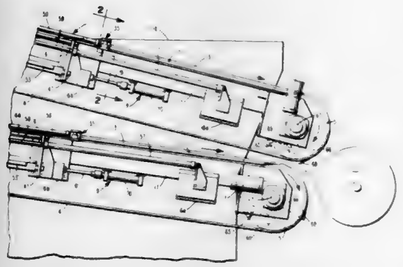
4,409,872

APPARATUS FEEDING REINFORCING LAYERS IN TIRE MANUFACTURE

Giorgio Bertoldo, Arese, Italy, assignor to Societa' Pneumatici Pirelli S.p.A., Milan, Italy

Filed Dec. 18, 1981, Ser. No. 332,154
Claims priority, application Italy, Dec. 23, 1980, 26899 A/80
Int. Cl.³ B29H *17/20*
U.S. Cl. 83—155 **13 Claims**





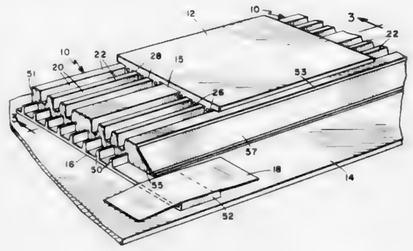
1. An apparatus for automatically feeding transporting strips of elastomeric material having metal cords embedded therein towards a drum which will form an annular reinforcing structure for a tread band of a vehicle pneumatic tire therefrom to be sandwiched between the tire's carcass and the tread band, said apparatus comprising for each of said strips a bobbin having an elastomeric strip wound thereon adapted to form layers of said annular reinforcing structure, a conveyor belt looped around two spaced pulleys one of which is disposed in proximity of said drum in its winding step and cutting means for cutting the elastomeric strip into lengths suitable for layers of said annular reinforcing structure, said apparatus being characterized in that it comprises means for maintaining two distinct and independent magnetic fields adapted to draw and to maintain the strip in pre-established position on the belt surface, said belt being non-magnetic, the first magnetic means being disposed immediately under the belt surface between the two pulleys and being stationary with respect to movement of the belt, and the second magnetic means being disposed on the pulley nearest the drum.

4,409,873

MODULAR STRAIGHT EDGE

Peter Kundikoff, Rte. 1, Box 204, Escondido, Calif. 92025

Continuation-in-part of Ser. No. 49,451, Jun. 18, 1979, abandoned, which is a continuation of Ser. No. 850,648, Nov. 11, 1977, abandoned. This application Sep. 29, 1980, Ser. No. 191,913
Int. Cl.³ B27B *9/04*
U.S. Cl. 83—745 **5 Claims**



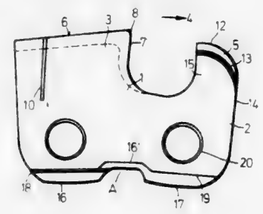
1. A modular straight-edge comprising:
at least one elongated straight-edge section having a work surface engaging portion and at least one longitudinal straight guiding edge,
said work surface engaging portion of said straight edge section having a plurality of securing slots,
a securing flange mounting a plurality of securing rails,
said rails being sized, spaced, and oriented to be received in and to engage said securing slots,
said securing flange further including an extension for extending beyond said straight-edge sections and for being secured to a work surface.

4,409,874

SAW CHAIN FOR CHAIN SAWS, PARTICULARLY POWER CHAIN SAWS

Karl Nitschmann, Schorndorf; Hans Dolata, and Gunter Dietzsch, both of Waiblingen, all of Fed. Rep. of Germany, assignors to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,731
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1980, 3002138
Int. Cl.³ B27B *17/00, 33/14*
U.S. Cl. 83—833 **1 Claim**



1. A saw chain for chain saws, including portable power chain saws; said saw chain having pivotally interconnected saw chain links, including cutting teeth, wherein each cutting tooth includes a body portion having leading and trailing longitudinally spaced round rivet holes therein for receiving rivets which connect the cutting tooth to adjacent links in the saw chain, the body portion being defined by leading and trailing edges facing toward and away from the direction of travel of the tooth and an inboard base edge which includes a recess for receiving the teeth of a chain drive wheel; the body portion further including an outboard area having a depth limiter adjacent the leading edge, and a notch behind the depth limiter; the cutting tooth further including a blade portion located behind the notch and extending generally perpendicular to the body portion, the blade portion having a cutting edge facing the direction of travel of the tooth and a generally flat section extending back to the trailing edge of the body portion, the improvement being characterized by:
a first set of safety markings in the body portion extending generally parallel to the base edge and being spaced from the base edge by a distance approximating the depth of the recess; the first set of safety markings including a marking generally following the geometry of the recess and being spaced therefrom; the set of safety markings being formed by grooves in the body portion, wherein the safety markings provide an indication that the round holes which receive the connecting rivets are in danger of being worn into;
a second safety marking formed by a single groove in the body portion, the second safety marking extending down from the blade portion into the body portion at a location just to the rear of the trailing rivet hole, the second safety marking terminating at a location above the trailing rivet hole;
a third safety marking extending across the flat section of the blade portion in spaced relation to the cutting edge and substantially parallel to the cutting edge, the third safety marking being a single groove having one end at the trailing edge of the flat section and the other end betwixt the cutting edge and trailing edge; whereby the second safety marking and the third safety marking provide an indication of the depth to which the tooth may be safely worn away when sharpening the tooth; and
a fourth safety marking spaced from the outboard edge of the depth limiter and extending from the leading edge to a position spaced from the opening of the notch, the fourth safety marking being a single groove which curves in an arc approximating the arc of the engaging edge of the depth limiter whereby the fourth groove indicates when there is excessive wear of the depth limiter.

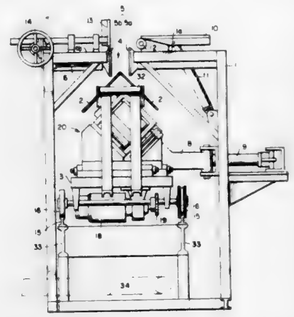
4,409,875

APPARATUS FOR MANUFACTURING AN INTEGRAL WOODEN ANGLE BAR

Sadahiro Nakajima, 622-7, Taie, Hidaka-cho, Hidaka-gun, Wakayama-Pref., and Katsunobu Tanaka, 218 Nakagawa-higashihawara, Shimada-city, Shizuoka, both of Japan

Filed Jul. 20, 1981, Ser. No. 284,535
Int. Cl.³ B27B *5/02*
U.S. Cl. 83—877 **1 Claim**

1. An apparatus for making an integral wooden angle bar from an integral block of wood, said apparatus comprising:
means for fixing the integral block of wood, said fixing means including first and second grip means for respectively abutting opposite sides of the integral block of wood, and a cradle structure means, pivotable away from said first and second grip means, for receiving the integral block of wood by gravity feeding and for aligning the integral block of wood so as to be abuttable and thereby fixable by said first and second grip means; and
means for making at least two incisions including first and second incisions in the integral block of wood while fixed by said fixing means, the first incision extending from a first side of the integral block of wood to a centerplane thereof and a second incision extending from a second side of the integral block of wood opposite the first side to the centerplane, whereby the planes of the first and second incisions intersect at an angle of substantially 90°; said means for making at least two incisions including first and second power saws respectively having first and second saw blades for cutting said first and second incisions in the



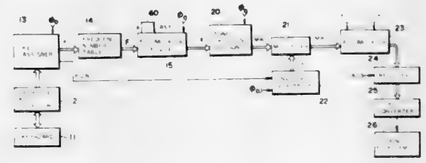
integral block of wood, said first and second power saws being positioned to cut along the centerplane of the integral block of wood in tandem, whereby at least two incisions can be made.

4,409,876

ELECTRONIC MUSICAL INSTRUMENT FORMING TONE WAVEFORMS

Mitsumi Katoh, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 20, 1981, Ser. No. 323,464
Claims priority, application Japan, Dec. 1, 1980, 55-167965
Int. Cl.³ G10H *7/00*
U.S. Cl. 84—1.01 **9 Claims**



1. An electronic musical instrument comprising:
a phase angle data generator for generating a phase angle data signal which exhibits a value timewisely progressing, at every predetermined sampling timing of a constant interval, from a first value to a second value at an incremental step value per timing interval corresponding to the frequency of a tone intended to be sounded;
a reset circuit connected to said phase angle data generator for resetting the progressing value of said phase angle data signal to said first value at each sampling timing that said data reaches said second value; and
a tone generator connected to said phase angle data generator for generating a tone signal based on the progressing value of said phase angle data signal.

4,409,877

ELECTRONIC TONE GENERATING SYSTEM

Gerald A. Budelman, Aloha, Oreg., assignor to CBS, Inc., New York, N.Y.

Continuation of Ser. No. 47,364, Jun. 11, 1979, abandoned. This application Jul. 14, 1981, Ser. No. 283,355
Int. Cl.³ G10B *3/10*; G10H *1/08, 7/00*
U.S. Cl. 84—1.23 **48 Claims**

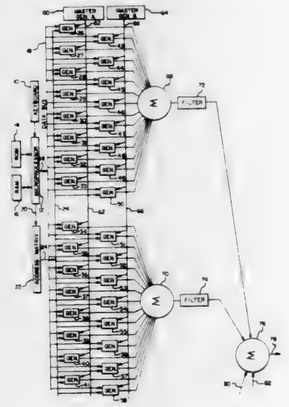
1. An electronic tone generating system of the harmonic

synthesis type for generating complex tones each including a fundamental and a series of harmonics, said system comprising:

a keyboard,

a first group of tone generators having first output frequencies defining a first musical scale, wherein given tone generators are selected in response to said keyboard for providing tones by harmonic synthesis by providing fundamental output frequencies corresponding to notes indicated by actuation of keys of said keyboard and a first set of harmonic output frequencies corresponding to notes indicated by actuation of keys of said keyboard within predetermined frequency error limits for given harmonics,

the same tone generators in said first group along said first musical scale serving selectively to provide individual harmonic and fundamental frequencies according to the



keyboard keys operated, such that the same tone generator in said first group as supplies a fundamental output for a given actuated key along the scale is also selectable by a lower actuated key along the same scale to supply a harmonic output for said lower actuated key along the same scale,

and a second group of tone generators having second output frequencies defining a second musical scale offset from said first musical scale, wherein given tone generators of said second group are selected in response to said keyboard for providing a second set of harmonic output frequencies corresponding to said notes indicated by actuation of keys of said keyboard in the tone generation by harmonic synthesis for substituting for harmonic output frequencies of said first set falling outside said predetermined error limits for given harmonics.

4,409,878

CARTRIDGE PRIMER SEATING TOOL

Gerald E. McClenning, 400 S. St. Charles, Florissant, Mo. 63031

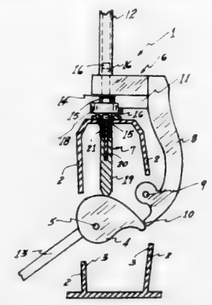
Filed Jul. 22, 1981, Ser. No. 285,857
Int. Cl.³ F42B *33/10*
U.S. Cl. 86—36 **2 Claims**

1. A cartridge primer seating tool comprising,

housing means,

primer stem means operably mounted in said housing means,

primer feed means operably mounted in said housing means, comprising arm means pivotally mounted to said housing means, a primer dispensing block dispensing in cam-controlled and spring-loaded manner primers disposed in a tube disposed vertically above the primer stem means,



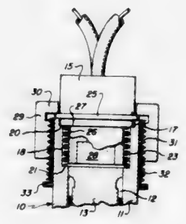
cam drive means operably communicating with and synchronously driving said primer stem means and said primer feed means.

4,409,879

EXPLOSIVE ACTUATED VALVES

Lawrence L. Cobb, Jr., Livermore, Calif., assignor to the United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Dec. 27, 1961, Ser. No. 162,611
Int. Cl.³ F42B *1/00*
U.S. Cl. 89—1 B **4 Claims**



1. A device of the character described comprising the combination of a generally tubular housing having an end portion forming a chamber to receive the sensitive portion of an explosive squib, a plunger within said housing having an end portion exposed to said chamber, squib retaining means for engaging said housing and a said squib to releasably maintain the squib in close proximity to said plunger end portion including a retaining ring of fusible material spaced outwardly from and encircling at least part of a said squib and part of its sensitive portion for reception of heat from an external source prior to appreciable reception thereof by the sensitive portion of the squib, an annular compression spring bearing at one end against said housing for urging at least a portion of the squib retaining means and a said squib away from said housing and from said plunger end portion upon subjection of the fusible material to heat sufficient to melt at least a portion thereof, and guide means for said spring to maintain even expansion thereof as a said squib is being urged away from said housing.

4,409,880

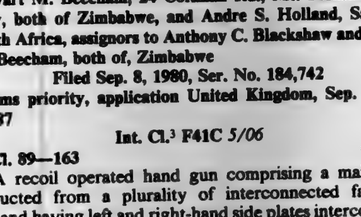
MISSILE STOWAGE AND LAUNCHER SYSTEM

Robert F. Fetterly, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 17, 1980, Ser. No. 217,242
Int. Cl.³ F41F *3/06*
U.S. Cl. 89—1.804 **18 Claims**

17. In a missile stowage and launching system for stowing a plurality of delta span-shaped missiles and for individually and successively launching such missiles from their stowed positions, wherein the improvement comprises:

missile support means for arranging said plurality of missiles



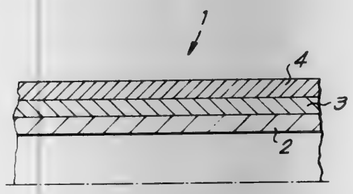
in a plurality of conical-shaped, nested clusters of missiles, and wherein said clusters and the associated support means comprises circumferential openings to accommodate transverse and outward launching of individual missiles from an inner nested cluster.

4,409,881

COMPOSITE BARREL AND PROCESS FOR THE MANUFACTURE THEREOF

Pierre van der Wielen, Liege, Belgium, assignor to Fabrique Nationale Herstal, Herstal, Belgium

Filed Sep. 2, 1980, Ser. No. 182,936
Claims priority, application Belgium, Sep. 26, 1979, 2/58100
Int. Cl.³ F41C *21/02*
U.S. Cl. 89—16 **1 Claim**



1. A composite gun barrel comprising an internal layer made from the group of metals consisting of tungsten, niobium, tungsten carbide and alloys thereof an intermediate layer made of a cobalt alloy and an external layer made of an alloyed steel.

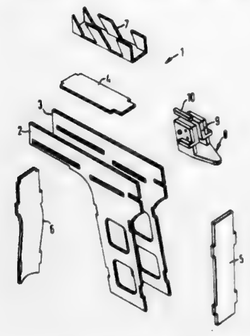
4,409,882

HAND GUN

Anthony C. Blackshaw, 50 McCleary Ave., Eastlea, Salisbury; Stewart M. Beecham, 24 Coltman Rd., Mt. Pleasant, Salisbury, both of Zimbabwe, and Andre S. Holland, Salisbury, South Africa, assignors to Anthony C. Blackshaw and Stewart M. Beecham, both of, Zimbabwe

Filed Sep. 8, 1980, Ser. No. 184,742
Claims priority, application United Kingdom, Sep. 7, 1979, 7931087
Int. Cl.³ F41C *5/06*
U.S. Cl. 89—163 **7 Claims**

1. A recoil operated hand gun comprising a main frame constructed from a plurality of interconnected fabricated plates and having left and right-hand side plates interconnected by a bottom plate defining a longitudinal recess; a barrel assembly supported on the main frame and received in said longitudinal recess; a slide movable relative to the main frame and co-operating with said left and right-hand side plates to enclose the barrel assembly within said longitudinal recess, the barrel assembly and slide being locked together by co-operating cam means on the barrel assembly and on the main frame which force the barrel assembly into engagement with the slide on return to its position of rest, the co-operating cam means comprising inclined complementary tongue and grooves on the



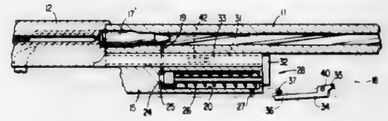
main frame and the barrel assembly, the cam means on the main frame comprising a separate pressed cam plate received between the left and right-hand side plates.

4,409,883

GAS OPERATED FIREARM

Edouard Nyst, Chemin de la Rouveyrolle, 13360-Roquevaire, France

Filed Jun. 3, 1981, Ser. No. 270,023
Int. Cl.³ F41C *5/02*
U.S. Cl. 89—192 **1 Claim**



1. In a firearm having a barrel with a bore extending the length thereof, a receiver secured to the rear portion of the barrel, said receiver defining a cartridge-receiving chamber, said chamber having an open breech, a bolt for closing the breech, a driving spring for operating the bolt to close the breech, and an operating slide slidably mounted in the receiver for operation of the driving spring, the improvement for storing energy from the gases released during discharge of a cartridge through the barrel which comprises: a cylindrical chamber mounted below and parallel to said barrel; a vent positioned between said cylindrical chamber and the bore of the barrel to allow passage of gases from the bore to the rear end portion of the cylindrical chamber; a piston having a head and a rod and being mounted in gas-tight sliding relationship within the cylindrical chamber, the head of said piston being mounted so as to receive against its rearwardly facing surface the pressure of gases entering the cylindrical chamber from the barrel, the rod of said piston extending through the forward end of the cylindrical chamber in sliding, gas-tight relationship with said forward end; a spring mounted on the piston rod between the forward surface of the piston head and the forward end of the cylindrical chamber; a L-shaped piston-connecting rod secured to the forward end of said piston rod, said piston connecting rod extending upwardly and rearwardly from its connection with the piston rod; a notch formed in the piston rod at its point of attachment to the piston connecting rod; a forestock grip member secured to the barrel and receiver, said forestock member extending around the exterior of the cylindrical chamber and piston connecting rod; a latch member secured to the interior of said forestock member, said latch member releasably securing the notch when the piston is at the limit of its forward motion; means located on the exterior of

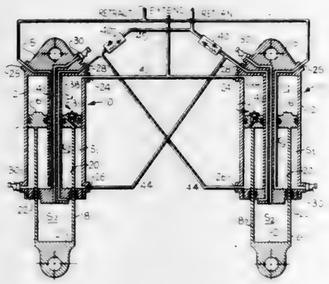
the forestock for actuating the latch to release the notch; a slide connecting rod secured at its rear end portion to the slide and having a bore therein at its forward end for receiving the rearwardly extending portion of the piston connecting rod; biasing means mounted on the piston connecting rod for biasing the slide connecting rod in a rearwardly direction, and cam means for releasing said biasing means when the slide connecting rod reaches the limit of its rearward motion.

4,409,884

SYNCHRONIZATION CYLINDER

Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Mar. 25, 1981, Ser. No. 247,377
Int. Cl.³ F01B *25/04*; F15B *11/22*
U.S. Cl. 91—17 **11 Claims**



1. A synchronized fluid actuator system comprising:

at least first and second actuator units, each actuator unit further comprising:

(a) an outside fluid cylinder having one closed end with an internal tail rod which terminates in a fixed piston smaller in diameter than the inside diameter of said outside fluid cylinder;

(b) a moving piston which slideably engages said inside diameter of said outside fluid cylinder while having an inside bore which slideably engages said internal tail rod, thereby forming a variable extend chamber which when pressurized with fluid extends said moving piston;

(c) an inside fluid cylinder having an outside diameter which produces an area which when subtracted from the area of said moving piston leaves an area equal to the area of said fixed piston, one closed end, the opposing end attached to said moving piston and an inside diameter which slideably engages said fixed piston, thereby forming a variable retract chamber between said piston surfaces and said inside cylinder and a secondary synchronizing chamber between said one closed end of said inside cylinder and said fixed piston;

(d) a head end cap closing the open end of said outside fluid cylinder while allowing axial displacement of said inside fluid cylinder thereby forming a primary synchronization chamber equal and opposite in volumetric displacement with said secondary synchronizing chamber;

(e) a first port communicating with said extend chamber;

(f) a second port communicating with said retract chamber;

(g) a third port and a fourth port communicating to said secondary and primary synchronizing chambers respectively;

(h) means to synchronize said at least first and second actuators at one end stroke of each of said moving pistons;

first conduits inter-connecting said first ports and connecting said interconnected first ports, alternately, to a fluid power source for extend stroke and system return for retract stroke;

second conduits interconnecting said second ports and connecting said interconnected second ports, alternately, to system return for extend stroke and to a fluid power source for retract stroke;

third conduits interconnecting said third port of said first actuator with the fourth port of said second actuator; and

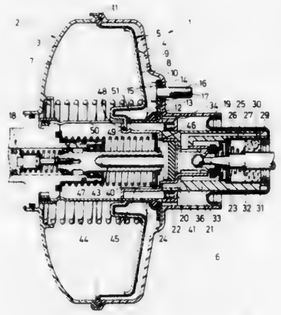
fourth conduits interconnecting said fourth port of said first actuator with the third port of said second actuator whereby fluid actuation of said extend or retract chambers actuates the respective synchronizing chambers so that fluid expelled from said primary synchronizing chamber of one actuator unit is admitted to said secondary synchronizing chamber of said second actuator unit and vice versa which synchronizes the actuation of said at least two actuator units even though their loads may be unequal.

4,409,885

BRAKE BOOSTER

Hans-Dieter Reinartz, and Rudolf Thiel, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Apr. 13, 1981, Ser. No. 253,433
Claims priority, application Fed. Rep. of Germany, May 13, 1980, 3018270
Int. Cl.³ F15B *9/10*; F16J *15/18*
U.S. Cl. 91—376 R **19 Claims**



1. A brake booster comprising:

a booster casing having a movable wall disposed therein coaxial of a longitudinal axis of said booster casing to divide said booster casing into a vacuum chamber and a working chamber; and

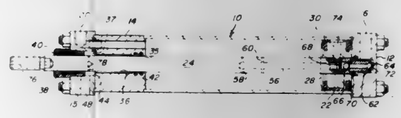
a control valve to control pressure in said working chamber, said control valve having a control valve casing rigidly connected to said movable wall, said valve casing having a guiding hub disposed coaxial of said axis to axially guide said valve casing in an axially outwardly extending portion of one transverse end wall of said booster casing defining said working chamber, said guiding hub having a common channel section extending from an end thereof remote from said movable wall toward said movable wall, said control valve having a chamber communicating with said common channel section disposed between an inner surface of said portion of one transverse end wall, an outer surface of said valve casing and a rolling diaphragm seal disposed between the inner surface of said portion of one transverse end wall and said valve casing, said rolling diaphragm having first longitudinal ribs therein cooperating with said outer surface of said valve casing to form channels to enable said chamber to communicate with said common channel section.

4,409,886

SELF-RETURNING CYLINDER

Ray H. Herner, Brookville, Ohio, assignor to Mosier Industries, Inc., Brookville, Ohio

Filed Sep. 8, 1980, Ser. No. 184,941
Int. Cl.³ F15B *11/15*
U.S. Cl. 91—397 **9 Claims**



1. Control apparatus comprising a piston housed within and in bridging bearing relation to an inner wall surface of a tube, a capping means applied to each of the opposite ends of said tube to form therewith a housing, rod means havng one end thereof in connection with said piston and its opposite end projected through and outwardly of one of said capping means to provide an operating end portion of said rod which locates exterior to said housing, said piston having an inoperative position wherein it is located in an adjacent relation to the other of said capping means, said other of said capping means having an opening for the application therethrough of fluid under pressure to move said piston in the direction of said one capping means, said one end of said rod means having a blind bore therein an inlet opening to which is exposed to the fluid applied to said piston to move it in the direction of said one capping means, said blind bore thereby receiving therein a small portion of said fluid applied under pressure, means defining a signal transmission station in said housing the transmission of a signal through which, governed by a predetermined extent of projection of said operating end of said rod means from said housing in correspondence with the movement of said piston provides in sequence a signal for triggering the flow of fluid under pressure to induce a return movement of said piston to its inoperative position and an evacuation of said signal on said piston reaching its said inoperative position, said blind bore having at least one opening therefrom in a direction inwardly thereof from said inlet opening arranged to communicate, on the achievement of a predetermined extent of movement of said piston in the direction of said one capping means, with said signal transmitting station by way of said one capping means to channel thereto the fluid applied to said blind bore under pressure, for use thereof to produce said signal for triggering the flow of fluid under pressure to induce said return movement of said piston to its inoperative position.

4,409,887

HYDRAULIC APPARATUS

Shitta Shingu, Tokyo; Atsushi Takahashi, and Isao Kosugi, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 45,869, Jun. 6, 1979, Pat. No. 4,318,332.
This application Jul. 15, 1981, Ser. No. 283,550
Claims priority, application Japan, Jun. 13, 1978, 53-70357
Int. Cl.³ F15B *11/04, 13/042*
U.S. Cl. 91—446 **1 Claim**

1. A hydraulic apparatus comprising:

a piston for carrying a load thereon;

a hydraulic cylinder for causing said piston to move vertically;

a hydaulic pump for supplying operating oil to said hydraulic cylinder;

a normally closed valve disposed in a conduit connected between said hydraulic pump and said hydraulic cylinder;

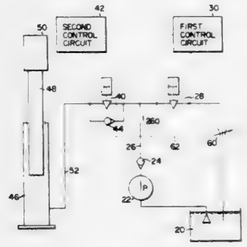
a check valve connected in parallel to said normally closed valve to permit the flow of the operating oil only toward said hydraulic cylinder;

an oil tank;

a normally open valve connected to a pipe passage for transmitting to said oil tank the operating oil delivered from said hydraulic pump;

a control circuit for piston-raising operation for controlling said normally open valve so as to reduce the oil passage thereof in the case of raising the piston and so as to totally open said normally open valve in the case of lowering the piston;

a control circuit for piston-lowering operation, for controlling said normally closed valve so as to totally close said normally closed valve in the case of raising the piston and so as



to enlarge the oil passage thereof in the case of lowering the piston;

an orifice member provided on the downstream side of said normally open valve in a manner that it is connected in series thereto; and

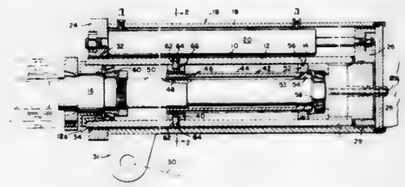
wherein said orifice member is so formed as to permit its opening to vary in opening area and further comprising means in fluid communication with the conduit portion between the normally closed valve and the hydraulic cylinder for controlling the opening of the orifice member in response to pressure variations in the conduit portion.

4,409,888

COMBINED LINEAR AND ROTARY ACTUATOR AND FLOATING RING GEAR

Paul P. Weyer, 48811 284th Southeast, Enumclaw, Wash. 98022

Filed May 2, 1980, Ser. No. 146,335
Int. Cl.³ F01B *3/00*
U.S. Cl. 92—31 **7 Claims**



1. A fluid-powered, helically splined rotary actuator comprising an outer cylindrical body, an output shaft, and linear-to-rotary transmission means between the body and the output shaft for providing relative rotational movement in opposite directions between the body and the output shaft,

said transmission means including an encircling, one-piece, circular, splined ring gear separate from and independently joined to said body,

said body including an elongated, one-piece continuous cylinder having a sidewall and having ring gear fastening openings within the sidewall, ports in said body for introducing pressuriTd fluid into the cylinder,

means for said fastening openings for joining the ring gear to said sidewall and sealing the fastening openings against leakage of pressurized fluid out of said cylinder, and wherein said joining means transmits torque between the

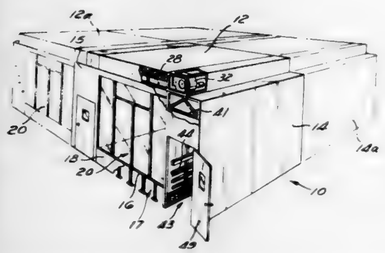
ring gear and the cylinder and axially locates the ring gear within the cylinder, said body having a smooth outer surface, said ring gear joining means including fasteners mounted flush with said body outer surface, an outer tube encircling said body, said outer tube having at least one set of end seals, and wherein said outer cylindrical body and flush ring gear fasteners provide a continuous smooth surface movable past said end seals without interference therewith.

4,409,889

MODULAR CLEAN ROOM

Maurice L. Burleson, 8003 Woodglen Cir., La Palma, Calif. 90623

Filed Nov. 2, 1981, Ser. No. 317,258
Int. Cl.³ F24F *7/10*
U.S. Cl. 98—33 A **4 Claims**



1. A clean room made of prefabricated modules comprising:

a pair of duct modules spaced from each other to define a work space between them, each module having a tubular box-like frame outlining a pair of spaced side walls, a pair of end walls, and a ceiling, and panels attached to the frame to define a self-supported, closed service corridor, and including a door in one of the panels for entering the corridor, at least one of said duct modules having an air inlet at a lower level and an air exit at an upper level, the air inlet being formed in the panel adjoining the work space;

an air circulating module having a box-like, tubular frame extending over the space between the duct modules and supported overhead by the duct modules, panels attached to said air circulating frame and enclosing the top and side walls of the air circulating module, the air circulating module further including a blower assembly mounted to said air circulating frame, positioned adjacent to and in communication with said air exit, said air circulating module further including a filter assembly positioned in the lower portion of said air circulating frame and extending over said work space so that air from the blower assembly is directed inwardly between the upper panel of the air circulating module and downwardly through the filter assembly; and

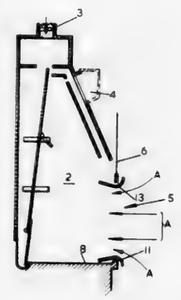
wall panels cooperating with said modules to complete the enclosure of the interior work space with said air inlets of the duct modules being open to said space so that air flowing from the filter assembly will pass through said space in a descending manner to said duct module air inlet, wherein the air is directed upwrdly in said duct modules through said air exit leading to the blower assembly.

4,409,890

FUME CUPBOARD

Archibald L. Longworth, Mirador, Woodbrook Rd., Alderley Edge, Cheshire, SK9 7BZ, England

Continuation-in-part of Ser. No. 42,666, May 25, 1979, Pat. No. 4,280,400. This application May 7, 1981, Ser. No. 261,395
Claims priority, application United Kingdom, May 30, 1978, 24508/78
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115 LH **12 Claims**



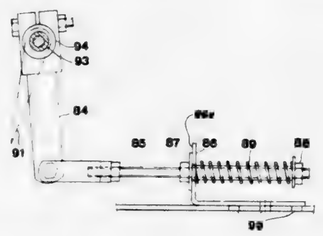
1. A fume cupboard comprising a ventilated enclosure having an access opening with an edge, a cowling provided along said edge and spaced therefrom such that an air flow channel is defined between the edge and the cowling through which air may be drawn during use of the cupboard from the exterior to the interior of the enclosure, said cowling being shaped such that there is a streamlined air-flow over the cowling into the enclosure when the cupboard is in use, and said cowling having a first portion located outwardly of the enclosure and a second portion sloping into the enclosure such that the streamlined air flow over said second portion is divergent relative to the main air flow into the cupboard through the access opening.

4,409,891

BALER FEEDER MECHANISM WITH ADJUSTMENT FEATURE

Adrianus Naaktgeboren, Zedelgem, Belgium, assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 20, 1981, Ser. No. 294,852
Claims priority, application United Kingdom, Aug. 30, 1980, 8028103
Int. Cl.³ B30B *1/06*
U.S. Cl. 100—189 **6 Claims**



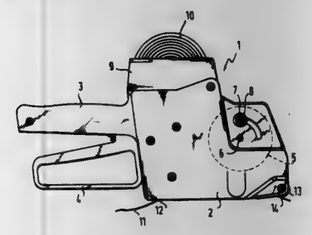
1. In a baler including a bale case, a feed platform adjacent said bale case, feeder elements moving along a predetermined path across at least a portion of said feed platform and through at least a portion of said bale case for feeding crop material from said feed platform into said bale case, wherein the improvement comprises said predetermined path of said feeder elements being adjustably positionable to vary the depth of penetration of said feeder elements into said bale case and the angle of inclination of said feeder elements as they move through said bale case, wherein said feeder elements are connected to and rotatable about a shaft, and further comprising means for connecting said shaft to the chassis of the baler in a plurality of positions to adjustably position said predetermined path of movement of said feeder elements.

4,409,892

HAND LABELLING APPARATUS

Günter Holland-Letz, Hirschhorn, Fed. Rep. of Germany, assignor to Esselte Pendaflex Corp., New York, NY

Filed Jul. 17, 1981, Ser. No. 284,204
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1980, 3030139
Int. Cl.³ B41J *5/00*
U.S. Cl. 101—93.18 **1 Claim**



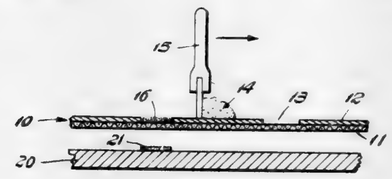
1. A hand labelling apparatus for rolling imprinting and for dispensing pressure-sensitive labels, comprising a housing having at least one wall, a print wheel mounted rotatably about an axis for movement between a rest position and an operating position and on the peripheral surface of which print types are disposed in a plurality of planes adjacent each other in the axial direction of said print wheels, means to position selected ones of said print types from each of said planes in a printing zone which extends parallel to said axis at the peripheral surface of the print wheel where, upon movement of the print wheel to the operating position, the selected print types engage at least one of said pressure-sensitive labels in rolling contact in response to the print wheel being rotated from its rest position to its operated position to thus print said at least one label with the selected print types by rolling movement of said selected print types across said labels, and an adjusting spindle extending parallel to said axis and connected to the print wheel, said spindle being displaceable in a direction parallel to said axis between a pushed-in position and a pulled-out position and projecting outwardly through an opening in said housing wall, said spindle including means selectively engageable with the print types disposed in each of the various planes to move the print types in each plane relative to the print types in the remaining planes so that the selected print types are positioned in said printing zone at the preipheral surface of the print wheel, means to permit movement of said print wheel from said rest position toward said operating position only when said spindle is fully in its pushed-in position, said means including a reduced diameter region of the addjusting spindle, said reduced region being the region which lies in the plane of the housing wall when the adjusting spindle is completely pushed in, said opening in the housing wall through which said adjusting spindle passes when the print wheel is in the rest position having an internal diameter greater than the non-reduced diameter of the adjusting spindle, and an arcuate slot whose path intersects said opening and corresponds to the path which the adjusting spindle describes on on rotation of the print wheel from the rest position to the operating position, the internal width of said slot being greater than the reduced diameter of said spindle and less than the non-reduced diameter of said adjusting spindle, whereby said spindle can enter said arcuate slot only when said spindle is in its fully pushed-in position and said print wheel is prevented from moving from its rest position when said spindle is not in its fully pushed-in position by the non-reduced diameter of said spindle which cannot leave said opening and enter said arcuate slot.

4,409,893

PROCESS FOR PRINTING POROUS IMAGE

Douglas A. Newman, Glen Cove, and Robert T. Emerson, Manhasset, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 631,512, Nov. 13, 1975, Pat. No. 4,128,430. This application Nov. 18, 1977, Ser. No. 852,889
Int. Cl.³ B41M *1/12, 5/02;* B41L *11/02*
U.S. Cl. 101—129 **7 Claims**



1. Process for the preparation of imaged master sheets capable of being used to produce a large number of duplicate copies of the master images by means of pressure in the absence of spirit duplicating fluids comprising the steps of:

(a) providing a semi-solid composition comprising a solidifiable, oil-resistant binder material from the group consisting of wax, resin and mixtures thereof, at least one non-volatile liquid material which is substantially incompatible with said binder material, a quantity of dyestuff dissolved in said non-volatile liquid material, and a volatile liquid having a boiling point within the range of from about 200° F. to about 460° F.,

(b) printing said semi-solid composition in image form onto the oil-resistant surface of a master sheet as a relatively heavy deposit which will not flow or run on the master sheet due to its semi-solid condition, and

(c) solidifying said printed composition by evaporating said volatile liquid to form images comprising a microporous skeletal structure of said binder material containing within the pores thereof said non-volatile liquid material and dissolved dyestuff in the form of a pressure-exudable ink.

4,409,894

ROTARY OFFSET SHEET SELECTIVE PRIME, VERSO OR MULTICOLOR PRINTING MACHINE AND METHOD

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 1, 1982, Ser. No. 353,229
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 8108806
Int. Cl.³ B41M *1/14;* B41F *5/16*
U.S. Cl. 101—211 **14 Claims**

1. Method of selectively printing multi-color, or prime-and-verso printing in a rotary sheet of said printing machine having

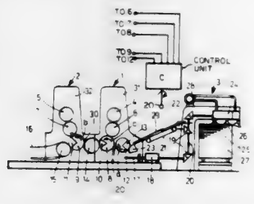
a sheet supply apparatus (**3,44,72**);

at least one sheet supply cylinder (**12,60,78**);

at least two rubber blanket cylinders (**6,7;48,49,50;75,76**) in continuous surface engagement with an associated respective plate cylinder;

at least one printing or impression cylinder (**8,9;55,52,53;77**), said printing or impression cylinder having a rubber blanket thereon,

comprising, in accordance with the invention,
controlling the respective engagement positions of at least one of the rubber blanket cylinders (**6,50,75**) and the associated printing or impression cylinder (**8,52,77**) in intermittent operation by
(a) positioning the at least one rubber blanket cylinder, carrying verso printing information, and the associated printing or impression cylinder to be separated from each other during essentially one revolution of the respective cylinders, to form a first operating phase;
(a1) positioning the at least one rubber blanket cylinder and the associated printing cylinder in surface engagement with each other to effect transfer of printed subject matter and for verso printing during essentially a sequential revolution of the respective cylinder, and forming a second operating phase;



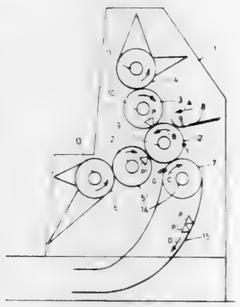
(b) positioning the printing or impression cylinder (**8,52,77**) and the sheet supply cylinder (**12,60,78**) during said first phase to effect verso printing and
(b1) positioning said printing or impression cylinder and the sheet supply cylinder to be separated or surface-disengaged from each other during said second operating phase; and
(c) positioning selected ones of the rubber blanket cylinders (**7;48,49;76**) and the associated printing or impression cylinders (**9;51,52;77**) during said first operating phase to effect prime printing and
(d) then positioning said selected ones of the rubber blanket cylinders and the associated printing or impression cylinders during a second operating phase at surface-separated positions.

4,409,895

EXPANSIBLE ROTARY OFFSET PRINTING MACHINE

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,420
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1980, 3045164
Int. Cl.³ B41F *13/24*
U.S. Cl. 101—248 **2 Claims**



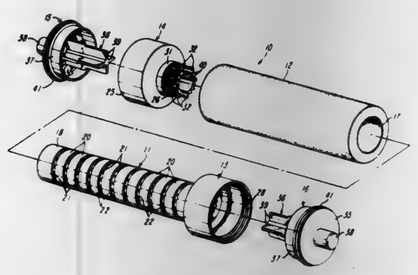
1. Expansible rotary offset printing machine, permitting, selectively, various arrangements of operating cylinders or rollers,
in which said operating cylinders or rollers include at least two of:
a rubber blanket cylinder; an impression cylinder; a plate cylinder; a transfer cylinder; a sheet removal cylinder of a chain transport system,
said machine having:
side walls (**1**);
a plurality of operating cylinders or rollers (**2–7**);
and bearing positions (**9–14**) for said cylinders or rollers at predetermined positions in said side walls,
the side walls supporting said cylinders or rollers at the predetermined positions,
wherein, in accordance with the invention,
the side walls include a positioning layout thereon having a maximum of six predetermined, fixed bearing positions (**9–14**) for each side wall,
one (**9**) of the positions being arranged and located for the bearing position of, selectively, an impression cylinder (**2**) or a first rubber blanket cylinder (**2'**), respectively receiving a substrate (**8**) which is to be printed;
another one (**10**) of the bearing positions being arranged and located for the bearing of a rubber blanket cylinder (**3**) for cooperation with the impression cylinder (**2**) or the first rubber blanket cylinder (**2'**);
a further one (**12**) of the positions being arranged and located for the bearing of, selectively,
a rubber blanket cylinder (**5'**),
or a sheet removal cylinder (**5**),
or a sheet transport drum (**5**) of a chain transport system (**15**),
any one of said cylinders of the further one (**12**) of the bearing positions cooperating with, respectively, the impression cylinder (**2**) or the first rubber blanket cylinder (**2'**) to receive a sheet therefrom;
and wherein at least one additional bearing position (FIG. **2**: **13**; FIG. **3**: **14**) is provided, arranged and located for the bearing position of, selectively, at least one additional printing cylinder (**6, 7**) or a sheet transport cylinder (**7'**) of the chain transport system (**15**);
wherein the bearing positions(**9–14**) accept, selectively,
(a) a first printing cylinder configuration of:
an impression cylinder (**2**) located at the first one (**9**) of the bearing positions, and receiving a substrate sheet (**8**) on which printing is to be effected;
a plate cylinder—rubber cylinder pair (**4, 3**) and respective bearing positions (**11, 10**) therefor, for prime printing by cooperation with the impression cylinder, and a sheet removal cylinder (**5**) located at said further one (**12**) of the positions (FIG. **1**); or
(b) a second cylinder configuration of:
an impression cylinder (**2**) located at said one position (**9**) and two plate cylinder—rubber blanket cylinder pairs (**4, 3**; **6, 5'**) located at respective bearing positions and at said further one (**12**) and additional (**13**) positions, respectively, the second blanket cylinder (**5**) also forming a sheet removal cylinder for the chain transport system (**15**) (FIG. **2**); or
(c) a third cylinder configuration of:
a rubber blanket cylinder (**2'**) receiving the substrate sheet (**8**) located at said one position (**9**), a plate cylinder—blanket cylinder pair (**4, 3**), and a plate cylinder (**7**) being located at said at least one additional position (**14**) and cooperating with the blanket cylinder (**2'**) at said one position (**9**), the further one (**12**) of the positions having a delivery drum (**5**) located thereon and forming a looping drum for the chain transport system (**15**) (FIG. **3**); or
a fourth cylinder configuration
wherein said at least one additional position comprises two positions (**13, 14**), said one position (**9**) having a blanket cylinder (**2'**) located thereon, a plate cylinder—rubber blanket cylinder pair (**4, 3**) located on the side walls; and
plate cylinders (**6, 7**) located at each of said two additional positions (**13, 14**) and cooperating, respectively, with a rubber blanket cylinder (**5'**) located at said further one position (**12**) and the rubber blanket cylinder (**2'**) located at said first position, said rubber blanket cylinder (**5'**) at said further one (**12**) position forming a looping cylinder for the chain transport system (FIG. **4**); or
(d) a fifth cylinder configuration
wherein said at least one additional position comprises two additional positions (**13, 14**), said at least one position (**9**) having an impression cylinder located thereon, a plate cylinder—blanket cylinder pair (**3, 4**) cooperating with said impression cylinder (**2**), a further plate cylinder (**6**) being located at one of said additional positions (**13**), a rubber blanket cylinder (**5'**) being located at said further one position (**12**) and a transfer drum (**7'**) being located at the second additional position (**14**) and forming a looping drum for the chain transport system (**15**) (FIG. **5**).

4,409,896

INK ROLLER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 161,813, Jun. 23, 1980, abandoned. This application May 17, 1982, Ser. No. 378,971
Int. Cl.³ B41F *31/22*
U.S. Cl. 101—367 **12 Claims**



1. An ink roller for a printer, the ink roller comprising: a tube having end portions, porous ink-receptive material received about the tube, a bearing roll at each end portion of the tube, at least one of the bearing rolls having a yieldable tubular portion received in one end portion of the tube, a plurality of outwardly extending teeth on the tubular portion, a plurality of holes in the tube for receiving the teeth, and a support within the tubular portion to prevent the tubular portion from yielding and releasing the teeth from engagement with the holes in the tube.

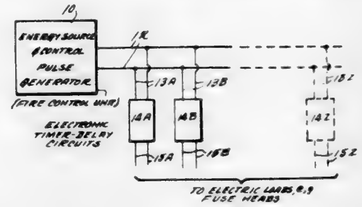
4,409,897

APPARATUS & METHOD FOR SELECTIVELY ACTIVATING PLURAL ELECTRICAL LOADS AT PREDETERMINED RELATIVE TIMES

Ian J. Kirby, Warrington; Michael I. Mitchell, Chester, and Andrew Stratton, Farnborough, all of England, assignors to Imperial Chemical Industries, Ltd., London, England

Division of Ser. No. 5,551, Jan. 22, 1979, Pat. No. 4,324,182. This application Oct. 1, 1981, Ser. No. 307,634
Claims priority, application United Kingdom, Feb. 2, 1978, 4057/78
Int. Cl.³ F42C *15/40*
U.S. Cl. 102—200 **19 Claims**

1. A method for selectively activating a plurality of electrical loads at respectively corresponding predetermined relative times, said method comprising the steps of:
generating reference timing signals at a central location;
separately receiving and processing said reference timing signals at the site of each electrical load;
said processing step at each site including the measurement of a respectively corresponding reference time interval



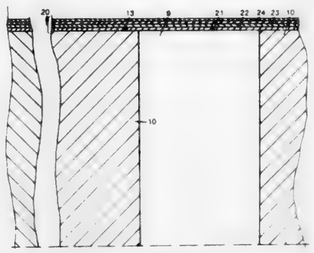
defined by said reference timing signals and subsequently measuring a respectively corresponding predetermined time delay as a function of the earlier measured reference time interval; and
activating each electrical load after its respectively corresponding predetermined time delay has elapsed.

4,409,898

ELECTRIC IGNITER

Jan-Olov Blix, Kristinehamn; Sven-Erik Bratt, and Olof Nygards, both of Karlskoga, all of Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed May 5, 1981, Ser. No. 260,632
Claims priority, application Sweden, May 27, 1980, 8003924
Int. Cl.³ F42C *19/12*
U.S. Cl. 102—202.5 **6 Claims**



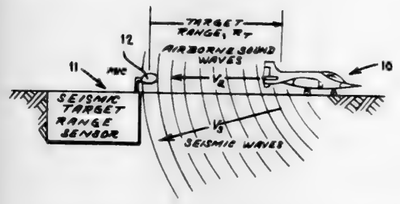
1. An electric igniter for use with artillery ammunition; comprising two electrically conductive bodies, an electrically insulating body between said two bodies, the conductive bodies together with the insulating body defining a common end surface, an electrically conductive member disposed on said common end surface connecting the conductive bodies, and a pyrotechnic charge pressed into contact with said member and ignitable by heat generated in the member on flow of an electric current therethrough; said member being bonded to said common end surface and comprising at least one metal layer having a resistance value predetermined by oxidation of said layer; a layer of an inert material disposed directly on said one metal layer and a metal thin film layer disposed directly on the inert layer.

4,409,899

ACOUSTIC AMPLITUDE-DOPPLER TARGET RANGING SYSTEM

Thomas E. Owen, Helotes; Sidney A. Suhler, and Wendell R. Peters, both of San Antonio, all of Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 27, 1981, Ser. No. 286,819
Int. Cl.³ F42C *13/06*
U.S. Cl. 102—211 **7 Claims**



1. An acoustic amplitude-doppler system for determining the distance to the closest point of approach to a munition and the time of arrival thereat of a moving target, said acoustic amplitude-doppler system comprising

an acoustic sensor circuit for sensing moving target sound waves and generating an input amplitude function signal P in response thereto,

a differentiating circuit receiving said input signal and developing signals $\dot{P}$, $\ddot{P}$ and $\dddot{P}$, said developed signals representing respectively the first, second and third derivatives of said input signal,

a time determining circuit receiving said second and third derivative signals $\ddot{P}$ and $\dddot{P}$ and generating from the times t_2, t_3 of the zero crossings thereof and from a time interval ratio K, a response indicating the predicted time t_c of target arrival at said closest point of approach, and

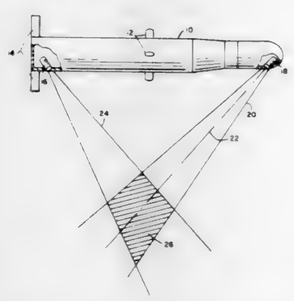
a distance determining circuit receiving (a) a signal having a frequency f_o responsive to spectral lines in said moving target sound waves, (b) input amplitude function P and (c) first derivative signal $\dot{P}$, and developing therefrom a response indicating the predicted distance d of the closest point of approach of said target to said munition.

4,409,900

FLYBY WARHEAD TRIGGERING

Richard W. Currie, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 30, 1981, Ser. No. 325,892
Int. Cl.³ F42C *13/02*
U.S. Cl. 102—213 **6 Claims**



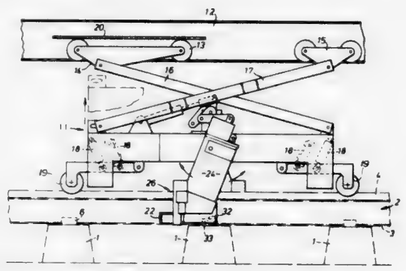
1. A triggering system comprising; transmitting means for transmitting electromagnetic radiation, receiving means disposed to provide a directional field of view for receiving directional reflected radiation of said electromagnetic radiation and for providing an output trigger signal in response to said received, reflected radiation, a movable vehicle, said transmitting means and said receiving means being mounted on said vehicle, said transmitting means being disposed for directing said electromagnetic radiation external of said vehicle into the field of view of said receiving means for establishing a triggering window in close proximity to the surface of said vehicle where the field of view and the transmitted electromagnetic radiation are coincident.

4,409,901

APPARATUS FOR PERFORMING OPERATIONS ON A RAILWAY TRACK

William B. Hark, Reading, England, assignor to Pandrol Limited, London, England

Continuation of Ser. No. 98,379, Nov. 27, 1979, abandoned. This application Dec. 10, 1981, Ser. No. 329,307
Claims priority, application United Kingdom, Nov. 30, 1978, 46757/78
Int. Cl.³ E01B *33/00, 29/04*
U.S. Cl. 104—7 B **14 Claims**



1. Apparatus for performing operations on a railway track, comprising automatic means for adjusting the relative positions of a flanged rail and a sleeper vertically and for adjusting the position of a flanged rail by moving it sideways relative to a sleeper, said automatic means including a rail adjusting mechanism with two diagonally symmetrical rail adjusting parts arranged to be juxtaposed to the opposite edges of the rail flange, each of said rail adjusting parts including a rail adjusting member having a recessed end portion defining an upper and a lower jaw adapted to receive therebetween a proximate edge region of the rail flange, and said rail adjusting parts further including means to operate the respective rail adjusting members (a) for moving said rail adjusting members so as to locate said upper and lower jaws thereof in positions to engage the rail flange from above and below, respectively, for lifting and lowering the rail and (b) for moving at least one of said rail adjusting members so as to locate the bottom of the respective end recess thereof in position to push against the associated rail flange for either shifting the rail sideways to or maintaining the rail in a desired location.

4,409,902

SPIKE DRIVERS

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

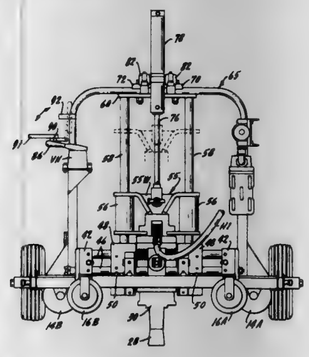
Filed Apr. 20, 1981, Ser. No. 255,647
Int. Cl.³ E01B *29/26*
U.S. Cl. 104—17 R **3 Claims**

1. In a railroad spike driver having two pairs of rail-engaging wheels for travel down the track, of which the wheels in one pair are supported each by an outrigger, and including a horizontal main frame supporting said outriggers together with a

pair of independently operable air-operated hammers each for adjustment in the direction parallel to the railroad track, the improvements comprising:

a pair of yoke castings, one for each hammer, including a pair of laterally spaced guide bushings;

a pair of upright guides supported on the main frame at opposite sides thereof and on which a related pair of yoke bushings is slidably mounted for up and down movement incidental to raising and lowering each hammer;



a pair of cylinders each supported by related of said upright guides, each cylinder having its piston connected to the related yoke whereby each yoke may be raised or lowered by controlling flow of fluid under pressure to the related cylinder;

a cross frame in a vertical plane supported by the main frame in a position between the hammers, and respective clamp means joining the respective upright guides to the cross frame so that by opening a clamp means the related yoke casting and hammer supported thereby may be laterally adjusted on said main frame.

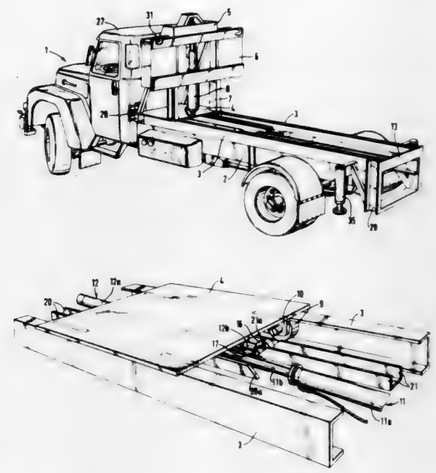
4,409,903

TRANSPORTATION APPARATUS

Tore C. Wilhelmsson, H>Kansdal 10, S-417 44 Göteborg, and Sten M. Lundström, Centigatan 12, 50247 Boras, both of Sweden

Continuation of Ser. No. 954,127, Oct. 24, 1978, abandoned. This application May 12, 1982, Ser. No. 377,701
Int. Cl.³ B60P *1/00*
U.S. Cl. 104—162 **3 Claims**

1. Transportation apparatus comprising a vehicle, a track supported on said vehicle, a traveling device movable on said track, a plurality of pivotally movable piston-cylinder units driven by a pressure medium and interspaced along the track in a longitudinal direction in which they extend, a stationary means of attachment on said vehicle for pivotally supporting one end of each of said piston-cylinder units, an engagement part connected to said traveling device having projections, the other end of each of said piston-cylinder units having engagement means engageable with said engagement part, and cam rails extending along said track cooperable with said engagement means, said engagement means of the piston-cylinder units sliding along said cam rails, which depending upon the degree of extension of the piston-cylinder units, cause crosswise displacement of the other end of said piston-cylinder units in a direction towards and away from said engagement part of the traveling device for alternate coupling operations of said other end of the piston cylinder units with the traveling device, the height of the cam rails determining the cross-wise position of said engagement means, whereby at least one of the piston-



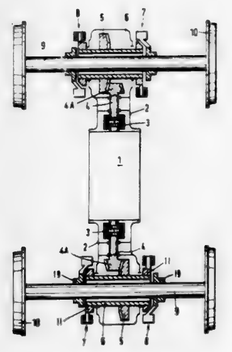
cylinder units always is in engagement with the traveling device.

4,409,904

DOUBLE-AXLE DRIVE FOR RAILWAY TRUCKS OF RAILRAOD VEHICLES

Johann Eichinger, Vaterstetten; Franz Parzl, and Wolfgang Schulz, both of Munich, all of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Apr. 20, 1981, Ser. No. 255,964
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1980, 3026756
Int. Cl.³ B61C *9/44, 9/50, 9/52*
U.S. Cl. 105—131 **4 Claims**



1. A double-axle drive for rail vehicles, comprising:

rotatably supported first and second lontigudinally spaced tranversely wheeled axles;

a rotatably supported hollow shaft surrounding each axle;

a drive motor located between said axles having a drive shaft at respective ends;

gear means between each of said drive shafts and said hollow

shafts at the respective ends of said motor to rotate said hollow shafts upon rotation of said drive shafts;

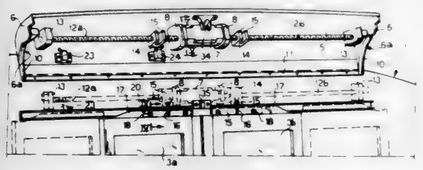
elastic coupling means connected adjacent each end of said hollow shaft to each first and second axle to rotate each of said axles, elastic coupling means comprising plural circumferentially spaced pin means secured to one of said hollow shaft and said axle with the axes thereof projecting radially, means defining plural circumferentially spaced arms secured to the other of said hollow shaft and said axle, said arms extending radially and being oriented in the circumferential spacing between said pin means, each said pin means and said arm having oppositely facing, circumferentially facing surfaces thereon, opposing circumferentially facing surfaces on mutually adjacent arms being located on opposite sides of a pin means located therebetween, the size of said pin means being smaller than the size of the circumferential distance between said opposing circumferentially facing surfaces to define a space therebetween, and elastically yieldable elements received in said space between said pin means and said opposing circumferentially facing surfaces, said elastically yieldable elements being fixedly secured between said pin means and each of said opposing circumferentially facing surfaces, the planes of said oppositely circumferentially facing surfaces on said pin means and said opposing circumferentially facing surfaces on mutually adjacent arms being angularly related at an acute angle to the axis of an associated one of said axles, and further being inclined at an acute angle to each other, and the planes of the oppositely facing surfaces on said elastically yieldably element also being inclined at an acute angle to each other so as to facilitate easy reception between mutually adjacent and opposing circumferentially facing surfaces on said pin means and said arm, said opposing circumferentially facing surfaces each having a V-shaped concave contour, said opposite sides of said pin means having a V-shaped convex contour, and said elastically yieldable elements being blocks arranged in opposing pairs and having two legs arranged in a V-shape, the inner surfaces of said two legs engaging said V-shaped surfaces of said pin means and the outer surfaces of said two legs engaging said V-shaped surfaces of said concave contours on said arms.

4,409,905

DEVICE FOR MOVING THE TWO SLIDING DOORS OF A CAR OF A CONTINUOUS CABLE-WAY WITH AUTOMATIC CLAMPING

Pier C. Zerbi, Leini, Italy, assignor to Nuova Agudio S.p.A., Turin, Italy

Filed Nov. 27, 1981, Ser. No. 325,475
Claims priority, application Italy, Mar. 20, 1981, 67387 A/81
Int. Cl.³ B61D *13/00*; E05F *11/34*
U.S. Cl. 105—329 S **5 Claims**



1. In a cable-car for a continuous cable-way with automatic clamping or catching, including two sliding doors, a device for moving said doors comprising:

a support structure extending above said doors and supported by said car so as to be rotatable about a horizontal longitudinal axis between a lowered working position and a raised rest position, said support structure acting as a protective cover for said device in said working position;

an electric motor rotatable in two senses and supported centrally on said support structure,

two worm-screws with opposing theads, which are rotatable by said electric motor and extend coaxially on opposite sides of the latter;

a drawing member extending upwardly from the upper edge of each of said sliding doors, and

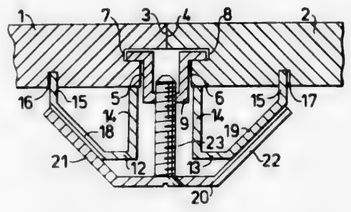
a respective nut cooperating with each said screw and being prevented from rotating so as to be displaceable axially by rotation of the respective said screw, each said nut engaging the drawing member of a respective said door when said support structure is in said lowered working position, and being disengaged from said drawing member when said support structure is pivoted manually into said raised rest position.

4,409,906

CLAMPING DEVICE FOR JOINING BOARDS

Carl-Göran Alneng, Robertsviksvägen 16, S-182 35 Danderyd, Sweden

Filed Mar. 31, 1981, Ser. No. 249,471
Int. Cl.³ A47B *57/00*
U.S. Cl. 108—64 **10 Claims**



1. A clamping device for joining together panel members lying substantially in the same plane with edges in abutting relationship but partially spaced by recesses providing a clearance therebetween and terminating into slots extending along said plane, said members having grooves on their undersides from said edges, comprising:

a tensioning member extending along said edges and into said slots;

securing members, each having an inner upstanding side bearing against said underside of said panel members near said recesses thereof on either side of said tensioning member;

said securing members having an outer side terminating in flanges bent to provide engagement with said grooves;

a generally trough-shaped, horizontal rail member bearing against said securing members; and

screw means fitting in said rail member and passing through said clearance for urging said rail member against said securing members thereby driving said securing members toward each other until said edges of panel members are in tight abutment.

4,409,907

PORTABLE TREE TABLE

Don S. Norton, Clinton, Miss., assignor to Brell Mar Products, Inc., Clinton, Miss.

Filed Jun. 4, 1981, Ser. No. 270,354
Int. Cl.³ A47B *5/02*
U.S. Cl. 108—152 **17 Claims**

1. A portable tree table, comprising:

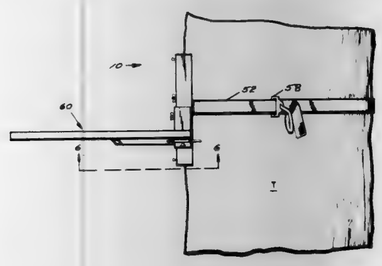
a bracket;

belt means having means for connecting the bracket therewith; said belt means being constructed and arranged to be tightly secured together about a tree trunk at any selected height, to thereby securely, removably fasten the bracket to the tree trunk at the selected height;

a table member;

a bracket fixture secured to the table member so as to be exposed at the rear edge of the table member;

said bracket and said bracket fixture having respectively nestable surface features; and securement means for re-



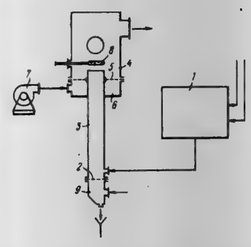
movably securing the bracket fixture to the bracket with said respective nestable surface features in a nested condition, so that the table member is cantilevered out from the tree at the selected height.

4,409,908

METHOD FOR THERMAL DECONTAMINATION OF WASTE WATERS

Petr G. Udyma, ulitsa Bolshaya Cherkizovskaya, 1, korpus 1, kv. 25, Moscow; Ionas A. Gilis, ulitsa Grinchiunio, 7, kv. 425, Kaunas; Sergei V. Zhubrin, ulitsa Dovzhenko, 6, kv. 58; Alexandr V. Sakharnov, Vinnitskaya ulitsa, 3, kv. 94, both of Moscow; Boris A. Rodioov, Khlebozavodskoi tupik, 7, kv. 1, Ljubertsy; Moskovskoi oblasti, and Vladimir V. Skornyakov, ulitsa Chaikovskogo, 1/2, kv. 28, Moscow, all of U.S.S.R.

Continuation of Ser. No. 901,305, May 1, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,246
Int. Cl.³ F23G *7/04*; C02F *1/72*
U.S. Cl. 110—346 **4 Claims**



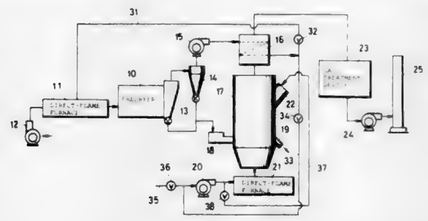
1. The method for the thermal decontamination of waste waters which contain solid impurities, which comprises passing a gas which in its entirety is combustible through said waste waters in the presence of surfactants in an amount sufficient for conversion of all of said waste waters to a foam formed of foam bubbles in which said solid impurities are suspended and which contain said gas within the bubbles and is combustible due to the combustible gas, and subjecting said combustible foam to combustion, whereby the entire foam and thus all of the waste water is evaporated and the combustible gas contained in the bubbles is liberated and continues to burn as a stable flame to burn off contaminants including said solid impurities in the waste water.

4,409,909

PROCESS OF COMBUSTION IN A FLUIDIZED-BED INCINERATOR

Takekazu Tomizawa, Fujieda; Susumu Ueda, Shizuoka; Toyoji Sakyo, Shizuoka, and Sumio Kawai, Shizuoka, all of Japan, assignors to Kabushiki Kaisha Okawara Seisakusho, Shizuoka, Japan

Filed Mar. 17, 1981, Ser. No. 244,721
Claims priority, application Japan, Mar. 20, 1980, 55-35383; Dec. 15, 1980, 55-177701
Int. Cl.³ F23G *5/00*
U.S. Cl. 110—346 **5 Claims**



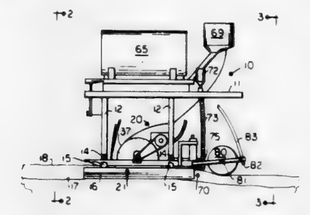
1. A process of combustion of particulate or powdery materials such as dried sludge, which comprises feeding said material to a predrier in which said material is dried by hot combustion products of a direct flame furnace to produce predried material and high-humidity low oxygen content exhaust gas, discharging said predried material from said predrier to a fluidized-bed incinerator, separately supplying to said incinerator an air-gas mixture comprising air and from 5-40% by weight of said high-humidity low oxygen content exhaust gas from said predrier, to thereby adjust the excess ration of combustion air and burn nitrogen oxides in the incinerator.

4,409,910

METHOD AND APPARATUS FOR PLANTING SEEDS WHILE CONDITIONING SOIL

Hoyle, Burton J., Five Points, and Timothy B. K. Lee, Sacramento, both of Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 183,802, Sep. 3, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,330
Int. Cl.³ A01C *23/02*
U.S. Cl. 111—1 **22 Claims**



1. A method of planting seeds in a field, comprising the steps of:

injecting at 30 to 50 p.s.i. an anti-cohesion liquid chemical into a narrow ribbon of soil no more than two and one-half inches wide and two inches deep,

then, immediately thereafter, vigorously agitating said ribbon of soil by a bladed wheel at a speed between 900 and 2000 r.p.m., to insure coating of all of the soil particles with the chemical to a depth below that at which the seed is to be planted,

then placing the seed at precise locations within and covered by the treated said ribbon of soil, and

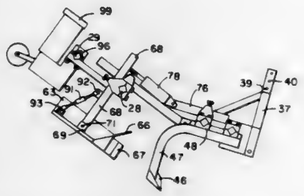
then firming the soil.

4,409,911

LISTING AND BED SHAPING APPARATUS WITH PLANTER ATTACHMENT AND METHOD

Alonzo B. Stiff, Brawley, Calif., assignor to Jordan Implemenet Co., Brawley, Calif.

Filed Oct. 23, 1981, Ser. No. 314,133
Int. Cl.³ A01C *5/06*
U.S. Cl. 111—52 **6 Claims**



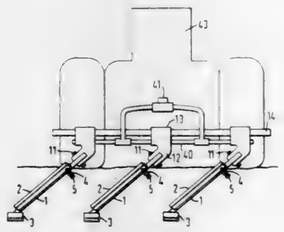
1. In a combination listing and bed shaping apparatus for use with a self-propelled vehicle having a three-point hitch, first tool bar means, means for securing said first tool bar means to said three-point hitch so that said first tool bar means extends in a generally horizontal direction perpendicular to the path of travel of the self-propelled vehicle, listing apparatus carried by said first tool bar means for forming furrows and raised beds, a second tool bar, means for securing said second tool bar to said first tool bar means permitting pivotal movement of said second tool bar about an axis parallel to the first tool bar means, bed shaping apparatus carried by said second tool bar for forming the raised beds, said bed shaping apparatus comprising an elongate sheet metal structure having a generally planar upper wall and downwardly and outwardly inclined side walls, means connected between said first tool bar means and said second tool bar for raising and lowering said second tool bar with respect to said first tool bar means, a third tool bar secured to said second tool bar and planting apparatus secured to said third tool bar and adapted to plant seeds in the raised beds.

4,409,912

AGRONOMIC IMPLEMENT

Amy M. E. Koronka, UpWaltham, and Paul Koronka, Banbury, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Nov. 6, 1980, Ser. No. 204,696
Claims priority, application United Kingdom, Nov. 29, 1979, 7941175; Apr. 3, 1980, 8011376
Int. Cl.³ A01C *23/02*
U.S. Cl. 111—7 **29 Claims**



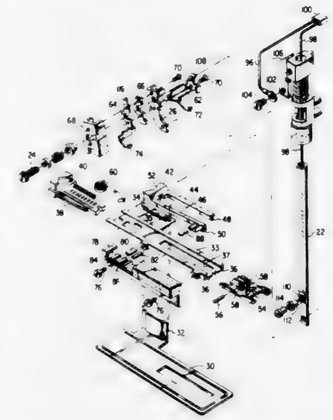
1. A cultivating implement comprising: a frame mounted for movement in a direction of travel; and at least one soil working tool mounted on said frame, said tool including a blade having a portion with a leading and trailing edge, which portion, in operation, extends sidewardly and downwardly into the soil in a plane substantially parallel to the direction of travel edgewise through the soil and inclined at an acute angle to the vertical so as to lift soil, without inversion, lying above the blade; said tool having at a lower end of said inclined blade portion a shoe member with an upwardly and rearwardly inclined upper surface at a leading end thereof, and a trailing edge thereof, and an upright and rearwardly extending side surface, said side surface being substantially parallel to the direction of travel and comprising bearing surface means for resisting lateral forces on the tool due to the lifting action of the blade on the soil.

4,409,913

BUTTONHOLE PRESSER DEVICE FOR SEWING MACHINES

Kenneth D. Adams, Madison; Marvin Kurland, East Brunswick; Richard Mead, Whippany; Ferdinand P. Oliva, Cranford, and Terry L. Wilson, Denville, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Aug. 25, 1982, Ser. No. 411,148
Int. Cl.³ D05B *3/08*
U.S. Cl. 112—158 B **7 Claims**



1. A buttonhole presser device for use with a sewing machine having an electrical control circuit and arranged to sew a buttonhole pattern, said presser device comprising:

a presser foot having a shank adapted to be secured to the presser bar of said sewing machine;

means for engaging work being sewn, said work engaging means being coupled to said presser foot and movable along a line of work feed by the work feeding movement of the sewing machine feed dog;

a conductor carried by said presser bar and electrically insulated therefrom;

means for electrically connecting said presser bar and said conductor to said electrical control circuit;

first and second switch contact members carried by said presser foot shank and spaced from each other, said first switch contact member adapted to be in electrical contact with said presser bar and said second switch contact member adapted to be in electrical contact with said conductor when said presser foot shank is secured to said presser bar; and

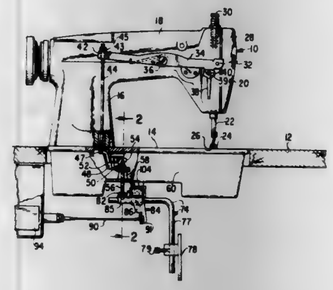
first and second contact closing members mounted on said work engaging means and movable therewith, the distance therebetween defining the length of a buttonhole pattern being sewn, each of said contact closing members being adapted to close an electrical circuit path between said first and second switch contact members.

4,409,914

MULTI-STAGE PRESSER LIFTER DEVICE

Eugene A. Sansone, Belle Meade, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 19, 1981, Ser. No. 275,186
Int. Cl.³ D05B *29/02*
U.S. Cl. 112—237 **6 Claims**



1. An improved presser lifting arrangement for a sewing machine having a frame, said frame including a work supporting bed, said frame supporting therein a presser bar and means for urging said presser bar towards said work supporting bed, said presser bar terminating in a presser foot for pressing a work fabric against said work supporting bed, said improved presser lifting arrangement comprising:

a knee shift pad;

means for supporting said knee shift pad beneath said sewing machine;

a first means responsive to a first pressure on said knee shift pad for raising said presser foot to a height above said work supporting bed sufficient to permit free movement of said work fabric beneath said presser foot; and

second means other than said first means and responsive to an additional increment of pressure on said knee shift pad for lifting said presser foot to an upper limit for ready removal or insertion of said work fabric therebeneath, whereby said work fabric may be repositioned beneath said presser foot by actuation of said first means only.

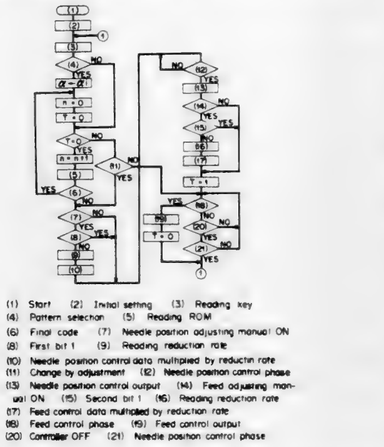
4,409,915

SWITCH CONTROL METHOD OF AN ELECTRONIC SEWING MACHINE

Yasukata Eguchi, Kinitachi; Susumu Hanyu; Hideaki Takenoya, both of Hachioji, and Mikio Inamori, Hino, all of Japan, assignors to Janome Sewing Machine Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1982, Ser. No. 351,740
Claims priority, application Japan, Mar. 20, 1981, 56-39515
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—266.1 **1 Claim**

1. A stitch control method by use of an electronic sewing machine having a microcomputer including an electronic memory storing stitch control data to operate the stitch forming device of the sewing machine for producing stitches, said method comprising; providing a stitch adjusting means for adjusting at least one of the needle position and the fabric feeding movement; providing discriminating signals each in match with each of the stitch control data stored in the electronic memory for discriminating the designation of the stitch adjusting means to be effective or noneffective; operating the microcomputer to read out the stitch control data from the electronic memory at a predetermined rotation phase of the sewing machine to make a calculation by means of the discriminating signal and the adjustment signal of the stitch adjusting means so as to modify the stitch control data designated by the discriminating signal for adjusting the corresponding stitch,



(1) Start (2) Initial setting (3) Reading key (4) Pattern selection (5) Reading ROM (6) Final code (7) Needle position adjusting manual ON (8) First bit 1 (9) Reading reduction rate (10) Needle position control data multiplied by reduction rate (11) Change by adjustment (12) Needle position control phase (13) Needle position control output (14) Feed adjusting manual ON (15) Second bit 1 (16) Reading reduction rate (17) Feed control data multiplied by reduction rate (18) Feed control phase (19) Feed control output (20) Controller OFF (21) Needle position control phase

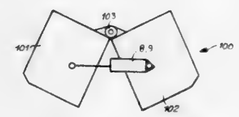
the result of the calculation operating the stitch forming device at a predetermined rotation phase of the sewing machine.

4,409,916

SPLIT VESSEL OR SIMILAR VESSEL

Ewout C. de Kat, Ridderkerk, Netherlands, assignor to IHC Holland N.V., Papendrecht, Netherlands

Filed Mar. 31, 1981, Ser. No. 249,362
Claims priority, application Netherlands, Mar. 31, 1980, 8001892
Int. Cl.³ B63B *35/30*
U.S. Cl. 114—29 **7 Claims**



1. For use with a split hopper or similar vessel consisting of two halves fitting together along the longitudinal central cross-sectional plane and being connected to each other by means of hinges having a horizontal axis, hydraulic cylinders adapted to be positioned in the neighborhood of said hinges to couple said two halves to one another, which hydraulic cylinders are capable of at least performing the closing movement of said two halves and have been included in a hydraulic circuit in which circuit close to said cylinders flexible tubes have been provided for transferring hydraulic liquid to and from said cylinders; the improvement in which in the pressure supply line there is provided a non-return valve between each cylinder and each flexible tube, said non-return valve (10,11,53) passing liquid in the direction of closing and blocking in the reverse direction, said non-return valve furthermore being provided with a control means for opening said valve under the influence of a control pressure, between the rod side and the head side of a each cylinder there being provided a non-return valve (G1, 53) which blocks the passage from the rod side to the head side and which may be opened under the influence of a control pressure, the control pressure on the latter non-return valve (G1) being dependent on the presence of control pressure on all the first-mentioned non-return valves (10,11) provided for all cylinders between flexible tubes and cylinders, and for each one of the non-return valves (10,11) present between flexible tubes and cylinders there is provided

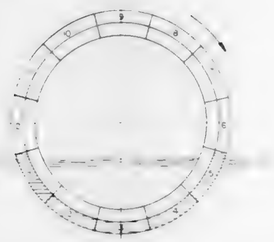
a switch (E1,E2) capable of being activated by the control pressure, which switches when they are all in the activated position thereof complete an electric circuit through an electromagnetic valve (S1) in the control pressure line to the non-return valve (G1) between the rod side and the head side of each cylinder, to move said valve (S1) into a position in which said valve (S1) passes the control pressure to said latter non-return valve (G1).

4,409,917

ROTATING PONTOON

Olavo Kramer Da Luz, Raa Gen. Joao Manbel- 604/Apto 14, 90.000 Porto Alegre Rio Grande Do Sul, Brazil

Continuation of Ser. No. 170,672, May 2, 1979, abandoned. This application May 10, 1982, Ser. No. 376,609
Claims priority, application Brazil, Sep. 2, 1979, 7705898[U]
Int. Cl.³ B63B *35/30*
U.S. Cl. 114—38 **7 Claims**



1. A rotatable hollow cylindrical pontoon partially filled with liquid and capable of turning about its longitudinal axis at any desirable angle, said pontoon permitting maintenance and repair of a vessel being unloaded without the necessity of conventional dry-docking and adaptable to unload dry bulk vessels by gravity and to store dry bulk cargo, said pontoon including therein a watertight floating device to provide support for vessels to be processed, means for rotating said hollow cylindrical pontoon, said means comprising a plurality of separate ballast tanks, some of said tanks containing liquid; compressed air means for transferring liquid from selected ones of said liquid containing tanks to selected other non-liquid containing tanks whereby displacement of said liquid from one tank to another tank causes said pontoon to rotate by displacement of the center of gravity thereof.

4,409,918

ICE-BREAKING AND CONVEYING SYSTEM

Jacob C. Wagner, 1042 S. Du Pont Hwy., New Castle, Del. 19720

Filed Dec. 2, 1981, Ser. No. 326,897
Int. Cl.³ B63B *35/08*
U.S. Cl. 114—40 **8 Claims**



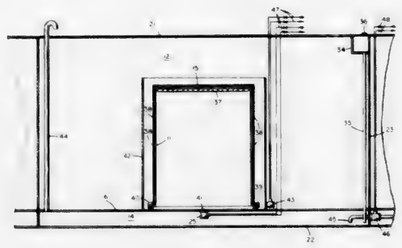
1. In a system for icebreaking for water navigation having: a ship with bow and stern, means for breaking ice at the forward part of said ship, means for preventing broken ice from impeding progress of said ship, including: means for conveying broken ice rearwardly in said ship, and means for discharging rearwardly conveyed broken ice from said ship, the improvement comprising the combination of said means for conveying broken ice including: means for floating broken ice within the ship in the form of a tube within the ship, at least a portion of said tube being above sea level, and vacuum pumping means for raising water into said tube portion for floating ice along said tube and tube portion for said discharging.

4,409,919

SHIP'S DOUBLE BOTTOM AND BAG SEGREGATED BALLAST SYSTEM

Patrick J. Strain, 27 Tanglewood Dr., Lynwood, Nepean, Ontario, Canada K2H 6P5

Filed Mar. 28, 1980, Ser. No. 134,993
Int. Cl.³ B63B *25/08*
U.S. Cl. 114—74 R **8 Claims**



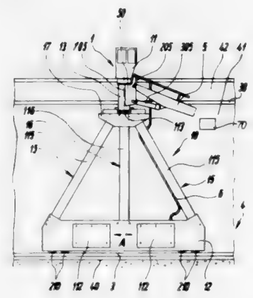
1. A segregated ballast system for a double bottomed ship comprising a flexible, impermeable container, located in the cargo space of the ship but not internally communicating therewith and in fluid internal communication with the double bottom space of said ship, the container being surrounded by a cage-like rigid porous guide and support means; means for passing ballast water out from and into the double bottom space and flexible container as required; air vent means to permit escape from the container of air entrapped therein; and the container and rigid porous guide being circumscribed by and contained within the walls of an emergency container to restrain the free flow of ballast water within this emergency container in event of failure of the flexible container, said cargo space being defined by longitudinal and transverse bulkheads, the walls of said emergency container being separate from any cargo space defining bulkheads.

4,409,920

APPARATUS FOR TREATING SHIP HULLS

Paul Hammelmann, Zum Sundern 17, 4740 Oelde 1, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,451
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1980, 3027677
Int. Cl.³ B63B *59/06*
U.S. Cl. 114—222 **23 Claims**



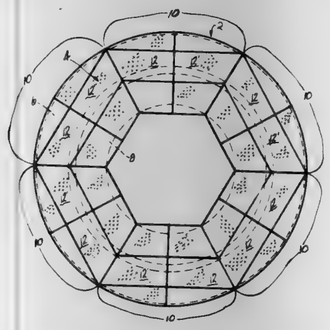
1. An apparatus for treating ship hulls in a dry dock, comprising a carriage movable horizontally on a longitudinal wall of a dry dock and having upper and lower portions; a control cabin located on said upper portion of said carriage; working means connected with said carriage and pivotable about at least one vertical and horizontal axes; working aggregates for operating the apparatus; a container located in the region of said lower portion of said carriage under water in filled condition of the dry dock, said container being water-tight and accommodating said aggregates; and a plurality of conduits including at least one fresh air supplying conduit extending to said container, and at least one exhaust gas and spent air discharging conduit extending from said container, said conduits extending up to said upper portion of said carriage.

4,409,921

FLOATING INSPECTION PLATFORM

James P. Carroll, Decatur; Paul S. Cary, Florence, and Johnny A. McCay, Hartselle, all of Ala., assignors to Champion International Corporation, Stamford, Conn.

Filed Apr. 8, 1982, Ser. No. 366,473
Int. Cl.³ B63B *35/58*
U.S. Cl. 114—264 **4 Claims**



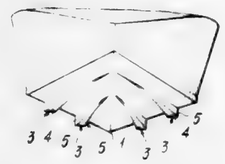
1. A floating platform adapted for use in inspecting the interior of a liquid-containing vessel, said platform comprising:
(a) a plurality of pontoon members of curvilinear configuration, said pontoon members having end surfaces carrying hinge loop members operable to interfit with cooperating hinge loop members on the end surfaces of adjacent ones of said pontoon members, said pontoon members being arranged to form inner and outer concentric floatation rings for said platform;
(b) removable pin means operable to extend through said interfitted hinge loop members to secure said pontoon members together in the respective inner and outer floatation rings;
(c) a plurality of braces mounted on said floatation rings and extending radially outwardly thereof to interconnect said inner and outer floatation rings together, said braces being equally spaced circumferentially of said floatation rings;
(d) releasable means connecting said braces to said floatation rings;
(e) a plurality of platelike subsections disposed on said braces to form a deck for the platform, said subsections being foldable between a compact storage configuration and an expanded supporting configuration, said subsections having radially extending edge portions overlying said braces whereby each brace supports adjacent radial edges of adjacent ones of said subsections; and
(f) pin means interconnecting said braces and said subsections to hold said subsections in place on said braces against lateral movement, and said pin means allowing said subsections to be readily lifted on and off of said braces to assemble and disassemble the platform.

4,409,922

V-SHAPED BOTTOM FOR SPEEDY MOTORBOATS HAVING IMPROVED PLANING SUPPORTING SKIDS

Riccardo Mambretti, Cascina Berina, 22070 Fenegro' (Como), Italy

Filed Jan. 28, 1981, Ser. No. 229,113
Claims priority, application Italy, Feb. 4, 1980, 19667 A/80
Int. Cl.³ B63B *1/20*
U.S. Cl. 114—283 **2 Claims**



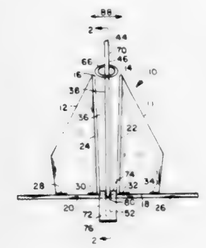
1. A hull for a boat, said hull comprising:
two longitudinal surfaces which angle downwardly toward a central longitudinal line of the hull to define a v-shaped structure which extends from the bow of the boat to its stern; and
at least two skids extending longitudinally with respect to said central line and projecting from said hull, said skids having two essentially vertical sidewalls and a supporting surface between said sidewalls and defining in cross section at least a portion of a polygon whose width is approximately equal to or less than its height, the height of said sidewalls and width of said supporting surface uniformly decreasing in dimension and thereby tapering to a point as said skids approach the bow of said boat.

4,409,923

MARINE ANCHOR

David B. MacPherson, 15 Potter St., Brunswick, Me. 04011

Filed Jun. 19, 1981, Ser. No. 275,196
Int. Cl.³ B63B *21/44*
U.S. Cl. 114—304 **7 Claims**



1. An improved marine anchor for anchoring a marine vessel with an anchor rode comprising in combination:
a first and a second fluke;
an anchor stock;
means connecting said first and second flukes to said anchor stock with a space disposed between said first and second flukes;
an anchor shank having a pivot aperture disposed between a head portion and a tail portion of said anchor shank;
rode means for connecting the anchor rode to said tail portion of said anchor shank;
said pivot aperture pivoting said anchor shank on said anchor stock in said space between said first and second flukes;
anchor crown means comprising a unitary member having a

first and a second bend defining a first and a second end region angularly disposed relative to a central region;

an anchor crown slot defined by said central region of said anchor crown means extending between said first and second end regions;

means connecting said anchor crown means for movement with said first and second flukes with said central region of said anchor crown means contacting said anchor stock and with said first and second end regions extending in a direction generally opposite to the direction of said flukes and with said anchor stock being disposed between said first and second end regions; and

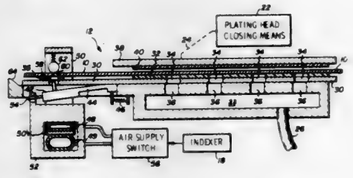
said anchor shank extending through said anchor crown slot enabling said anchor shank to pivot from a first position in which said anchor shank head portion engages said first end region of said anchor crown means to a second position in which said anchor shank head portion engages said second end region of said anchor crown means.

4,409,924

SELF-ADJUSTING PLATING MASK

Gerald C. Laverty, Santa Clara, and Michael Seyffert, Santa Cruz, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jul. 1, 1982, Ser. No. 394,216
Int. Cl.³ B05C *5/02*
U.S. Cl. 118—406 **9 Claims**



1. Plating apparatus suitable to plate the surface of a strip of metal comprising:

strip moving means connected to intermittently move the strip;

a plating head adapted to receive the strip therethrough, said head including passageways adapted to contain and direct plating electrolyte against the strip;

masking means disposed between said plating head and said strip, operable to define the areas of the strip that are to be contacted by electrolyte from said passageways, said masking means being movable relative to the plating head;

strip engaging means mounted on said masking means, operable upon movement to engage the strip at known locations;

activating means connected to said engaging means and to said strip moving means, said activating means operable to move said engaging means into engagement with the strip just as the strip is completing a movement so as to move said masking means with said strip and in predetermined alignment with said strip.

4,409,925

ABSORBENT MATERIAL

Ewart Brundrett, Baden, and Franklin T. Carter, Waterloo, both of Canada, assignors to Thermaster Inc., Kitchener, Canada

Filed Nov. 2, 1981, Ser. No. 317,067
Int. Cl.³ A01K *1/015*
U.S. Cl. 119—1 **9 Claims**

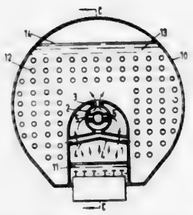
1. A granular absorbent material having a density of about 2 to about 20 lb/cu.ft., comprising ground paper, Plaster of Paris and at least one other component in the weight ratio 1:0.01:0.01 to about 1:2:1 which has been granulated utilizing water droplets, said other component being selected from the group consisting of sand, fertilizer, colorants, oil and deodorants.

4,409,926

HORIZONTAL SHEEL BOILER

John P. Moore, Gainsborough, England, assignor to Vosper Thornycroft Limited, Portsmouth, United Kingdom

Filed Apr. 27, 1981, Ser. No. 258,135
Claims priority, application United Kingdom, Apr. 30, 1980, 8014229
Int. Cl.³ F23C *111/02*
U.S. Cl. 122—4 D **4 Claims**



1. In a horizontal shell boiler with fluidized bed combustion of the type comprising a shell intended to contain boiler fluid, a horizontal furnace section extending within the shell, flue gas tubes extending horizontally through the shell and disposed above and around the furnace section, and a flue gas transfer section at one end of the furnace section for transferring the products of combustion from the furnace section to the said flue gas tubes (, and); the improvement comprising:

flue gas transfer means extending horizontally (through) within an upper portion of the furnace section, (said fluid gas transfer means comprising:) and which includes;

a double-walled flue gas tube defining a jacket and an inner flue gas transfer passage;

boiler fluid transfer passages communicating the interior of said jacket with the interior of said boiler shell, including a first plurality of said boiler fluid transfer passages which are inclined to the horizontal and which connect a lower portion of said jacket, and a second plurality of said boiler fluid transfer passages which connect an upper portion of said jacket with the interior of said boiler shell; and

horizontally oriented, flue gas transfer passages extending through both of said walls of said double-walled flue gas tube(,) and spaced longitudinally thereof, said passages communicating said inner flue gas transfer passage with the interior of said furnace section.

4,409,927

FLAMELESS NITROGEN SKID UNIT WITH TRANSMISSION RETARDER

Stanley B. Loesch; James C. St. John; Danny K. Mints, and Allen D. Burmeister, all of Duncan, Okla., assignors to Halliburton Company, Del.

Filed Mar. 31, 1980, Ser. No. 136,049
Int. Cl.³ F22B *3/06*; F28C *3/00*
U.S. Cl. 122—26 **17 Claims**

1. An apparatus for heating a first fluid, comprising:

a first internal combustion engine;

a main pump for pumping said first fluid;

a mechanical transmission means connecting said engine and said main pump so that said main pump is driven by said engine;

a coolant system means for circulating a coolant fluid and transferring heat energy from said internal combustion engine to said coolant fluid;

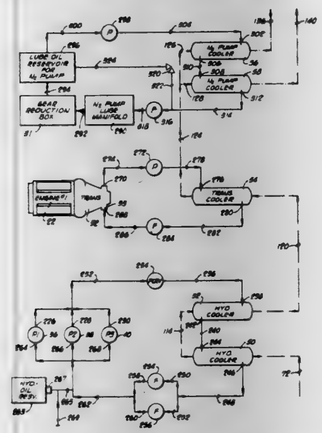
a coolant fluid-to-first fluid heat exchanger means for transferring heat energy from said coolant fluid to said first fluid;

a transmission retarder means, connected to said transmission means, for exerting a varying load on said engine so that an amount of heat energy transferred from said internal combustion engine to said coolant fluid, and from said coolant fluid to said first fluid, is increased as said load

exerted on said engine by said transmission retarder means is increased;

a second internal combustion engine;

wherein said coolant system means is further characterized as being a means for circulating said coolant fluid and transferring heat energy from said first and second internal combustion engines to said coolant fluid; and



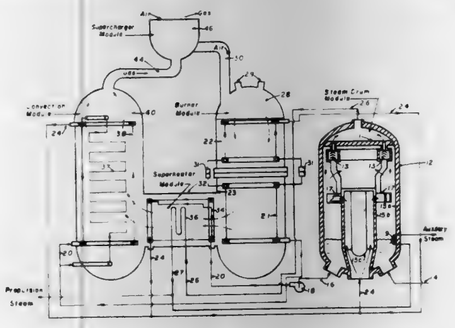
wherein said apparatus further comprises a variable load means, connected to said second internal combustion engine, for exerting a varying load on said second internal combustion engine, so that an amount of heat energy transferred from said second internal combustion engine to said coolant fluid and from said coolant fluid to said first fluid increases as said load exerted on said second internal combustion engine by said variable load means increases.

4,409,928

STANDARDIZED COMPACT MODULAR BOILER

Thomas P. Tursi, Horsham, Pa., and Thomas R. Millington, Woodbury, N.J., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 2, 1981, Ser. No. 317,040
Int. Cl.³ F22D *7/00*
U.S. Cl. 122—406 S **3 Claims**



1. A standardized compact modular boiler, comprising, in combination:

a burner module for receiving and igniting a mixture of fuel and compressed air;

a furnace module externally connected by an integral flange with said burner module to receive the ignited fuel and compressed air mixture including a combustion chamber for generating and passing hot gas from said mixture and furnace tubes connected to receive the hot gas and saturated feedwater for generating a steam and water mixture;

a steam drum module connected to receive the steam and water mixture and input feedwater for providing dry steam and the saturated feedwater therefrom;

a superheater module externally connected by a quick disconnect coupling with said furnace module for receiving and passing the hot gas from said furnace module and including a superheater tube bundle for receiving said dry steam for providing a superheated steam;

a convection module externally connected by a quick disconnect coupling with said superheater module to receive and pass the hot gas from said superheater module and including a steam generating tube bundle connected to receive the saturated feedwater for providing the steam and water mixture therefrom;

a supercharger module adapted to receive air and connected to receive the hot gas passing from said convection module for heating and compressing the air supplied to said burner module; and

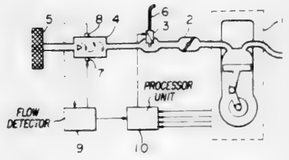
a pump module connected to receive and force circulate the saturated feedwater from said steam drum module to said furnace, superheater and convection modules.

4,409,929

FUEL CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Takeo Sasaki, and Yoshinobu Morimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 135,664, Mar. 31, 1980, abandoned. This application Jul. 20, 1981, Ser. No. 284,669
Claims priority, application Japan, Mar. 29, 1979, 54/37811
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—479 **6 Claims**



1. A fuel control apparatus for an internal combustion engine, comprising:

an air flow detector which generates a pulse signal having a frequency proportional to an air flow rate of air fed into said engine;

a fuel feed valve which is placed in a suction air passage of said engine to feed a fuel into a suction tube by its switching operation;

a processor unit which controls the operation period of said fuel feed valve to open said valve for a predetermined period depending upon the output frequency of the pulse signal produced by said air flow detector and which varies the operation period of said valve depending upon predetermined conditions of said engine;

a monitor means for detecting a fault condition in said processor;

a monostable multivibrator unit including means for producing a signal related to engine coolant temperatures, which produces a pulse signal having a frequency depending upon the output frequency of said air flow detector and a pulse width depending upon the engine coolant temperature;

a selective means controlled by the monitor means for selecting the output pulse signal of said processor when no processor fault is detected and for selecting the pulse

signal output of said monostable multivibrator unit when a processor fault is detected; and

a driving means having an input coupled to the selective means for driving said fuel feed valve with the output pulse signal selected by said selective means;

wherein said monostable multivibrator unit comprises:

a comparator;

temperature sensing means for producing a voltage related to engine coolant temperature and for applying said voltage to a first input of said comparator;

an RC charging circuit including a resistor and capacitor connected in series at a junction also connected to a second input of said comparator; and

differentiation circuit means having an input coupled to the pulse signal produced by said air flow detector for temporarily discharging said capacitor upon each occurrence of said air flow detector pulse signal;

wherein said comparator produces the output pulse signal of said monostable multivibrator unit with a pulse width based on the amount of time taken for the voltage of said capacitor to exceed the voltage produced by said temperature sensing means after discharge of said capacitor by said differentiation circuit means.

4,409,930

VENTING A LIQUID SUPPLY SYSTEM

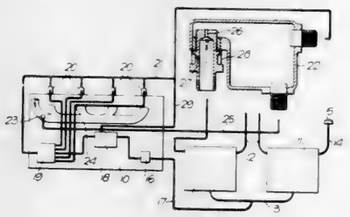
Cecil T. Bury, and Andrew J. Holmes, both of Huddersfield, England, assignors to David Brown Tractors Ltd., Huddersfield, England

Filed Apr. 22, 1981, Ser. No. 256,413

Claims priority, application United Kingdom, Apr. 24, 1980, 8013608

Int. Cl.³ F02M *37/00*

U.S. Cl. 123—514 **6 Claims**



1. A fuel system for an internal combustion engine comprising a pump drawing fuel from a tank and supplying it to a fuel injection pump which delivers it to at least one injector, a leak line for returning excess fuel from the fuel injection pump and the injector to the tank, a cold starting device in the engine's induction system supplied with fuel solely by gravity from an outlet in the lower part of a reservoir provided in its upper part with an inlet and an outlet by means of which it is interposed in the leak line, a restriction from which fuel emerges as a jet disposed in that outlet leading from the upper part of the reservoir to the tank, and a vent hole disposed downstream of the restriction within the zone containing the jet.

4,409,931

COMBUSTION AND POLLUTION CONTROL SYSTEM

John E. Lindberg, Lafayette, Calif., assignor to Owen, Wickersham & Erickson, San Francisco, Calif.

Continuation of Ser. No. 657,747, Feb. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 613,867, Sep. 16, 1975, abandoned, which is a continuation-in-part of Ser. No. 356,589, May 3, 1973, abandoned, which is a continuation-in-part of Ser. No. 227,440, Feb. 18, 1972, abandoned. This application Sep. 25, 1980, Ser. No. 190,933

Int. Cl.³ F02B *19/00, 47/00, 43/08, 51/00*

U.S. Cl. 123—25 R **63 Claims**



39. Apparatus for providing improved combustion and reduced emissions in an internal combustion process engine comprising the combination of

a combustion chamber,

means for feeding fuel into said combustion chamber,

means for injecting controlled amounts of an aqueous fluid into said combustion chamber, and

means in response to engine need for increasing the weight ratio of said aqueous fluid to said fuel during and responsive to engine acceleration.

4,409,932

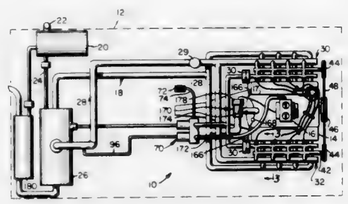
METHOD AND APPARATUS FOR POWERING ENGINE WITH EXHAUST GENERATED STEAM

Peter A. Gill, Arlington, Tex., assignor to Scoron Corporation, Arlington, Tex.

Filed Dec. 7, 1981, Ser. No. 328,377

Int. Cl.³ F02M *25/02*

U.S. Cl. 123—25 D **20 Claims**



1. An apparatus for use with an internal combustion engine operated through throttle input by an operator having at least one combustion chamber with a carburetor having a throttle, the combusted gases leaving the combustion chamber through an exhaust system, comprising:

a water storage unit for storing water;

a steam generator positioned along the exhaust system for vaporizing water from said water storage unit with heat from the combusted gases;

a steam intake manifold for entering steam generated in said steam generator into said at least one combustion chamber;

engine timing valve means for permitting flow of steam from said steam intake manifold to said at least one combustion chamber during the power stroke to increase the energy output of the internal combustion engine;

steam throttling means for controlling the flow of steam into said at least one combustion chamber; and

throttle proportioning control means for proportioning the response of said steam throttle means and the carburetor throttle to throttle input by the operator, the proportions being determined by the steam temperature and pressure in said steam generator.

4,409,933

ENGINE COMPARTMENT COOLING APPARATUS

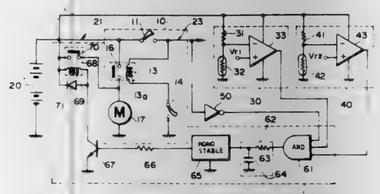
Hiroshi Inoue, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 15, 1982, Ser. No. 398,658

Claims priority, application Japan, Aug. 12, 1981, 56-118701[U]

Int. Cl.³ F01P *7/12*

U.S. Cl. 123—41.12 **6 Claims**



1. Apparatus for cooling an engine compartment of a vehicle, comprising:

(a) first detecting means for sensing the cessation of engine operation to produce a stop signal;

(b) second detecting means for sensing the temperature of engine coolant to produce a coolant signal when the temperature of the coolant is above a predetermined value;

(c) third detecting means for sensing the temperature of outside air to produce an outside-air signal when the temperature of the outside air is above a predetermined value;

(d) means for driving a fan for cooling the engine; and

(e) means responsive to the stop signal, coolant signal and outside-air signal for actuating said driving means for a predetermined time interval.

4,409,934

INLET SUPPLY MANIFOLD FOR COMBUSTION ENGINE WITH 4- TO 6-CYLINDERS IN LINE

Wolfgang Kaindl, Blütenstr. 21, D-8052 Moosburg, Fed. Rep. of Germany

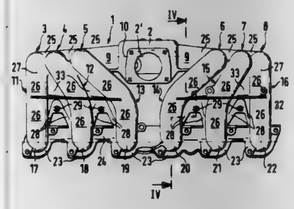
PCT No. PCT/EP80/00080, § 371 Date Apr. 17, 1981, § 102(e) Date Apr. 17, 1981, PCT Pub. No. WO81/00594, PCT Pub. Date Mar. 5, 1981

PCT Filed Aug. 18, 1980, Ser. No. 253,841

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2973331

Int. Cl.³ F02B *75/18*

U.S. Cl. 123—52 M **8 Claims**



1. An intake manifold for 4- to 6-cylinder in-line internal combustion engines, comprising:

a distribution chamber and individual intake pipes of substantially equal length extending therefrom in two groups arranged approximately symmetrically to each other, said intake pipes including initial portions starting from the distribution chamber pairwise and mutually oppositely in an approximately common plane, substantially continuously curved intermediate portions, and mutually parallel end portions extending in a common direction having coupling ends for inlet ducts of an engine, the end portions extending approximately at a right angle to the initial portions and substantially in a plane approximately parallel to the plane of the initial portions, characterized in that

the intermediate portions of all individual intake pipes include first eblows arranged substantially within said common plane which start from the initial portions and pass over substantially within said common plane into directions generally opposite said end portions, following a similar curved course, and in that further elbows of said intermediate portions which adjoin said, first elbows form an approximately U-shaped connection with the end portions.

4,409,935

MECHANICAL VALVE CLEARANCE COMPENSATOR FOR INTERNAL COMBUSTION ENGINES

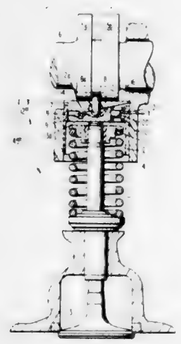
Werner Henn, Tübingen; Reiner Bachschmid, Kernen-Rommelshuasen, and Karl Zeilinger, Berglen-Hösslinswart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,465

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1979, 2943246

Int. Cl.³ F01L *1/22*

U.S. Cl. 123—90.53 **13 Claims**



1. A mechanical valve clearance compensator arrangement for an internal combustion engine, which engine is provided with a camshaft means cooperable with a cup tappet means for effecting operation of engine valves, the arrangement comprising a wedge means supported in the cup tappet means for displacement in a direction at right angles to a travel direction of the cup tappet means, the wedge means including an inclined wedge surface, means for constantly urging the wedge means in a clearance-compensation direction, and means for intermittently acting upon the wedge means for urging the wedge means in a direction opposite the clearance-compensation direction, the means for intermittently acting upon the wedge means includes a radial operating cam fixedly connected to the camshaft means, a pin means longitudinally displaceably guided in the cup tappet means and interposed between the operating cam and the wedge means for transmitting motion of the operating cam to the wedge means, and in that the wedge means includes a sliding surface means for supporting the pin means, the sliding surface means has an inclination which is greater than the inclination of the wedge surface of the wedge means, characterized in that

the wedge means includes a sliding member and a pressure member,

the sliding member includes a circular recess for pivotably mounting the pressure member at a right angle to a central axis of the cup tappet means and in a direction of travel of the sliding member,

the sliding surface means is arranged in the pressure member and the wedge surface of the wedge means is formed by the pressure member.

4,409,936

SPLIT TYPE INTERNAL COMBUSTION ENGINE

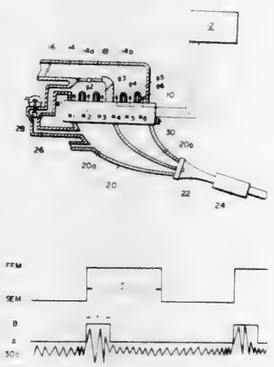
Kichihiko Dozono, Yukosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,033

Claims priority, application Japan, Mar. 7, 1980, 55-28879

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **2 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) sensor means sensitive to engine vibrations for providing a signal indicative of a sensed vibration level; and

(c) control means responsive to engine load conditions for disabling said first cylinder unit at low load conditions, said control means being responsive to the signal from said sensor means for holding said first cylinder unit active, regardless of engine load conditions, when the sensed vibration level exceeds a reference value, said control means being operable to increase the vibration reference value by a predetermined value for a first predetermined time after the sensed vibration level exceeds the reference value and to hold the first cylinder unit active for a second predetermined time after the sensed vibration level exceeds the reference level.

4,409,937

SPARK TIMING CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jun. 13, 1980, Ser. No. 159,439

Claims priority, application Japan, Jan. 1, 1979, 54-140416; Jun. 15, 1979, 54-75425; Jun. 15, 1979, 54-75426

Int. Cl.³ F02P *5/04*

U.S. Cl. 123—425 **18 Claims**

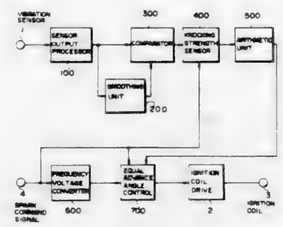
1. A spark timing control device for an internal combustion engine, comprising:

means for providing a knocking determination signal indicative of the occurrence of engine knock at a frequency higher than a predetermined frequency and an amplitude greater than a predetermined amplitude,

producing means connected to receive said knocking determination signal as an input for producing an output which changes at a certain rate by an amount corresponding to a predetermined crank angle in the direction of retarding a spark timing each time said knocking determination signal is inputted thereto indicating the occurrence of knocking at a frequency higher than a predetermined frequency and an amplitude greater than a predetermined amplitude, and which changes at a smaller rate than said certain rate in the direction of advancing the spark timing in the absence of the knocking determination signal;

means for providing a spark command signal;

outputting means connected to receive said spark command signal as an input for outputting a signal which is reset to a



base value each time said spark command signal is inputted thereto and which thereafter changes to a predetermined level at a rate depending upon the rotational speed of the engine;

first comparator means for comparing the outputs of the producing means and the outputting means to output a pulse signal of a duration corresponding to the interval when the output of the producing means is greater than the output of the outputting means; and

retarding means for retarding the spark timing by an amount corresponding to the duration of the pulse signal.

4,409,938

IGNITION SYSTEM FOR A TWO-CYCLE ENGINE

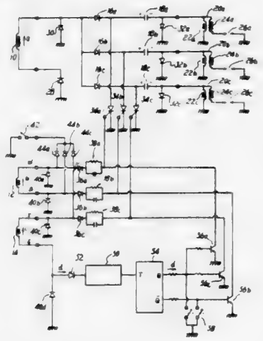
Hiroaki Fujimoto, and Ryozo Ohkita, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 10, 1981, Ser. No. 300,915

Claims priority, application Japan, Sep. 12, 1980, 55-126802

Int. Cl.³ F02P *9/00*

U.S. Cl. 123—335 **2 Claims**



1. In an ignition system for a two-cycle internal combustion engine having a throttle valve and N cylinders (wherein N is a number 3 or greater), including ignition signal generating means for generating in consecutive order N firing pulse signals consisting of odd numbered and even numbered firing pulse signals at evenly spaced time intervals relative to the crankshaft position of the engine, and N switching elements each responsive to a respective one of said N firing pulse signals for igniting a respective one of said N cylinders; the improvement comprising:

a flip-flop that is toggled each complete revolution of said engine so that the Q and $\overline{Q}$ output thereof change each successive engine revolution;

N transistors each connected between one of said switching elements and ground and having the base terminals of the transistors associated with the switching elements triggered by the odd numbered firing pulse signals connected to one of the Q or $\overline{Q}$ output of said flip-flop and the base terminals of the transistors associated with the switching elements triggered by the even numbered firing pulse signals being connected to the other of said Q or $\overline{Q}$ output of said flip-flop, so that each of said transistors is rendered conductive during every second engine revolution for inhibiting every second firing pulse signal from firing its respective switching element and further so that the non-inhibited firing pulse signals remain at evenly spaced time intervals; and

a switch responsive to said throttle valve for enabling said N transistors below a predetermined throttle valve setting.

4,409,939

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

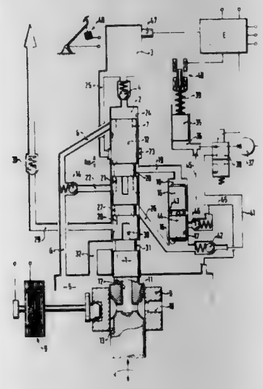
Franz Eheim, Stuttgart; Gerald Höfer, Weissach-Flacht, and Helmut Laufer, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,443

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1980, 3004460

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—357 **29 Claims**



1. In a fuel injection system, having a fuel injection nozzle for internal combustion engines including:

a fuel supply

an intermediate piston having a front face and a rear face, which is actuated back and forth synchronously to the cycles of the fuel injections and which front face in fluidly connectable to an injection line of said fuel nozzle;

a low pressure supply pump which is connected to supply fuel to the injection system;

control means for timely connecting the fuel supply to the front face of said intermediate piston initiating its backmovement;

a high pressure pump having a work chamber which forces fuel into a fuel reservoir, said control means controlling the fuel quantity forced into said fuel reservoir

and further controlling the period of a fluid connection between the fuel reservoir and the rear face of the intermediate piston thereby initiating the forth moving and the injection stroke of the intermediate piston;

a relief conduit fluidly connecting the rear face of the intermediate piston stroke on its backmovement to the low pressure supply pump;

said fuel reservoir receiving fuel from the work chamber when the high pressure pump is in a compression stroke, such that the pressure of the reservoir is related to the difference between the fuel quantity received from the work chamber and the fuel quantity withdrawn to the rear face on the forward movement of the intermediate piston and

a check valve located between the reservoir and the work chamber to fluidly disconnect the reservoir and the work chamber when the high pressure pump is in an intake stroke.

4,409,940

SPEED GOVERNOR FOR INTERNAL COMBUSTION ENGINES

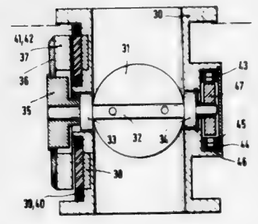
Harry Gaus, Bensheim, Fed. Rep. of Germany, assignor to Fritz Heinzmann GmbH & Co., Albershausen, Fed. Rep. of Germany

Filed Dec. 31, 1980, Ser. No. 221,536

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1979, 2952786

Int. Cl.³ F02D *11/10;* **B60K** *31/00*

U.S. Cl. 123—361 **10 Claims**



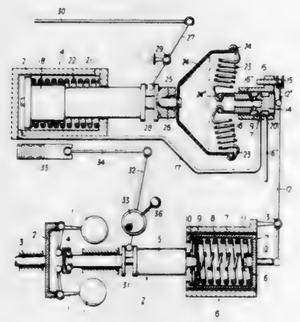
1. In a speed governor, for internal combustion engines, including an automatic control system and a fuel dosage system therewith, the improvement in combination therewith comprising an electromechanical adjustment member that actuates the fuel dosage system and having a stationary part with at least two evenly wound sector-shaped stationary coils, and a movable part with a permanent magnet which is an at least dual-pole, axially magnetized ring having an axis of rotation and rotatably journalled in said stationary part, the magnetic field of said permanent magnet passing through said coils having winding axes located substantially parallel to the axis of rotation of said permanent magnet ring, said permanent magnet being arranged in such a way that a torque of predetermined magnitude and direction is effective thereon when current flows through said coils which are located stationary around the axis of rotation axially opposite said permanent magnet ring and an electrical adjustment control magnitude accordingly is supplied to said coils so that the electromechanical adjustment member converts electrical input magnitude into a mechanical output magnitude, whereby the torque is exactly proportional to the current according to the magnitude and direction thereof, said electromechanical adjustment member being actuated by electrical adjustment magnitude of the automatic control system, whereby an actual value corresponding to the instantaneous speed and a rated value corresponding to rated speed are supplied to the automatic control system and the electrical adjustment magnitude is produced dependent upon difference of these values.

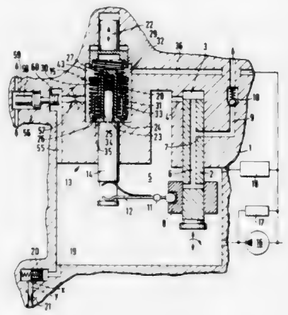
4,409,941

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Max Haubenhofer, 5/1 Wittekweg, 8010 Graz, Austria

PCT No. PCT/AT80/00033, § 371 Date Jun. 12, 1981, § 102(e) Date Jun. 12, 1981
PCT Filed Oct. 16, 1980, Ser. No. 276,343
Claims priority, application Austria, Oct. 16, 1979, 6738/79
Int. Cl.³ F02D *1/04*
U.S. Cl. 123—373 **12 Claims**





1. A control system for a fuel injected internal combustion engine which operates in conjunction with a multiplicity of auxiliary assemblies which are adjustably operable, including a fuel injection pump, said engine causing a control shaft to rotate at a rate dependent on its operating speed, said control system being capable of simultaneously adjusting the operation of said fuel injection pump and other of said multiplicity of auxiliary assemblies, said control system comprising

a mechanical centrifugal governor which is loaded by a spring means and is connected to said control shaft and to said fuel injection pump so as to adjust the operation of said fuel injection pump based on the rate of rotation of said control shaft, said governor including an end support member for said spring means which is capable of moving along an axial center line which extends therethrough, and

a servomotor which is operatively connected to said end support member and to one of said multiplicity of auxiliary assemblies such that, based on the axial positioning of said end support member, it will adjust the operation of said one of said multiplicity of auxiliary assemblies.

4,409,942

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Franz Eheim, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,044
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2909537
Int. Cl.³ F02M *59/32, 7/12*
U.S. Cl. 123—387 **11 Claims**

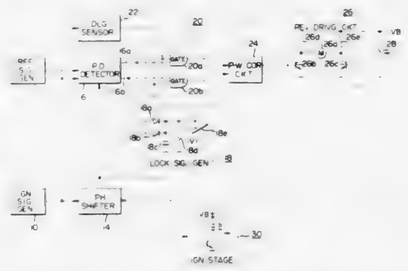
1. A fuel injection pump for an internal combustion engine, said fuel pump including a fuel supply pump which is driven at an rpm synchronous with engine speed to supply operating fuel to a suction chamber in said fuel injection pump, a fuel pump piston which is set into simultaneous reciprocal and rotary motion by a cam drive means, an annular slide fuel quantity control member operable on said fuel pump piston for determining a fuel injection quantity, a hydraulic rpm governor, said hydraulic rpm governor including an adjusting piston, one end of said adjusting piston projecting into a pressure relieved chamber and the other end projecting into said suction chamber in said fuel injection pump, a governor lever supported in said combustion chamber for adjustable operation of said annular slide in an axial direction relative to said fuel pump piston, said governor lever being operable by said hydraulic rpm governor adjusting piston, spring means in said pressure relieved chamber surrounding said adjusting piston which operates counter to fuel pressure in said fuel injection pump on an end of said adjusting piston, a fuel discharge channel connected with said suction chamber and said pressure relieved chamber which relieves pressure in said suction chamber, a valve operable to control fuel flow through said fuel discharge channel to control pressure in said suction chamber, a servomotor for operating said valve in accordance with the operating temperature of said engine, characterized in that said valve is under the influence of said servomotor and arranged to be held open when said engine is cold at which time the pressure in said suction chamber is accordingly lower and the injection quantity is greater, and when the engine is warm and/or hot said valve is held in a closed position, and an adjustable throttle in said fuel discharge channel which normally restricts flow in said fuel discharge channel when said valve is in an open position.

4,409,943

IGNITION TIMING CORRECTING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Satoshi Komurasaki; Atsushi Ueda, and Tsuneo Yamane, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 249,457, Mar. 31, 1981, abandoned. This application Sep. 22, 1982, Ser. No. 421,581
Claims priority, application Japan, Apr. 3, 1980, 55-44407
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—418 **4 Claims**



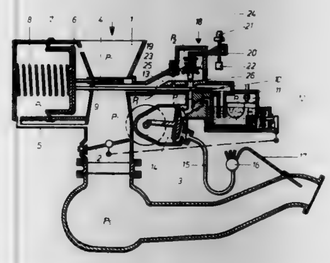
1. An ignition time correcting system for an internal combustion engine comprising: a reference generator means for generating a reference signal at a reference angular position of the rotation of an internal combustion engine; an ignition generator means for generating an ignition signal at an angular position of the rotation of the engine leading that for said reference signal, said ignition signal having a predetermined advance characteristic, a phase shifter means connected to said ignition generator means to control a retardation of said ignition signal in response to a control input applied thereto, an ignition means connected to said phase shifter means to generate an ignition voltage in response to an output from said phase shifter means; a first means for delivering to said phase shifter means a control signal for determining the retardation of said ignition signal due to said phase shifter means; a control means for controlling a signal supplied said first means in accordance with a phase difference between said reference signal and an output from said phase shifter means during a predetermined mode of operation of the internal combustion engine, said control means having a first control gain upon the control effected in a direction to increase the retardation of said ignition signal resulting from said phase shifter means, and a second control gain different from said first control gain upon the control effected in a direction to decrease said retardation of said ignition signal.

4,409,944

FUEL SUPPLY SYSTEM

Karl Schmidt, Dormagen-Gohr, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Aug. 5, 1981, Ser. No. 290,208
Int. Cl.³ F02M *7/00*
U.S. Cl. 123—445 **1 Claim**



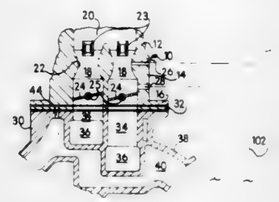
1. A fuel supply system for mixture-compressing combustion engines, having in addition to a main air channel including a throttle valve, a suction pipe connected to and extending downstream from said main air channel with the downstream end thereof arranged for connection to the inlet valves of the engine, a carrier-air channel connected to said main air channel upstream from said throttle valve and branching off from said main air channel, a fuel metering nozzle opening into said carrier-air channel, a pump associated with the fuel metering nozzle, distributor channels extending from the carrier-air channel downstream of the pump to the downstream end of said suction pipe, and a control valve adjustable in dependence upon operating parameters of the engine and arranged before the fuel metering nozzle to control the carrier-air, characterized in that a proportioning valve is provided in the fuel metering nozzle (**11**) and the proportioning valve is adjustable in dependence upon an air quantity measuring valve (**4**) arranged in the main air channel upstream of the throttle valve (**2**), the carrier-air channel (**13**) branches off from the main air channel (**1**) between the air quantity measuring valve (**4**) and the throttle valve (**2**), and the control valve in the carrier-air channel (**13**) is a differential-pressure valve (**18**) having a flow opening (**26**) communicating with the fuel metering nozzle (**11**) and containing a membrane (**24**) dividing the interior of the differential-pressure valve with the side of the membrane away from the flow opening acted upon by an adjustable force means (**19**) and the air pressure in the carrier-air channel (**13**) at the fuel metering nozzle (**11**) and the other side acted upon by the air pressure in the carrier-air channel upstream from the flow opening (**26**) of the differential-pressure valve (**18**).

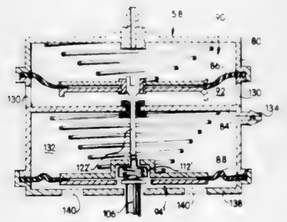
4,409,945

EXHAUST GAS RECIRCULATION SYSTEM

Shane H. Rachedi, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 286,302, Jul. 24, 1981. This application May 9, 1983, Ser. No. 493,120
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **4 Claims**





1. An exhaust gas recirculation (EGR) system for use with an internal combustion engine having intake and exhaust manifolds, a carburetor induction passage having a venturi and a pressure sensing port adjacent the venturi for sensing the vacuum level therein, the system comprising;

an EGR duct connecting the gases from the exhaust manifold to the engine intake manifold, and a one-piece integral assembly of a spring closed sonic flow EGR valve means in the duct normally closing the duct to prevent recirculation of gases and movable to open positions in response to a signal pressure acting thereon, and a fluid pressure actuated servo means connected to the valve means for moving the valve means in response to the signal pressure;

the servo means comprising a housing having a plurality of annular flexible diaphragm means spaced from one another and together partitioning the housing into a plurality of fluid chambers, means connecting a first one of the chambers at all times to the venturi port, means connecting a second diaphragm means to the EGR valve means, and means subjecting the second diaphragm means to the actuating signal pressure for actuating the EGR valve means, a second one of the chambers having an air bleed valve assembly operably associated therewith to bleed the actuating pressure at times, the assembly including an air vent and a spring closed air bleed valve movably associated with the vent to control flow through the same, a part of the assembly being movable with the first diaphragm means to control the bleed of air to control the movement of the EGR valve means as a function of the change in venturi vacuum;

the EGR valve means consisting of an essentially conical pintle mounted for a reciprocating movement into and out of a stationary cooperatively shaped nozzle valve seat to define convergent-divergent flow paths at all open positions of the pintle for the flow of exhaust gases therethrough, the valve means being so designed and constructed to provide sonic flow through the valve means over essentially the entire vacuum operating level of the

engine to thereby establish a constant rate of flow of exhaust gases through the valve means at each open position of the valve means, the rates of flow through the valve means thereby varying solely as a function of the area opening of the valve means as determined by the position of the pintle in response to the change in venturi vacuum level controlling the signal pressure acting on the servo means and being independent of the pressure level variations adjacent the valve means;

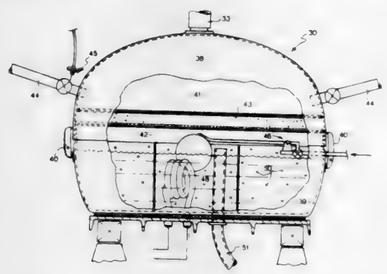
the servo means including means connecting the second one of the chambers to a source of vacuum, one side of the second diaphragm means defining a wall of the second chamber, means subjecting the other side of the second diaphragm means to atmospheric air pressure that constitutes the signal pressure for actuating the servo means and thereby the EGR valve means, the second diaphragm means having a vent associated therewith interconnecting the atmospheric air signal pressure to the second vacuum chamber, a spring closed bleed valve mounted on the second diaphragm means for a movement into and out of the vent to regulate the bleed of vacuum to thereby control the movement of the EGR valve means, and plunger means secured to the first diaphragm means for movement in response to changes in venturi vacuum towards and away from the vent to at times engage the bleed valve to control the bleed of air and thereby the movement of the EGR valve means.

4,409,946

INTERNAL COMBUSTION ENGINES

Geoffrey P. Sandford, Artarmon, and Paull A. Alekna, East Lakes, both of Australia, assignors to Vaporpak Pty. Limited, Artarmon, Australia

Filed Jan. 23, 1981, Ser. No. 227,855
Claims priority, application Australia, Jan. 25, 1980, PE2147
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **13 Claims**



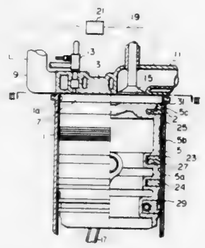
1. An inductive fuel supply for an internal combustion engine, said assembly comprising a closed vessel adapted to receive liquid fuel to cause vaporization thereof, a mixing nozzle assembly adapted to receive and mix fuel and air, a first duct extending between said vessel and nozzle so as to provide for the passage of fuel from said vessel to said nozzle, second duct means extending to said nozzle so as to deliver air thereto, said vessel having a shell enclosing a chamber to receive said fuel, a filter extending across the interior of said chamber so as to divide said chamber into an upper and a lower portion, said filter being adapted to inhibit the flow of other than fuel vapor from said lower chamber portion to said upper chamber portion, baffle means located in said lower chamber portion adapted to inhibit movement of said fuel therein, heating elements located in said lower chamber portion adapted to heat said fuel to cause vaporization thereof, fuel supply means to deliver the fuel to said lower chamber portion and air delivery means adapted to deliver air to the interior of said vessel at a location above the liquid fuel level therein.

4,409,947

EXHAUST GAS RECIRCULATING TYPE DIESEL ENGINE

Hiromichi Yanagihara, and Noriyuki Tokoro, both of Gotenba, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 6, 1981, Ser. No. 232,175
Claims priority, application Japan, Sep. 4, 1980, 55-121703; Sep. 4, 1980, 55-125010[U]; Sep. 5, 1980, 55-125530[U]
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—569 **8 Claims**



1. An exhaust gas recirculating type diesel engine having a cylinder with a cylinder liner, a cylinder head closing the top of the cylinder, a piston movable in the cylinder and comprising a circumferential surface and a top, the top defining with a cylinder liner and cylinder head a combustion chamber, a piston ring recess in the circumferential surface of the piston and a piston ring therein, an intake system for providing air to the combustion chamber, an exhaust system for leading exhaust material from the combustion chamber, and recirculation means to return a part of the exhaust material from the exhaust system to the intake system, wherein the improvement comprises:

an annular groove formed in the circumferential surface of the piston between said top and said piston ring recess and facing the cylinder liner; and

a substantially annular ring engaged in the annular groove and comprising a radial portion extending generally radially inwardly into said groove, and a circumferential portion extending from the outer region of the radial portion longitudinally along the cylinder liner, said substantially annular ring serving as means to impede small particle material generated within the combustion chamber from moving to the region of the piston ring.

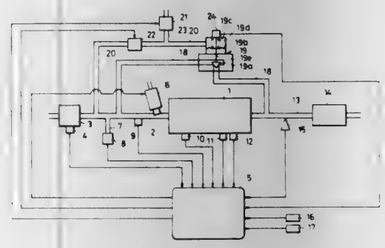
4,409,948

EXHAUST GAS RECIRCULATION CONTROL SYSTEM HAVING A FUNCTION OF AUTOMATICALLY CORRECTING DETECTED ZERO OPENING VALUE OF EXHAUST GAS RECIRCULATION VALVE

Shumpei Hasegawa, Niiza; Akihiro Yamato, Sayama, and Yutaka Otobe, Shiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,056
Claims priority, application Japan, May 8, 1981, 56-69091
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—571 **6 Claims**

1. An exhaust gas recirculation system for combination with an internal combustion engine having an intake pipe and an exhaust pipe, said system comprising: an exhaust gas recirculation passageway connecting said exhaust pipe of said engine to said intake pipe thereof; an exhaust gas recirculation valve having a controllable valve opening and arranged across said exhaust gas recirculation passageway for opening and closing same; means for detecting a particular opening condition of said engine where recirculation of exhaust gases should be effected from said exhaust pipe to said intake pipe through said exhaust gas recirculation passageway; first memory means storing a plurality of different required valve opening values of said exhaust gas recirculation valve, which are functions of operating condition of said engine; sensor means for detecting an actual value of the valve opening of said exhaust gas recirculation valve; means for determining the difference between a valve opening value detected by said sensor means and a required valve opening value read from said first memory means; control means for controlling the valve opening of said exhaust gas recirculation valve so as to minimize said difference obtained by said difference determining means; means for determining whether or not a required valve opening value read from said first memory means corresponds to full closing of said exhaust gas recirculation valve; timer means adapted to



generate a signal when said full closing command determining means continuously generates a signal indicative of a required valve opening value read from said first memory means corresponding to full closing of said exhaust gas recirculation valve, for a predetermined period of time; second memory means adapted to store as a reference value a valve opening value which is detected by said sensor means when said second memory means is supplied with said signal generated by said timer means; and means for correcting one of a valve opening value subsequently detected by said sensor means and a required valve opening value subsequently read from said first memory means, by said value stored in said second memory means.

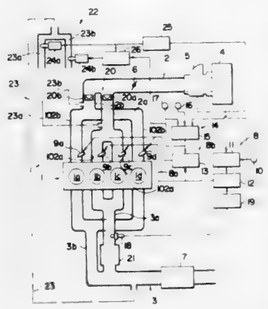
4,409,949

EXHAUST GAS RECIRCULATION CONTROL MEANS FOR MULTIPLE CYLINDER ENGINE HAVING MEANS FOR CONTROLLING AIR-FUEL RATIO IN ACCORDANCE WITH A SIGNAL FROM AN EXHAUST GAS SENSOR

Hideki Tanaka; Yoshitaka Tabara, and Masaaki Taniguchi, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Mar. 11, 1982, Ser. No. 357,153
Claims priority, application Japan, Mar. 11, 1981, 56/35635
Int. Cl.³ F02M *25/06*; F01N *3/15*; F02B *3/00*
U.S. Cl. 123—571 **9 Claims**

1. A multiple cylinder interval combustion engine including first group of cylinder means, second group of cylinder means, an intake system comprising, first intake passage means leading to said first group of cylinder means and second intake passage means leading to said second group of cylinder means, first fuel supply means for providing a supply of fuel to said first intake passage means, second fuel supply means for providing a supply of fuel to said second intake passage means, exhaust passage means leading from said first group of cylinder means for passage exhaust gas therefrom, exhaust gas sensing means disposed in said exhaust passage means for providing an output signal in accordance with a concentration of a constituent in the exhaust gas, first air-fuel ratio control means for controlling the first fuel supply means in accordance with the output of the exhaust gas sensing means so as to provide a first intake mixture of a first predetermined air-fuel ratio, second air-fuel ratio control means for controlling the second fuel supply means in accordance with the first predetermined air-fuel ratio to provide a second intake mixture of a second air-fuel ratio which has a predetermined relationship with respect to the first air-fuel ratio, first exhaust gas recirculation passage means connecting said exhaust passage means with said first intake passage means, second exhaust gas recirculation passage means



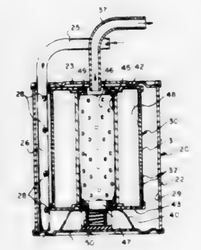
connecting the exhaust passage means with said second intake passage means, first recirculation control means for controlling a gas flow in said first exhaust gas recirculation passage means, second recirculation control means for controlling a gas flow in said second exhaust gas recirculation passage means.

4,409,950

FUEL SAVER AND POLLUTION CONTROL DEVICE

Nathan Goldberg, A-217 Oak Summit Apartments, 310 S. Easton Rd., Glenside, Pa. 19038

Filed May 7, 1981, Ser. No. 261,606
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—573 **20 Claims**



1. In a vehicle having an internal combustion engine having an air intake means comprising a carburetor and an intake manifold, a crank case, a combustion chamber with associated valve means, a positive crank case valve ventilation means, vapor conduit connection between the positive crank case ventilation valve means and the air intake means the improvement comprising:

a housing connected in the conduit between the crank case ventilation valve means and the air intake means,

an inlet flow means in the housing connected through the conduit of the crank case ventilation valve means, with flow disbursing means inside the housing dividing and directing vapor flow in a direction parallel to oblique to the interior surface of the housing,

a filter means located in the central portion of the housing having an entrance face and an exit face capable of removing particulate impurities and high molecular weight by-products passing through the conduit but passing essentially all vapors to the exit face,

a sealing means to seal a flow cavity from the exit face of the filter means against the interior surface of the housing to

allow flow communication from the exit face to an outlet means in the housing communicating with the conduit to the air intake means,

a spring means creating a bias pressure against the filter means and against the sealing means.

a safety by-pass means comprising a passage to allow vapors to pass directly from the inlet means to outlet means without passing through the filter means and a closure of the passage capable of opening only upon pressure build-up in the housing, and

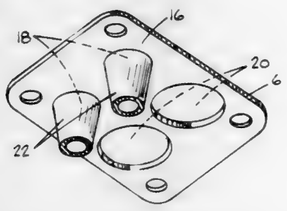
a condensation means positioned in the housing, capable of collecting and holding water condensate separate from any accumulated solid particulate, solid deposits, or heavy oily liquid condensate collected within the housing.

4,409,951

DEVICE TO IMPROVE THE FUEL EFFICIENCY OF AN INTERNAL COMBUSTION ENGINE

Edward T. Whitworth, R.R. #3, Port Rowan, Ontario, Canada

Filed Jun. 5, 1980, Ser. No. 156,742
Int. Cl.³ F02M *29/00*
U.S. Cl. 123—590 **6 Claims**



1. For use with a four barrel carburetor and a manifold body of an internal combustion engine having cylinders, a device to improve the fuel efficiency of said engine, said device being located between the carburetor and manifold body, said device comprising a supporting plate having an opening aligned with and substantially corresponding in size to each barrel of said carburetor with a truncated cone surrounding and tapering away from the two openings that are adjacent to the two smaller barrels, said device being positioned so that a fuel-air mixture formed in said carburetor will enter said device through a large end of said cone first, the size of the opening at a small end of said cone when compared to the size of the opening at the large end constituting an extreme restriction of the flow area.

4,409,952

ENGINE TIMED IGNITION SYSTEM WITH IMPROVEMENT

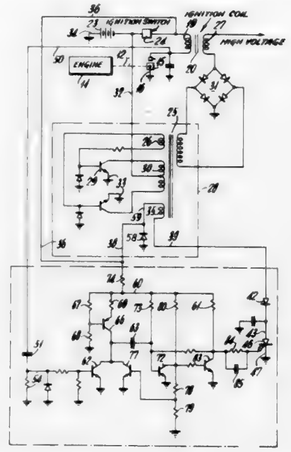
Robert E. Canup, Poughkeepsie, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 8, 1981, Ser. No. 299,691
Int. Cl.³ F02P *3/00*
U.S. Cl. 123—620 **6 Claims**

1. In combination with an engine timed ignition system having a short duration high voltage inductive discharge spark initiating signal and including means for adding a DC spark sustaining signal therewith, the improvement comprising:

means for starting said spark sustaining signal simultaneously with said initiating signal, and

means for positively stopping said spark sustaining signal a predetermined time interval after said simultaneous start,



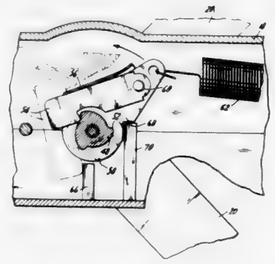
said predetermined time interval being inversely proportional with the speed of said engine.

4,409,953

SPRING TYPE BALL PITCHING MACHINE

Melvin R. Kennedy, Hampton Bays, N.Y., and Dietmar Nagel, Chester, N.J., assignors to Nagel, Kennedy, Arad & Associates, New York, N.Y.

Filed Feb. 26, 1981, Ser. No. 238,591
Int. Cl.³ A41B *7/00*
U.S. Cl. 124—7 **8 Claims**



1. A ball pitching machine comprising:

a frame;

a drive housing fixedly mounted on said frame;

reciprocating drive means projecting from said drive housing;

a ball pitching arm mounted to said drive means exterior of said housing and movable between a first released position and a second cocked position.

said reciprocating drive means including means wholly within said drive housing for reciprocating said ball pitching arm comprising a rotating drive wheel, an eccentric arm mounted to said ball pitching arm, a pawl pivotably mounted to said eccentric arm engagable with said drive wheel, a release wall mounted in said housing in operative relationship to said pawl, an extension spring connecting said drive housing to said eccentric whereby rotation of said drive wheel moves said pawl and said eccentric from a first released position to a second cocked position wherein the distance between said eccentric and said drive

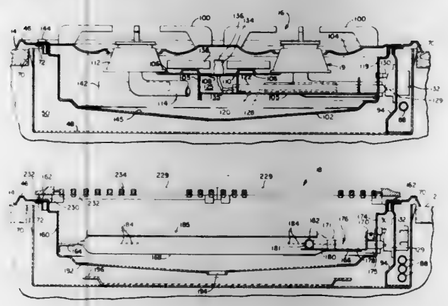
housing is increased so that said extension spring is extended and upon engagement of said pawl with said release wall, said pawl disengages from said drive wheel and said extended extension spring rapidly rotates said eccentric arm and said ball pitching arm mounted to said eccentric arm from said second cocked position to said first released position.

4,409,954

MODULAR GAS CARTRIDGE

Lee J. Berlik, Cleveland, and S. Thomas Barnes, Chatanooga, both of Tenn., assignors to Raytheon Company, Lexington, Mass.

Filed May 4, 1981, Ser. No. 259,798
Int. Cl.³ F24C *3/00*
U.S. Cl. 126—39 M **17 Claims**



1. A modular gas operated heating cartridge adapted for inserting in a surface gas range compartment having an orifice hood and electrical connector rigidly secured therein, comprising:

a pan;

means for removably supporting said pan in alignment with said compartment;

a gas burner rigidly secured to said pan, the mixer head of said burner communicating outside said pan for alignment with said orifice hood; and

an igniter rigidly secured to said pan, said igniter having a rigid electrical terminal communicating outside said pan through an aperture in a wall of said pan, said terminal inserting into and making electrical contact with said connector when said cartridge is inserted in said compartment, said terminal being slidably disengageable from said connector for removing said cartridge from said compartment.

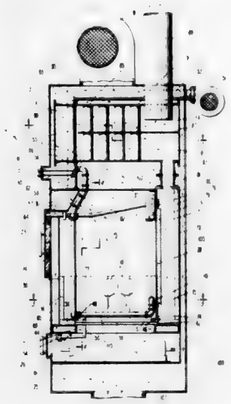
4,409,955

SOLID FUEL WARM AIR FURNACE

J. Vernon Christian, 2160 Longreen Rd., Kingsport, Tenn. 37660

Filed Jun. 4, 1981, Ser. No. 270,550
Int. Cl.³ F24H *3/00*
U.S. Cl. 126—103 **19 Claims**

1. A furnace comprising a housing, means defining a firebox in said housing, an open grate in said firebox adapted to support solid fuel thereon, combustion air inlet means in said housing and adapted to deliver air to said firebox beneath said grate for heating and passing said combustion air upwardly through said grate and said fuel thereon and mixing said combustion air with combustible gases released from said fuel, said air inlet means also adapted to deliver air to said firebox in a direction upwardly toward said grate, an insulated burn-out chamber having an inlet located at the rear of said firebox adjacent said grate and adapted to draw the mixture of heated air and combustible gas therethrough, an outlet for said burn-out chamber, means at the burn-out chamber inlet for igniting and retention of said mixture of air and combustible gas, and



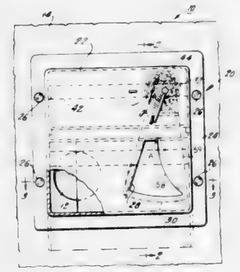
heat exchanger means communicated with said burn-out chamber outlet.

4,409,956

THERMOSTAT FOR STOVES

Stockton G. Barnett, R.D. 3, Salmon River Rd., Plattsburgh, N.Y. 12901

Continuation-in-part of Ser. No. 60,629, Jul. 25, 1979, abandoned. This application Sep. 2, 1980, Ser. No. 183,259
Int. Cl.³ F23L *13/02*
U.S. Cl. 126—290 **32 Claims**



1. A thermostat for a stove, comprising:

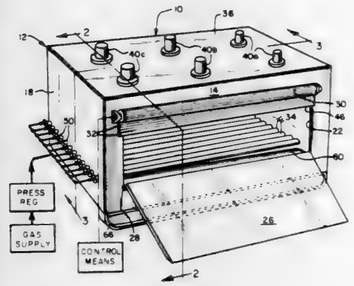
a housing having a thermostat aperture formed in a surface thereof;

flap means movably secured to said housing and being movable in a manner which adjusts the effective size of said thermostat aperture between a fully open and a fully closed position; and

thermal control unit means contained in said housing for detecting changes in the temperature of a stove to which said thermostat is attached and for moving said flap means as a function of said change in temperature; said flap means, said thermostat aperture and said thermal control unit means cooperating to cause the flow rate of air through said thermostat for a constant pressure differential across said thermostat to change by an amount approximately proportional to the square of said change in the temperature of said stove over a range of thermostat openings extending from at least said fully closed position to at least a partially open position, said flow rate being increased responsive to a fall in the stove temperature and

being decreased responsive to a rise in the stove temperature.

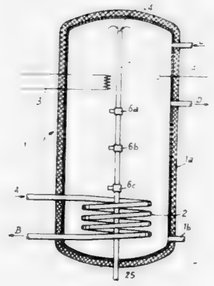
4,409,957
SNOW MELTER
Clifton C. Muhammad, Chicago, Ill., assignor to Carter Bros. Iron Works, Inc., Chicago, Ill.
Filed Oct. 2, 1979, Ser. No. 81,174
Int. Cl.³ E01H *5/10*; E01C *19/45*
U.S. Cl. 126—343.5 R **17 Claims**



1. An apparatus for melting snow comprising:
a closed heating chamber having an upper portion and a lower portion;
opening means for opening said chamber to permit the loading of snow therein;
spaced heat exchange ducts positioned in said lower portion of said heating chamber and having inlet ends connected to burning means situated at one side of said heating chamber, said heat exchange ducts being heated by hot gas flowing therethrough from said burning means;
transmission means coupled to the exit ends of said ducts for directing said hot gas upwardly and across the upper portion of said heating chamber;
blower means associated with said transmission means for blowing at least some of said hot gas from said transmission means at the upper portion of said chamber downwardly into said chamber;
exhaust means coupled to the exit end of said transmission means for exhausting the remaining hot gas from said transmission means;
vent means for venting gas from said chamber; and
drain means positioned below said heating chamber for draining water from said apparatus.

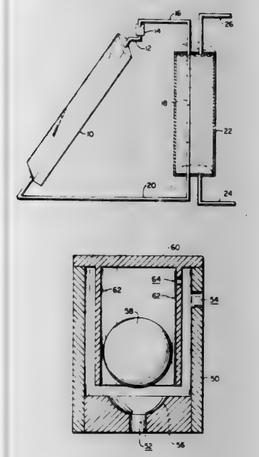
4,409,958
WATER HEATING METHOD AND APPARATUS
Jean-Pierre R. Fillios, 49, rue Péreire, 78100 Saint Germain-en-Laye, Paris, France
Filed Aug. 3, 1981, Ser. No. 289,376
Claims priority, application France, Aug. 8, 1980, 80 17623
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—362 **3 Claims**

1. Apparatus for removing water having a pedetermined temperature from a generally vertical water heater tank containing a quantity of water having a variable non-uniform temperature, comprising
(a) an outlet pipe (**5**) centrally arranged within the tank and having a generally vertical axis, the upper end of said pipe being arranged adjacent the top of the tank and containing an opening (**24**) and the lower end of said pipe extending through the bottom of the tank and containing an outlet opening (**25**), said pipe containing a plurality of vertically spaced lateral openings (**5***a*); and
(b) a plurality of temperature-controlled valve means (**6**) arranged within said plurality of lateral openings, respectively, for delivering water to said pipe when the water adjacent said valve means reaches the predetermined temperature, each of said valve means including
(1) a collar member (**11**) connected with said pipe and surrounding one of said lateral openings, said collar member containing an opening (**23**) aligned with said lateral pipe opening;
(2) a control rod (**14**) having an axis normal to said pipe axis and extending through said collar member and lateral pipe openings;
(3) a disk-shaped plate member (**18**) connected with said control rod, said plate member being operable to close said collar member opening;
(4) a hollow cylindrical member (**20**) having a closed end connected with the end of said control rod extending through said lateral pipe opening into said pipe, the lower wall portion of said cylindrical member containing a slot (**21**); and
(5) temperature-responsive means for reciprocating said control rod between normally closed, partially open, and fully open positions, respectively, whereby when the temperature of the water adjacent a lateral pipe opening is below the predetermined temperature, said control rod is in its closed position wherein said plate



member closes said collar member opening to prevent the flow of water into said pipe through said lateral pipe opening wherein said cylindrical member extends partially into said pipe, thereby to afford passage of water downwardly through said pipe around said cylindrical member, and when the temperature of the water adjacent said lateral pipe opening reaches the predetermined temperature, said control rod is initially displaced to its partially open position wherein said plate member is partially spaced from said collar member opening to allow water to flow into said pipe through said lateral pipe opening and said slot and said cylindrical member extends further into said pipe to afford passage of water downwardly through said pipe around said cylindrical member, and when the temperature of the water adjacent said lateral pipe opening exceeds the predetermined temperature, said control rod is further displaced to its fully open position wherein said plate member is further spaced from said collar opening to allow water to flow into said pipe through said lateral pipe opening and said slot and said cylindrical member extends completely into said pipe to prevent passage of water downwardly through said pipe beyond said cylindrical member.

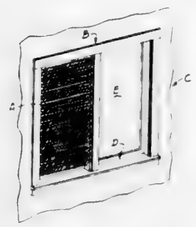
4,409,959
SOLAR ENERGY WATER PREHEAT SYSTEM
Harry W. Sigworth, Jr., Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Apr. 30, 1981, Ser. No. 259,294
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **4 Claims**



1. A solar energy system for heating fluids, which comprises:
an absorber inclined to the horizontal, having flow passages therethrough for the thermosiphoning circulation of heat transport liquid;
a conduit loop for the removal of hot transport liquid from the top of the absorber and the return of cool transport liquid to the bottom of the absorber;
a valve disposed in said conduit loop having a housing with a lower inlet port for the introduction of transport liquid passing to the valve from said absorber and an upper outlet port for the transport liquid effluent passing through said valve; a valve seat interposed in said housing between said ports; a valve member movably disposed in said housing above the valve seat, which has a density greater than the heat transport liquid at or below a specified normal operating temperature, and a density less than the heat transport liquid above the specified normal operating temperature, which valve member will sealingly engage the valve seat to prevent the downward flow of heat transport liquid if the operating temperature is at or below the specified normal operating temperature, but which will disengage from the valve seat to permit the upward flow of fluid, and which will also disengage from the valve seat to permit the downward flow of fluid if the operating temperature is above the specified normal operating temperature; and
means for exchanging thermal energy from the hot transport liquid in the conduit loop, between said valve and the return inlet of the conduit to the absorber, to a cooler fluid.

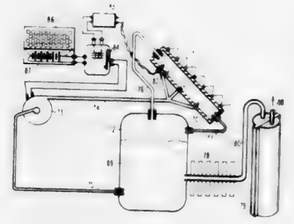
4,409,960
LOUVER SOLAR PANEL
Eric Balzer, 32594 Walker Rd., Avon Lake, Ohio 44012
Filed Jun. 26, 1981, Ser. No. 277,960
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—428 **3 Claims**

1. A solar heating assembly mounted interiorly of a building, comprising:
(a) at least two vertical support members fixedly positioned inside a window opening;
(b) said vertical support members each having an inner edge disposed adjacent a window in said window opening, an outer edge spaced away from said window, and a web connecting said inner and outer edges;
(c) said members having vertically spaced, parallel louver receiving slots in said webs extending downwardly from said outer edges toward said inner edges, said slots opening at said outer edges and terminating short of said inner edges, and the slots of one member being in substantially parallel alignment with the slots of the other member;



(d) a plurality of louvers extending between and removably inserted in associated slots of said vertical support members, said louvers being slidably supported in said slots, the weight of said louvers maintaining their positions in said slots; and,
(e) said louvers having their upper surfaces treated with a substantially black heat absorbing material and being corrugated transversely of their lengths to form a series of adjacent flat sections, the included angle between adjacent flat sections being substantially 90°.

4,409,961
SOLAR WATER PUMP
Louis R. O'Hare, 1700 Banyan #3, Fort Collins, Colo. 80526
Filed Mar. 23, 1981, Ser. No. 246,708
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—433 **11 Claims**



1. A steam driven water pump comprising:
an alternating steam pressurization and vacuum production means in the form of two chambers and multiple ducting placing the chambers in fluid flow communication, one chamber being a displacement chamber capable of containing water and sustaining steam pressure and the other chamber being a heating chamber capable of transmitting heat energy to water periodically delivered to it and of sustaining steam pressure from the steam converted from the heated water, and said chambers being in fluid flow communication with each other by means of multiple ducting and valving, one duct being capable of providing steam pressure fluid flow communication between the top portions of each chamber and another duct being capable of providing periodic water flow communication through a valve from said water displacement chamber to said heating chamber to thereby provide periodic water contact with the heating chamber and consequent water conversion to steam pressurization of the chambers and,

steam generator chamber heating means in the form of a thermal energy source in heat flow communication with the heating chamber and, water receiving and water impelling means by which the water in the displacement chamber can be driven from that chamber during periods of steam pressurization, and by which water can be recieved into that chamber during alternate periods of vacuum production in which periods water flow to the heating chamber is prevented, said water receiving and water impelling means being in the form of additional ducting placing the displacement chamber in fluidflow communication with a water source and reservoir and,

internal water circulation means by which water is moved from the water displacement chamber to the heating chamber and,

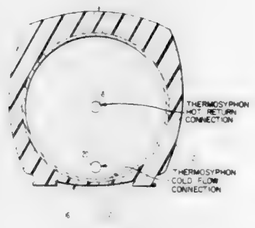
internal water circulation control means in the form of a valve capable of repeatedly, alternately providing and then preventing water fluid flow communication from the displacement chamber to the heating chamber.

4,409,962

WATER STORAGE TANK

Harry J. Riley, Wembley, Australia, assignor to S.W. Hart & Co. Pty. Ltd., Welshpool, Australia

Continuation of Ser. No. 98,416, Nov. 28, 1979, abandoned. This application Jul. 15, 1981, Ser. No. 283,698
Claims priority, application Japan, Sep. 5, 1979, 54-114022
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—437 **3 Claims**



1. In a thermosyphon solar water heater comprising a horizontally disposed cylindrical water storage tank which tank is entirely surrounded by a combined insulating and heat sink layer of foamed plastic material, said cylindrical tank having water outlet means in an upper region thereof and water inlet means in a lower region thereof, the improvement comprising the distribution of said plastic materials such that the part of said layer surrounding the upper region of said tank is thicker than the part of said layer surrounding the lower region of said tank, thereby preventing excessive heat loss from the upper region of said tank normally containing hot water, while permitting heat to be lost from said lower region of said tank under stagnation conditions, said layer having a topmost thickness in the range from 40 to 80 mm and a lowermost thickness in the range from 5 to 15 mm.

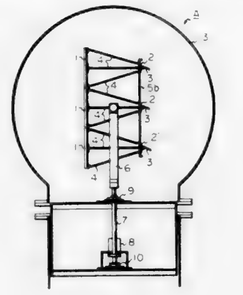
4,409,963

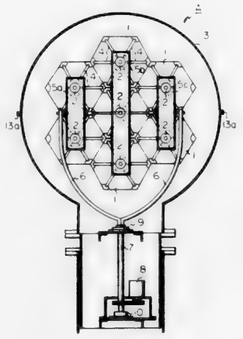
SOLAR OPTICAL ENERGY COLLECTOR

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,537
Claims priority, application Japan, Jun. 27, 1980, 55-087277; Jun. 27, 1980, 55-087279
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—440 **4 Claims**

4. A solar optical energy collector comprising a lens system for concentrating sun beams and a sun beam receiving system for introducing said sun beams into an optical-conductor cable, said lens system having a plurality (N) of Fresnel lenses (**1**, **1** . . .) each formed in the shape of a hexagon, with $N=3n(n+1)$ Fresnel lenses (**1**, **1** . . .) disposed around one Fresnel lens (**1**) so that each side of said one Fresnel lens (**1**) positioned in the center of said lens system adjoins one side of each of the respective surrounding Fresnel lenses (**1**, **1** . . .), in a concentric-circular relationship, wherein (n) stands for a natural number; said sun beam receiving system having a plurality of sun beam focusing members (**2**, **2** . . .) spaced from and rearward of said lens system, each of said sun beam focusing members (**2**) respectively corresponds to one of said Fresnel lenses (**1**), with





said lens system and said receiving system being integrated with each other; a transparent spherical capsule (**13**) formed of a plastic material divided along a horizontal plane (**13***a*,**13***b*) passing substantially through the center thereof, said lens system together with said receiving system being hermetically sealed in said spherical capsule (**13**) and turnably mounted around a vertical axis and a horizontal axis (**7** and **11**), said axes perpendicularly intersecting each other at the centroid of said integrated lens system and receiving system, with said centroid positioned substantially at the center of said spherical capsule.

4,409,964

SOLAR HEAT COLLECTOR ASSEMBLY

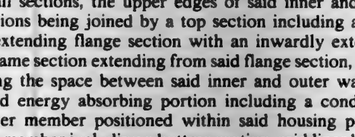
Mitsuhiro Shimada, and Atsuyuki Katto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1980, Ser. No. 212,621
Claims priority, application Japan, Dec. 22, 1979, 54-184258[U]
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—443 **9 Claims**

1. A solar heat collector assembly comprising:

a cylindrical transparent tube having an open end portion hermetically sealed by the use of a lid sealant and being held in a vacuum state; and

a heat-collecting pipe secured in said transparent tube with its end portion extending outside said transparent tube through said sealant,



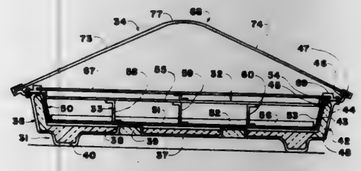
wherein said sealant is made of a thermally-nonconducting and anticorrosion material with a softening point higher than that of said transparent tube.

4,409,965

SOLAR ENERGY CONVERSION APPARATUS

Stanley G. Nash, Great Falls, Mont., assignor to Sun Wise, Inc., Great Falls, Mont.

Continuation-in-part of Ser. No. 329,297, Dec. 10, 1981, Pat. No. 4,366,808, which is a continuation-in-part of Ser. No. 80,694, Oct. 1, 1979, abandoned. This application Jan. 3, 1983, Ser. No. 455,405
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **19 Claims**



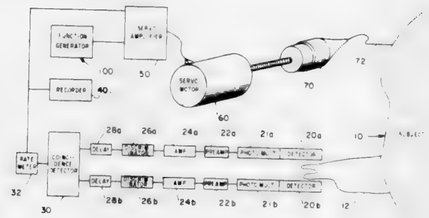
1. Solar energy conversion apparatus including a housing portion, an energy absorbing portion, a fluid directing portion and a cover portion; said housing portion including a molded plastic pan member, said pan member including a base section, said base section including upwardly extending spacer sections, said spacer sections being spaced from one another, insulation covering the exposed surface of said base section, said base section including downwardly extending support sections, said pan member including outwardly inclined sidewall sections, said sidewall sections including spaced inner and outer wall sections, the upper edges of said inner and outer wall sections being joined by a top section including an outwardly extending flange section with an inwardly extending slotted frame section extending from said flange section, insulation filling the space between said inner and outer wall sections; said energy absorbing portion including a conductive metal liner member positioned within said housing portion, said liner member including a bottom section, said liner bottom section resting on the upper surfaces of said housing spacer sections, the edges of said bottom section terminating adjacent said housing sidewall sections, said liner member also including sidewall sections extending from the edges of said liner bottom section upwardly to a point closely adjacent to the top section of said housing sidewall sections, a conductive metal separator section extending between said liner sidewall sections adjacent the upper ends thereof and enclosing said liner member; said fluid directing portion including a plurality of spaced baffle members, said baffle members being disposed longitudinally of said pan member and substantially parallel to one another, said baffle members being arranged in a staggered relationship with alternating baffles each having one end adjacent to a common end of said liner member and the other end of each alternate baffle being spaced from the opposite end of said liner member to provide a tortuous fluid path through said apparatus, an inlet opening adjacent one end of said tortuous path and an outlet opening adjacent the opposite end of said tortuous path, said baffle members extending upwardly from said liner bottom section to said separator section; said cover portion including transparent impact resistant flat and dome members, said flat member extending between said top section of said pan member, the edges of said flat member being secured to said top section around substantially the entire edge thereof, said dome member being disposed over said flat member and extending beyond the edges of said flat member, the edges of said dome member being engageable with said inwardly extending slots of said flange section of said pan sidewall sections, said dome member including substantially flat sections extending upwardly from the longitudinal edges of the pan member toward one another and a convex central section joining said upwardly extending flat sections extending longitudinally of said apparatus.

4,409,966

METHOD AND APPARATUS FOR INJECTING A SUBSTANCE INTO THE BLOODSTREAM OF A SUBJECT

Richard M. Lambrecht, Quogue; Gerald W. Bennett, East Moriches, both of N.Y.; Charles C. Duncan, New Haven, Conn., and Louis W. Ducote, Shoreham, N.Y., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed May 29, 1981, Ser. No. 268,423
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—1.1 **8 Claims**



1. A method for injecting a radiopharmaceutical into the blood stream of a subject, so that a concentration of said radiopharmaceutical in the blood stream of said subject increases linearly over a period of time making said concentration follow a predetermined function of time, comprising the steps of:

(a) injecting said radiopharmaceutical into the blood stream of said subject;

(b) measuring for the concentration of said radiopharmaceutical in the blood stream of said subject; and

(c) controlling the rate of said injection in response to said measurement so as to cause the concentration of said radiopharmaceutical in the blood stream of said subject increases linearly over a period of time making said concentration follow a predetermined function of the time elapsed since the beginning of the injection.

4,409,967

MANUAL MASSAGE INSTRUMENT

Jean-Louis H. Gueret, Paris, France, assignor to L'Oreal, Paris, France

Filed Oct. 6, 1980, Ser. No. 194,492
Claims priority, application France, Oct. 23, 1979, 79 26255
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—62 R **10 Claims**

1. A massage instrument for the skin, comprising:

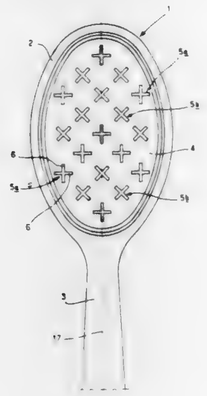
(a) at least one active face (a); there being provided on each said active face (a)

(b) an array of a plurality of groups of projecting spikes (b) each of which is made of an elastically-deformable, flexible material; with each of said spikes (b) being made up of

(c) at least two intersecting plates displaced so as to upright-ly-extend from each of said active faces (a) on which said

spike groups (b) are provided, with said intersecting plates having a relative angular orientation one between another so that, when viewed in plan perspective, they provide X-like projections, with

each of said respective spike groups (b) provided on each said active face (a) being disposed relative to one another in relative spaced alignment and in a randomly alternating aligned arrangement one relative to the next, with



alternate spikes in each of said respective spike groups (b) having differing orientation angulations in their given intersecting plates (c), so that

the spikes of each same sort of group in said spike groups array (b) are disposed in said randomly alternating arrangement on each active face (a) on which they are provided with the spikes of each of another of the same group.

4,409,968

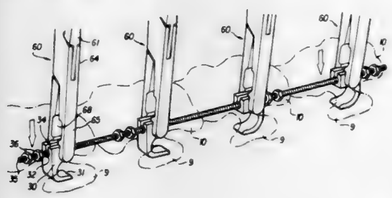
METHOD AND APPARATUS FOR ENGAGING A HOOK ASSEMBLY TO A SPINAL COLUMN

Denis S. Drummond, 1214 Wellesley St., Madison, Wis. 53703

Division of Ser. No. 118,315, Feb. 4, 1980, abandoned. This application Apr. 17, 1981, Ser. No. 255,249

Int. Cl.³ A61F *5/00*

U.S. Cl. 128—69 **8 Claims**



1. A method for installing a hook and rod assembly which comprises grasping slotted hooks with hook holders each said hook holder having jaws and a windowed opening immediately behind the jaws, said windowed opening being sufficiently large such as to allow passage therethrough of a rod and spaced locking means when said hook holders are holding said hooks in alignment on a spinal column, said jaws firmly holding said hooks, placing the hooks at desired positions and holding each hook in place with said hook holders, placing locking means on the rod for locking the hooks to the rod and spacing the locking means to align them approximately with corresponding hooks to which they are to be attached, passing the rod with the spaced locking means through the windowed opening in each of the hook holders, while controlling and maintaining the position of the slotted hooks with the respective hook holders, aligning the locking means with the respective slotted hooks, pressing said rod into the slots of said hooks, connecting the locking means to the hooks to secure the rod to the hooks and to firmly hold the rod within the hooks.

4,409,969

DEVICE FOR TREATING FAULTY POSITIONS AND POSTURES OF THE HUMAN TORSO

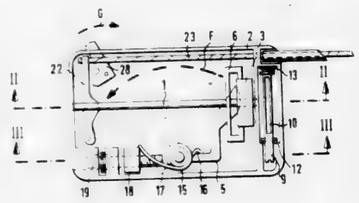
Peter Will, Wienerstrasse 78, 6100 Darmstadt, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,773

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932881

Int. Cl.³ A61F *5/02*

U.S. Cl. 128—78 **8 Claims**



1. A device for treating faulty positions of the torso of a person, comprising: in a housing at least one force storage means and means for mounting a tension strap; said tension strap mounting means being movable in said housing between an end position and a starting position; said force storage means biasing said mounting means for movement from said end position to said starting position; locking means for locking said mounting means in said end position; strap means for mounting said housing to the torso of a person to be treated; a tension strap connected to said mounting means and to said strap means such that, upon the person correcting his or her posture from a faulty position to a desired position, said tension strap moves said mounting means into said end position and the latter is locked by said locking means; and means connected to said strap means for releasing said locking means and thereby said mounting means upon change of the person's posture from said desired position to a faulty position.

4,409,970

APPARATUS AND METHOD FOR TREATMENT OF COMMINUTED COLLES' FRACTURE

Edson D. Carrel, 30 River Forest, Anderson, Ind. 46011

Filed Mar. 23, 1981, Ser. No. 246,151

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—84 C **10 Claims**

1. A surgical apparatus for providing a portable, dynamic traction assembly for treatment of a comminuted Colles' fracture which comprises:

a cast received over a patient's forearm;

a pair of first and second, stainless steel bone screws having self-tapping points and being about seven sixty-fourths of an inch in diameter, said first screw having a threaded portion about one inch in length and having an eye portion, said second screw having a threaded portion about one and one-half inches in length, said first and second bone screws being for insertion into the second metacarpal and the ulna, respectively, said second bone screw being incorporated within said cast;

a stainless steel wire bow having a pair of straight side portions having first and second ends, each of the first ends of the side portions including a plaster attaching configuration to facilitate securement of the first ends into a cast fitted to a person's forearm, said bow further including a generally V-shaped intermediate portion extending between the second ends of the side portions; and

an elongated, elastic material for connection between the center of the intermediate portion of said wire bow and said first bone screw.

5. The method for treating a communited Colles' fracture of a patient by provision of a portable, dynamic traction assembly which comprises the steps of:

a. making a closed reduction of the patient's fracture under anesthesia;

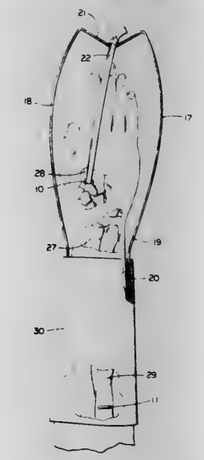
b. suspending the patient's forearm in a generally vertical position;

c. preparing the hand and forearm with aseptic technique and draping the forearm with a sterile towel;

d. making stab incisions over the base of the second metacarpal shaft in the back of the hand and also over the proximal ulnar shaft over the subcutaneous border of the ulna adjacent the elbow;

e. drilling the second metacarpal and the ulna through both cortices with a drill of about seven sixty-fourths of an inch in diameter;

f. inserting a first bone screw into the second metacarpal and a second bone screw into the ulna adjacent the patient's



elbow, the bone screws being stainless steel, self-tapping and about seven sixty-fourths of an inch in diameter, said first bone screw having a threaded portion about one inch in length and having an eye portion, said second screw having a threaded portion about one and one-half inches in length;

g. closing the incisions around the bone screws;

h. applying a short, well-padded, cylindrical plaster cast to the patient's forearm incorporating the second bone screw and extending to about two to three inches above the wrist;

i. incorporating into the cast a stainless steel wire bow having a pair of straight side portions having first and second ends, each of the first ends of the side portions including a plaster attaching configuration to facilitate securement of the first ends into the cast the bow further including a generally V-shaped intermediate portion extending between the second ends of the side portions, said incorporating including securing the plaster-attaching first ends of the side portions within the cast; and

j. connecting an elongated, elastic material between the center of the intermediate portion of the wire bow and the eye of the first bone screw to apply a traction force on the first bone screw.

4,409,971

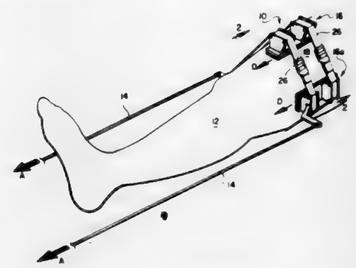
CIRCULO-SEGMENTAL SPANNING AND HOLDING APPARATUS

Frederico D. Guerriero, 7029 W. Grand Ave., Chicago, Ill. 60635

Filed May 20, 1982, Ser. No. 380,111

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—84 C **13 Claims**



1. An orthopedic traction apparatus for application to a selected anatomical portion for applying traction, said apparatus comprising:

at least one traction line;

a plurality of circulo-segmental pressure plates intermittantly disposed in spaced radial array about the selected anatomical poriton whereby circulation is unimpeded in intervening areas between said plates, each said plate comprising a base portion contoured to rest in substantially flat configuration against the anatomical portion, at least one pressure strap spanning means disposed elevated from said plate for inwardly directed pressure contact with a pressure strap, and means interconnecting said plate and said spanning means for retaining said spanning means in spaced elevation from said pressure plate means base portion;

at least one pressure strap for disposition radially about said circulo-segmental plates and in firm contact with said strap spanning means for exerting an inward pressure thereon for holding said plates sufficiently firmly against the anatomical portion to provide stable means for anchoring said at least one traction line; and

pivotably adjustable traction securement means attached to at least one of said circulo-segmental plates for allowing said at least one traction line to be adjustably angled for varying the longitudinal distribution of the inwardly directed pressure on said plates.

4,409,972

MOULDING PART FOR MAKING RELIEVING AND SUPPORTING PLASTER BANDAGES, MORE PARTICULARLY IN THE UPPER ZONE OF THE HUMAN THIGH, AND PLASTER BANDAGE MADE USING SUCH MOULDING PART

Jan Prahl, Rullstorf, Fed. Rep. of Germany, assignor to Firma IPOS Gesellschaft für Integrierte Prothesen-Entwicklung und Orthopädietechnischen Service mbH & Co. KG, Luneburg, Fed. Rep. of Germany

Filed Aug. 25, 1981, Ser. No. 296,077

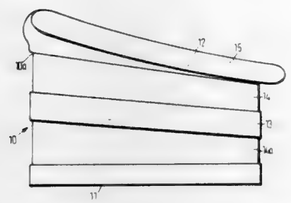
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1980, 3032194

Int. Cl.³ A61F *13/04*

U.S. Cl. 128—91 R **4 Claims**

1. A moulding part for making relieving and supporting plaster bandages, for use in the zone of the upper part of the human thigh, wherein the moulding part has a moulding member having an inner surface and an outer surface, said moulding member being and constructed like a clasp in the form of an unclosed ring arranged to extend around the thigh, said moulding member having an upper end-side edge zone extending transversely of the ring axis of said moulding member and a lower end-side edge zone, said upper end-side edge zone being

inclined relative to said lower end-side edge zone and having a laterally outwardly projecting edge bead which projects outwardly from and merges into the outer surface of said moulding member adjacent said upper end-side edge zone of the moulding member, an outwardly projecting mould supporting



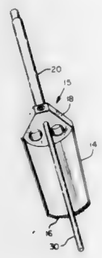
zone formed with and encircling said moulding member at a space below said edge bead, a supporting clasp located in the mould supporting zone and formed of a bending-resilient metal material positioned within the material of the moulding member.

4,409,973

METHOD AND APPAPARATUS FOR CORRECTIVE OSTEOTOMY

John A. Neufeld, 20840 Charriere Rd., Oregon City, Oreg. 97045

Filed Jan. 29, 1981, Ser. No. 229,641
Int. Cl.³ A61F *5/04, 17/32*; A61B *17/16, 17/14*
U.S. Cl. 128—92 E **3 Claims**



1. An arcuate osteotomy saw comprising:

a semi-cylindrical blade of substantially uniform thickness so as to be semi-cylindrical exteriorly and interiorly, said blade having teeth at a forward end thereof adapted for making an arcuate bearing joint cut through a bone as said blade is oscillated about its longitudinal axis to provide for reorientation of said bone about said bearing joint cut,

and a central guide rod substantially smaller in diameter than said blade for reception in a guide hole drilled in said bone,

said saw having a central portion longitudinally remoed from said forward end, wherein said central portion is provided with a central bore for receiving said guide rod in bearing relation for guiding said saw relative to said bone, said guide rod having a length extending from said saw for reception in sliding relation substantially through said bone as well as through a substantial length of said central bore to provide said bearing relation so as to guide the saw in the direction determined by said rod.

4,409,974

BONE-FIXATING SURGICAL IMPLANT DEVICE

Jeffrey A. Freedland, 693 Montgomery St., Brooklyn, N.Y. 11213

Filed Jun. 29, 1981, Ser. No. 278,084
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 B **18 Claims**



1. A surgical implant device for fixating bones in which a round rectilinear bore has been drilled, said device having an upper end region and a lower end region and comprising:

(a) a head positioned at the upper end region of the device;

(b) a plurality of arms, each having a proximal and a distal end;

(c) means for hingeably connecting the proximal ends of the arms to the head so that said arms may be deployed by radial upward swinging movement from a downwardly extending retracted position, wherein said arms are spaced a predetermined angular distance from the head and wherein the greatest effective transverse dimension of the head and of the connected arms is less than the diameter of the bore drilled in the bone so that the head with said arms in the retracted position may be inserted into said bore, to an extended position wherein the arms are spaced from the head at an angular distance which is less than said predetermined distance and wherein the greatest effective transverse dimension of said head and connected arms is greater than the diameter of said bore;

(d) shaft means for guiding the insertion of the head and arms of the implant device into the bore, said arms being at all times positioned exteriorly of said shaft means;

(e) manually operable pull-type actuating means connected to the arms for deploying the arms from the retracted position to the extended position after said head and connected arms have been inserted into the bore; and

(f) manually effectuatable means for firmly securing the lower end region of said implant device which is opposite the head against portions of the bone surrounding the bore and exerting downward force on the head and arms subsequent to the insertion of the head and connected arms into the bore and their deployment to the extended position.

4,409,975

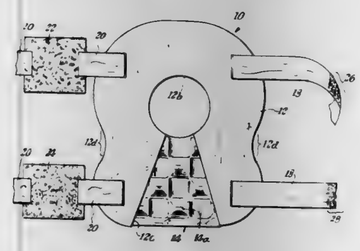
NEGATIVE HEEL PROTECTOR CUSHION

Orit Simhoni, P.O. Box 640134, Miami, Fla. 33164

Filed May 29, 1981, Ser. No. 268,348
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—153 **2 Claims**

1. A therapeutic support device to prevent or assist in the healing of the decubitus ulceration on the heel of the foot comprising:

a resilient body, said resilient body formed from a plurality of individual, resilient foam layers, each layer disposed in a stacked array, each of said layers having a substantially central aperture sized to receive the heel area of a foot with sufficient spacing around the heel area to that the heel area does not contact the surrounding surface formed from the aperture disposed within each layer, the layer apertures being stacked to form a single substantially central aperture in said resilient body, each of said layers having first, second and third and fourth strap receiving apertures, said first and second strap receiving apertures being disposed centrally on one side of said central aperture, and said third and fourth apertures being disposed essentially on the opposite side of said central aperture in each layer, each of said layers having a substantially flat surface and on the opposite side an undulated wavy surface formed from a plurality of pockets, said top layer having its undulated surface disposed downwardly, said top layer including a pie shaped passage from a peripheral edge to said central aperture, said second layer engaging said top layer having an undulated surface engaging the undulated surface of said top layer, and said bottom layer having its undulating surface disposed downwardly such that the flat surface of the second layer engages the flat surface of the bottom layer; and



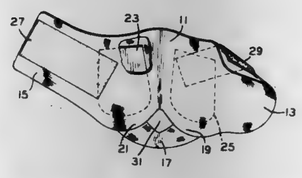
a first strap connected through said first and second strap apertures in each of said layers and a second strap disposed through said third and fourth apertures in each of said layers, said first and second straps including an adjustable connecting means whereby the ends of said first, second, third and fourth straps can be removably connected in either a parallel or criss-cross array to encircle the dorse part of the foot when the heel is disposed within the central aperture.

4,409,976

ANKLE SUPPORT

Artie L. Pence, 4141 Conner Dr., Marion, Ind. 46952

Continuation of Ser. No. 193,287, Oct. 2, 1980, abandoned. This application Sep. 20, 1982, Ser. No. 380,223
Int. Cl.³ A61F *13/06*
U.S. Cl. 128—166 **3 Claims**



1. An elastic-free ankle support to extend about the Achilles' tendon of a foot along the inner and outer sides of the foot and across the ankle to completely encircle the ankle of a wearer and to pass beneath the arch and sole of the foot while leaving the toes exposed comprising:

a main body portion for passing around the Achilles' tendon including side portions thereof for passing along the inner and outer sides, respectively, of the foot,

a tongue portion extending from one side of the main body portion for passing from the instep over the front of the foot,

a first strap portion extending from the main body portion side opposite the tongue portion to lap over the tongue portion and secure the support to the ankle, said first strap being substantially non-elastic and non-elastically connected to the side of the main body portion opposite the tongue portion, said first strap being narrower than said tongue,

a second non-elastic strap portion non-elastically connected to and extending from the same side of the main body portion as the tongue portion and being adjacent thereto,

a stirrup portion depending from the main body portion intermediate the tongue and first strap portions to pass beneath the arch and sole of the foot to prevent upward movement of the main body portion,

a region of contact fastener material on an inner surface of the first strap portion and a mating region of contact fastener material on an outer surface of the main body portion side from which the tongue extends whereby the support first strap portion may be adjustably tightened about any one of a range of sizes of foot,

a second region of contact fastener material on an inner surface of the second strap portion and a mating region of contact fastener material on the side of the main body portion from which the first strap portion extends whereby the support second strap portion may be adjustably tightened about any one of the range of sizes of foot,

said first mentioned mating region of contact fastener material being positioned relative to the second strap and the second region of contact fastener material being positioned relative to the first strap to position the second strap above the first strap with the straps encircling the ankle in opposed senses and pulling the side portions of the main body portion in opposite directions when the support is properly positioned about an ankle and the straps are tightened, and

stiffening panels in the side portions of the main body portion.

4,409,977

HIGH FREQUENCY VENTILLATOR

Jose Bisera, Camarillo, and Max H. Weil, Beverly Hills, both of Calif., assignors to Institute of Critical Care Medicine, Los Angeles, Calif.

Filed Jul. 6, 1981, Ser. No. 280,703
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.15 **3 Claims**

1. A high frequency ventillator system comprising:

walls forming a pump chamber with a pair of open ends;

a flexible bag lying in said chamber and having opposite open ends sealed within the open ends of said chamber thereby defining a pressure compartment between said walls and said bag;

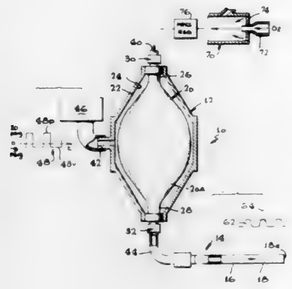
entrance and exit check valves connected to said ends of said bag;

a breathing gas source connected to said entrance check valve;

a catheter assembly connected to said exit valve, for applying gas pumped out of said bag into the air passage of a patient; and

a high frequency pressure pulse source connected to said pressure compartment to apply pressure pulses of controlled

pressure and duration that compress said bag to pump out gas therefrom;



said bag having a volume great enough that it is compressed less than about one-tenth its volume by each pressure pulse of said source.

4,409,978

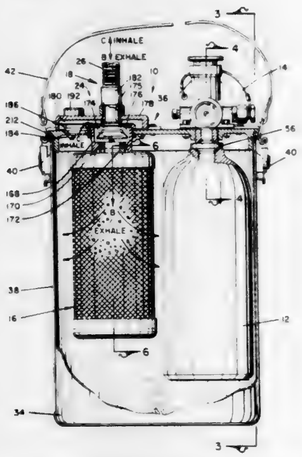
PORTABLE, SELF-CONTAINED BREATHING APPARATUS

Josef A. Bartos, Chesterland, Ohio, assignor to Portable Air Supply Systems, Corp., Irwindale, Calif.

Continuation-in-part of Ser. No. 159,779, Jun. 16, 1980, abandoned. This application Jun. 1, 1981, Ser. No. 269,516

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—205.12 **17 Claims**



1. Self-contained, closed-type breathing apparatus, which comprises:

(a) a thin flexible breathing bag;

(b) a metallic pressure container containing a breathable gas under high pressure;

(c) scrubber means adapted for removing carbon dioxide from a user's breath through a chemical reaction while concurrently passing nitrogen from a user's breath therethrough;

(d) a cannister having an open end adapted to house said metallic pressure container, said scrubber means and said bag;

(e) metallic mounting structure mounted across said open end of said cannister, said pressure container and said scrubber means being mounted to said mounting structure such that they are in direct heat conducting relationship, said bag being mounted within said cannister to enclose said pressure container and said scrubber means;

(f) gas flow control means connected to the pressure container for regulating flow of breathable gas from the pressure container into the bag;

(g) breathing means connected to the scrubber means for enabling a user to exhale into the bag through the scrubber means and to inhale directly from the bag; and

(h) sealing means for sealing the bag within the cannister and around said pressure container, said scrubber means, said gas control means and said breathing means to prevent gas inflow from the outside amient to thereby enable a user to exhale into and inhale from the bag without exhaling directly into or inhaling from the outside ambient atmosphere;

(i) said pressure container and metallic mounting structure being adjacent said scrubber and serving to effectively conduct heat from within the bag to without and to dissipate heat from the scrubber.

4,409,979

DEVICE FOR OBSERVING AND TREATING THE EYE USING A LASER

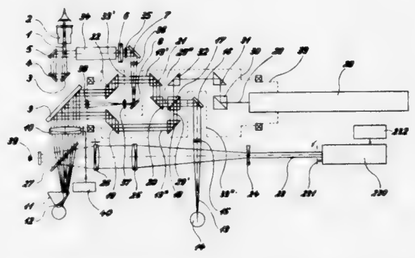
Philippe Roussel, Thun; Franz Fankhauser, and Eugen van der Zypen, both of Bern, all of Switzerland, assignors to Lasag AG, Thun, Switzerland

Filed Nov. 28, 1980, Ser. No. 211,207

Claims priority, application Switzerland, Nov. 28, 1979, 10570/79; France, Mar. 5, 1980, 80 04994

Int. Cl.³ A61B *17/36*

U.S. Cl. 128—303.1 **5 Claims**



1. Apparatus for treating the eye with a laser beam to effect ophthalmological surgery on said eye, said apparatus comprising an optical system for observing and treating the eye, means to produce a treatment laser beam having an axis, means for employing said optical system to observe the area of the eye to be treated and to treat said eye with said laser beam, means to produce two elementary beams of visible coherent light rotating about the axis of said treatment laser beam in such a way to generate its envelope, means to modulate the light intensity of said elementary beams, said optical system comprising a focusing lens for directing the treatment laser beam on the area of the eye to be treated and means to adjust said optical system to ensure that the treatment laser beam is focused on the plane of treatment and that said treatment laser beam does not contact untreated portions of the eye prior to energizing said treatment laser beam for surgically treating the eye, said means to adjust being utilized when a light spot formed by the elementary beams in the plane of the focus of said focusing lens is flickering.

4,409,980

GAS SENSOR WITH PH-SENSITIVE FET TRANSDUCER

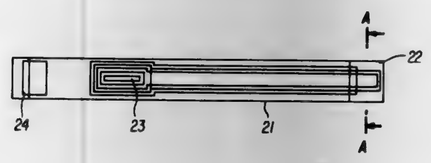
Makoto Yano; Kiyoo Shimada, and Kyoichiro Shibatani, all of Kurashiki, Japan, assignors to Kuraray Company, Limited, Kurashiki, Japan

Filed Aug. 17, 1981, Ser. No. 293,304

Claims priority, application Japan, Aug. 25, 1980, 55-117411

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—635 **18 Claims**



1. A gas sensor comprising:

a pH-sensitive FET transducer having a gate-insulated field-effect transistor structure;

a reference electrode deposited on the surface of said transducer and adjacent the gate region of said transducer;

an insulating tube which provides connecting lead wires to the FET transducer and to the reference electrode and which houses said transducer and reference electrode, said gate region of said FET transducer being located in the opening provided in said insulating tube, and said lead wires extending along said insulating tube;

electrical insulation resin placed between the inner wall of said tube and lead-wire-FET connecting points to stop said opening of the tube;

a hydrophilic polymer layer extending over both said gate region of the FET transducer and said reference electrode and containing electrolyte which is sensitive to variations in hydrogen ion concentration through gas absorption; and

a gas permeable membrane covering at least the entirety of said polymer layer.

4,409,981

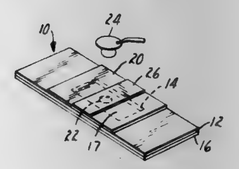
MEDICAL ELECTRODE

Chris A. Lundberg, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 20, 1981, Ser. No. 285,254

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—640 **4 Claims**



1. A disposable medical electrode for connecting electrical equipment to the skin of a patient, which electrode has been cut from a plurality of elongate webs, said electrode comprising

a first sheet comprising a first surface adapted to adhere to the skin of a patient, a second surface and at least two edges connecting the first surface to the second surface, said first sheet having an opening therethrough which is spaced from each of the edges of said first sheet,

a removable release liner sheet laminated to said first surface of said first sheet and covering said opening, said release liner and the perphery of said opening defining a reservoir within the electrode,

a relatively stiff but yet resilient second sheet comprising (1) a first surface affixed to the second surface of said first sheet opposite said release liner, (2) a second surface and (3) at least two edges connecting the first surface to the second surface and in common with said edges of said first sheet, said second sheet covering said opening, and having a hole therethrough adapted to receive a connecting lead for the electrical equipment, said hole being positioned adjacent said opening,

a conductive gel within said reservoir, and

a third sheet comprising (1) a first surface affixed to the second surface of said second sheet opposite said first sheet, (2) a second surface and (3) at least two edges connecting the first surface to the second surface and in common with said edges of said first and second sheets, said third sheet covering said hole.

4,409,982

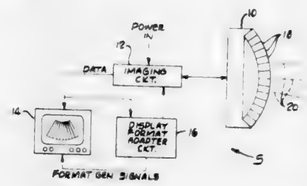
ULTRASONIC STEP SCANNING UTILIZING CURVILINEAR TRANSDUCER ARRAY

Kiven Plesset, Wallingford, and Darwin P. Adams, Guilford, both of Conn., assignors to Picker Corporation, Cleveland, Ohio

Filed Oct. 20, 1980, Ser. No. 198,436

Int. Cl.³ G01N *29/04*; A61B *10/00*

U.S. Cl. 128—660 **5 Claims**



4. An ultrasonic medical diagnostic system comprising:

(a) a hand-held stationary surface sector scanning assembly comprising an array of ultrasonic transducer elements having a fixed elongate convex curvilinear configuration, each of said elements having an emitting face defining a central axis, none of said axes diverging from any other by more than about 90°, said array being dimensioned and configured for simultaneous imposition of each of said elements against the exterior of a patient's body;

(b) imaging electronics for actuating respective sub-groups of said elements in a sequence to electrically scan incident ultrasonic energy in discrete resultant beams through a patient and to produce electrical signals from echoes of said incident energy, and

(c) a display system responsive to the electrical signals for producing a tangible representation of internal structure of the patient into which the energy is directed.

4,409,983

PULSE MEASURING DEVICE

David E. Albert, Box 2700 - DUMC, Durham, N.C. 27710

Filed Aug. 20, 1981, Ser. No. 294,487

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—690 **14 Claims**

1. In a portable pulsemeter worn on the body of a human or animal user, said pulsemeter including:

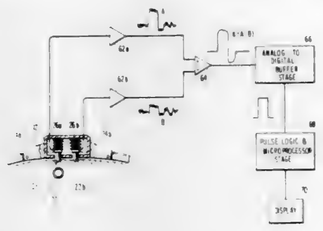
at least one piezoelectric transducer in which is a piezoelectric element;

housing means for mounting said piezoelectric transducer, said housing means being maintained in substantially stationary contact relative to said body, in the vicinity of a region thereof through which an artery passes, and said

piezoelectric transducer being adapted to produce transducer output signals representative of forces, among other things, radial to an artery of said user and produced by said user's pulse beat;

at least one pulse rate monitor which is operated by monitor signals representative of occurrences of the user's pulse beat; and

means for delivering to said pulse rate monitor monitor signals derived from said transducer output signals, the



improvement comprising at least one elastically mounted piezoelectric transducer, in which are:

a transducer post fastened to said piezoelectric element, said post being adapted to firmly contact said body in the vicinity of said artery; and

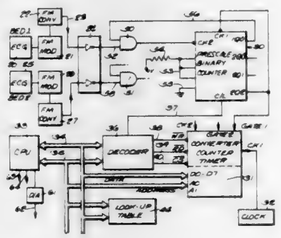
at least one elastic mounting connecting said piezoelectric element to said housing means, the physical constants of said elastic mounting being selected to filter out higher frequency components of the forces applied to said transducer post.

4,409,984

FM-DIGITAL CONVERTER

Joseph B. Dick, Earlysville, Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,821
Int. Cl.³ A61B 5/04
U.S. Cl. 128—696 **4 Claims**



4. Means for converting a train of frequency modulated (FM) pulse signals, whose frequency variations are representative of variations in the magnitude of an electrocardiograph (ECG) analog voltage used to modulate the signals, to digital numbers corresponding in value to the magnitude of the analog voltage waveform prevailing at times the FM signals are sampled, comprising:

a gate having one input for said train of FM pulses, an input for a gating signal and an output for the FM pulse train,

a first edge triggered counter means having an input for the gated FM pulse train, one output coupled to said gating signal input and another output, said counter responding to being initialized by providing said gating signal and responding to counting a predetermined number of FM pulses by terminating said gating signal, said counter further responding to being triggered by an edge of the first FM pulse sample to be counted by setting said other output to one state and responding to the corresponding edge of the last FM in the sample by changing said output to another state,

second counter means having input means for a clock pulse train whose frequency is substantially higher than the FM pulse frequency, and having a gate signal input coupled to said other output of said first counter means for enabling said second counter to begin counting clock pulses when said other output is set to said one state and for terminating counting in response to said other output changing to its other state,

processor means and a data bus and an address bus coupled thereto,

decoder means coupled to said data and address buses and having a plurality of output means coupled to said first counter means and said second counter means, respectively,

said second counter means also being coupled to said address and data buses, and

a look-up table coupled to said address and data buses, said look-up table storing digital data in addressable locations corresponding in value, respectively, to digitized analog voltage values,

said decoder responding to a signal from said processor to start a sampling interval by initializing said first counter means and enabling said second counter to count clock pulses during the sampling interval as determined by occurrence of the corresponding edge of the last in said predetermined number of FM pulses in a sampling interval, the digital count in said second counter at the end of the sample corresponding to FM pulse frequency and, hence, to the analog input voltage magnitude during each sampling interval,

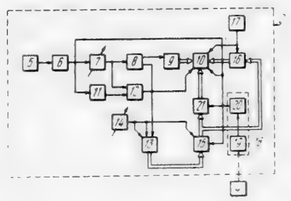
said digital counts being read by said processor means by way of said data bus, and said processor means, using said count as an address to a look-up table location for obtaining a digital value corresponding to the FM pulse frequency and the analog input voltage during the respective sampling intervals.

4,409,985

ELECTRONIC ERGOMETER FOR CARDIAC ARRHYTHMIA PATIENTS

Georgy I. Sidorenko, ulitsa Pulikhova, 7, kv. 37; Vladimir I. Stankevich, ulitsa Plekhanova, 32, korpus 2, kv. 84; Vladimir M. Yakubovich, 1 pereulok Opanskogo, 4, kv. 1, and Yaroslav G. Nikitin, ulitsa Prityts'kogo, 54, kv. 354, all of Minsk, U.S.S.R.

Filed Mar. 25, 1981, Ser. No. 247,238
Int. Cl.³ A61B 5/02
U.S. Cl. 128—702 **3 Claims**



1. An electronic ergometer for measuring work performed by an individual and power developed thereby while performing work at which a cardiac arrhythmia occurs by measuring the oscillations of the body center of gravity of the individual, comprising:

a transducer means for converting the oscillations of the body center of gravity of said individual into an electrical signal provided as an output, said transducer being implemented as at least one seismic pickup having an output;

a pulse shaper including a threshold element having an input and an output, said input being connected to said output of said transducer;

an adjustable high-frequency multivibrator having a control input and an output of settable frequency, said control input being connected to said output of said pulse shaper;

a frequency divider having a counting input, a first output and a second output, said counting input being connected to said output of said adjustable high-frequency multivibrator;

a first counter having a counting input and a plurality of bit position outputs equal in number to the number of bit positions of the counter, said counting input being connected to said first output of said frequency divider; an indicator having a first control input, a second control input, a signal input, a first plurality of information inputs and a second plurality of information inputs, the inputs of said first plurality of information inputs being respectively connected to corresponding bit position outputs of said first counter;

a second counter having a counting input, a reset input, a control input and a plurality of bit position outputs equal in number to the number of bit positions of the counter, said counting input being connected to said second output of said frequency divider;

an adjustable timer having an output, said output being connected to said reset input and to said control input of said second counter;

a register having a control input, a reset input, a plurality of information inputs equal in number to the number of outputs of said plurality of outputs of said second counter, and a plurality of outputs equal in number to the number of bit positions of the register, said reset input being connected to said output of said adjustable timer and corresponding information inputs of said plurality of inputs being respectively connected to corresponding bit position outputs of said second counter;

a power indication enabling unit having a control input, a plurality of inputs equal in number to the number of bit positions of said second counter and a plurality of outputs equal in number to the number of inputs of said plurality of inputs of the unit, corresponding inputs of said plurality of inputs being respectively connected to corresponding bit position outputs of said register and corresponding outputs of said plurality of outputs being respectively connected to corresponding inputs of said second plurality of information inputs of said indicator;

an indication switching unit having an output, said output being connected to said first control input of said indicator and to said control input of said power indication enabling unit;

an ECG sensing unit having an output;

an arrhythmia signal generating means including:

an arrhythmia sensing unit having an input and an output, said input being connected to said output of said ECG sensing unit, and

a monostable multivibrator having an input and an output, said input being connected to said output of said arrhythmia sensing unit and said output being connected to said control input of said register and to said second control input of said indicator;

a low-frequency multivibrator having an input and an output, said input being connected to said output of said monostable multivibrator;

a mixer having a first input, a second input and an output, said first input being connected to said output of said adjustable high-frequency multivibrator, said second input being connected to said output of said low-frequency multivibrator and said output being connected to said signal input of said indicator;

a unit for enabling indication of power at which an arrhythmia occurs having a control input, a plurality of information inputs equal in number to the number of outputs of said plurality of outputs of said register, and a plurality of information inputs equal in number to the number of said information inputs, said control input being connected to said output of said monostable multivibrator, corresponding information inputs of said plurality of inputs being respectively connected to corresponding outputs of said register, and corresponding information outputs of said plurality of outputs being respectively connected to corresponding inputs of said first plurality of information inputs of said indicator; and

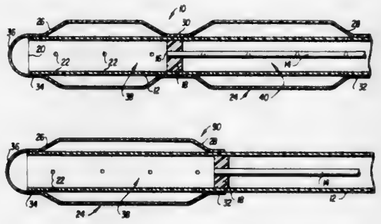
a housing to accomodate said transducer means, said pulse shaper, said adjustable high-frequency multivibrator, said frequency divider, said first counter, said indicator said second counter, said adjustable timer, said power indication enabling unit, said indication switching unit, said arrhythmia signal generating means, said low-frequency multivibrator, said mixer, said register, and said unit for enabling indication of power at which an arrhythmia occurs.

4,409,986

ESOPHAGEAL CARDIAC PULSE MONITORING APPARATUS AND METHOD

Howard P. Apple, and Paul J. Dauchot, both of Cleveland Heights, Ohio, assignors to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 134,819, Mar. 28, 1980, Pat. No. 4,331,156. This application Mar. 25, 1982, Ser. No. 361,686
Int. Cl.³ A61B 7/02
U.S. Cl. 128—715 **2 Claims**



1. An improved double lumen apparatus for use in an esophageal stethoscope, comprising:

a first lumen having a first end for insertion into the esophagus;

a second lumen surrounding said first lumen, said second lumen having a second end for insertion into the esophagus and a plurality of radially extending holes spaced about its circumference in the region of said first end;

means associated with said first and second ends for isolating the interior of said first lumen from the interior of said second lumen, said isolating means extending between said lumens at a location spaced along said second lumen above said holes; and

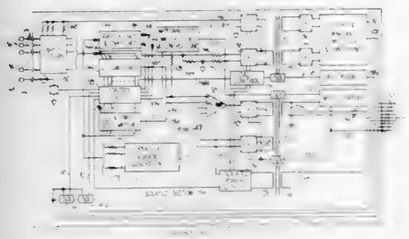
flexible diaphragm means for transmitting pressure variations in the esophagus into said first and second lumens, said diaphragm means comprising a tubular portion extending along and surrrounding said second lumen at the location of said holes, a pair of radially extending shoulder portions projecting inwardly from the opposite ends of said tubular portion, whereby said tubular portion is radially spaced from said second lumen in the vicinity of said holes, and means for attaching said diaphragm to said second lumen.

4,409,987

ELECTROENCEPHALOGRAPH

Robert A. McIntyre, Skokie, Ill., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 9, 1978, Ser. No. 914,280
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—731 **47 Claims**



1. In an EEG system, a plurality of patient electrodes, means for developing a digital signal representing one of said electrodes, an amplifier having first and second input terminals, first switch means controlled by said digital signal for connecting said one electrode to said first input terminal, second switch means controlled by said digital signal for connecting all of said plurality of electrodes except said one electrode together and to said second input terminal, and impedance measuring means connected to the output of said amplifier.

4,409,988

APPARATUS FOR COLLECTING CULTURES

Donald J. Greenspan, 235 Pavilion Ave., Riverside, N.J. 08075, assignor to Donald J. Greenspan, Riverside, N.J.

Division of Ser. No. 781,298, Mar. 25, 1977, Pat. No. 4,184,483, which is a continuation-in-part of Ser. No. 589,521, Jun. 23, 1975, Pat. No. 4,014,746, which is a continuation-in-part of Ser. No. 358,350, May 8, 1973, Pat. No. 3,890,954. This application Oct. 1, 1979, Ser. No. 80,551
The portion of the term of this patent subsequent to Jan. 22, 1997, has been disclaimed.
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—759 **3 Claims**



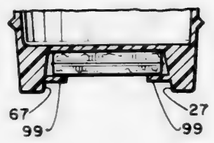
1. Apparatus for collecting cultures, said apparatus comprising:
(a) a hollow tubular container having a closed end, an open end and sides extending therebetween;
(b) a culture-sustaining medium position within said tubular container adjacent said closed ends;
(c) a swab including an elongated member and an absorbent tip, said swab extending into said container; and
(d) a movable piston means extending the cross tubular member and adapt to form a seal with said sides, said piston means being movable through said culture-sustaining medium toward said closed end when said swab is in pushing contact with said piston means, said piston means including valve means for allowing said culture-sustaining medium to flow through said valve means from a position adjacent said closed end through and into contact with said absorbent tip.

4,409,989

URINE SPECIMEN CUP

Daniel Larribas, 9401 Stanfield Ct., Stockton, Calif. 95209

Filed Sep. 14, 1981, Ser. No. 302,299
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—760 **14 Claims**



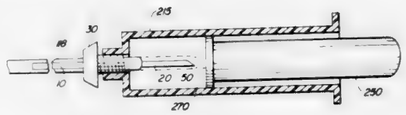
1. A one piece urine specimen cup, open at the top and comprising an outer wall formed in three portions, the upper two of which are in fluid communication:
the upper portion of which is generally oval in cross section, and which fluidly communicates with a middle portion whose cross section dimensions are smaller than those of the top portion, and which has a bottom wall extending normal to said outerwall, (across a portion of said middle portion),
the bottom portion of said cup comprises a pair of spaced apart feet, each having an outer and an inner wall, the inner walls extending upwardly to a generally normal connecting wall that serves as the bottom wall for the middle portion
wherein the inner wall of each foot of said cup includes a small inward extending rib spaced down from the bottom wall of said middle portion, and disposed toward the other of said feet thereby forming a resting place for a towelette.

4,409,990

FLUID SAMPLING NEEDLE ASSEMBLY AND METHOD OF USE THEREOF

Gil N. Mileikowsky, 2601 S. Braeswood, #902, Houston, Tex. 77025

Filed Oct. 13, 1981, Ser. No. 310,521
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—763 **5 Claims**



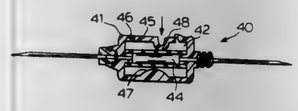
1. A fluid sampling apparatus, which comprises:
a. a flexible, non-cutting cannula;
b. a rigid, cutting needle aligned longitudinally with said cannula;
c. a needle housing assembly joining said cannula and said needle along the longitudinal axes thereof, said assembly having a first end adapted for sealing engagement with the exposed end of a catheter prepositioned in the lumen of a blood vessel, said assembly also having a threaded second end;
d. each end of said needle housing assembly adapted for receipt of a segmented, removable protective cover encompassing said cannula and said needle; and
e. a soft, flexible sheath connected to said second end of said needle housing assembly and covering said needle in spaced apart relation.

4,409,991

FLUID FLOW CONTROL DEVICE FOR USE WITH AN EVACUATED BLOOD COLLECTION CONTAINER

William N. Eldridge, Rutherford, N.J., assignor to Becton Dickinson and Company, Paramus, N.J.

Division of Ser. No. 118,158, Feb. 4, 1980, Pat. No. 4,319,582. This application Dec. 14, 1981, Ser. No. 330,342
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—766 **1 Claim**



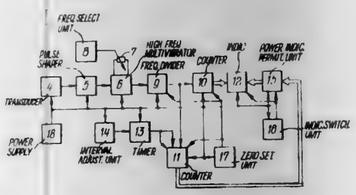
1. Blood sample flow control apparatus for controlling the flow of blood from a vein after an evacuated blood collection container has been connected thereto for collecting said blood sample, characterized by
(a) an elongated substantially rigid body;
(b) a first needle cannula connected to said body for penetrating said vein;
(c) a second needle cannula connected to said body at the end thereof opposite said first cannula for penetrating the stopper of said evacuated blood collection container;
(d) a resilient collapsible tube in said elongated body interconnecting said first and second cannulae;
(e) said collapsible tube providing a continuous flow passage from said vein to said blood collection container upon said blood collection container being connected to said second needle cannula;
(f) a depressible lever pivotally mounted on said body and operable to collapse said tube after said blood collection container has been connected to said second needle cannula to control flow of blood through said tube;
(g) first abutment means on said lever for engaging said tube; and
(h) second abutment means on said body on the side thereof opposite said first abutment means for cooperating to collapse said tube.

4,409,992

ELECTRONIC ERGOMETER

Georgy I. Sidorenko, ulitsa Pulikhova, 7, kv. 37; Vladimir I. Stankevich, ulitsa Plekhanova, 32, korpus 2, kv. 84; Mikhail V. Sklema, ulitsa Matusevicha, 25, kv. 107, and Arkady D. Margolin, ulitsa Kalinovskogo, 63, kv. 5, all of Minsk, U.S.S.R.

Filed Oct. 16, 1980, Ser. No. 197,756
Int. Cl.³ A61B *5/10*
U.S. Cl. 128—782 **9 Claims**



1. An electronic ergometer measuring work performed by an individual and power developed by said individual while performing work in terms of oscillation of the individual's body's center of gravity, comprising:
a power supply unit having an output;
transducer means converting the oscillations of the body center of gravity of said individual into an electrical signal provided as an output, said transducer means including at least one seismic pickup having an output;
a pulse shaper comprising a threshold element and having a first input connected to said output of said power supply unit, a second input connected to said output of said transducer means, and an output;
an adjustable high-frequency multivibrator having a control input connected to said output of said shaper, an input connected to said output of said power supply unit, and an output;
frequency adjusting means operatively associated with said adjustable high-frequency multivibrator and setting the frequency of said output of said adjustable high-frequency multivibrator;
frequency selecting means having an output connected to said frequency adjusting means and selecting the frequency of said adjustable high-frequency multivibrator;
a first frequency divider having a counting input connected to said output of said adjustable high-frequency multivibrator, an input connected to said output of said power supply unit, a reset input, and an output;
a first multi-digit counter having a set of bit position outputs equal in number to the number of bit positions of the counter, a counting input connected to said output of said first frequency divider, an input connected to said output of said power supply unit, a reset input, and an output;
an indicator having a control input, a first set of inputs and a second set of inputs being respectively connected to corresponding bit position outputs of said first multi-digit counter;
a zero setting unit having an input connected to said output of said power supply unit, and an output connected to said reset input of said first frequency divider and to said reset input of said first multi-digit counter;
a second multi-digit counter having a set of bit position outputs equal in number to the number of bit positions of the counter, a counting input connected to said output of said first frequency divider, a first reset input connected to said output of said zero setting unit, an input connected to said output of said power supply unit, a second reset input, and a control input;
an adjustable timer having an input connected to said output of said power supply unit, an output connected to said second reset input and to said control input of said second multi-digit counter, and a reset input;
a time interval adjusting unit having an input connected to said output of said power supply unit, and an output connected to said reset input of said adjustable timer;
a power indication permitting unit having a control input, a set of inputs equal in number to the number of bit positions of said second multi-digit counter, a set of outputs equal in number to the number of inputs of said set of inputs, and an input connected to said output of said power supply unit, the inputs of said set of inputs being respectively connected to corresponding bit position outputs of said second multi-digit counter, and the outputs of said set of outputs being respectively connected to corresponding inputs of said second set of inputs of said indicator;
an indicator switching unit having an input connected to said output of said power supply unit, and an output connected to said control input of said indicator and to said control input of said power indication permitting unit; and
a housing accommodating said transducer means, said pulse shaper, said adjustable high-frequency multivibrator, said first frequency divider, said frequency adjusting means, said frequency selecting unit, said first multi-digit counter, said indicator, said second multi-digit counter, said adjustable timer, said time interval adjusting unit, said zero

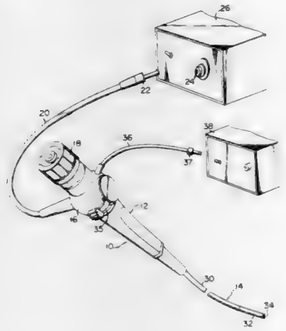
setting unit, said power indication permitting unit, said indicator switching unit, and said power supply unit.

4,409,993

ENDOSCOPE APPARATUS

Hiroyuki Furihata, Hamura, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,520
Claims priority, application Japan, Jul. 23, 1980, 55-100884
Int. Cl.³ A61B *1/06*; A61N *5/04*
U.S. Cl. 128—784 **20 Claims**



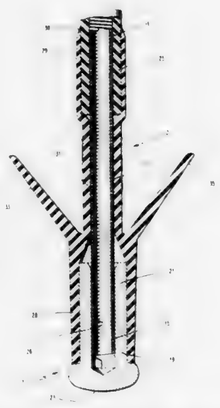
1. An endoscope comprising:
an endoscope control section manually operable by an operator;
a flexible insertion section coupled to said endoscope control section, for insertion into a coeliac cavity, said insertion section comprising a distal end portion having a distal end surface and directable in a desired direction within a prescribed range in accordance with the flexibility of said insertion section; and a passage interior of said insertion section, said passage having a prescribed inner diameter and extending lengthwise in said insertion section;
a hollow and flexible sheath member received in said passage and having a distal end, an inner diameter and an outer diameter smaller than said inner diameter of said passage, said sheath member being reciprocatable and rotatable in said passage in accordance with an operation of said operator;
a hollow, substantially round tip member mounted to said sheath member at said distal end of said sheath member and having an inner diameter smaller than said inner diameter of said sheath member, the outer surface of said tip member being substantially flush with the outer surface of said sheath member;
a microwave-irradiator having a rear wall and connected at said rear wall thereof to microwave-transmitting wire, said a microwave-irradiator having an outer diameter smaller than said inner diameter of said passage so as to be selectively receivable in said passage, and having a microwave irradiation surface for irradiating microwaves outward, said microwave-irradiator being swingable substantially at the connection between said microwave-irradiator and said microwave-transmitting wire so that said microwave irradiation surface of said microwave-irradiator is directable in a desired direction when protruded out from said insertion section; and
drive means operable by an operator and extending with said microwave-transmitting wire through said sheath member and through said tip member, said drive means being coupled to said rear wall of said microwave-irradiator for driving said microwave-irradiator to selectively cause said microwave-irradiator to protrude from or be received in said passage of said insertion section; and to swing said microwave irradiation surface in a desired direction after said microwave-irradiation is protruded from said passage in accordance with an operation of said operator.

4,409,994

LAP JOINT MOLDING MEMBER FOR A PACEMAKER ELECTRODE LEAD

Carl Doring, Wollstonecraft, Australia, assignor to Telectronics Pty., Ltd., Lane Cove, Australia

Filed Jun. 2, 1981, Ser. No. 269,577
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—785 **19 Claims**



1. An electrode lead for implant into a heart comprising:
a first electrical conductor having a distal end and a proximal end;
a first electrode connected to the distal end of said first conductor, said first electrode having an exposed distal tip and a proximal shank;
a first insulative sheath covering a portion of said first electrical conductor extending from said proximal end thereof toward said distal end;
flexible, insulative joining means having a distal end overlapping said proximal shank of said first electrode to form a first elongated lap joint, a proximal end connected to the distal end of said first insulative sheath to form a second elongated lap joint, and a recessed portion intermediate said first and second lap joints; and
foldable anchoring means attached to said joining means in the vicinity of the transition between said first lap joint and said recessed portion, said anchoring means when in a relaxed, unfolded state extending angularly from said joining means and adapted to engage heart tissue upon implant and when folded being received into said recessed portion to minimize the diameter of said electrode lead.

4,409,995

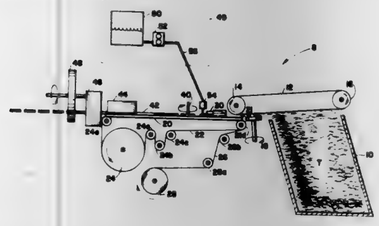
METHOD FOR APPLYING PARTICULATE MATTER TO TOBACCO

Walter A. Nichols, Richmond, Va., assignor to Philip Morris, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 162,334, Jun. 23, 1980, abandoned. This application May 18, 1981, Ser. No. 264,920
Int. Cl.³ A24B *3/12*
U.S. Cl. 131—84 R **9 Claims**

1. A method of adding matter to cigarettes comprising the steps of:
a. depositing cigarette paper and tobacco on a garniture tape;
b. imparting curvature to said garniture tape, cigarette paper, and tobacco by passing said garniture tape over a garniture;

c. compressing and forming said tobacco into a rod by means of a short tongue;



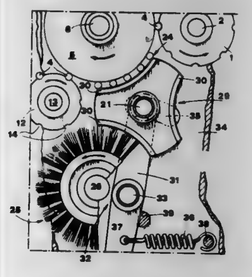
d. adding flavoring matter to said tobacco by means of a conduit passing through a compression foot of said short tongue.

4,409,996

DEVICE FOR FITTING FILTERS TO CIGARETTES

Seragnoli Enzo, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed May 5, 1981, Ser. No. 260,772
Claims priority, application Italy, Jun. 4, 1980, 48872 A/80
Int. Cl.³ A24C *5/52*
U.S. Cl. 131—94 **10 Claims**



1. A device for fitting filters to cigarettes, comprising means for transferring in succession, in a transverse direction, groups formed by at least one cigarette and one filter cutting placed in end to end contact, said transfer means comprising a rolling surface that has equidistantly spaced means for housing said groups, and suction means for holding joining bands for said groups on said rolling surface; a counter-rolling element mounted in spaced relation to said rolling surface, said counter-rolling element comprising a plurality of separate counter-rolling surfaces, said device comprising an active rolling position defined by one only of said separate counter-rolling surfaces which in combination with said transfer means defines a passage of a size slightly less than the diameter of one of said groups; and means for moving each of said plurality of separate counter-rolling surfaces individually and at successive times into said active rolling position while all of the remaining ones of said separate counter-rolling surfaces are in inactive position.

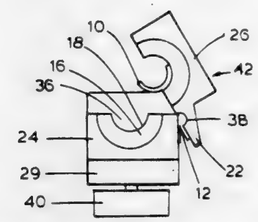
4,409,997

HINGED CIGARETTE EXTINGUISHER AND SAVER

James A. Lehman, 59 Reid Ter., Apt. 14, Fond du Lac, Wis. 54935

Filed Dec. 28, 1981, Ser. No. 334,564
Int. Cl.³ A24F *19/00, 19/10, 19/14, 47/00*
U.S. Cl. 131—235 ST **1 Claim**

1. A cigarette snuffer in combination with a clamping means; said snuffer comprising a split tube construction have complimentry sections wherein a hinge pivotally attaches said sections; said clamping means comprising an inverted U-shape construction having a substantially flat upper surface and two downwardly extending and opposed sidewalls wherein said sidewalls include a pair of opposed resilient gripping elements; means for compressing one of said gripping elements against the other of said gripping elements so as to grip a substantially vertical wall type support; said split tube construction being



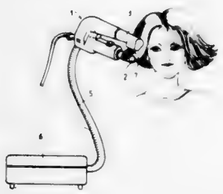
open at both ends having one end terminating on a portion of said upper surface of said clamp making said portion the terminating end and the other end positioned for the reception of cigarettes to be snuffed; a means for ejecting said cigraette located within said split tube and attached to one of said complimentry sections so as to eject the snuffed cigarette when the complimentry sections are separated an effective number of degrees.

4,409,998

HAIRSTYLING APPLIANCE

Rudolf Bauer, Königstrasse 17, D-7000 Stuttgart 1, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,802
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043470
Int. Cl.³ A45D *24/00*
U.S. Cl. 132—9 **9 Claims**



1. Hair styling device comprising:
a housing,
a hair curler cylinder,
said hair curler cylinder having a smooth outer surface upon which hair is wound and an interior hollow space defined by an end wall, said hair curler cylinder further including openings which extend through said wall to said interior hollow space,
driving means for driving said hair curler cylinder for winding hair onto said hair curler cylinder and on which said hair can slip during rotation of said hair curler cylinder,
air aspirating means in communication with the hollow interior space of said hair curler cylinder which maintains a continuous air flow from the outer surface of said hair curler cylinder through any hair on said hair curler cylinder and through said openings in said wall into said hollow interior space which effects take-up of hair in a sliding relationship with the outer surface of a rotating hair curler cylinder,
a hot air supply means,
a hot air supply nozzle which directs a stream of hot air from said hot air supply means relative to said hair curler cylinder, said hot air supply nozzle being pivotable about an

axis of said housing to attain one of two set positions which positions function as a switch which controls a direction of rotation of said hair curler cylinder and the direction of the hot air stream relative to said hair curler cylinder, said stream of hot air being in a direction tangential to the circumference of said hair curler cylinder and in a direction of rotation thereof such that the flow of all of the hot air stream is in the rotational direction of the hair curler cylinder, passes through the hair as the hair is wound onto the hair curler cylinder and upon contact of the hot air stream with the hair curler cylinder, the hot air stream follows th curvature of the hair curler cylinder essentially in the same direction as the rotation of said hair curler cylinder, and

said hot air stream is aspirated through said openings which extend through the wall of said air curler cylinder to decrease drying time of the hair being styled.

4,409,999

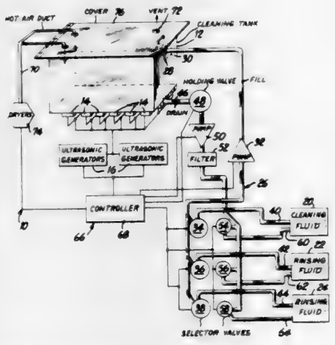
AUTOMATIC ULTRASONIC CLEANING APPARATUS

Edward A. Pedziwiatr, 50 Glenview Ter., Cresskill, N.J. 07626

Filed Aug. 7, 1981, Ser. No. 290,963

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—95 **3 Claims**



1. An ultrasonic cleaning apparatus comprising:

a cleaning tank;

a plurality of fluid storage containers for containing cleaning and rinsing solutions;

conduit means in communication with each of the fluid storage containers and the cleaning tank, said conduit means including pumping means between each container and the tank for enabling the passage of fluid from each container to the tank and return of fluid from the tank to the container; and

control means coupled with the conduit means for enabling said passage and return of each fluid in accordance with a predetermined time cycle of operation.

4,410,000

PRESSURE CONTROL APPARATUS FOR AT LEAST TWO PRESSURE VESSELS

Beat Mattmann, Lucerne; Marco Dreyer, St. Niklausen, and Wilhelm Marti, Horw, all of Switzerland, assignors to BOA A.G. Luzern, Lucerne, Switzerland

Filed Apr. 29, 1981, Ser. No. 258,723

Claims priority, application Switzerland, Apr. 3, 1980, 3361/80

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—116 **8 Claims**

1. A pressure control device comprising

first and second pressure vessels;

a housing block having a cylindrical fluid chamber and first and second connection channels communicating with said fluid chamber and with said first and second respective pressure vessels,

said housing block having third and fourth connection channels communicating with said fluid chamber and with the atmosphere;

pressure responsive shut-off valve means in each of said connection channels including

a first valve means having a normally biassed closed position shutting-off flow from said first pressure vessel to said fluid chamber,

a second valve means having a normally biassed closed position shutting-off flow from said second pressure vessel to said fluid chamber,

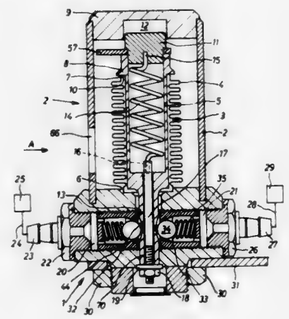
a third valve means having a normally biassed closed position shutting-off flow from the atmosphere to said fluid chamber,

a fourth valve means having a normally biassed closed position shutting-off flow from said fluid chamber to the atmosphere;

pressure responsive means carried by said housing block and having a control chamber communicating with said fluid chamber;

valve control means operatively connected to said pressure responsive means including a cylindrical rod element and a cylindrical rod portion with a hollow bore extending into said fluid chamber,

first means on said rod portion intermediate its ends adapted to permit the first and second valve means to be disposed in their normally biassed closed positions,



second means on said rod portion adapted to move the first and second valve means to open positions,

third means on said rod portion adapted to move said third valve means to an open position,

said rod element extending coaxially through the bore of said rod portion and being smaller in diameter than the hollow bore to define a cylindrical clearance between the rod element and the bore whereby slight lateral movement of the rod element in the bore results in a self-centering arrangement therefor,

said rod element havings its ends protruding out of the bore,

a coil spring mounted in tension between one end of said rod element and said pressure responsive means to effect movement of said rod element in response to pressure variations sensed by said pressure responsive means,

an operative connection between an opposite end of said rod element and said housing block;

said pressure responsive means having a normal operating pressure condition where the second means on said rod portion retain the first and second valve means in their open positions so that pressure in the first and second pressure vessels is equalized,

said pressure responsive means causing the first means on said rod portion to move said first and second valve means to closed positions in response to a drop in pressure in said fluid chamber,

said pressure responsive means causing the third means on said rod portion to move said third valve means to an open position whereby said fluid chamber and said control chamber are vented to the atmosphere increasing pressure differential across said first and second valve means to further assure closure thereof, and

said fourth valve means defining an inlet for pressurizing the pressure control device from a source of pressurized fluid.

4,410,001

ANTI-SIPHON SELECTOR VALVE

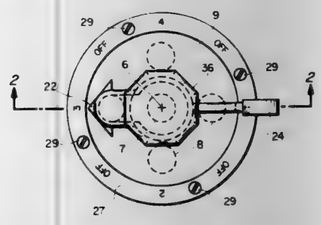
Robert P. Goguen, 180 Michael Dr., Campbell, Calif. 95008

Continuation-in-part of Ser. No. 118,733, Feb. 5, 1980, Pat. No. 4,326,671. This application Aug. 5, 1981, Ser. No. 290,334

The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.

Int. Cl.³ F16K *24/02*

U.S. Cl. 137—217 **16 Claims**



1. An anti-siphon selector valve comprising:

a valve body having therein an input port and a plurality of output ports disposed about the input port, said valve body further defining a passage communicating said input port to one of said output ports;

a conduit mounted on the valve body and selectively connectable between the input port and one of the other of the output ports so that incoming fluid entering the input port is directed out the one of the other of the output ports, said conduit including piston means for sealingly associating said conduit with the one of the other of the output ports;

anti-siphon valve means mounted on the valve for venting the other of the output ports to the atmosphere through the conduit when the pressure of fluid in the valve is substantially atmospheric; and

wherein the anti-siphon valve means includes a vertically translatable piston mounted in the conduit and is selectively connectable to vent all of the other of the output ports to the atmosphere.

4,410,002

VALVE PROVIDED WITH A THERMALLY-ACTUATED MECHANISM FOR PRESSING VALVE SEATS AGAINST A VALVE GATE BODY

Pieter J. Schuurman, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 260,508, May 4, 1981. This application Mar. 14, 1983, Ser. No. 474,857

Claims priority, application United Kingdom, Oct. 10, 1980, 8032758

Int. Cl.³ F16K *3/16, 49/00*

U.S. Cl. 137—238 **3 Claims**

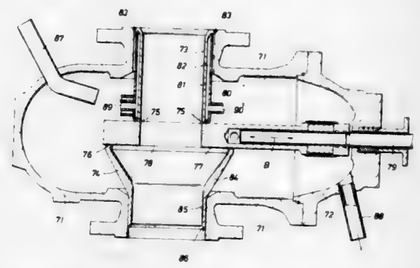
1. A valve comprising:

a valve housing containing a fluid supply conduit and a fluid discharge conduit for conveying fluid which flows through the valve;

within the valve housing, a valve gate body which contains an opening and is movable relative to the fluid supply and discharge conduits to open or close the fluid passageway for said flow through the valve;

contact resistant valve seat materials arranged on surfaces of the supply and discharge conduit and valve gate body for being pressed together to form substantially fluid-tight seals between those conduits and the gate valve body;

at least one heat-expandable metal structure arranged so that its thermally-induced expansion and contraction relieves and applies a relatively high force for compressing the valve seat materials on the fluid supply and discharge conduits against those on the valve gate body, said heat expandable metal structure including the fluid supply



conduit and having an annular fluid passageway disposed around said fluid supply conduit, means for circulating a fluid through said annular passageway for heating and cooling said expandable metal structure to cause said metal structure to expand and contract axially; and

means for repositioning the valve gate body when the force compressing it between the fluid supply and discharge conduits is relieved.

4,410,003

ROTARY PLUG VALVE

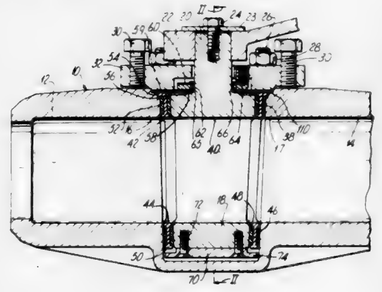
Michael J. Sandling, Barnstaple, England, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Dec. 22, 1980, Ser. No. 218,958

Claims priority, application United Kingdom, Jan. 8, 1980, 8000539; Sep. 25, 1980, 8030894

Int. Cl.³ F16K *23/00*

U.S. Cl. 137—312 **8 Claims**



1. A rotary plug valve, said valve comprising:

A valve housing, said housing having inlet and outlet ports;

A frusto-conical chamber, said chamber being formed in said housing;

A frusto-conical plug, said plug having a flow passage therethrough, said plug being insertable in said chamber, said plug being rotatable in said chamber from a remote position between valve-open and valve-closed positions, said valve-open position being when said plug flow passage is aligned with said inlet and said outlet ports of said housing, said valve-closed position being when said plug flow passage is rotated 90° from said valve-open position from said remote position such that said flow passage is blocked by said housing;

A liner for sealing said plug in said chamber, said liner being located between said chamber and said plug when said plug is inserted into said chamber, said liner having apertures which align with both said inlet and said outlet ports, and said flow passage, said liner further comprising:

Two plastic members, said plastic members sealing said plug in said chamber, said members comprising an inner plastic sleeve and an outer plastic sleeve, said sleeves being composed of fluorocarbon material, said inner sleeve and said outer sleeve being bonded together where said sleeve surfaces contact, said inner plastic sleeve having a substantial proportion of the radially inner surface of said sleeve being spaced relative to said plug such that thermal relief areas are provided permitting expansion of said plastic members;

A rigid support member, said member being at least partly enclosed by said inner and said outer plastic sleeves such that said inner and outer sleeves are in direct contact with both said plug surface and said chamber surface respectively, said members being located such that said inner and said outer plastic sleeves together with said rigid supporting member form said liner, said supporting member being a metal cage having flange portions defining apertures, said plastic sleeves extending radially inwardly and outwardly beyond said flange portion whereby said chamber surface and said plug surface are contacted solely by said plastic sleeves of said liner;

Means for preventing said liner for rotating in said frusto-conical chamber, said means having at least one lug, said lug being receivable in at least one correspondingly scalloped recess proximate the top, wider periphery of said frusto-conical chamber of said valve housing; and

Means for attaching said liner to said plug such that said liner and said plug form a unit, said unit being removable from said housing, said liner being separable from said plug after said unit is removed from said housing.

4,410,004

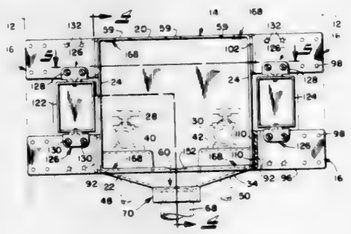
LAUNDRY OUTLET BOX

David E. Kifer, Parma, Ohio, and Robert H. McGuire, Anaheim Hills, Calif., assignors to Oatey Co., Cleveland, Ohio

Filed Apr. 4, 1980, Ser. No. 137,816

Int. Cl.³ F16L *5/00*

U.S. Cl. 137—360 **32 Claims**



1. A laundry outlet box capable of being recess mounted in a wall between laterally spaced wall supports, comprising: a housing having an axis and an open front face normal to such axis, plural bracket means each having a laterally extending portion adapted at its distal end for attachment to the wall support and an axially extending portion, mounting means for attaching said axially extending portion to said housing in a plurality of axially adjusted positions, and detent means for releasably locking said axially extending portion in one of such axially adjusted positions, said detent means including a plurality of axially spaced laterally opening recesses in said mounting means or axially extending portion and a laterally extending protrusion on the other selectively releasably engageable in any one of said recesses, said mounting means including axially opening mounting loops on opposite sides of said housing, said axially extending portions of said bracket means being receivable in said mounting loops, said protrusions being provided on the inner surface of said loops or the outer surface of said axially extending portions of said bracket means, and said recesses being provided on the adjacent surface of the other of said loops or axially extending portions.

4,410,005

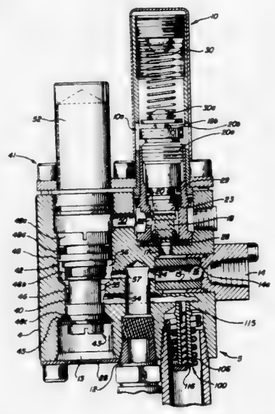
PILOT OPERATED RELIEF VALVE

Raymond G. Reip, Indian Head Park, Ill., assignor to Vapor Corporation, Chicago, Ill.

Continuation of Ser. No. 233,376, Dec. 13, 1981, abandoned. This application Apr. 18, 1983, Ser. No. 483,851

Int. Cl.³ F16K *31/38*

U.S. Cl. 137—488 **1 Claim**



1. In a valve assembly including a two-stage pilot valve and a balanced main valve having a pressurized head volume, wherein said pilot and said main valve are in fluid communication through at least one conduit for venting said volume and operating said main valve, a tubular plug flow adapter mounted in said conduit comprising;

an axial conduit defined by said plug, said conduit having a first diameter and length;

at least one ball in said conduit having a diameter essentially less than said conduit first diameter, said ball and conduit defining an annular flow area;

means containing said ball within said conduit length, said means including first and second conduit openings, said first opening having an effective diameter less than said ball, and spring means for mounting said flow adapter in said conduit, said spring means including a spring portion positioned to partially obstruct the diameter of said second opening, thereby defining normal and relief positions of said ball at opposite ends of said conduit and within said first length;

wherein venting said main valve head volume moves said ball from normal to relief positions.

4,410,006

DAMPER VALVE

Alexander E. Moulton, Bradford-on-Avon, England, assignor to Moulton Developments Limited, Wiltshire, England

Filed Oct. 13, 1981, Ser. No. 311,143

Claims priority, application United Kingdom, Oct. 17, 1980, 8033667

Int. Cl.³ F16K *17/18*

U.S. Cl. 137—493.8 **7 Claims**

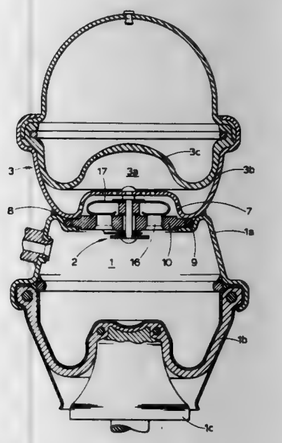
1. A damper valve arranged in a liquid conduit to control flow through the conduit in both directions, and comprising an apertured port plate with resilient flaps covering the ports so that fluid flow can only take place unidirectionally through a flap covered port, the valve having

a. a pair of main bump ports (11) covered by a centrally anchored elongate metal leaf (12) disposed on a first side of the port plate (10),

b. a pair of rebound ports (13) similarly covered by a centrally anchored elongate metal leaf (14) disposed on the second side of the port plate (10),

c. said pairs of bump and rebound ports (11 and 13) being of generally similar size,

characterized in that there are provided at locations substantially co-planar with said main bump ports, two blow-off bump



ports (16) which are larger than said main bump ports (11), which blow-off bump ports are covered by a separate centrally anchored bow-shaped metal leaf spring (17) which bridges the leaf spring closing the main bump ports and has its ends curved inwardly and shaped to constitute a pair of valving flaps, which inwardly curved flaps are preloaded against the blow-off bump ports (16) to such extent that said blow-off bump ports (16) are arranged to open only when the fluid pressure, in bump flow, rises substantially above the pressure corresponding to opening of the main bump valve ports (11).

4,410,007

SOFT SEAL INSTALLATION FOR FEED WATER CHECK VALVE

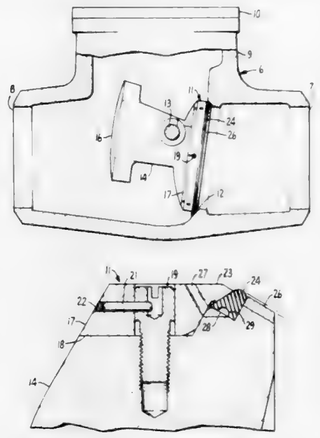
Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, San Mateo, Calif.

Continuation-in-part of Ser. No. 176,846, Aug. 11, 1980, abandoned. This application Feb. 24, 1982, Ser. No. 351,984

Int. Cl.³ F16K *15/03*

U.S. Cl. 137—516.29 **1 Claim**

1. In a swinging check valve having a valve portion swingable between an open and a closed position, the check valve including a valve body having an annular valve seat, said valve body and said valve portion having hard metal conical complementary facings adapted to form the primary valve seal when brought together, the improvement comprising a backup system including an annular flexible valve sealing element displaced outwardly from said primary valve seal on the valve portion to engage the annular valve seat on the valve body to close the valve, the valve portion including an annular groove extending about its circumference and having mounted therein said flexible annular valve sealing element, said element having a "U" shape when viewed in cross section, with a rounded outer surface adapted to contact said valve seat with the legs of the "U" in contact with the bottom and sides of annular groove and with the hollow interior of the "U" forming a chamber with the bottom of the groove constituting one side thereof and being cooperatively adjacent to the annular valve seat on the valve body when the swing check valve is in its closed position, a passage leading from said chamber to the opposite side of the valve portion whereby the chamber is in communi-



cation with fluid under pressure from within the valve body to expand the flexible sealing element outward into sealing engagement with the annular valve seat.

4,410,008

OPERATING EQUIPMENT FOR GATE VALVES (PASSAGE VALVES)

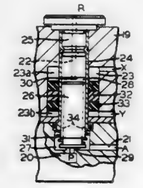
Helmut Gottling, Isernhagen, and Rudolf Moller, Gehrden, both of Fed. Rep. of Germany, assignors to WABCO Steuerungstechnik GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 209,432, Nov. 24, 1980, Pat. No. 4,350,182. This application Jun. 21, 1982, Ser. No. 390,018

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1979, 2949424

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—627.5 **4 Claims**



1. A valve device including at least one inlet, at least two outlets, and valve means, the latter having a first position for interrupting fluid pressure communication between said one inlet and one of said outlets, while concurrently establishing fluid pressure communication between said one outlet and the other of said outlets, and a second position for establishing fluid pressure communication between said one inlet and said one outlet, while concurrently interrupting fluid pressure communication between said one and said other of said outlets, said valve device further comprising:

(a) a bushing carried in the housing of said valve device;

(b) said valve means being operatively disposed within said bushing;

(c) a control chamber formed in the housing of said valve device through which said bushing passes;

(d) magnetic means operatively disposed in said control chamber in surrounding relationship with said bushing; and

(e) at least one elastomeric member arranged in said control

chamber contiguous with said magnetic means so as to form first and second pressure chambers on the opposite sides thereof, said first and second pressure chambers each having a connection via which fluid under pressure is supplied and exhausted to effect shifting of said at least one elastomeric member, said elastomeric member concurrently shifting said magnetic means to effect actuation of said valve means between said first and second positions.

4,410,009

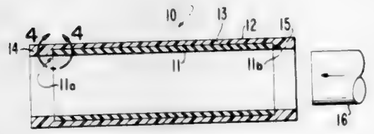
RECOVERABLE SLEEVE ASSEMBLY

John M. Blum, San Jose, Calif., assignor to Sigmaform Corporation, Santa Clara, Calif.

Continuation of Ser. No. 133,801, Mar. 25, 1980, abandoned. This application Jun. 15, 1982, Ser. No. 388,676

Int. Cl.³ F16L *9/00, 55/00*

U.S. Cl. 138—109 **8 Claims**



1. In a recoverable sleeve assembly including an inner elastomeric tube and an outer rigid tube surrounding and secured to the inner tube and holding the inner tube in outwardly stretched condition, the improvement comprising an outer tube extending axially beyond and covering both ends of the inner tube, secured to said ends of the inner tube, and having a thickness equal to the total thickness of the inner tube plus the thickness of that portion of the outer tube which surrounds the inner tube, said outer tube being a rigid thermosetting adhesive polyurethane comprising a polyol reacted with an isocyanate whereby said outer tube is sufficiently adhesive to hold the inner tube in outwardly stretched condition but will peel from the inner tube after breaking by impact or application of heat without use of a solvent.

4,410,010

ORIFICE METER WITH ISOLATION CHAMBER SEAL ON THE ORIFICE DISC CARRIER

Davis A. Van Scoy, Simonton, Tex., assignor to Grove Valve and Regulator Company, Oakland, Calif.

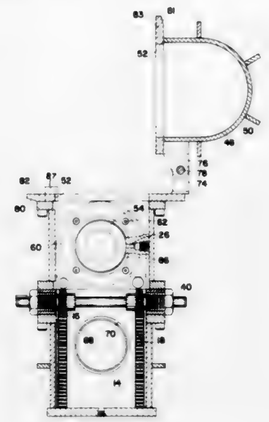
Filed Feb. 8, 1982, Ser. No. 346,485

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—44 **3 Claims**

1. An orifice meter comprising:
- an open top main housing module having a pair of parallel plates;
- aligned flow passages through said plates;
- a lower housing module secured to and in communication with said main housing module;
- a carrier plate having a top orifice disc receptacle and a lower through flow port;
- seal rings on both sides of said carrier plate sealing against said plates around said disc receptacle and said flow port;
- said carrier plate being slidable between a lower working position and a raised servicing position in which positions, respectively, said disc receptacle and said flow port are aligned with said flow passages; and
- means for raising and lowering said carrier plate; and
- a flange plate around the top of said main housing module;
- a closure housing module hinged at one side to said flange plate;

said closure housing module receiving said carrier plate in its servicing position; and



clamp means for locking said closure housing firmly against said flange plate.

4,410,011

TUBULAR CASING WITH GLUED SEAM AND ITS MANUFACTURE AND USE FOR CURVED OR RING-SHAPED SAUSAGES

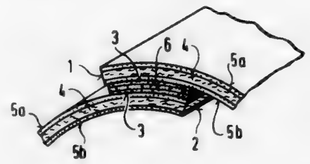
Klaus Andrä, Zornheim; Elfriede Hutschenreuter, Bad Schwalbach, and Herbert Porrmann, Niedernhausen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,886

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040279

Int. Cl.³ A22C *13/00*; F16L *11/00*

U.S. Cl. 138—118.1 **18 Claims**





1. A tubular casing suitable for containing foodstuffs, comprising:
- a web of material comprising a naturally occurring polymer, said web being curved about its longitudinal axis in such a manner that its two longitudinal edge regions are positioned to form a seam;
- a layer of a substantially water-insoluble adhesion-promoting resin covering at least one of the inside and outside surfaces of said web in at least the area of said two edge regions;
- a strip of film applied to said longitudinal edge regions forming the seam, said strip of film comprising a material capable of shrinking predominantly in the direction of its longitudinal axis upon the application of heat; and
- a layer of a pressure-sensitive adhesive interposed between said strip of film and each edge region of said web material, whereby the seam is sealed by said strip of film via said layer of pressure-sensitive adhesive and said layer of adhesion-promoting resin.

4,410,012

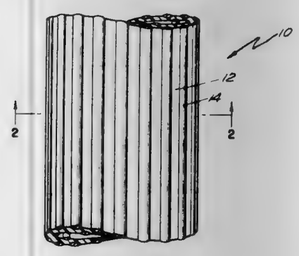
RADIALLY COMPLIANT ACOUSTIC LINE ARRAY HOSE

John J. Redding, West Warwick, R.I., and Robert O. Hauptmann, Groton, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 20, 1980, Ser. No. 198,743

Int. Cl.³ F16L *11/04, 11/08, 11/12*

U.S. Cl. 138—121 **8 Claims**



1. A line array hose comprising:
- a long cylindrical tube of soft, flexible thermoplastic material having high damping characteristics for providing low self-noise and radial compliance as said hose is towed through the water; and
- a first plurality of raised longitudinal ribs of a stiffer, harder thermoplastic material, bonded to said long cylindrical tube and spaced uniformly around the circumference thereof at a predetermined distance from each other, for providing wear and cut-through resistance for said cylindrical tube in such a way as to maintain said high damping characteristics and radial compliance.

4,410,013

COMPOSITE DUAL TUBING

Takesada Sasaki, Machida; Hiroshi Endo, Zama; Yoshimasa Zama, Sagamihara; Masahiko Shiraishi, Nakatsu; Yosinari Miura, Nakatsu, and Masayuki Yamaguchi, Nakatsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

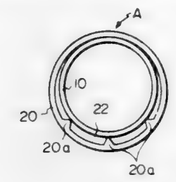
Filed Sep. 8, 1981, Ser. No. 300,397

Claims priority, application Japan, Sep. 9, 1980, 55-125012; Sep. 12, 1980, 55-126870

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—149 **3 Claims**

1. An exhaust pipe for high temperature waste gas from an automobile engine, said exhaust pipe comprising a metal dual tubing characterized in that said metal dual tubing comprises an inner tube and an outer tube which are in contact with each other along substantially the entire longitudinal length of the tubing and further at least one stripe of lug contacts the outer surface of said inner tube and the inner surface of said outer tube, said at least one stripe of lug extending substantially the entire longitudinal direction of the tubing, and said lug is located at the half section of the dual tubing opposite to the half section where the tubes are in contact.



4,410,014

FLEXIBLE INSULATED AIR DUCT

Clifford D. Smith, Waterville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 168,911, Jul. 14, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,709

Int. Cl.³ F16L *9/14*

U.S. Cl. 138—149 **2 Claims**



1. A flexible insulated air duct (**50**) consisting essentially of a flexible cylindrical inner core (**51**) including a wire helix (**52**) with spaced convolutions, flexible scrim-faced glass wool blanket material (**46**) wrapped around the core (**51**) and including on its outer surface a glass scrim (**36**) having about two by three strands of glass filaments per square inch, and a flexible outer jacket (**54**) over the scrim-faced glass wool blanket material (**46**), a flattened sample of the duct wall being capable of passing the flame penetration test of Underwriters Laboratories Standard UL 181 for Class I air duct materials.

4,410,015

METHOD AND APPARATUS FOR PRODUCING AN INTERWOVEN SEAM INTERCONNECTING TWO WOVEN WEB PORTIONS

Rudolf Koller, and Walter Runkel, both of Aachen, Fed. Rep. of Germany, assignors to Herrmann Wangner GmbH & Co KG, Reutlingen, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,217

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 3025909

Int. Cl.³ D03D *41/00*; D21F *1/12, 7/10*

U.S. Cl. 139—383 A **16 Claims**

1. A method of producing an interwoven seam interconnecting two end portions of a woven structure including an array of parallel warp threads and an array of parallel weft threads interwoven with the array of warp threads at right angles thereto, particularly for making an endless woven band, especially for use in the paper-manufacturing industry, comprising the steps of:
- forming a tying strip at the free ends of the warp threads of each of the end portions to be interconnected, by removing some of the weft threads from each of the end portions

and retaining some of the weft threads at the free ends of the warp threads such that the tying strip is disposed at the free ends of the warp threads, spaced from the remainder of the woven structure and connected thereto only by the warp threads and holds the free end of the warp threads in their original order;

positioning the end portions in registry with one another such that the weft threads are coextensive and the warp threads substantially register with one another;

positioning seam warp threads between the points at which the warp threads emerge from the woven structure and forming a seam loom shed from the seam warp threads;

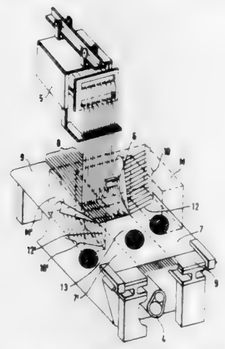
releasing the warp threads in their original order from the tying strip by periodically lifting and lowering the weft threads of the tying strip which interconnect the warp threads at their free ends;

separating one of the warp threads at a time in space from the following warp threads;

mechanically introducing the released and separated warp thread as a seam weft thread into the respective seam loom shed and transporting such seam weft thread across the respective seam loom shed;

shifting such seam weft thread within the seam loom shed into its proper position in the seam being formed;

repeating the releasing, separating, introducing and shifting steps with another warp thread stemming from the respectively other end portion such that the other warp thread is



transported across the further seam loom shed in the opposite direction;

detaining the properly positioned respective seam weft threads in the seam, including forming a following seam loom shed; and

advancing the seam weaving operation by a step having a length corresponding to the spacing between the individual warp threads in timed sequence with the operating steps of releasing, separating, introducing, shifting, detaining and repeating.

8. An apparatus for producing an interwoven seam interconnecting two end portions of a woven structure including an array of parallel warp threads and an array of parallel weft threads interwoven with the warp threads at right angles thereto, particularly for making an endless woven band, especially for use in the paper-manufacturing industry, comprising:

means for positioning the end portions to be interconnected, from which at least some of the weft threads have been removed to form a tying strip holding the warp threads of each of the end portions in their original order at their free ends and at a predetermined distance from the remainder of the woven structure, in registry with one another such that the waft threads are coextensive and the warp threads substantially register with one another;

means for clamping the ends of the tying strip to the means for positioning the end portions of the woven structure;

means for positioning seam warp threads between the points at which the warp threads emerge from the woven structure;

lifting elements for periodically lifting and lowering the tying strip weft threads which interconnect the warp threads at their free ends for gradually releasing the warp threads from the tying strip in their original order;

means for mechanically separating one of the warp threads at a time in space from the following warp threads;

means for forming a succession of seam loom sheds from the seam warp threads;

means for mechanically introducing the released and separated warp threads associated with the respective end portions of the woven structure as respective seam weft theads in opposite directions into, and for transporting such seam weft threads in said opposite directions across the respectively associated seam loom sheds;

means for shifting the respective seam weft threads within the respectively associated seam loom sheds into their proper positions in the seam being formed, in which positions they are detained upon closing of the respectively associated seam loom sheds; and

means for advancing the seam weaving operation by a step having a length corresponding to the spacing between the individual warp threads of the woven structure, in timed sequence with the operation of the releasing, separating, forming, introducing, and shifting means.

4,410,016

AIR SUPPLY SYSTEM FOR A PNEUMATIC LOOM
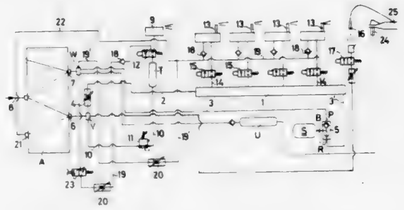
Petrus G. J. Manders, Eindhoven, Netherlands, assignor to Rüti Machinery Works Ltd., Rüti, Switzerland

Filed Oct. 13, 1981, Ser. No. 310,763

Claims priority, application Switzerland, Oct. 22, 1980, 7869/80

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **3 Claims**



1. An air supply system for a pneumatic loom, comprising:

a compressed air line;

a compressed air container;

a primary control valve for operatively connecting said compressed air container with said compressed air line;

a primary nozzle;

means for connecting said primary nozzle with said primary control valve;

said connecting means including a control valve and conduit means for supplying said compressed air storage;

said primary nozzle being operatively connected with said control valve;

a plurality of auxiliary nozzles operatively connected with said compressed air container; and

said connecting means further including a separate compressed air storage arranged directly forwardly of said control valve of said primary nozzle in said conduit means and operating independently of said compressed air container supplying said plurality of auxiliary nozzles.

4,410,017

METHOD AND APPARATUS FOR PNEUMATIC INSERTION OF A WEFT THREAD IN THE SHUTTLE OF A MULTI-FEED WEAVING LOOM

Adolf Linka, Untere Dornäcker 4, Bechtoldsweiler, D-7450 Hechingen 6, Fed. Rep. of Germany

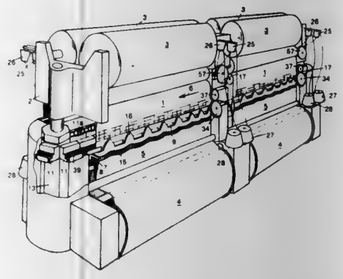
PCT No. PCT/DE81/00064, § 371 Date Dec. 11, 1981, § 102(e) Date Dec. 11, 1981, PCT Pub. No. WO81/03037, PCT Pub. Date Oct. 29, 1981

PCT Filed Apr. 18, 1981, Ser. No. 333,859

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016182

Int. Cl.³ D03D *47/26*

U.S. Cl. 139—436 **24 Claims**



1. A method for the pneumatic insertion of a weft thread into the shuttle of a multi-feed weaving loom in which the weft thread, measured out at a predetermined length, is inserted by means of an air flow in an injector into a weft thread magazine of a shuttle continuously moving past the injector, characterized in that the injector, beginning at a start position, is moved along with the shuttle for a predetermined distance at a reduced speed during the insertion of the weft thread into the weft thread magazine, and at the end of this distance is rapidly returned to the position.

4,410,018

NOZZLE STRUCTURE FOR A WEAVING MACHINE

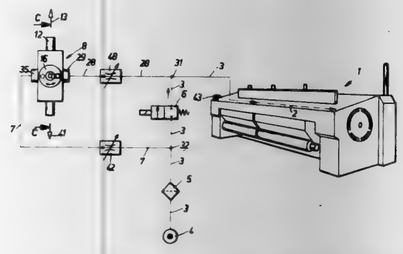
Dionizy Simson, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 27, 1981, Ser. No. 296,647

Claims priority, application European Pat. Off., Sep. 9, 1980, 80 105387.7

Int. Cl.³ D03D *47/34, 47/36, 47/28*

U.S. Cl. 139—450 **4 Claims**



1. A nozzle structure for a weaving machine comprising

a body having a guide channel passing therethrough for passage of a filamentary material therethrough; and

a control valve having a fluid channel therein for introducing a jet of fluid into said guide channel, said valve being rotatably mounted in said body on an axis perpendicular to said guide channel for movement between two positions in communication with said guide channel and in opposition to each other whereby the jet of fluid can be introduced alternately into said guide channel in opposite directions.

4,410,019

BINDING TOOL

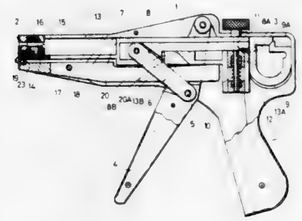
Tadashi Suzuki, Saitama, Japan, assignor to Satogosei Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1982, Ser. No. 366,521

Claims priority, application Japan, May 29, 1981, 56/81090

Int. Cl.³ B21F *9/00*

U.S. Cl. 140—123.6 **2 Claims**



1. A binding tool for fastening and cutting off a band after relaxing of a pulling force comprising:

a pistol-type body capable of being fitted with a pad plate at the tip;

a trigger part subjected to a returning force;

a pulling member slidably disposed in said body and having a tip provided with ratchet pawls and a locking part opposite the pawls;

a sliding member slidably disposed along a slot of said pulling member and connected to said trigger part through a pivoted connecting member and having a tapered surface near its rear end portion;

a push-up member having a tapered surface at the top, said surface being slidably contacted with said tapered surface of said sliding member and having a surface slidably contacting an inner surface of the rear end portion of said pulling member, the contacting of said tapered surfaces of said push-up member and said sliding member being released when forces imposed reach a predetermined value;

a rocking member provided at the tip with a cutter and pivoted to said body; and

a push-down member having a sloped surface slidably contacted with a sloped surface provided in the lower portion of said pulling member, a face slidably contacting the upper surface of said rocking member, and a face coming into slidable contact with a pressing surface provided at an under side of said sliding member after releasing from contact the tapered surfaces of said sliding member and said push-up member.

4,410,020

SENSOR SYRINGE

Adrian Lorenz, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Mar. 26, 1981, Ser. No. 247,904

Claims priority, application Switzerland, Apr. 23, 1980, 3124/80

Int. Cl.³ B65B *3/04*

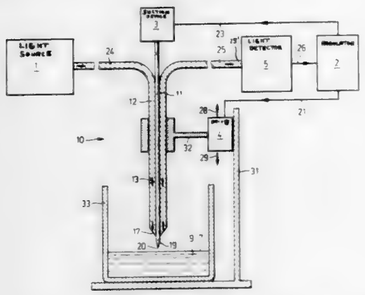
U.S. Cl. 141—65 **3 Claims**

1. An arrangement for positioning a duct of a sample withdrawal device for the withdrawal of a sample from a liquid contained within a vessel and wherein the duct automatically is positionally adjusted with respect to an unknown liquid surface of the sample, comprising:

a duct through which the sample is withdrawn;

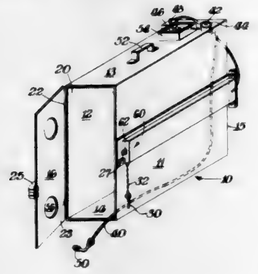
a hollow, light-conducting rod surrounding the duct in a substantially sheath-like fashion;

said light-conducting rod having a lower end;
suction means cooperating with the duct for removal of the liquid sample from the vessel through the duct;
controlling means, including drive means, for positionally adjusting the lower end of said light-conducting rod in relation to the level of the liquid sample in the vessel; and



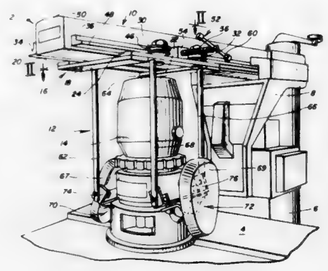
means for detecting the change in the light reflection behavior of the lower end of the light-conducting rod upon its immersion into the liquid and for signalling said controlling means that the duct surrounded by said light-conducting rod is in position to withdraw a liquid sample from the vessel.

4,410,021
TIRE INFLATION
Daniel Blevins, and Robert W. Adelman, both of Linden Green, Del., assignors to The Crowell Corporation, Newport, Del.
Filed May 15, 1981, Ser. No. 264,196
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—95 **6 Claims**



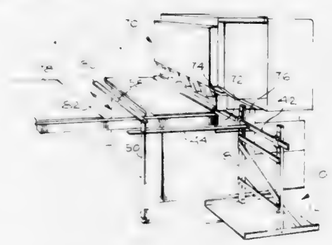
1. An apparatus for relatively safely inflating pneumatic tires on vehicular wheel rims, the apparatus comprising a box that receives a tire-carrying truck wheel rim, the walls being sufficiently strong and securely held to contain all tire and wheel parts in the event the tire or rim explodes, one wall of the box being a door openable to permit the introduction and the removal of the tire-carrying wheel rim, a flexible air conduit within the box and having an outlet connector that can be clamped to a tire valve stem, the air conduit having linking means penetrating through a wall of the box to a valved supply line outside the box, a pressure indicator visible from outside the box and connected to the flexible air conduit to indicate the pressure in the tire, and precautionary interlock means coacting with the door and the air conduit to prevent the flow of air from the valved supply line to the valve stem when the door is not closed but permitting such flow when the door is closed.

4,410,022
ROUTER HARNESS
Laurence A. Peterson, 17826 State Line, Lansing, Ill. 60438
Filed May 3, 1982, Ser. No. 374,159
Int. Cl.³ B27C *5/10*
U.S. Cl. 144—1 F **12 Claims**



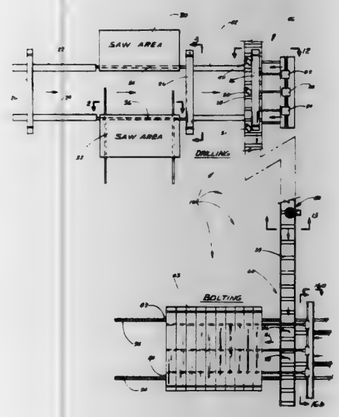
1. A router harness for use with a radial arm saw assembly having a substantially horizontal support arm, said router harness comprising: bracket means coplanar with and operatively connected to said support arm for longitudinal movement therealong; support means integral with and depending from said bracket means, said support means defining a cell for storing a router therein; clamping means affixed to said support means for securing a router to said support means; and registration means mounted to said bracket means for selectively positioning and fixing said bracket means and support means integral therewith along said support arm.

4,410,023
WORK HOLDER
Jesus G. Vasquez, 5601 D St., Chino, Calif. 91710
Filed May 26, 1981, Ser. No. 267,194
Int. Cl.³ B25H *1/00*
U.S. Cl. 144—287 **9 Claims**



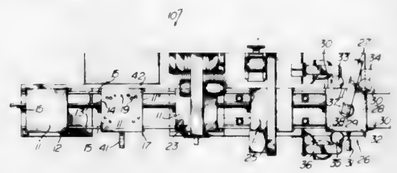
1. An improved work holder for use with a cutting or shearing machine, said work holder comprising, in combination:
(a) a stationary base;
(b) a plurality of spaced stationary upright supports secured to said base;
(c) an adjustable translatable support arm mounted on and movable relative to said upright supports;
(d) ground traverse means connected to said arm and including handle means for advancing said arm into a workpiece support position and for retracting said arm from said workpiece support position, said ground traverse means further being spaced laterally of said arm and including a generally vertical rod, a single wheel rotatably secured to the lower end thereof, and a crossbar secured to the upper end thereof and extending laterally to said arm, said handle extending forward of and secured to the upper end of said rod.

4,410,024
APPARATUS AND METHOD OF ASSEMBLING BARGE FENDERS
Wofford M. Folse, Sr., P.O. Box 1210, New Iberia, La. 70560
Filed Mar. 25, 1981, Ser. No. 247,641
Int. Cl.³ B27F *7/00*; B27C *1/00*; B27M *1/08*
U.S. Cl. 144—353 **17 Claims**



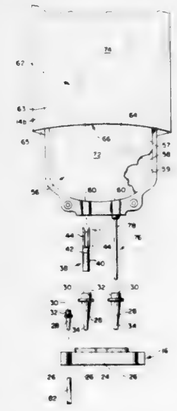
1. A method of making barge fenders, comprising the following steps:
(a) providing a pair of endless guide chains for conveying a wooden work piece to be treated;
(b) providing a pair of saw assemblies for performing selected cuts on the ends of said wooden work piece, each of said saw assemblies comprising:
(i) a saw for performing first vertical cut to obtain a predetermined length of said work piece;
(ii) a saw for performing a 45° angle cut to release ½ of the top portion of an end of said work piece;
(iii) a saw for performing a horizontal cut midway through an end of the work piece to the depth of the 45° angle cut;
(iv) a saw for performing a second vertical cut to adjoin the horizontal and the 45° angle cuts;
(c) guiding said work piece so that both ends of the work piece enter the saw assembly simultaneously;
(d) conveying the work piece through the saw assemblies;
(e) performing four selected cuts on both ends of said work piece simultaneously;
(f) conveying the work piece out of the saw assemblies following the cutting operation;
(g) providing a bore assembly for drilling a plurality of holes simultaneously along the length of the work piece;
(h) conveying the work piece into the boring assembly;
(i) securing the work piece in the bore assembly and boring a plurality of holes in predetermined places along the length of the work piece;
(j) conveying the work piece out of the bore assembly;
(k) providing a bolting assembly for simultaneously bolting a plurality of work piece into a barge fender unit;
(l) guiding the work piece into the bolting assembly and positioning it in alignment with a selected number of identical pieces for bolting them into the barge fender unit;
(m) providing means for assembling the work pieces into a single barge fender unit;
(n) bolting the work pieces and assembling them into the barge fender unit.

4,410,025
METHOD AND APPARATUS FOR MAKING WOODEN CHAIR SEATS
Jacques Sicotte, St. Therese, Canada, assignor to Paul Sicotte & Fils Ltee, St. Therese, Canada
Filed Mar. 17, 1981, Ser. No. 244,725
Int. Cl.³ B27C *1/00*; B27M *1/08*
U.S. Cl. 144—365 **16 Claims**



1. An automatic machine for making wooden chair seats comprising feed means for sequentially advancing a plurality of boards in a series spaced apart manner along a plurality of separate work stations, board positioning and holding means at said stations to hold said boards thereat at a precise location to effect a work function to said boards, means to synchronize the displacement of said boards from said stations, a drilling station for drilling holes on at least one side face of said boards, a routing station for routing a pattern in a surface of said boards, a sanding station for sanding said routed surface, a contour cutting station for cutting a predetermined peripheral outline in said boards, edge sanding means for sanding the cut outlet edge of said boards, and transfer means to transport said boards after they have been machined by said work stations into seats to an unloading area.

4,410,026
PORT BLOCK ASSEMBLY FOR INTERCONNECTING A FLUID CONTAINER WITH A FLUID CONDUIT
Daniel R. Boggs, Vernon Hills, and Carl Aronson, Wauconda, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 13, 1981, Ser. No. 282,894
Int. Cl.³ B65D *30/24*
U.S. Cl. 383—60 **19 Claims**



1. A port block assembly for interconnecting a fluid container fabricated of a first material with a fluid conduit fabricated of a second material which is chemically dissimilar to the first material, said assembly comprising
body means having a port and being fabricated from a material which is chemically similar to the first material for

bonding to the container with said port in flow communication with the interior of the container, and

insert means having a bore and being fabricated from a material which is chemically similar to the second material for interference fit engagement with said body means port with a portion of said insert means exposed for bonding to the fluid conduit.

4,410,027

RETAINER STRIP ASSEMBLY FOR FLEXIBLE SHEET MATERIAL

Robert W. Lucous, 1690 S. Shiloh Rd., Laura, Ohio 45337

Continuation-in-part of Ser. No. 952,272, Oct. 18, 1978, abandoned. This application Jun. 3, 1980, Ser. No. 156,124

Int. Cl.³ A47G *5/00*; A44B *21/00*

U.S. Cl. 160—380 **2 Claims**



1. An improved elongated two-piece retainer strip assembly adapted to be mounted on a surface surrounding a window for gripping and retaining a panel of flexible sheet material, said strip assembly comprising an extruded single piece bottom strip member of semi-rigid plastics material, said bottom strip member being symmetrical about a longitudinally extending center plane, and including a generally flat base wall being piercable by a plurality of longitudinally spaced nails adapted to project perpendicular from said base wall to secure said bottom strip member to the surface, a front wall and a back wall projecting from said base wall and cooperating therewith to define a generally channel-shaped recess, said front and back walls each having a protuberance extending inwardly in partially overlying relation to said recess to form opposing undercut portions of said recess between said protuberances and said base wall, an extruded single piece top strip member of semi-rigid plastics material, said top strip member being non-symmetrical about a longitudinally extending center plane and having an inner portion with protuberances projecting outwardly into said undercut portions of said recess for capturing the sheet material within said recess with the sheet material overlying said front and back walls, said top strip member including an outer portion having opposite outwardly projecting edge flanges overlying said front and back walls of said bottom strip member and providing said top strip member with a width generally the same as the width of said bottom strip member, one of said edge flanges on said top strip member cooperating with the underlying said protuberance on said top strip member to define a groove having a depth greater than the depth of the groove defined by the opposite said edge flange and the underlying said protuberance to provide for inserting said semi-rigid top strip member and the sheet material into said bottom strip member while providing for conveniently removing said top strip member from said bottom strip member, and said bottom strip member including longitudinally extending flexible bottom corner portions projecting laterally outwardly from said front and back walls and downwardly from said base wall to provide an air-tight seal between said bottom strip member and the supporting surface between the nails.

4,410,028

PROCESS AND INSTALLATION FOR STORING HEAT AND FOR UPGRADING ITS TEMPERATURE

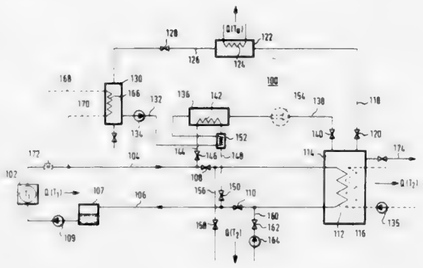
Georg Alefeld, Josef-Raps-Strasse 3, Munich 40, Fed. Rep. of Germany; Peter Maier-Laxhuber, Munich, and Markus Rothmeyer, Erding, both of Fed. Rep. of Germany, assignors to Georg Alefeld, Munich, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,185

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022284

Int. Cl.³ F25B *15/00*

U.S. Cl. 165—1 **25 Claims**



1. A process for storing heat and for upgrading its temperature comprising the following steps:

A. generating a working fluid by expulsion from an absorbing substance, in vapor form and within a relatively low pressure range, by applying heat at a temperature T_1, in an intermediate temperature range, to the absorbing substance;

B. condensing the working fluid vapor generated in step A, while in the relatively low pressure range, at a temperature T_0 in a relatively low temperature range;

C. raising the pressure of the condensed working fluid into a relatively high pressure range;

D. evaporating the condensed working fluid, in the high pressure range, by application of heat at a temperature in the intermediate temperature range;

E. re-absorbing the evaporated working fluid in the absorbing substance, in the high pressure range and at a temperature T_2 within a relatively high temperature range while generating heat of absorption; and

F. withdrawing the heat of absorption for utilization;

the working fluid being water and the absorbing substance being a zeolite;

and $T_0<T_1<T_2$.

4,410,029

METHOD OF OPERATING HEAT EXCHANGER APPARATUS COMPRISING A PLURALITY OF HEAT EXCHANGER UNITS CONNECTED IN SERIES, AND APPARATUS ADAPTED FOR OPERATION BY THE METHOD

Dick G. Klaren, Ijmuiden, Netherlands, assignor to Esmil BV, Amsterdam, Netherlands

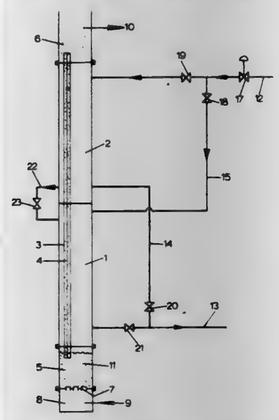
Filed Aug. 18, 1981, Ser. No. 294,024

Claims priority, application Netherlands, Sep. 5, 1980, 8005023

Int. Cl.³ F28D *13/00*; F28G *13/00*

U.S. Cl. 165—1 **6 Claims**

1. Method of operating heat-exchanger apparatus comprising a plurality of heat exchanger units which are connected together in series for countercurrent flow of respectively a first heat exchanging medium which contains fluidisable particulate material and a second heat-exchanging medium, each said unit comprising at least one vertical tubular duct in which said first heat-exchanging medium flows upwardly with said particulate material in a fluidized state and a compartment through which said second heat-exchanging medium passes and through which said duct extends, the particulate material acting to remove deposits formed on the tube inside walls by the first



medium, said method including the step of intermittently interrupting the flow of said second medium through each of the compartments for a period of time, while flow through at least one other of said compartments is maintained, in order that the cleaning effect of the removal of the said deposits by the particulate material is temporarily increased in that compartment.

4,410,030

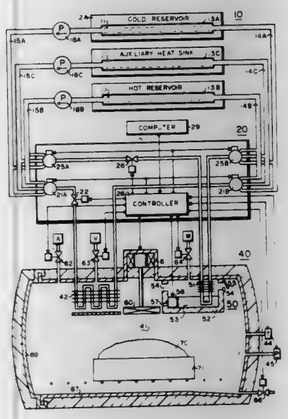
PRESSURE COOKER WITH REGULATED VAPOR PRESSURE

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 299,214, Oct. 4, 1972, Pat. No. 3,888,303, which is a continuation-in-part of Ser. No. 569,354, Apr. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 769,389, Feb. 16, 1977, abandoned, and a continuation-in-part of Ser. No. 941,123, Sep. 11, 1978, Pat. No. 4,246,955. This application Nov. 4, 1980, Ser. No. 204,079

Int. Cl.³ F25B *13/00*

U.S. Cl. 165—2 **11 Claims**



1. A process for regulating pressure in a processing vessel over a range of temperatures by regulating the partial pressure of a condensible gas, comprising the steps of:

cooling a surface which communicates with the processing vessel sufficiently to condense a portion of the condensible gas into its condensate and collecting the condensate in a condensate vessel which is thermally insulated from the processing vessel, said cooling continuing until the pressure in the processing vessel is reduced to a predetermined level, said cooled surface and condensate vessel being at substantially the pressure of the processing vessel, and

heating a surface which is in the condensate in the condensate vessel sufficiently to vaporize at least a portion of the condensate until the partial pressure of the condensible gas increases the pressure in the processing vessel to a predetermined level whereby the condensible gas and its condensate are conserved under transformation between gaseous and liquid phases to regulate pressure in the processing vessel.

4,410,031

LATENT HEAT ACCUMULATOR

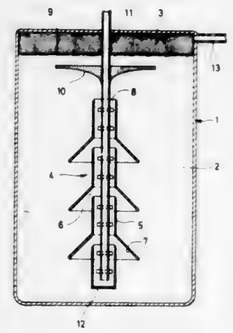
Friedrich Lindner, Stuttgart, and Kurt Scheunemann, Lahr, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt e.V, Bonn, Fed. Rep. of Germany

Filed Jul. 13, 1981, Ser. No. 282,936

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028153

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—10 **12 Claims**



1. A latent heat accumulator for use with a latent heat storage medium and a heat exchange medium immiscible with and having a specific weight less than that of said heat storage medium, comprising

(a) a vertically arranged container (1) having a lower section containing a volume of said heat storage medium and an upper section containing a volume of said heat exchange medium; and

(b) means for transporting said heat exchange medium through said heat storage medium for mixture therewith, said transport means including

(1) a passage conduit (4) vertically arranged within said container lower section, the upper end of said passage conduit being spaced from said upper section and containing an outlet opening (8), said conduit also containing a plurality of vertically spaced radially arranged inlet openings (6) through which said heat storage medium may enter said conduit; and

(2) means (11, 14) for introducing said heat exchange medium into the lower end of said conduit for upward flow therethrough, whereby when said heat exchange medium flows upwardly through said conduit toward said outlet opening, said heat storage medium is drawn into said conduit via said inlet openings for mixing in heat exchange relation with said heat exchange medium, following which the mixture is discharged from said conduit via said outlet opening.

4,410,032

RADIATOR GRILLE STRUCTURE

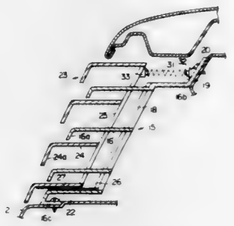
Shinya Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Dec. 10, 1981, Ser. No. 329,426

Claims priority, application Japan, Dec. 26, 1980, 55-186634[U]

Int. Cl.³ F28F *13/08*

U.S. Cl. 165—44 **5 Claims**



1. A radiator grille structure for attachment to the front end of an automotive vehicle having a fore-and-aft direction, comprising:

a stationary grille to be secured to the vehicle body of the automotive vehicle and comprising a plurality of horizontally elongated lamellar plates vertically spaced apart from each other and respectively having front end portions bent downwardly and forwardly for forming therebetween gaps to pass ram air therethrough,

a movable grille comprising a plurality of horizontally elongated lamellar plates vertically spaced apart from each other and respectively having front end portions bent downwardly forwardly, the lamellar plates of the movable grille being arranged alternately to the lamellar plates of said stationary grille, the movable grille being movable in the fore-and-aft direction with respect to said stationary grille so as to cause the front end portions of the lamellar plates to move toward and away from positions closing said gaps, respectively, and

driving means for driving said movable grille to move in the fore-and-aft direction with respect to said stationary grille.

4,410,033

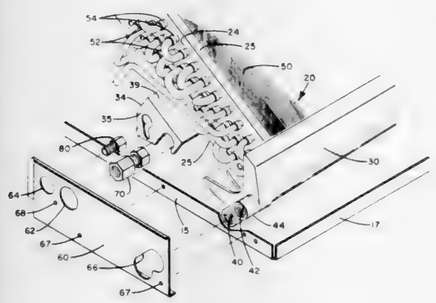
COMBINATION COUPLING RETAINER AND SUPPORT FOR A HEAT EXCHANGE UNIT

Thaddeus J. Wawro, Auburn, and Timothy A. Wright, Chittenango, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 2, 1981, Ser. No. 279,656

Int. Cl.³ F25D *19/00, 21/14*

U.S. Cl. 165—78 **9 Claims**



1. A combination coupling retainer and support assembly for use with a plate fin heat exchanger having a tube sheet, a liquid header and a suction header which comprises:

a retainer comprising a face portion which defines an arcuate liquid line slot and a suction line opening and an extension portion for securing the face portion to the tube sheet of the heat exchanger;

liquid line coupling means secured to the liquid header and located to extend through the liquid line slot of the face portion to slide along the slot as the heat exchanger is rotated; and

suction line coupling means secured to the suction header and positioned to be secured within the suction line opening to serve as an axis of rotation for the heat exchanger relative to the coupling retainer.

4,410,034

TEMPERING ARRANGEMENT FOR CONTAINERS

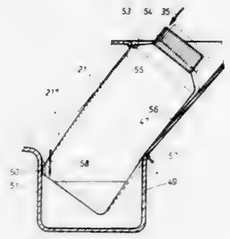
Rainer Bernhardt, and Walter Kremer, both of Bergneustadt, Fed. Rep. of Germany, assignors to Jobo-Labortechnik GmbH & Co. K.G., Gummersbach, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,828

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021722

Int. Cl.³ F28F *7/00*

U.S. Cl. 165—80 E **11 Claims**



1. A tempering arrangement for containers, particularly for bottles with photodeveloping chemicals, comprising a tank for accommodating a tempering bath and having an opening arranged for inserting a container, said container provided with a shoulder; an abutment formation provided adjacent to said opening of said tank; and guiding means for guiding the container during its insertion into said tank in one direction and thereafter deflecting the container in another direction transverse to said one direction so that the container assumes in said tank its end position in which the shoulder of the container engages behind said abutment formation of said tank to prevent unintentional rearward movement and withdrawal of the container from said tank.

4,410,035

CONDENSING APPARATUS AND METHOD FOR PRESSURIZED GAS

Jeffrey A. White, 1 Westmorland Rd., London, Ontario N6J 3N2, Canada

Filed Aug. 24, 1981, Ser. No. 295,713

Claims priority, application Canada, May 15, 1981, 377441

Int. Cl.³ F28B *3/00*

U.S. Cl. 165—111 **20 Claims**

1. A vapour condensing apparatus for continuously collecting condensate subject to the freezing from a supply (12) of compressed gas passing therethrough wherein the temperature dew point of the vapour in the compressed gas is greater than the temperature of the cooling fluid, said apparatus comprising at least one elongate condensing assembly having a top end and a bottom end and

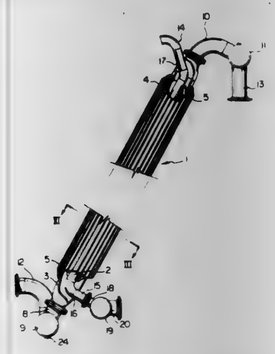
wherein each said assembly includes

spaced apart inner (2) and outer (3) tubular sections which extend directly between said ends,

a first passageway (6) in said assembly for the passage of the cooling fluid therethrough and which is defined by the interior of said inner tubular section (2),

a second passageway (7) in said assembly for the passage of the said compressed gas therethrough and which is defined by the spacing between said spaced apart inner (2) and outer (3) tubular sections,

compressed gas inlet manifold means (9) communicating with said second passageway (7) at said bottom end,



compressed gas outlet manifold means (10, 11) communicating with said second passageway (7) at said top end and

condensate discharge means (24) at the bottom end of said assembly for exhausting condensate collected in said second passageway (7) and draining therethrough by gravity to the compressed gas inlet manifold means and being prevented from freezing by the presence of the compressed gas supplied from the manifold prior to being cooled by the cooling fluid.

4,410,036

HEAT EXCHANGER MADE OF ALUMINUM ALLOYS AND TUBE MATERIAL FOR THE HEAT EXCHANGER

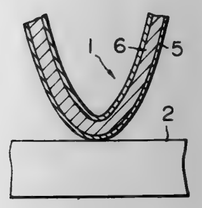
Kenso Kanada, Anjo; Yoshiharu Hasegawa, Oobu; Hiroshi Kawase, Imaichi, and Kazunori Ishikawa, Nikko, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Furukawa Aluminum Co., Ltd., Tokyo, both of, Japan

Filed Sep. 24, 1981, Ser. No. 305,357

Claims priority, application Japan, Oct. 1, 1980, 55-137043; Oct. 21, 1980, 55-146352

Int. Cl.³ F28F *19/06*

U.S. Cl. 165—134 R **4 Claims**



1. A heat exchanger, comprising:

a plurality of sacrificial anode fins formed of a brazing sheet made of aluminum alloys; and

at least one tube made of an aluminum alloy,

said fins being secured to said tube by brazing, and

said tube aluminum alloy consisting essentially of copper of 0.2–1.0 weight percent and the balance essentially aluminum.

4,410,037

RECUPERATOR

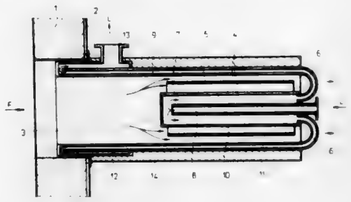
Attila Bíró, Budapest, Hungary, assignor to Kohaszati Gyárépitó Vállalat, Budapest, Hungary

Filed May 7, 1981, Ser. No. 261,652

Claims priority, application Hungary, May 13, 1980, 1179

Int. Cl.³ F28D *7/12;* **F24B** *7/00*

U.S. Cl. 165—142 **2 Claims**



1. A recuperator for industrial furnaces comprising:

an outer shell;

a flue gas flow connecting means on end of said outer shell fluidly connected to a furnace flue gas flow path;

an air flow passage means located within said outer shell and having an air inlet on one end of said outer shell;

a radiation heat exchanger fluidly connected to said flue gas flow connecting means at one end of said radiation heat exchanger;

a convective heat exchanger located on an end of said radiation heat exchanger remote from said radiation heat exchanger one end and spaced from said flue gas flow connecting means so that said radiation heat exchanger separates said convective heat exchanger from said flue gas flow connecting means to be in series with said radiation heat exchanger and behind said radiation heat exchanger with respect to said flue gas flow connecting means;

said convective heat exchanger including a dividing wall having a first heat transfer surface thereof facing said radiation heat exchanger to be in heat transfer communication with said radiation heat exchanger, said convective heat exchanger further including an air conduit fluidly connected at a first end thereof to said air inlet, said air conduit including a second end located adjacent to and spaced from a second heat transfer surface of said dividing wall and directing air to impact against said dividing wall second heat transfer surface;

said air passage means being continuous and including said air conduit and a convective portion in said convective heat exchanger, said convective portion including a first section fluidly connected to said dividing wall second heat transfer surface to receive air which has impacted said dividing wall second heat transfer surface, a second section fluidly connected to said first section, heat transfer to said air flow passage means convective portion being primarily by means of convection, said convective heat exchanger further including means defining an auxiliary heat exchange surface adjacent to said air passage means convective portion, said air flow passage means further including a radiation portion extending beyond said dividing wall and located in said radiation heat exchanger to transfer heat to air flowing in said air flow passage means radiation portion with heat transfer to said air passage means radiation portion being primarily by means of radiation, said air passage means further including a collecting chamber having a first end thereof fluidly connected to said air passage means radiation portion and an outlet fluidly connected to a second end of said collecting chamber, said collecting chamber first and second ends being positioned so that at least some portion of the air flowing in said collecting chamber moves in a direction different from the flow direction of air in said air passage means radiation portion;

said dividing wall being located with respect to said flue gas flow connecting means so that heat transfer to said dividing wall first heat transfer surface is predominantly by means of radiation and heat transfer from said dividing wall second heat transfer surface is predominantly by means of convection;

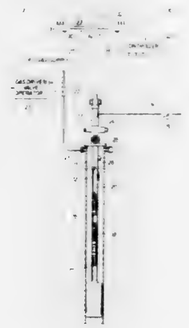
said dividing wall defining a heat transfer means which exchanges heat flowing from said radiation heat exchanger to said dividing wall to air flowing in said convective heat exchanger which has impacted said dividing wall.

4,410,038

INTERMITTENT WELL CONTROLLER

Donald J. Drapp, Missouri City, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Apr. 29, 1982, Ser. No. 373,132
Int. Cl.³ F21B *43/00*
U.S. Cl. 166—53 **11 Claims**



1. For use in controlling the rate of production of a producing well on a gas lift system in response to operative conditions of the well which are determined by sensor means forming well condition signals indicative of the condition thereof, an apparatus which comprises a battery powered controller in a normally off state which is periodically switched on to test the well condition signals from said sensor means, and further including output means connected to said controller for forming a control signal for operation of the gas lift system and wherein said controller includes an integrated circuit microcomputer means switched on by a first means preventing application of adequate power for operation, cooperative with a second means periodically switching said microcomputer means on for an interval of time sufficient to operate a third means to obtain the well condition signals indicative of the well condition, and wherein said microcomputer means is on sufficiently long to determine the well condition and form the control signal from said output means.

4,410,039

UNITIZED WELL TESTING APPARATUS FOR USE IN HOSTILE ENVIRONMENTS

Jack J. DeWald, 7323 W. Roadway, New Orleans, La. 70124

Filed May 14, 1982, Ser. No. 378,107
Int. Cl.³ E21B *43/00, 43/34*
U.S. Cl. 166—57 **9 Claims**

1. A modular well testing unit for use in hostile environments, comprising:

a. a plurality of modular sections providing upon assembly an enclosed structure for housing the components of the well testing unit, each modular section being self-supporting and transportable;

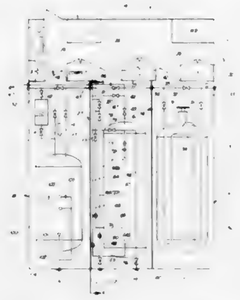
b. means for assembling the modular sections together to form the enclosed structure;

c. insulation means providing upon assembly an internal controlled environment surrounded by a substantially continuous external shell;

d. internal access means for allowing access between adjacent modular sections;

e. production fluid intake means for intaking a production gas/fluid stream from an oil/gas well to be tested;

f. crude oil outlet means for discharging oil from the assembled enclosure;



g. a plurality of well testing fluid handling components comprising at least in part separator means for separating the production stream into components disposed respectively in said modular sections; and

h. manifold means for forming fluid flow connections between the outlet means, the inlet means and the vessels, said manifold means including connection means for forming detachable fluid conveying connections between different modular units.

4,410,040

CORROSIVE ENVIRONMENT TENSION PACKER

Kenneth E. Longacre, and Marvin R. Kruschke, Sr., both of Farmington, N. Mex., assignors to Baker International Corporation, Orange, Calif.

Division of Ser. No. 167,300, Jul. 10, 1980, Pat. No. 4,344,651.
This application Oct. 21, 1981, Ser. No. 313,435
Int. Cl.³ E21B *33/128*
U.S. Cl. 166—118 **5 Claims**



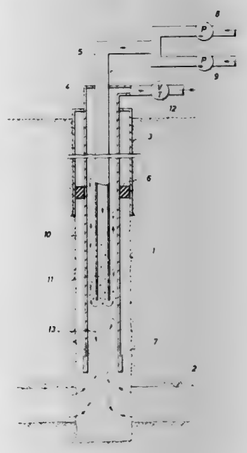
2. A packer assembly carried on a first conduit for use in a well exposed to a corrosive injection fluid, said well being encased by a second conduit having first and second conduit memebers, said conduit members being interengaged by a coupling element whereby a locking recess is defined within said coupling element and between said conduit members, said packer assembly comprising: an inwardly flexible, outwardly urged latch assembly; control means on said latch assembly; means on said packer assembly defining a pocket for selective receipt of said latch assembly for locking said latch assembly relative to said locking recess; and elastomeric packer body means below said pocket and carried by said packer assembly, contourably urged into sealing relation with said second conduit subsequent to locking engagement of said latch assembly and said second conduit.

4,410,041

PROCESS FOR GAS-LIFTING LIQUID FROM A WELL BY INJECTING LIQUID INTO THE WELL

David R. Davies, Rijswijk, Netherlands, and Edwin A. Richardson, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 127,355, Mar. 5, 1980, abandoned. This application Oct. 24, 1980, Ser. No. 200,176
Int. Cl.³ E21B *21/00, 43/22, 47/06*
U.S. Cl. 166—250 **12 Claims**



1. A well treating process for gas-lifting liquid from a borehole which contains a liquid, comprising:

extending a first pipe string which is equipped with a remotely-actuatable annulus sealing means within the borehole from a surface location to a selected fluid-removal depth within the liquid in the borehole;

actuating the sealing means to seal the annulus around the first pipe string in a location above said fluid-removal depth;

extending a second pipe string within the first to a depth sufficient to reduce the fluid pressure at said fluid-removal depth when a significant proportion of liquid within the first and second pipe strings in locations above the bottom of the second pipe string is replaced by gas;

compounding a gas-generating aqueous liquid solution of inorganic compounds which solution (a) contains ammonium ions and nitrite ions (b) is self-reacting at the temperature within the borehole and (c) reacts to form gaseous nitrogen and a relatively inert aqueous solution;

flowing the gas-generating solution into the top of the second pipe string while flowing fluid out of the top of the first pipe string and correlating the rates of flow to cause at least a significant proportion of the liquid within the first pipe string in a location above the bottom of the second pipe string to be replaced by gas; and

continuing said inflowing and outflowing of fluid while adjusting said rates of flowing fluid, to the extent required, to cause the pressure within the borehole at said fluid-removal depth to be reduced to and maintained at a selected relatively low valve for a selected time while liquid inclusive of whatever liquid is drawn in from the reservoir is being gas-lifted to a surface location.

4,410,042

IN-SITU COMBUSTION METHOD FOR RECOVERY OF HEAVY OIL UTILIZING OXYGEN AND CARBON DIOXIDE AS INITIAL OXIDANT

Winston R. Shu, Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 2, 1981, Ser. No. 317,034
Int. Cl.³ F21B *43/243*
U.S. Cl. 166—261 **5 Claims**

1. A method for recovering oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well and a spaced apart production well comprising:

(a) initiating an in-situ combustion front in the formation by injecting a combustion-supporting gas comprising a mixture of essentially pure oxygen and carbon dioxide into the injection well and continuing injection of said combustion-supporting gas until said combustion front has advanced a predetermined distance from the injection well, said injected carbon dioxide dissolving in the in place oil thereby reducing its viscosity and increasing effective oil permeability;

(b) thereafter terminating injection of the mixture of essentially pure oxygen and carbon dioxide and injecting essentially pure oxygen into the injection well to support in-situ combustion; and

(c) producing oil from the formation via said production well.

4,410,043

METHOD FOR INHIBITION OF CARBONATE DISSOLUTION IN THE RECOVERY OF OIL UTILIZING CO_2

Arthur C. Hall, Dallas, and Franklin R. Lunsford, Lewisville, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 26, 1982, Ser. No. 382,448
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—273 **18 Claims**



1. A method for recovering oil from a subterranean, oil-containing formation penetrated by an injection well and a production well, said formation containing minerals, principally calcium carbonate, and calcium ions dissolved in interstitial water, comprising:

(a) injecting into said formation via said injection well a slug of an aqueous solution containing a water-soluble salt whose anion is capable of precipitating calcium ions in the interstitial water to form an insoluble barrier on the mineral surfaces that inhibits mineral dissolution caused by CO_2,

(b) injecting a slug of CO_2 into said formation via said injection well so as to mobilize the oil;

(c) injecting a drive fluid into the formation via said injection well to displace oil toward said production well; and

(d) recovering oil from the formation via said production well.

11. A method for recovering oil from a subterranean, oil-containing formation penetrated by an injection well and a production well, said formation containing minerals, principally calcium carbonate, and calcium ions dissolved in interstitial water, comprising:
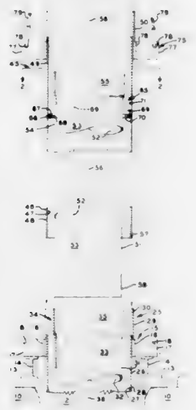
(a) injecting into said formation via said injection well a slug of CO_2 so as to mobilize the oil;

(b) simultaneously injecting into said formation via said injection well an aqueous solution containing a water-soluble salt whose anion is capable of precipitating calcium ions in the interstitial water to form an insoluble barrier on the mineral surfaces that inhibits mineral dissolution caused by CO_2;

(c) injecting a drive fluid into the formation via said injection well to displace oil toward said production well; and
(d) recovering oil from the formation via said production well.

4,410,044
METHOD FOR ORIENTING WELL CASING AND OTHER TUBULAR WORK OBJECTS AND DEVICE THEREFOR

Larry C. Naffziger, 3091 N. Monroe, Fresno, Calif. 93711
Continuation-in-part of Ser. No. 282,395, Jul. 13, 1981, Pat. No. 4,382,470. This application Sep. 16, 1981, Ser. No. 302,539
Int. Cl.³ E21B *19/16*
U.S. Cl. 166—379 **3 Claims**

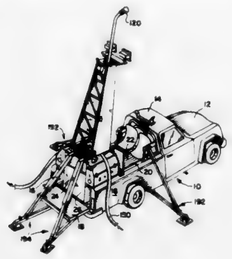


1. A method for installing sections of well casing in a borehole comprising the steps of:
A. supporting a first section of well casing, having inner and outer walls, in the borehole with end portions of said walls adjacent to the earth surface;
B. suspending a second section of well casing, having inner and outer walls, over the borehole and in substantial axial alignment with said end portions of said walls of the first section and with the inner wall of the second section suspended from and within the outer wall of the second section with a lower end portion of the inner wall extending therefrom in the direction of the borehole;
C. mounting the lower end portion of the inner wall of the second section on the end portion of the inner wall of the first section in substantial axial alignment therewith;
D. sliding the outer wall of the second section downwardly about the inner wall of the second section;
E. mounting the outer wall of the second section on the end portion of the outer wall of the first section in substantial axial alignment therewith; and
F. lowering said first and second sections into the borehole.

4,410,045
FIREFIGHTING VEHICLE

Richard W. Whitman, Vandalia, Ohio, assignor to Fire Pro, Inc., Springfield, Ohio
Filed Oct. 5, 1981, Ser. No. 308,693
Int. Cl.³ A62C *27/00*
U.S. Cl. 169—24 **12 Claims**

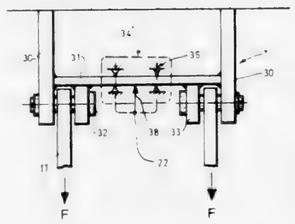
1. A firefighting vehicle comprising:
a pick-up truck of the type having a roofed cab, side walls, a rear wall, and a floor defining a bed;
a housing defining a plurality of compartments and having a top surface, said housing mounted on said floor within said bed;
a rigid tower having a substantially rectangular base pivotally attached to said top surface at a forward portion thereof and capable of pivoting from a substantially vertical, operational position forwardly to a substantially horizontal, storage position;
means for pivoting said tower between said horizontal and said vertical positions;
rigid conduit means pivotally attached to said top surface rearwardly of said forward portion of said tower and



having a lower end for communication with fire hose means and terminating in nozzle means at an upper end, said conduit means extending within and slidably supported by said tower such that said conduit means is pivoted by movement of said tower between a substantially horizontal position and a substantially vertical position.

4,410,046
DEVICE FOR REGULATING THE TRACTIVE FORCE IN LOWER LINKAGES OF TRACTOR LIFTING GEAR

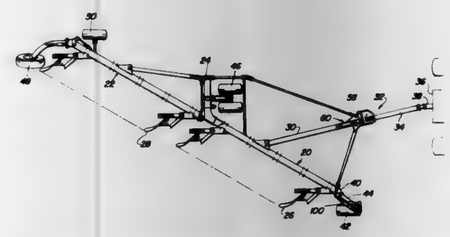
Heinz Schulte, Marktheidenfeld, Fed. Rep. of Germany, assignor to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany
Filed Jun. 3, 1981, Ser. No. 270,028
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1980, 3021777
Int. Cl.³ A01B *63/112*
U.S. Cl. 172—7 **9 Claims**



1. In a tractor device for regulating the tractive force therefore, said tractor including a lifting gear with a pair of lower linkages, said device comprising:
(a) a pair of linkage sections which are rigidly mounted on the tractor;
(b) each of said pair of lower linkages being pivotably connected to one of said pair of linkage sections such that said lower linkages act upon said linkage sections and said linkage sections absorb tractive and compressive forces which act on said lower linkages;
(c) a bending bar which is rigidly connected to each of said pair of linkage sections to form a closed frame, said bending bar being subjected to bending moments by reason of deflection in said linkage sections caused by tractive and compressive forces in said lower linkages; and
(d) a measurement transducer which measures the deflection of said bending bar.

4,410,047
TRACTOR-DRAWN PLOW WITH HITCH AND FURROW WHEEL HYDRAULIC MOTORS CONNECTED IN SERIES

Loren G. Arnold, Rock Island; Paul D. Parker, and James F. Sullivan, both of East Moline, all of Ill., assignors to Deere & Company, Moline, Ill.
Filed Jun. 22, 1981, Ser. No. 275,572
Int. Cl.³ A01B *63/111*
U.S. Cl. 172—328 **8 Claims**

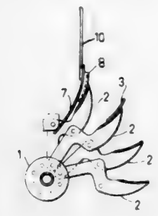


1. In a tractor-drawn plow having a main frame disposed obliquely to the line of travel, a forwardly extending hitch bar rigidly connected to the left front end of the frame, vertically shiftable hitch means connected to the hitch bar and adapted to be supported on a tractor, a front furrow wheel including a support member disposed adjacent to the right front end of the frame, linkage means connected between the right front end of the frame and the furrow wheel support member for selective raising and lowering of the right front end relative to the furrow wheel, the improvement residing in mechanism for operating the hitch means and linkage means substantially in unison to maintain the frame front ends substantially level during raising and lowering, said mechanism comprising: a two-way hydraulic furrow wheel motor having a cylinder, piston and piston rod, means connecting the cylinder to the furrow wheel carrier, means connecting the piston rod to the main frame right front end for operation of the motor upon extension and retracting strokes respectively to raise and lower said right front end, a two-way hydraulic hitch motor having a cylinder, piston and piston rod, means connecting the hitch cylinder to the hitch bar, means connecting the hitch piston rod to the hitch means for operation upon extension and retracting strokes respectively to raise and lower the main frame left front end, hydraulic means interconnecting the cylinders for operation in series, said hydraulic means including a rephasing port upstream of the main port as the hitch piston rod extends so that, as the hitch piston reaches the end of its extension stroke, it first covers and then uncovers the re-phasing port, said connection of the hitch piston rod to the hitch means including means external to the hitch motor cylinder for effecting limited return of the hitch piston on its retracting stroke sufficiently to re-cover the re-phasing port.

4,410,048
REPLACEMENT SPOONS AND FIXTURES FOR ROTARY HOE

Jack A. Tulen, R.R. #1, Coatsworth, Ontario, Canada NOP 1H0, and James L. Tulen, R.R. #1, Wheatley, Ontario, Canada NOP 2P0
Continuation of Ser. No. 83,158, Oct. 9, 1979, Pat. No. 4,276,686. This application May 18, 1981, Ser. No. 264,967
Int. Cl.³ A01B *39/08*
U.S. Cl. 172—540 **8 Claims**

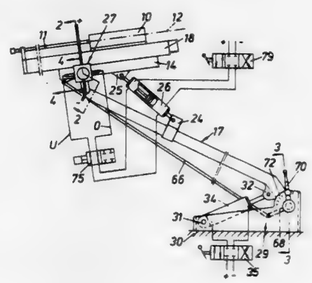
1. A rotary hoe wheel having a hub, a plurality of worn teeth having worn free end portions and other end portions affixed to said hub and extending outwardly therefrom, means spaced from said hub for attaching said teeth together to hold them in spaced relationship relative to said hub, and replacement spoons affixed to common surfaces of said worn free end portions of said teeth, said replacement spoons having ends extending beyond the worn free end portions of said teeth with



said spoon ends being spaced substantially equal distances from said hub.

4,410,049
DIRECTIONAL VALVE MEANS FOR POSITIONING MACHINE UNITS

Alexis Molin, Saltsjöbaden, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Continuation of Ser. No. 916,063, Jun. 16, 1978, abandoned. This application May 4, 1981, Ser. No. 259,816
Claims priority, application Sweden, Jun. 21, 1977, 7707137; Jun. 21, 1977, 7707138
Int. Cl.³ E21C *5/00*
U.S. Cl. 173—2 **12 Claims**



1. Directional valve means and boom frame device for positioning machine units, comprising:
(a) a machine unit (**18**),
(b) a support (**17**),
(c) a pivot axis (**21**) on said support for angularly adjustably supporting said machine unit thereon,
(d) a pressure fluid actuated motor (**26**) between said support and said machine unit for angular adjustment of said machine unit,
(e) a hydraulic directional valve (**27**) for controlling the pressure fluid supply to said motor, said directional valve (**27**) comprising a first element incorporating valve housing means (**41**), and a second element incorporating cooperating valve body means (**40**) which are adjustable relative to said valve housing means, said first and second elements (**40,41**) having cooperating valve surfaces for controlling said pressure fluid supply,
(f) one of said first and second valve elements (**40,41**) being coupled to pivot conjointly with the machine unit (**14,18,10**) so as to sense the actual angular position of the machine unit on said support
(g) means for adjusting the angular relationship of the other of said valve elements (**40**) to a selective set angle value for said machine unit, said means including an angle transmission connecting said other element to an angular control position remote from said machine unit,
(h) said valve elements (**40,41**) having a feedback position

(FIGS. 5,6) in respect of angular movement produced by said motor means, said feedback position being defined by said cooperating valve surfaces of said valve elements, in which feedback position the pressure fluid supply to the positioning motor (26) is cut down or cut off when said actual angle valve coincides with said predetermined set angle value in said valve,

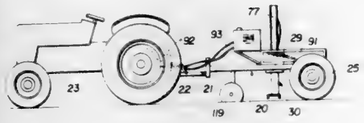
(i) and said directional valve in its feedback position (FIGS. 5,6) adapted to pressurize the positioning motor in the two opposite directions of movement thereof by providing a larger incoming than return leakage through the directional valve to and from said positioning motor.

4,410,050

MACHINE FOR INSERTING RIGID MEMBERS IN THE SOIL

William S. Councell, Jr., Goldsboro, and Garland L. Turner, Hillsboro, both of Md., assignors to Councell Nurseries, Inc., Goldsboro, Md.

Filed Jan. 18, 1982, Ser. No. 340,023
Int. Cl.³ E21B *15/04*; B23B *45/16*
U.S. Cl. 173—112 **14 Claims**



1. A machine for inserting rigid members into the ground at regular intervals comprising a continuously moving body portion having a substantially horizontal guideway, a carriage on the guideway adapted to move rearwardly and forwardly thereon during the continuous movement of the body portion, a supply of rigid members to be inserted in the ground on said carriage, a guiding and positioning means for said members on the carriage adapted to receive one member at a time from said supply and to position the member vertically and support it in preparation for insertion into the ground, a power means on the carriage including a vertical plunger coaxial with the vertically positioned member in said guiding and positioning means adapted to engage and force the member into the ground, a coacting delivery means mechanically coupled to said plunger and operated by upward movement of said plunger to deliver one member at a time from said supply to said guiding and positioning means, means including a clutch operated in response to the continuous movement of said body portion and connected with the carriage to drive the carriage on said guideway reversely to the movement of the body portion whereby the carriage can achieve a condition stationary relative to the ground when each rigid member is being inserted into the ground during said continuous movement of the body portion, and control and timing means on the machine to coordinate movements of the carriage and said power means.

4,410,051

SYSTEM AND APPARATUS FOR ORIENTING A WELL CASING PERFORATING GUN

Wilbur L. Daniel; Eugene J. Linyaev; Arnold M. Walkow, and Gregory J. Wilkinson, all of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 27, 1981, Ser. No. 238,907
Int. Cl.³ E21B *43/117*
U.S. Cl. 175—4.51 **16 Claims**

1. A well casing perforating apparatus, comprising:

(a) an elongated cylindrically tubular housing connectable at an upper end portion to a cable for positioning the device in a well within the casing thereof;

(b) a housing guide means mounted at an upper end portion of said housing at said cable for guiding said housing upper end portion into an aperture within said casing that is smaller in dimension than said casing;

(c) an upper roller means at an upper end portion of said housing having a plurality of rollers mounted therearound said housing in a spaced relation and in fixed relative positions to reduce the friction incurred through longitudinal movement of said housing through said casing and the like, said roller means having an outer dimension substantially smaller than the interior of said well casing adapted to support said housing on the interior of a tubular support surface within said well;

(d) a casing perforating means within said housing having an explosive casing perforation charge;

(e) a casing perforating orienting means in said housing operably positioned relative to said perforating means and operable to orient said perforating means relative to an elongated body within the casing in which said housing is located such that said perforating means will not be oriented toward said elongated body;

(f) swivel means with said housing below said upper roller means and above said orienting means and said casing perforating means and adapted to permit free rotation of



the portion of said housing located below said swivel means relative to the portion of said housing located above said swivel means;

(g) eccentric weight means contained within a segment said generally cylindrically tubular housing below said swivel means of having a weight substantially denser than other portions of the well casing perforating apparatus and positioned eccentrically relative to the transverse cross section of said generally cylindrically tubular housing and said weight being sufficiently large in mass to cause said housing to rotate axially when unrestrained with said weight being on the downwardly directed portion of said housing in order to urge the bottom of said housing in a downward direction; and

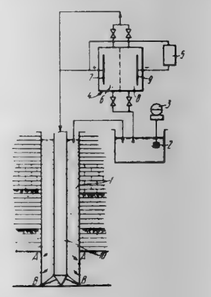
(h) lower roller means on a lower end portion of said housing having a plurality of rollers mounted therearound said housing in a spaced relation and in fixed relative positions to decrease the associated friction accompanying longitudinal motion of said housing, said roller means having an outer dimension substantially smaller than the interior of said tubular support surfaces within said well casing adapted to support said housing on the interior of a a well.

4,410,052

METHOD OF DRILLING A PRODUCTIVE BED

Ulmas D. Mamadzhanov, Ts-1, dom 19, kv. 25; Vitold M. Bakhir, proezd Gaidara, 7-a, kv. 17; Stanislav A. Alekhin, and Raisa I. Born, both of Chilanzar, kvartal 24, dom 53, kv. 89, all of, Tashkent, U.S.S.R.

PCT No. PCT/SU80/00084, § 371 Date Jan. 31, 1981, § 102(e) Date Jan. 23, 1981, PCT Pub. No. WO80/02718, PCT Pub. Date Dec. 11, 1980
PCT Filed May 30, 1980, Ser. No. 232,033
Claims priority, application U.S.S.R., May 31, 1979, 2764611
Int. Cl.³ E21B *47/00*; G01V *3/18*
U.S. Cl. 175—50 **4 Claims**



1. A method of drilling a productive bed in a well, comprising the tapping of the bed roof and the use of a starting flushing fluid, and determining the redox potential value of the productive bed rock, wherein the improvement comprises altering the physical-chemical properties of the starting flushing fluid leaving the well until they correspond to the physical-chemical properties of the productive bed rock; altering the sign and value of the redox potential of the starting flushing fluid leaving the well until they correspond to the sign and value of the redox potential of the productive bed rock; and introducing the changed starting flushing fluid back into the well.

4,410,053

APPARATUS FOR DRILLING HARD MATERIAL

Roger F. Masse, 131, rue Roussin, Thetford Mines, Canada G6G 1N6

Filed Dec. 15, 1980, Ser. No. 216,821
Int. Cl.³ E21B *1/00, 4/14, 4/16, 4/20*
U.S. Cl. 175—53 **11 Claims**

1. A drill head for use in drilling a front of hard material such as rock, said drill head comprising:

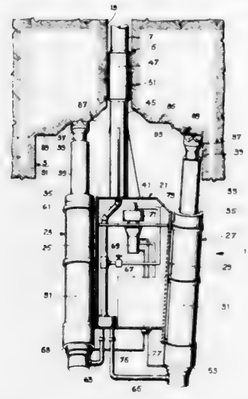
support means:

a mounting post secured to and projecting from the support means;

means for detachably connecting said mounting post to drive means for rotating said post and support means and driving said support means towards said front, and

at least two impact hammers mounted onto and projecting from the support means toward said front to fragment, in use, the hard material of said front,

said hammers being located at different radial distances from the mounting post and having rock fragmenting heads located at different distances from the support means such that the hard material of the front is fragmented by impact



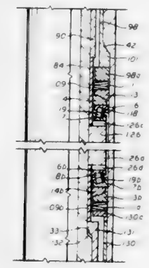
along concentric, spaced-apart circular paths and by shear between said paths.

4,410,054

WELL DRILLING TOOL WITH DIAMOND RADIAL/THRUST BEARINGS

Dave D. Nagel, and Thomas Aparicio, Jr., both of Houston, Tex., assignors to Maurer Engineering Inc., Houston, Tex.

Filed Dec. 3, 1981, Ser. No. 327,105
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **20 Claims**



1. A down hole well drilling tool adapted for connection at one end to the lower end of a drill string and at the other end to a drill bit to be driven thereby, comprising

tubular housing means and rotary shaft means supported therein and extending therefrom and adapted to support a drill bit,

motor means in said housing means actuated by flow of drilling fluid therethrough and operable to rotate said shaft means,

bearing means in said housing means supporting said rotary shaft means, in which

said bearing means comprises at least two radial/thrust bearings, each having one bearing member supported on said housing and another bearing member, having rotary bearing contact therewith, supported on and rotatable with said shaft means,

said bearing members having initially flat surfaces meeting on a substantially conical surface of contact,

said bearing members, after break in, having substantially conical bearing surfaces meeting for smooth rotary bearing contact on said conical surface of contact, and

said conical bearing surfaces each having bearing faces of diamond comprising the only bearing surfaces in said radial/thrust bearing.

4,410,055

DRILLING TOOL

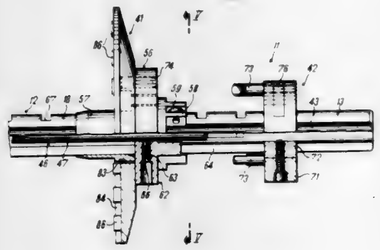
Jürgen Kessler, Stuttgart, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

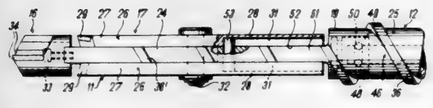
Filed Mar. 12, 1981, Ser. No. 242,916

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1980, 3010440

Int. Cl.³ E21B 7/28

U.S. Cl. 175—173 **19 Claims**





1. A drilling tool suitable for producing a drill hole which at relatively great depth is provided with a conical enlargement, in a soft material, comprising an axially elongated tool shank having a first end and a second end with a first drill to produce a basic cylindrical drill hole at the first end thereof and a second drill for producing a conical enlargement, said second drill in the direction of feed is provided in an articulated manner behind the first drill, said tool shank comprises a flattened part, said second drill includes bit holders which are attached in an articulated manner to both sides of said flattened part, a connecting link guide positioned between said flattened part and bit holders so that said bit holders can be swung out sideways, said connecting link guide comprising a slide block, a stop part rigidly attached to said connecting link guide, said stop part arranged to determine the setting depth of the conical enlargement, and an elongated slideway which is provided on the bit holders of the second drill and extends generally in the elongated direction of said tool shank, a spring in engagement with said link guide and said tool shank so that said link guide is movable relative to said tool shank against said spring, said connecting link guide comprises an elongated tie rod assembly located within said tool shank and having a first end closer to the first end of said tool shank and a second end, said slide block (**53**) is connected to the first end of said tie rod (**46**), said tool shank is hollow and cylindrically shaped and said tie rod assembly is guided essentially over its entire length concentrically inside said hollow cylindrical tool shank (**12**) in an axially movable manner relative to said tool shank, and the second end of said tie rod assembly is attached rigidly to said stop part (**41**, **41'**), said flattened part (**24**) is located adjacent said first drill on said tool shank, and said slideway on said bit holders (**26**) of said second drill (**17**) comprises grooves (**31**) formed into the inside surfaces of said bit holders which face one another.

4,410,056

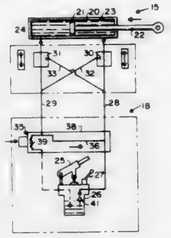
HYDRAULIC CAB TILTING SYSTEM HAVING FULL LOCKING WITH CONTROLLED FREE-FALL

Virgil E. Pound, San Jose; James R. Jensen, Sunol, and Albert C. Zwicky, Hayward, all of Calif., assignors to PACCAR Inc., Bellevue, Wash.

Filed May 27, 1981, Ser. No. 267,464

Int. Cl.³ B62D 33/06

U.S. Cl. 180—89.15 **16 Claims**



1. An hydraulic tilt system for a cab pivotally mounted on a motor vehicle frame, adapted for full safety locking and controlled cab return free-fall, comprising:

an hydraulic piston-cylinder assembly pivotally connected between the cab and its frame,

a remotely located control station having an hydraulic pump with an "up" position and a "down" position, an hydraulic fluid reservoir, and control means for actuating said pump to either of said positions and selecting the direction of tilting said cab,

hydraulic lines connecting said hydraulic piston-cylinder assembly with said control station,

first valve means in said hydraulic lines at said assembly, for automatically blocking said lines and stopping the tilting motion of the cab upon loss of hydraulic pressure, and

controlled return free-fall and safety lock second valve means at said control station in the path of said hydraulic lines for automatically locking said cab against free-fall movement when the pump is in "down", position and said cab is in a position where except for said automatic locking it would ordinarily free-fall, said second valve means upon manaul actuation and manual retention, enabling unlocking and free-fall of said cab at a controlled rate from such a locked position, locking occurring again whenever manual control is released.

4,410,057

EMERGENCY HYDRAULIC SYSTEM

Kenneth C. Johnson, Coloma, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed May 9, 1980, Ser. No. 148,470

Int. Cl.³ B62D 5/06

U.S. Cl. 180—133 **6 Claims**

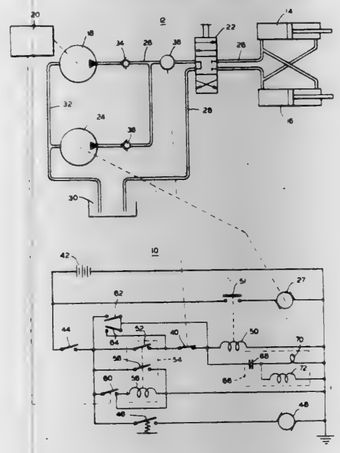
1. An emergency hydraulic system for a vehicle having a hydraulic steering mechanism and including an engine driven pump for supplying the steering mechanism for normal steering, an electric motor driven pump for supplying the steering mechanism for emergency steering, and an electrical source for operating the motor of the motor driven pump, the system comprising

a solenoid operated switch for energizing the motor from the electrical source upon the occurrence of a predetermined condition indicating subnormal operation of said hydraulic steering mechanism, the solenoid of said solenoid operated switch connected to be energized from the electrical source,

a normally closed hydraulic condition switch connected in circuit with said solenoid, said hydraulic condition switch arranged to open upon the occurrence of a predetermined condition of the hydraulic steering mechanism indicating normal operation of said hydraulic steering mechanism,

a relay having a coil and two normally open switches, one of said relay switches connected in circuit with said solenoid and said hydraulic condition switch,

a normally open engine condition switch arranged to close



in response to a predetermined condition of the engine indicating normal operation of the engine, said engine condition switch and said relay coil connected in circuit to the electrical source, and

said second switch of the relay connected to maintain said relay coil energized while said engine condition switch remains closed.

4,410,058

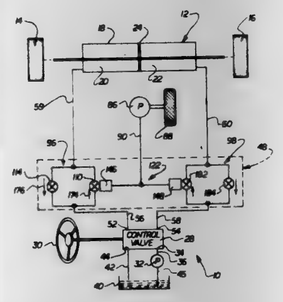
VEHICLE STEERING APPARATUS

Richard W. Dymond, Rochester, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 10, 1981, Ser. No. 329,219

Int. Cl.³ B62D 5/08

U.S. Cl. 180—143 **6 Claims**



4. In an apparatus for use in turning steerable vehicle wheels, said apparatus comprising fluid motor means operable to effect turning movement of steerable vehicle wheels, said motor means including first and second variable volume chambers, and manually actuatable control valve means for directing fluid flow to said motor means upon actuation of said control valve means, said control valve means including first and second control valve ports, the improvement comprising pressure modulation means connected to series fluid communication with said control valve means and said fluid motor means for reducing the pressure of the fluid from said control valve means to an extent which varies as a function of vehicle speed, for porting the fluid from said control valve means to said motor means at the reduced pressure to effect operation of said motor means under the influence of a fluid pressure force which varies in magnitude both as a function of the extent of actuation of the control valve means and as a function of vehicle speed, and for porting fluid from said motor means to said control valve means during operation of said motor means, said pressure modulation means includes

(a) first and second modulator ports each of which is connected in fluid communication with one of said control valve ports,

(b) third and fourth modulator ports each of which is connected in fluid communication with one of said variable volume chambers,

(c) first and second passage means connected in parallel fluid communication with said first and third modulator ports,

(d) third and fourth passage means connected in parallel fluid communication with said second and fourth modulator ports,

(e) first valve means operable between a closed condition blocking fluid flow through said first passage means and an open condition enabling fluid to flow through said first passage means from said first modulator port to said third modulator port,

(f) second valve means operable between a closed condition blocking fluid flow through said second passage means and an open condition enabling fluid to flow through said second passage means from said third modulator port to said first modulator port,

(g) third valve means operable between a closed condition blocking fluid flow through said third passage means and an open condition enabling fluid to flow through said third passage means from said second modulator port to said fourth modulator port,

(h) fourth valve means operable between a closed condition blocking fluid flow through said fourth passage means and an open condition enabling fluid to flow through said fourth passage means from said fourth modulator port to said second modulator port, and

(i) biasing means for urging said first and third valve means toward their closed conditions with a biasing force which varies as a function of the speed of the vehicle,

said first valve means being operable from the closed condition to the open condition against the biasing force under the influence of fluid pressure transmitted from said first control valve port to said first modulator port to enable fluid to flow from said first control valve port through said first and third modulator ports to said first variable volume chamber to effect expansion of said first variable volume chamber and operation of said fluid motor means to turn the steerable vehicle wheels in a first direction, said second variable volume chamber contracting simultaneously with expansion of said first variable volume chamber to discharge fluid to said fourth modulator port, said third valve means being maintained in the closed condition by said biasing means to block fluid flow through said third passage means from said fourth modulator port to said second modulator port, said fourth valve means being opened under the influence of fluid pressure to enable fluid to flow from said fourth modulator port to said second modulator port through said fourth passage means,

said third valve means being operable from the closed condition to the open condition against the biasing force under the influence of fluid pressure transmitted from said second control valve port to said second modulator port to enable fluid to flow from said second control valve port through said second and fourth modulator ports to said second variable volume chamber to effect expansion of said second variable volume chamber and operation of said fluid motor means to turn the steerable vehicle wheels in a second direction, said first variable volume chamber contracting simultaneously with expansion of said second

variable volume chamber to discharge fluid to said third modulator port, said first valve means being maintained in the closed condition by said biasing means to block fluid flow through said first passage means from said third modulator port to said second modulator port, said second valve means being opened under the influence of fluid pressure to enable fluid to flow from said third modulator port to said fourth modulator port through said second passage means.

4,410,059

FLUID-OPERATED CONTROL APPARATUS FOR POWER-ASSISTED STEERING SYSTEM OF AUTOMOTIVE VEHICLE

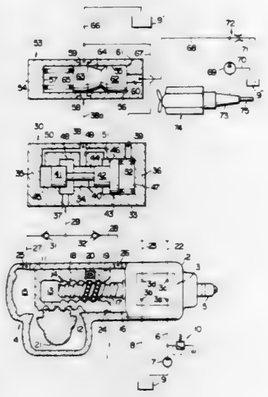
Massafumi Nakayama; Tokiyoshi Yanai, and Masato Fukino, all of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 19, 1982, Ser. No. 359,678

Claims priority, application Japan, Apr. 8, 1981, 56-52789; Jul. 2, 1981, 56-98991[U]

Int. Cl.³ B62D *5/08*

U.S. Cl. 180—143 **10 Claims**



1. A fluid-operated control apparatus for a power-assisted steering system for a steerable vehicle, comprising:

signal generating means for producing a signal representive of vehicle speed,

fluid storage means adapted to have fluid stored therein,

fluid-displacement means operative to suck in fluid from the fluid storage means and deliver fluid under pressure,

a steering wheel and shaft assembly rotatable about an axis therethrough,

a steering pressure control valve assembly responsive to turning motion of said steering wheel and shaft assembly and having a fluid inlet port communicable with said fluid-displacement means, a fluid outlet port communicating with said fluid storage means, and first and second control fluid ports, the valve assembly being shiftable between conditions having the fluid inlet port held in communication with one of said first and second control fluid ports and having said fluid outlet port held in communication with the other of the first and second control fluid ports and a condition having the fluid inlet and outlet ports held in communication with each other,

a steering power cylinder assembly comprising a housing and a piston operatively connected to said wheel and shaft assembly and movable in the housing for having formed therein first and second pressure-acting chambers separate from each other across the power piston and communicating with said first and second control fluid ports, respectively,

a pressure compensating valve assembly which is formed with a fluid inlet port communicable with each of said pressure-acting chambers of said cylinder assembly, a fluid outlet port and a control fluid port and which comprises a valve member movable for continuously varying the degree of communication between the fluid inlet and outlet ports of the valve assembly, said valve member having pressure-acting areas to be subjected to fluid pressures in first and second directions opposite to each other, the fluid pressure in the fluid inlet port being variable with the pressure of the fluid delivered from said fluid-displacement means and urging the valve member for movement in the first direction and a biasing element urging said valve member to move in the second direction, and

a pressure reducing valve assembly which is formed with a fluid inlet port communicating with the fluid outlet port of said pressure compensating valve assembly and a fluid discharge port communicating with said fluid storage means and with the control fluid port of said pressure compensating valve assembly for urging said valve member for movement and which comprises a valve member movable for continuously varying the degree of communication between the fluid inlet and discharge ports of the pressure reducing valve assembly, the fluid pressure in the fluid discharge port being directed into said control fluid port and developing therein said fluid pressure urging said valve member of the pressure compensating valve assembly for movement in said second direction, the valve member of the pressure reducing valve assembly being responsive to said signal and being moved in a direction to vary the degree of communication between the fluid inlet and discharge ports of the pressure reducing valve assembly in response to said signal.

4,410,060

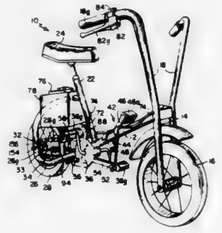
POWER-ASSISTED VELOCIPEDE

Joel C. Cunard, Bedford, Pa., assignor to Brown Group Recreational Products, Inc., Bedford, Pa.

Filed Nov. 16, 1981, Ser. No. 321,592

Int. Cl.³ B62M *7/12*

U.S. Cl. 180—205 **20 Claims**



1. In a power-assisted velocipede of the type including a frame, a seat supported by the frame, a front wheel rotatively supported by the frame, a steering mechanism for turning the front wheel, at least one rear wheel including a hub rotatively supported by an axle from the frame, a pedal sprocket rotatively supported by the frame, a chain sprocket mounted to one end of the rear wheel hub, and an endless chain connecting the pedal sprocket and the chain sprocket, the improvement comprising

A. an overrunning sprocket mounted to the other end of the rear wheel hub; and

B. a power unit mounted to said frame on the opposite side thereof from said chain and adjacent the rear wheel, said power unit including

(1) a housing engaged on said axle;

(2) a DC electric motor mounted to the housing, said motor having an armature terminated by a gear;

(3) a gear train contained in the housing, one end of the gear train being rotated by said motor gear and the other end of the gear train encircling said axle and being mechanically coupled to the overrunning sprocket so that, when said motor is energized, said overrunning sprocket and the wheel hub connected thereto are rotated in one direction; and

(4) a battery supported by said frame;

(5) electrical switch means accessible to the velocipede rider; and

(6) means for electrically interconnecting the battery, switch means and motor so that, when the switch means is closed, the motor is energized to propel the velocipede.

4,410,061

PASSIVE SEATBELT SYSTEM

Gosaku Terabayashi, Aichi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

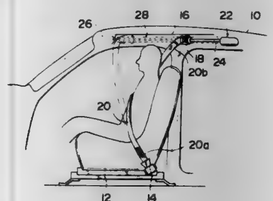
Continuation-in-part of Ser. No. 90,915, Nov. 5, 1979, abandoned. This application Mar. 10, 1981, Ser. No. 242,373

Claims priority, application Japan, Nov. 6, 1978, 53-136549

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ B60R *21/10*

U.S. Cl. 180—268 **5 Claims**



1. A passive seatbelt system for an automotive vehicle wherein means for driving an occupant restraining webbing is automatically operated in accordance with actions of an occupant getting into and out of the vehicle to fasten the webbing to or unfasten from the occupant, characterized by comprising a drive control circuit for generating a control output for a predetermined period of time to operate said means for driving the webbing when the webbing is required to be fastened to or unfastened from the occupant, and further for ceasing the generation of the drive control output to stop the operation of said means for driving the webbing when the webbing has moved to a webbing fastened position or a webbing unfastened position even within the predetermined period of time.

4,410,062

TUNED VIBRATOR WITH A COMPLIANT CONNECTION TO THE BASE PLATE

Joseph F. Mifsud, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Dec. 12, 1980, Ser. No. 215,774

Int. Cl.³ G01V *1/047, 1/55*

U.S. Cl. 181—121 **1 Claim**

1. A seismic vibrator for imparting vibratory energy into the earth, comprising:

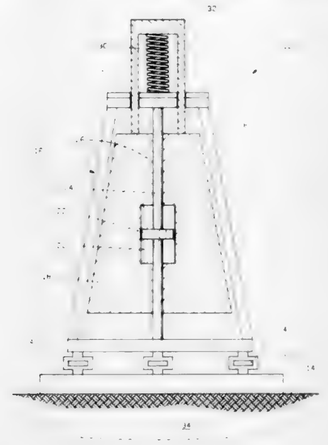
a base plate adapted for coupling the vibrator to the surface of the earth;

a reaction mass defining therein a cylindrical chamber;

a piston mounted in the chamber;

means for adding and withdrawing fluid under pressure from the chamber on both sides of the piston to reciprocate the piston; and

a compliant rectangular block having a hole therethrough, said hole passing through the block in a direction transverse to the path of reciprocating motion of the piston, connected between the piston and the base plate, said block having a compliance such that it forms a substantially rigid connection between the piston and the base plate at the fundamental vibrator-ground resonance frequency, and that the natural frequency of the driven load



of the vibrator is in the seismic spectrum of the vibrator and is higher than the fundamental vibrator-ground resonance frequency.

4,410,063

LOUDSPEAKER SYSTEM

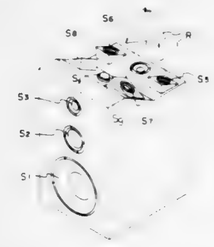
Akira Yasue, Nara; Toshiji Kato, Hirakata, and Yozo Takahashi, Ibaragi, all of Japan, assignors to Onkyo Kabushiki Kaisha, Neyagawa, Japan

Filed Nov. 19, 1981, Ser. No. 322,912

Claims priority, application Japan, Mar. 4, 1981, 56-30666[U]; Mar. 4, 1981, 56-30667[U]; Sep. 5, 1981, 56-142806

Int. Cl.³ H05K *5/00*

U.S. Cl. 181—147 **14 Claims**



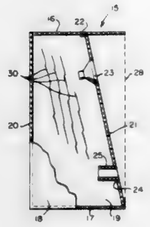
1. A loudspeaker multi-way system including at least first and second front loudspeakers supported on an enclosure front of a main enclosure in such a manner that the radiation axis extends in a forward direction and the sound pressure as a result of the direct sounds is substantially constant independent of frequency, the system further including at least one compensation loudspeaker associated with said front loudspeakers and which is mounted to radiate indirect sounds and having a configuration so that the sound pressures as a sum of the direct and indirect sounds remains substantially constant independently of frequency and which is so disposed that the radiation sounds thereof are radiated to propagate rearwards, substantially free of forward radiation.

4,410,064

BASS RESPONSE SPEAKER HOUSING AND METHOD OF TUNING SAME

Anthony R. Taddeo, 800 Corwin Rd., Rochester, N.Y. 14610

Filed Jan. 27, 1982, Ser. No. 343,338
Int. Cl.³ H05K *5/00*
U.S. Cl. 181—152 **5 Claims**



1. A method of acoustically reducing the upper peak impedance of a loudspeaker of the type mounted in a ported housing, comprising

determining the upper resonant frequency of a speaker mounted in a ported housing with its mouth facing outwardly,

and

adjusting at least one wall of the housing relative to another to form in the housing a horn which has a cross sectional area that progressively increases at least from a point adjacent the rear of the speaker to a point adjacent the port in said housing, and which has a length approximately equal to ¼ the wave length of the sound produced by the speaker at its upper resonant frequency.

4,410,065

MULTI-LAYER ACOUSTIC LININGS

John D. Harvey, Matlock, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 15, 1981, Ser. No. 254,491
Claims priority, application United Kingdom, May 17, 1980, 8016395
Int. Cl.³ F04F *17/04;* **F01N** *1/02, 1/24*
U.S. Cl. 181—224 **12 Claims**



1. An acoustic lining forming at least a part of a peripheral wall of a flow duct in a fluid flow machine, said acoustic lining, while in situ as said at least a part of said peripheral wall absorbing sound without obturating sound and flow of fluid and having acoustic impedances capable of being varied to suit changing flow and noise conditions in said duct and comprising:

a perforate sound permeable facing skin;

a further perforate sound permeable skin, said perforate facing skin overlying said further perforate skin; and

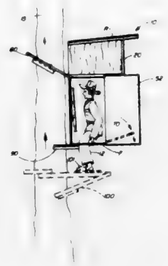
said perforate facing skin and said further perforate skin being relatively movable with respect to each other in a contact or non-contact sliding sense to vary said acoustic impedance to suit the changing flow and noise conditions in said duct.

4,410,066

TREE STAND APPARATUS

George W. Swett, Rte. 1, Epps, La. 71237

Filed Aug. 6, 1981, Ser. No. 290,613
Int. Cl.³ A01M *31/02;* **A45F** *3/26;* **A47C** *9/10*
U.S. Cl. 182—135 **10 Claims**



1. An enclosed deer stand with tree climbing capability, comprising a covered frame forming:

a. an enclosed stand having a top, bottom, and a plurality of side walls defining an enclosure therebetween, the rearmost of said side walls normally being adjacent a tree to which said frame is normally attached:

b. an opening in said bottom;

c. closure means for sealing said opening;

d. a lower climbing bracket affixed to the tree and movable independently of the frame, positioned during operation directly below the opening so that a climber can stand on the lower climbing bracket and extend partially into the closure means, said lower climbing bracket including a tree gripping surface for transferring load to a tree at the surface thereof adjacent said frame and means for supporting the climber operatively connected to the tree gripping means for moving the tree gripping means up a tree by lifting force applied by the climber as he supports his upper body with the frame;

e. an upper climbing bracket affixed to the top of the frame, said upper climbing bracket including an upper tree gripping surface for transferring load to a tree at the surface thereof opposite said frame; and

f. means within reach of the climber operatively connected to the upper tree gripping means for moving the upper tree gripping surface up the tree by lifting force applied by the operator as he extends the distance between the upper and lower climbers.

4,410,067

ELEVATOR DOOR OPERATOR

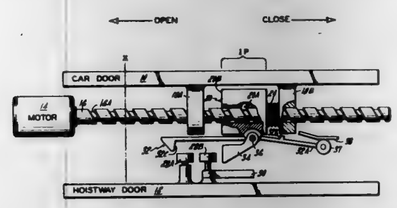
Robert L. Leiner, Simsbury, and John K. Salmon, South Windsor, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Sep. 30, 1981, Ser. No. 307,391
Int. Cl.³ B66B *13/12*
U.S. Cl. 187—52 LC **8 Claims**

5. Apparatus for opening and closing a pair of parallel sliding doors, characterized by:

a motor-powered drive unit to open and close the doors,

a coupling assembly which connects the doors to the drive unit, said assembly being propelled by the drive unit between a first position at which the doors are opened and a second position at which the doors are closed, said assembly including a block-like member which, as the assembly moves in one direction, pushes one door in that direction, a first arm on the block-like member for pushing the second door in that one direction, a second arm on said block-like member for grabbing each door as the block-like member is moved in a second direction, opposite the first direction, said second arm being retractable to disengage its connection with both doors when the assembly is at the first position, and



a control surface, stationary relative to the assembly, for controlling the second arm as the assembly moves to said second position and causing the second arm to retract to the disengaged position.

4,410,068

DISC BRAKE AND ANTI-RATTLE SPRING THEREFOR

Peter J. Schreiner, Mishawaka; John F. Limberg, Granger, both of Ind., and Mark J. Cybulski, Chicago, Ill., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 13, 1981, Ser. No. 292,459
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—73.38 **4 Claims**

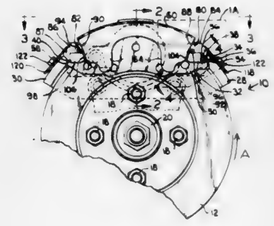
1. A disc brake comprising a support member disposing a pair of friction elements and a caliper adjacent a rotatable brake disc, said support member including a pair of circumferentially spaced arms, said caliper cooperating with said pair of friction elements to urge the latter into engagement with said brake disc to retard rotation thereof effecting a brake application, and an anti-rattle spring cooperating with said pair of friction elements to inhibit rattling thereof characterized in that said anti-rattle spring includes an elongate resilient split sleeve engaging said support member and said pair of friction elements, and a cylinder of elastomeric material received within said split sleeve, one of said arms defines an axially extending groove opening toward said pair of friction elements, said pair of friction elements cooperating with said groove to define a pair of apertures, said anti-rattle spring being received in said groove and passing through said pair of aperture, said one arm defines an axially extending guide surface which is angulated with respect to an axial plane extending substantially through the center of said recess, said guide surface extending radially outwardly toward said axial plane, said anti-rattle spring yieldably biasing said pair of friction elements radially outwardly into sliding engagement with said guide surface, and said guide surface moving said pair of friction elements toward the other of said pair of arms.

4,410,069

DISC BRAKE

Peter J. Schreiner, Mishawaka; Bert A. Gumkowski, South Bend, and John F. Limberg, Granger, all of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 29, 1981, Ser. No. 278,527
Int. Cl.³ F16D *65/14*
U.S. Cl. 188—73.36 **2 Claims**



1. A disc brake comprising a brake disc rotatable about an axis, a nonrotatable support member including a pair of circumferentially spaced and axially extending arms defining a recess therebetween, a pair of friction elements received in said recess adjacent opposite faces of said brake disc and engaging said pair of arms in torque-transmitting abutting relationship, and a caliper received in said recess and straddling both said pair of friction elements and said brake disc, characterized by said pair of friction elements and one of said pair of arms defining cooperating abutment means for forming an interlocking fit therebetween, said interlocking fit substantially preventing radial movement of said pair of friction elements relative said one arm, said pair of friction elements and the other of said pair of arms defining coacting abutment means for substantially preventing radially inward movement of said pair of friction elements while allowing radially outward movement thereof, said pair of friction elements and said caliper defining associating abutment means for preventing radially outward movement of said pair of friction elements relative said caliper, resilient means extending between said caliper and said pair of friction elements for yieldably biasing said associating abutment means into engagement, said support member defining a single axially extending pin adjacent said other arm, said caliper defining an axially extending bore slidably receiving said single pin, and said single pin cooperating with said caliper to substantially prevent radially outward movement of said caliper and said pair of friction elements relative to said other arm said associating abutment means includes an axially extending abutment surface defined by said caliper and a projection defined by each of said pair of friction elements, said projections each defining an abutment surface slidably engaging said axially extending abutment surface of said caliper each of said projections defines a circumferentially extending slot opening toward said recess, a pair of projections defined by said caliper, and said resilient means including an elongate resilient member extending between said projections of said caliper and passing through said slots, said resilient member engaging said pair of friction elements to bias the latter toward said caliper, said elongate resilient member includes a center portion and end portions offset from said center portion and aligning with one another, said end portions defining hook-shaped portions which engage said projections of said caliper, said center portion being distorted torsionally with respect to said end portions to provide said bias.

4,410,070

DISC BRAKE

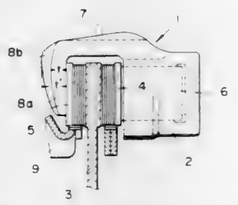
Yutaka Hagiwara, Fujisawa, and Tetu Yamazaki, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 20, 1981, Ser. No. 265,387

Claims priority, application Japan, May 28, 1980, 55-73366[U]

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.36 **4 Claims**



1. A disc brake for a vehicle wheel, said disc brake comprising:

a disc connected with the vehicle wheel for rotation therewith,

an inner pad and an outer pad disposed on opposite sides of said disc and movable into braking engagement with said disc,

a support member adapted to be fixed to a vehicle body for supporting said pads movably, and

a caliper slidably supported by said support member and having, on one side of said disc, a cylinder containing therein a piston for loading said inner pad against said disc and, on the other side of said disc, a limb portion for loading said outer pad against said disc,

the flexural rigidity of said limb portion being less on the leading side thereof located upstream with respect to the direction of the disc rotation for loading the upstream side of the outer surface of said outer pad relative to the trailing side of said limb portion located downstream with respect to the direction of the disc rotation for loading the downstream side of the outer surface of said outer pad,

said limb portion of said caliper being formed in a bifurcate shaping having two branch portions, the upstream branch portion for loading said leading side of said outer surface of said outer pad, and a trailing branch portion for loading said trailing side of said outer surface of said outer pad, the thickness of said leading branch portion being less than the thickness of said trailing branch portion.

4,410,071

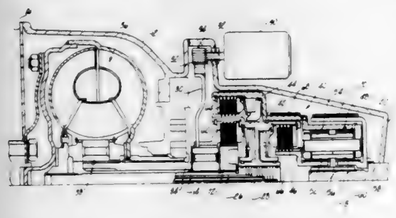
VEHICLE TRANSMISSION

Daniel R. Osterman, 8238 Honey Tree, Canton, Mich. 48187

Filed Feb. 5, 1981, Ser. No. 231,668

Int. Cl.³ B60K *25/00, 41/28*

U.S. Cl. 192—2 **9 Claims**



1. For use with a vehicle having a drive train and an engine with a rotary drive shaft, a transmission comprising:

a housing,

a driven member rotatably mounted in the housing and means for coupling said engine drive shaft to said driven member,

a drive member rotatably mounted to said housing and adapted for connection with the vehicle drive train so that rotation of the transmission drive member in one direction propels the vehicle in a forward direction while rotation of the transmission drive member in the opposite direction propels the vehicle in a reverse direction,

means for selectively coupling said driven member to said drive member whereby said engine drive shaft rotatably drives said drive member in said one direction, said coupling means comprising an annulus which rotates in a first direction to produce rotation of the drive member in said one direction,

means for rotatably driving said annulus in a direction opposite from said first direction to thereby rotatably drive said drive member in said opposite direction, said means for rotatably driving said annulus in said opposite direction comprising an electric motor having an output, means for selectively actuating said motor in a predetermined direction of rotation, and means for drivingly connecting said motor output to said annulus, and

a one-way clutch operatively disposed between said annulus and said driven member, said one-way clutch engaging when said annulus is driven in said first direction with respect to said driven member and means for actuating said electric motor in a rotational direction opposite from said predetermined direction.

4,410,072

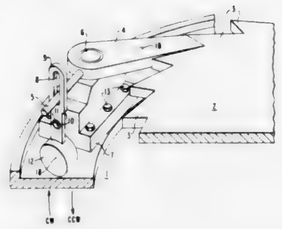
GRAVITY CONTROLLED ANTI-REVERSE ROTATION DEVICE

Robert J. Dickinson, Shaler Township, Allegheny County, and Todd M. Wetherill, Lower Burrell, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1981, Ser. No. 293,046

Int. Cl.³ B60T *8/02*; F16D *49/00*

U.S. Cl. 192—8 R **4 Claims**



1. An anti-reverse rotation device, for a rotating component, said device comprising;

A. a horizontal pawl, pivotally mounted on said rotating component;

B. a stationary ratchet having teeth adapted to mesh with said pawl, preventing rotation of said rotating component in at least one direction when said pawl is pivoted into intercourse with said ratchet;

C. means for control of said pawl, said means adapted to assist disengagement of said pawl due to centrifugal forces generated on said means by rotational motion of said rotating component in an allowed direction, and to impel engagement due to gravitational force on said means.

4,410,073

AXLE DRIVE MECHANISM

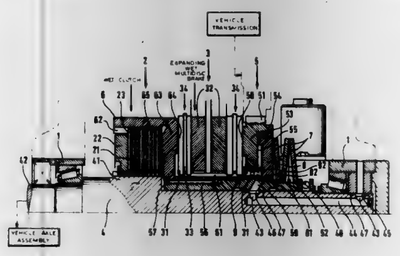
Friedrich Ehrlinger, Friedrichshafen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,891

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948895

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—18 A **4 Claims**



1. A selectively operable axle drive mechanism for a vehicle having more than one driving axle, comprising:

an axle housing;

a main shaft rotatable in said housing and axially fixed therein;

a drive gear axially fixed on said main shaft and angularly displaceable relative thereto;

a multidisc clutch in said housing having a first group of discs nonrotatably connected to said shaft and a second group of discs interleaved with the discs of said first group and nonrotatably connected to said drive gear, said discs forming a stack axially spaced from said drive gear, said clutch being provided with a spring acting upon said stack to compress the same and with pressurizable means responsive to fluid pressure to relieve said spring, said pressurizable means including a carrier for said second group of discs, said carrier being axially shiftable relative to said drive gear but nonrotatably coupled therewith; and

a parking brake disposed between said stack and said drive gear around said shaft, said parking brake having at least one member connected to said housing, said operating means effective upon actuation of said parking brake and braced between said member and said carrier and between said member and said drive gear for frictionally connecting said carrier, said housing and said drive gear together, said operating means acting upon said carrier to compress said stack.

4,410,074

FRICTION CLUTCH ASSEMBLY

Paul Maucher, Sasbach, and Oswald Friedmann, Lichtenau, both of Fed. Rep. of Germany, assignors to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

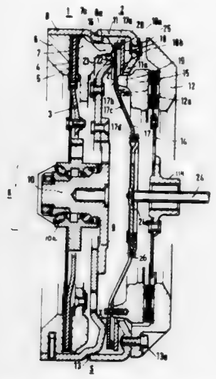
Filed Apr. 2, 1981, Ser. No. 250,314

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013298

Int. Cl.³ F02N *5/04*; F16D *21/06, 13/44*

U.S. Cl. 192—48.7 **52 Claims**

1. In a friction clutch assembly wherein a first clutch establishes or terminates a torque transmitting connection between a rotary driving element and a coaxial first driven element, such as between the crankshaft of an internal combustion engine and a flywheel which is rotatable with reference to the crankshaft, wherein the first driven element contains a second clutch for establishment or termination of a torque transmitting connection between the first driven element and a coaxial second driven element, such as between said flywheel and the input shaft of the transmission in an automotive vehicle embodying said engine, wherein said first and second clutches respectively comprise a first friction disc driven by said driving element and a second friction disc driving said second driven element, wherein each of said clutches has a pair of pressure plates flanking the respective friction disc and wherein at least one pressure plate of each clutch is movable axially of said elements and is adapted to be biased against the corresponding friction disc, the improvement which consists in the provision of common actuating means which is operable to engage and disengage said first and second clutches.



4,410,075

TORSIONAL DAMPERS

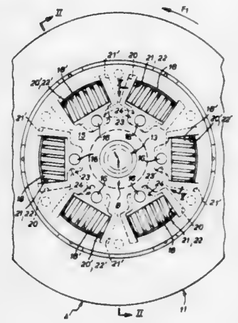
Andre Caray, Paris, and Dominique Despres, Clichy, both of France, assignors to Valeo SA, Paris, France

Filed Oct. 14, 1981, Ser. No. 311,189

Claims priority, application France, Oct. 15, 1980, 80 22002

Int. Cl.³ F16D *3/66*

U.S. Cl. 192—106.2 **11 Claims**



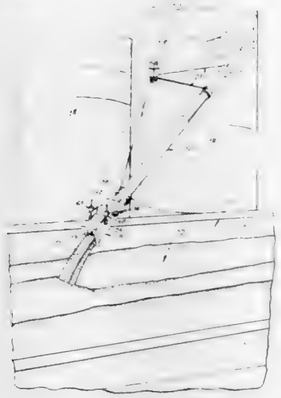
1. A torsional damper comprising at least first and second coaxial parts mounted to rotate relative to one another within a defined sector of relative angular movement, circumferentially disposed between said parts circumferentially acting elastic means comprising a plurality of elastic members some at least of which are associated with one another in series in a rest configuration of the damper assembly, and modulation means which, beyond a predefined degree of relative angular movement between said parts, bring about the parallel association with one another of at least some of said elastic members.

4,410,076

DUST SUPPRESSOR

Joe B. West, Blue Island, and Donald G. Van Camp, Crete, both of Ill., assignors to Metcalf Construction Company, Hammond, Ind.

Filed Feb. 2, 1981, Ser. No. 231,221
Int. Cl.³ B65G *11/20*
U.S. Cl. 193—32 **14 Claims**



1. A device for suppressing emission of dust into the atmosphere during flow of particulate commodities discharged from a loading spout comprising:
(a) a housing receiving the flow of particulate commodity,
(b) a normally-closed butterfly valve disposed within said housing and blocking said housing when in a closed position, and having a free edge portion adapted to be engaged by the flow of particulate commodity for opening the valve, and
(c) bias means biasing said butterfly valve toward a closed position with a force just sufficient to cause said free edge portion to shape the flow of commodity into a relatively solid mass without substantially restricting the flow of the commodity as it passes by the free edge of said butterfly valve in the downstream direction to be discharged from the housing.

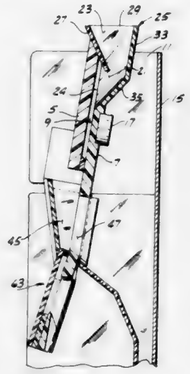
4,410,077

COIN HANDLING APPARATUS WITH COIN RETARDATION FEATURE

Anton Okolischan, Crestwood, Mo., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Jun. 1, 1981, Ser. No. 268,749
Int. Cl.³ G07F *1/04*
U.S. Cl. 194—1 K **11 Claims**

1. In coin handling apparatus of the type having a track down which coins may roll on edge, walls at opposite sides of the track for confining the coin to rolling along the track, said track and walls forming a chute, the latter being inclined off vertical for coins to roll down the chute in face-to-face engagement with one of said walls, and means along said one wall of the chute for detecting a coin as it rolls therepast, the improvement comprising entrance means through which a coin is adapted to enter the chute laterally through said one side wall at a point upstream of said detecting means, said entrance means comprising a passageway having an inclined reach extending laterally upwardly away from the chute at an inclination off vertical more than said one wall of the chute, and an inlet for entry of coins into the passageway for travel down said inclined reach toward said chute, said passageway opening into the chute through said one side wall thereof at an elevation above the track therebelow and at a location upstream of said detecting means, said inclined reach having an inside concave surface opposed to and facing said other side wall of the chute, said concave surface being so sized and contoured that coins which the apparatus is to handle slide down said inclined reach of the passageway generally in a plane inclined off vertical more than said one wall of the chute with only opposite edge portions of the coin in contact with said concave surface, the coin proceeding down in said inclined plane and being directed by said inclined reach laterally



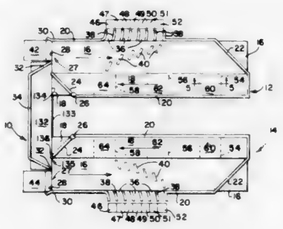
across the chute for impact of its lower edge portion against the other side wall of the chute thereby to deaden the motion of the coin and to deflect it down onto the track for rolling on edge down the chute without substantial bounce or flutter and with the coin in face-to-face engagement with said one wall of the chute for accurate detection by said detecting means as the coin rolls therepast.

4,410,078

ARTICLE DENSITY SENSING

Winston E. Shields, Justice, and Robert F. Lantz, II, South Holland, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

Continuation of Ser. No. 867,320, Jan. 5, 1978, abandoned, which is a continuation of Ser. No. 695,684, Jun. 14, 1976, abandoned. This application May 25, 1979, Ser. No. 42,694
Int. Cl.³ B65G *47/46*
U.S. Cl. 198—358 **14 Claims**



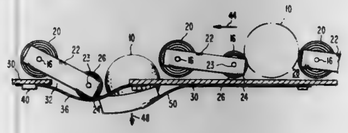
1. In a conveying system for transportation of substantially identical articles from a first operating station to a second operating station, the conveying system including a moving supply conveyor for moving articles from said first operating station to said second operating station and beyond, and a moving return conveyor for receiving articles passing beyond said second operating station, said moving return conveyor being of a width in excess of the width of an intended article and wherein a plurality of the articles may be disposed on said return conveyor generally in random rows and colums; control means for regulating the number of articles present in the conveying system, said control means including at least one sensing zone extending along a predetermined linear portion of said return conveyor; sensing means operatively associated with said sensing zone for sensing the density of randomly arranged articles disposed on said return conveyor in said sensing zone, signal means for generating a signal in accordance with the sensed density, and regulating means for receiving the signal and regulating operation at one of said operating stations in accordance therewith.

4,410,079

EGG CONVEYOR TURNING APPARATUS

Lee H. Niederer, Titusville, and Steven D. Niederer, Pennington, both of N.J., assignors to Otto Niederer Sons, Inc., Pennington, N.J.

Filed Nov. 19, 1981, Ser. No. 322,817
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—424 **14 Claims**



1. An egg conveyor turning apparatus comprising:
(a) an egg receiving conveyor means including egg receiving means therein;
(b) an egg delivery conveyor means positioned extending above and immediately over said egg receiving conveyor means and oriented angularly with respect thereto, said egg delivery conveyor means comprising:
1. a plurality of rod means extending laterally across said egg delivery conveyor means, said rod means being longitudinally movable with respect to said egg delivery conveyor means for transporting eggs therealong;
2. a plurality of primary spool means mounted upon said rod means and extending laterally across said egg delivery conveyor means;
3. a secondary bracket means pivotally secured with respect to said rod means adjacent each one of said primary spool means and extending in the trailing direction therefrom with respect to the direction of movement of said egg delivery conveyor means, said secondary bracket means including a cam means thereon;
4. a plurality of secondary spool means secured with respect to each of said secondary bracket means to be pivotally secured with respect to said rod means and with respect to the one of said primary spool means thereadjacent in the leading direction, said secondary spool means and the trailing one of said primary spool means being spatially disposed with respect to one another at less than the size of an egg to define an egg holding means therebetween;
(c) a track means extending longitudinally with respect to said egg delivery conveyor means at a location therebelow to abut said cam means of said second bracket means and maintain the longitudinal dimension of said egg holding means;
(d) an egg aperture means below said egg conveyor means and immediately below the path of movement of said egg holding means at a location above said egg receiving means of said egg receiving conveyor; and
(e) a camming surface interposed along said track means adjacent to each of said egg aperture means to abut said camming traveling therealong and allow downward movement of said cam means and downward pivotal movement of said secondary roller means to longitudinally widen said egg holding means to release an egg held therein to pass downwardly through said egg aperture means onto said egg receiving conveyor therebelow.

4,410,080

DELIVERY DEVICE FOR A FREEZING PLANT

Hans Gram, Vojens, Denmark, assignor to Brødrene Gram A/S, Vojens, Denmark

Filed May 6, 1981, Ser. No. 260,991
Claims priority, application Denmark, May 19, 1980, 2176/80
Int. Cl.³ B65G *17/04*
U.S. Cl. 198—715 **1 Claim**



1. A delivery device for a freezing plant of the type in which the material or the products to be frozen are moved through the freezing plant supported by a conveyor belt comprising a continuous web of open wire mesh or mutually connected open wire mesh mats, said conveyor belt being capable of stretching in longitudinal and transverse directions, spaced transverse braces supporting said wire mesh web or said wire mesh mats so as to form a generally planar supporting surface for said material or products while being conveyed through said freezing plant, conveyor chains connected to opposed ends of said braces, said delivery device comprising a roller about a part of which said conveyor belt is movable for delivery of the frozen material or products, said roller having axially extending supporting slats the opposing ends of which are spaced inwardly of opposed lateral edges of said wire mesh web or wire mesh mats, and said roller having a sprocket at each end for engaging said chains, the spacing between the outer surfaces of said slats and the axis of said roller being greater than the spacing between said wire mesh web or said wire mesh mats and the axis of said roller as determined by engagement of said sprockets and said chains so as to deform said wire mesh web or said wire mesh mats outwardly with respect to the lateral edges of said wire mesh web or said wire mesh mats during the passage of said wire mesh web or said wire mesh mats about said part of said roller for causing mutual movements of the wires of said mesh in said longitudinal and transverse directions for importing to said conveyor a relative movement to the material or the products supported thereon, thereby resulting in a clean removal of the material or products from said conveyor.

4,410,081

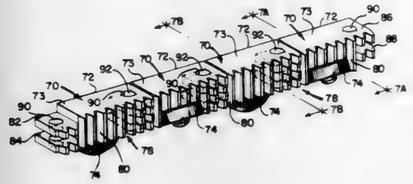
CONVEYOR SYSTEM

Clyde R. Weihe, Jr., 17 Lindberg Ave., Needham Heights, Mass. 02194

Filed Oct. 26, 1981, Ser. No. 314,770
Int. Cl.³ B65G *35/00*
U.S. Cl. 198—725 **22 Claims**

1. A conveyor for transporting racks of objects from one station to another comprising a horizontal surface supporting a rotatable means, a plurality of links connected together in head-to-toe fashion, each link comprising a body member for supporting the racks and said rotatable means mounted thereon defining a plane of rotation making an acute angle with the horizontal surface upon which the conveyor is supported by means of which the conveyor is caused to move along a prede-

termined path, the next adjacent links being joined together in such a manner as to permit each link to pivot in a horizontal



plane whereby said conveyor can move in horizontally curved fashion.

4,410,082

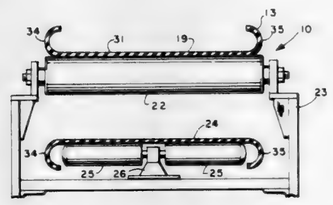
STRETCHABLE LOAD-RETAINING CONVEYOR BELT

Hebert E. McGinnis, Akron, Ohio, assignor to The First National Bank of Akron, Akron, Ohio

Continuation-in-part of Ser. No. 181,404, Aug. 26, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,768

Int. Cl.³ B65G *15/08, 15/34*

U.S. Cl. 198—818 **22 Claims**



22. A load-carrying belt conveyor system comprising support rollers positioned at longitudinally spaced-apart locations on said system defining a belt path, said belt path having a predetermined length, a stretchable conveyor belt installed on said system along said belt path, said belt having a length in the molded condition less than said predetermined length of said belt path by a sufficient amount so that said belt is initially stretched at least 3 percent when in the mounted position in said system, said stretchable conveyor belt including an elongated elastomeric body having spaced-apart edges, edge portions along said edges, a load-carrying belt surface on one side of said body extending between said edges, belt narrowing means responsive to stretching of said belt whereby tension on said belt generates transverse forces in a direction to reduce the width of the belt, said belt narrowing means including a first layer of reinforcing cords laid on a bias to the transverse axis of the belt and extending from one of said edges to the other of said edges under said belt surface, a second layer of reinforcing cords coextensive with and positioned under said first layer laid at an opposite bias angle to the cords of said first layer, and resistance means in said belt coextensive with and positioned under said second layer to selectively resist said transverse forces generated by said narrowing means so that said edge portions of said belt are bent by interaction with said narrowing means providing retaining walls at said edges for the load carried by said belt surface, and balancing means including at least one layer of reinforcing cords having layer edges spaced from the edges of said belt to maintain a relatively flat surface between said retaining walls.

4,410,083

WIRE-NETTING CONVEYOR BELT, AND METHOD OF MAKING SUCH WIRE-NETTING CONVEYOR BELT

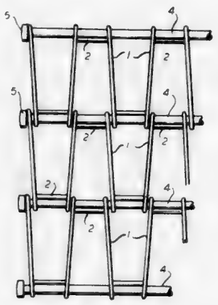
Jannes J. Poerink, Prins Bernardlaan 25, Borne, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,296

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015228; Nov. 10, 1980, 3042346

Int. Cl.³ B65G *17/06*

U.S. Cl. 198—853 **3 Claims**



1. A wire-netting conveyor belt comprising, a plurality of transversely extending rods extending

transversely of the longitudinally direction of conveyor travel,

said rods being spaced apart longitudinally at predetermined equal intervals,

a plurality belt elements extending between and connected to adjacent transverse rods,

said belt elements being formed of bent wire having integral longitudinal legs extending longitudinally between adjacent rods with adjacent pairs of legs being angled to diverge in opposite directions relative to the longitudinal direction,

said belt elements having integral transverse legs extending transversely of and joined to a pair of longitudinal legs,

said transverse legs being bent into an eye with a looping angle about one said transverse rods to connect the rods and belt elements,

said eyes of said transverse legs having a portion extending parallel to the transverse bar and of a greater length than twice the thickness of the wire of said belt element,

the length of said eye including the parallel portion being smaller than the average spacing between respectively adjacent longitudinal legs at the center portions thereof, and

means at the ends of said rods holding links assembled under resilient compression between opposite side of the conveyor.

4,410,084

WATER SKI ROPE STORAGE COMPARTMENT

Charles R. Ladner, 1032 Gladstone, Azle, Tex. 76020

Filed Mar. 22, 1982, Ser. No. 360,464

Int. Cl.³ B65D *85/04;* **B65H** *75/00, 75/38, 75/40*

U.S. Cl. 206—53 **5 Claims**

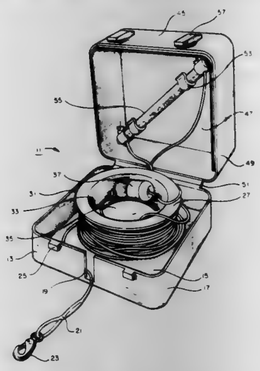
1. A device for storing cord, comprising:

a compartment having a base and a lid connected together by a hinge; and

a spool extending rigidly upward from the inside surface of the base and having an annular periphery for winding cord;

the spool having on its side opposite the base an outwardly inclined circular lip of diameter less than the width of the base; and

wherein the base has a bottom and the lid has a top, the bottom and the top having depending walls that mate to enclose the spool, one of the walls having an aperture for allowing cord to extend through when the compartment is closed.



4,410,085

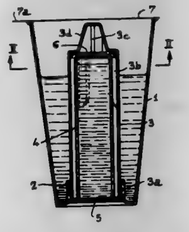
DRINKING GOBLET ENABLING TWO DOSES OF CONSTITUENTS TO BE MIXED JUST BEFORE CONSUMPTION

Alain Beneziat, Thil, and Andre Silaire, Gif sur Yvette, both of France, assignors to Manufacture Lyonnaise de Bouchage, Lyons, France

Filed May 3, 1982, Ser. No. 374,546

Int. Cl.³ B65D *81/32, 85/72, 51/28*

U.S. Cl. 206—217 **7 Claims**



1. Drinking tumbler allowing two doses of constituents to be mixed just before consumption, wherein it comprises a recipient in the form of a glass, inside which is maintained a hermetically closed flask containing one of the two constituents, the opening of said recipient or glass being closed by a heat-welded lid so as to contain the second constituent around the said flask.

4,410,086

MEDICAL APPLIANCE DISPOSAL CONTAINER

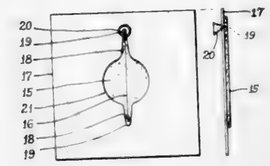
James L. Simpson, 307 MacLaren La., Lake Bluff, Ill. 60044

Filed Mar. 5, 1982, Ser. No. 354,951

Int. Cl.³ B65D *25/00;* **B26F** *3/00;* **B65F** *7/00, 1/02*

U.S. Cl. 206—366 **25 Claims**

1. A medical appliance disposal container comprising; a container body comprising a bottom and side walls; and a container top enclosing said container, said container top having at least one opening therein for insertion of medical appliances, said opening being covered by at least one slotted plastic membrane, said slot being of sufficient size to permit insertion of the desired medical appliance into the disposal container, and a bending means located at one end of said slot whereby needles may be bent while attached to a syringe and the bent needle-syringe assembly inserted through said slot into said disposal container.



4,410,087

TAPE CASSETTE STORAGE BOX

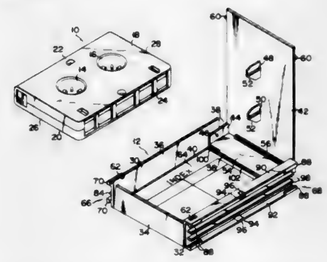
Hideo Shirako, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,357

Claims priority, application Japan, Feb. 7, 1981, 56-16134[U]

Int. Cl.³ B65D *85/672*

U.S. Cl. 206—387 **8 Claims**



1. A tape cassette storage box comprising a main body which has a tape cassette detachable opening and an auxiliary opening, said tape cassette detachable opening detachably holding a tape cassette which has two flat surfaces which are mutually spaced apart parallel to each other and rotatably holding reel hubs, and four side surfaces which connect said two flat surfaces and which extend along rims of said two flat surfaces, one of said two flat surfaces being exposed to the outer atmosphere, and said auxiliary opening exposing one of said four side surfaces of said tape cassette held in said main body to the outer atmosphere;

a cover which is rotatably mounted on said main body and is rotatable between a first position where said cover covers said tape cassette detachable opening and stores said tape cassette in said main body in cooperation therewith and a second position where said cover is spaced apart from said tape cassette detachable opening to allow mounting-/demounting of said tape cassette in and from said main body through said tape cassette detachable opening;

a tongue portion which moves together with said cover, which covers said auxiliary opening and which faces said one of said four side surfaces of said tape cassette which is held in said main body, when said cover is located in the first position, and an end portion of which, being away from said cover, comes close to said one of said four side surfaces of said tape cassette which is held in said main body when said cover is moved from the first position to the second position; and

an eject member which is mounted on said tongue portion and which moves together with said tongue portion and is spaced apart from said tape cassette held in said main body upon the movement of said cover to the first position and

which causes a part, in the vicinity of said one of said four side surfaces, of said one of said two flat surfaces of said tape cassette, to move in the direction away from said tape cassette detachable opening upon the movement of said cover from the first position to the second position.

4,410,088

HOLDERS FOR PHOTOGRAPHIC SLIDES

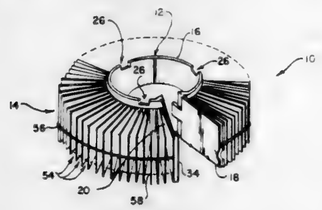
Joachim L. Rohloff, 59 Fourth Beach Clifton, Cape Town, South Africa

Filed Aug. 5, 1981, Ser. No. 290,205

Claims priority, application South Africa, Aug. 5, 1980, 80/4745

Int. Cl.³ B65D *85/30, 85/62*

U.S. Cl. 206—455 **8 Claims**



1. A holder for photographic slides which comprises a strip-like resiliently flexible belt which forms one side wall of the holder, a connecting portion at each end of the flexible belt, the connecting portions including means for releasably securing them one to the other thereby to retain the holder in the form of a closed loop once the connecting portions have been brought into juxtaposition, a plurality of spaced panel elements protruding from one side of said flexible belt, the panel elements defining an array of upwardly open side-by-side pockets, the array extending between said connecting portions and being adjacent said belt, each pocket serving to receive a photographic slide which slide can be inserted downwardly into the pocket through the upwardly open mouth thereof, first flexible means extending along the length of said array, the first flexible means being secured to the panel elements, forming a further side wall of the holder which further side wall is opposed to said one side wall and preventing photographic slides leaving said pockets in the direction away from said belt, and second flexible means extending along the length of said array, joined to the panel elements and forming the bases of the pockets on which bases photographic slides inserted into the pockets through their upwardly open mouths are supported, the rectilinear array becoming a radial array once said holder has been formed into a closed loop and the first and second flexible means being taut while the holder is in the form of a closed loop and limp while the holder is in its rectilinear condition.

4,410,089

FLEXIBLE PACKAGE, AND METHOD AND APPARATUS FOR MANUFACTURING SAME

Ermanno Bortolani, Milan, Italy, assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Oct. 21, 1981, Ser. No. 313,511

Claims priority, application United Kingdom, Nov. 11, 1980, 8036190

Int. Cl.³ B65B *61/18;* **B65D** *73/00*

U.S. Cl. 206—633 **25 Claims**

1. A pack having an easy open feature comprising:

first and second superposed film portions sealed together at a seal region; and

wherein a marginal zone of said first film portion at or near said seal region is folded away from said second film



portion, back into contact with said first film portion and tacked to said first film portion.

4,410,090

DEVICE FOR TESTING AND SORTING BOTTLES

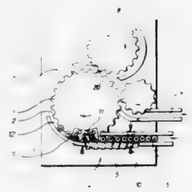
Siegmar Sindermann, Kamen-Heeren, Fed. Rep. of Germany, assignor to Holstein und Kappert GmbH, Dortmund, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 241,377

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1980, 3007540

Int. Cl.³ B07C *5/10*

U.S. Cl. 209—525 **4 Claims**



1. In a bottle treatment device wherein bottles to be filled are fed to cleaning test means, tested and thereafter unsuitable bottles are sorted out before the proper bottles enter a filling section of the device, an improvement comprising transfer means for transferring bottles to said cleaning test means, including a transfer star and a discharge star positioned to define a transfer circumferential path for the bottles; means for introducing bottles into said transfer means; said transfer star including a plurality of gripping units for holding individual bottles thereon; closing control means positioned on said transfer star in the vicinity of said introducing means and operative for bringing the gripping units positioned over a part of said circumferential path into an opening position to prevent them from gripping respective bottles; recognition means located on said introducing means and operative for scanning a bottle of a defective size, said recognition means actuating said closing control means for preventing the respective gripping units from gripping a bottle of a defective size; and means for discharging defective bottles from said circumferential path, said discharging means being disposed between said closing control means and said cleaning test means.

4,410,091

ARTICLE SORTING APPARATUS AND METHOD

Robert M. Cowlin, Thorpeness near Leiston, and Nigel C. Helsby, Maldon, both of England, assignors to Lockwood Graders (UK) Limited, Danbury, England

Filed May 11, 1981, Ser. No. 262,771

Claims priority, application United Kingdom, May 14, 1980, 8015940

Int. Cl.³ B07C *3/14, 5/36*

U.S. Cl. 209—546 **27 Claims**

1. Article sorting apparatus comprising conveying means for conveying articles to be sorted through an inspection area,

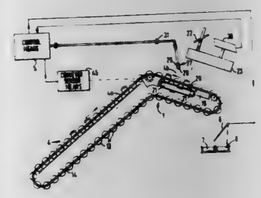
television camera means for viewing the inspection area,

selection means for selecting an article from a plurality of articles present in the inspection area,

the selection means including

an indicator member manually moveable within the inspection area by an operator viewing the articles in the inspection area for indicating a selected article, and

emitter means mounted on the indicator member and moveable with the indicator member within the inspection area to allow the operator to position the emitter means in the direct vicinity of a selected article in the inspection area,



the television camera means being arranged to view the inspection area and the emitter means in the inspection area, and to generate signals representing the location of the emitter means in the field of view of the television camera means, the emitter means being adapted to produce an output of electromagnetic radiation to which the television camera means is sensitive relative to the background of the inspection area,

separating means for selectively separating articles, and

control means for actuating the separating means in dependence upon signals generated by the camera means to effect selective separation of articles in response to article selection by an operator utilising the selection means in the inspection area.

4,410,092

AUTOMATIC CONTROL DEVICE FOR A BOUNDARY PLATE OF A GRAIN SEPARATOR

Toshihiko Satake, Higashihiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

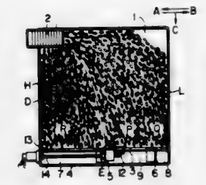
Filed Sep. 18, 1980, Ser. No. 188,369

Claims priority, application Japan, Sep. 22, 1979, 54-131568; Jan. 12, 1980, 55-2476

Int. Cl.³ B07B *13/10, 13/16*

U.S. Cl. 209—557 **2 Claims**

1. An automatic control device for a boundary plate of a grain separator comprising a separator plate provided with a roughened surface and mounted at inclinations in both of longitudinal and lateral directions with respect to the horizontal plane, means for supplying a mixture of different grains to the lateral higher portion of the longitudinal higher side of the separator plate, means for imparting movement to the grains on said separator plate, and a grain transfer trough provided with boundary plates and mounted at the longitudinal lower end of the separator plate, wherein the flow flux of one of the different grains is deflected to the lateral higher side of said separator plate while the flow flux of the other grains is deflected to the lateral lower side of said separator plate by said lateral movement imparted to said grains, due to the difference in physical properties between said different grains, while the flow flux of grain mixture moves from the longitudinal higher side to the longitudinal lower side of the separator plate through the area between said flow fluxes of said different grains, said fluxes being separated from one another by said boundary plates as said fluxes drop into and flow through said grain transfer trough, characterized in that said automatic control device comprises a photoelectric detector disposed at an area in said grain transfer trough near the boundary between one of the fluxes of different grains and said flux of grain mixture, in such a manner that the light transmitting surface of said photoelectric detector is disposed substantially vertically so that one of said boundary plates associated with said photoelectric detector is moved and adjusted in accordance withthe result of detection of the light reflected by or transmitted through the grains flowing through said area, while said light



transmitting surface of said photoelectric detector is continuously contacted slidingly by the grains flowing through said area, wherein said light-transmitting surface of said photoelectric detector is disposed on the wall of a grain flow sleeve mounted in said grain transfer trough and wherein said grain flow sleeve on which said photoelectric detector is disposed is spaced at a slight offset distance from said one of said boundary plates.

4,410,093

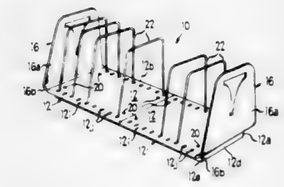
DEVICE FOR ORGANIZING PAPERS AND FILES

Dan Chiariello, and Ned Chiariello, both of Burlington, Wis., assignors to Keystone Ferrule & Nut Corporation, Burlington, Wis.

Filed May 18, 1981, Ser. No. 264,579

Int. Cl.³ B42F *17/00*

U.S. Cl. 211—11 **16 Claims**



2. A device for supporting articles such as files, folders, envelopes, papers, or the like, on a desk top, table top, or the like supporting surface, comprising: a base member adapted to be positioned on a supporting surface, said base member including a lower, supporting surface engaging portion and an upper, article supporting portion having side margins which extend outwardly with relation to the corresponding margins of the supporting surface engaging portion, said side margins being provided with a plurality of aligned, longitudinally spaced openings, said portions of the base member being positioned in vertically spaced relation to one another; a plurality of article support members adapted to be releasably engaged in the openings provided in the side margins of the article supporting portion of the base member for receiving therebetween articles to be supported on the device; at least one removable end member for engagement on the base member, said end member having an upwardly extending article supporting portion and an inwardly extending base member engaging portion adapted to be received in the space between said portions of the base member; and stop means on the base member for limiting the extent to which the inwardly extending base member engaging portion of said at least one removable end member can be inserted between said portions of the base member.

4,410,094

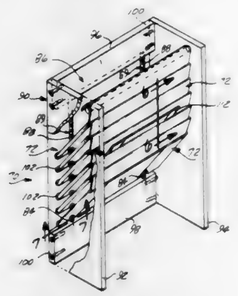
RECORD STORAGE APPARATUS

Robert L. Wagar, 8189 W. Carpenter Rd., Flushing, Mich. 48433

Continuation-in-part of Ser. No. 90,515, Nov. 2, 1979, Pat. No. 4,305,520. This application Dec. 10, 1980, Ser. No. 215,075

Int. Cl.³ A47F *5/00*

U.S. Cl. 211—55 **6 Claims**



1. A record storage apparatus comprising:
a plurality of envelopes, each of said envelopes having upstanding front and rear walls, with top, bottom and side edges;
said rear wall of each envelope having a greater height than said corresponding front wall;
said rear wall of each envelope being joined to said front wall of the adjacent rearward envelope;
means for disposing said top edge of said envelopes at a predetermined acute angle with respect to said bottom edges thereof; and
means for supporting envelopes in a linear arrangement, said supporting means including:
a pair of spaced, parallel rods;
said envelopes having a pair of spaced apertures located along the bottom edges of said front and rear walls, said apertures adapted to be disposed around said rods such that said envelopes are supported on said rods; and
means for securing said envelopes on said rods.

4,410,095

INTERLOCKING MODULAR ARTICLE SUPPORTING SYSTEM AND COMPONENT UNITS THEREFOR

Andrew E. Dembicks, Raleigh, N.C., assignor to Southern Case, Inc., Raleigh, N.C.

Filed Nov. 5, 1980, Ser. No. 204,297

Int. Cl.³ A47F *5/08*

U.S. Cl. 211—60 T **21 Claims**



1. A modular article supporting system comprising a plurality of interlocked component units;
each said component unit including a body having opposed ends;
said units being interlocked end to end to form said system;
the opposed ends of adjacent units including cooperative, mating interference fit means for interlocking the adjacent units by sliding interference fit;
the body of at least some of said component units including an article support station wholly contained within the dimensions of its respective unit, said article support station having a configuration and dimensions suitable to receive, guide and orient an article into a suitable position for support by said support station; and
at least some of said component units including a mounting portion for facilitating the mounting of said system to a primary support.

4,410,096

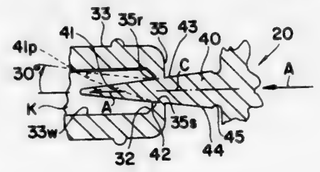
INTEGRAL CAP AND CONTAINER

Joseph R. Paradis, Holden, Mass., assignor to Nypro Inc., Clinton, Mass.

Continuation-in-part of Ser. No. 143,126, Apr. 23, 1980, abandoned. This application Sep. 28, 1981, Ser. No. 306,550

Int. Cl.³ B65D *17/40*

U.S. Cl. 215—32 **10 Claims**



1. A container with an integral cap, comprising
a plug extending from said cap through a wall of said container, said wall having a weakened region which becomes deformed and severed when said cap is depressed towards said container, and
said plug having an extension into the interior of said container which is proportioned to limit the movement of said cap during shipment and handling of said container to resist severence of said cap from said container during the occurrence of inadverent forces during handling and shipment by the contact of the extension of said plug with an interior wall of said container before a force sufficient to rupture said wall is encountered.

4,410,097

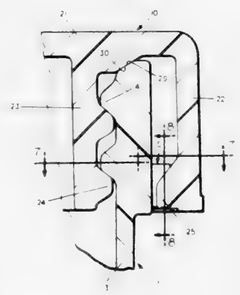
CHILD RESISTANT PACKAGE

Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 18, 1982, Ser. No. 389,724

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—214 **18 Claims**



1. A child resistant package comprising

a container having an open end,
a thread on the inner surface of the open end,
a closure having a top wall,
a peripheral skirt,
an annular wall spaced radially inwardly from the peripheral skirt,
said annular wall having an external thread on the outer surface thereof interengaging the thread on the inner surface of the upper end of the closure,
said skirt and said closure having radially engageable means,
said skirt being flexible such that the closure can be engaged with the container by interengagement of the threads and rotation of the closure in one direction until the radially engageable means engage and the closure may be removed by radially compressing portions of the closure at about 90° between the lugs on the closure to disengage the radially engageable means such that the closure can be removed by rotation relative to the container in the opposite direction.

4,410,098

CHILDPROOF LOCKING CAP

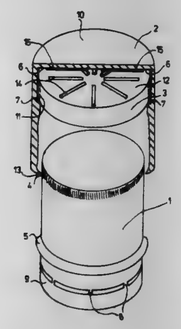
Hans-Dieter Dubs, Worms; Gunter Spatz, Biblis, and Carlos-Enrique Brandes, Worms, all of Fed. Rep. of Germany, assignors to Firma Alcoa Deutschland GmbH, Worms, Fed. Rep. of Germany

Filed Jun. 23, 1982, Ser. No. 391,387

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 8119446

Int. Cl.³ B65D *55/02*

U.S. Cl. 215—220 **10 Claims**



1. A locking cap for containers with a threaded neck comprising an inner and an outer cap, the inner cap carrying on its upper edge a circumferential knurl, wherein between the inner and the outer cap an intermediate cap having on its inner surface another knurl and on its top face upward projections, the outer cap having on its inner bottom face downwardly pointing projections, and the knurl of the intermediate cap being designed to engage in the circumferential knurl of the inner cap.

4,410,099

CASE FOR MULTIPACKS OF BOTTLES

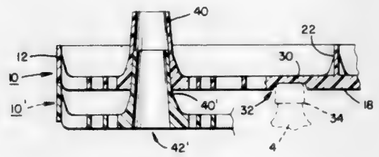
Pierre J. deLarosiere, Lisboa, Portugal, assignor to International Container Systems, Inc., Tampa, Fla.

Filed Nov. 30, 1981, Ser. No. 326,131

Int. Cl.³ B65D *10/24, 21/02, 25/10*

U.S. Cl. 220—21 **6 Claims**

1. A case for unsupported-base multipacks of bottles, each multipack having at least four bottles located in a generally rectangular array of at least two rows and a multipack bottle holder to which the bottles of the multipack are removably attached, each bottle of the multipack having a bottle closure which extends above the multipack bottle holder when the bottles are standing upright, the multipack bottle holder being located above a horizontal midplane passing through the bottles of the multipack when the bottles are standing upright so that when the multipack is lifted by the multipack-bottle holder, the bases of the bottles are unsupported; the case being molded from a plastic material and comprising:
(a) a generally rectangular outer wall enclosing an area sufficient to encompass at least two multipacks of bottles standing upright side-by-side;
(b) a base grid comprising a plurality of ribs interconnected to form a grid network, a first side of the base grid defining a bottle-support surface and an opposite side of the base grid defining a case-rest surface, a case-upright direction being defined generally normal to the base grid in the direction from the case-rest surface towards the bottle-support surface, the outer wall being connected to the base grid generally along a perimeter of the base grid, the outer wall projecting generally away from the base grid in the case-upright direction, an outer-wall limit plane being defined as a lowest horizontal plane which the outer wall does not extend above when the case is resting on a horizontal surface, the case-support surface having a plurality of indentations therein defining closure-locating dimples, each closure-locating dimple being shaped to receive a top portion of a bottle closure, a square lattice of vertex points being defined in fixed geometric relationship to the outer wall, the closure-locating dimples being located substantially at the vertex points of squares of the lattice, the squares of the lattice being dimensioned substantially to correspond to the spacing of the bottles in a multipack;



(c) case-partitioning means connected to the outer wall and the base grid for partitioning the case to define a plurality of multipack receptacles, the case partitioning means projecting generally away from the base grid in the case-upright direction, each multipack receptacle being shaped to receive the bases of the bottles of a multipack with a centerline of each bottle of the multipack passing at least approximately through a vertex point of the lattice of vertex points, the outer wall being shaped relative to the lattice of vertex points to permit a plurality of such cases with multipacks inserted in the multipack receptacles to be arranged in a multilayered cross-stacked structure with the closures of the bottles of the cases of a lower layer being located in closure locating dimples of the cases in a next higher layer;
(d) a plurality of supporting pillars, each multipack receptacle having a supporting pillar located within it substantially at a center of a square of the lattice of vertex points, the supporting pillars being connected to the base grid and projecting generally away from the base grid in the case-upright direction to a point beyond the outer-wall limit plane, each supporting pillar being shaped and dimensioned to fit within a space between four bottles of a multipack inserted in the multipack receptacle and urge against a side portion of each of the four bottles to stabilize the multipack, the four bottles being located respectively at the four vertex points of the square of the lattice in which the supporting pillar is located, each supporting pillar being generally hollow with crosswise dimensions of the supporting pillar generally decreasing as the distance from the base grid increases, the base grid having a pillar-insert opening passing through it adjacent to each

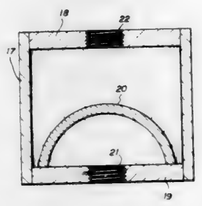
supporting pillar which provides communication with the hollow interior of the supporting pillar, the supporting pillars and the pillar-insert openings being shaped so that two empty cases may be nested one on top of the other with each supporting pillar of the lower case projecting through a pillar-insert opening and into the hollow interior of a corresponding supporting pillar of the upper case.

4,410,100

BREATHER SEPARATOR FOR FLUID POWER SYSTEM RESERVOIR

James E. Simmons, 1209 Savannah Ct., Flower Mound, Tex. 75028, and Bill Page, 3600 Valley View, 8-1, Irving, Tex. 75061

Filed Nov. 2, 1981, Ser. No. 317,164
Int. Cl.³ B65D *25/20, 51/16*
U.S. Cl. 220—85 R **2 Claims**



1. An air venting apparatus for a fluid reservoir comprising, in combination,

(a) a first conduit means connecting said reservoir to a fluid separation means;

(b) a fluid separation means comprised of a cylindrical cannister having an inlet aperture through a bottom flat wall, an outlet aperture through a top flat wall, an arched baffle member positioned inside the cylindrical cannister over the inlet aperture with a concave surface of the baffle member opposed to the inlet aperture, each end of the arched baffle member affixed to an upward facing surface of the flat bottom wall and an open space on each side of said baffle member allowing air flowing between the inlet and outlet openings to flow between said baffle and an interior wall of said cylinder;

(c) a second conduit means connecting said fluid separation means to a breather cap means; and

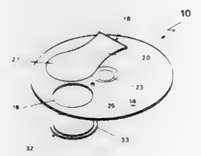
(d) a breather cap means designed to inhibit the flow of dust from ambient atmosphere into the second conduit means.

4,410,101

EASY OPENING TOP CLOSURE MEMBER ASSEMBLY FOR A CONTAINER

Kuno J. Vogt, 4250 ½ Fairmont Ave., San Diego, Calif. 92105

Filed Jan. 12, 1981, Ser. No. 224,004
Int. Cl.³ B65D *51/20*
U.S. Cl. 220—257 **9 Claims**



1. An easy opening top closure member assembly for a container comprising:

a container top member having a cut-out portion defining an aperture of a predetermined configuration;

a strip member having a width and length greater than that of said aperture whereby said strip member completely covers the top of said aperture when it is positioned in its closed position;

a disc member having a width and length greater than that of said aperture whereby said disc member completely covers the bottom of said aperture when it is positioned in its closed position, the top surface of said disc member around its periphery being free of any adhesive where said disc member comes in contact with the bottom surface of said container top member that would prevent said disc member from being slid rearwardly beneath said container top member during the final stages of the operation of opening the top of said container; and

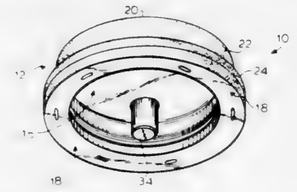
means for securing the underside of said strip member to the top surface of said top member and also to the top surface of said disc member.

4,410,102

CAN SEALER

Robert S. Lutzker, 21 Lee Ave., East Williston, N.Y. 11596

Filed Jun. 10, 1982, Ser. No. 386,957
Int. Cl.³ B65D *45/28*
U.S. Cl. 220—323 **17 Claims**



1. A can sealer for extending over the open top of a can containing any substance, as for example, a carbonated beverage, and for cooperating in retaining the carbonation of the beverage over extended periods of time, the can resealer comprising:

a locking cap having a skirt having at least one recess;

a ratchet plate having at least one cantilevered ratchet disposed in the recess of the cap when the resealer is in an unsealed position over the open top of the can, camming means defined by cooperating interengaging surfaces of the cap and ratchet for urging the ratchet out of the recess into engaged position with the can top to cooperate in retaining the sealer on the top of the can in a sealed position; and

means for providing relative rotational movement between the cap and plate between the sealer in the sealed position and unsealed position.

4,410,103

SEQUENTIAL UNIT FEEDING APPARATUS

Ralph Fuhrmeister, Coopers Plains, Australia, assignor to Furma Manufacturing Co. Pty. Ltd., Coopers Plains, Australia

Filed Mar. 9, 1981, Ser. No. 241,510
Claims priority, application Australia, Mar. 10, 1980, PE2692; Jul. 21, 1980, PE4620
Int. Cl.³ B21J *15/32*
U.S. Cl. 221—25 **13 Claims**

1. Apparatus for the sequential feeding of headed fasteners including:

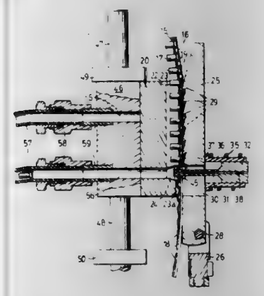
a carrier band of pliable resiliently deformable material, with the shanks of a multiplicity of similar fasteners driven in the same direction through apertures equally spaced along the band,

a delivery conduit,

a striker aligned with the entry to the delivery conduit,

guide means adapted to guide the carrier band between the striker and the entry to the delivery conduit,

an actuator adapted to engage fasteners in the carrier band and to advance them to bring each in sequence into alignment with the striker, said actuator comprising a toothed member with ratchet teeth adapted to engage simultaneously a plurality of heads of fasteners in the band, means for urging the toothed member to the carrier head, and



means for reciprocating the toothed member, its teeth being adapted to over-ride fastener heads on one stroke and to advance them on the return stroke, and

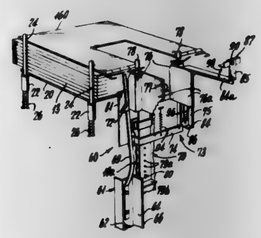
means for moving the striker to drive each of the fasteners brought into alignment therewith in such manner as to force the head of the fastener through the band and expel the fastener into the delivery conduit.

4,410,104

VENDING MACHINE

William Carswell, and Evelyn Friedman, both of P.O. Box 149, Whitehall, N.Y. 12887

Filed Jul. 17, 1981, Ser. No. 284,330
Int. Cl.³ B65H *31/20*
U.S. Cl. 221—241 **15 Claims**



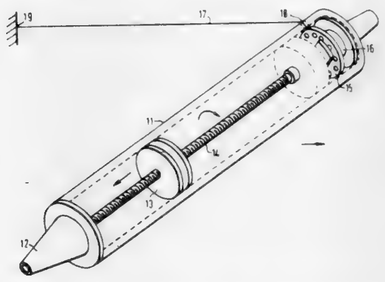
1. A vending apparatus, comprising an enclosure having an access opening formed therein for removal of an article therethrough from one side thereof by a customer on payment of a fee, means for supplying articles to be vended to the other side of said access opening, access opening control means including means for adjusting the size of said access opening, gating means and gating actuating means, said gating means being movable between a first position blocking removal of any articles through said access opening and a second position in which at least one article can be removed through said access opening, said gating actuating means being operable from a starting condition to an intermediate condition to shift said gating means from its first position to its second position and releasably retain said gating means in its said second position, said gating actuating means being responsive to removal of an article through said access opening to release said gating means, and resilient means for shifting said gating means from its second position to its first position following release thereof by said gating actuating means, said gating actuating means being movable from a starting position corresponding to its starting condition into engagement with said gating means in its said intermediate condition and while so engaged being movable back to its said starting position.

4,410,105

CABLE-DRIVEN ROTOR-PISTON DISPENSING APPARATUS AND METHOD OF OPERATING THE SAME

Ian E. Currah, 14 Eton Rd., Stratford-upon-Avon, England

PCT No. PCT/GB79/00067, § 371 Date Dec. 19, 1979, § 102(e) Date Dec. 19, 1979, PCT Pub. No. WO79/01067, PCT Pub. Date Dec. 13, 1979
PCT Filed May 11, 1979, Ser. No. 179,290
Claims priority, application United Kingdom, May 12, 1978, 19401/78; May 12, 1978, 19402/78; May 30, 1976, 24435/78
Int. Cl.³ A01C *7/18*
U.S. Cl. 222—1 **30 Claims**



1. Apparatus for dispensing material comprising:

a container for said material;

output means for expressing said material from said container through an outlet of said container;

a control rotor coupled to said output means in such a manner that rotation of said control rotor causes the output means to express said material through said outlet;

drive means for driving said rotor in rotation; and

an elongate metering member for effecting rotation of said rotor by engagement of said metering member with said rotor and by relative movement between said metering member and said container outlet,

said metering member being engaged with said rotor in such a manner as to tend to restrain rotation of said rotor by said drive means and to effect the required rotation of said rotor in operation by controlled release of said restraint during said relative movement between said outlet and said metering member.

4,410,106

ADDITIVE MATERIAL METERING SYSTEM WITH PNEUMATIC DISCHARGE

Gerald C. Kierbow, and Herbert J. Horinek, both of Fed. Rep. of Germany, assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 114,628, Jan. 23, 1980, abandoned. This application May 12, 1981, Ser. No. 263,017
Int. Cl.³ G01F *11/24*
U.S. Cl. 222—135 **5 Claims**

1. A material storage and metering system, comprising:

first storage means for storing a first solid phase material;

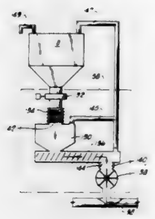
first metering means for transferring said first material from said first storage means at a controlled flow rate within a first range of flow rates, said first range being defined by a low end and a high end, said first metering means including:

metering bin means for receiving said first material from said first storage means through an upward facing opening; and

conveyor means for discharging said first material from

said metering bin means at a controlled rate within said first range of flow rates, said conveyor means including a screw conveyor having a downward facing opening connected to a discharge line by an air lock means for allowing passage of said first material therethrough while preventing an internal pressure within said discharge line from being communicated to said screw conveyor;

second storage means, for storing a second solid phase material, said second storage means having a capacity less than a capacity of said first storage means;



second metering means for transferring said second material from said second storage means at a controlled flow rate within a second range of flow rates, said second range being defined by a low end and a high end, said high end of said second range being at least substantially as great as said low end of said first range; and

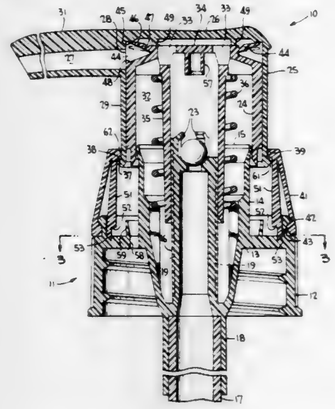
wherein the area of the upward facing opening in said metering bin means communicated with said first storage means is equal to the area of the downward facing opening in said screw conveyor communicated with said air lock means, so that forces acting on said first metering means, due to internal pressures, are balanced.

4,410,107

LIQUID DISPENSING PUMP

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Dec. 18, 1981, Ser. No. 332,338
Int. Cl.³ B65D *88/54*
U.S. Cl. 222—321 **9 Claims**



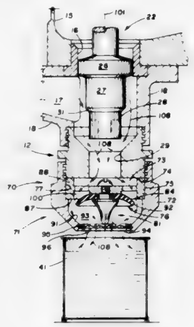
1. In a pump for dispensing fluid from a container, including a variable volume pump chamber defined by relative movement between piston and cylinder members along an axis of reciprocation, said chamber having a valve controlled inlet passage, a discharge passage extending from said chamber, a discharge valve for said discharge passage, the pumping of fluid from said pump chamber through said discharge passage being effected upon relative movement between said members against the force of a return spring acting therebetween, said spring urging relative outward movement between said members for suctioning fluid into said chamber through said inlet passage, said discharge passage extending from said pump chamber in a lateral direction relative to said axis of reciprocation, the improvement wherein said discharge valve comprises a valve seat and a spring washer both extending in said lateral direction, said spring washer being hingedly connected to one of said members for resilient engagement against said valve seat in a discharge closing position, and said return spring urging said discharge valve into said closing position.

4,410,108

PRESSURE-ACTUATED VALVE FOR USE WITH POSITIVE DISPLACEMENT FILLING MACHINE

Everett S. Minard, Sacramento, Calif., assignor to Elmar Industries, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 120,277, Feb. 11, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 310,227
Int. Cl.³ B67D *5/37*
U.S. Cl. 222—380 **3 Claims**



1. For use with a positive-displacement receptacle-filling machine having a base frame with an open bottom dispensing channel extending therein along a vertical axis, a valve comprising:

a. a valve upper body adapted to be joined to said base frame and having a passageway therethrough forming part of said dispensing channel and extending along said axis;

b. means on the bottom of said valve upper body defining an annular seat disposed around said passageway and concentric with said axis;

c. a cylindrical plug including a ring having an upper ring portion, a lower ring portion, and a central transverse plate provided with a plurality of apertures through said plate connecting an upper manifold chamber marginally defined by said upper ring portion and a lower manifold chamber defined by said lower ring portion;

d. a hub on said plate concentric with said axis, said plurality of apertures surrounding said hub in concentric relation, the bottom of said hub being at a predetermined elevation above the bottom annular surface of said lower ring portion;

e. an elastomeric diaphragm of circular outline in plan and mounted on the bottom of said hub concentric with said axis, said diaphragm being of sufficient diameter and thickness so that in uppermost position the peripheral portion of said diaphragm engages and is biased downwardly by the adjacent circular corner edge of said bottom annular surface of said lower ring portion, said diaphragm being of a material possessing a restorative force capable of tightly sealing said peripheral portion of said diaphragm against said corner edge of said lower ring portion; and,

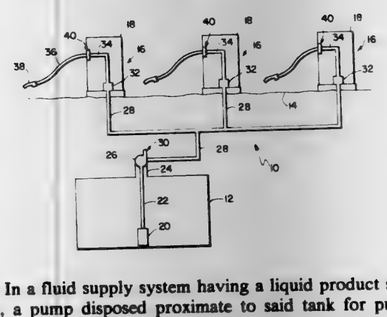
f. a nozzle fitting threadably engageable with said valve upper body, said nozzle fitting including a bore adapted to receive said plug and to clamp said ring against said annular seat as said nozzle fitting is threaded on said valve upper body, said nozzle fitting further including inverted conical side walls extending below said ring and said diaphragm and defining a product stream-shaped chamber having a bottom discharge port concentric with said axis, said peripheral portion of said diaphragm being flexed downwardly by a vertical head pressure in excess of a predetermined amount to permit product flow from said upper manifold chamber to said lower manifold chamber and around the rim of said diaphragm into said product flow shaping chamber and out said bottom discharge port.

4,410,109

LEAK DETECTION SYSTEM AND CHECK VALVE FOR USE THEREIN

Robert L. Murrell, Jr., Norfolk, and Howard J. Murrell, Sr., Virginia Beach, both of Va., assignors to Quality Engineering Co., Inc., Virginia Beach, Va.

Filed May 4, 1982, Ser. No. 374,787
Int. Cl.³ B67D *5/32, 5/34;* F17D *5/02;* F16K *17/00*
U.S. Cl. 222—52 **9 Claims**



1. In a fluid supply system having a liquid product storage tank, a pump disposed proximate to said tank for pumping product from the tank, a supply line having one end connected to said pump and a second end connected to a supply nozzle having valve contained therein for opening and closing said nozzle, a leak detection system, comprising:

a leak detection sensor means for sensing the pressure of product in said supply line and holding the flow rate of product through said supply line to a value below a maximum when said sensed pressure is below a first minimum value, said sensor means being connected to said supply line in proximity to said pump; and

pressure responsive valve means connected to said supply line between said sensor means and said nozzle for sensing said pressure and holding said supply line closed until said pressure increases to a second minimum value, said second minimum value being at least as great as said first minimum value.

4,410,110

VALVE-AND-LID ASSEMBLY FOR A CONTAINER

Luigi Del Bon, Feldstrasse 141, and Franco Del Bon, Feldstrasse 139, both of 4663 Aarburg, Switzerland

Filed Apr. 30, 1981, Ser. No. 259,159
Claims priority, application Switzerland, Aug. 5, 1980, 5912/80
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—402.24 **16 Claims**

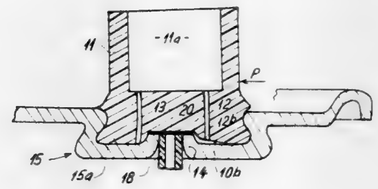
1. A self-closing valve-and-lid assembly adapted for closing the open top end of a container fillable with pressurized product comprising:

a lid and rigid collar means protruding centrally on one face of said lid, and bearing an annular contact face,

said valve disc being elastically resilient under conditions of filling product into, and discharging product from said container, and having a flat central zone and a peripheral zone about said central zone and being adapted to be firmly clamped-in in said assembly,

said peripheral zone being of greater thickness than said central zone when said valve disc is mounted in said assembly,

said valve disc having an inner disc face thereof adapted to be turned toward said lid and collar means and being adapted for uninterrupted contact with the entire portion of said lid face facing said valve disc and surrounding said contact face of said collar means, while said assembly is in closed condition,



said inner disc face having, in said central zone of said valve disc, an annular contact zone adapted for sealingly contacting said contact face of said collar means, when said assembly is in a closed state,

the portion of said valve disc inside said annular contact zone being unperforated,

said valve disc having an outer disc face on the side thereof opposite said inner disc face;

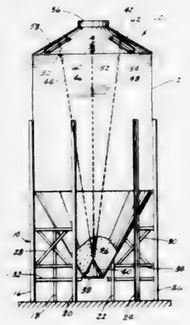
and at least one duct extending through said disc from a region of said outer disc face spaced away from said unperforated central disc portion, to said inner disc face and opening out of said inner disc face in a region thereof outside said annular contact zone and adapted for being in contact with said collar means outside said contact zone thereof and the adjacent lid face portion.

4,410,111

STORAGE CONTAINER FOR PARTICULATE MATERIAL

Lloyd D. Barger, 1520 N. Lexington Pkwy., St. Paul, Minn. 55117

Filed Oct. 24, 1980, Ser. No. 200,071
Int. Cl.³ B65D *90/66;* F16K *51/00*
U.S. Cl. 222—509 **4 Claims**



1. A storage container for particulate material comprising,

encasing means for said material including side, top and bottom members and a central vertical axis,

a centrally located filler opening in said top member and a cover for said opening,

discharge flow regulating means which is operatively connected to the top member of said encasing means and includes a discharge valve member which is symmetric about its vertical axis,

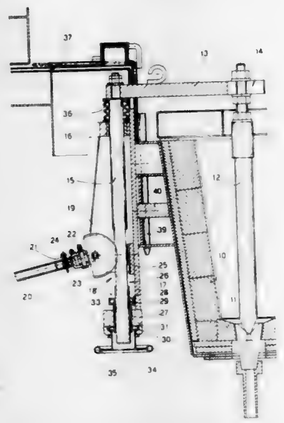
a centrally located discharge port in said bottom member, said discharge flow regulating means including a plurality of tension members which suspend said valve member symmetrically about its central axis, said tension members having lower ends connected to said valve member and upper ends vertically adjustably connected to said top member at positions generally uniformly radially spaced from the central vertical axis radially outwardly from said filler opening and generally uniformly circumferentially spaced apart, said filler opening thereby being free of obstruction by said tension members.

4,410,112

DEVICE FOR REGULATING A TUNDISH STOPPER

Fulvio Fassano, Gorizia, and Giorgio Turco, Pozzuolo del Friuli, both of Italy, assignors to Danieli & C. Officine Meccaniche S.p.A., Italy

Filed May 26, 1981, Ser. No. 267,058
Claims priority, application Italy, May 26, 1980, 60384/80[U]
Int. Cl.³ B22D *41/08*
U.S. Cl. 222—602 **5 Claims**



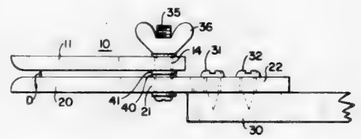
1. A device for regulating a tundish stopper on a first shaft comprising a support structure for said tundish, a rigid arm attached at one end to said first shaft, a second shaft connected to the other end of said arm and positioned parallel to said first shaft, said second shaft defining a rack, a toothed sector meshing with said rack, a lever connected to said toothed sector for movement thereof, a reaction slide block slidable with respect to said second shaft positioned opposite said toothed sector, an externally threaded sleeve on said second shaft axially movable with respect to said second shaft, and a threaded ring nut positioned on said sleeve which when rotated causes the sleeve and second shaft to move longitudinally.

4,410,113

BOW FORMING APPARATUS

Robert Palombo, 16 Hyacinth Dr., Fords, N.J. 08863

Filed Apr. 8, 1981, Ser. No. 252,255
Int. Cl.³ A41H *43/00*; D04D *7/10*
U.S. Cl. 223—46 **1 Claim**



1. Apparatus for making a bow of the puffy type, with said bow fabricated from a single length of ribbon comprising:

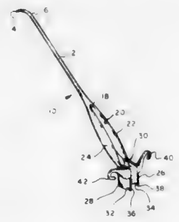
a top planar member having first and second projecting tines separated one from the other by a given distance and extending parallel to one another and in the same plane as directed from a common base of said top member, a bottom planar member having third and fourth projecting tines of the same dimensions as said first and second tines and also separated one from the other by said given distance, as directed from a common base of said bottom member, each of said tines having rounded surfaces facing each other, said common base of said bottom member being longer than that of said top members to allow the apparatus to be secured to a surface with said tines extending solely in the horizontal plane, with said top and bottom planar members each having a coaxial aperture in said base, support means directed through said coaxial apertures for coupling said top and bottom members together for positioning said top member above said bottom member with the top member separated from the bottom member by a predetermined amount selected according to the width of a ribbon to be accommodated, said predetermined distance being selected by adjustment means located about said apertures when said top member is positioned over said bottom member with said apertures in coaxial alignment with said adjustment means being at least one washer of a thickness selected according to the width of the ribbon to be accommodated, with said common base of the bottom planar member further including an additional aperture for securing said bottom member on a horizontal surface, whereby a ribbon can be directed transverse to said tines as well as above and below said top and bottom members to permit looping of said ribbon about said tines with said tines operative to hold said loops in place until the bow is finally formed.

4,410,114

COMBINED TOOL FOR NEEDLEWORK

Norma K. Wilson, 10 Adams Ave., Pitman, N.J. 08071

Filed Dec. 28, 1981, Ser. No. 335,242
Int. Cl.³ D05B *87/00*
U.S. Cl. 223—99 **8 Claims**



1. A combined tool for needlework including:

an elongated support member;

said support member tapering substantially to a point adjacent one end thereof, said one end being curved so as to form a pick;

a pair of needle threaders mounted adjacent the other end of said support member, said needle threaders lying in the same first plane and being comprised of substantially thin planar metal and extending outwardly from opposite sides of said support member;

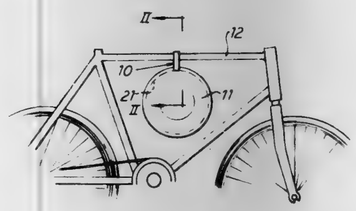
the axis of said support member intersecting said first plane and lying in a second plane which differs from said first plane.

4,410,115

TOY CARRIER DEVICE

John D. McClain, Jr., 300 W. Maple, Apt. #110, and Bruno J. March, 409 S. Washington Blvd., both of Mundelein, Ill. 60060

Filed Jun. 8, 1981, Ser. No. 271,286
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—39 **6 Claims**



1. The combination of a generally saucer-shaped flying disk toy having a flanged rim portion including an axially extending annular rim flange with a radially inner face and a radially outer face, and a carrier adapted for supportingly suspending the toy from a generally horizontally elongate support, and wherein:

said carrier comprises a one-piece plastic member having a resilient loop-shaped relatively narrow body for freely receiving and engaging said support, said body defining a head loop portion having a contacting portion means for resting above said support with remaining portions of said head loop portion being spaced from said support;

said body merging with a pair of space depending legs extending downwardly from said head loop portion;

one of said legs being substantially shorter than the other of said legs and terminating in a downwardly and outwardly curved jaw so as to define a downwardly facing jaw surface;

said other of said legs having its lower end portion in the form of a generally looped-closing extension terminating in a generally upwardly projecting outwardly and downwardly curved jaw so as to define an upwardly facing jaw surface;

said body and legs resiliently biasing said jaws into contiguity but permitting said jaws and legs to be flexibly spread apart for receiving said support within the head loop portion of the carrier;

flaringly related lips on said jaw surfaces cooperating for defining an entry mouth through which said toy rim flange is adapted to be forced into gripped engagement by and between said jaw surfaces and with the lip of said other leg jaw surface suspending said toy by engaging said radially inner face of said toy rim flange; and

said one leg jaw surface engaging said radially outer face of said toy rim flange in an outwardly offset relation to the engagement of the other leg jaw surface with the radially inner face of said toy rim flange so that a thrust vector is generated tending to swing the toy inwardly toward and into engagement with the lip of said other leg jaw, and the jaw surfaces thereby effecting a firm 3-point grip of the toy in supported relation on the carrier.

3. The combination of a generally saucer-shaped flying disk toy having a flanged rim portion including an axially extending annular rim flange with a radially inner face and a radially outer face and a carrier adapted for supportingly suspending the toy from a generally horizontally elongate support, and wherein:

said carrier comprises a one-piece resilient loop-shaped body providing a head loop of ample semicircular dimension to receive said support freely therein;

a downwardly extending elongate first leg and a downwardly extending spaced elongate second leg and said legs integrally connected by the head loop;

said legs converging generally toward one another and providing the carrier with a vertically elongate downwardly extending form;

a first jaw on the terminal end portion of said first leg and comprising a downwardly extending slightly curved jaw formation;

a downwardly extending second jaw terminal loop on said second leg curled upwardly and inwardly and shouldering toward said first jaw;

said second jaw suspendingly engaging said radially inner face of said toy rim flange and also engaging said toy adjacently below said rim flange;

said first jaw thrusting the engaged portion of said toy firmly toward said second jaw, so that the two jaws together effect a 3 -point gripping engagement with the toy; and

said jaws defining entry mouth surfaces for facilitating reception of the rim flange of the toy between the jaws by resiliently spreading the legs and thereby the jaws apart for this purpose.

4,410,116

ADJUSTABLE-DROP PACKAGE CARRIER RACK FOR TWO-WHEEL VEHICLES SUCH AS BICYCLES

Joseph Mattei, P.O. Box 1451, Chicago, Ill. 60690

Filed Oct. 26, 1981, Ser. No. 315,158
Int. Cl.³ B62J *7/04*
U.S. Cl. 224—40 **11 Claims**



1. A package-carrier rack for use over the rear wheel of a two-wheel vehicle, the vehicle having a main frame with a support member positioned adjacent to and extending upwardly above said rear wheel, said rack comprising:

an elongated, substantially planar-oriented, primary package-supporting surface having first and second ends and adapted to be placed in a substantially horizontal position above said rear wheel of said vehicle;

fastening means to removably secure the first end of said primary package-supporting surface to said upwardly extending support member of said main frame;

an elongated, substantially planar-oriented, secondary package-supporting surface rotatably connected to the second end of said primary package-supporting surface for movement between a lower position depending angularly

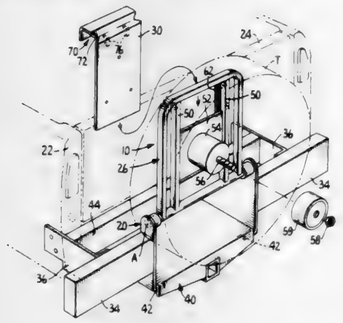
downwardly from said primary surface up to at least a horizontal position as an extension of said primary surface;
telescopically adjustable side supporting members for securing said secondary package-supporting surface to said vehicle, said side supporting members being removably connected to said secondary package-supporting surface and extending downwardly on on each side of said rear wheel and being removably fastened to said vehicle near the axle of said wheel.

4,410,117

COMBINATION BUMPER AND SPARE TIRE CARRIER

John Crawford, 1282 Alicante Dr., Pacifica, Calif. 94044, and Wayne Crawford, 700 Felton St., San Francisco, Calif. 94134

Filed Jul. 7, 1982, Ser. No. 396,034
Int. Cl.³ B62D *43/02*
U.S. Cl. 224—42.06 **11 Claims**



1. A spare tire carrier adapted for mounting adjacent the tailgate of a vehicle wherein the tailgate is rotatable about a lower hinge between a vertical, closed position and a horizontal, open position, said carrier comprising:
a bracket member spaced rearwardly from said tailgate;
a generally planar frame means pivotally connected to said bracket member at a point offset laterally from the hinge of said tailgate, said frame means including a means for mounting a spare tire juxtaposed to the rearward side of said frame means, said frame means further including a pair of spaced apart guide members, each guide member having a channel defined therein; and
a planar attachment plate, with the opposed side edges of said attachment plate being slidably received within the channels of said guide members and with the upper end of said attachment plate being fixedly mounted to the upper edge of said tailgate to define a telescoping configuration enabling said tailgate and frame means combination to be simultaneously moved between the open and closed positions while maintaining the connection therebetween.

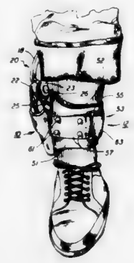
4,410,118

UNIVERSAL HOLSTER ASSEMBLY

Michael P. Taurisano, 163 Oxford Rd., New Hartford, N.Y. 13413

Filed Mar. 14, 1983, Ser. No. 474,803
Int. Cl.³ F41C *33/02*; F41B *13/04*
U.S. Cl. 224—222 **7 Claims**

1. A universal holster for carrying a handgun that comprises in combination
a holster body having an interior pocket for housing a handgun and an opening in the upper portion thereof for providing access to the grip of the handgun, retainer tabs disposed outwardly from the upper portion of the body for substantially encircling the hammer of the handgun, a belt receiving slot contained in the body for slidably receiving a belt therein, and
a leg support means having a relatively wide pad for partially encircling a human leg above the ankle, a soft, pliable backing material covering the back of the pad, a belt for slidably receiving the holster body thereon which is affixed at its proximal end to a side edge of the pad, said belt passing across the outer surface of the pad beneath a belt loop affixed to said outer surface whereby the holster



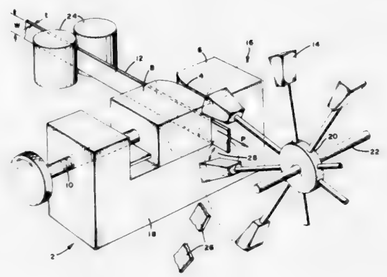
body is positionable between the loop and the proximal end of the belt, a reversing buckle secured to the pad adjacent to the proximal end of the belt to permit the distal end of the belt to be passed about the leg and turned through the buckle back upon itself, adjustable fastening means for securing the turned distal end of the belt to itself whereby the pad can be tightened against the leg.

4,410,119

DEVICE FOR PRODUCING SHARD FROM METAL RIBBON

Robert E. Hathaway, Dover, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 30, 1981, Ser. No. 288,593
Int. Cl.³ B26F *3/00*
U.S. Cl. 225—4 **8 Claims**



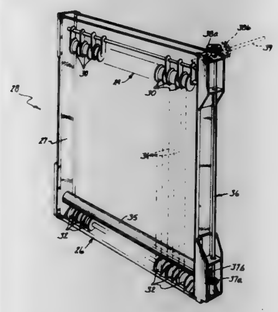
7. A method for forming shard from a metallic ribbon having a width and thickness with the thickness being the minimum dimension comprising the steps of:
advancing the ribbon through a slot which passes through an anvil, and
impacting the minimal dimension of the ribbon as the ribbon exits the anvil with an impact surface to provide a moment in the plane of the ribbon sufficient to fracture the ribbon.

4,410,120

GEARS FOR WEB TRANSPORT

Keith L. Henk, Brooklyn Park, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Dec. 4, 1981, Ser. No. 327,355
Int. Cl.³ B65H *17/42*
U.S. Cl. 226—109 **18 Claims**



6. Gear apparatus in combination with a drive system of a processor of photosensitive material, the combination comprising:
a shaft with a first keyway having a first arcuate surface;
a gear with a coaxial aperture having an interior surface positioned about the shaft over the first keyway and a bore having an interior surface and communicating with the aperture, the gear being made of an ultra-high molecular weight polyethylene;
a key having a second arcuate surface cooperating with the first arcuate surface and a first end portion and a second end portion with the first end portion communicating with the bore;
a set screw having a threaded portion, a head portion and a distal end, the distal end engaging the first end portion of the key through the bore such that the key when engaged slides along the first arcuate keyway and the second portion of the key deformably engages the interior surface of the aperture, and the head portion is of a substantially square cross sectional configuration having corners whose distance from the central axis of the screw is greater than the radius of the bore such that the corners deformably engage the interior surface of the bore so that the interior surface of the bore securely holds the head portion such that the set screw retains the second end portion of the key in engagement with the interior surface of the aperture thereby securely retaining the gear in a fixed position on the shaft.

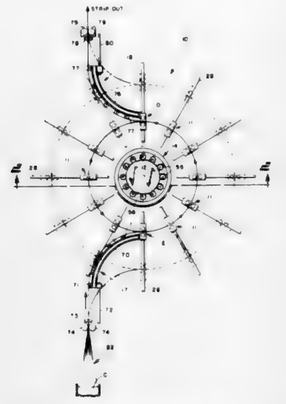
4,410,121

SPIRAL COIL STRIP ACCUMULATOR AND METHOD

Donald J. Wheeler, Belton, S.C.; Christopher Cooper, Brunswick, and Charles R. Krejsa, Northfield, both of Ohio, assignors to Guild International Inc., Bedford, Ohio

Filed Aug. 28, 1981, Ser. No. 297,234
Int. Cl.³ B65H *17/42, 75/02*
U.S. Cl. 226—118 **25 Claims**

25. A method of storing a variable length of elongated strip material comprising the steps of:
(a) forming the strip material into a helical path consisting of more than one turn and maintaining adjacent turns in spaced apart relationship at discrete circumferentially spaced locations,
(b) supporting and guiding the strip material along the helical path thus defined, and
(c) positively uniformly moving the strip material radially at such discrete circumferentially spaced locations to radially



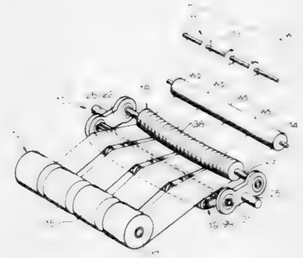
expand and contract the helical path thereby to vary the length of strip material stored in such helical path.

4,410,122

DEVICE FOR WIDTHWISE CONTROL OF WEB MATERIAL AND METHOD

Kenneth G. Frye, South Egremont, and Donald Gangemi, Great Barrington, both of Mass., assignors to Beloit Corporation, Beloit, Wis.

Filed Jun. 1, 1981, Ser. No. 268,788
Int. Cl.³ B65H *35/02, 23/32*
U.S. Cl. 226—199 **33 Claims**



4. A device for widthwise control of web material and adapted to be operatively disposed between a web material source and other processing equipment, and comprising:
a bar structure having elongate resiliently bendable mounting beam means, and limited wrap area means carried by said beam means and adapted to have web material run thereon;
means for effecting resilient primary bow bending adjustment of said beam means in respect to the web material so that said wrap area means will have a widthwise controlling effect on the running web material;
said wrap area means comprising a set of side-by-side independent but cooperatively related wrap area members which are adjustable relative to one another and relative to said beam means;
and means adjustably mounting said members on said beam means and adapted for individually selectively adjusting any of said members relative to said beam means to effect secondary bow adjustments of said wrap area means incrementally at any of said members, without altering said

primary bow relation, for compensating for uneven tension in any part of the web material, such as may be caused by variations in web thickness, bulk or length;

said beam means comprising a pair of cooperating beam members which have their opposite ends adjacent to one another, the beam members being anchored fixedly relative to one another to one of their ends and being connected for relative longitudinal movement at the other of their ends, and said means for effecting primary bow bending acting to adjust the beam members relatively longitudinally at said other ends for placing the beam members under longitudinal bending stress and causing bending of both of the beam members in the same direction.

4,410,123

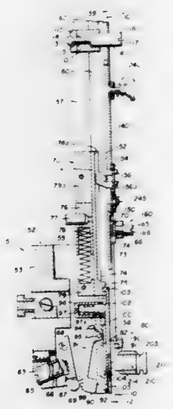
WIRE STITCHING MACHINE HEAD

Bernard P. Kunka, and Casper W. Hagemann, both of Racine, Wis., assignors to Interlake, Inc., Oak Brook, Ill.

Filed Oct. 21, 1981, Ser. No. 313,575

Int. Cl.³ B27F *7/23*

U.S. Cl. 227—8 **20 Claims**



1. In a cyclical wire stitching machine including means operative in each cycle for feeding and severing a length of staple wire from a continuous supply thereof, forming the severed staple wire into a staple and driving the staple through an associated workpiece and against a clincher, the improvement comprising: drive means controllable for establishing an operation cycle which begins and ends at a rest position, a wire holder, feed means coupled to said drive means and responsive thereto during a first portion of said cycle for feeding a predetermined length of wire to said wire holder and severing the predetermined length of wire from the associated supply, and staple-forming and driving means coupled to said drive means and responsive thereto during a second portion of the cycle for forming into a staple the severed length of wire fed during the first portion of the same cycle and driving the staple into the associated workpiece, whereby at the rest position of the cycle there is no wire in said wire holder.

4,410,124

METHOD OF MANUFACTURING A FIRING ELECTRODE

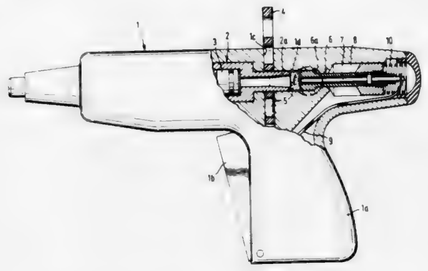
Franz Buechel, Ruggell, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Mar. 27, 1981, Ser. No. 248,306

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1980, 3012497

Int. Cl.³ B25C *1/14*

U.S. Cl. 227—9 **4 Claims**



1. An explosive powder driven device utilizing caseless propellent charges for driving fastening elements into a receiving material comprising a casing having a front end from which the fastening elements are driven and a rear end, a barrel slidably mounted within said casing, a propelling piston movably displaceable within said barrel, a propellent charge firing assembly slidably mounted with said casing and located in alignment with said barrel in the front end-rear end direction of said casing with said assembly being located between said barrel and the rear end of said casing, said casing, barrel and firing assembly combining to form a combustion chamber, said firing assembly comprising an axially extending firing electrode for igniting a propellent charge positioned within said combustion chamber, a tubular guidance member laterally enclosing said firing electrode with said firing electrode being in spaced relation inwardly from said guidance member, said guidance member being axially displaceable relative to said casing and a spray-coated annular layer of electrically insulating material directly deposited on the axially extending surface of said firing electrode so that there is no gap between said insulating material and the axially extending surface of said firing electrode and the space between said firing electrode and said guidance member is completely filled with the radially outer surface of said electrically insulating material annular layer begin in sealing contact with the juxtaposed surface of said guidance member.

4,410,125

SURGICAL STAPLER APPARATUS WITH CURVED STAPLE PUSHER

Douglas G. Noiles, New Canaan, and David T. Green, Norwalk, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 2, 1981, Ser. No. 308,183

Int. Cl.³ A61B *17/10*

U.S. Cl. 227—19 **14 Claims**

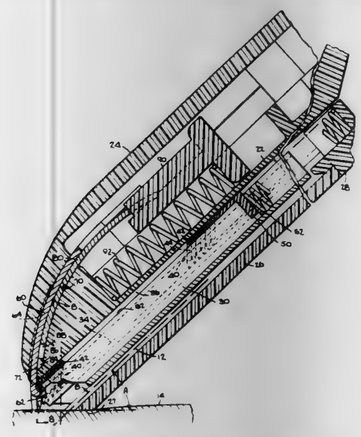
1. A surgical stapler comprising:

a longitudinal body adapted to be held with the longitudinal axis of the body at an acute angle to the surface of the tissue to be stapled;

a plurality of identical surgical staples disposed in the body in a stack having a longitudinal axis substantially parallel to the longitudinal axis of the body, each staple having a longitudinal crown and two substantially parallel legs substantially perpendicular to the crown at respective opposite ends of the crown so that the crown and legs of each staple define a plane, the plane of each staple being substantially perpendicular to the surface of the tissue to be stapled when the body is held at said acute angle to the surface of the tissue;

an anvil adjacent a central portion of the crown of the distal-most staple in the stack, the crown of said staple also including an end portion adjacent each end of the central portion;

a substantially inflexible, longitudinally circular arcuate staple pusher mounted for arcuate reciprocation relative to the body, the proximal end portion of the staple pusher being substantially parallel to but spaced from a proximal portion of the stack, and the plane of the distal-most staple



in the stack being substantially tangent to the distal end portion of the staple pusher, the distal end portion of the staple pusher including (a) two laterally spaced, distally extending fingers, each of which engages a respective one of the end portions of the crown of the distal-most staple, and (b) a longitudinal slot between the fingers for allowing the central portion of the crown of the distal-most staple and the anvil to enter the slot when the crown of the distal-most staple is bent around the anvil; and

means for arcuately reciprocating the staple pusher toward the distal-most staple in the stack so that the fingers bend the end portions of the crown of the distal-most staple around the anvil.

4,410,126

MASS SOLDERING SYSTEM

Harold T. O'Rourke, Milford, N.H., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 951,052, Oct. 12, 1978, which is a continuation-in-part of Ser. No. 897,492, Apr. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 856,759, Dec. 2, 1977, abandoned. This application Aug. 20, 1982, Ser. No. 409,849

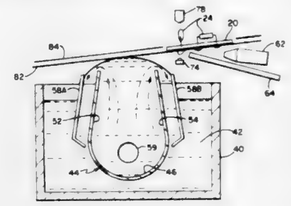
The portion of the term of this patent subsequent to Aug. 30, 2000, has been disclaimed.

Int. Cl.³ B23K *1/02*; H05K *3/34*

U.S. Cl. 228—180 R **19 Claims**

1. A method of mass joining with solder printed circuit boards having mounted thereon components with leads protruding downward through holes in said board, said method comprising the steps of:

depositing a quantity of molten solder onto the underside of said board and said downward protruding leads by passing the bottom surface of the board over a solder wave and substantially immediately following said depositing impinging a stream of heated air directly into the molten solder deposited on the underside of said board and said protruding leads by means of an air knife blast directed towards the solder wave and impinging on the bottom surface of the board sufficiently soon after it leaves the solder wave so that the solder is still molten, the air knife



blast having sufficient velocity to remove essentially all bridges and shorts but not sufficient velocity to adversely affect properly wetted joints.

4,410,127

METHOD OF SOLDERING PINS TO PRINTED CIRCUIT BOARDS, AND SOLDERING BATH FOR THIS METHOD

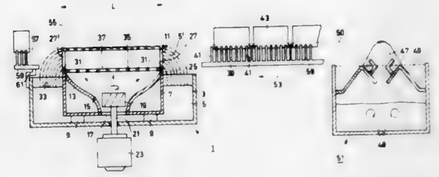
Manfred Bodewig, Monchen-Gladbach, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1981, Ser. No. 236,359

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006431

Int. Cl.³ B23K *3/06*

U.S. Cl. 228—180 A **5 Claims**



1. A method of soldering connection pins to printed circuit boards, comprising:

supplying an elongated carrier strip carrying a multiplicity of connection pins attached thereto and extending vertically upward from the strip with a plurality of printed circuit boards aligned upright above the strip, a plurality of adjoining connection pins having their upper ends attached to each respective printed circuit board along a lower edge of the printed circuit board,

passing the strip horizontally in its longitudinal direction throught a bath of liquid solder, while maintaining the alignment of the pins and boards above the strip,

maintaining the solder bath depth sufficient to rise a given distance above the lower edge of the printed circuit boards, and

causing solder to flow in the direction of strip movement at the location where the strip moves out of the bath, and removing the solder flow from solder-wet parts to a level below the strip.

4,410,128

PACKING CONTAINER PROVIDED WITH TEAR-UP OPENING ARRANGEMENT

Hans A. Rausing, Lund, Sweden, assignor to Tetra Pak International AB, Sweden

Filed Jan. 16, 1981, Ser. No. 225,602

Claims priority, application Sweden, Jan. 21, 1980, 8000471

Int. Cl.³ B65D *5/74*

U.S. Cl. 229—17 R **3 Claims**

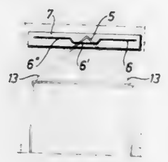
1. A liquid-tight packing container made from a packing

material and provided with a tear-up opening arrangement, comprising:

a packing body;

a triangular lug provided on said packing body at an intersection between a side wall and a top wall of the packing body, said lug being tearable to provide a pouring spout for said packing body;

a cut line in said packing material near said lug, said cut line having first and second end portions extending on either side of an apex of said triangular lug and a center portion of said cut line extending parallel to, but at a distance from, a line passing through said apex, the line through the



apex being coincident with said first and second end portions of said cut line, said cut line aiding in opening the packing container by the tearing of said lug; and

strip means sealed to the packing material along said cut line for preventing leakages therethrough, said strip means being a longitudinally molecular-oriented plastic strip which is sealed in a liquid-tight manner to an inside surface of said packing body over said cut line, said plastic strip being easily tearable in a longitudinal direction along said direction of molecular orientation, said longitudinal direction being along said cut line, said plastic strip not being easily tearable in a direction transverse to said longitudinal direction.

4,410,129

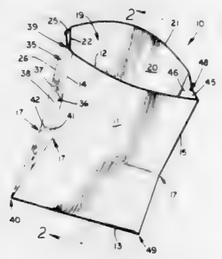
COLLAPSIBLE PAPERBOARD CONTAINER

Henry Wischusen, III, Lilburn, Ga., assignor to Rock-Tenn Company, Norcross, Ga.

Filed Oct. 30, 1981, Ser. No. 316,951

Int. Cl.³ B65D *5/36, 5/42*

U.S. Cl. 229—41 B **4 Claims**



1. A collapsible paperboard container formed from a cut and scored flat blank, comprising:

front and back wall panels each having top edges, bottom edges joined together and a pair of side edges;

a pair of side wall panels each joined to said side edges of one of said front wall panels and one of said back wall panels by a score line along the entire length of said side edges, said side wall panels being shaped to maintain said front and back wall panels in spaced apart relationship such that said side edges of said front and back wall panels joined by said side wall panels extend substantially parallel to one another from said top edges for a portion of the height of said side wall panels, said side wall panels then tapering such that said side edges bend inwardly to meet at the point at which said bottom edges of said front and back wall panels are joined, said side wall panels further including a central longitudinal score and a pair of weakening scores extending diagonally upwardly, from the locations at which said side panels begin to taper, to said central longitudinal score so as to form the shape of a diamond with the tapering portions of said side wall panels;

said side edges of said front wall panel converging in the plane of said front wall panel toward one another from said top edge of said front wall panel to the location at which said side wall panels begin to taper, and then diverging from one another to said bottom edge of said front wall panel; and

said side edges of said back wall panel converging in the plane of said back wall panel toward one another from said top edge of said back wall panel to the location at which said side wall panels begin to taper, and then diverging from one another to said bottom edge of said back wall panel.

4,410,130

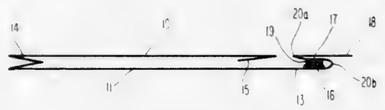
PROTECTIVE STRIP FOR Z-FOLD BAG CLOSURE

Fox J. Herrington, Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1981, Ser. No. 335,955

Int. Cl.³ B65D *33/20*

U.S. Cl. 383—62 **8 Claims**



6. In a thermoplastic bag comprising a first wall and a second wall, said walls being sealingly joined along a major portion of their sides and bottom portions, an open mouth portion proximate to the top edges of said walls, said open mouth portion of said bag having a flap member which is an extension of the second bag wall, said flap having free longitudinal edges and a closure comprising a strip of pressure sensitive adhesive which extends transversely across a portion of an inner surface of said flap a preselected distance from the edge of said flap, said flap further comprising a protective strip a preselected distance from said adhesive strip, said distance between said adhesive strip and said protective strip being utilized to fold the flap back upon itself, the improvement comprising said protective strip having a base portion and at least one rib extending upwardly from said base portion, said at least one rib being narrower than said base portion to minimize protective strip contact with said adhesive strip and of sufficient stiffness and dimension such that in a stored position the surface of said adhesive strip is substantially contacted only by the top portion of said at least one rib.

4,410,131

HEATING AND AIR CONDITIONING SYSTEM

Wolfgang Radtke, Overath, and György Borbely, Kerpen-Mödrath, both of Fed. Rep. of Germany, assignors to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG, Cologne, Fed. Rep. of Germany

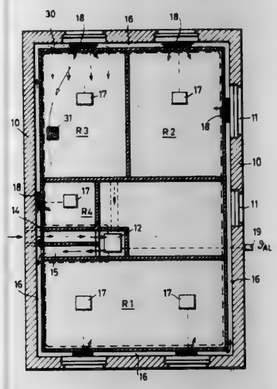
Filed Mar. 26, 1982, Ser. No. 362,553

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1981, 3113285

Int. Cl.³ F25B *29/00;* **G05D** *23/00*

U.S. Cl. 236—10 **11 Claims**

1. A heating and air conditioning system for a building having several rooms comprising first basic heating system means for supplying heat uniformly to each of a plurality of rooms to maintain the rooms at a first predetermined temperature in the absence of persons in the rooms, second auxiliary heating system means for heating and selectively directing outside fresh air to any of the rooms in a quantity sufficient to



elevate the first predetermined temperature thereof to a second higher temperature beyond said first predetermined temperature, and control means in each room for initiating the operation of said second auxiliary heating system means in response to the presence of a person in any particular room.

4,410,132

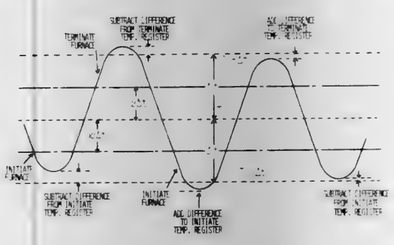
THERMOSTAT WITH DEAD ZONE SEEKING SERVO ACTION

Michael R. Levine, 2900 Heatherway, Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 206,761, Nov. 14, 1980, Pat. No. 4,356,962. This application Sep. 2, 1982, Ser. No. 414,185

Int. Cl.³ F24D *5/10;* **F23N** *5/20*

U.S. Cl. 236—11 **7 Claims**



1. In a thermostat operative to be connected to a temperature modifying apparatus to control the operative state of the apparatus and including means for generating an electrical signal representative of a desired temperature set-point and means for generating an electrical signal representative of the ambient temperature at the thermostat, the improvement comprising: means for generating control signals for the temperature modifying apparatus operative to control it into a state which causes the ambient temperature to move toward the set point; and means for adaptively modifying the time of termination of each of said control signals as a function of the temperature difference between said set-point and the limit of the ambient temperature attained the previous time the temperature modifying apparatus was controlled to said state.

4,410,133

TWO WAY FLUID SWITCHOVER VALVE WITH CROSSOVER PROTECTION

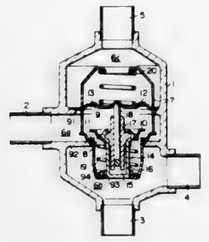
Tatsumi Furukubo, Susono, Japan, assignor to Toyota Jodosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 29, 1981, Ser. No. 335,338

Claims priority, application Japan, Feb. 16, 1981, 56-20483[U]; Apr. 28, 1981, 56-62051[U]; Jun. 30, 1981, 56-97031[U]

Int. Cl.³ F01P *7/02*

U.S. Cl. 236—34.5 **10 Claims**



1. A valve for controlling mutual communication between a first chamber space, a second chamber space, and a third chamber space, comprising:

a first valve seat and a first valve element which cooperates with said first valve seat by to and fro motion towards and away from said first valve seat so as to open and close a first controlled aperture through said first valve seat, said first controlled aperture being on a first fluid flow path between said first chamber space and said second chamber space;

a second valve seat and a second valve element which cooperates with said second valve seat by to and fro motion towards and away from said second valve seat so as to open and close a second controlled aperture through said second valve seat, said second controlled aperture being on a second fluid flow path between said first chamber space and said third chamber space;

a first means for biasing said first valve element in a first direction away from said first valve seat;

a second means for biasing said second valve element in a second direction opposite to said first direction towards said second valve seat with a biasing force substantially greater than the biasing force exerted on said first valve element by said first biasing means;

a temperature sensitive actuator comprising a temperature sensitive means which senses the temperature of fluid generally around and impinging on it and changes its volume, a first actuating member and a second actuating member axially slidable in relation to each other, said temperature sensitive actuator as a whole being floatingly supported with said first actuating member bearing on said first valve element and said second actuating member bearing on said second valve element;

said temperature sensitive actuator functioning so as, with rise in the temperature of said fluid sensed by said temperature sensitive means, to move said first actuating member and said second actuating member with respect to one another in such mutual relative directions as to exert by said first actuating member a force on said first valve element in said second direction, first to move said first valve element towards said first valve seat so as first to close said first controlled aperture and so as first to interrupt communication along said first fluid flow path between said first chamber space and said second chamber space, and to exert by said second actuating member a greater force on said second valve element in said first direction and secondly to move said second valve element

away from said second valve seat so secondly as to open said second controlled aperture and so as secondly to establish communication along said second fluid flow path between said first chamber space and said third chamber space just after said first controlled aperture has been closed and the communication along said first fluid flow path between said first chamber space and said second chamber space has been interrupted.

4,410,134

METHOD OF AND APPARATUS FOR OPERATING A MONOVALENT ALTERNATIVE ABSORPTION HEATING INSTALLATION

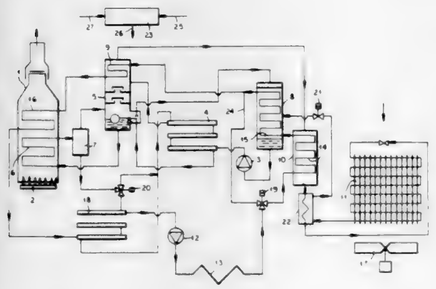
Paul Heimbach, Cologne; Peter Goebel, and Franz Gruber, both of Brühl, all of Fed. Rep. of Germany, assignors to Buderus Aktiengesellschaft, Wetzlar, Fed. Rep. of Germany

Filed Aug. 14, 1981, Ser. No. 292,427

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3031033

Int. Cl.³ F25B *27/00, 15/00*

U.S. Cl. 237—2 B **8 Claims**



1. A method of operating an absorptive heating installation which comprises:

a heat generator,

a solvent circulation path for a solvent adapted to absorb a coolant, said solvent circulation path including a solvent pump, a temperature changer for passing coolant-poor solvent in indirect heat exchange with coolant-rich solvent, a rectifier having a sump in which coolant-rich solvent collects, a stripper in said heat generator in which coolant-rich solvent is heated, and a separator in which coolant-rich solvent is separated into coolant vapor and a liquid phase consisting of said coolant-poor solvent, the vapor being fed to said rectifier,

a coolant circulation path extending from said rectifier and including a condenser, a cold exchanger in which condensed coolant is passed in indirect heat exchange with coolant vapor, an evaporator receiving said coolant from said cold exchanger and producing coolant vapor, and an absorber for contacting solvent vapor with said coolant-poor solvent from said temperature changer to produce a coolant/solvent mixture which is supplied to said pump, and

a circulation path for a heating medium extending through said condenser, said absorber and said rectifier,

said method comprising:

in a heat pump mode above a predetermined ambient temperature feeding said solvent from said separator directly to said temperature changer and simultaneously conducting said heating medium through said condenser and said absorber;

in a direct heating mode below said temperature, circulating said heating medium so as to cause it to bypass said condenser and said absorber while heating said medium said heating medium being heated in said direct heating mode by passing it in indirect heat exchange in a further heat exchanger with coolant-poor solvent from said separator prior to feeding said coolant-poor solvent to said temperature changer; and

preventing the supply of ambient heat to said evaporator and said absorber during said direct heating mode.

4,410,135

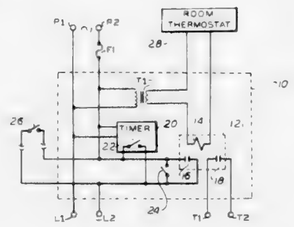
CONTROLLER FOR A ROOM HEATING SYSTEM

Robert L. Skyinskus, R.D. 5, P.O. Box 873, Newton, N.J. 07860

Filed Nov. 4, 1980, Ser. No. 203,862

Int. Cl.³ F24D *1/00*

U.S. Cl. 237—8 R **7 Claims**



1. A controller for a combination room heating and water heating system which enables the disabling of the water heating without eliminating room heating which combination system comprise a furnace, a room thermostat for firing the furnace to provide room heating and a furnace thermostat for firing the furnace to provide water heating, where said controller utilizes said room thermostat for independently firing said furnace to provide room heating to a selected temperature and which utilizes said furnace thermostat to operatively connect with a timed switch to regulate the heating of water during selected time periods said controller comprising:

a power input terminal for receiving primary electrical power;

a timed switch for connecting and disconnecting said power input terminal to said furnace, disconnecting said terminal disabling said furnace thermostat; and

switching means responsive to said room thermostat for connecting and disconnecting said power input terminal to said furnace.

4,410,136

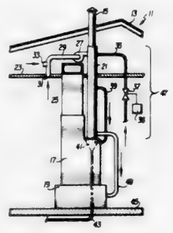
FURNACE ECONOMIZER-HUMIDIFIER

C. F. Oliver, Jr., 118 Siguenza Dr., Pensacola, Fla. 32561

Filed Feb. 12, 1980, Ser. No. 109,181

Int. Cl.³ F24B *7/00*

U.S. Cl. 237—55 **7 Claims**



1. Apparatus for utilizing heat in the flue of a furnace as a heat exchanger and humidifying source for a building comprising

a substantially vertical flue;

a first conduit means spaced from and substantially concentric with said flue and substantially coextending with said flue;

at least one air supply duct connected to the interior of said building;

a second conduit means connecting said supply duct to said first conduit means;

blower means in said second conduit means for forcing air between said flue and said first conduit means substantially the length of said first conduit means in a direction opposite to the normal flow of gases in said flue;

means for applying moisture to the outer surface of said flue within said first conduit means and above the blower means;

air outlet means at the other end of said first conduit means;

condensate drain collecting means secured within said flue substantially above said furnace;

a conduit connected to and bypassing a section of said flue;

a power driven fan in said conduit; and

a damper regulator mounted in said flue between the openings of said conduit.

4,410,137

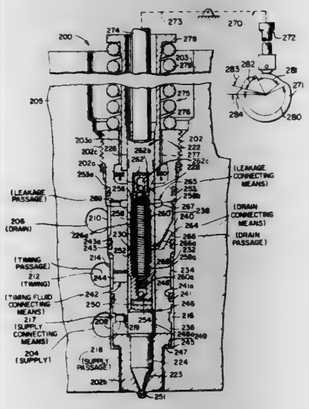
MINIATURIZED UNIT FUEL INJECTOR EMPLOYING HYDRAULICALLY CONTROLLED TIMING

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1981, Ser. No. 336,332

Int. Cl.³ F02M *45/00, 53/04, 55/00*

U.S. Cl. 239—95 **20 Claims**



1. A fuel injector, comprising

(a) an injector body containing a central bore and an injection orifice communicating with said central bore;

(b) an injector plunger mounted for periodic reciprocal movement within said central bore between an innermost position in which said injection orifice is closed and an outermost position in which an injection chamber is formed within the central bore between the inner end of said injector plunger and said injection orifice, said injector plunger including an inner plunger section and an outer plunger section mounted for independent reciprocal movement within said central bore to define a variable volume timing chamber between said plunger sections;

(c) supply connecting means for providing a pathway for fluid under pressure to flow from a source into the injection chamber;

(d) timing fluid connecting means for providing a pathway for fluid under pressure to flow from a timing fluid source into said timing chamber to form selectively a hydraulic link between said plunger sections; and

(e) biasing means for biasing said inner and outer plunger sections together, said biasing means including at least one spring extending between said inner and outer plunger sections to apply a force tending to move said plunger sections together.

4,410,138

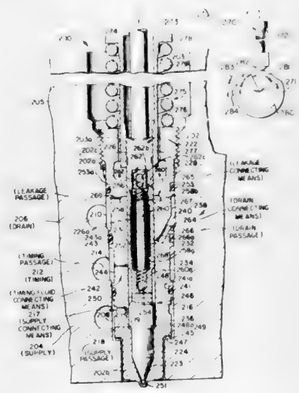
UNIT INJECTOR COOLED BY TIMING CONTROL FLUID

Lester L. Peters, and Timothy A. Warlick, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 31, 1981, Ser. No. 336,493

Int. Cl.³ F02M *45/00, 53/04, 55/00*

U.S. Cl. 239—95 **11 Claims**



1. A fuel injector for injecting periodically metered quantities of fuel from a source of fuel into the combustion chamber of an internal combustion engine having a source of timing fluid which varies in pressure, comprising

(a) an injector body containing a central bore, a feed orifice through which fuel from the fuel source may pass into said central bore and an injection orifice through which fuel metered into said central bore may pass into the combustion chamber;

(b) an injector plunger mounted for successive cycles of reciprocatory movement within said central bore, said injector plunger including flow control means for causing fuel to be metered into said central bore through said feed orifice during a metering portion of each said cycle and for causing metered fuel to be injected through said injection orifice into the combustion chamber during an injection portion of each said cycle; and

(c) timing means for responding to pressure variations in the timing fluid during a timing portion of each said cycle for controlling the timing of said injection portion of each said cycle and for causing timing fluid to flow through said injector body during a cooling portion of each said cycle distinct from said timing portion to cool both said injector body and said injector plunger.

4,410,139

LIQUID NEBULIZER

Kyoichi Nishikawa, Tokyo, and Sadao Mitsui, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed May 8, 1978, Ser. No. 904,034

Claims priority, application Japan, May 10, 1977, 52-59142[U]

Int. Cl.³ B05B *17/06*

U.S. Cl. 239—102 **7 Claims**

1. In a liquid nebulizer including a nebulizing chamber for containing a liquid to be nebulized, an outlet duct from the chamber, and means for producing a liquid projection on the surface of the liquid within the chamber which generates a fog

composed of minute liquid particles that are exhausted from said chamber through said outlet duct, the improvement comprising a partition within said chamber and having an upper edge above said liquid surface and which surrounds said liquid projection and is positioned so that large particles from said



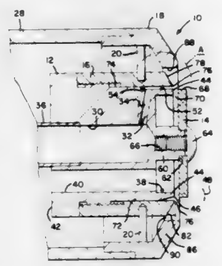
liquid projection and drops from said outlet duct fall outside of said partition, and wherein said means for producing said liquid projection comprises a transducer positioned at the bottom of said chamber, a vertical axis passing through the center of said transducer lying outside the confines of said duct.

4,410,140

ATOMIZER AND METHOD

Leonard G. Nowak, Palmyra, Pa., assignor to Hauck Manufacturing Company, Lebanon, Pa.

Filed Apr. 30, 1981, Ser. No. 259,071
Int. Cl.³ F23D *11/16*
U.S. Cl. 239—419.3 **19 Claims**



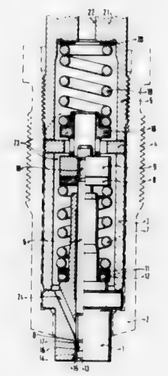
1. A fuel atomizer for an industrial heating burner or the like comprising a body having an upstream end, a central fuel passage extending into the body from the upstream end, a plurality of fuel feed passages spaced circumferentially around the central passage and extending outwardly therefrom, a plurality of circumferentially spaced hollow spreading chambers each located at the outer end of a feed passage and including a mouth facing downstream and a spreading wall overlying the end of the fuel passage, the spreading wall extending circumferentially to each side of the feed passage, and an air delivery system for flowing atomizing air across the spreading chamber mouths whereby fuel oil flowed through said passages and into the spreading chambers flows to each side of the chambers and forms a pair of fuel streams located circumferentially of the feed passages for atomization by the air flow.

4,410,141

FUEL INJECTION NOZZLE FOR INTERNAL COMBUSTION ENGINES

Kurt Seifert, Esslingen-Zollberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,347
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1979, 2948907
Int. Cl.³ F02M *61/08*
U.S. Cl. 239—453 **3 Claims**



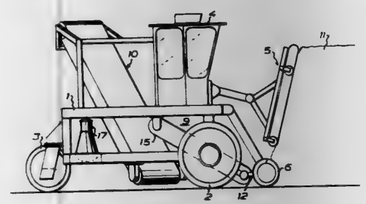
1. A fuel injection nozzle for internal combustion engines comprising a nozzle body, a bore in one end of said nozzle body, a valve needle disposed in said valve body that opens in the direction of fuel flow, a first spring positioned relative to said valve needle to produce a closing force on said valve needle, said valve needle having a control location for fuel passage disposed adjacent to the end of said nozzle body including said bore which also serves to guide said valve needle in said nozzle body, said nozzle body further having a throttle restriction in the fuel flow which is controlled by said valve needle in accordance with a stroke of said valve needle, said throttle restriction being effective during a first portion of an opening stroke thereby acting as a pre-stroke and is subsequently rendered ineffective, a stop ring held tightly against said nozzle holder by a sheath-like sleeve nut which encompasses said nozzle body and said first spring, a second spring positioned relative to said valve needle and supported on one end on said nozzle holder and on its other end on a spring support plate wherein said valve needle is subjected to the force of at least two springs, said spring support plate including an axial extension that extends through said stop ring and which extension is supported on a valve needle holder ring and an annular portion which abuts said stop ring after a pre-stroke movement of said valve needle, said first and second springs having a predetermined relationship with one another which effect an abrupt increase in closing force after the pre-stroke, of which said first spring, embodied as a compression spring, always acts in the closing direction, characterized in that said second spring has a smaller force than said first spring and said second spring further acts counter to said first spring only until after a set distance of movement for the pre-stroke has been covered and the effect of the force of said second spring upon the valve needle is precluded by abutment of said spring support plate on said stop ring.

4,410,142

METHOD AND APPARATUS FOR COMPOSTING WASTE

Carl-Göran H. Carlson, Tomelilla, Sweden, assignor to PLM AB, Malmö, Sweden

Filed Mar. 30, 1981, Ser. No. 249,992
Claims priority, application Sweden, Feb. 19, 1981, 8101106
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—18 **3 Claims**



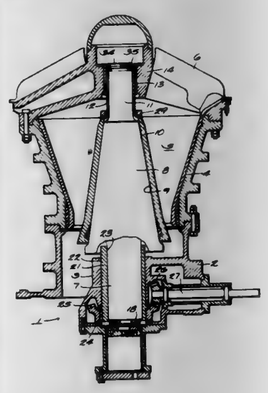
1. A method of composting waste which comprises depositing the waste on the site of an original compost layer having a length of at least 30 m, a width of at least 10 m and a height of up to 9 m, successively feeding waste from the compost layer to a rotary cutting roller which has a direction of movement relative to the compost layer and which comminutes the waste and flings it under intermixing and vortex motion through a conditioning compartment in which the waste is conditioned and freed of carbon dioxide and is supplied with oxygen, thereafter depositing the conditioned waste in a new compost layer laterally of the original compost layer and, during a subsequent conditioning, returning the conditioned waste to the site of the original compost layer, whereby the waste, during repeated conditionings, is subjected to an oscillating movement substantially perpendicular to the direction of movement of the cutting roller, and repeating the above cycle periodically from once every tenth minute to once every sixtieth day for a total of from 1 to 120 days.

4,410,143

MAIN SHAFT ASSEMBLY FOR A GYRATORY CRUSHER

Donald J. Polinski, Combined Locks, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 26, 1980, Ser. No. 190,918
Int. Cl.³ B02C *2/06*
U.S. Cl. 241—209 **11 Claims**



1. In a gyratory crusher including a lower frame, an upper frame mounted on the lower frame, a crusher mantle having a tapered internal bore extending through the mantle, and a shaft having a correspondingly tapered mantle supporting portion projecting through the bore in generally contiguous supportive engagement with the mantle to support the mantle on the shaft, the improvement comprising:

a bearing journal projecting from said supporting portion to form the end of the shaft;

a bearing sleeve releasably secured about said journal including shoulder means engaging the crusher mantle to restrain axial displacement of the mantle along the shaft;

stationary first bearing means retained by the upper frame retaining said bearing sleeve and journal and second bearing means retained by the lower frame supporting the shaft for gyratory movement about the axis of said first bearing means during operation of the crusher; and

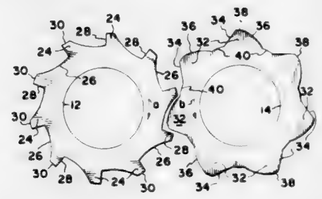
sleeve fastening means releasably securing the bearing sleeve to the shaft at the outermost end of the journal remote from bending loads imposed on the shaft by the mantle during operation of the crusher.

4,410,144

SYNCHRONOUSLY COORDINATED COUNTERROTATED CRUSHER ROLL TEETH SYSTEM

Aldo P. Imperi, Grand Blanc, Mich., assignor to General Steel Industries, Inc., St. Louis, Mo.

Filed Feb. 26, 1981, Ser. No. 238,363
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—236 **2 Claims**



1. In a crusher roll assembly having first and second toothed crusher rolls, with a nip between them, mounted for and driven in, coordinated counterrotation about spaced parallel axes to crush material fed into the nip between the rolls; the number of teeth on said second roll being less than the number of teeth on said first roll and said second roll being driven at a higher rate of rotation than said first roll; the improvement wherein the leading edge of each tooth on said first roll is a concavely curved surface and the trailing edge of each tooth on said first roll is a substantially flat surface substantially radial to the axis of said first roll, generally tangential lands connecting said leading and trailing edges each tooth on said second roll having a leading edge surface defined by a substantially flat surface inclined rearwardly with respect to the direction of rotation of said second roll and a convexly curved trailing edge surface generally complementary in shape to the concave leading edge surface of a tooth on said first roll, the leading and trailing edge surfaces of each tooth on the second roll being separated by a generally tangential land, the teeth on the second roll also being connected by roots which intermesh with said lands on the teeth of the first roll; the teeth on the first and second rolls being radially opposite and the axes of rotation of said rolls being spaced from each other by a distance such that the teeth on the respective rolls move in overlapping paths through the nip between the rolls with the teeth on the respective rolls maintained in spaced relationship to each other, the peripheral spacing of the teeth on the said rolls being such that counterrotation of said rolls first advances the substantially flat leading edge surface of a first tooth on the second roll to a position generally opposite the concave trailing edge surface of a first tooth on the first roll while disposing the trailing convex edge surface of a second tooth on the second roll immediately adjacent the first tooth on the second roll in the downstream direction in close mating proximity to the leading concave edge

surface of a second tooth on the first roll immediately adjacent the first tooth on the first roll and downstream thereof, the land on the said second tooth on the first roll being opposite a root on the second roll and the substantially flat leading edge surface of the second tooth on the second roll at this time being downwardly inclined and generally parallel to the substantially flat trailing edge surface of a third tooth on the first roll which is immediately downstream of the said second tooth on the first roll; the land on the said second tooth on the second roll permitting the intermeshing second tooth on the first roll and second tooth on the second roll to radially clear, with continued rotation of the rolls.

4,410,145

STONE CRUSHER

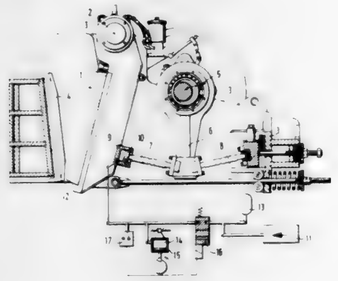
Manfred Koch, Neustadt, Fed. Rep. of Germany, assignor to IBAG-Vertrieb GmbH, Neustadt, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 143,168

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916513

Int. Cl.³ B02C *1/02, 19/08*

U.S. Cl. 241—264 **1 Claim**



1. A machine for crushing stones of the type having hairline and cleavage cracks susceptible to propagation by high frequency vibration; said machine being of the type having a crushing chamber defined by two members each having a top edge, a bottom edge and a crushing surface which extends between the top and the bottom edges; the two members being mounted in the machine such that their crushing surfaces face each other, the space between their top edges form an entrance opening to the chamber and the space between their bottom edges form a discharge opening from the chamber and in which one of said members is mounted for movement towards and away from the other member to effect a mechanical crushing of material which has been fed between the two members;

further including means for regulating the size of the discharge opening, said means for regulating comprising a hydraulic cylinder and a piston and hydraulic medium in the cylinder, one of the hydraulic cylinder or the piston being directly attached to the movable member and the other of the hydraulic cylinder or piston being mounted for movement relative to the movable member, the improvement comprising means connected to said hydraulic cylinder for supplying said hydraulic medium thereto and means for superimposing a relatively high frequency vibration on the movable member, as the movable member is moving toward and away from the other member, for propagating the hairline and cleavage cracks of the rocks;

said means for superimposing comprises means for producing relatively high frequency vibrations in the hydraulic medium which are transmitted to the movable member via the piston or cylinder which is directly attached to the movable member.

4,410,146

DEVICE FOR FORMING A STORAGE COIL FROM A THREAD SUPPLIED FROM A YARN SUPPLY

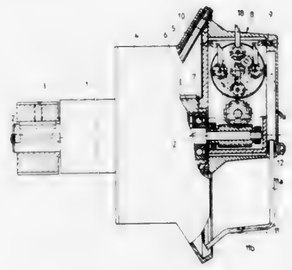
Cornelis A. J. H. Van Hest, Helmond, Netherlands, assignor to Ruti-te Strake B.V., Netherlands

Filed Jan. 28, 1982, Ser. No. 343,691

Claims priority, application Netherlands, Feb. 2, 1981, 8100492

Int. Cl.³ B65H *51/20*

U.S. Cl. 242—47.01 **6 Claims**



1. A device for forming a storage coil from a thread supplied from a yarn supply, comprising a winding drum and a thread guide rotatable relative to thereto, at least a portion of a drum sleeve of said winding drum being defined by pins or ribs extending substantially in an axial direction of the drum, means for moving the storage coil in the axial direction along the drum, at least a first portion of the ribs or pins defining the winding drum sleeve surface extending parallel to the winding drum axis, the remaining portion of the ribs or pins having, as seen in the yarn transport direction, a slightly convergent extension relative to the drum axis.

4,410,147

WINDING MACHINE FOR WINDING STRAND-SHAPED WINDING MATERIAL ON A SPOOL

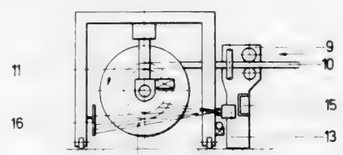
Gerhard Seibert, Putzendoplergasse 3, Vienna A-1232, Austria

Filed Jun. 22, 1981, Ser. No. 276,290

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024094

Int. Cl.³ B65H *54/28*

U.S. Cl. 242—158 R **8 Claims**



d

1. In a winding machine for winding strand-shaped winding material to form a winding on a flanged rotating spool to which the winding material is fed via a strand guide on a side of the spool, having a winding layer feed drive for a reciprocating relative traversing movement axially of the spool between the spool and the strand guide, the feed drive being controlled upon the rising of the winding material at a spool flange in accordance with a predetermined control program during a transition from a winding layer, having a predetermined width when completely formed, into a next higher winding layer, wherein a step is defined between the first mentioned winding layer and the next higher winding layer

until the width of the next higher winding layer increases to said predetermined width the improvement comprising,

an electrical scanning means arranged on the strand-guide side for monitoring the presence of the winding layer step in a contour of the winding layers, respectively, without physically contacting the winding layer step, as the width of the next higher winding layer increases to said predetermined width and a transition to a successive next higher winding layer occurs,

said scanning means having a scanning range at least equal to a maximum winding thickness of the spool, and

said scanning means having means for turning on the control program for reversing the movement of the feed drive upon the transition from the first-mentioned winding layer into the next higher winding layer and upon each occurrence of a new said winding layer step.

4,410,148

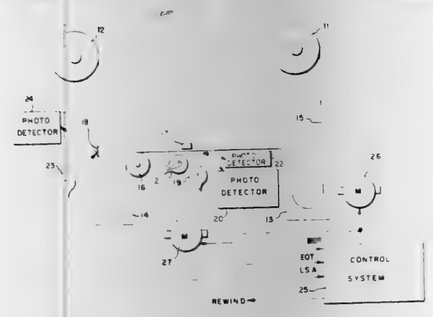
FEEDBACK CONTROL CIRCUIT FOR PHOTOSENSORS IN MAGNETIC TAPE DRIVES

Robert E. Dunlap, Littleton, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed May 26, 1981, Ser. No. 267,254

Int. Cl.³ B65H *59/38;* **G03B** *1/04;* **G11B** *15/06*

U.S. Cl. 242—188 **11 Claims**



1. A magnetic tape recording and reproducing system of the type in which a light reflective marker is positioned on the tape of each reel to mark that position of the tape comprising:

magnetic recording and reproducing heads;

tape buffering means for decoupling the tape inertia from the reel inertia;

a tape drive for driving said tape between a file reel and a machine reel, through said tape buffering means and past said magnetic heads;

a control system including means for controlling said tape in a forward and a rewind direction;

a source of light incident on said tape between said machine reel and said file reel;

a light sensor positioned relative to said tape buffering means and heads to detect light reflected from said tape, said sensor producing an electrical output which represents the passage of said reflective marker, the output of said sensor being connected to said control system to switch it from one control operation to another upon passage of said marker; and

a feedback circuit connected between said sensor output and said source of light for controlling the intensity of said source to maintain said output substantially constant notwithstanding changes of reflectivity of said tape or gradual changes of efficiency of said source of light.

4,410,149

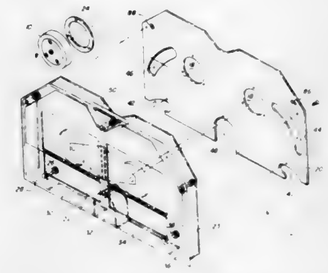
TRANSPORT APPARATUS FOR USE WITH A LINEAR TAPE RECORDER

Lee B. Armstrong, San Clemente, Calif., assignor to Eastman Technology, Inc., Rochester, N.Y.

Filed Oct. 7, 1981, Ser. No. 309,344

Int. Cl.³ G03B *1/04;* **G11B** *15/32, 23/04*

U.S. Cl. 242—200 **12 Claims**



1. Linear tape transport apparatus useful with a tape container of the type having

(a) rotatable supply and take-up reels of and for magnetic tape therein, a length of said tape extending between said reels, and

(b) first, second and third openings therein, said length of tape between said reels passing on the outside of said container over said first opening via said second and third openings, said second and third openings straddling said first opening, said apparatus comprising

(a) a capstan,

(b) first and second guide rollers,

(c) means for providing relative positioning between said tape container and said tape transport apparatus so that said capstan and said guide rollers respectively enter the first, second and third openings of said tape container, and

(d) means for so positioning said capstan and said guide rollers, from respective first positions within said container to respective second positions remote from said container, that said tape extends between said reels without significantly guidedly touching said container, said capstan and said guide rollers serving to wrap tape about said capstan when in their respective second positions, thereby to effect reel-to-reel linear transportation of said tape while utilizing the user convenience of a container for said tape.

4,410,150

DRAG-REDUCING NACELLE

Daniel J. Lahti, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 126,779, Mar. 3, 1980, abandoned. This application Apr. 14, 1982, Ser. No. 368,242

Int. Cl.³ B64D *29/02*

U.S. Cl. 244—53 R **4 Claims**

1. For a gas turbine engine effective for powering an aircraft, an exhaust system comprising:

an annular, first flowpath member comprising a forward portion having an outer radius increasing from a forward end of said first flowpath member to an intermediate portion thereof having a maximum radius; said first flowpath member further including a conical aft portion comprising first and second axially adjacent conical aft portions having an outer radius decreasing from said intermediate portion along said first and second aft portions, respectively, to an aft end of said second aft portion of said first flowpath member; and

an annular, second flowpath member disposed coaxially with and spaced radially outwardly from said first flow-

path member for defining therebetween an exhaust nozzle, said second flowpath member including an aft portion having an inner surface radially spaced from and surrounding said forward, intermediate and first aft portions of said first flowpath member and defining therebetween converging, throat and diverging sections, respectively, of a converging-diverging nozzle portion of said exhaust nozzle, said exhaust nozzle having a nozzle exit at a downstream end thereof for exhausting gases over said second aft portion of said first flowpath member in a generally aft direction, said gases forming a dividing streamline with airflow flowing over an outer surface of said second flowpath member during aircraft cruise operation, said streamline extending in an aft direction from an aftmost end of said second flowpath member;



said throat section being disposed upstream of said nozzle exit, and said inner surface of said aft portion of said second flowpath member having a downstream portion extending aft and radially inwardly from a position opposite said intermediate portion of said first flowpath member for directing said gases radially inwardly with respect to a central engine axis;

said diverging section having a predetermined length effective for substantially matching a pressure of said gases at said nozzle exit with a pressure of said airflow; and

said converging-diverging nozzle, said downstream inner surface portion of said second flowpath member and said conical aft portion of said first flowpath member being effective for causing said dividing streamline to slope radially inwardly from said aftmost end of said second flowpath member for reducing aerodynamic drag during aircraft cruise operation.

4,410,151

UNMANNED CRAFT

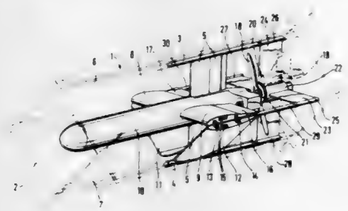
Heinz-Jochen Höppner, Bremen; Ulrich Krämer, Syke-Barrien; Hugo Sgarz, and Herbert Sadowski, both of Bremen, all of Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,021

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1979, 2935044

Int. Cl.³ B64F *1/04*; F41F *3/00*

U.S. Cl. 244—63 **22 Claims**



8. An unmanned aircraft to be launched from a silo having two parallel running, diametrically opposed rails, comprising:

a fuselage;

a pair of fins with rudders extending oppositely from the fuselage and having guide means for running in the rail means;

wing means, deployably attached to the fuselage and prior to launch being retracted towards the fuselage into a position in which the respective wing tips are not more rearward in relation to the fuselage than in a deployed position;

the fuselage containing an engine, there being a propeller for being driven by the engine, the propeller having dimensions to inscribe a circle upon rotation whose diameter multiplied by the square root of two is less than a total extension of the fins; and

rocket engine means releasably connected to the fuselage aft of the propeller.

4,410,152

THRUST REVERSER FOR A JET ENGINE, MORE ESPECIALLY FOR EQUIPPING AN AIRCRAFT

John F. Kennedy, Boulogne, and Alain Fournier, Clamart, both of France, assignors to Society De Construction Des Avions, France

Filed Jul. 1, 1981, Ser. No. 279,238

Claims priority, application France, Jul. 4, 1980, 80 14907

Int. Cl.³ B64C *15/00*; F02K *3/06*

U.S. Cl. 244—110 B **13 Claims**



1. A thrust reverser for a jet engine comprising an outer casing surrounding an engine structure and defining therewith an annular duct for the flow of a gaseous flux from an upstream region to a downstream region, said casing comprising a fixed forward section and a moveable downstream section which is axially moveable with respect to said engine structure; means for producing a thrust inversion comprising doors moveable from a first, inactive position to a second, thrust reversal position in which the doors extend radially with respect to the annular duct so as to close off the duct and extend outwardly with respect to the casing so as to create a passage in the casing which allows the flux to be deflected radially towards the outside of the annular duct and upstream thereof, said doors forming an intermediate section of the casing which is located between said fixed forward section and said moveable downstream section and which, in the first, inactive position thereof, is co-planar with said upstream and downstream sections; exterior links for joining said doors to said downstream section of said casing; beams forming extensions of said fixed upstream section of said casing and disposed laterally with respect to said doors; fixed axes formed integrally with said beams about which said doors pivot between said inactive position and said thrust reversal position; and control means for moving said downstream section of said casing and comprising jacks which are housed in said beam and which extend between said fixed upstream section and said moveable downstream section such that the action of said jacks directly causes the axial movement of said moveable downstream section and, consequently, the pivoting of said doors to said second, thrust reversal position thereof, solely by means of the force exerted by said moveable sections on said links and such that said jacks are permanently disposed outside of the thrust inversion flux.

4,410,153

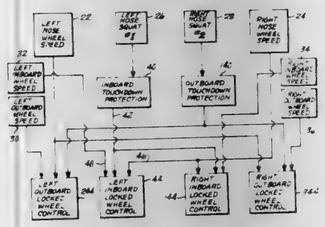
BRAKE CONTROL SYSTEM FOR PROVIDING BRAKE RELEASE SIGNALS

Ervin G. Romero, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jun. 29, 1978, Ser. No. 920,517

Int. Cl.³ B64C *25/42*

U.S. Cl. 244—111 **1 Claim**



1. In combination in an aircraft having left and right nose gear wheels, left and right inboard main landing gear wheels, and left and right outboard main landing gear wheels:

left and right nose gear squat switches for providing nose gear squat logic;

first means for generating signals representative of the wheel speed of said left nose gear wheel;

second means for generating signals representative of the wheel speed of said right nose gear wheel;

third means for generating signals representative of the wheel speed of said left outboard main landing gear wheel;

fourth means for generating signals representative of the wheel speed of said left inboard main landing gear wheel;

fifth means for generating signals representative of said right inboard main landing gear wheel;

sixth means for generating signals representative of said right outboard main landing gear wheel;

an inboard touchdown protection circuit coupled to said left nose gear squat switch for providing an inboard touchdown protection signal;

an outboard touchdown protection circuit coupled to said right nose gear squat switch for providing an outboard touchdown protection signal;

a left outboard locked wheel control circuit responsive to said first means, said third means, and said outboard touchdown protection signal for providing a left outboard locked wheel signal;

a left inboard locked wheel control circuit responsive to said second means, said fourth means, and said inboard touchdown protection signal for providing a left inboard locked wheel signal;

a right inboard locked wheel control circuit responsive to said second means, said fifth means, and said inboard touchdown protection signal for providing a right inboard locked wheel signal;

a right outboard locked wheel control circuit responsive to said first means, said sixth means, and said outboard touchdown protection signal for providing a right outboard locked wheel signal;

a first skid control valve responsive to said left outboard locked wheel signal for deactivating braking of said left outboard main landing gear wheel;

a second skid control valve responsive to said left inboard locked wheel signal for deactivating braking of said left inboard main landing gear wheel;

a third skid control valve responsive to said right inboard locked wheel signal for deactivating braking of said right inboard main landing gear wheel; and,

a fourth skid control valve responsive to said right outboard locked wheel signal for deactivating braking of said right outboard main landing gear wheel.

4,410,154

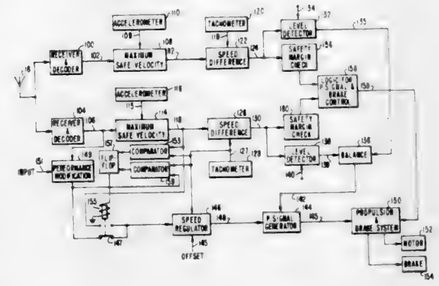
TRANSIT VEHICLE BRAKE CONTROL APPARATUS AND METHOD

Thomas C. Matty, North Huntingdon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 51,913, Jun. 25, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 257,681

Int. Cl.³ B61L *11/02*

U.S. Cl. 246—182 B **16 Claims**



1. In brake control apparatus for a vehicle operative with a roadway having a predetermined design deceleration rate and having a command speed to establish the actual speed of the vehicle in relation to that roadway, the combination of:

means including an accelerometer coupled with the vehicle for sensing a first deceleration of the vehicle in relation to inertial space,

means including a tachometer coupled with the vehicle for sensing the actual speed of the vehicle and determining a second deceleration of the vehicle in relation to the roadway,

means responsive to the actual speed being greater than the command speed for determining a safe brake velocity for the vehicle in accordance with a predetermined speed control relationship including each of said design deceleration rate, said first deceleration and said second deceleration, and

speed control means responsive to the command speed for controlling the actual speed of the vehicle until there is a predetermined speed difference between the safe brake velocity and the actual speed when the speed control means becomes responsive to the determined safe brake velocity.

4,410,155

CLAMP FOR PANEL MOUNTING OF GAUGE INSTRUMENTS

Richard H. Wetterhorn, Fairfield, and David A. Busch, Stratford, both of Conn., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 139,956, Apr. 14, 1980, Pat. No. 4,310,113, which is a continuation of Ser. No. 931,809, Aug. 7, 1978, abandoned. This application Jul. 13, 1981, Ser. No. 282,632

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—27.1 **2 Claims**

1. A clamp for concealed panel wall mounting a rear inlet connected stem gauge instrument comprising in combination:

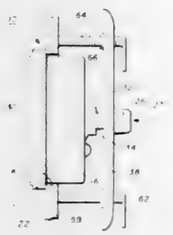
(a) an elongated metal plate of length at least sufficient to span the width of the gauge instrument to be mounted;

(b) a first opening defined in said plate of size at least sufficient to pass the inlet stem of the gauge having a transverse formation comprising parallel grooves oppositely located on the stem;

(c) a centrally located keyslot opening in said plate communicating with said first opening thereof and of insufficient size to pass the inlet stem of the gauge, said keyslot open-

ing being of predetermined geometric configuration to interfit with said transverse formation on the gauge stem for providing both a rotational and longitudinal interlock therewith;

(d) a first lateral leg near one end of said plate extending from said plate to a distal end comprising the edge face thereof, said first lateral leg being adapted when said plate is interlocked on the gauge stem to extend in a direction toward the panel wall adjacent a first edge of the gauge instrument;



(e) a second lateral leg near the opposite end of said plate from said first lateral leg extending from said plate to a distal end comprising the edge face thereof, said second lateral leg being adapted when said plate is interlocked on the gauge stem to extend in a direction toward the panel wall adjacent a second edge of an instrument thereat; and

(f) both of said first and second legs being threadedly connected to said plate to be effective when their edge faces engage the panel wall for providing takeup adjustment to mount the gauge instrument securely against the panel wall.

4,410,156

SUSPENSION OF PIPES OR TUBES UNDERGOING THERMAL EXPANSION

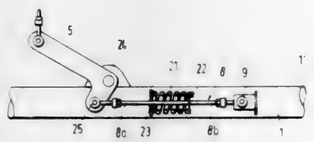
Bruno Pischzik, Ratingen, and Johann Schneiderat, Xanten, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,086

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1977, 2745473

Int. Cl.³ F16L *3/00*

U.S. Cl. 248—58 **7 Claims**



1. Suspension device for a tube which undergoes thermal expansion, and which is to be suspended from a stationary frame, foundation, building, etc., comprising:

anchor means having a stationary point of suspension with respect to said frame, foundation, or building, and defining a connect point of fixed distance therefrom;

a two-arm lever, the arms being defined by three linkage points, two outer ones and an in-between one, one of the outer ones being linked to said connect point;

a rod disposed generally alongside, but spaced from said tube and having one end pivoted to the tube;

spring means, bearing against a support point on the rod and against another support point on the tube to take up at least part of the suspension force; and

the other end of said rod being pivoted to one of the two other linkage points not connected to said connect point, the remaining linkage point being pivoted on the tube in spaced apart relation to the pivoting of the one end of the rod.

4,410,157

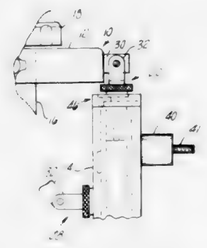
PHOTOGRAPHY STAND SYSTEM

Carmel S. Monti, 2010 Medford Rd., No. D33, Ann Arbor, Mich. 48104; Arthur Eisenkramer, 67 Litchfield Rd., and Carl Yurdin, 2 Harborview Rd., both of Port Washington, N.Y. 11050

Filed Feb. 28, 1980, Ser. No. 125,599

Int. Cl.³ F16M *11/38*; A47G *29/00*

U.S. Cl. 248—125 **15 Claims**



1. A photograph stand system comprising a plurality of elongate support members, each of said elongate support members having at least one T-slot extending along substantially the entire length thereof; means for assembling and securing said elongate support members together in a support structure;

as least one coupling sleeve including T-bolt threadedly received in said sleeve and having the T-portion disposed in said T-slot, each of said support elements further including a face portion extending along the length thereof adjacent said T-slot, whereby said coupling sleeve may be rotated towards said T-portion to clamp said sleeve and said T-portion on opposite sides of the face portion of the support member at any point along the length thereof, said coupling sleeve further including a threaded stud extending away from the sleeve for mounting fixtures for cameras or photographic accessories;

whereby said photography stand system enables adjustable positioning of said coupling sleeve at points along the length of any of said elongate support members.

4,410,158

OVER-BED TELEVISION SUPPORT FRAME

Eugene R. Maffei, 3908 Edinburgh Dr., Youngstown, Ohio 44511

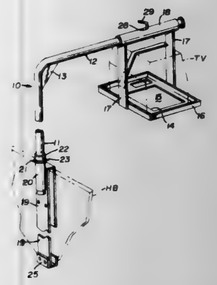
Filed Jul. 28, 1980, Ser. No. 172,864

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—214 **3 Claims**

1. An over-bed television support frame for use on a bed having a headboard, the support frame comprising a clamping device of a size emabling it to be engaged of said headboard, a vertically positioned tubular socket on said clamping device, an inverted L-shaped member having horizontal and vertical portions, said vertical portion of said L-shaped member rotatably engaged in said tubular socket, a horizontally disposed rectangular frame conprising an inturned horizontally disposed flange and a vertically standing flange thereabout, said inturned horizontally disposed flange adapted to engage the face of a television with said vertically standing flange retaining

said television theron and means on said horizontal portion of said inverted L-shaped member suspending said rectangular



frame therebeneath so that said television can be viewed by a person on the bed looking up at said television.

4,410,159

ADJUSTABLE SUPPORT FOR A VIDEO DISPLAY TERMINAL

Harry J. McVicker, Pottstown; Norman Olson, Philadelphia, both of Pa.; Richard F. Saurer, Salt Lake City, Utah, and John C. Schulte, Plantation, Fla., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 14, 1981, Ser. No. 283,261

Int. Cl.³ A47B *91/00*

U.S. Cl. 248—349 **10 Claims**

1. An adjustable support assembly for a video display terminal comprising:

a moulded base element,

said base element having a pair of concave tracks formed on an arc of a circle,

said base element further having an annular recess therein,

a moulded support ring movably mounted in said annular recess of said base element and said annular ring having a foot portion extending therefrom for supporting said base element on said support ring,

said base element being rotatably mounted on said support ring,

a moulded cradle element,

said cradle element having a convex element movably mounted on said pair of concave tracks,

said moulded cradle element further having means integrally formed therewith adapted to support a CRT housing thereon,

said housing being rotatably movable on said pair of concave tracks about a focal point centered near the center of gravity said assembly to provide an adjustable angle of tilt to said housing.

4,410,160

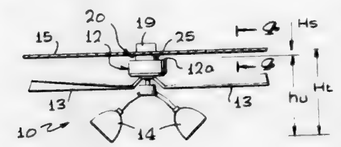
MEANS AND METHOD FOR ATTACHING FAN AND FIXTURE UNITS OR THE LIKE SUBSTANTIALLY FLUSH WITH A CEILING

Marvin Alperin, Los Angeles, and Joseph L. Brassner, Tarzana, both of Calif., assignors to Albrass Enterprises, Inc., Los Angeles, Calif.

Filed Apr. 22, 1982, Ser. No. 370,749

Int. Cl.³ F16M *1/00, 3/00*

U.S. Cl. 248—674 **3 Claims**



1. In a ceiling terminal which includes a largely cylindrical ceiling bowl member having a lower rim and fastened close to a ceiling, and a second largely cylindrical bowl member of about the same diameter, and with an upper rim to mate with the ceiling member by one member closely fitting within the other, and wherein the second bowl member is attached to an electrical device of larger diameter than the bowl members, so that when the bowl members mate the electrical device blocks easy access to the outside of the bowl members, the improvement wherein:

one bowl member has a plurality of slots spaced about its rim, and the other bowl member has a plurality of projections that pass along said slots when said bowl members mate;

each of said slots is largely U-shaped, with a first portion extending primarily vertically by at least twice its width and having an outer end forming an opening in the rim of the slotted member and an inner end spaced from its rim, a second slot portion extending primarily horizontally from said inner end of said first slot portion and said second slot portion having an inner end opposite said first slot portion, and a third slot portion extending in a largely vertical direction from said inner end of said second slot portion and having an inner end furthest from the second slot portion, whereby a workman can install the second bowl member with the electrical device thereon by pressing up the second bowl member until he senses that the projections have reached the inner end of the first slot portions, turning the second member until the projections reach the inner end of the second slot portions, and then releasing the second member to move down slightly to move the projections to the inner ends of the third slot portions.

4,410,161

MOUNTING APPARATUS FOR OUTBOARD TROLLING MOTORS

Robert A. Booty, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 29, 1980, Ser. No. 220,387

Int. Cl.³ F16M *1/00, 3/00*

U.S. Cl. 248—642 **7 Claims**

1. An outboard motor mounting apparatus for moving an outboard motor between a generally vertical operating position and a generally horizontal retracted position, said mounting apparatus comprising:

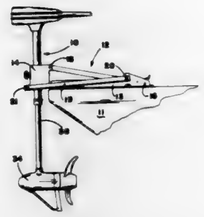
(A) a mounting bracket;

(B) a swivel bracket for supporting said outboard motor, said swivel bracket resting directly on said mounting bracket when said outboard motor is in said operating position;

(C) a first central arm having a first end pivotally attached to rotate about a first axis fixed on said mounting bracket and

a second end pivotally attached to rotate about a second axis fixed on said swivel bracket;

(D) second and third arms, one on each side of said first arm, said second and third arms having a first end pivotally attached to rotate about a third axis fixed on said mounting



bracket and said second and third arms each having a second end pivotally attached to rotate about a fourth axis fixed on said swivel bracket; and

(E) a latch means for latching said swivel bracket directly to said mounting bracket when said outboard motor is in the operating position.

4,410,162

RECOVERABLE FORM PART FOR USE IN THE REGION WHERE A TENDON IS ANCHORED IN A PRESTRESSED CONCRETE COMPONENT

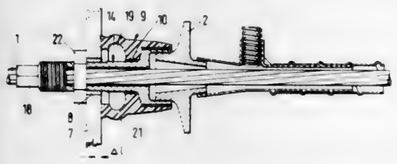
Johann Wlodkowski; Oswald Nützel, and Dieter Jungwirth, all of Munich, Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,037

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1980, 3030975

Int. Cl.³ E04G *17/08*

U.S. Cl. 249—215 **8 Claims**



1. Recoverable form part for use in the region where a tendon is anchored in a concrete component, comprising a part having a configuration so that it forms a cup-shaped recess when attached to the portion of the form into which concrete is poured, said part having an interior surface forming a centrally arranged passage therethrough for the tendon, said part is formed of a resilient material such as rubber or a rubber-like material, said part having first outer surfaces extending transversely of the passage therethrough with said first outer surfaces being spaced apart in the axial direction of the tendon and at least one second outer surface extending between said first outer surfaces and extending generally in the direction of the passage therethrough, a spindle guard tube is arranged within said part extending into and being concentric with the passage through said part with said interior surface closely encircling said tube, said tube extending into said part from the side of said part arranged to contact the surface of the form, said tube is arranged to extend through the form so that an axially compressive force can be applied through said tube to said part, said part has an annular hollow space therein laterally encircling said spindle guard tube adjacent to and spaced from the end of said part arranged to contact the form, said hollow space extends radially outwardly from said interior surface to an annular location spaced inwardly from said second outer surface, said part has an annular opening extending around said spindle guard tube and from the hollow space to said first surface thereof arranged to contact the form, said annular opening extends radially outwardly from said interior surface to a surface spaced radially inwardly of the radially outermost surface of said hollow space, the portion of said part forming said second outer surface and laterally encircling said hollow space having a reduced thickness wall section as compared to the adjacent wall sections of said outer surface extending in the direction between said first outer surfaces and the reduced thickness wall section is spaced from said first outer surfaces so that said portion deforms outwardly from said passage when a compressive force is applied to said part in the direction of said passage whereby said portion of said second outer surface arches outwardly away from said passage relative to the remainder of said second outer surface.

4,410,163

VALVE SEAT

William B. Scobie, Houston, and Edward G. Holtgraver, Spring, both of Tex., assignors to Keystone International, Inc., Houston, Tex.

Filed Feb. 1, 1982, Ser. No. 344,502

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—306 **29 Claims**



1. A seat ring for a rotary valve assembly comprising:

a radially inner metallic sealing section for sealing engagement with a valve element;

a radially outer retaining section for mounting said seat ring in said valve assembly;

and a multiplicity of circumferential windings of material in surrounding relationship to said sealing section of said seat ring, and radially outwardly thereof, each of said windings comprising an elongate strand of said material, each of said strands having its centerline oriented substantially circumferentially with respect to said sealing section for generally the full length of said winding.

4,410,164

MODULAR FLOW CONTROL SYSTEM

Dean L. Kamen, Bedford, N.H., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Dec. 31, 1981, Ser. No. 336,068

Int. Cl.³ F61L *55/14*; A61M *5/00*

U.S. Cl. 251—9 **14 Claims**

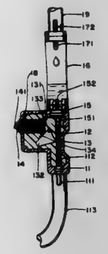
1. A flow control system comprising:

a case;

a tube of resilient material, of which at least a portion is located within the case;

a threaded member, having a thread axis and mounted in the case, to cause adjustable compression of the tube as the threaded member is advanced, by bearing against a movable member in contact with the tube; and

a movable member having a first face in contact with the tube and a second face contacted by the threaded member, said second face being aligned at a substantially oblique angle, and the first face being substantially non-parallel, with respect to the thread axis, so that axial motion of the



threaded member causes a functionally proportional degree of motion of the first face for compressing the tube.

4,410,165

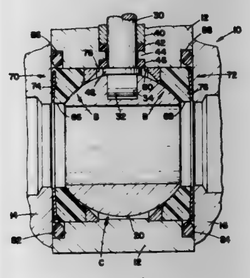
BALL VALVE AND SEAT ASSEMBLY

Ulrich H. Koch, Bainbridge Township, Cuyahoga County, and Peter C. Williams, Cleveland Hts., both of Ohio, assignors to Whitey Co., Highland Hts., Ohio

Filed Feb. 16, 1982, Ser. No. 348,718

Int. Cl.³ F16K *25/00*

U.S. Cl. 251—174 **20 Claims**



1. A ball valve comprising:

a body having a central passageway;

a ball member including a fluid flow opening therethrough, said ball member being positioned in said passageway and mounted for selective rotation between valve open and closed positions to control fluid flow through said valve, said ball member further including a radius of curvature on an outer wall surface;

a pair of radially inward extending continuous shoulders in said passageway disposed circumferentially thereof on opposite sides of said ball member;

a pair of radially inward extending counterbores in said passageway disposed on opposite sides of said ball member, each of said counterbores having an inner end wall and being circumferentially continuous; and,

a pair of composite seat member assemblies positioned axially in said passageway on opposite sides of said ball member for fluid-sealing engagement with said ball member, each of said pair comprising:

a reinforcing ring including a central opening, a first surface facing an associated one of said shoulders, a second surface abutting an associated one of said counterbore end walls and a third surface generally facing said ball member in a spaced relationship therefrom;

a seat ring adapted for elastic flexure generally toward and away from said reinforcing ring and including a central opening, a first surface generally facing said associated one of said shoulders, a second surface abutting said reinforcing ring first surface, and a third surface facing said ball member for sealing engagement with said ball member outer wall surface, said seat ring third surface being contoured and having a radius of curvature in an unstressed, unassembled condition greater than said radius of said ball member; and,

a disc spring having a central opening and a generally frustoconical configuration in an unstressed condition interposed between said seat ring and said associated one of said shoulders;

said ball member and pair of composite seat member assemblies being sized so that when assembled axially between said shoulders, each seat ring is flexed away from an associated reinforcing ring and stressed to have a radius of curvature at said seat ring third surface generally equivalent to said ball member radius of curvature and is disposed in sealing engagement with said ball member over the extent of said seat ring third surface, each disc spring being stressed toward a flattened condition for continuously urging the third surface of the associated seat ring toward engagement with said ball member.

4,410,166

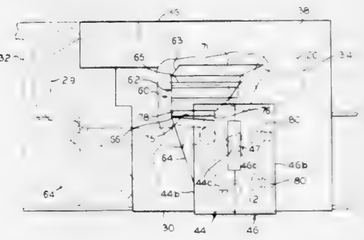
GAS COLLECTOR FOR METALLURGICAL VESSELS

Dennis L. Hixenbaugh; Peter G. A. Brand, and Edward J. Straka, all of Pittsburgh, Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Dec. 10, 1981, Ser. No. 329,250

Int. Cl.³ C21B *11/10*; C21C *5/38*

U.S. Cl. 266—158 **3 Claims**



1. An enclosure for a metallurigical vessel, said enclosure having side walls, an upper end and a door for providing access to the interior of said enclosure,

gas collecting means disposed adjacent the upper end of said enclosure and including a stationary gas collecting portion having first and second spaced apart inlets and an outlet,

a generally elongated gas collecting hood mounted for movement within said enclosure and between a remote position therein and an operative position generally above and to one side of said metallurgical vessel,

coupling means for coupling said hood to said first inlet when said hood is in its operative position,

said hood extending generally horizontally from said first inlet and to a position generally above and to another side of said vessel and having an opening formed in one side thereof;

and said side facing generally horizontally and toward the area above said vessel,

said stationary gas collecting portion being located above and to one side of said vessel,

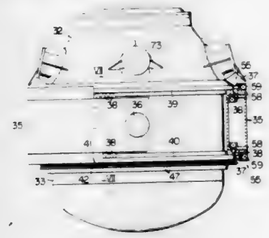
a second hood fixedly mounted on said gas collecting portion and communicating with the second inlet.

4,410,167

METHOD OF APPLYING A REFRACTORY LINING TO A ROTARY STEEL CONVERTER

Keikichi Murakami, Kobe, Japan, assignor to Kawasaki Jukogyo K.K., Kobe, Japan

Division of Ser. No. 103,619, Dec. 14, 1979, abandoned. This application Jun. 25, 1981, Ser. No. 278,008
Claims priority, application Japan, Dec. 22, 1978, 53-163691
Int. Cl.³ C21B *7/04*
U.S. Cl. 266—281 **9 Claims**



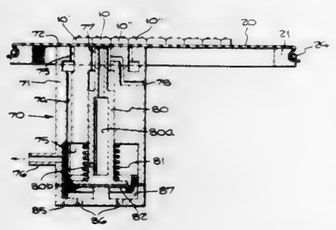
1. A method of applying a refractory lining to an inner surface of a vessel of a steelmaking converter, comprising the steps of:
(a) providing the vessel with a trunnion ring encircling and supporting the vessel coaxially by radial and axial support rollers uniformly distributed substantially throughout the circumference of the trunnion ring, in such a manner as to enable the vessel to rotate about its centerline axis relative to the trunnion ring, which is rotatably supported about a stationary axis transverse to the centerline axis;
(b) providing a flowable refractory material within the vessel;
(c) rotating the vessel at least about its centerline axis to such an angular position that a specific worn lining region will be covered by the refractory material; and
(d) causing the vessel to oscillate rotatingly through an angle about its centerline axis in two opposite directions with respect to said angular position.

4,410,168

APPARATUS FOR MANIPULATING A STRETCHED RESILIENT DIAPHRAGM

Alexander Gotman, Santa Monica, Calif., assignor to Asta, Ltd., Irvine, Calif.

Division of Ser. No. 167,667, Jul. 11, 1980, Pat. No. 4,296,542. This application Aug. 7, 1981, Ser. No. 290,890
Int. Cl.³ B25B *11/00*
U.S. Cl. 269—21 **16 Claims**



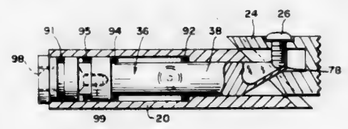
1. Apparatus for manipulating a stretched, resilient diaphragm from its under side comprising, in combination:
a support member having a flat upper surface adapted to engage the under surface of the diaphragm, said flat upper surface having an annular opening formed therein;
means for applying vacuum to said annular opening thereby to grip a corresponding annular portion of the under surface of the diaphragm;
said support member also having a central hole therein positioned concentric to said annular opening;
a pusher member positioned within said central hole; and
selectively operable means for raising said pusher so as to thereby elevate an associated portion of the diaphragm relative to said annular portion thereof.

4,410,169

WORK-HOLDING CLAMP WITH DOUBLE-ACTING HYDRAULICALLY ACTUATED JAW

Kurt F. Swenson, Newton, N.J., assignor to J & S Tool Company, Inc., Livingston, N.J.

Filed Nov. 19, 1981, Ser. No. 323,040
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—32 **16 Claims**



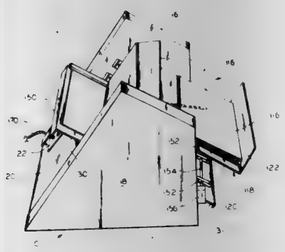
1. A work-holding clamp adapted for releasably securing a work piece on a table of a machine tool and the like, said work-holding clamp including:
(a) a body member having a supporting surface and means for securing said body member to a work table and with the forward end of said body member formed with a sliding and retaining contoured means disposed at an angle between thirty degrees and sixty-five degrees to the theoretical axis of said body member;
(b) a stepped bore formed in and through said body member and parallel with said supporting surface with a forward end of said bore including a reduced diameter bore portion to and through said forward portion of the body member and into said retaining contour means disposed at this selected angle;
(c) a piston having stepped smaller and larger diameters carried in the stepped bore and movable within said bore by pressurized means such as air or fluid;
(d) sealing means carried by and movable with said piston and adapted to inhibit the passage of the pressurized means beyond said larger diameter;
(e) a fixed sealing means disposed at the forward end of the enlarged portion of said stepped bore, this sealing means disposed to inhibit the flow of that pressurized means between the forward smaller diameter portion of the piston and stepped bore while permitting forward and rearward movement of the piston in the stepped bore;
(f) an inlet passageway through the sidewall of the body member and into the enlarged diameter portion of the stepped bore and with the inner end of said inlet passageway adjacent the fixed sealing means carried in the forward end of the stepped bore;
(g) a fixed plug seal removably mounted in the end of the enlarged bore of the stepped bore and providing therein and therethrough an inlet for pressurized means into the stepped bore and to the rear of the sealing means carried by the piston;
(h) a forward end of the movable piston with a lower cam surface providing an outer and lower angled surface of not less than fifteen degrees and greater than forty-five degrees from the theoretical axis of the piston and a substantially parallel upper cam surface formed at said forward end of the piston;
(i) a jaw member having a compatible sliding and retaining means disposed at an angle similar to that formed and provided at the forward end of the body member, said sliding means disposed for the movement of the jaw member along said retaining means without appreciable deviation of the movement of the jaw member from said angled path and a lower cam surface formed in said jaw member and adapted to engage the lower cam surface formed on the forward end of the piston and with the forward movement of the piston the lower cam surface of the piston engages the lower cam surface formed in the jaw member and urges said jaw member forwardly and downwardly at and along said angled retaining means, and
(j) a pin means carried by and in the jaw member and having its inner end adapted to slidably engage the the upper cam surface on the forward end of the piston and with rearward movement of the piston causing the jaw member to be moved rearwardly and upwardly.

4,410,170

MACHINE FOR STAPLING AND FOLDING A STACK OF PAPER SHEETS TO FORM A BOOK

Bruce Wertheimer, 2323 Davis St., P.O. Box 836, North Chicago, Ill. 60064, and Rune S. Pearson, Torrence, Calif., assignors to Bruce Wertheimer, Sarasota, Fla.

Filed Jul. 10, 1980, Ser. No. 168,301
Int. Cl.³ B41L *43/12*
U.S. Cl. 270—37 **9 Claims**



1. A machine for stapling and folding a stack of paper sheets comprising:
(a) means for receiving an unfolded stack of paper sheets, said means comprising a hand-operated table which has a first position at which said table normally rests and which position it occupies when said unfolded stack of paper sheets is placed thereupon;
(b) means for stapling said sheets together along a stapling line while said sheets are stacked on said means for receiving a stack of unfolded paper sheets;
(c) a first pair of power-driven rollers on said machine forming therebetween a nip to grip and fold said sheets and thereby prefolding said sheets along said stapling line;
(d) a second pair of power-driven rollers also forming therebetween a nip, the last-mentioned nip being aligned essentially parallel with the nip of said first pair of power-driven rollers, on said machine to further grip and fold said sheets as said sheets pass out of said first pair of power-driven rollers;
(e) a blade which is mounted for reciprocal motion between a rest position and an extended position and which urges said stack of papers through said first pair of power-driven rollers and also through said second pair of power-driven rollers;
(f) means for power-driving said rollers;
(g) means for mounting said table for movement by hand by the operator of said machine to convey said stack of unfolded stapled sheets to a second position where the stapled sheets are gripped and folded by said first and second power-driven rollers;
(h) switch means activated by moving said table into said second position, said switch means upon activation energizing operation of said blade and said first and second pairs of power-driven rollers; and
(i) means for conveying said stapled sheets out of said machine after folding;
whereby said stack of stapled sheets is lifted off said blade by said first pair of power-driven rollers without separation of said sheets from the staples and said stack of stapled sheets is creased to essentially a 180° fold by a second pair of power-driven rollers.

8. A machine for stapling and folding a stack of paper sheets comprising:
(a) Means for receiving an unfolded stack of paper sheets;
(b) Means for stapling said sheets together along a stapling line while said sheets are stacked, in a first position, on said means for receiving a stack of unfolded paper sheets;
(c) A first pair of power driven rollers on said machine forming therebetween a relatively wide nip to grip and prefold said sheets along said stapling line;
(d) A second pair of power driven rollers forming therebetween a relatively narrow nip, the last-mentioned nip being aligned essentially parallel with the nip of said first pair of power driven rollers on said machine to further grip and fold said sheets as said sheets pass out of said first pair of power driven rollers;
(e) A blade which is mounted for reciprocal motion and having an edge for engaging the stack of sheets substantially along the staple line;
(f) Means for reciprocally moving said blade between a rest position and an extended position wherein said edge passes completely through the nip of said first pair of rollers and just short of the nip of said second pair of rollers so as to urge said sheets through said first pair of power driven rollers and to within the grip of said second pair of power driven rollers;
(g) Means for power driving said rollers;
(h) Means for conveying said stack of unfolded stapled sheets to a second position where the stapled sheets are gripped and folded by said first and second power driven rollers; and
(i) Means for conveying said stapled sheets out of said machine after folding;
whereby said stack of stapled sheets is lifted off said blade by said first pair of power driven rollers without separation of said sheets from the staples and said stack of stapled sheets is creased to essentially a 180° fold upon itself by said second pair of power driven rollers.

4,410,171

APPARATUS FOR AUTOMATICALLY ALIGNING A WORKPIECE ALONG THE LINE OF FEED

Kensaku Kobayashi, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

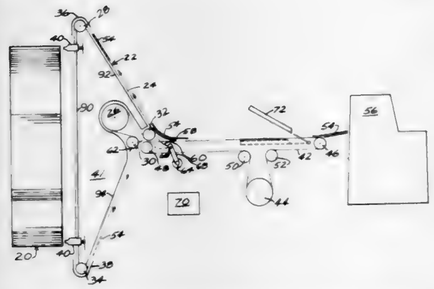
Filed Feb. 19, 1982, Ser. No. 350,511
Claims priority, application Japan, Feb. 26, 1981, 56-028151
Int. Cl.³ B65H *7/10*
U.S. Cl. 271—227 **3 Claims**



1. An apparatus for automatically aligning a workpiece along the line of feed comprising two pivotally interconnected arms extending transversely to the line of feed, each of said

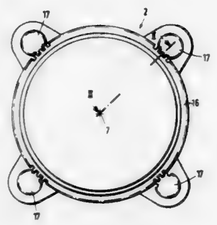
arms having a workpiece gripping element at one end thereof adapted to engage the workpiece adjacent an edge thereof, solenoid means operatively connected to the opposite end of one of said arms for pivoting said one of said arms on a stationary frame to move the workpiece gripping element thereon into and out of engagement with said workpiece along a substantially vertical path, servo motor operated eccentric means connected to the opposite end of the other of said arms for moving the workpiece gripping element thereon transverse to the edge of the workpiece along a substantially semi-oval path in opposite directions to peridically engage and shift said workpiece transversely to the line of feed and photoelectric sensing means for sensing the location of an edge of the workpiece and providing a signal for controlling said solenoid means and said servo motor operated eccentric means.

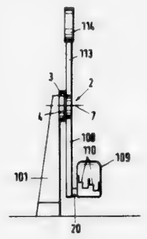
4,410,172
FEEDING MECHANISM FOR A COLLATOR
David H. Holliday, Seattle, Wash., assignor to Carl Johnson and T. W. Secrest, both of Seattle, Wash., part interest to each
Filed Nov. 28, 1977, Ser. No. 855,273
Int. Cl.[3] B65H *39/11*
U.S. Cl. 271—288 **2 Claims**



1. A feeding mechanism for inserting copies of pages in the bins of a collator, said feeding mechanism comprising:
a. a plurality of insertion gates for directing said copies into said bins;
b. a carrier for carrying said copies to said insertion gates;
c. a drive means for driving said carrier so that said carrier is capable of carrying said copies downwardly from a position adjacent to the top bin to a position adjacent to the bottom bin to said insertion gates and also for driving said carrier so that said carrier is capable of carrying said copies upwardly from a position adjacent to the bottom to a position adjacent to the top bin to said insertion gates;
d. said insertion gates having downwardly curved feed guides for directing said copies moving downwardly into said bins, and having upwardly curved feed guides for directing said copies moving upwardly into said bins;
e. a suspension means for said gates comprising a guide and a roller;
f. said suspension means, operatively, connecting with said insertion gates; and,
g. a moving means, operatively, connecting with said insertion gates for moving said insertion gates for directing said copies into said bins.

4,410,173
COUNTERBALANCED ROUNDABOUT HAVING PLURAL DRIVES
Karl Böhme, Bremen, Fed. Rep. of Germany, assignor to Heinr. Wilhelm Huss & Co., Fed. Rep. of Germany
Filed Mar. 17, 1981, Ser. No. 244,590
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1980, 3010302; Mar. 18, 1980, 8007321[U]
Int. Cl.[3] A63G *1/08*
U.S. Cl. 272—38 **5 Claims**



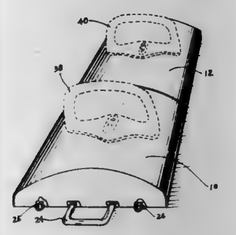


1. An amusement ride, comprising:
a supporting structure;
a single passenger carriage carried by one end of a first jib, said carriage having a plurality of rows of passenger seats, another end of said jib being pivotably mounted to said support in a manner to rotate about a fixed horizontal axis,
a second jib having a counterweight rigidly attached to one end and another end thereof being rigidly connected to said first jib in a manner to rotate therewith about said axis with said counterweight opposite the passenger cage, said counterweight being positioned and with a fixed weight that substantially counterbalances the passenger carriage when empty,
a gear wheel operably attached to said first and second jibs with an axis of rotation coincident with said horizontal axis, and
at least four motors carried by said supporting structure, each motor driving a pinion gear that engages said gear wheel at locations spaced therearound thereby to rotate said jibs and passenger carriage in a manner to reduce the strain when said carriage is heavily loaded with passengers.

4,410,174
EXERCISE HORSE
Sadao Hamada, 2492 Battaglia Cir., San Jose, Calif. 95132
Filed Mar. 26, 1982, Ser. No. 362,110
Int. Cl.[3] A63B *5/12*
U.S. Cl. 272—64 **6 Claims**

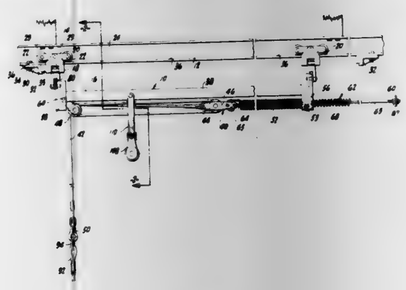
1. A pommel handle exercise apparatus comprising a case made of two semicylindrical halves, each of the halves having an outer, convex surface and being hinged at one end to the other half, and further wherein each of the case halves being

provided with a means for removably attaching pommel handles to the outer convex surface thereof, in an upright, rigid



manner, whereby said handles may be removed and stored inside said case when not in use.

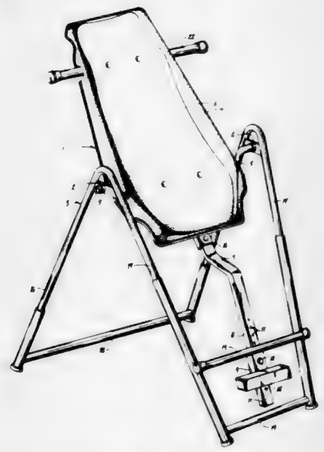
4,410,175
SAFETY SUSPENSION UNIT AND HARNESS FOR DEVELOPING JUMPS IN FIGURE SKATING
Ellis W. Shamp, 1623 Butte, Richmond, Calif. 94804
Filed Jul. 17, 1981, Ser. No. 284,334
Int. Cl.[3] A63B *7/00*
U.S. Cl. 272—70 **7 Claims**





1. A safety suspension unit for support of athletes during exercises comprising:
a fixed elevated track mountable to a support structure;
a carriage unit having tracking means engaging said elevated track for linear transport of said carriage on said elevated track;
wherein said carriage comprises an elongated structural member with first and second ends and wherein said tracking means comprise a pair of roller units connected to said ends of said structural member, said roller units having rollers in engagement with said track wherein said carriage is supported below said track;
a cable dispensing means with a support cable, said dispensing means connected to said carriage for dispensing said cable from said carriage in response to forces applied to said cable, said cable dispensing means having tension regulating means for increasing the tension of dispensed cable as said cable is dispensed; and connecting means for connecting said cable to the person of an athlete;
wherein said cable dispensing means comprises a pulley system with a first pulley connected to said first end of said structural member, and a second displaceable pulley connected to said tension regulating means, said tension regulating means being connected to said second end of said structural member, wherein said cable is connected to said second pulley and is threaded around said first pulley, around said second pulley and over said first pulley terminating at said connecting means.

4,410,176
FULL BODY WEIGHT FRACTION DEVICE
Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Pasadena, Calif.
Filed Aug. 7, 1981, Ser. No. 291,064
Int. Cl.[3] A63B *17/00*
U.S. Cl. 272—145 **18 Claims**



1. An exercise device comprising:
(a) a pair of spaced apart pivot bearings;
(b) means for supporting said pivot bearings in a coaxial relationship parallel to and spaced above a floor surface;
(c) a tilt bed disposed between said pivot bearings and pivotally mounted therein at its approximate midpoint, and having a human torso supporting means sized and configured generally to match the size and shape of a human torso, and an extension means extending longitudinally from the lower end of said torso supporting means;
(d) ankle holding means attached to said extension means for the secure attachment of a user's ankles to said tilt bed;
(e) a pivot stop means wherein said tilt bed supporting the user may be rotated to a stop position with said ankle holding means rotated past the vertical plane through the axis of said pivot bearings;
(f) adjustment means on said tilt bed which allows said ankle holding means to be selectively longitudinally positioned with respect to said pivot bearings so that said ankle holding means can be positioned over a range of locations relative to said vertical plane when said tilt bed is at said stop position, said range being from a fixed distal position wherein said ankle holding means is closest to said vertical

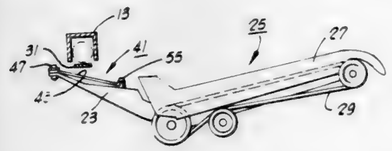
plane through the axis of said pivot bearings to a fixed proximal position wherein said ankle holding means is farthest away from said vertical plane through the axis of said pivot bearings.

4,410,177

BOWLING PIN ORIENTATION DEVICE FOR ORIENTING FALLING BOWLING PINS IN A BOWLING PIN CONVEYOR SYSTEM

Cleonard Richardson, 938 NE. 15th, Oklahoma City, Okla. 73105

Filed Oct. 15, 1981, Ser. No. 311,526
Int. Cl.³ A63D *5/09*
U.S. Cl. 273—43 D **8 Claims**



1. A bowling pin orientation device for orienting to a single axial orientation bowling pins of the type having a relatively heavy base portion and a relatively light neck portion comprising:

a substantially horizontal shelf;

means for horizontally sliding bowling pins axially from said shelf with a selected one of a neck-first orientation and a base-first orientation;

a pan disposed beneath said shelf for receiving bowling pins sliding from said shelf, said pan having a downwardly angled trough having an upper end and a lower end and said trough being disposed generally perpendicularly with respect to axial orientations of bowling pins sliding from said shelf; and

an arm having a first end, a second end and a smooth surface therebetween for carrying the neck portion of a bowling pin slidingly therealong, said first end of said arm being connected to said upper end of said trough of said pan and said arm extending downwardly and away from said shelf across said trough such that a neck portion of a bowling pin sliding from said shelf in a neck-first orientation will be received on said surface of said arm and slide downwardly therealong allowing a bowling pin falling from said shelf in a neck-first orientation to fall into said trough in base-down orientation, while the base portion of a bowling pin sliding from said shelf in a base-first orientation will not be received on said surface and will fall into said trough in a base-down orientation.

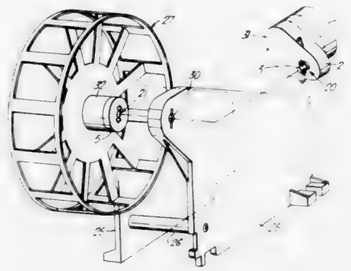
4,410,178

GAMING MACHINES

David Partridge, West Wickham, England, assignor to Starpoint Electrics Limited, Morden, England

Filed May 17, 1982, Ser. No. 378,810
Claims priority, application United Kingdom, May 21, 1981, 8115605
Int. Cl.³ A63F *5/04*
U.S. Cl. 273—143 R **4 Claims**

1. In a reel unit for a gaming machine said unit comprising a reel, a stepping motor and a reduction gearbox having an output shaft, said stepping motor being connected to drive said reel through said reduction gearbox, the improvement comprising a coupling between said output shaft of said gearbox and said reel, said coupling comprising a transverse pin extending through said output shaft, a boss in rigid relationship with said reel, said boss being formed with an axial circular opening, said opening forming a close fit with



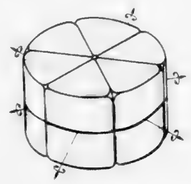
said output shaft, said boss being further formed with a transverse slot receiving said transverse pin, said slot being wider than said pin, and a layer of resilient cushioning material between said pin and said slot.

4,410,179

SHIFTABLE ELEMENT PUZZLE

Erno Rubik, Budapest, Hungary, assignor to Konsumex Külkereskedelmi Vallalat, Budapest, Hungary

Filed Nov. 9, 1981, Ser. No. 319,599
Claims priority, application Hungary, Nov. 9, 1980, 2679
Int. Cl.³ A63F *9/08*
U.S. Cl. 273—153 S **4 Claims**



1. A shiftable element logical puzzle in the form of a cylindrical body comprised of an assembly of sector shaped cylinder forming elements, said elements forming two identical cylder halves in the form of upper and lower tiers of six elements each, three of said elements in each tier being identical to each other, but different from the remaining three identical elements, and means joining said elements together to form said cylindrical body and enabling various groupings of six elements, three from each tier, to rotate relative to the remaining elements about three axes passing through the cylinder body axis but perpendicular thereto.

4,410,180

PUZZLE

Melford D. Clark, 741 Piper La., Prospect Heights, Ill. 60070

Filed Nov. 16, 1981, Ser. No. 321,482
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—156 **7 Claims**

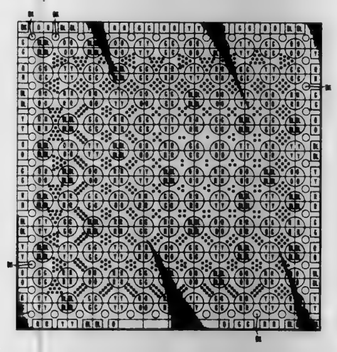
1. A puzzle comprising

a plurality of pieces of the same size and geometrical configuration,

each of said pieces having a square top surface,

each of said top surfaces having thereon a unique visible pattern which matches with the patterns on other ones of said top surfaces of mutually arranged pieces only when said pieces are mutually arranged in side-by-side relationship in a unique predetermined recognizable configuration with the top surfaces of said pieces forming a square,

said pieces being arranged in a plurality of sets with the first set of four pieces forming a first square, and the second set of five pieces when added to the first square forming a second square,



said plurality of pieces in said first set being uniquely positionable to provide a predetermined recognizable pattern on the top surface of said first square,

said plurality of pieces in said second set being uniquely positionable to provide a predetermined recognizable pattern on the top surface of said second square, and

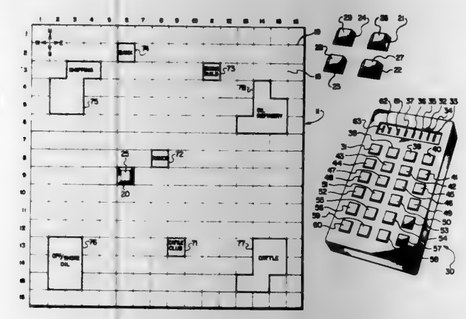
the pieces in each set having indicia on the top surface identifying the respective set of which they are a part, said set identifying indicia being devoid of information indicating the correct placement or orientation of the pieces.

4,410,181

ELECTRONIC BOARD GAME

Douglas E. Lapp, Lawndale, and Luan G. Tran, Redondo Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed May 29, 1981, Ser. No. 268,451
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—238 **7 Claims**



1. An electronic board game in which a group of players compete under game rules by taking turns, said electronic board game comprising:

a plurality of player tokens;

a playing surface defining a matrix of squares; including a first plurality of squares having means indicating upon the squares thereof membership of said squares in said first plurality of squares and a second, and a third plurality of squares, each of said squares in said first, second and third pluralities of squares being capable of being occupied by a single player token;

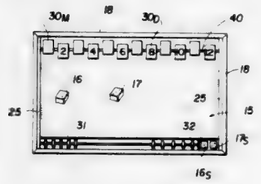
control means assigning a first game significance to said first plurality of squares which is not altered from game to game and a second game significance to said second plurality of squares which is randomly varied from game to game and a third game significance to said third plurality of squares which is randomly varied for each player turn, said first, second and third game significances of each plurality, each including player individual responses and consequences unique to that plurality.

4,410,182

ARITHMETIC DICE GAMEBOARD

David D. Francis, 5041 Linette La., Annandale, Va. 22003

Filed Jul. 21, 1981, Ser. No. 285,502
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—268 **3 Claims**



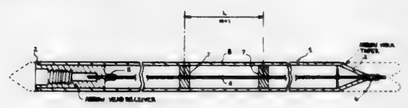
2. A board game played with a pair of dice comprising therewith, a playing surface disposable to rest horizontally and adapted for rolling the dice thereon, and manually operable scoring display means integrally disposed adjacent said surface comprising a rod mounted parallel said surface with a set of eccentrically disposed cubical elements disposed thereon by apertures defined therethrough parallel to one edge and off center nearer one edge for pivoting the elements between two bistable positions with one indicia face on each element carrying an indicia character for matching a possible roll of the dice displayed for visibility in one bistable position and masked in the other for selectively displaying and masking a set of individual indicia such as numbers to indicate game progress in response to manual pivoting of one or more elements with the indicia obtained by a rolling of the dice wherein the rod is disposed through the cube between two parallel faces at a position off center toward a first cube edge and the rod is disposed to permit the two diametrically opposed cube edges adjacent the first cube edge to contact said playing surface thereby to produce the respective bistable state positions.

4,410,183

PRESTRESSED ARROW SHAFT

Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Sep. 13, 1982, Ser. No. 416,864
Int. Cl.³ F41B *5/02*
U.S. Cl. 273—416 **6 Claims**



1. A cylindrical, tubular arrow shaft having a head end, a nock end and a length L is provided with a coaxially disposed prestressing means with one end anchored at the head end, the other end anchored at the nock end, said prestressing means having at least one elastomeric washer coaxially disposed about the prestressing means and closely fitting within the

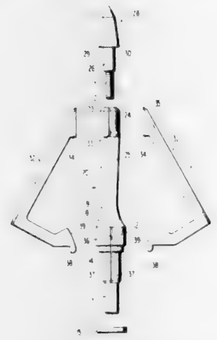
inside diameter of the arrow shaft tube, the elastomeric washer spacing being approximately equidistant along length L.

4,410,184

ARROWHEAD HAVING MODULAR REMOVABLE BLADES

Jeffrey J. Anderson, P.O. Box 11, McCann Mill Rd., Pottersville, N.J. 07979

Filed Oct. 7, 1981, Ser. No. 309,487
Int. Cl.³ F41B *5/02*
U.S. Cl. 273—422 **11 Claims**



1. In an arrowhead of the type wherein a plurality of interchangeably L-shaped blades are removably mounted on an elongated body, the combination comprising:

one end of said body being inwardly slotted in an axial direction to provide inwardly compressible axially extending segments defining at least one slot to receive one end of a blade;

adjustable compressing means mounted on said one end of the body to compress said segments inwardly to immovably grip said one end of a blade;

a second slot provided in said body axially spaced from said one slot to receive the other end of said blade;

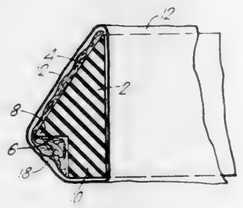
and means on the body axially spaced from said first slot to immovably attach the other end of said blade in the second slot in said body.

4,410,185

METHOD FOR SEALING A SPACE BETWEEN TWO SEALING SURFACES AND A SEALING DEVICE FOR CARRYING THE METHOD INTO EFFECT

Sten Sporre, Storgatan 25, S-330 12 Forsheda, Sweden

Filed Apr. 20, 1982, Ser. No. 370,072
Claims priority, application Sweden, Apr. 23, 1981, 8102578
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—1 **15 Claims**



1. In a sealed and lubricated coaxial pipe joint formed by connecting an outer socket and an inner spigot with an annular elastic seal between them, the improvement comprising:

an annular sliding sealing ring adapted to be mounted within the joint prior to the connection thereof, and consisting essentially of: (a) an annular elastic core having a radially projecting engagement portion, (b) an annular tearable covering toroidally surrounding said core, and (c) a lubricant annularly positioned between at least a portion of said core and said covering,

means for mounting said sealing ring within the joint prior to connection thereof, said means being integral with said socket or spigot, and

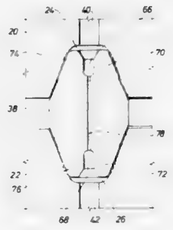
stop means for preventing insertion beyond a predetermined point, so that insertion of the spigot into the socket will cause the covering of the sealing ring to be engaged and torn at the point of said radially projecting portion, releasing the lubricant to facilitate said insertion and permitting the elastic core to form a seal.

4,410,186

SEALING SYSTEM FOR PRESSURIZED FLANGED JOINTS

Elwood K. Pierce, Jr., Coldspring, Tex., assignor to Petroleum Designers, Inc., Houston, Tex.

Filed Apr. 12, 1982, Ser. No. 367,166
Int. Cl.³ F16J *15/06, 15/40*
U.S. Cl. 277—2 **21 Claims**



1. A system for sealing flanged joints in flow line systems and for detecting and maintaining the seal integrity thereof, said system comprising:

(a) a pair of flanges each defining annular seal groove means having tapered circular side wall means, said flanges further defining pressure detection and sealant injection passage means in communication with said seal groove means;

(b) ring seal means being positioned within said seal grooves of said flanges and having tapered inner and outer sealing surface means for sealing engagement with said tapered side wall means of said seal groove means, the axial extremities of said ring seal means cooperating with said seal groove means to define pressure detection and sealant injection chamber means being in communication with respective ones of said pressure detection and sealant injection passage means of said flanges; and

(c) pressure detection passage means communicating said pressure detection and sealant injection chamber means and facilitating simultaneous detection of any leakage past said ring seal means and into either of said pressure detection chamber means.

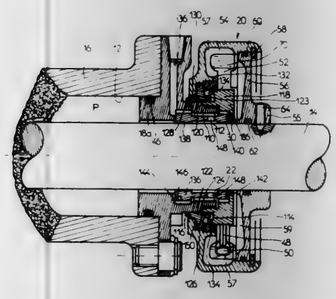
4,410,187

SEALING DEVICE FOR ROTARY HYDRAULIC FLUID MACHINE

Auguste Legoy, 12 bis, rue Rene Coty, 76290 Montivilliers, and Claude Legoy, 5, rue Hippolyte Fenoux, 76620 Le Havre, both of France

Filed Apr. 6, 1982, Ser. No. 366,072
Claims priority, application France, Apr. 8, 1981, 81 07065
Int. Cl.³ F16J *15/42, 15/32*
U.S. Cl. 277—25 **17 Claims**

1. Sealing device for a rotary hydraulic machine containing hydraulic fluid comprising a casing, a shaft emerging from said casing and an annular gasket/valve provided with a flexible lip, whereof one side is turned towards the suction side of a pump and which presses normally with sealed contact around the shaft when the pump is inoperative, and wherein an annular sealing chamber is defined between the shaft and a casing part, said sealing chamber being connected, on the one hand, to the side of the gasket lip opposite the first said side and, on the other hand, to an annular cavity defined inside a hollow rotary body fixed in a sealed manner around the end of the shaft to be sealed and fitting with clearance around the casing, valve means being provided for connecting the delivery side of the pump to said sealing chamber when the pump rotates at normal speed in order that said sealing chamber is permanently filled with liquid at a pressure equal to that of the delivery pressure, such tht the gasket/valve is separated from the shaft and that a leakage flow is delivered to said cavity of the rotary body where it forms a liquid ring pressed under the effect of the



centrifugal force against the outer periphery of said cavity, recovery means being provided for keeping the depth of said liquid ring constant and for restoring the excess liquid to said sealing chamber as well as for maintaining said sealing chamber at a pressure greater than that of the suction pressure of the pump, said sealing devices being characterized in that between a free internal peripheral edge of the rotating body and the contiguous sleeve wall, but movable axially in relation to the latter, said seal comprises an annular body which fits with some play around the sleeve, a lip seal turned on the side of cavity of rotating body and capable of being applied in a fluid-tight manner upon the exterior surface of the sleeve, and a radial annular protrusion housed inside an annular formed in said peripheral edge of the rotating body, the dimensions of which are greater than those of said protrusion, so as to avoid any friction of the protrusion with the rotating body during rotation.

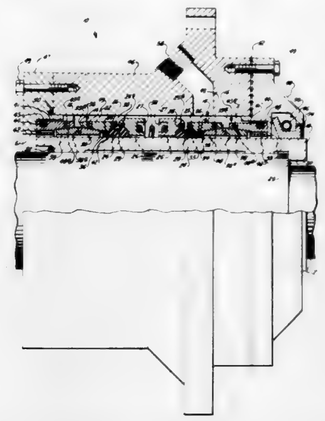
4,410,188

SLURRY PUMP DOUBLE MECHANICAL SPLIT FACE SEAL

John C. Copes, 2750 McConnell Dr., Baton Rouge, La. 70809

Filed Nov. 17, 1982, Ser. No. 442,281
Int. Cl.³ F16J *15/38, 15/46*
U.S. Cl. 277—65 **12 Claims**

1. A split mechanical seal for a working shaft which comprises, in combination, an inner and an outer pair of ring inserts disposed about said shaft, one of each pair being stationary and the other being rotatable with said shaft with one of said rotatable seal inserts facing in sealing relation one of said stationary inserts, a pair of stationary and a pair of rotatable seal insert holders associated respectively with said pair of stationary and said pair of rotatable inserts and each insert holder having longitudinally and outwardly tapered recess for engagement with each of said inserts, said rotatable seal insert holders being



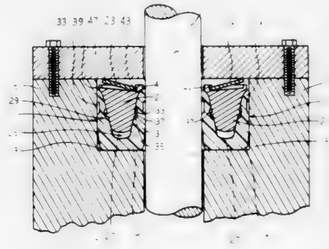
juxtaposed in back-to-back relationships and urged apart by a biasing means.

4,410,189

RESILIENT SEAL RING ASSEMBLY WITH SPRING MEANS APPLYING FORCE TO WEDGE MEMBER

William N. Myers, Huntsville, Ala., and Leopold A. Hein, Flintville, Tenn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 13, 1982, Ser. No. 378,533
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—117 **7 Claims**



1. An improved ring seal for sealing the interface between a moving shaft and a housing, comprising;

a resilient ring cup having an annular center recess extending from its upper end and sloping inwardly to a bottom so as to define inner and outer lips from the sides of the ring cup;

a ring wedge member positioned within said annular recess and adapted to be shifted between an upper position and a lower position;

each annular side forming said annular recess having a slot therein extending from said annular recess;

said wedge member having annular inwardly sloping sides with a projecting rib on each side;

said projecting ribs positioned within the slots on the sides of said annular recess;

said ring cup member having substantially annular, parallel outer sides when in an unstressed condition;

said annular recess slots having a width so as to allow the wedge member to be positioned in an upper position

within said annular recess which does not stress the outer sides of the ring cup member and to be positioned in a lower position which forces the inner and outer lips outwardly into tight sealing engagement with the shaft and housing; and

a spring means secured to the wedge member for applying a force urging the wedge member into its lower position within said annular recess when installed;

the annular sloping sides of said wedge member having an inward slope less than the interfacing slope of the sides of said annular recess so as to provide a wedging action which forces the inner and outer lips of the ring cup outwardly into sealing engagement when the wedge member is shifted from its upper position to a lower position.

4,410,190

FLUID SEAL PUMPING EFFECT LIP SEAL FOR ROTARY SHAFT

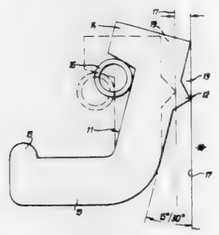
Charles W. Potter, Manchester, England, assignor to J. H. Fenner & Co. Ltd., Hull, England

Filed Dec. 12, 1980, Ser. No. 215,857

Claims priority, application United Kingdom, Dec. 21, 1979, 7944249; Sep. 19, 1980, 8030422

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—153 **11 Claims**



1. In or for a fluid seal arrangement for relatively rotatable members such as a housing and a shaft having a surface to be sealed, a moulded seal comprising an axially extending flexible sleeve-like body having an outer free end, ordinarily spaced from the surface to be sealed, a surface generally coaxial with and opposed to the surface to be sealed, and an integral annular sealing lip projection having a pointed sealing edge engageable with the surface to be sealed about the full periphery thereof, the annular sealing lip projection being of minor axial dimension relative to the axial length of the flexible sleeve like body and being provided in spaced-apart disposition relative to the outer free end of the sleeve-like body, and the said opposed surface of the body extending toward the surface to be sealed from the sealing lip projection to said outer free end to provide a variably dimensioned annular fluid cavity for pumping fluid away from the edge of the sealing lip projection at the intended high pressure side of such projection.

4,410,191

SELF-ENERGIZING AUTOMATIC LATHE CHUCK

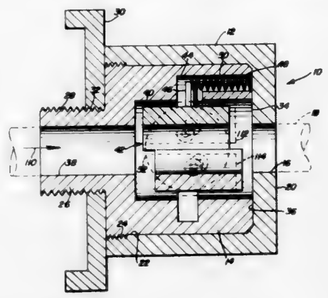
Tom P. James, Odessa, Tex., assignor to Ken Griffin, Odessa, Tex.

Filed Feb. 19, 1981, Ser. No. 235,962

Int. Cl.³ B23B *13/00, 15/00*

U.S. Cl. 279—35 **3 Claims**

1. An automatic chuck including a base for support from a rotatable lathe mounting portion for rotation therewith, said base having a central work receiving passage extending therethrough and adapted to have an elongated workpiece longitudinally step advanced therethrough in a first direction, a pair of elongated opposing jaws disposed on diametrically opposite sides of said passage, extending longitudinally therealong and including pairs of corresponding sides disposed on opposite sides of the centerline of said passage, first and second connecting means disposed on said opposite sides of said centerline, means pivotally connecting each of said connecting means to each of the corresponding pair of jaw sides for angular displacement relative thereto about parallel axes extending transversely of said passage between said opposite jaw sides, and thrust means operatively connected between said base and one of said jaws yieldingly biasing said one jaw in a second direction opposite to said first direction.



4,410,192

WEDGE-OPERATED JAW CHUCK FOR HOLDING WORK ON A MACHINE TOOL

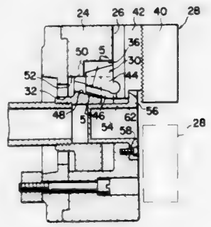
Akira Nobukawa, Fukuyama, and Tatsuei Sawaguchi, Fuchu, both of Japan, assignors to Kabushiki Kaisha Kitagawa Tekkosho, Hiroshima, Japan

Filed Jan. 14, 1981, Ser. No. 224,867

Claims priority, application Japan, Jan. 18, 1980, 55-5137

Int. Cl.³ B23B *31/16*

U.S. Cl. 279—121 **8 Claims**



1. A wedge-operated jaw chuck to be mounted on a machine tool for holding work to be operated upon comprising:

(a) an annular jaw carrier having a plurality of guide grooves formed radially in its front face and a plurality of slots formed one in the bottom of each guide groove so as to extend radially outwardly from the inner end of said groove, said slot being narrower than said groove,

(b) a plurality of gripping jaws slidably engaged one in each guide groove in the jaw carrier for movement in its radial direction to engage and disengage work;

(c) a wedge integrally projecting rearwardly from each gripping jaw and comprising a web extending radially of the jaw carrier and a flange at the inner end of the web, the width of the web being less than the width of the flange, part of its web being movably received in one of the slots in the jaw carrier; and

(d) a plunger slidably mounted in the jaw carrier for movement in its axial direction, the plunger having a plurality of undercut wedge grooves formed in its circumference at an angle to its axis for slidably receiving the wedges of the gripping jaws to cause the movement of the gripping jaws

in the radial direction of the jaw carrier by a wedging action upon movement of the plunger in its axial direction, the plunger having a pair of opposed overhanging portions which are formed by each undercut wedge groove and which lie between the jaw carrier and the flange of one of the wedges;

(e) whereby, upon radial outward displacement of the gripping jaws in the operation of the chuck, the overhanging portions of the plunger are held against the jaw carrier and thus are protected against rupture or strain due to bending stresses.

4,410,193

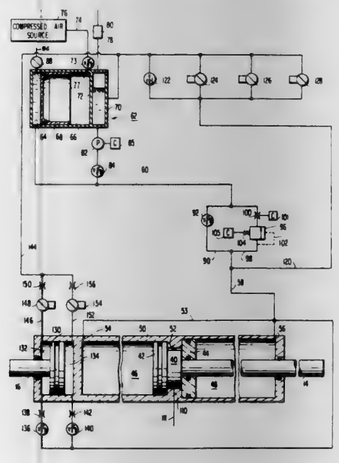
REMOTELY ADJUSTABLE COMPENSATOR FOR CENTERING STEERING SYSTEMS

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 78213

Filed Nov. 14, 1979, Ser. No. 93,968

Int. Cl.³ B62D *5/10*

U.S. Cl. 280—90 **85 Claims**



1. An apparatus for returning to a preselected position the steering system of a vehicle having at least one steerable member movable to either side of said preselected position in response to a steering force, said apparatus comprising:

return means for providing a return force continuously biasing said steerable member toward said preselected position upon movement of said steerable member to either side of said preselected position; and,

resistance means for preventing substantial movement of said steerable member to either side of said preselected position until said steering force exceeds said return force by an amount of differential force opposing said movement, said resistance means including actuator means for providing a fluid pressure differential in response to said movement and fluid means for resisting fluid flow in response to said fluid pressure differential so as to provide said amount of differential force.

4,410,194

CASTER WHEEL BRAKE

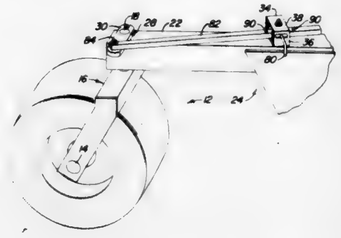
Ronald M. Steilen, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Jun. 25, 1981, Ser. No. 277,418

Int. Cl.³ B62D *13/04*

U.S. Cl. 280—86 **17 Claims**

1. In a framed implement adapted for forward movement over the ground and having a caster wheel adapted for rocking to and from a forward direction about an upright axis, caster wheel control means for limiting oscillation of the caster wheel comprising: first means movably supported with respect to the frame; second means connecting the first means for movement with the caster wheel as the latter rocks, said second means defining an effective moment arm through which the caster wheel acts to move the first means, said moment arm decreasing as the caster wheel moves from the forward direction; and third means for adjustably resisting movement of the first means.



4,410,195

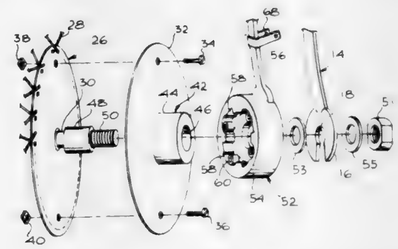
BICYCLE WITH IMPROVED SAFETY

Hermenegildo C. Agustin, 47-710 Hui Alala St., Kaneohe, Hi. 96744

Filed Dec. 28, 1981, Ser. No. 334,562

Int. Cl.³ B62L *1/00*

U.S. Cl. 280—264 **2 Claims**



1. A bicycle with improved safety including a frame, said frame including a front fork portion having a pair of arms, each of said arms having an axle-supporting opening at its lower end, each said axle-supporting openings being coaxial with and opposed to the other axle-supporting opening;

an axle having threaded end-portions, a central support portion and a sleeve adjacent one of said threaded end portions, said sleeve being fixed with respect to said axle and having a first outer-bearing surface of a first diameter;

a front wheel rotatably supported on said axle and having a centrally located coaxial disk rotatable with said front wheel;

a brake cover having a disk portion and a hollow-cylinder portion supported coaxially thereon, said hollow-cylinder portion having an inner bearing surface and a second outer bearing surface, both coaxial with said disk portion;

said brake cover being secured to said centrally located coaxial disk for rotation therewith;

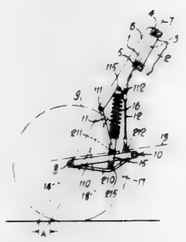
a brake body including a housing portion and a bracket portion, said housing portion having an opening therethrough for passage of said axle and having a central recess therein for receiving said hollow-cylinder portion;

said central recess having a plurality of control recesses disposed about said central recess, each of said control recesses having a cam surface and a barrier;

a roller bearing positioned in each of said control recesses for movement over said cam surface;

a spring urging each of said roller bearings along its respective cam surface away from said barrier and into contact with said second outer bearing surface of said hollow-cylinder portion;
said inner bearing surface of said hollow-cylinder portion being in rotational engagement with said first outer bearing surface of said sleeve on said axle;
said bracket portion being secured to an adjacent one of said arms of said front fork;
and means for securing said axle to said arms of said front fork.

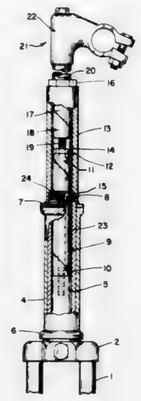
4,410,196
SUSPENSION SYSTEM FOR A MOTORVEHICLE WHEEL, PARTICULARLY FOR A MOTORCYCLE WHEEL
Valentino Ribi, Genoa, Italy, assignor to Honda Giken Kogyo Kabushiki Kaisha, Asaka, Japan
Filed Nov. 24, 1980, Ser. No. 209,923
Claims priority, application Italy, Dec. 7, 1979, 12861 A/79
The portion of the term of this patent subsequent to Jul. 15, 1997, has been disclaimed.
Int. Cl.³ B62K *21/02*
U.S. Cl. 280—276 **4 Claims**



1. A front suspension system for a motorcycle wheel, comprising
(a) a suspension structure mounted on a steering column and inclined downwardly in a forward direction;
(b) two swinging arms pivoted at one end to said suspension structure and at the other end to a wheel-carrying element so that said suspension structure, said two swinging arms and said wheel-carrying element form an articulated quadrilateral;
(c) shock absorber means acting on said articulated quadrilateral to oppose relative movement between said suspension structure and said wheel-carrying element due to a load applied to said motorcycle;
(d) said wheel-carrying element having a prolongation extending forwardly beyond said two connecting points between said two swinging arms and said wheel-carrying element, for mounting a motorcycle wheel;
(e) said shock absorber means having its upper end pivoted to said supporting structure, and its lower end pivoted to said wheel-carrying element, at a position below the ideal straight line passing through said pivotal connections of said two swinging arms to said wheel-carrying element.

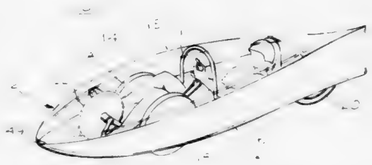
4,410,197
SHAFT ASSEMBLY FOR EXTENDING THE HEIGHT OF THE STEM OF A BICYCLE FORK
Raymond P. St. Hillaire, 9 Assabett St., Maynard, Mass. 01754
Filed Nov. 18, 1981, Ser. No. 322,645
Int. Cl.³ B62K *21/16, 21/22*
U.S. Cl. 280—279 **10 Claims**

1. In a bicycle comprising in part:
a fork structure having a tubular stem extending upward therefrom, said stem having external threads at its upper end and having an open interior axial passage;
a tubular frame head being mounted for rotation on the stem;
a handle bar neck having means to receive the handle bars and having a tubular shaft extending downward for insertion into the axial interior passage of the fork stem;
means to retain the fork structure, frame head, and handle bar neck in assembled relation;
means to extend the height of the fork stem comprising:



a tubular extender shaft having an open interior axial passage, said lower end of said passage being threaded to engage the threads of the form stem;
a reinforcing rod having a cylindrical body sized for insertion into the combined axial passage formed by the passages of the stem and extender shaft; and
means mounted on the reinforcing rod and being operable after insertion to lock said rod into reinforcing position within said combined axial passage.

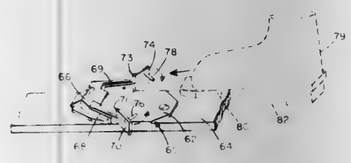
4,410,198
HUMAN POWERED VEHICLE
Fred D. Fernandes, La Verne; John M. Speicher, Upland; Douglas W. Unkrey, and Allan A. Voigt, both of Anaheim, all of Calif., assignors to Versatron Research Corporation, Geyserville, Calif.
Filed Apr. 30, 1981, Ser. No. 258,941
Int. Cl.³ B62K *5/02*
U.S. Cl. 280—281 LP **37 Claims**



1. A vehicle capable of being propelled by a human rider comprising:
a chassis including a seat positioned to support a rider in a generally supine position for operation of the vehicle, at least three wheels including a pair of front wheels in generally coaxial positions on opposite sides and forward of the seat, and drive means coupled to at least one of the wheels to propel the vehicle in response to rider manipulation; and
a continuous streamlined shell comprising a single lobe totally enclosing the chassis except for slots in the bottom of the shell through which the wheels protrude, said shell having its widest dimension at approximately the position

of the front wheels and having an aerodynamically shaped section extending forward of the front wheel axis to terminate in a rounded nose.

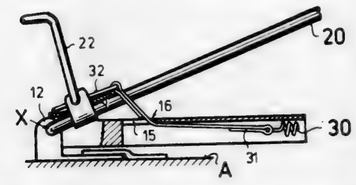
4,410,199
CROSS-COUNTRY SKI BOOT BINDING
Joel H. Eisenberg, 53A Blackhawk La., Stratford, Conn. 06497
Filed Dec. 16, 1980, Ser. No. 216,968
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—615 **2 Claims**



1. A ski boot binding comprising:
means for attaching said binding to a ski,
means for receiving a ski boot, and
pivot means,
said pivot means disposed with respect to the ski boot so as to be rearward of the toe area of the boot when the boot is in place to balance the boot so that little effort is required to lift the heel of the boot and disposed with respect to said means for attaching and said means for receiving so that the ski boot can tilt forward about said pivot means thereby providing a rearward kick wherein said pivot means comprises at least one peg adapted to be received by the ski boot and wherein said means for receiving comprises a toe grip disposed at one end of a plate, said grip having a pair of sidewalls extending rearwardly therefrom, said sidewalls each being connected by a hinge to a wall, each said wall supporting one said peg.
2. A ski boot binding comprising:
means for attaching said binding to ski,
means for receiving a ski boot, and
pivot means,
said pivot means disposed with respect to the ski boot so as to be rearward of the toe area of the boot when the boot is in place to balance the boot so that little effort is required to lift the heel of the boot and disposed with respect to said means for attaching and said means for receiving so that the ski boot can tilt forward about said pivot means thereby providing a rearward kick
wherein said means for receiving comprises a tongue, said tongue being pivotally connected to said means for attaching, and said tongue being adapted to be received by a portion of the ski boot,
said means for attaching comprises a plate, said tongue being pivotally connected to said plate by a hinge, wherein the ski boot has a slot in its front lip and said tongue is disposed to fit through the slot when the boot is in place, and
wherein a peg is attached to the end of said tongue opposite said hinge when the boot is in place to prevent the boot from slipping off of said tongue.

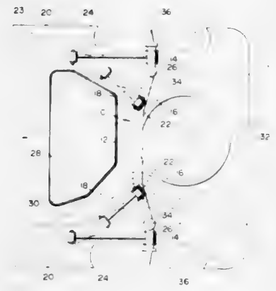
4,410,200
SKI BINDING WITH STEP FRAME AND RETRACTION INSTALLATION
Hans Näpflin, Kastanienalle 5, 6375 Beckenried, Switzerland
Filed Sep. 4, 1981, Ser. No. 299,542
Claims priority, application Austria, Sep. 8, 1980, 4509/80
Int. Cl.³ A63C *9/083, 9/16*
U.S. Cl. 280—618 **3 Claims**

1. Ski binding including a sole plate having a front end and a step frame hinged to said front end in a swivel manner, the step frame including means for securing a ski boot to the step frame and having a retraction installation for urging the step frame against the sole plate, said retraction installation having at least one draw spring connected at one end to the sole plate, which is characterized by a recess (**14**) located in the underside of the sole plate (**10**) and an opening (**15**) in the sole plate (**10**), said draw spring (**30**) being positioned in the recess (**14**) and the other end of the draw spring (**30**) being connected to a strap



(**31**) which passes through the opening (**15**) and which is attached to a buckle (**32**), and further including a bearing plate (**21**) attached to the front end of the step frame (**20**), said buckle (**32**) being pivotable into one of two orientations, a first orientation in which said buckle (**32**) lays upon the sole plate (**10**), and a second orientation in which said buckle lays upon the bearing plate (**21**).

4,410,201
RIGID AXLE REAR SUSPENSION FOR AN AUTOMOTIVE VEHICLE OR THE LIKE
Yoshitaka Iijima, Yokohama, and Masanori Abe, Kawasaki, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 20, 1981, Ser. No. 265,386
Claims priority, application Japan, May 30, 1980, 55-73785[U]
Int. Cl.³ B60G *9/02*
U.S. Cl. 280—688 **14 Claims**



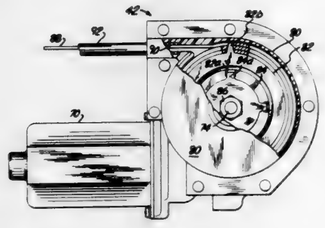
1. In a vehicle having a chassis, a rear axle suspension assembly comprising:
an axle having two transversely extending axially aligned end portions for rotatably supporting the road wheels of the vehicle, said axle having a forwardly offset transversely extending central inboard portion, and said axle having two intermediate portions angled with respect to and connecting said two end portions to said inboard portion;
a first pair of links pivotally mounted to the chassis at their forward ends and connected to said two intermediate portions of said axle at their rearward ends; and
a second pair of links pivotally mounted to the chassis at their forward ends and connected to said two end portions of said axle at their rearward ends;
said first and said second pairs of links pivotally swinging said axle about the chassis pivot mounts and rotating said

axle in response to substantially vertical movement of the road wheels.

4,410,202
PASSIVE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM

Juichiro Takada, 3-12-1, Schinmachi, Setagayaku, Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,369
Claims priority, application Japan, Oct. 30, 1980, 55-154226[U]; Jun. 23, 1981, 56-91757[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—804 **8 Claims**

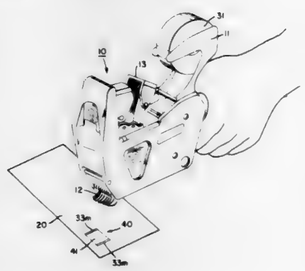


1. A passive occupant restraint belt system for vehicles comprising a belt, a belt transfer guide engaging the belt and movable between restraint and release locations in the vehicle in which it holds the belt in occupant-restraining and occupant-releasing positions, respectively, and a reversible drive device coupled by a flexible drive element to the belt guide and operable in response to opening and closing of the vehicle door to move the guide between the release and restraint locations characterized in that the drive device includes a rotatable sprocket wheel having a multiplicity of teeth extending substantially radially outwardly with respect to the axis of rotation of the wheel and the drive element is a tape having one end fastened to the guide and the other end fastened to the sprocket wheel and having spaced-apart holes in at least the portion thereof adjacent the said other end adapted to receive the sprocket teeth such that the tape is wound onto and unwound from the sprocket wheel to move the guide between said locations upon rotation of the sprocket wheel.

4,410,203
MULTI-PURPOSE LABELLING

George A. Lothrop, Medfield, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Oct. 8, 1980, Ser. No. 195,267
Int. Cl.³ G09F *3/00*
U.S. Cl. 283—81 **6 Claims**



1. A multipurpose label structure consisting of a base carrier, an adhesive superimposed on said base carrier,

an intermediate label releasably superimposed upon said adhesive,

a further adhesive superimposed upon said intermediate label,

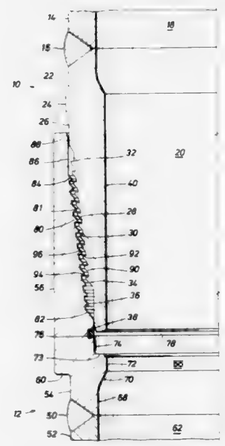
an outer label releasably superimposed upon said further adhesive,

wherein said outer label and said intermediate label have different release characteristics.

4,410,204
CONNECTOR

Larry E. Reimert, Houston, Tex., assignor to Dril-Quip, Inc., Houston, Tex.

Filed Jul. 6, 1981, Ser. No. 280,302
Int. Cl.³ F16L *55/00, 25/00*
U.S. Cl. 285—24 **16 Claims**



1. A connector assembly comprising:

a. a first connector member including a first generally cylindrical guide section and a second generally cylindrical guide section axially displaced from, and of lesser external diameter than, said first guide section;

b. a second connector member for receiving said first connector member, including a first generally cylindrical receptacle, for receiving said first guide section, and a second generally cylindrical receptacle, for receiving said second guide section, axially displaced from and of lesser internal diameter than said first receptacle;

c. tapered external thread means, as part of said first member, positioned generally axially between said first and second guide sections;

d. tapered internal thread means, as part of said second member, positioned generally axially between said first and second receptacles and generally complementary to said first thread means for threaded engagement therewith; and

e. wherein said first and second guide sections may be partially received by said first and second receptacles, respectively, to align said first and second members without threaded engagement between said first and second thread means.

4,410,205
BLOW OUT PREVENTER HOSE COUPLING

Thomas L. Ingram, Sherman, Tex., assignor to Airsco Hydraulics, Inc., Dallas, Tex.

Filed Dec. 17, 1980, Ser. No. 217,421
Int. Cl.³ F16L *55/00, 39/00, 51/02, 33/00*
U.S. Cl. 285—47 **18 Claims**



1. A hose coupling comprising:

a hollow cylindrical tubing with first and second ends;

a toroid attached around the outside circumference of the tubing at a location near the first end of the tubing;

attachment means attached to and extending from the toroid over and beyond the first end of the tubing along its longitudinal axis for coupling to a corresponding coupling;

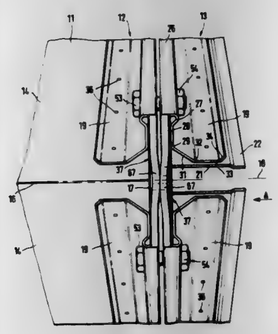
a stem attached at the second end of the tubing and extending away from the tubing along its longitudinal axis for connecting a hose at the second end of the tubing;

insulation surrounding the hollow cylindrical tubing from the toroid back away from the first end of the hollow cylindrical tubing towards and over the second end of the tubing and the stem attached thereto.

4,410,206
FLANGE CONNECTION FOR RECTANGULAR AIR-CONDITIONING DUCTS

Georg Mez, Reutlingen, Fed. Rep. of Germany, assignor to Mez-Technik A.G., Zurich, Switzerland

Filed May 11, 1981, Ser. No. 262,199
Int. Cl.³ F16L *23/00*
U.S. Cl. 285—405 **8 Claims**



1. In a flange connection for rectangular sheet metal air-conditioning ducts having

sheet metal frame members in the form of open-sided box girders having inner and outer walls, which members may be slipped onto the free edges at the ends of the sheet metal of such air-conditioning duct,

metal anglepieces several millimeters thick, each having two legs with an angle therebetween, each of said legs being designed to be slipped into said box girders, each said anglepiece furthermore having a middle plate, generally placed in one plane but for an outer cornerpart of the middle plate, which is formed out of this plane for use as a spacer, the cornerpart being generally on a line having said angle,

and fixing parts for grippingly joining said anglepieces together,

the improvement wherein said fixing parts take effect on each of said angle piece legs at position which are symmetrical with respect to said line having said angle in each case, each of said fixing parts forcing together a sandwich structure made up of:

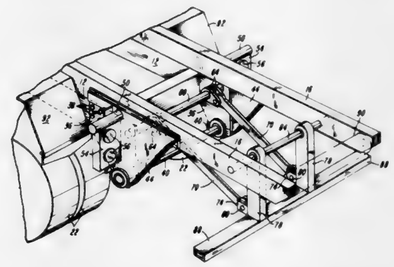
an outer wall of a first one of said box girders, one leg of one of said angle pieces, an inner wall of said first box girder, an inner wall of a second one of said box girders, a leg of a second angle piece and an outer wall of said second box girder,

and said walls and said angle piece legs each have through-holes running there through and said fixing parts take the form of headed bolts slipped through said through-holes.

4,410,207
BUMPER STRUCTURE FOR VEHICLE HAVING TILTABLE LOAD CARRIER MEMBER

Heino W. Scharf, Knoxville, Tenn., assignor to Dempster Systems Inc., Knoxville, Tenn.

Filed Dec. 21, 1981, Ser. No. 332,741
Int. Cl.³ B60R *19/02*
U.S. Cl. 293—118 **6 Claims**



1. In a vehicle provided with a frame and a load carrier member which is angularly movable between a horizontal position and an inclined position with respect to the frame, automatically retractable bumper structure comprising:

a pair of arm members pivotally joined to the load carrier member and extending therefrom,

an engagement member attached to the arm members,

a pair of link members,

means pivotally attaching the arm members to the link members and means pivotally attaching the link members to the frame,

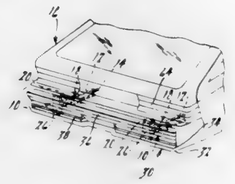
the arm members extending downwardly from the load carrier member when the load carrier member is in its horizontal position, the arm members and the engagement member thus being in an obstructive position when the load carrier member is horizontal, the arm members being automatically pivotally movable from an obstructive position to an unobstructive position for movement of the engagement member from an obstructive position to an unobstructive position as the arm members and the link members automatically pivotally move with pivotal movement of the load carrier member from a horizontal position to an inclined position.

4,410,208

VEHICLE IMPACT ENERGY ABSORBING BUMPER MOUNT

Frank A. Mulso, Jr., Lake Orion, and Juan J. Smith, Utica, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Nov. 2, 1981, Ser. No. 317,653
Int. Cl.³ B60R *19/00*
U.S. Cl. 293—132 **3 Claims**



1. In combination with a motor vehicle, an impact absorbing structural assembly comprising, a transversely extending bumper bar, a pair of identical bumper mounting units attached to the vehicle frame and extending longitudinally therefrom, each said mounting unit having outer and inner generally channel-shaped sheet metal members nested in substantially coaxial relation, each said outer member having a composite shape with its one bumper end portion away from the vehicle formed with a plurality of substantially half-round corrugations, each said outer member having its remaining vehicle end portion formed with a C-shaped section, each said inner member and its associated outer member vehicle end portion having substantially parallel side flanges and vertical bight walls, means attaching said outer member one end portion and its associated inner member one end to bumper bracket means on said bumper bar, each said associated inner and outer member having a predetermined longitudinal dimension such that said outer member vehicle end portion extends a defined axial distance beyond its associated inner member vehicle end, means securing said outer member vehicle end portion to the vehicle frame, said securing means operative for maintaining said outer member vehicle end portion and said inner member in nested relation while permitting said inner member to move axially relative to said outer member vehicle end portion, whereby an impact force of a predetermined level on said bumper bar is absorbed by plastic deformation of said outer member corrugated portion being axially foreshortened and collapsed into contact with its associated inner member, resulting in controlled longitudinal guided travel of said inner member and said bumper bar relative to said outer member vehicle end portion, such that the impact force moves said bumper bar substantially in a horizontal plane defined by said pair of mounting units to thereby obviate damage to body parts of the vehicle by said bumper bar.

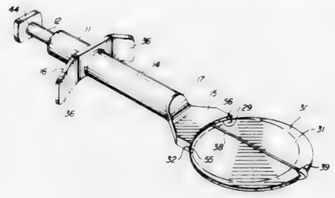
4,410,209

WAFER-HANDLING TOOL

Silvio P. Trapani, 1907 Cordilleras Rd., Redwood City, Calif. 94062

Filed Mar. 11, 1982, Ser. No. 357,056
Int. Cl.³ B05C *13/02*
U.S. Cl. 294—34 **9 Claims**

1. A wafer-handling tool comprising:
a hollow cylinder open at one end and forming a handle for said tool,
said cylinder being flattened on its outer periphery along at least a part of its length,
scoop means attached to the other end of said cylinder and forming a concave edge extending outwardly and laterally of said cylinder,
said scoop means being provided with a flat surface arranged coplanar with said flat surface of said cylinder,
a plunger movably mounted in the open end of said cylinder,
spring means mounted in said cylinder for biasing said plunger toward said open end of said cylinder,
a shaft attached at one end to said plunger to extend outwardly and longitudinally of the other end of said cylinder and the concave surface of said scoop means,
a gripping means attached to the other end of said shaft,
said gripping means being provided with a flat surface coplanar with the flat surface of said cylinder and said scoop



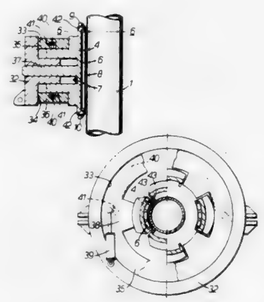
means and presenting a concave edge facing the concave edge of said scoop means, and
wedge-shaped grooves, one provided in each of the concave edges of said scoop means and said gripping means for holding a wafer therebetween,
whereby movement of said plunger into said cylinder separates said gripping means from said scoop means and relaxation of the tension on said plunger and spring means causes movement of said gripping means toward said scoop means.

4,410,210

RETAINING GRIPPERS

Bruno J. M. de Sivry, Paris; Olivier R. Anselme, Sevres; Bernard G. Sudreau, Puteaux; Meichel J. Jegousse, Saint Herblain; Yves R. Le Hir, Nantes, and Daniel Josien, Willems, all of France, assignors to Compagnie Francais des Petroles, Paris, France

Filed Oct. 15, 1981, Ser. No. 311,803
Claims priority, application France, Oct. 24, 1980, 80 22827
Int. Cl.³ B66C *1/46*
U.S. Cl. 294—99 R **3 Claims**



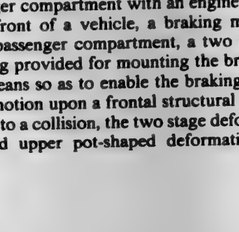
1. A soft retaining gripper comprising at least one rigid jaw, at least one jack comprising an inflatable flexible bladder carried by said jaw, a flexible wall arranged to be applied by said bladder against a surface to be gripped while stresses are exerted in the longitudinal direction between said gripper and the surface and parallel to said wall, said flexible wall being made of a composite anisotropic material comprising elongate elements which are oriented in the longitudinal direction and which are selected from a group comprising chains, mesh, metal bars and synthetic textiles, which have practically zero elongation in said longitudinal direction, and which are embedded in a covering of a flexible synthetic resin selected from a group comprising plastomers and elastomers, two support members solid with said jaw and disposed respectively adjacent the longitudinal ends of said jack, means attaching said flexible wall to said support members, and a carrier frame and a retractible wedging means inserted between said jaw and said carrier frame and enabling said jaw to be moved towards and away from said carrier frame.

4,410,211

MOTOR VEHICLE BODY WITH CONCEALED DRIP RAIL

Herbert Kloppe, Pulheim; Heinz Rest, Cologne, and Erwin Spiegel, Bergheim, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 27, 1981, Ser. No. 228,851
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003216
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—213 **3 Claims**



1. In a motor car body having a roof plate, internal and external side wall plates defining a side wall of the body fixed to the roof plate, a door pivotally mounted to the side wall, a window mounted in the side wall adjacent the door, and a concealed drip moulding assembly of the type wherein a first portion of the roof plate adjacent the door is folded to define with portions of said side wall a rain channel extending forwardly and rearwardly along the body and covered by an edge portion of the door, the improvement comprising the provision of a reinforcing plate carried on said side wall portion to define with said roof plate portion said rain channel and wherein second portions of the roof plate extending axially beyond said door and over said window are folded essentially identically with said first portions and said reinforcing plate is extended coextensively therewith to define an extended rain channel in axial registration with said window and wherein a cover is mounted over said extended channel between said roof plate and said side wall to mask said extended rain channel.

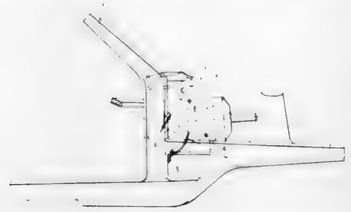
4,410,212

MOTOR VEHICLE

Günter Stürtz, Leinfelden; Herbert Holtze, Weil der Stadt; Dietrich Rothacker, and Gerhard Burk, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,221
Claims priority, application Fed. Rep. of Germany, May 16, 1980, 3018732
Int. Cl.³ B62D *25/08*
U.S. Cl. 296—189 **7 Claims**

1. A motor vehicle comprising an end wall means for separating a passenger compartment with an engine space or trunk arranged in a front of a vehicle, a braking means arranged outside of the passenger compartment, a two stage deformation means being provided for mounting the braking means at the end wall means so as to enable the braking means to execute a pivotal motion upon a frontal structural deformation of the vehicle due to a collision, the two stage deformation means includes a rigid upper pot-shaped deformation member, a larger lower pot-shaped deformation member arranged at the end wall means, and a shoulder means forming a transition



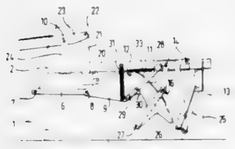
between the upper and lower deformation members, and the brake means is attached to the rigid upper pot-shaped deformation member.

4,410,213

CONVERTIBLE CHAIR

Ilan Samson, 62, Eshkol St., Tel-Aviv, Israel

Continuation of Ser. No. 62,958, Aug. 2, 1979. This application Jun. 8, 1981, Ser. No. 271,228
Claims priority, application Israel, Aug. 7, 1978, 55298
Int. Cl.³ A47C *1/02*; A61G *15/00*
U.S. Cl. 297—84 **13 Claims**



1. A convertible chair which is adjustable between sitting and reclining positions and which comprises a support frame; a seat having front and rear ends and a lower surface; a backrest; means tiltably mounting said seat and said backrest for tilting movement about respective axes extending transversely of said chair; and an adjustment mechanism for coupling the seat and backrest together so that tilting movement of said backrest results in corresponding tilting movement of said seat, said adjustment mechanism comprising at least one support element having an elongate part with an elongate curved support surface for supporting said seat, said curved support surface having front and rear ends, an actuating lever rigidly connected to said support element, pivot means for pivotally mounting said support element to said support frame for rotation about a pivot axis extending through said support element directly adjacent said rear end of said curved support surface and a control linkage extending from said lever to said backrest, whereby tilting of said backrest about the respective transverse axis produces a rotation of said support element about said pivot axis to adjust the vertical height of the point of support of the seat on said curved element in dependence on the position of the backrest, and wherein the curved surface of said support element is so arranged and it rolls off on the lower surface of the seat during rotation about said pivot axis so that the point of support of said seat on said curved support surface moves progressively forwardly from said pivot axis during movement of said seat and backrest to a fully reclining position and progressively rearwardly towards said pivot axis during the return movement, so that the turning moment which the

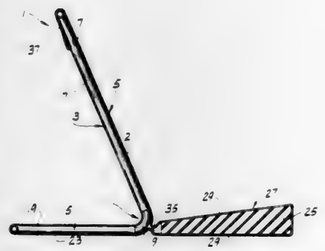
seat exerts on the curved support element balances the varying turning moment exerted on the curved support element by the backrest, in all positions.

4,410,214

LEISURE CHAIR

Robert C. Geschwender, Lincoln, Nebr., assignor to Concept Engineering, Inc., Lincoln, Nebr.

Continuation-in-part of Ser. No. 945,856, Sep. 26, 1978, Pat. No. 4,208,070. This application Jun. 9, 1980, Ser. No. 157,338
Int. Cl.³ A47C *13/00*
U.S. Cl. 297—118 **10 Claims**



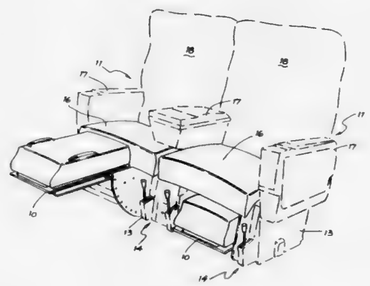
1. A leisure chair comprising a knockdown frame having only four component parts, each being substantially planar for compactness, said component parts including a pair of separate generally U-shaped frame portions, one constituting a support frame portion and the other constituting a backrest frame portion and each being formed from one relatively long piece of bent metal, and a pair of relatively short generally L-shaped connectors adapted for a telescopic fit with the ends of said frame portions to form a rigid frame of generally L-shape as viewed from the side, each L-shaped connector being formed from one relatively short piece of bent metal, a removable cover formed to fit over the frame and to hold said component parts in assembly, and a cushion swingable relative to the frame about an axis extending transversely of the frame at said connectors, said chair, when assembled, being adapted to be positioned on a floor in a first position in which the support portion of the frame rests flat on the floor and the backrest frame portion at one end of the support portion constituting its front end extends upwardly and rearwardly from said one end of the support portion with the cover providing a backrest, and in which said cushion extends forwardly from the frame and rests on the floor for providing a seat, said chair being adapted to be overturned from said first position to a second position in which the support portion of the frame extends upwardly from the floor and the backrest frame portion slopes downwardly from the upper end of the support portion to the floor with the cover presenting a reclining surface, the cushion being swingable to a position in which it rests substantially flat against said surface to provide a headrest for one reclining on said surface, said support and backrest frame portions being formed for nonrocking engagement with the floor when the chair is in said second position.

4,410,215

RETRACTABLE LEG REST FOR A CHAIR

Eric J. McKean, Lugarno, and David P. Downey, Five Dock, both of Australia, assignors to Qantas Airways Limited, Sydney, Australia

PCT No. PCT/AU80/00054, § 371 Date Apr. 28, 1981, § 102(e) Date Apr. 28, 1981, PCT Pub. No. WO81/00509, PCT Pub. Date Mar. 5, 1981
PCT Filed Aug. 28, 1980, Ser. No. 261,180
Claims priority, application Australia, Aug. 28, 1979, PE0234
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—429 **4 Claims**



1. A leg rest for a chair of the kind having a framework defining a pair of spaced apart support legs and a base for a seat, the base and the support legs forming a storage space beneath the seat which is accessible from the front of the chair, said leg rest comprising:

(i) a pair of mounting brackets spaced apart by at least the width of the leg rest and adapted to be secured to the framework of the chair,

(ii) a platform for supporting a leg rest cushion adapted to be stowed in the storage space beneath the seat when not in use and to be moved into adjustable leg-supporting relationship with the seat of the chair by an articulating frame which includes:

(a) an off-set linkage arm at each side of the platform, each linkage arm being pivotally connected at one end to one of the mounting brackets and at the other end to the rear of the platform,

(b) a quadrant member on each side of the platform, each quadrant member being pivotally connected at its centre to any of the mounting brackets forward of the connection of the respective linkage arm, each quadrant member being located in the storage space when the platform is stowed there,

(c) a link member connecting each linkage arm to the adjacent quadrant member so that movement of the linkage arm is transmitted as arcuate movement of the quadrant members,

(d) a platform support roller extending inwardly from the forward arcuate extremity of each quadrant member and slidably engaged in a slot formed in the respective side of the platform,

(e) a locking bar extending between the mounting brackets and beneath the arcuate periphery of the quadrant members and adapted to engage a corresponding pair of locking notches on the rear portion of the arcuate periphery of each quadrant member, and,

(f) release means for disengaging the locking bar,

the arrangement being such that when the platform is drawn forward from the storage space, the quadrant members are swung forward by the link members with the support rollers running rearward in the platform slots and the linkage arms elevate the rear of the platform along an arcuate path which passes clear of the front of the chair base so that the leg rest is brought into leg-support relationship with the seat of the chair,

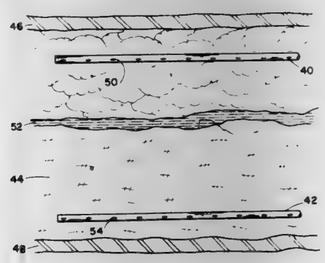
the angle of the platform to the seat being determined by the location of the locking notches on the quadrant members.

4,410,216

METHOD FOR RECOVERING HIGH VISCOSITY OILS

Joseph C. Allen, Bellaire, Tex., assignor to Heavy Oil Process, Inc., Dallas, Tex.

Continuation of Ser. No. 108,815, Dec. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 940,390, Sep. 7, 1978, Pat. No. 4,257,650. This application May 27, 1981, Ser. No. 267,469
Int. Cl.³ E21B *43/24, 43/30, 47/00*; E21C *41/10*
U.S. Cl. 299—2 **14 Claims**



1. A method of recovering oil from a subsurface earth formation, comprising:

establishing a shaft of oil extending from the surface to said subsurface earth formation;

drilling a first plurality of boreholes radially from said shaft hole in a substantially horizontal plane within an upper portion of said formation;

drilling a second plurality of boreholes radially from said shaft hole in another substantially horizontal plane within a lower portion of said formation;

introducing a displacing fluid through one of said plurality of boreholes and into said formation for forming a substantially horizontal blanket of displacing fluid;

injecting a driving fluid through said one of said plurality of boreholes and into said formation along at least a substantial portion of each of said one of said plurality of boreholes for vertically driving said displacing fluid through said formation;

withdrawing oil from the other of said plurality of boreholes while injecting said driving fluid into said formation;

monitoring recovery of said driving fluid from each of said other of said plurality of boreholes; and

injecting a liquid comprising substantially water through selected ones of said other of said plurality of boreholes in response to recovery of said driving fluid from each of said other of said plurality of boreholes for inhibiting further recovery of said driving fluid.

3. A method of recovering oil from a subsurface earth formation, comprising:

establishing a shaft hole extending from the surface to said subsurface earth formation;

drilling a first plurality of boreholes radially from said shaft hole in a substantially horizontal plane within an upper portion of said formation;

drilling a second plurality of boreholes radially from said shaft hole in another substantially horizontal plane within a lower portion of said formation;

simultaneously introducing a displacing fluid comprising substantially steam through each of said first plurality of boreholes and into said formation for forming a substantially horizontal blanket of displacing fluid;

subsequently injecting a driving fluid through each of said first plurality of boreholes and into said formation along at least a substantial portion of each of said first plurality of boreholes for vertically driving said displacing fluid through said formation; and

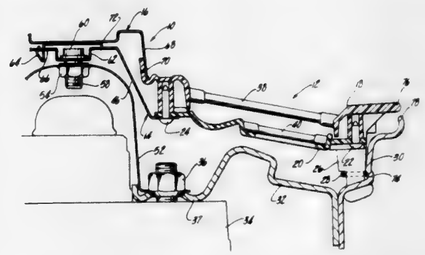
withdrawing oil from said second plurality of boreholes while injecting said driving fluid into said formation.

4,410,217

ANTI-THEFT WHEEL COVER

Norman Loren, Warren, Mich., assignor to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Nov. 16, 1981, Ser. No. 321,625
Int. Cl.³ B60B *7/04, 7/06*
U.S. Cl. 301—37 AT **9 Claims**



1. An anti-theft cover for a vehicle wheel comprising a cover body adapted to be applied to the outer face of a vehicle wheel, means around the outer peripheral portion of the cover body for releasably mounting the cover on a vehicle wheel, a metal bracket extending across the central portion of the cover body, said bracket having an outer peripheral portion having a diameter substantially less than the outer peripheral portion of the cover body, means axially connecting the outer peripheral portion of said bracket with the axially adjacent portions of the cover body, said bracket also having a central portion, the radially intermediate portions of said bracket being apertured to form a plurality of circumferentially spaced, readily bendable legs extending between and interconnecting the central and outer peripheral portions of the bracket, the central portions of said bracket and cover body having registering central openings therein, a cover locking member extending axially through said registering openings and having a head portion engaging the axially outer face portions of said bracket surrounding the opening therein, the portion of the locking member extending through said openings being adapted to engage and releasably lock with a cooperating member fixed on the wheel to retain the cover on the wheel in the event of disengagement of the releasable mounting means from the wheel.

4,410,218

CONTROL VALVE FOR TRACTOR REAR AXLES

Richard C. Bueler, Des Peres, Mo., assignor to Echlin Inc., Branford, Conn.

Filed Jun. 15, 1981, Ser. No. 273,870
Int. Cl.³ B60T *8/26*
U.S. Cl. 303—6 C **11 Claims**

1. A valve for a brake system comprising:

(a) a housing having a cavity therein;

(b) a reaction piston slidingly and sealing disposed in said cavity;

(c) said reaction piston having first and second surfaces thereon defining a first effective area and a second opposed effective area thereof;

(d) said reaction piston having a third surface defining a third effective area of said reaction piston;

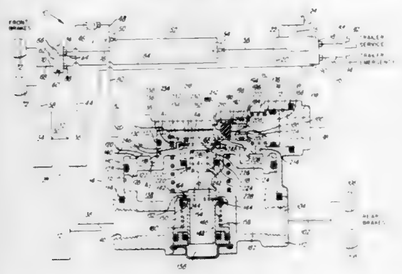
(e) a first chamber of said cavity being adapted to receive a first fluid pressure for application to said first effective area;

(f) a second chamber in said housing being adapted to receive and deliver a second fluid pressure and to apply said

second fluid pressure to said second opposed effective area;

(g) a third chamber in said cavity being adapted to receive fluid pressure for application to said third effective area;

(h) means for controlling the admission and exhaustion of said second fluid pressure from said second chamber in



accordance with a displacement of said reaction piston; and

(i) pressure responsive means for responding to a third pressure thereon for controlling the communication of said first fluid pressure to said third chamber and for controlling the ratio of said second fluid pressure to said first fluid pressure in accordance with said third pressure.

4,410,219

TRACKED VEHICLES

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

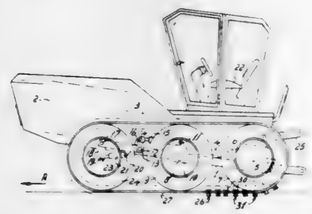
Continuation of Ser. No. 895,025, Apr. 10, 1978, Pat. No. 4,281,882. This application Nov. 24, 1980, Ser. No. 210,018

Claims priority, application Netherlands, Apr. 15, 1977, 7704129; Jun. 24, 1977, 7707007

The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.

Int. Cl.³ B62D *55/24, 55/28*

U.S. Cl. 305—35 EB **14 Claims**



1. A vehicle included in the group which comprises tractors, motorcars, soil cultivating machines, trucks, wagons and the like, wherein the vehicle comprises a frame and ground engaging wheels mounted on said frame, a track arranged around at least two of said ground engaging wheels, said track comprising a continuous belt of flexible material, said belt being provided with profiles which include first parts connected substantially rigidly to said belt and extending substantially parallel to adjacent surface of said belt at its circumference and second parallel parts spaced at a distance therefrom, said first and second parts rigidly connected by central web parts extending substantially normally to the adjacent portion of said belt, each of said profiles having a cross-section which is an I-shaped configuration.

4,410,220

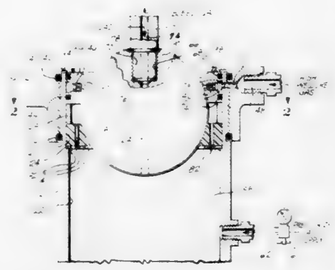
GAS LUBRICATED BALL BEARING

Curtiss W. Robinson, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 17, 1980, Ser. No. 130,614

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—109 **10 Claims**



1. A gas lubricated bearing comprising:

a spherical ball;

means for applying a downwardly directed load onto the ball;

a gas distribution ring surrounding an upper portion of the ball, presenting an annular bearing seat directed towards the ball and including gas delivery orifices directed to discharge through individual passages against the ball;

means for supplying a gas under pressure through said orifices, to provide a lubricating gas film between the seat and the ball, attended by downwardly directed fluid forces acting on the ball;

a housing having a lower portion which defines a pressure chamber below the ball to which a substantial surface portion of the lower part of the ball is exposed;

means for providing a regulated gas pressure within said pressure chamber for pressure loading the ball towards the bearing seat; and

support pad means positioned below the center of the ball and spaced from the gas distribution ring to hold the ball sufficiently close to the annular seat when the bearing is not pressurized to preposition it so that the chamber below the ball can be pressurized.

4,410,221

TOILET ROLL DISPENSER

Paul J. Vallis, Kew, and William H. Hall, Kooyong, both of Australia, assignors to Bowater-Scott Limited, Victoria, Australia

Filed Apr. 27, 1981, Ser. No. 257,868

Claims priority, application Australia, Apr. 29, 1980, PE3326

Int. Cl.³ B65H *19/04*

U.S. Cl. 312—39 **1 Claim**

1. A dispenser for cylindrical rolls of sheet material comprising:

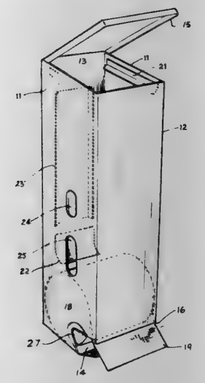
a body having a front wall, a rear wall, sidewalls, and a first and second end wall;

an inlet, for inserting rolls into the body, located in the first end of the body;

an aperture, located in the second end of the body, through which sheet material may be withdrawn;

a resilient impeding means comprising a downwardly directed resilient flange, located on the inner face of the rear wall at a distance of at least one but less than two roll diameters from the second end of the body; and

means for preventing the removal of stored rolls from the inlet comprising two downwardly directed flanges, one on the inner face of each sidewall, located adjacent to the inlet, and an inwardly directed projecting means incorporated on the rear wall, extending from above the downwardly directed resilient flange to below the two downwardly directed flanges on the sidewalls to prevent twisting and removal of said stored cylindrical rolls of sheet material from the dispenser.



4,410,222

ELECTRICAL CONNECTOR FOR A RIBBON CABLE

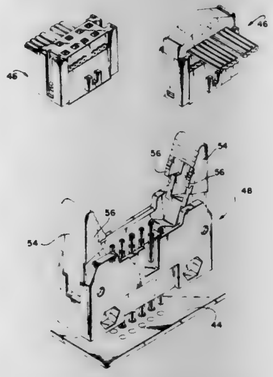
Masahiro Enomoto, Kawasaki; Yoshiyuki Awano, Sagamihara; Yuji Yamada, and Akira Aso, both of Yokohama, all of Japan, assignors to Molex Incorporated, Lisle, Ill.

Filed Jul. 6, 1981, Ser. No. 280,706

Claims priority, application Japan, Jul. 5, 1980, 55-91238

Int. Cl.³ H01R *23/54*

U.S. Cl. 339—17 F **4 Claims**



1. An electrical connector assembly for electrically connecting insulation-clad ribbon cable to a circuit member, said electrical connector assembly including a female connector electrically connected to the ribbon cable, selectively removeable strain relief means mountable over said female connector, and a male connector mounted on said circuit member for mating with said female connector, said male connector including a pair of pivotably mounted manually manipulatable lever means moveable between a locking position and an eject position for selectively locking and ejecting the female connector to and from the male connector, each lever means including an eject portion underlying and engaging the underside of the female connector and a locking portion adapted to simultaneously overlie and engage the female connector when in a locking position, the improvement comprising:

the locking portion of each lever means including

a gripping portion having two spaced apart walls depending therefrom defining a cavity for receiving and surrounding an end of the strain relief means, each of said walls having a bottom surface for engaging the top surface of the female connector when the lever means is in the locking position regardless of whether the strain relief means is mounted thereon.

4,410,223

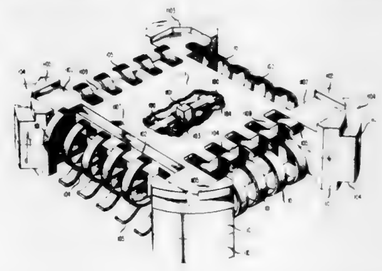
MODULE MOUNTING ASSEMBLY

Paul A. Baker, 2595 Bryden Rd., Columbus, Ohio 43209, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 3, 1981, Ser. No. 289,508

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—17 CF **28 Claims**



1. Apparatus for mounting a module with terminals on a circuit board, said apparatus comprising:

an assembly (1) for holding the module (2) and interconnecting the terminals (20) thereof with the circuit board (3) characterized in that

said assembly comprises

electrical conducting spring members (10) having opposing first and second contacts (102, 105) for contacting the module and circuit board,

means (11) for transversely mounting ones of said electrical conducting spring members in rows parallel to top and bottom surfaces of said mounting means wherein each said electrical conducting spring member extends along and outward from one of a pair of traverse center longitudinal ribs toward opposed edges of said mounting means with each said electrical conducting spring member positioned in a spaced apart relationship extending across and overlapping other said electrical conducting spring members along lines perpendicular to said top and bottom surfaces to position said first and second contacts in planes parallel to said top and bottom surfaces of said mounting means and outward of said center rib from which each said conducting spring member extends, and

means (12, 42) for engaging the module terminals in electrical contact with ones of said first and second contacts.

4,410,224

INTERCONNECTION DEVICE FOR MULTIPLE CONDUCTOR CABLES

Joe D. Giulie, Palo Alto, Calif., assignor to Ico Rally Corporation, Palo Alto, Calif.

Filed Aug. 24, 1981, Ser. No. 295,539

Int. Cl.³ H01R *9/16*

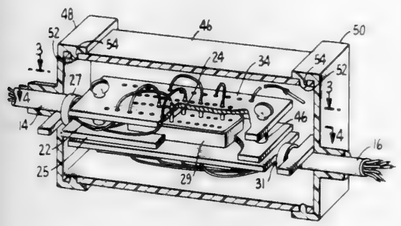
U.S. Cl. 339—18 R **5 Claims**

1. An intereonnection device for connecting first and second cables wherein each of said cables has a plurality of conductors comprising in combination:

a. said first cable having a plurality of conductors, at least some of said conductors terminating in individual pins,

b. a first flat plate having an elongated opening therein, said first flat plate being connected to said first cable,

c. a second flat plate underlying said first plate and carrying an upstanding jack pannel socket having a plurality of individual sockets therein, and extending into the opening in said first plate, said second plate being fastened to said second cable,



d. a third plate extending over said second plate, said third plate being of an insulating material and having a plurality of holes corresponding in placement and number to the individual sockets of the second plate, and

e. said three plates lying parallel to each other and means for fastening the three plates together.

4,410,225

UNIVERSAL CONNECTOR KIT

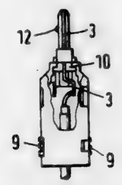
Anneliese Stoewe, and Gunter Hegner, both of Berlin, Fed. Rep. of Germany, assignors to Krone GmbH, Berlin, Fed. Rep. of Germany

Filed May 28, 1981, Ser. No. 267,847

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027047

Int. Cl.³ H01R *13/506*

U.S. Cl. 339—31 R **6 Claims**



1. A universal connector plug assembly kit for selective insertion into a contact strip having a multiplicity of pairs of normally closed, springingly engaged contact elements, to selectively make external electrical connection to said normally closed contact pairs and to make electrical connection independently to each contact of a contact pair, said assembly kit comprising:

at least one pair of identical electrically insulative shell halves adapted to fit together to form a unitary housing adapted to receive at one end a cable having at least one wire therein;

at least one pair of separate, flattened, elongated, electrically conductive first contact members;

at least one unitary, insulative, second contact member having two spaced planar legs connected at one end, said second contact member having an electrically conductive path on at least one planar side of one of said legs;

at least one electrically insulative first insert member adapted to be captured between said two shell halves at the other end of said housing and retained therein, said first insert member being adapted to retain, in cooperation with said shell halves, at least one of said first contact members in a position extending from inside said housing outwardly from said other end thereof;

at least one electrically insulative second insert member adapted to be captured between said two shell halves at the other end of said housing and retained therein, said second insert member being adapted to retain, in cooperation with said shell halves, said second contact member in a position extending from inside said housing outwardly from said other end thereof;

said first and second contact members, when assembled with said housing and respective insert member being adapted for permanent connection with the wire from said cable.

4,410,226

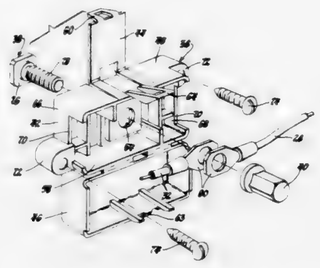
JUNCTION BOX AND CONNECTOR ARRANGEMENT

Robert L. Adduci, Girard, and Duane L. Abbuhl, Williamsfield, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1981, Ser. No. 291,560

Int. Cl.³ H01R *4/28*

U.S. Cl. 339—44 R **3 Claims**



3. A junction box and connector arrangement comprising,

a junction box of one-piece construction molded from a thermoplastic material,

said junction box comprising a box-like body having a side wall and a bottom wall and a flap integrally hinged to the side wall adjacent the bottom wall so that the flap pivots from an open position to a closed position covering an exterior portion of the bottom wall,

said bottom wall having a shallow slot extending from the side wall to an opposite side wall to receive the flap in a closed position and an aperture extending therethrough which comprises a recess in the exterior portion of the bottom wall which opens into the shallow slot and a hole in the interior portion of the bottom wall,

a connector comprising a stud having a head disposed in the recess and a shank extending through the hole into the interior of the box-like body,

said head and said recess being complementarily shaped so that said stud does not rotate with respect to the box-like body,

said flapp covering the head of the stud in the closed position to retain the stud and insulate the stud when the junction box is attached to a conductive panel, and

said junction box further comprising a cover integrally hinged to the opposite side wall so that the cover pivots to a position closing an open end of the box-like body which is opposite the bottom wall.

4,410,227

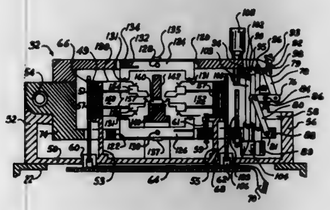
TRI-STATE CONTACTOR ASSEMBLY FOR ELECTRONIC DEVICE PACKAGE TEST HANDLER

Wallace R. Prunella, Sunnyvale, and Art W. Kordes, Los Altos, both of Calif., assignors to Trigon Industries, Inc., Mountain View, Calif.

Filed May 8, 1981, Ser. No. 262,945

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—75 M **10 Claims**



1. A tri-state contactor assembly for making electrical contact to electrical conductors disposed along an edge of an electronic circuit device, comprising:

means forming a base;

first head means including first contact pin means extending a first predetermined distance from a first side thereof and means disposed proximate said first pin means and forming a first stop surface extending away from said first side a second predetermined distance greater than said first predetermined distance;

second head means including second contact pin means extending from a second side thereof;

means for transporting a circuit device to be tested along a predetermined path to a test position;

means affixed to said base means for holding said first head means and said second head means in spaced apart relationship above and below said path respectively, with said first side facing said second side and said first pin means aligned with said second pin means; and

actuator means for causing said first head means and said second head means to move from first state positions of maximum relative separation clear of said path to second state positions of intermediate relative separation wherein said first stop surface extends into said path to engage a circuit device moving along said path and cause said device to stop in said test position, and thence to move to third state positions wherein said first and second pin means are caused to engage the conductors of the device disposed in said test position.

4,410,228

SPRING-LOADED TERMINAL ASSEMBLY

Brian D. Stephenson, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 27, 1981, Ser. No. 286,749

Int. Cl.³ H01R *11/22*

U.S. Cl. 339—95 D **5 Claims**

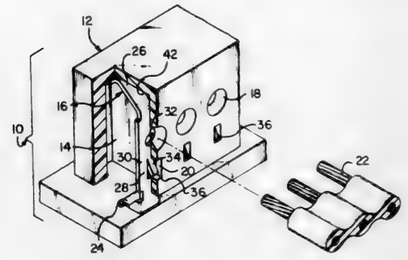
1. A spring-loaded terminal assembly comprising:

a housing of rigid insulative material defining at least one profiled cavity therein, a like number of conductor-receiving apertures each extending through said housing into a respective one of said cavities; and a terminal in each said cavity, each said terminal being an elongated stamped and formed metal member having

a body portion with a pair of integral transverse flanges and a conductor-receiving aperture extending through said body portion axially alignable with said housing aperture;

a mounting tail extending from one end of said body portion beyond said profiled cavity; and

an integral resilient extension extending from the other end of said body portion and bent out of the plane defined by said body portion, said extension maintaining said housing and terminal apertures in a normally unaligned orientation so that the resilient force of said resilient extension must be overcome to axially align said apertures and allow a conductor to be inserted therein, said resilient extension re-



turning said apertures into said axially unaligned orientation thereby pinching said conductor between said housing aperture and said terminal aperture.

4,410,229

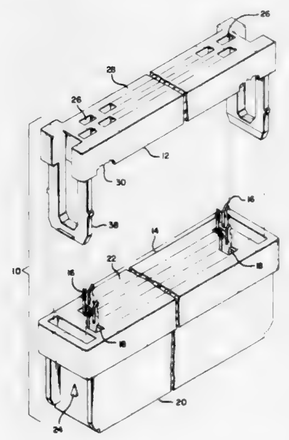
LATCHING MEANS IN MULTICONTACT CONNECTOR AND CONTACT TERMINAL FOR FLAT CABLE

Brian D. Stephenson, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 177,325, Aug. 12, 1980, abandoned. This application Sep. 1, 1982, Ser. No. 413,959

Int. Cl.³ H01R *11/20*

U.S. Cl. 339—98 **6 Claims**



1. An improved multicontact electrical connector for terminating flat multiconductor cable and having a base of insulating material with a plurality of terminal passages extending between a cable receiving surface and a mating face, an electrical terminal mounted in each of said terminal passages, each of said terminals having a wire receiving slot defined by a pair of insulation piercing spaced-apart arms, said arms extending normally beyond said cable receiving surface of said base, and a cover to be mated to said base against said cable receiving surface, said cover having terminal receiving passages extending therethrough aligned to accept said arms of said terminals, wherein the improvement comprises interengaging means including:

an ear on each of said arms directed normally from a plane defined by said arms, said ears located intermediate the free end of said arms and the bottom of said wire receiving

slot, said ears each having a shoulder directed toward said bottom of said wire receiving slot;

a shelf in each of said terminal receiving passages in the cover extending parallel to said cable receiving surface of said base, said shelf engagable by said shoulders of said ears to latchingly secure said cover to said base whereby, movement of said arms in relation to each other causing a narrowing of said wire receiving slot during mating of said cover to said base is eliminated.

4,410,230

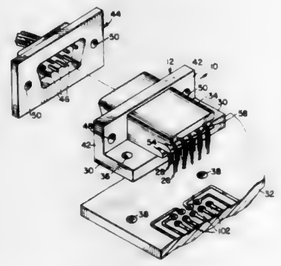
CONNECTOR BLOCK

Alfonso J. SanMiguel, Irvine, Calif., assignor to Holmberg Electronics Corporation, Inman, S.C.

Continuation of Ser. No. 298,453, Sep. 2, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 475,467

Int. Cl.³ H01R *23/70*

U.S. Cl. 339—176 M **25 Claims**



1. A connector block including a body formed of insulating material and adapted to be mounted on a surface, the body having a row of terminal confining cavities having ends opening on one side of the body; and a series of terminals formed from strip metal stock, each terminal including a cavity portion fitted within a cavity in the row of cavities to secure the terminal in the body, a contact joining the cavity portion for forming an electrical connection with a circuit element, and a terminal tail extending from the cavity portion outwardly of the opening in the cavity, the terminal tail including a solder contact on the free end thereof adapted to be soldered to a circuit element on the surface wherein the improvement comprises each terminal including a bottom wall, upstanding side walls running from the cavity portion to the solder contact and extending away from the bottom wall in the same direction to define a shallow channel shape in transverse cross section and a smooth bend in the tail between the cavity portion and the solder contact, the side walls projecting radially outwardly of the bottom wall at the bend whereby the terminal tails rigidly locate the solder contacts with respect to the body to facilitate positioning the solder contacts in a desired pattern for engagement with the circuit elements on the surface.

4,410,231

INTEGRATED CIRCUIT MOUNTING SOCKET

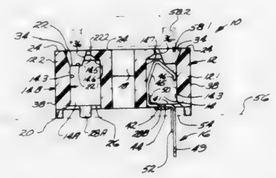
Ronald E. Senor, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1981, Ser. No. 300,077

Int. Cl.³ H01R *13/405*

U.S. Cl. 339—218 M **9 Claims**

1. A connector for mounting integrated circuit units on a printed circuit board comprising a body of deformable electrically insulating material having a plurality of recesses arranged in a line therein and a plurality of electrically conductive metal spring contact members mounted in the respective recesses, said body having said recesses open at one end at a bottom of the body, having steps formed in the recesses at opposite sides of the open recess ends facing outwardly from the recesses, and having terminal entry apertures opening into the opposite ends of recesses through a top of the body, said contact members each having a base part resting on the steps in a respective recess, having a single beam spring part extending up into the recess from one end of the base to loop over the base to resiliently dispose a distal end of the spring part at a selected recess location, and having a post part extending down out of the open recess end from the opposite end of the base part, said body having deformed portions securing the contact members in said recesses, characterized in that the connector body has tower portions formed therein so that respective tower portions extend from the bottom of the body between each pair of said recesses and from each end of said line of recesses adjacent



the open recess ends, said tower portions being tapered to extend into the recesses to intercept said recess steps, the base parts of the contact members each having a wing extending from each side thereof and having an arcuate shape formed in the distal end of each wing, said arcuate wing ends being fitted against respective steps in said recesses around respective tower portions intercepting said steps for precisely locating the contact members in said recesses with the distal ends of said contact spring beam parts each resiliently disposed at said selected locations for engaging another means with a selected force, and said tower portions of the body being deformed over said wing portions of the base part for securing the contact members in said positions in the recesses.

4,410,232

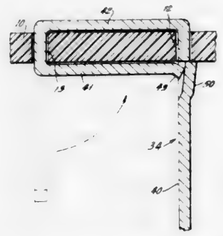
TERMINAL STAKING ARTICLE AND PROCESS

Phillip J. Murray, Southampton, Pa., assignor to Continental-Wirt Electronics Corp., Southampton, Pa.

Filed Jan. 4, 1982, Ser. No. 336,626

Int. Cl.³ H01R *9/16*

U.S. Cl. 339—220 R **10 Claims**



1. An assembled conductive terminal and an insulation board support therefor; said insulation board support comprising a thin board having at least first and second spaced, parallel slots therethrough and first and second parallel surfaces; said conductive terminal comprising a thin, elongated strap of conductive material having a width substantially greater than its thickness; said strap having a first portion extending through said first slot and extending away from said first surface of said board and being connectable to an external electrical circuit; said first portion of said strap having a frangible region immediately adjacent said first surface; said frangible region being more easily laterally distorted than regions removed from said frangible region; said strap having a second portion which is continuous with said first portion and which is bent to overlie said second surface between said first and second slots; said strap having a third portion which is continuous with said second portion and which extends through said second slot and is bent to overlie said first surface between said first and second slots; said third portion having a free end which engages said first portion of said strap at its said frangible region and which presses said frangible region laterally beyond the edge of said first slot, thereby to firmly secure said conductive terminal to said insulation board.

4,410,233

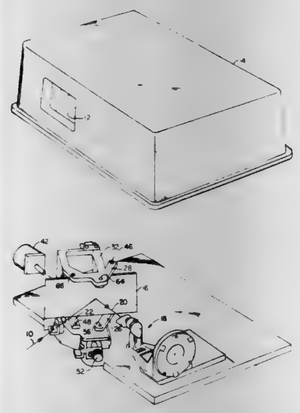
UNEQUAL FOUR-BAR LINKAGE SCAN MIRROR ASSEMBLY

Leslie H. Gerhardt, Acton, and Richard P. Mitrano, Tewksbury, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed May 7, 1981, Ser. No. 260,670

Int. Cl.³ G02B *7/18, 27/14*

U.S. Cl. 350—6.6 **16 Claims**



1. In a system coupled to receive energy through an aperture and for reflecting said energy to receiving optics, apparatus for minimizing the size of said aperture while maintaining a relatively wide field of view of said energy, said apparatus comprising:

A. a base, said base including fixed first and second pivot points;

B. a mirror;

C. means for mounting said mirror, said means for mounting including third and fourth pivot points;

D. a first link coupled between said first and third pivot points;

E. a second link coupled between said second and fourth pivot points;

F. said first, second, third and fourth pivot points arranged so that said mirror may be pivoted about displaced and substantially parallel axes; and

G. means, coupled to either said first link or said second link, for enabling the simultaneous rotation and translation of said mirror in an arc with a nonconstant radius so that the total movement of said mirror provides a total field of view of said energy which is wide relative to the size of said aperture.

4,410,234

TIMING PULSE GENERATOR FOR SCANNING APPARATUS

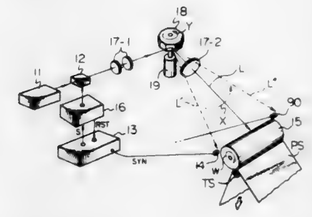
Tomohisa Mikami, Kawasaki; Fumitaka Abe, Inagi; Fumio Sakurai, and Tadashi Matsuda, both of Yokohama, all of Japan, assignors to Fumitsu Limited, Kanagawa, Japan

Filed Apr. 7, 1980, Ser. No. 138,110

Claims priority, application Japan, Apr. 10, 1979, 54-43275

Int. Cl.³ G02B *27/17*

U.S. Cl. 350—6.8 **19 Claims**



1. A timing pulse generator for a light scanning apparatus having a character generator receiving timing pulses, a light modulator controlled by the character generator and a constant velocity rotating mirror and for producing timing pulses, the period of which is variable, said timing pulse generator comprising:

first means for generating a plurality of reference pulse trains which have the same frequency as each other, but different phases from each other;

second means for storing distortion control data which specify a variable period of each two successive pulses of the timing pulses to be produced and which compensates for scanning distortion produced by the rotating mirror;

third means for sequentially selecting one of the pulses among the pulses of said reference pulse trains, in accordance with said distortion control data every time each of said timing pulses is produced; and

gate means being introduced at the output of said third means, said gate means masking the pulses of the reference pulse trains other than the pulse to be selected, in accordance with the distortion control data to be stored in said second means, and the selected pulses forming the timing pulses received by the character generator, whereby the distortion produced by the rotating mirror is corrected.

4,410,235

DEVICE FOR PRODUCING A MOVING LIGHT BEAM

Ekkehard Klement, and Gerhard Schiffner, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 7, 1980, Ser. No. 176,027

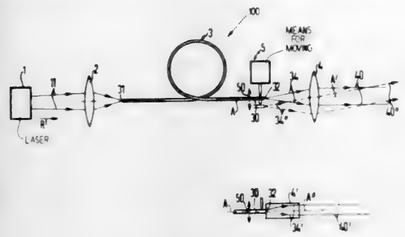
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936463

Int. Cl.³ G02B *5/14*

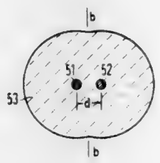
U.S. Cl. 350—96.18 **21 Claims**

15. A device for receiving a light beam and retransmitting specific portions of the light beam in a reemitted beam which can be moved in space, said device comprising a light waveguide having an inlet surface at one end and an outlet surface at the opposite end, means for coupling a beam of light into the inlet surface, means for uncoupling the re-emitted beam emerging from the outlet surface and means for moving the end portion of the light waveguide adjacent the outlet surface to change the direction of the re-emitted light beam, said means

for uncoupliing being a gradient lens, said gradient lens being permanently connected to the outlet surface of the light waveguide so that the gradient lens moves with the end portion of the light waveguide.



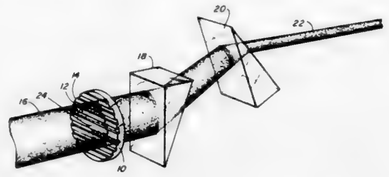
4,410,236
OPTICAL DIRECTIONAL COUPLER AND METHOD OF MANUFACTURE
Gerhard Schiffner, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Division of Ser. No. 2,615, Jan. 11, 1979, Pat. No. 4,259,016.
This application Feb. 2, 1981, Ser. No. 230,430
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804103
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.33 **5 Claims**



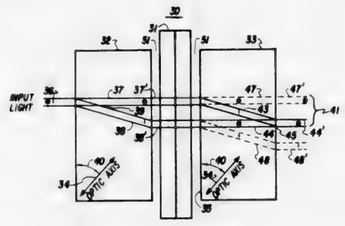
1. In an optical monomode directional coupler having two light waveguides extending next to one another and being spaced so slightly from each other to enable light to be coupled over between them line-wise, the improvement comprising the monomode directional coupler comprising a pair of monomode cores of an optical fiber surrounded by a common jacket, said pair of cores and common jacket being simultaneously drawn from a double crucible.

4,410,237
METHOD AND APPARATUS FOR SHAPING ELECTROMAGNETIC BEAMS
Wilfrid B. Veldkamp, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Sep. 26, 1980, Ser. No. 191,006
Int. Cl.³ G02B *5/18*
U.S. Cl. 350—320 **15 Claims**

1. A method of shaping the intensity profile of a beam of electromagnetic waves comprising:
positioning a diffraction grating having a centrally symmetric grating pattern in the optical path of the beam, the grating pattern itself having a generally central phase reversal transverse to the axis of the beam.



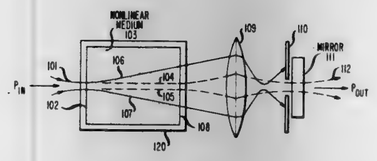
4,410,238
OPTICAL SWITCH ATTENUATOR
Eric G. Hanson, Burlingame, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Sep. 3, 1981, Ser. No. 298,986
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—347 E **2 Claims**



1. An apparatus for selectively attenuating the power of an unpolarized input light beam, the apparatus comprising:
a first transmission medium of birefringent calcite for receiving the input light beam and for splitting said input light beam into ordinary and extraordinary beams having orthogonal polarizations;
a liquid crystal cell having a first surface adjacent to said first transmission medium for receiving said ordinary and extraordinary beams and for selectively rotating the polarization of a portion of each of said beams by 90 degrees; and,
a second transmission medium of birefringent calcite adjacent to a second surface of the liquid crystal cell, said second transmission medium being operative for receiving the rotated ordinary and extraordinary beams and for splitting said rotated ordinary beam into first and second beams having orthogonal polarizations and for splitting said rotated extraordinary beam into third and fourth beams having orthogonal polarizations such that an unpolarized output light beam is formed from a combination of the second and third beams and the power of said output light beam is variable from substantially zero to substantially the power of the input light beam.

2. A method for selectively attenuating the power of an unpolarized input light beam, the method comprising the steps of:
displacing the input light beam in a calcite slab to form ordinary and extraordinary light beams;
receiving said ordinary and extraordinary light beams in a liquid crystal cell and rotating therein a selected portion of the ordinary and extraordinary light beams by 90 degrees;
splitting said ordinary light beam in another calcite slab to form first and second beams having orthogonal polarizations;
splitting said extraordinary light beam in the other calcite slab to form third and fourth beams having orthogonal polarizations;
combining said second and third beams into an unpolarized output light beam;
selecting the portion of the ordinary and extraordinary light beams which are rotated such that a ratio of the power of the output light beam to the power of the input light beam is variable from substantially zero to substantially unity.

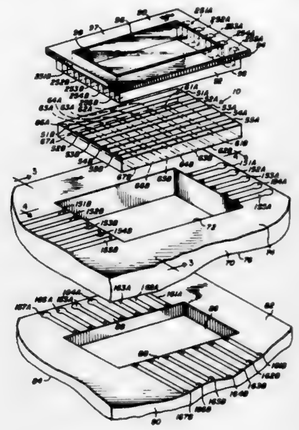
4,410,239
NONLINEAR OPTICAL DEVICE USING SELF-TRAPPING OF LIGHT
Alexander E. Kaplan, Cambridge, Mass.; John E. Bjorkholm, Holmdel, N.J.; Peter W. Smith, Colts Neck, N.J., and Walter J. Tomlinson, III, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Apr. 17, 1981, Ser. No. 255,291
Int. Cl.³ G02F *1/35*
U.S. Cl. 350—354 **5 Claims**



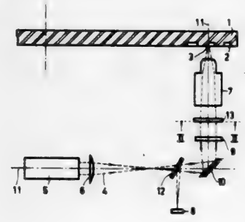
1. A nonlinear bistable optical device for use with an input light beam having a nonuniform spatial profile comprising a nonlinear medium (103) having an input face (102) and an output face (108), said nonlinear medium having an index of refraction that increases with increasing light intensity, and means (109, 110 and 111) including a reflective central aperture positioned at the output face of said nonlinear medium for reflecting light back into the medium only from a limited central area of said output face.

4,410,240
MOUNTING STRUCTURE FOR ELECTRO-OPTIC CHARACTER ELEMENTS
John W. Medernach, Albuquerque, N. Mex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 13, 1981, Ser. No. 282,479
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—356 **3 Claims**

1. An optical display mounting structure comprising:
an electrically insulative first substrate having upper and lower opposed surfaces and at least one cavity situated therein, said cavity being shaped to receive a display character element therein;
at least one display character element having upper and lower opposed surfaces and electrodes situated on said upper and lower opposed surfaces thereof, said element being situated in said cavity;
an electrically insulative second substrate having upper and lower surfaces and at least one opening, the upper surface of said second substrate facing the lower surface of said first substrate, said opening of said second substrate being substantially aligned with a respective cavity of said first substrate and forming a lip therewith;
first electrode elements situated on the upper surface of said first substrate;
interconnection means for electrically coupling the electrodes on the upper surface of said character element to said first electrode elements, and
second electrode elements situated on the upper surface of said second substrate, said second electrode elements extending onto said lip so as to contact and electrically couple to the electrodes on the lower surface of said character elements.



4,410,241
DEVICE FOR PROCESSING OPTICAL INFORMATION AND METHOD OF MANUFACTURING A COMA CORRECTION PLATE USED IN SUCH A DEVICE
Hendrik de Lang, Heeze, and Gijsbertus Bouwhuis, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 27, 1980, Ser. No. 200,712
Claims priority, application Netherlands, Aug. 29, 1980, 8004892
Int. Cl.³ G02B *27/00*
U.S. Cl. 350—409 **6 Claims**



1. A device for processing optical information comprising a system of optical elements arranged along an optical main axis for guiding a light beam to a radiation-sensitive detector and means for correcting for coma produced by said system, said correcting means including two dielectric layers arranged along said main axis and extending perpendicularly thereto, each dielectric layer having a thickness Z which is constant in a first direction extending perpendicularly from sadi main axis and which varies in a second direction, η, which is perpendicular to said first direction, in accordance with the function:

$$Z = a\,\eta^3$$

where $\eta = 0$ is situated on the optical main axis and where a is a constant which depends on the value of coma W_{31} to be compensated for and on the refractive index n of the material of the dielectric layer, such that:

$$a = \frac{4}{3\sqrt{3}} \cdot \frac{W_{31}}{(n-1)}$$

said dielectric layers being oriented so that said first directions on the respective layers are inclined with respect to each other at an angle of approximately 60°.

4,410,242

HIGH-PRECISION OPHTHALMOMETER WHICH IS INDEPENDENT OF DISTANCE

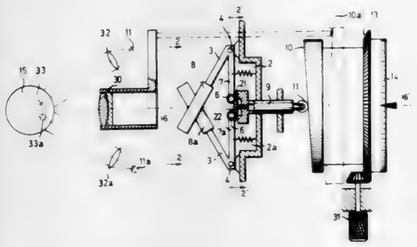
Ortwin Muller, Aalen; Kurt Schulz, and Viktor Stopar, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Jan. 12, 1981, Ser. No. 224,033

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1980, 3000995

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—211 **6 Claims**



1. An ophthalmometer with viewing means on an axis of viewing symmetry for radial orientation with respect to a cornea to be evaluated, said ophthalmometer having two mark-projection systems on axes symmetrically offset from and on opposite sides of the axis of viewing symmetry and adapted for radial orientation with respect to the cornea, said viewing means including two flat glass plates in lateral adjacency and pivotally mounted on spaced parallel axes for swing in equal and opposite angular directions from a plane normal to said axis of viewing symmetry, and means including a single cam for selectively varying the magnitude of equal and opposite angular swing with respect to said plane, said last-mentioned means comprising an intermediate follower block, a separate follower arm rigid to each glass plate and positioned to track follower-block movement, and spring means reacting between said plates at such offset from their respective pivot axes as to (1) resiliently load the pivoted support of said plates against radial play and (2) to apply follower-loading torque to both follower arms to thereby preload said block for continuous tracking of said cam.

4,410,243

ARRANGEMENT FOR TEST IMAGE ROTATION IN REFRACTOMETERS

Dietmar Fürste, 3, Carl-Zeiss-Platz, Jena, German Democratic Rep.

Filed Jul. 14, 1980, Ser. No. 163,269

Claims priority, application German Democratic Rep., Jul. 24, 1979, 214565

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—211 **5 Claims**

1. An arrangement for test image rotation in refractometers employing Scheiner apertures, comprising subsequently and in optical alignment

a light source for emitting a bundle of light,

a collector lens for paralleling said bundle of light,

a first rotatable mount being provided with a central opening coaxially in and relative to said bundle of light,

a transparent member substantially at right angles to said bundle of light,

a test marking,

two optical wedges adjacently arranged to and in a plane parallel to a plane defined by the transparent member and having the refracting edges in mutual opposition,

said transparent member covering said central opening of said first mount,

said test marking being attached to said transparent member,

said two optical wedges splitting said bundle of parallel light into two partial bundles of light,

and further comprising in optical alignment,

a second rotatable mount being provided with a central opening,

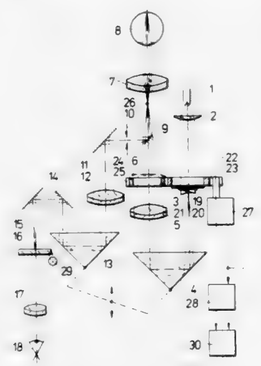
a Scheiner aperture being coaxially arranged in said central opening of said second rotatable mount,

said first and said second rotatable mount being arranged in said plane and being provided with an external toothed rim each, and mutually meshing via the toothed rims,

a first prism,

a second prism,

said first prism and said second prism being connected to



each other via mechanical means for simultaneous displacement by equal amounts,

said first prism being arranged in said two partial bundles of light subsequent to said two wedges for deviating said partial bundles substantially about 180°,

a first objective lens being arranged between said first prism and said second rotatable mount in said two partial bundles of light for imaging the latter from said first prism into the two openings of said Scheiner aperture, and ophthalmoscope lens subsequently to said Scheiner aperture and a patient's eye,

both being subsequently arranged in said two partial bundles of light,

said ophthalmoscope lens having a focal point,

said first objective lens producing an intermediate image of said test marking substantially in the focal point of said ophthalmoscope lens,

said ophthalmoscope lens imaging said test marking upon the retina of the patient's eye for producing a retina test marking image,

a semi-transparent reflector,

a first reflector,

a second objective lens,

said semi-transparent reflector being transparent to and inclinedly inserted into the two partial bundles of light between said Scheiner apertures and said ophthalmoscope lens and reflective to the retina test marking image bundle of light,

said semi-transparent reflector directing said retina test marking image bundle of light substantially at right angles to said two partial bundles of light from said ophthalmoscope lens to said second objective lens,

said first reflector being inclinedly inserted into said retina test marking image bundle of light and directing the latter substantially in parallel and spaced relation to said two partial bundles of light from said semi-transparent reflector to said second objective lens,

said second objective lens being arranged in said retina test marking image bundle of light between said first reflector and said second prism,

a second reflector following said second objective lens,

a third reflector,

a graduated plate,

an eyepiece,

said second reflector, said third reflector, said graduated plate and said eyepiece being subsequently arranged in said retina test marking image bundle of light,

said second prism being for directing and folding said retina test marking image bundle of light from said second objective lens to said second reflector,

said second and said third reflector being inclinedly arranged in and relative to said retina test marking image bundle of light for folding the latter by substantially 180°,

said graduated plate being for indicating said retina test marking image,

said eyepiece being for observation of said graduated plate.

4,410,244

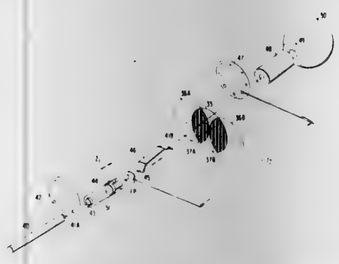
RETINAL ACUITY TESTING DEVICE

Paul W. Remijan, Southbridge, Mass., assignor to Randwal Instrument Co., Inc., Southbridge, Mass.

Division of Ser. No. 863,948, Dec. 23, 1977, Pat. No. 4,265,534. This application Mar. 3, 1981, Ser. No. 240,200

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—211 **10 Claims**



1. Opthalmic apparatus for producing an interference pattern on the retina of an eye, said apparatus comprising;

A. interference pattern generating means for generating a first diffraction and a second diffraction that are of different order, that have equal strength and that overlap thereby to produce a high-contrast, low-noise interference pattern in the area of overlap, and

B. focusing means positioned to receive the interference pattern from said interference pattern generating means for projecting the interference pattern onto the retina from only two point sources of light in the eye pupil.

4,410,245

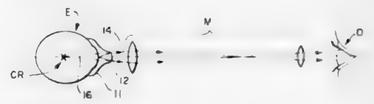
IMAGE STABILIZATION METHOD, AND APPARATUS

Charles J. Koester, 60 Kent Rd., Glen Rock, N.J. 07452

Continuation-in-part of Ser. No. 42,085, May 24, 1979, Pat. No. 4,241,257, which is a division of Ser. No. 902,277, May 3, 1978, Pat. No. 4,170,398. This application Apr. 14, 1980, Ser. No. 139,669

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—219 **31 Claims**



8. An optical system for viewing a region or plane within or on a rotating object, said optical system being adapted to move precisely with the object, and whereby said optical system is adapted to provide a virtual image of said region or plane at the center of rotation of the object, in order to reduce the effects of rotational motion or jitter on the image of said region or plane.

4,410,246

SYSTEM AND MECHANISM OF FEEDING, TRACTION, SHUTTERING AND FILM ADJUSTMENT IN PROGRAMMABLE AUDIOVISUAL APPARATUS, WITH RAPID FRAME CHANGE

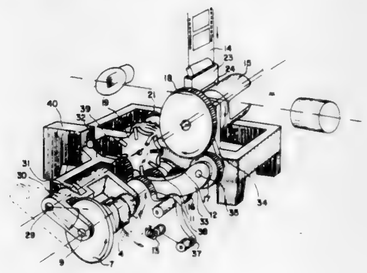
Elio D. Castanho, Jr., 510 Ademar de Barros Ave., Sao Jose dos Campos, Sao Paulo, Brazil

Filed Aug. 18, 1981, Ser. No. 293,955

Claims priority, application Brazil, Aug. 20, 1980, 8005253

Int. Cl.³ G03B *21/38*

U.S. Cl. 352—169 **6 Claims**



1. Audiovisual apparatus including film having a plurality of successive film frames and shutter means having a shutter frame, said film and shutter frames being situatable along a common optical axis for projection, comprising:

a shaft mounted for rotation;

a pulley mounted on said shaft for free rotation with respect thereto, said pulley being adapted for continuous rotation on said shaft;

clutch means fixed to said shaft for rotation therewith;

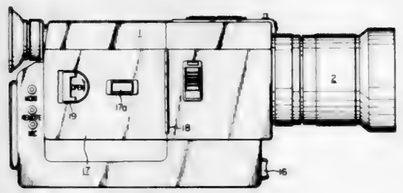
selectively actuatable ratchet means for coupling said clutch means when actuated to said continuously rotating pulley to rotate said shaft through only a single revolution;

a solenoid coupled to said ratchet means for actuating the same upon receiving a pulse signal whereby said shaft rotates to a single revolution;

said shutter means being mounted for rotation with respect to an axis to move said shutter frame between a projecting position in which said shutter frame is optically aligned with said optical axis for projection of said single film frame and an obstructing position wherein the shutter

frame is out of alignment with with the optical axis so as to optically block projection of a film frame;
shutter rotating means coupled to said shaft for rotating said shutter means from a projecting position through obstructing positions and then to a projecting position upon rotation of said shaft through a single revolution; and
means for advancing said film coupled to said shaft by coupling means such that for each rotation of said shaft, said film is advanced a distance corresponding to a single film frame in a manner such that advancement of said film occurs only after said shutter means has obtained said obstructing position.

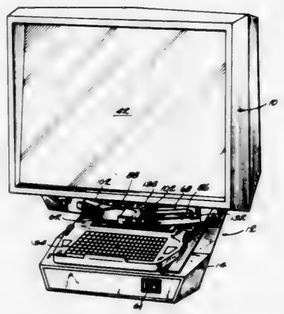
4,410,247
MOTION PICTURE CAMERA
Noritsugu Hirata, Yokohama, and Hiroyuki Takimoto, Urawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 929,240, Jul. 21, 1978, Pat. No. 4,365,875. This application Aug. 24, 1981, Ser. No. 295,422
Claims priority, application Japan, Aug. 12, 1977, 52-97294; Aug. 23, 1977, 52-101259; Aug. 23, 1977, 52-101262
Int. Cl.³ G03B *1/00*
U.S. Cl. 352—91 S **2 Claims**



1. A motion picture camera comprising:
(a) a power source;
(b) a first control circuit for controlling a photographic operation;
(c) power source operating means, wherein said power source applies power to said control circuit in response to the operation of said power source operating means;
(d) adjusting means for adjusting the quantity of light striking the film surface, said adjusting means decreasing the quantity of light from a normal level or returning the quantity of light to the normal level;
(e) operating means for operating said adjusting means;
(f) signal forming means for forming a power connection signal when power is applied to said control circuit; and
(g) a second control circuit responsive only to the power connection signal to operate said adjusting means, independently of the operation of said operating means for said adjusting means, to return the quantity of light to the normal level when the quantity of light adjusted by said adjusting means has been decreased below the normal level.

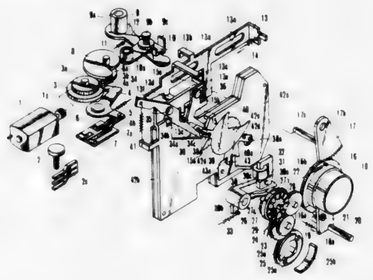
4,410,248
OPTICAL AND FOCUSING ARRANGEMENT FOR MICROFICHE READER
George H. Schaefer, Wauwatosa, and Stephen P. Hirsch, North Prairie, both of Wis., assignors to Realist, Inc., Menomonee Falls, Wis.
Filed Apr. 16, 1982, Ser. No. 369,097
Int. Cl.³ G03B *23/08*
U.S. Cl. 353—27 R **8 Claims**

1. In a microfiche reader of the type having a housing in which a fiche carrier is mounted for movement in a horizontal plane to position a selected image in a vertical path of light projected upwardly through the fiche, the improvement comprising,
a pivot in said housing,
eccentric means mounted on said pivot,
a lens carrier pivotally mounted on said eccentric means for movement in a horizontal plane between first and second positions,
a pair of lens guides in said carrier located so a lens supported by one guide will be positioned in said light path



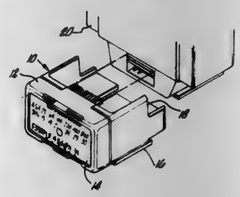
when the lens carrier is in its first position and the other guide positions a lens supported thereby in said light path when the lens carrier is in said second position,
said eccentric means between the lens carrier and said pivot permitting the effective location of the lens carrier pivot to be adjusted to center the associated lens in said light path.

4,410,249
CAMERA WITH ELECTROMAGNETICALLY OPERATED SHUTTER
Michio Hirohata, Inagi, and Hideo Ikari, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1982, Ser. No. 374,108
Int. Cl.³ G03B *7/08, 9/00*
U.S. Cl. 354—30 **5 Claims**



1. A photographic camera having an electromagnetically operated shutter, comprising:
shutter blades displaceable between a position in which the blades cover an exposure aperture by overlapping each other over the aperture and a position in which said aperture is uncovered, said shutter blades being arranged also to serve as diaphragm blades;
a sector ring arranged to carry said shutter blades and to cause the shutter blades to perform opening and closing actions;
electromagnetic means for driving said sector ring for opening said exposure aperture;
control means for controlling the supply of power to said electromagnetic means;
holding means for holding said sector ring in a first position in which said shutter blades deeply overlap each other and in a second position in which the shutter blades shallowly overlap each other;
locking means for locking said holding means in said first position and in said second position; and
driving means for closing said exposure aperture.

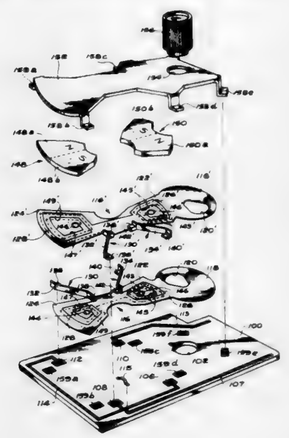
4,410,250
FLASH ADAPATER AND SYSTEM
Kenneth J. Curran, Thousand Oaks, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.
Filed Apr. 3, 1981, Ser. No. 250,684
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—33 **18 Claims**



1. An adapter for use with an automatic electronic flash unit and a camera wherein the flash unit is of the type that includes flash means for providing a light flash, control means for controlling the duration of the light flash in accordance with light normally received by a light sensor of the flash unit or camera, and trigger means for providing a flash unit ready signal and for responding to a synchronizing signal to start the light flash by the flash means, and wherein the camera includes first means for controlling shutter speed and providing an indication to the camera operator in response to a ready indication signal and second means for providing a synchronizing signal substantially synchronized with shutter release, the adapter comprising
housing means physically and electrically connectable between a flash unit and a camera, the housing means including
(a) first electrical terminal means for coupling the flash unit ready signal to the adapter,
(b) adaptive circuit means in the housing responsive to the flash unit ready signal for generating the ready indication signal,
(c) second electrical terminal means for coupling the ready indication signal to the camera,
light sensor circuit means for providing a light signal to the adaptive circuit means indicative of the light received by the subject being photographed, said adaptive circuit means generating a quench signal and varying the ready indication signal at least in part in response to the light signal, and
the first means being additionally for coupling the quench signal to control means of the flash unit for terminating the light flash.

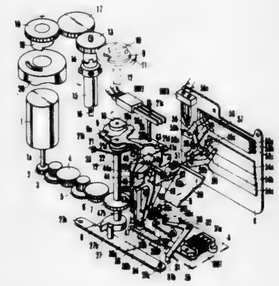
4,410,251
INTEGRATED ELECTROMECHANICAL CAMERA CONTROL MECHANISM
James K. Lee, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 219,168, Dec. 22, 1980, Pat. No. 4,333,722. This application Mar. 22, 1982, Ser. No. 360,491
Int. Cl.³ G03B *3/10, 7/087, 9/24*
U.S. Cl. 354—25 **21 Claims**

1. In combination with a photographic camera, an integrated electromechanical camera control mechanism, comprising:
a mechanism plate comprising ferromagnetic material having an electrically insulating coating;
electrical conductor means printed on said insulating coating;
a flat magnet mounted over said mechanism plate to form a planar magnetic gap therewith, said mechanism plate providing a flux return path for said magnet;



electrical components comprising an electrical control circuit mounted on said mechanism plate;
a planar armature located in said magnetic gap and electrically connected to said control circuit by said printed electrical conductors.

4,410,252
SINGLE LENS REFLEX CAMERA
Ryoichi Yoshikawa, Yokohama; Yoshihiro Shigeta, Tokyo; Masanori Uchidoi, Yokohama; Yoichi Tosaka, Shakujii, and Shosuke Haraguchi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 24, 1981, Ser. No. 295,326
Claims priority, application Japan, Aug. 28, 1980, 55-118618
Int. Cl.³ G03B *1/18, 19/12*
U.S. Cl. 354—153 **5 Claims**



1. A camera comprising:
(a) a reflex mirror;
(b) locking means engaged with said reflex mirror for preventing said reflex mirror from being moved to a viewing position;
(c) film advance means;
(d) a film winding motor coupled to said film advance means for actuating the film advance means in response to a termination of an exposure of the camera; and
(e) coupling means for coupling said motor with said locking

means for releasing said locking means in response to an initiation of the movement of said motor.

4,410,253

CAMERA HAVING LENS PROTECTION COVER

Takayuki Tsuboi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1982, Ser. No. 381,001
Claims priority, application Japan, May 28, 1981, 56-81697; May 28, 1981, 56-81698
Int. Cl.³ G03B *3/10, 17/00*
U.S. Cl. 354—195 **19 Claims**



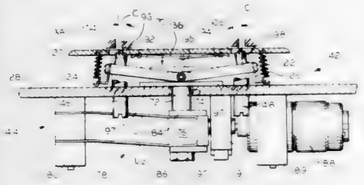
1. A camera having a photographic objective lens and a protection cover capable of shuttering off the front of at least said photographic objective lens, comprising:
(a) actuating means for controlling the opening and closing operation of said protection cover;
(b) electric motor means arranged upon movement of said actuating means in a first direction to be energized for a predetermined time;
(c) driving means for opening and closing said protection cover, said driving means operating as the driving torque of said electric motor means is transmitted thereto; and
(d) latching means arranged to latch said driving means when motion of said driving means by said electric motor means reaches a terminal end, said latching means being responsive to movement of said actuating means in a second direction releasing said latching connection.

4,410,254

PIN REGISTRATION BACK FOR FILM STRIP CAMERA

Howard A. Niemuth, and Herbert D. Bredehorn, both of Chicago, Ill., assignors to Uniquip Manufacturing, Inc., Chicago, Ill.

Filed Jan. 22, 1982, Ser. No. 341,833
Int. Cl.³ G03B *17/00*
U.S. Cl. 354—203 **11 Claims**



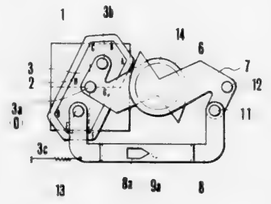
1. A device for positioning a film strip having a row of sprocket holes extending along each of its two opposite sides, said device comprising a chassis having a plurality of back position indexing means for cooperating with indexing means formed on a camera body to insure precise alignment with respect to a rectangular format area of said camera body by said chassis table means supported by said chassis for movement between film engaged and disengaged positions, means on said tables for snagging four of said sprocket holes near the four corners of said rectangular format area and motor device means for pulling said film taut and pressing said taut film into the focal plane of said camera.

4,410,255

ELECTROMAGNETIC DRIVE DEVICE FOR ELECTRO-MAGNETICALLY OPERATED SHUTTER

Michio Hirohata, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,503
Claims priority, application Japan, Nov. 18, 1980, 55-162150
Int. Cl.³ G03B *9/24*
U.S. Cl. 354—230 **5 Claims**



1. An electromagnetic drive device for a programmed electromagnetic shutter arranged to determine a shutter time and an aperture value by controlling an opening degree of blade members, said drive device comprising:
a permanent magnet to form a magnetic field, said permanent magnet forming a first magnetic field and a second magnetic field which produces magnetic flux in a reverse direction to that of magnetic flux produced at the first magnetic field;
a rotating member, which is made to effect an opening operation of said blade members corresponding to a rotation to a first direction, and at the same time to effect a closing operation of said blade members corresponding to a rotation to a second direction reverse to the first direction; and
a coil provided at said rotating member, said coil including a first part always positioned within the first magnetic field irrespective of rotation of said rotating member, a second part always positioned within the second magnetic field irrespective of the rotation of said rotating member, a third part which is connected to the first part and at the same time retreats from within the first magnetic field corresponding to the rotation of said rotating member to the first direction then is positioned outside of the magnetic field, and a fourth part which is connected to the second part and at the same time is made to enter into the second magnetic field from outside of the magnetic field corresponding to the rotation of said rotating member to the first direction, wherein the first and second parts of said coil are connected together through the third and fourth parts.

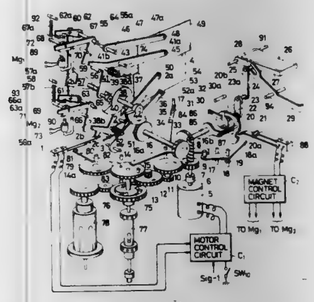
4,410,256

ELECTRIC SHUTTER DEVICE HAVING A RECIPROCATING SHUTTER CHARGING MEMBER

Akihiko Sato, Kawasaki, and Yoshiyuki Nakano, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 2, 1982, Ser. No. 364,798
Claims priority, application Japan, Apr. 10, 1981, 56/53137
Int. Cl.³ G03B *9/08*
U.S. Cl. 354—234 **5 Claims**

1. An electric shutter including a leading shutter member adapted to move from an exposing aperture closing position to an exposing aperture opening position in response to a shutter releasing operation; a trailing shutter member adapted to move from said exposing aperture opening position to said exposing aperture closing position after the start of movement of said leading shutter member; biasing means for biasing said leading and trailing shutter members toward the direction of said movement; first holding means having a position for holding said leading shutter member at said exposing aperture closing position; a first solenoid means adapted for attracting said first holding means at said holding position; second holding means having a position for holding said trailing shutter member at said exposing aperture opening position; and a second solenoid means adapted for attracting said second holding means at said holding position in order to enable an exposure of a determined duration by successive de-energization of said first and second solenoid means, wherein said improvement comprises reciprocating means adapted to accumulate the biasing force of said biasing means during the forward displacement and to perform a backward displacement in response to said shutter releasing operation; resetting means adapted to bring said first and second holding means to said holding positions in response to said forward displacement and to enable retraction of said first and second holding means from said holding positions in response to said backward displacement; and current control means adapted to energize said first and second solenoid means during a period from said shutter releasing operation to the enabling of retraction of said first and second holding means and before the start of movement of said leading and trailing shutter members.

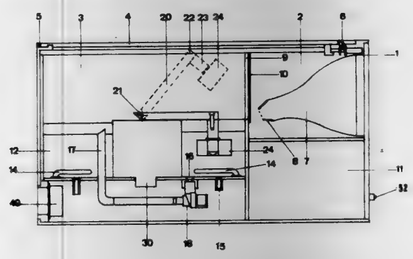


4,410,257

APPARATUS FOR DEVELOPING FILMS HAVING A PIVOTABLE ARM

Claude Thebault, Meylan, France, assignor to Kis France, Grenoble, France

Filed Mar. 26, 1982, Ser. No. 362,122
Claims priority, application France, Apr. 3, 1981, 81 06899
Int. Cl.³ G03B *3/08*
U.S. Cl. 354—308 **8 Claims**



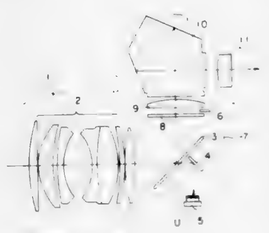
1. An automatic apparatus for the development of photographic films comprising:
a plurality of processing tanks arranged in a ring in a light-tight compartment,
a rotating base,
an arm pivoted to said base arranged in the center of the said ring formed by the tanks and having at its free end a receiving member intended to receive a spool on which the film to be developed is wound,
a push rod having a first and second end,
a horizontal cam having a ramp portion and a vertical crank pin thereon,
a Maltese cross which is loosely mounted on the vertical push rod and rigidly connected to said base, said Maltese cross having a number of equidistant arms equal to the number of processing tanks,
a motor whose vertical rotation shaft drives said horizontal cam, said first end of said push rod resting on said ramp portion, said second end resting below the movable arm in the vicinity of said base, said vertical crank pin operating to cooperate with said Maltese cross to rotate said arm in a horizontal direction, said arm being driven in a vertical direction by said push rod.

4,410,258

AUTOMATIC FOCUS DETECTING DEVICE FOR CAMERA

Harumi Aoki; Masahiro Kawasaki, both of Saitama, and Koji Suzuki, Asaka, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 6, 1981, Ser. No. 290,415
Claims priority, application Japan, Aug. 7, 1980, 55-108611; Aug. 19, 1980, 55-113063; Sep. 4, 1980, 55-121761; Oct. 9, 1980, 55-140605
Int. Cl.³ G03B *7/08*
U.S. Cl. 354—25 **18 Claims**



1. An automatic focus detecting device for a camera, said automatic focus detecting device having a light path along which light corresponding to an image of an object is transmitted and is incident, said device comprising:
lens means having an image plane for focusing said light transmitted along said light path;
at least one self-scanning type photoelectric converting device including a plurality of charge storage type microphotoelectric elements disposed in a microphotoelectric element array at a position optically corresponding to the image plane of said lens means, and scanning means for said microphotoelectric element array for detecting the state of focus of the image of the object to generate a photoelectric output of said at least one self-scanning type photoelectric converting device; and
at least one light detector for monitoring said incident light, which integrates the quantity of light incident upon said microphotoelectric element array and is provided adjacent thereto, so that a position optically corresponding to that of said photographic film surface is retained, and in the same plane as said microphotoelectric element array for storing a quantity of charge in correspondence to the quantity of incident light, said at least one self-scanning type photoelectric converting device having a charge storage time which is controlled according to the quantity of charge stored in said charge storage type photoelectric

element of said at least one light detector in correspondence to the quantity of incident light.

4,410,259

APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGE

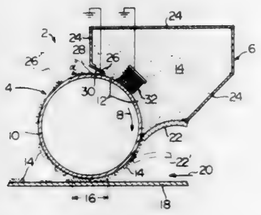
Ryutaro Yamagata, Nishinomiya; Nobuhiko Kozuka, Suita; Hitoshi Nishihama, Hirakata; Shigeo Koyama, Toyonaka, and Kazutada Sakai, Takatsuki, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Mar. 3, 1981, Ser. No. 239,950

Claims priority, application Japan, Mar. 8, 1980, 55-29629; Jun. 6, 1980, 55-77998[U]; Jun. 17, 1980, 55-83700[U]

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **36 Claims**



1. A latent electrostatic image-developing apparatus comprising a developer holding member in the form of a roller to be rotated, the rotational axial line of said roller extending substantially horizontally, and a developer receptacle containing a one-component developer, which consists only of toner particles capable of retaining an electric charge, and having an opening at that site which faces a part of the surface of said developer holding member, said apparatus being adapted to hold the developer on the surface of the developer holding member, charge the developer, carry the charged developer to a developing zone by the movement of the surface of the developer holding member and apply the charged developer to a latent electrostatic image to be developed; characterized in that the moving direction of the surface of the developer holding member, the downstream edge of the opening of the receptacle is defined by a charging member at least a part of which is formed of an elastic material and of which a free end is adapted to be pressed against the surface of the developer holding member, the upstream edge of said opening is positioned so as to approach or contact the surface of the developer holding member above said rotational axial line and downstream of the topmost part of the surface of the developer holding member, and the upstream edge of the opening of the developer receptacle is defined by the free end of a member which inclinedly extends downwardly at an angle of 10° to 50° to the horizontal line passing through the topmost part of the surface of the developer holding member and downstream in the surface moving direction of the developer holding member.

4,410,260

TONING APPARATUS AND METHOD

Manfred R. Kuehnle, New London, N.H., assignor to Coulter Systems Corporation, Bedford, Mass.

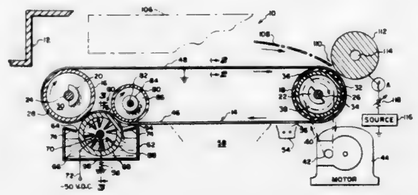
Filed Dec. 9, 1981, Ser. No. 328,809

Int. Cl.³ G03G *15/10*; G03B *27/32*

U.S. Cl. 355—10 **36 Claims**

33. In an apparatus for toning a latent image in which there is a belt having an exterior photoconductive surface moving in a loop which includes a portion of said loop extending between a pair of belt supporting rollers, said pair of rollers defining a plane tangential to both through which the belt would move if not deviated between said rollers, the belt adapted to be charged at a charging station, thereafter exposed at an exposure station to produce a latent image on the belt, the belt adapted thereafter to carry said latent image into said portion between said pair of belt supporting rollers, there being a toning station between said pair of belt supporting rollers for toning said latent image as said latent image passes between said pair of belt supporting rollers along said belt, and there being a developed image transfer station for transferring the toned image to a carrier medium,

the herein invention which comprises: said toning station including a store of toner material having a rotating toning



roller with one arcuate area engaging said toner material and a second arcuate area engaging the belt in said portion of said loop while extending through said plane and deviating the belt from said plane to follow said second arcuate area whereby toner material will be picked up from said store and transferred to said belt to develop said latent image as it passes along said second arcuate area, the toning roller rotating substantially in synchronism with said moving belt and maintaining said belt in tension between said pair of belt supporting rollers.

4,410,261

RANGE FINDING DEVICE

Makoto Masunaga, Tokyo; Kazuya Hosoe, Machida; Tokuichi Tsunekawa, Yokohama; Yukichi Niwa, Yokohama; Mitsutoshi Ohwada, Yokohama, and Noriyuki Asano, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 944,974, Sep. 22, 1978, Pat. No. 4,305,657. This application Mar. 2, 1981, Ser. No. 239,871

Claims priority, application Japan, Sep. 29, 1977, 52-117235

Int. Cl.³ G01C *3/10*; G03B *7/08*

U.S. Cl. 356—1 **14 Claims**

1. A range detecting device for detecting the range of an object, comprising:

(A) signal integration and storing type image sensing means including a plurality of sensing elements arranged to receive first and second detection images of said object and to provide an electrical image element signal for each image element of said first and second detection images;

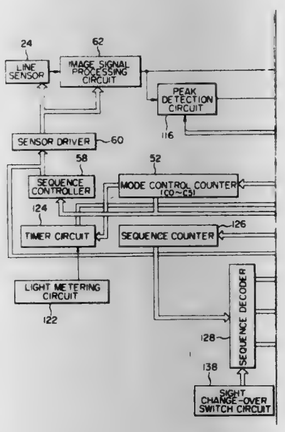
(B) circuit means for receiving the image element signals from said image sensing means and for detecting on the basis of said image element signals, the relative positional difference between M successive image elements of said first detection image and M successive image elements of said second detection image corresponding to said M successive elements of said first detection image so as to provide data on the range of the object;

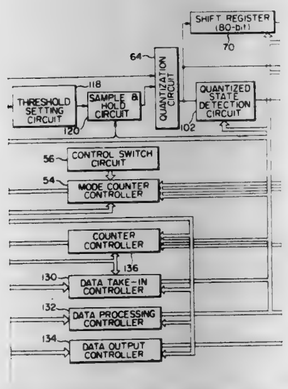
(C) driving means for driving said image sensing means, said drive means being operative to set said sensing means to a condition such that the electrical signals are discarded from said sensing means and to cause read-out of the electrical signals from said sensing means;

(D) monitor means for monitoring the integration of signals by said image sensing means as said sensing means integrates the signals, said monitor means producing a characteristic indication when the integration of the signals by said sensing means reaches a predetermined threshold; and

(E) sequence control means for controlling first, second, and third sequence modes of operation of the device, wherein said control means causes said drive means to effect the

setting of said sensing means to the discard condition during the first mode, causes said monitor means to effect the monitoring of the integration of the signals by said sensing means during the second mode which is subsequent to the first mode, and causes, in response to the





characteristic indication produced from said monitor means, said drive means to effect the read-out of the electrical signals from said sensing means during the third mode subsequent to the second mode, the read-out electrical signals being supplied to said circuit means.

4,410,262

SHEET TRANSPORTATION AND SEPARATION APPARATUS

Kenzo Ariyama, Yokohama; Akira Hirose, Tokyo, and Tadashi Itoh, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jun. 18, 1981, Ser. No. 275,125

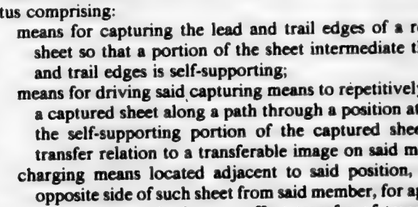
Claims priority, application Japan, Jun. 19, 1980, 55-083299; Jun. 25, 1980, 55-086082; Jun. 27, 1980, 55-087530

Int. Cl.³ G03G *15/14, 15/22*

U.S. Cl. 355—3 SH **32 Claims**

15. In an apparatus for reproducing images, including an image-bearing member adapted to carry an image on a surface thereof, said surface being adapted to move continuously in a predetermined direction, means for transporting a sheet along a path synchronously with movement of said surface to bring it into close contact with said surface, means for transferring said image born by said surface to said sheet, and means for separating said sheet after transfer of said image from said surface, the improvement comprising:

bending means including a pressure-application device having a catching portion normally located along said path and adapted to engage at least a part of the leading edge of said sheet for pivoting said pressure-application device by



further movement of said sheet along said path to thrust a second portion of said device from a normal position into a bending position engaging said sheet to bend a leading corner portion of said sheet upwardly so that it will lie away from said member, and

stripping means located adjacent said member for forcing said bent corner portion of said leading edge in a direction away from said surface.

4,410,263

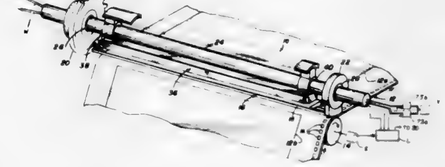
SHEET HANDLING DEVICE FOR IMAGE TRANSFER IN AN ELECTROGRAPHIC COPIER

Gary B. Gustafson, Hilton, and Garold F. Fritz, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,778

Int. Cl.³ G03G *15/00, 15/01*

U.S. Cl. 355—3 TR **15 Claims**



1. Apparatus for transferring seriatim, related transferable images from sequentially spaced image-receiving areas on a member onto a surface of a moving receiver sheet, said apparatus comprising:

means for capturing the lead and trail edges of a receiver sheet so that a portion of the sheet intermediate the lead and trail edges is self-supporting;

means for driving said capturing means to repetitively move a captured sheet along a path through a position at which the self-supporting portion of the captured sheet is in transfer relation to a transferable image on said member;

charging means located adjacent to said position, on the opposite side of such sheet from said member, for applying a charge to such sheet to effect transfer of transferable images from said member to a surface of a captured receiver sheet; and

means for synchronizing the movement of said driving means with the image-receiving areas on said member to

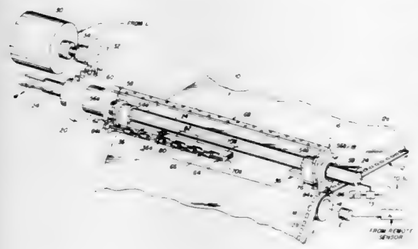
sequentially register the captured sheet with the related transferable images at said position so that such images are transferred to the receiver sheet in accurate superimposed register.

4,410,264

RECEIVER SHEET TRANSPORT WITH A GUIDING MEMBER AND ALIGNING MECHANISM

Ronald C. Holzhauser, Holley, and James A. McGlen, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1982, Ser. No. 353,780
Int. Cl.³ G03G *15/00, 15/01*
U.S. Cl. 355—3 TR **9 Claims**



1. In apparatus for transferring related transferable marking particle images seriatim, from spaced areas on a member onto a receiver sheet, such apparatus including tow means for moving a receiver sheet successively into transfer relation with the related transferable images on the member, means mounted on said tow means for attaching a receiver sheet to said tow means with a portion of such sheet intermediate the lead and trail edges being self-supporting, sheet aligning means on said tow means for engaging the lead edge of a receiver sheet to align such receiver sheet with an area on said member so that the images transferred from areas on said member are accurately registered on such sheet, and means for effecting transfer of such related images in accurate superimposed register onto the self-supporting portion of the receiver sheet when such self-supporting portion is in transfer relation with the related transferable images on the member, the improvement comprising:

a member, adjacent to said sheet aligning means, for guiding the lead edge of a receiver sheet into engagement with said sheet aligning means; and

means for mounting said guiding member and said sheet aligning means for movement to a first position at which an aligned receiver sheet is urged into clamped engagement with said attaching means by said guiding member, or to a second position at which such receiver sheet is out of clamped engagement with said attaching means, and said guiding member and sheet aligning means are remote from each receiver sheet.

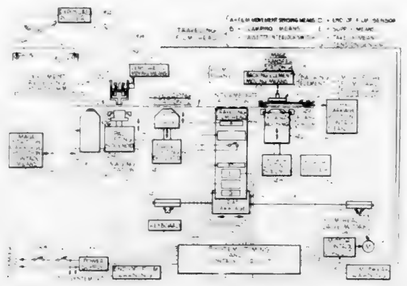
4,410,265

CASSETTE AND DRIVE SYSTEM FOR MICROFICHE RECORDING SYSTEM WITH TRAVELING FILM HEAD

Herbert C. Ovshinsky, Oak Park, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Aug. 3, 1981, Ser. No. 289,232
Int. Cl.³ G03B *27/48, 27/50, 27/70*
U.S. Cl. 355—51 **22 Claims**

1. A cassette for dispensing photographic film comprising a housing, a light sealed dispensing portion in said housing, said dispensing portion comprising filmstrip supply support means, a takeup dispensing portion in said housing, said dispensing portion having filmstrip takeup support means, a strip of film extending between said supply and takeup support means and past an imaging area exposable to an external radiant energy source, said filmstrip having film position marking means thereon, and light access means in said housing to allow light



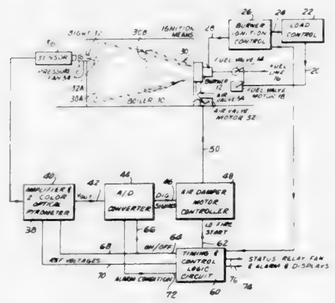
detection of said film position marking means by an external sensing means.

4,410,266

METHOD AND APPARATUS FOR COMBUSTION CONTROL AND IMPROVED OPTICAL PYROMETER RELATED THERETO

Seymour Seider, Hewlett Harbor, N.Y., assignor to BSC Industries Corp., Woodside, N.Y.

Filed Aug. 25, 1980, Ser. No. 180,609
Int. Cl.³ G01J *5/60, 3/50*
U.S. Cl. 356—45 **7 Claims**



1. Apparatus comprising combustion means including flame generating means, flame inspection means for inspecting the color of the flame, and combustion control means responsive to said flame inspection means for controlling said combustion means in accordance with the color of said flame, said combustion means includes an air source for the supply of air to said flame, said combustion control means being coupled to said air source to control air-to-fuel ratio, said flame inspection means including an optical pyrometer, said optical pyrometer being a two-color optical pyrometer adapted for inspecting the flame at different wavelengths to obtain a plurality of measurements which are used to operate said combustion control means, said optical pyrometer including a single control light-sensitive cell and two different light filters through which said cell is alternately exposed to said flame, a disc on which said filters are mounted, a motor to rotate said disc, and circuit means coupled to said cell and supplying a control signal to said combustion control means, said disc being provided with slots corresponding with said filters, said optical pyrometer further including a supplemental cell to detect said slots, said supplemental cell being coupled to said circuit means to generate synchronizing signals therein, said disc being further provided with a synchronization opening in correspondence with said slots and supplemental cell to enable distinguishing between said slots and thereby between said filters, said circuit means including a

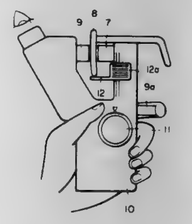
first circuit for generating separate signals corresponding to the filters and a second circuit which is an AGC circuit responsive to one of the separate signals for keeping the same constant and modifying the other of said separate signals accordingly which is processed to generate a signal corresponding to the color of said flame, said circuit means further including low pass filter means to filter said other signal and a D.C. amplifier to amplify the thusly filtered signal to generate said control signal.

4,410,267

HAND-HELD LENS METER

Osamu Shindow, Tokyo; Ikuzo Okamoto, Tamagawa; Takeshi Machida, Sakado, and Hiroshi Koyama, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,783
Claims priority, application Japan, Feb. 26, 1980, 55-23821[U]; Oct. 18, 1980, 55-148793[U]
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124 **13 Claims**



1. A hand-held lens meter comprising: a target; an objective lens; a lens rest adapted to receive a lens to be measured; a relay lens, a focusing screen and an eyepiece lens disposed along an optical axis which is folded between said objective lens and said eyepiece lens; a power-measuring dial operatively coupled to slidably move said target along said optical axis; reflecting means disposed between said lens rest and said focusing screen for reflecting light an even number of times; and a prism creating an optical path length longer than the diameter of said objective lens and having at least one light reflecting surface, said prism being disposed between said lens rest and said objective lens; and means for mounting said target objective lens, lens rest, relay lens, focusing screen, eyepiece lens, reflecting means and prism so that said lens meter can be held with the hand.

4,410,268

APPARATUS FOR AUTOMATICALLY MEASURING THE CHARACTERISTICS OF AN OPTICAL SYSTEM

Hiroshi Tamaki, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Japan

Filed Apr. 24, 1981, Ser. No. 257,271
Claims priority, application Japan, Apr. 28, 1980, 55-56581; May 29, 1980, 55-71736; Jul. 31, 1980, 55-105513; Mar. 3, 1981, 56-30222
Int. Cl.³ G01B *9/00*
U.S. Cl. 356—124 **29 Claims**

1. An apparatus for measuring optical characteristics of an optical system, said apparatus comprising: light source means for projecting a bundle of rays to said optical system; collimator means located between the light source means and the optical system for providing a parallel pencil of rays from said bundle of rays; mask means located behind the optical system for selectively passing the rays which have passed through the optical system; detecting means spaced apart from said mask means by a predetermined distance along the optical axis of said apparatus; operation means for operating on information received from said detecting means to determine the optical characteristics of the optical system; said mask means having a pattern thereon comprised of at least two nonparallel straight lines, whereby changes in the lengths and gradient angles of



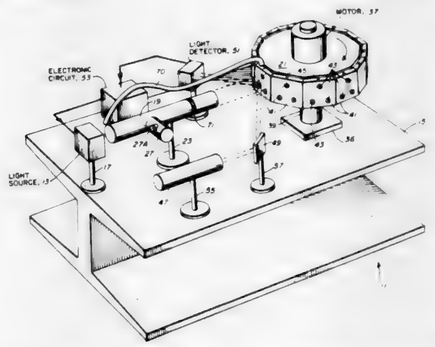
projections of the straight lines of the mask means onto the detecting means are detected to determine the optical characteristics of the optical system.

4,410,269

APPARATUS AND METHOD FOR TESTING A ROTATING POLYGON MIRROR

Edwin A. Jeffery, Natick, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Sep. 8, 1980, Ser. No. 185,239
Int. Cl.³ G01B *11/26, 11/30;* **G01P** *3/40*
U.S. Cl. 356—138 **6 Claims**



1. Apparatus for testing the angular inclination and/or flatness of the faces of a polygon mirror while said polygon mirror is rotating comprising:

a. an autocollimator positioned in optical alignment with said faces of said polygon mirror,

b. a first light source for supplying light to said autocollimator in the form of light pulses,

c. a second light source for generating a continuous beam of light in the direction of said faces of said polygon mirror,

d. a light detector along the scan line of the deflected continuous beam of light and producing an electrical pulse signal each time said deflected continuous beam of light impinges thereon,

e. a counter for counting the electrical pulse signals emitted by said light detector and generating a trigger signal for triggering said first light source when the count is equal to the number of faces on said polygon mirror,

f. a momentary contact switch for incrementing said counter so as to change occurrence of the trigger signal, and

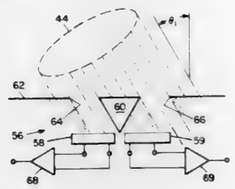
g. means for ascertaining which face of said polygon mirror is illuminated by said first light source.

4,410,270

ANGLE POSITION TRANSDUCER

Leonard Zuckerman, Dix Hills, N.Y., assignor to Litton Systems, Inc., Hauppauge, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,589
Int. Cl.³ G01B 11/26; H04N 1/04
U.S. Cl. 356—152 **6 Claims**



1. An angle position transducer for indicating the position of a light beam as that beam rotates in a locus from left to right and right to left about a point and is reflected back toward the said point, comprising:

photodetector means for indicating the degree of angular position of said light beam at any point of said locus;

said photodetector means being disposed to the right and left sides of said point;

masking means mounted between said point and said reflected light beam to mask said light beam from said right side mounted photodetector when said light beam is reflected from said left side and to mask said light beam from said left side mounted photodetector when said light beam is reflected from said right side; and

second masking means mounted on either side of said first mentioned masking means;

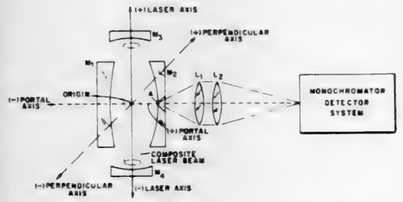
said first mentioned masking means being formed with a wedge shape having the narrowest point thereof mounted between said right and left side mounted photodetector and having the widest point thereof mounted toward said reflected light beam to prevent light scattering between said photodetectors; whereby, an output signal from said photodetector means indicates the position of said light beam.

4,410,271

MULTIPLE-REFLECTION OPTICAL GAS CELL

Thomas G. Matthews, Oak Ridge, Tenn., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Jun. 15, 1981, Ser. No. 274,014
Int. Cl.³ G01J 3/44
U.S. Cl. 356—301 **5 Claims**



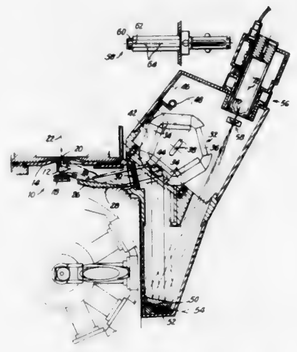
1. A multiple-reflection optical cell comprising two spherical mirrors positioned in confronting plane-parallel alignment, said mirrors having different radii of curvature, the center of each of said mirrors being positioned on the optical axis of the cell, the mirror with the smaller radius of curvature having a portal at its center which extends through the mirror along the optical axis of the cell, said optical axis being the axis along which Raman or fluorescence radiation is collected and transmitted to an optical detection apparatus, and said optical axis being perpendicular to the axis along which optical excitation is applied to a gas positioned between the mirrors of the cell.

4,410,272

OPTICAL SPECTROSCOPE FOR SCANNING ELECTRON MICROSCOPE

Jacky Beauvineau, 18, rue des Arts et Metiers, 60140 Liancourt, and Jack Semo, 3, Residence des Trois Forets, 78380 Bougival, both of France

Filed Jun. 11, 1981, Ser. No. 272,781
Claims priority, application France, Jun. 19, 1980, 80 13619
Int. Cl.³ G01J 3/18; G01N 21/62
U.S. Cl. 356—311 **7 Claims**



1. An optical spectroscope for a scanning electron microscope comprising a vacuum chamber in which is located a sample holder bombarded by an electron beam, wherein it comprises:

(A) in the said microscope chamber:

(a) a concave mirror formed by a paraboloid portion facing the sample holder in such a way that its focus is in the vicinity of the impact point of the electron beam on the sample, said mirror having an opening permitting the passage of the beam and being thus able to reflect the radiation from the impact point in the form of a parallel beam,

(b) a plane deviating mirror oriented so as to receive the parallel beam,

(c) an outlet window for the chamber, constituted by a plate with parallel faces and made from a material transparent to the useful optical radiation and which is placed on the path of the beam reflected by the deviating mirror,

(B) outside the microscope chamber:

(d) a drum supporting a plurality of flat diffraction gratings having different numbers of lines per unit of length, said drum being rotatable about a first axis in such a way that a random one of the gratings can be disposed in the working position facing the window to receive the optical beam leaving the latter, the drum being integral with a bracket movable about a second axis located in the plane of the grating in the working position and parallel to the lines of said grating, the rotation of the bracket about the second axis being controlled by a stepping motor,

(e) a spherical concave mirror with a large focal distance able to receive the beam diffracted by the grating in the working position,

(f) a slit blocking means in the focal plane of the spherical concave mirror,

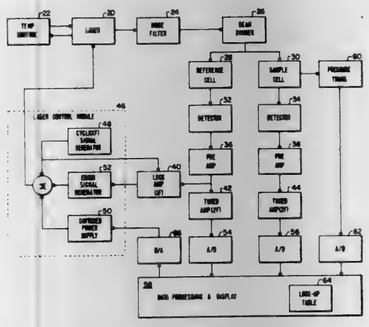
(g) a photodetector located to the rear of the slit blocking means.

4,410,273

SCANNING LASER SPECTROMETER

Arlan W. Mantz, Acton; David L. Wall, Burlington; Dudley M. Chapman, Medford; Richard S. Eng, Newton, and Kenneth W. Nill, Lexington, all of Mass., assignors to Laser Analytics, Inc., Bedford, Mass.

Filed Mar. 9, 1981, Ser. No. 242,139
Int. Cl.³ G01J 3/42; G01N 21/39
U.S. Cl. 356—319 **2 Claims**



1. A spectrometer system comprising in combination:

a semiconductor diode laser capable of emitting energy at an output frequency variable in response to a varying injection current;

temperature control means including means for maintaining said laser at a predetermined temperature;

optical means including a beam divider for apportioning selected energy from said laser along a plurality of optical paths;

first detection means disposed with respect to one of said paths for detecting said energy propagating along said one path;

second detection means disposed with respect to another of said paths for detecting said energy propagating along said another path;

means for disposing an absorbing reference material along said one path between said first detection means and said laser so as to attenuate a portion of said laser energy propagating along said one path, said reference material having selected absorption features of determinable spectral widths at optical frequencies of interest;

means for disposing a sample in said another optical path between said second detection means and said laser so as to intercept another portion of said laser energy propagating along said second path;

a plurality of amplifying means connected to said first and second detectors for providing electrical output signals proportional to the laser energy incident on the respective detectors;

laser control means for controlling said injection current of said laser, said laser control means including:

(a) means for providing substantially constant currents at a plurality of predetermined values corresponding to injection currents suitable to cause said laser to emit said energy at discrete frequencies substantially corresponding to said selected absorption features,

(b) means for cyclically varying said constant currents about said predetermined values by at least one predetermined amplitude at at least one predetermined frequency, said predetermined amplitude corresponding to a range of injection currents corresponding to a range of said output frequencies at least as large as a selected spectral width of one of said absorption features, and

(c) means for varying said constant currents in response to an error signal,

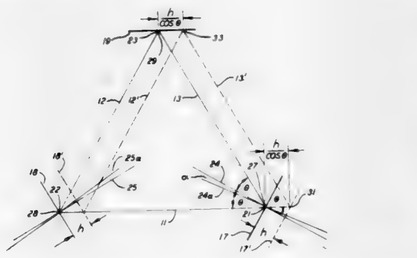
said amplifying means including phase detection means to determine the phase relationship between said means for cyclically varying and at least one said electrical output signal, said means for phase detection providing said error signal.

4,410,274

RING LASER GYROSCOPE WITH DOPPLER MIRRORS AND OFFSET ACTUATORS

Bo H. G. Ljung, Wayne, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 8, 1981, Ser. No. 271,734
Int. Cl.³ G01C 19/64
U.S. Cl. 356—350 **4 Claims**



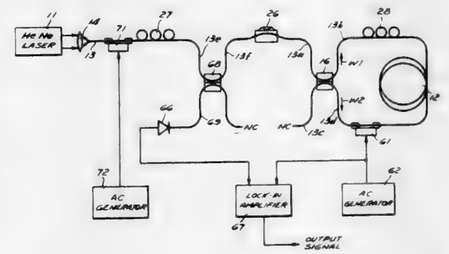
1. A method of preventing lock-in in an equilateral triangular ring laser gyroscope that comprises three mirrors directing monochromatic beams of radiant energy of a predetermined wavelength λ in opposite directions around a closed optical path, said method comprising vibrating first and second ones of the mirrors in first and second directions, respectively, to move the reflective surfaces of said first and second mirrors along first and second paths each offset by approximately 4.27° from the perpendicular to the reflective surfaces of said first and second mirrors, respectively, while maintaining the total length of the closed optical path constant to diminish back scattered radiation at the wavelength λ from all of the mirrors substantially to zero, and in which the third one of the mirrors is held stationary.

4,410,275

FIBER OPTIC ROTATION SENSOR

Herbert J. Shaw, Stanford; Herve C. Lefevre, Los Altos, and Ralph A. Bergh, Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Mar. 31, 1981, Ser. No. 249,714
Int. Cl.³ G01B 9/02; G01C 19/64
U.S. Cl. 356—350 **6 Claims**



1. An all-fiber optic rotation sensor, comprising:

a light source for producing a light wave;

a single, continuous, uninterrupted strand of optical fiber forming a line portion and a loop portion, said light source optically coupled to said line portion for propagation of

said light wave through said line portion to said loop portion;

said single, continuous strand of optical fiber having a portion of the cladding removed from one side of said fiber at the ends of said loop portion to form first and second oval surfaces, said first and second oval surfaces juxtaposed and optically closing said loop portion to couple said loop portion and said line portion;

a portion of said single, continuous, uninterrupted strand of fiber in said loop portion forming a coil, the diameter of said coil selected to stress said fiber to provide a birefringent medium for controlling the polarization of light propagating in said loop portion;

a portion of said single, continuous, uninterrupted strand of optical fiber having a portion of the cladding removed from one side thereof to form a third oval surface;

a birefringent crystal juxtaposed with said third oval surface and forming a polarizer to cause light propagating through said strand to be polarized to a preselected polarization; and

means for coupling light from said line portion to provide an output signal indicative of the rotation rate of said loop portion, said polarizer passing only the portion of said light coupled to said line portion from said loop portion which travels an identical optical path length through said loop to said coupling means so that nonrotationally induced phase differences in said output signal are eliminated.

4,410,276

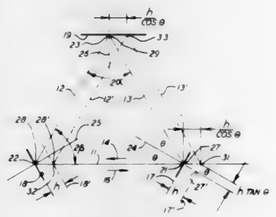
RING LASER GYROSCOPE WITH DOPPLER MIRRORS

Bo H. G. Ljung, Wayne, and John C. Stiles, Morris Plains, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 15, 1981, Ser. No. 274,044

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **8 Claims**



1. A method of preventing lock-in in a ring laser gyroscope that comprises a plurality of mirrors directing monochromatic beams of radiant energy of a predetermined frequency in opposite directions around a closed optical path, said method comprising vibrating first and second ones of the mirrors in first and second directions, respectively, to move the reflective surfaces of said first and second mirrors along first and second paths that include components perpendicular to the reflective surfaces of said first and second mirrors, respectively, while maintaining the total length of the closed optical path constant to diminish back scattered radiation from all of the mirrors, and in which the optical path is an isosceles triangle and a third mirror is held stationary and the distance that the first and second mirrors are vibrated is substantially equal and of a magnitude such that the combined energy in the back scattered radiation at said predetermined frequency from all three of the mirrors is reduced substantially to zero, and wherein each of said first and second mirrors is vibrated at an amplitude that shifts the region thereon struck by the light beams by a distance having a magnitude that corresponds to a zero of a Bessel function.

4,410,277

APPARATUS FOR DETECTING MAGNETO-OPTICAL ANISOTROPY

Manabu Yamamoto, Odawara, and Masahiro Ojima, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

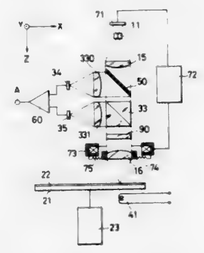
PCT No. PCT/JP79/00272, § 371 Date Jun. 30, 1980, § 102(e) Date Jun. 30, 1980, PCT Pub. No. WO80/01016, PCT Pub. Date May 15, 1980

PCT Filed Oct. 26, 1979, Ser. No. 201,483

Claims priority, application Japan, Nov. 1, 1978, 53/149556[U]

Int. Cl.³ G01N *21/21*; G01J *4/04*

U.S. Cl. 356—366 **1 Claim**



1. The apparatus for detecting magneto-optical anisotropy consisting of a light source, a magneto-optically anisotropic medium to which the ray of light from said light source is irradiated, a polarization analyzer to which the ray of light from said medium is incident and a light detector to which the ray of light obtained via said polarization analyzer is incident, the improvement wherein said apparatus is equipped with means for generating ellipticaly polarized light on an optical path consisting of said light source, said magneto-optically anisotropic medium, said polarization analyzer and said light detector, and said means for generating the elliptically polarized light are arranged in such a manner that the ray of light travelling towards said polarization analyzer remains the elliptically polarized light when it is incident to said polarization analyzer, wherein the ray of light emitted by said light source is linearly polarized light, and said means for generating the elliptically polarized light is a phase plate with the phase difference 2Δ and with the principal axis oriented at an angle θ with respect to the polarization direction of said linearly polarized light, which is characterized by that the quantity $|\sin 2\theta \cdot \sin 2\Delta|$ is stipulated within the range given by the following formula:

$$\eta A/4E < |\sin 2\theta \cdot \sin 2\Delta| < 4|E|/\eta,$$

where E is the Kerr ellipticity on a magnetized reflecting surface, A is the ratio of the received light intensity to the intensity of the Fresnel reflection light under the condition of $\Delta=0$ or $\theta=0$, and η is the fluctuation factor of the received light intensity.

4,410,278

METHOD AND APPARATUS FOR APPEARANCE INSPECTION

Hiroshi Makihira; Yasuo Nakagawa; Toshimitsu Hamada, all of Yokohama, and Makoto Udaka, Yokosuka, all of Japan, assignors to Hitachi, Ltd. and Japan Nuclear Fuel Co., Ltd., both of Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,181

Claims priority, application Japan, Jul. 20, 1979, 54-91575; Aug. 20, 1979, 54-105065; May 16, 1980, 55-63943

Int. Cl.³ G01N *21/55, 21/88*

U.S. Cl. 356—445 **15 Claims**

1. A method of inspecting the appearance of the outer surface of an object comprising:

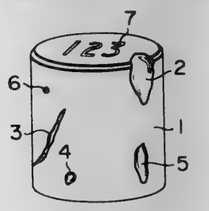
a first detection process including steps of

(a) radiating light condensed in strip form into a predetermined area and from a direction at a non-zero angle to the normal to the surface of the object,

(b) picking up by an image sensor the light regularly reflected from the surface of the object,

(c) quantizing an image signal produced from said image sensor at least at two threshold levels, one higher and one lower than the average signal level produced by said image sensor, and providing binary signals having values in accordance therewith, and

(d) detecting defects in the surface of the object including at least one of an unground part and a metal inclusion separately from at least one of surface missing defects and



convex defects by the values of said binary signals produced by the quantization, and

a second detection process including steps of

(a) radiating light onto a predetermined image sensing area of the surface of an object, from a plurality of directions,

(b) picking up by an image sensor the light reflected from the predetermined area in the direction perpendicular to the surface of the object,

(c) quantizing an image signal produced from said image sensor at a threshold level lower than the average signal level produced by said image sensor and providing a binary signal having a value in accordance therewith, and

(d) detecting the presence of at least one of a crack and a pit in the surface of said object by the value of said binary signal produced by the quantization.

4,410,279

APPARATUS FOR AGITATING THE CONTENTS OF STORAGE TANKS

Michael Howden, Appleton, and Terence L. Griffiths, St. Helens, both of England, assignors to British Nuclear Fuels Limited, Risley, England

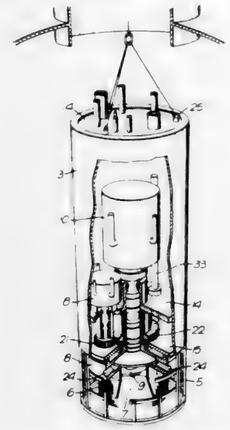
Filed Mar. 16, 1982, Ser. No. 358,832

Claims priority, application United Kingdom, Mar. 31, 1981, 8110079

Int. Cl.³ B01F *7/32*

U.S. Cl. 366—262 **5 Claims**

1. An apparatus for agitating the contents of storage tanks comprising a housing adapted to be immersed in the contents of the tank, an impeller and an impeller casing extending beyond an end of the housing, respective variable drive means for rotating the impeller and the impeller casing located within the housing, an inlet to the impeller, and a plurality of radially directed outlets in the casing whereby rotation of the impeller effects circulation of the contents from the inlet to the outlets



and rotation of the casing causes the discharge at the outlets to agitate the contents of the tank.

4,410,280

ELECTRIC FOOD PREPARATION APPARATUS

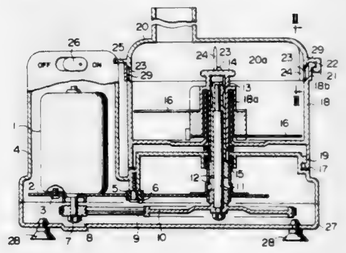
Terukazu Yamauchi, Minoo, and Hirofumi Nakakura, Takarazuka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 1, 1981, Ser. No. 279,464

Claims priority, application Japan, Jul. 9, 1980, 55-97425[U]

Int. Cl.³ B01F *7/04*

U.S. Cl. 366—314 **14 Claims**



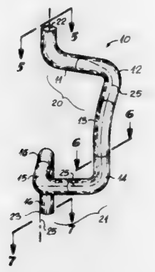
1. An electric food preparation apparatus comprising: an electric motor; a main body containing said electric motor; a container body mounted on said main body; a rotating member adapted to be rotatively driven in said container body by said electric motor; and a container lid adapted to be mounted on said container body to cover the upper opening of said container body, said container lid being so structured as to fit its opening brim to the inner periphery of said container body in such a manner that an annular cavity is formed in the fitting portion between said container body and said container lid, the annular cavity being in communication with the interior of the container body through communication passages; said apparatus further comprising fluid guiding members disposed at the upstream side of each communication passage and adjacent to each communication passage as viewed in the direction of rotation of said rotating member, so as to generate a negative pressure in each communication passage.

4,410,281

MIXING METHOD AND APPARATUS UTILIZING PIPE ELBOWS

LeRoy W. Crookes, East Brunswick, N.J., assignor to Ralph B. Carter Company, Hackensack, N.J.

Filed Mar. 2, 1981, Ser. No. 239,568
Int. Cl.³ B01F *5/00*
U.S. Cl. 366—341 **14 Claims**



1. Mixing apparatus comprising means for supplying sludge as a first substance of fluid constitution, means for supplying flocculant as a second substance, and means for receiving said first and second substances to mix the same while advancing the substances along a path of travel to produce a mixture of said flocculant and said sludge, the latter means comprising an assembly of three pipe elbows connected one after the other and through which said substance travels and undergoes mixing, each of said pipe elbows having a smooth unobstructed inner surface, said assembly of pipe elbows having an inlet and outlet disposed in parallel planes axially offset from one another, said three pipe elbows being substantially identical right angle elbows and further having center lines disposed substantially in mutually perpendicular planes and bend angles which are successively turned in different directions to cause each axial streamline in the cross-sectional flow path of the flocculant, sludge mixture to undergo successive velocity changes while concurrently undergoing angular rotation in the cross-sectional flow path to effect mixing of the sludge and flocculant without internal obstructions in said elbows and provide said mixture of flocculant and sludge at said outlet.

10. A method of effecting mixing of a substance of liquid composition comprising introducing said substance at an inlet and advancing the substance along a path of travel to effect mixing of the substance and turning said substance through successive bend angles in different planes while traveling along said path to flow through an outlet parallel to said inlet and axially offset therefrom by conveying the mixture through an assembly of three substantially identical right angle elbows disposed in mutually perpendicular planes and through which the substance flows without obstruction such that axial streamlines in the flow cross-section of the substance undergo successive and different velocity changes while also undergoing successive rotation in said flow cross-section.

4,410,282

APPARATUS FOR CONTINUOUS AND DIRECT MEASUREMENT OF THE SEA SURFACE TEMPERATURE

Guy Leger, Monaco, Monaco; Jacques Roux, Aix-en-Provence; Jean Alinat, Nice, both of France, and Jacques Constans, Monaco, Monaco, assignors to European Atomic Energy Community, Luxembourg

Filed May 11, 1981, Ser. No. 262,704
Claims priority, application United Kingdom, May 9, 1980, 8015401
Int. Cl.³ G01K *1/14, 1/16*
U.S. Cl. 374—156 **12 Claims**

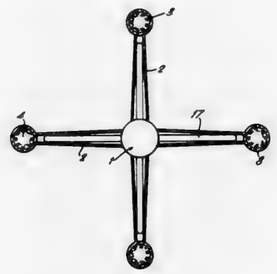
1. An apparatus for continuous and direct temperature measurement of an upper superficial layer of a water surface, which apparatus comprises:

a central floating member;

at least one peripheral floating element;

at least one arm transversely connecting the central member to the at least one peripheral floating element corresponding thereto;

at least one temperature sensor detector carried by the apparatus;



a thermal collector disposed in the at least one arm for transmitting heat to the at least one temperature detector; and

electrical means in the apparatus for transmission of temperature data from the at least one temperature detector,

wherein the central member and the at least one peripheral floating element are adapted to maintain the apparatus on the water surface while at least a part of the at least one arm is in contact with and senses the upper superficial layer of the water.

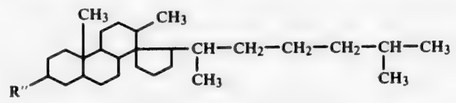
4,410,283

CHOLESTERIC LIQUID CRYSTAL OF THE REENTRANT TYPE AND A TEMPERATURE-DETECTING DEVICE ENTAILING THE USE OF A LIQUID CRYSTAL OF THIS TYPE

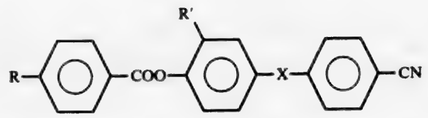
Jean-Claude Dubois; Jean Billard, and Annie Zann, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 26, 1981, Ser. No. 296,302
Claims priority, application France, Aug. 29, 1980, 80 18774
Int. Cl.³ C09K *3/34*; G01K *11/12*
U.S. Cl. 374—162 **7 Claims**

1. A liquid crystal mixture of at least one liquid crystal of a first type and a second liquid crystal of a second type, said first liquid crystal being a cholesteric material selected from the group consisting of cholesterol ester, a cyanobiphenyl derivative and a compound of the formula:



wherein R'' is alkyl of 1 to 10 carbon atoms; said second liquid crystal having reentrant nematic properties in that it exists in at least three meso phases and having the formula:



wherein R is C_nH_{2n+1}, $C_nH_{2n+1}O$ or $C_nH_{2n+1}COO$ and n ranges from 2 to 10, R' is hydrogen or methyl, and wherein X is —CH=N—, —CH=CH—, —C≡C— or —COO—; the proportion of said first and second liquid crystals being such that said mixture is of the reentrant cholesteric type.

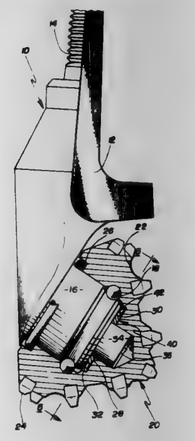
5. A temperature detecting liquid crystal device, said device being provided with the liquid crystal mixture of claim 1 between the transparent plate and light-absorbing plate of said device.

4,410,284

COMPOSITE FLOATING ELEMENT THRUST BEARING

G. Richard Herrick, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 22, 1982, Ser. No. 370,809
Int. Cl.³ F16C *33/10, 33/66*; E21B *10/22*
U.S. Cl. 384—93 **10 Claims**



1. A rock bit comprising:

a rock bit body forming at least one journal bearing shaft, said journal bearing shaft forming at least one radial bearing surface and at least one radially extending thrust bearing surface,

a rock cutter rotatably mounted on said journal, said rotatable cutter forming at least one radial bearing and at least one radially extending thrust bearing surface,

a thrust bearing disc with a first thrust surface in contact with said at least one radially extending thrust bearing surface formed on said journal bearing shaft, and a second thrust surface substantially parallel to said first thrust surface in contact with said at least one radially extending thrust bearing surface formed in said rotatably mounted cutter, said first thrust surface of said disc having at least one first nonconcentric lubricant distribution groove formed therein, a second substantially complementary lubricant distribution groove formed in said second thrust surface of said disc, at least one port extending through said thrust bearing disc, said port intersecting both of said first and second lubricant distribution grooves for providing lubricant communication therebetween, and

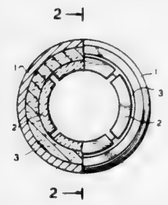
a radial bearing surface formed in said rock cutter to bear said disc concentric to said at least one radial bearing surface formed in said rock cutter, said disc is rotatable relative to said rock cutter and to said bearing journal.

4,410,285

CERAMIC AND METAL ARTICLE AND METHOD OF MAKING IT

Franz Strasser, Jetzendorf; Ludwig Steinhauser, Maisach, and Bernd Kugenbuch, Adelshofen, all of Fed. Rep. of Germany, assignors to MTU Motoren Und Turbinen Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,743
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014645
Int. Cl.³ F16C *17/22*
U.S. Cl. 384—278 **6 Claims**



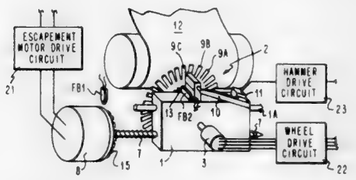
1. A bearing comprising an outer metal ring, an inner ceramic ring within the outer ring, and a metal felt ring located between the outer and inner rings, the metal felt ring being brazed to both the outer metal and inner ceramic rings.

4,410,286

PRINTING COMPLEX CHARACTERS

Elizabeth Y. Ko, and Robert A. Pascoe, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1981, Ser. No. 273,562
Int. Cl.³ B41J *25/24*
U.S. Cl. 400—22 **8 Claims**



1. In a high speed, bidirectional, on-the-fly printer, including a means for character selection, an improved method for controlling the direction and velocity of the print element carrier during printing of the portions of complex characters characterized by moving the carrier past a print position and printing the first portion of a character;

twice reversing the direction of carrier motion while controlling carrier velocity so that the duration of carrier motion is substantially the same as the time needed for selection of the next character portion to be printed; and

moving the carrier again past the same print position and printing the next portion of the character.

4,410,287

SINGLE WHEEL BILLET MARKER

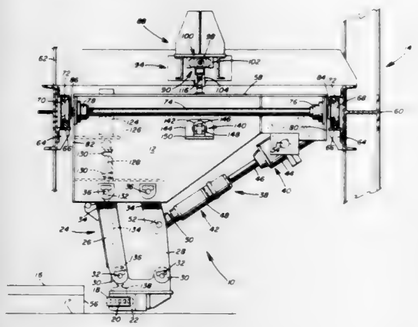
Edwin W. Speicher, Pittsburgh, Pa., assignor to M. E. Cunningham Company, Ingomar, Pa.

Filed Jun. 1, 1982, Ser. No. 383,760
Int. Cl.³ B41F *17/00*
U.S. Cl. 400—134 **10 Claims**

1. Apparatus for marking a workpiece comprising,

a marking wheel housing,

a wheel rotatably mounted on said housing and having a plurality of marking elements on the periphery thereof,
a support arm having a first end portion pivotally connected to said housing,
said support arm having a second end portion opposite said first end portion,
a frame,
said support arm second end portion being pivotally connected to said frame,
support means for guiding said frame along a transverse linear path relative to the workpiece,
control means for moving said frame incrementally along said transverse linear path to selectively position said housing and said marking wheel for marking the workpiece with a series of marks,



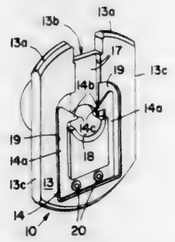
lift means extending between said frame and said support arm for pivoting said housing through an arcuate path between a raised position and a lowered position for marking,
stamping means carried by said lift means and extending from and aligned with said lift means for reciprocating said housing to impress the desired element on the workpiece when said marking wheel is in said lowered position, and
said stamping means being movable by operation of said lift means in a direction aligned with the direction of movement of said stamping means to sequentially impress said series of marks on the workpiece as said marking wheel is incrementally moved in said linear path transverse to the combined direction of movement of said lift means and said stamping means.

4,410,288

VERTICAL REPLACEMENT DAISY WHEEL ELEMENT

Lawrence Holmes, Jr., 91 Highwood Ave., Midland Park, N.J. 07432

Filed Dec. 14, 1981, Ser. No. 330,482
Int. Cl.³ B41J *1/30*
U.S. Cl. 400—144.2 **3 Claims**



1. A hub unit for daisy wheel-type print element with vertical replaceable disc elements comprising a circular hub means with a bore therein and a guide plate means fixedly mounted on said hub means normal to the axis of such bore, said resulting assembly having formed therein a semi-circular cup means concentric with said bore; and
spring means mounted on said guide plate means operable to apply spring pressure on a circular nipple received in said semi-circular cup means to force it into said cup means for concentric registry, said spring means being a C-shaped spring with a pair of arms forming prongs with inwardly directed ears operable to bear on a circular surface of a nipple received in said semi-circular cup means to force such a nipple into said cup means.

4,410,289

SERIAL PRINTER

Hiroshi Koike; Shuhei Takeuchi, both of Morioka, and Mikio Miyajima, Iwate, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,551
Claims priority, application Japan, Sep. 5, 1980, 55-123040
Int. Cl.³ B41J *1/24*
U.S. Cl. 400—185 **17 Claims**



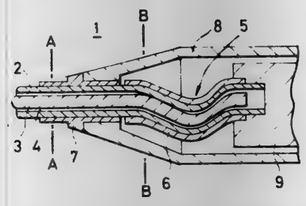
1. A serial printer comprising:
(a) a carriage adapted to be shifted along a platen;
(b) a type cylinder carried by said carriage in such a manner so as to be able to be shifted in the axial direction thereof and to be rotated, said type cylinder including a plurality of type portions each movable into a printing position by the shifting of said type cylinder;
(c) shifting means for shifting said type cylinder in the axial direction thereof;
(d) type cylinder rotating means for rotating said type cylinder;
(e) hammer means for pressing the type portion in a printing position onto a paper;
(f) means including only one unidirectional motor serving as the power source for said shifting means, said type cylinder rotating means and said hammer means for activating said shifting means, said type cylinder rotary means and said hammer means;
(g) shifting clutch means for controlling the transmission of torque between said motor and said shifting means;
(h) type cylinder rotating clutch means for controlling the transmission of torque between said motor and said type cylinder rotating means;
(i) hammering clutch means for controlling the transmission of torque between said motor and said hammer means; and
(j) cam means adapted to be rotatively driven by said motor only when said shifting clutch means and said type cylinder rotating clutch means are in non-torque-transmitting condition, said cam means being adapted to be rotated after the completion of selective shifting operation and rotation of said type cylinder to transmit the torque of said motor through said hammering clutch means to said hammer means to actutate the latter.

4,410,290

COMPOSITE PEN TIP

Akio Ito, and Osami Yamauchi, both of Nagoya, Japan, assignors to Pilot Ink Co., Ltd., Aichi, Japan

Filed Jan. 22, 1982, Ser. No. 341,727
Claims priority, application Japan, Jan. 27, 1981, 56-10012[U]; Feb. 25, 1981, 56-25492[U]; Feb. 25, 1981, 56-25493[U]; Jul. 22, 1981, 56-108915[U]; Jul. 27, 1981, 56-111950[U]; Aug. 18, 1981, 56-122215[U]
Int. Cl.³ B43K *5/00;* **B43M** *11/06*
U.S. Cl. 401—198 **6 Claims**



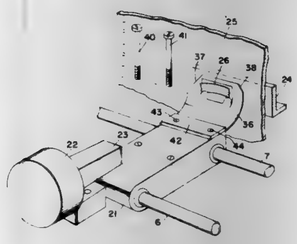
1. A composite pen tip comprising: a hollow tubular casing; a core member slidably inserted in said tubular casing to form an axial ink flowing channel between the inner surface of the tubular casing and the outer surface of the core member, said core member being made of a material more wear-resistant than the tubular casing; a plurality of axially extending projections protruding inwardly into said ink flowing channel from the inner surface of the tubular casing; said tubular casing and core member axially terminating at respective front ends which are substantially flush with each other to form a level writing face, and the tubular casing and the core member being bent along the axial direction thereof in substantially the same manner in at least one location in substantially the same place whereby said core member contacts said projections in the location of said curving so that blocking of said ink flowing channels and reduction of the cross-sectional area of said channels is eliminated and frictional contact thereat maintains said core front end flush with said front end of said casing but permits said core to slide backward as said casing wears.

4,410,291

ANTINOISE DEVICE FOR IMPACT SERIAL PRINTERS

Marcello Speraggi, Milan, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Feb. 19, 1982, Ser. No. 350,461
Claims priority, application Italy, Feb. 24, 1981, 19935 A/81
Int. Cl.³ B41J *29/10*
U.S. Cl. 400—689 **2 Claims**



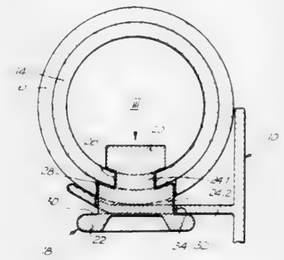
1. An antinoise device for serial printers of the type having a printing head mounted on a printing carriage sliding along a printing line and wherein the printing is made by the action of such printing head against a platen, a printing support being interposed between printing head and platen, such antinoise device comprising:
(a) a transparent elastic leaf provided with an opening through which said printing head performs an impression, said leaf further having a substantially rectangular shape with the two upper angles beveled, said leaf further being provided with two appendices which extend inside said opening, said leaf being fixed to said printing carriage and elastically bending against said platen near the zone where said printing head impacts the printing support, whereby said printing support is locally pressed against said platen by said leaf and its vibration is prevented.

4,410,292

DEVICE FOR RETAINING AND HOLDING A PLATE OR PANEL IN AN ARTICLE OF FURNITURE OR THE LIKE

Hubert Rüther, Elbring 25, Seevetal 8 bei Hamburg, Fed. Rep. of Germany D-2105

Filed Dec. 30, 1980, Ser. No. 221,464
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 8002638[U]
Int. Cl.³ F16D *1/00*
U.S. Cl. 403—24 **6 Claims**



1. A panel to framework fastening device for use in an article of furniture or the like including a toggle, a panel and a frame of pipe detachably interconnected by means of substantially tubular connector sockets substantially concentrically mounted with respect to an end of at least one pipe, the wall of each connector socket and the wall of the pipe end being provided with alignable, openings the radially inner opening being non-circular, said toggle comprising a rotary head, a rotary latch, and a shank section connecting the head and the latch, said toggle securing the panel to the frame by extending through the aligned, openings of the connector socket wall and the pipe wall such that the rotary latch engages the inner surface of the innermost wall in force-locked manner and the shank section engages the innermost wall opening edge in form-locked manner, the underside of the rotary head facing the shank section being substantially planar and supporting and securing the panel.

4,410,293

MECHANICAL PRELOAD NUT ASSEMBLY

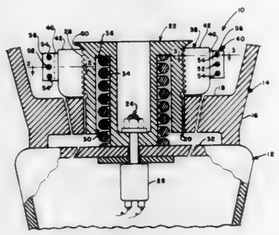
Jack D. Elias, Torrance, and John B. Cardoso, San Pedro, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 18, 1981, Ser. No. 293,780
Int. Cl.³ F16B *37/10*
U.S. Cl. 403—24 **6 Claims**

1. An assembly for attaching components together, such as a re-entry vehicle and a booster, with a high preload level of force, comprising:
(a) a frame member attached to said booster and disposing said booster on said re-entry vehicle;
(b) a separation housing disposed adjacent said frame member and connected to said re-entry vehicle;
(c) a split nut disposable in a collapsed condition for connecting said separation housing to said frame member and thereby retaining said booster on said re-entry vehicle at said high preload level of force, said nut being movable to

an expanded condition for releasing said preload level of force; and

(d) a split band for encompassing said split nut and retaining it in its collapsed condition when said band is disposed in an assembled condition about said nut, and for releasing



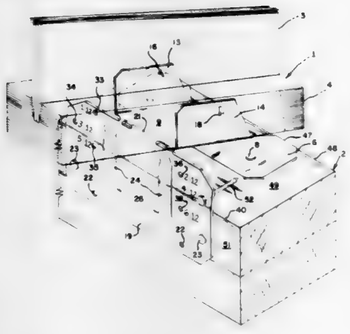
retention of said split nut and allowing it to move toward its expanded condition and provide gradual release of said preload level of force of said booster on said re-entry vehicle when said band assembly is actuated to a disassembled condition about said nut.

4,410,294

VARIABLE PITCH CONNECTOR

Tyrell T. Gilb, Berkeley, and Alfred D. Commins, Livermore, both of Calif., assignors to Simpson Strong-Tie Company, Inc., San Leandro, Calif.

Filed May 7, 1981, Ser. No. 261,680
Int. Cl.³ B25G *3/00*; E02D *27/00*
U.S. Cl. 403—27 **7 Claims**



1. A variable pitch connector for attaching an inclined beam member to a bearing member comprising:

a. a nailable generally horizontal bearing member having a top face and laterally disposed first and second side faces;

b. an inclined nailable beam member positioned above said bearing member for support thereby;

c. a sheet metal connector joining said bearing member and said inclined beam member at selected pitches;

(1) said connector includes a base member having laterally disposed in-line edges for registration with the edge of said first side face of said bearing member and an inset edge therebetween and formed with fastener openings for attchment to said bearing member;

(2) said connector includes a seat member integrally attached at a selected acute angle to said base member along a first bend line which is coincident with said inset edge and is formed with a longitudinally spaced elevated end and is dimensioned for holding a portion of said base of said inclined beam member;

(3) said connector includes laterally spaced side members integrally attached to said seat member and formed with openings for attachment to the sides of said inclined member;

(4) said connector includes an upright member connected to said elevated end of said seat member along a second bend line which is coincident with said elevated end of said seat member and is formed with openings for attachment of said upright member to said second side face of said bearing member; and

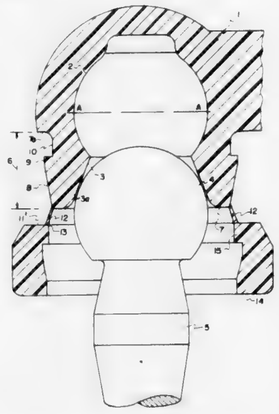
d. said beam member is positioned so that a portion rests upon said top face of said bearing member adjacent said edge of first side face.

4,410,295

UNIVERSAL JOINT CONSTRUCTION

Metin Ersoy, Hilchenbach, and Hermann J. Krämer, Wilnsdorf, both of Fed. Rep. of Germany, assignors to Lemförder Metallwaren AG Lemförde, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,039
Claims priority, application Fed. Rep. of Germany, May 2, 1981, 3103954
Int. Cl.³ F16C *11/00*; F16D *1/12*
U.S. Cl. 403—122 **6 Claims**



1. A universal joint construction, comprising a plastic housing casing portion including an interior cavity forming a ball receiving socket having an opening that receives a ball member with a wall bounding the opening which is bevelled outwardly to an end from said socket on its interior and has an exterior which is bevelled outwardly from said end in the direction towards said socket, the exterior of said housing casing having an annular groove around said socket adjacent said exterior of said wall, a frangibly connected ring portion having a bore with a radially inwardly extending collar of a diameter that engages over said wall and is advanced over said bevelled exterior of said wall and deflects said wall inwardly and establishes engagement of said collar in said groove, with said ring reinforcing side wall.

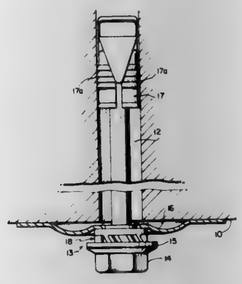
4,410,296

ROCK BOLT OVERLOAD WARNING DEVICE

Kot F. Unrug, 2917 Waco Rd., Lexington, Ky. 40503

Filed Oct. 30, 1981, Ser. No. 316,973
Int. Cl.³ E21D *21/02*
U.S. Cl. 405—259 **18 Claims**

17. A mine roof warning device comprising a washer having a base member with six stepped paired rupturable angular finger like projecting elements extending from a surface of said washer, said stepped paired projecting elements being spaced at equal distances around the periphery of said base member with the alternate of said stepped paired projecting elements comprising corresponding elements of the same height spaced at 120° around the periphery of said base member, said projecting elements extending from the surface of the base of said washer at an angle of about 60° to a stepped height of from about 6 mm to 8 mm, such that, as said corresponding project-



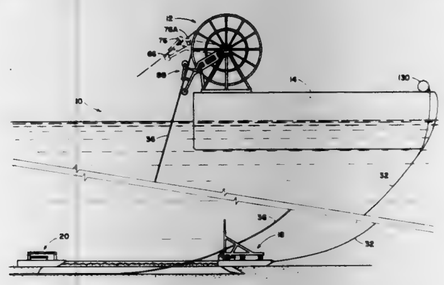
ing elements of the same height rupture, there is always maintained a plane of contact defined by points of contact of at least three of said remaining projecting elements of the same height translated to the mine roof.

4,410,297

MARINE CONTINUOUS PIPE LAYING SYSTEM

Robert P. Lynch, 10177 S. 77 E. Ave., Tulsa, Okla. 74133

Filed Jan. 19, 1981, Ser. No. 226,389
Int. Cl.³ B23B *35/04*; F16L *1/00*; E02F *5/02*
U.S. Cl. 405—164 **12 Claims**



1. A marine continuous pipe laying system comprising

a vertically mounted pipe reel having horizontal axis of rotation adapted to be carried by a marine vessel;

a pipe straightener means pivotally carried by the rotational axis of the reel for straightening the pipe as it is paid off from the reel;

an undersea trenching plow operably connected to the vessel for opening a trench, pipe guide means carried by the plow for guiding the pipe into the open trench; and

a backfilling apparatus operably connected to the plot for covering the pipe within the trench

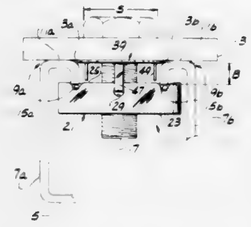
wherein the pipe straightener means comprises an elongated yoke frame pivotally secured to the rotational axis of the reel, the frame comprising at least two straightening rollers and including means for adjusting the relative positions of said straightening rollers for varying the bending moment applied to the pipe.

4,410,298

FASTENER

Joseph W. Kowalski, Florissant, Mo., assignor to B-Line Systems, Inc., Highland, Ill.

Filed Oct. 2, 1980, Ser. No. 192,942
Int. Cl.³ F16B *37/04*
U.S. Cl. 411—112 **16 Claims**



1. For securement to metal framing having a slot and inside and outside faces on opposite sides of the slot for attachment of parts to the framing through the slot from the outside of the slot, a fastener comprising:

an elongate body having a first face constituting an inside face and an opposite face consituting an outside face, opposite sides, and opposite ends, the width of said body between said sides being less than the width of the slot in the framing whereby the body may be generally aligned with the slot, entered into the slot and passed through the slot from the outside to the inside of the framing and then turned to extend in crosswise position relative to the slot for engagement of portions of the outside face of the body adjacent the ends of the body with the inside face of the framing at opposite sides of the slot; and

means for clamping the body in place in its said crosswise position comprising an annular clamp member of relatively thin resilient material secured to the body on the outside face thereof, said clamp member having portions generally adjacent opposite sides of the body engageable with the outside face of the framing when the body is aligned with, entered into and passed through said slot, said portions remaining substantially stationary with respect to the outside face of the body when the latter is turned to its crosswise position, said clamp member also having resilient clamping portions generally adjacent opposite ends of the body engageable with the outside face of the framing when the body is turned to its said crosswise position, said clamping portions, when unstressed, being spaced closer to the outside face of the body than are said substantially stationary portions and being adapted resiliently to bend away from the outside face of the body when the latter is turned to its crosswise position for providing a spring action tending to draw the body into clamping engagement with the inside face of the framing on opposite sides of the slot.

4,410,299

COMPRESSOR HAVING FUNCTIONS OF DISCHARGE INTERRUPTION AND DISCHARGE CONTROL OF PRESSURIZED GAS

Konoshuke Shimoyama, Kiryu, Japan, assignor to Ogura Glutch Co., Ltd., Kiryu, Japan

Filed Jan. 2, 1981, Ser. No. 222,154
Claims priority, application Japan, Jan. 16, 1980, 55-003404
Int. Cl.³ F04B *23/00*
U.S. Cl. 417—440 **6 Claims**

1. In a compressor including a housing formed therein with an internal space, a suction port and a discharge port; and a gas pressurizing member movably received within said internal space of said housing, wherein during moving said gas pressurizing member has at least part of surfaces thereof cooperating

with inner wall surfaces of said internal space to define a pumping chamber in which said suction port and said discharge port open,

the improvement wherein said housing further comprises:

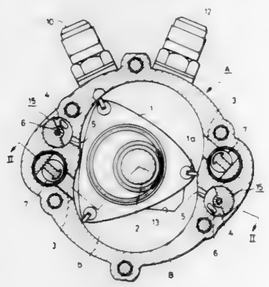
at least one volume control chamber having a substantial internal volume relative to the internal volume of said pumping chamber in said internal space of said housing, said at least one volume control chamber being located in the vicinity of said discharge port;

first port means communicating said at least one volume control chamber with said pumping chamber;

second port means communicating said at least one volume control chamber with said suction port;

a valve received within each of said at least one volume control chambers; and

control means coupled to and controlling said valve such that said valve selectively assumes any one of first, second



and third predetermined positions in its respective volume control chamber irrespective of a driving state of said pressurizing member;

wherein said valve at said first position thereof is disposed to close both said first port means and second port means so that said pressurizing member performs a compression action with a normal compression ratio, said valve at said second position thereof being disposed to open said first port means and close said second port means to increase by a substantial amount the compression volume of said pumping chamber, whereby said pressurizing member performs a compression action with a reduced compression ratio and a consequently reduced discharge flow rate, and said valve at said third position thereof being designed to open both said first port means and said second port means so that no compression action is performed by said pressurizing member.

4,410,300

OIL WELL RABBIT

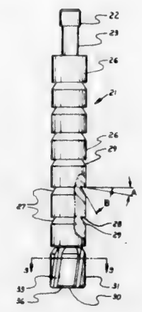
Harold W. Yerian, c/o Pearne, Gordon, Sessions, McCoy & Granger, 1200 Leader Bldg., Cleveland, Ohio 44114

Filed Feb. 5, 1981, Ser. No. 231,920

Int. Cl.³ F04B *47/12*

U.S. Cl. 417—56 **3 Claims**

1. A well rabbit comprising an elongated circular body, the body including a plurality of circumferential grooves on its exterior, said grooves being axially distributed along a major portion of the length of the body and having a generally uniform axial spacing, said grooves forming a labyrinth-type seal to resist passage of gas upwardly past the rabbit in the clearance in a surrounding production pipe, the body including land areas intervening the grooves, said land areas being relatively greater in axial length than the axial length of said grooves measured at the cylinder defining said lands, said grooves having an undercut profile such that they each include a forward surface which extends both radially inwardly and axially upwardly, said forward groove surfaces having a form of a shallow cone forming a relatively small angle with a plane perpendicular to the axis of the rabbit, said grooves each being defined by a second rearward conical surface forming a relatively large angle with a plane perpendicular to the axis of the



rabbit and intercepting its respective shallow cone at a locus axially forward of the edge at the intersection of the respective shallow cone and the adjacent cylindrical land.

4,410,301

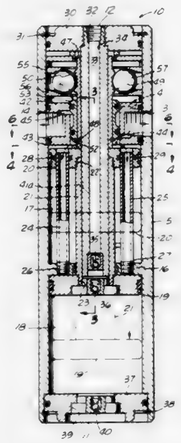
FLUID COMPRESSOR

Julius C. Westmoreland, Marina Del Rey, Calif., assignor to Inotek-Westmoreland Venture, Irvine, Calif.

Filed Aug. 31, 1981, Ser. No. 297,713

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—264 **2 Claims**



1. A fluid compressor driven by a pressurized working liquid, comprising:

walls defining an open-ended hollow housing containing a first end plate in a housing open end and including a check valve permitting fluid flow into the housing from an external source of supply and preventing flow out;

a second end plate received in the housing other open end enclosing the housing;

a partition separating the housing interior into first and second chambers, said partition including a centrally located opening;

first and second pistons located within the first and second chambers respectively and interconnected by a hollow rigid tube extending through the partition central opening, the ends of said tube being received in openings passing through the pistons;

a check valve in the second piston opening allowing fluid flow from the second chamber into the tube interconnecting the pistons and preventing fluid flow in the opposite direction;

hollow standpipe means having one end affixed in openings in the partition and slidingly extending through accommodating openings in the first piston;

a rodlike member having a bore therethrough with one end secured within an opening in the second end plate and the remainder of said member extending into the housing first chamber and within the tube interconnecting the pistons;

a check valve within the inner end of the rodlike member bore permitting fluid flow from through the said check valve into the member bore and preventing fluid flow in the opposite direction;

valving means selectively actuable to a first valving mode providing pressurized working liquid on one side of the pistons and communicating the other side of the first piston to a liquid sump, and to a second valving mode providing pressurized working liquid to the other side of the first piston and communicating the first side of both pistons to a sump, said valving means includes a body member with a working liquid inlet opening, a liquid outlet opening, a chamber intermediate to and in communication with the inlet and outlet openings, walls defining said intermediate chamber including a first slotted opening communicating with the inlet, a second slotted opening communicating with the outlet opening and a third slotted opening communicating with a further standpipe slidingly extending through the first piston and having an end communicating with the housing first chamber, and a spool selectively positionable to connect the first and third slotted openings together in the first valving mode and the second and third slotted openings in the second valving mode; and

means responsive to piston location for selectively actuating the mode of said valving means.

4,410,302

AUTOMATIC AIR VENTING DEVICE FOR ELECTROMAGNETIC PLUNGER PUMP

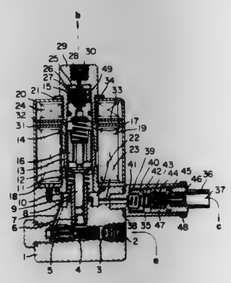
Yasutsune Chiba, 2-26-9, Sannoh, Ohta-ku, Tokyo; Katsumi Nozawa, 42, Kuritaya, Kanagawa-ku, Yokohama-City, Kanagawa-Prefecture, and Kenji Igarashi, 42-101, Myojindai, Hodogaya-ku, Yokohoma-City, Kanagawa-Prefecture, all of Japan

Filed Mar. 16, 1981, Ser. No. 244,306

Claims priority, application Japan, Jul. 16, 1980, 55-96190

Int. Cl.³ F04B *49/00*

U.S. Cl. 417—299 **8 Claims**



1. An automatic venting device for an electromagnetic plunger pump including an electromagnetic coil, and an electromagnetic plunger mounted in sliding reciprocatory movement in a guide case extending through the electromagnetic coil on its center axis, the sliding reciprocatory movement of the electromagnetic plunger being caused by an intermittent magnetic attracting force produced by energization of the electromagnetic coil with a pulse current and the biasing force of a return spring, so as to enable a pumping action to be performed with the cooperation of a suction valve and a discharge valve actuated simultaneously as energization of the electromagnetic coil, wherein said automatic venting device is arranged with a shut-off valve mechanism in a passage at the pressure side between the discharge valve of the pump and a discharge port of the pump, said automatic air venting device comprising:

a venting cylinder which is at its one end flow-connected to said passage at the pressure side of the pump and at the other end flow-connected to a return port;

a valved plunger fitted in the venting cylinder for sliding reciprocatory movement and formed at one end portion with a leak passage for gas communicating said passage at the pressure side of the pump with said return port;

a valve mounted at the other end of the valved cylinder facing said return port;

a valve seat arranged on said return port adapted to be brought into and out of engagement with the valve;

a spring mounted between the valved plunger and the return port for urging the valve to be brought out of engagement with the valve seat to open the valve; and

a return passage provided outside a pump body separately from an intake passage;

said spring and said leak passage being set such that when the internal pressure of the pump rises above a predetermined pressure during operation of the pump, said leak passage is blocked by the liquid so that said valve is operative to be closed as it is brought into engagement with the valve seat, and that only when the pressure and flow rate of the liquid at the pressure side of the pump drops below the predetermined valve due to entrainment of the gas in the liquid, said lead passage allows gas or liquid containing gas to glow therethrough and the valve is brought out of engagement with the valve seat by the biasing force of the spring to thereby cause the gas or the liquid containing gas to flow through the return port and the return passage to be vented out of a pump body.

4,410,303

MOTOR-COMPRESSOR UNIT FOR REFRIGERATORS

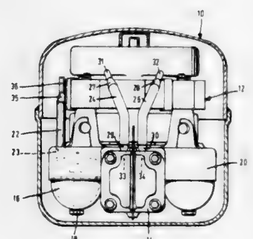
Alfredo Bar, Pavia, Italy, assignor to NECCHI Societa per Azioni, Pavia, Italy

Filed May 28, 1981, Ser. No. 267,918

Claims priority, application Italy, Jun. 9, 1980, 42916 A/80

Int. Cl.³ F04B *39/00*

U.S. Cl. 417—312 **2 Claims**



1. In a motor-compressor unit for refrigerators housed in a hermetically sealed container, comprising a cylinder head in which the suction and delivery chambers are provided, and means for feeding the refrigerant gas enclosed in said container to said suction chamber constituted by a main tube in communication at one end with said container and at the other with a silencer which is itself connected to said suction chamber, the improvement comprising supplementary tubes which directly connect said container to said suction chamber, said supplementary tubes and said main tube comprising terminal portions

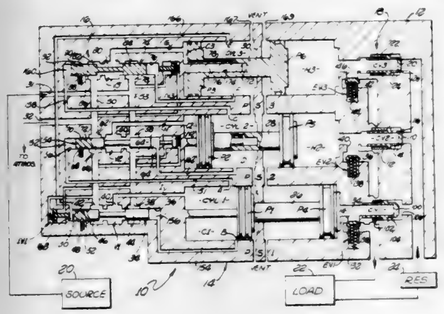
having a cross-section of smaller diameter which are connected to the central part of the tube by portions of variable cross-section.

4,410,304

FREE PISTON PUMP

Raymond A. Bergloff, Woodland Hills; James T. Hollis, Fountain Valley, and Oswald A. Walkes, Northridge, all of Calif., assignors to HR Textron Inc., Valencia, Calif.

Filed Dec. 21, 1981, Ser. No. 332,389
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—346 **10 Claims**



1. In a gas operated free piston pumping apparatus having at least first, second and third piston assemblies mounted within respective cylinders for reciprocation therein through intake and exhaust strokes for providing liquid under pressure responsive to controlled application of gas under pressure thereto, the improvement comprising:

a three way control valve for each piston assembly, each of said control valves having first and second positions;

first means for positioning the control valve associated with each piston assembly in its first position to provide gas under pressure to its associated piston assembly responsive to another piston assembly approaching completion of its pump exhaust stroke; and

second means for positioning the control valve associated with each piston assembly in its second position responsive to its associated piston assembly completing its pump exhaust stroke for removing gas under pressure from said associated piston assembly and venting said associated piston assembly.

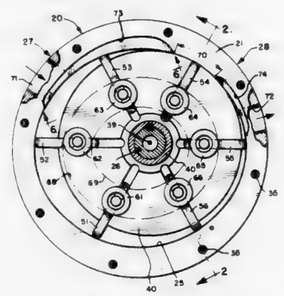
4,410,305

VANE TYPE COMPRESSOR HAVING ELLIPTICAL STATOR WITH DOUBLY-OFFSET ROTOR

Wayne C. Shank, Tucson, Ariz., and Thomas C. Edwards, Rockledge, Fla., assignors to Rovac Corporation, Rockledge, Fla.

Filed Jun. 8, 1981, Ser. No. 271,399
Int. Cl.³ F04C *18/00*
U.S. Cl. 418—150 **8 Claims**

1. A rotary compressor comprising in combination a housing defining a chamber having opposed parallel end walls and a curved outer wall, the outer wall having a reference region between inlet and outlet sides of the chamber, said inlet and outlet sides having a substantially elliptical profile having major and minor axes centered on the chamber axis, a rotor of cylindrical shape having a plurality of equally spaced radial grooves formed therein and having a shaft supporting the same for rotation in the housing, vanes profiled to fit the chamber and radially slidable in the grooves to define enclosed compartments between them, each vane having a pair of axially extending stubshafts having rollers respectively mounted thereon, roller tracks formed in the end walls of the chamber for accomodating the rollers and for guiding the vanes so that the profiled outer edges of the vanes follow the outer wall of the chamber in closely spaced engagement, means defining an inlet port on the inlet side of the chamber for aspiration of gas into a compartment and an outlet port on the outlet side for discharging gas from the compartment in the compressed state, the ports being located in the curved outer wall of the chamber and positioned to closely straddle the reference region, the rotor having its axis laterally offset from the chamber axis for



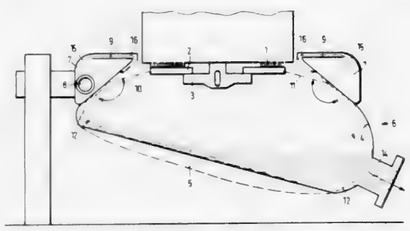
sealing engagement at the reference region for sealing between the ports, the rotor axis being offset toward the outlet port and the rotor axis being spaced along both the major and minor axes of the elliptical profile by sufficient amounts that each vane undergoes but a single in and out stroke during each revolution of the rotor notwithstanding the elliptical nature of the chamber.

4,410,306

APPARATUS FOR GRANULATING PLASTICS MATERIAL OR PLASTIC COMPOSITIONS

Dietmar Anders, Hanover, and Jürgen Voigt, Wathlingen, both of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,135
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1981, 3116117
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—71 **4 Claims**



1. Apparatus for granulating molten or fused masses of plastics material comprising:

(a) feed means for said material,

(b) means for granulating said material, including a rotatable cutting means positioned downstream of said feed means,

(c) a granulation chamber surrounding and extending below said cutting means and having at least in its upper region a downwardly and outwardly inclined annular wall surface against which said granulated material impacts and over which water flows to carry away said granulated material, said chamber having an open end adjacent said cutting means and on opposite end through which granulated materials are discharged from said chamber,

(d) an annular channel adjacent said open end of said chamber,

(e) water feed means communicating with said channel for delivering water under pressure thereto, the water undergoing high centrifugal acceleration in said channel,

(f) means defining an annular acceleration chamber one end of which communicates with said channel and the other end of which comprises an opening communicating with the interior of said granulation chamber,

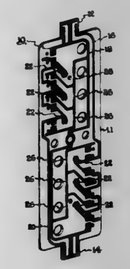
whereby water is centrifugally accelerated in said acceleration chamber as a result of which water flows through said opening and down the outwardly and downwardly inclined wall surface of said granulation chamber to carry away said granulated materials.

4,410,307

CONDUCTIVE INK FOR FLASH LAMP ARRAY CIRCUIT

Edward J. Collins, Mentor-on-the-Lake, and Mary E. Suster, Chagrin Falls, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,413
Int. Cl.³ F21K *5/00*; G03B *15/02*; H01B *1/06*
U.S. Cl. 431—359 **6 Claims**



1. An improved photoflash array having a plurality of high voltage type flash lamps connected to a lamp firing circuit pattern deposited on a circuit board with radiation-sensitive switches and fuse elements being connected in said circuit pattern for sequential firing of said flash lamps, said fuse elements being provided by narrowing the width of the circuit pattern at the fuse locations and undergoing thermal decomposition when activated with radiation, wherein the improvement comprises a non-metallic conductive ink for said circuit pattern and fuse elements which is a mixture containing a least 25% by weight in said mixture of powdered carbon with a particulated electrically conductive radiation-absorbing material selected from graphite and conductive carbon exhibiting a bulk resistivity characteristic less than approximately 200 ohm-centimeters and an organic polymer binder, said conductive ink exhibiting increased electrical conductivity at said fuse locations before thermal decomposition together with increased residual electrical resistance after thermal decomposition.

4,410,308

COMBUSTION FURNACE AND BURNER

James G. McElroy, 115 Mesa Ct., Conroe, Tex. 77302

Filed Jan. 4, 1982, Ser. No. 336,844
Int. Cl.³ F27B *9/00, 9/28*; C21D *9/54*
U.S. Cl. 432—149 **10 Claims**

1. A combustion system for burning air and gas, comprising:

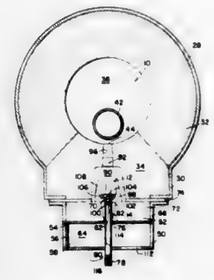
an air manifold for receiving air;

a gas manifold for receiving the gas, said gas manifold being disposed within said air manifold;

aspirating means for combining the gas from said gas manifold with the air from said air manifold to create an air/gas mixture;

diffuser means for creating turbulent flow of the air/gas mixture;

said aspirating means being juxtaposed to said diffuser means; and



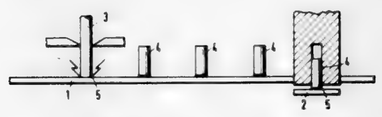
a combustion chamber having an enlarged portion housing said diffuser means and a reduced portion communicating said enlarged portion with a hearth.

4,410,309

METHOD OF MAKING A SPARK-PLUG CENTER ELECTRODE

Dieter Stöckel, Birkenfeld, and Friedrich Schneider, Pforzheim, both of Fed. Rep. of Germany, assignors to G. Rau GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 226,171
Int. Cl.³ H01T *21/02*
U.S. Cl. 445—7 **4 Claims**



1. A method of making a spark-plug center electrode comprising a composite body including a sheath part in the form of a hollow body of corrosion-resisting material which is open at one end and a core made of a material having good thermal conductivity, said method comprising:

welding a wire forming the core material to one face of a strip of the corrosion-resisting material;

cutting from said strip a round having welded thereto said wire;

deep drawing said round around said wire; and

jointly plastically shaping said round and said wire to form said composite body.

4,410,310

DEGASSING A CRT WITH MODIFIED RF HEATING OF THE MOUNT ASSEMBLY THEREOF

Jack C. Halbrook, Marion, Ind., assignor to RCA Corporation, New York, N.Y.

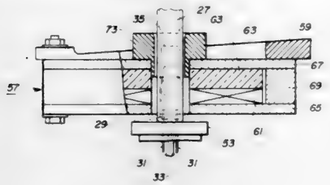
Filed Apr. 23, 1981, Ser. No. 256,980
Int. Cl.³ H01J *9/00, 9/39*
U.S. Cl. 445—57 **7 Claims**

1. In a method for making a cathode-ray tube comprising an envelope and a mount assembly including a plurality of sequentially-spaced electrodes sealed in said envelope,

said method including baking said envelope whereby said mount assembly is heated to about 250° to 300° C., simultaneously exhausting gases from said envelope and applying radio-frequency energy to said mount assembly during said heating step to heat conductive parts thereof above about 450° C.,

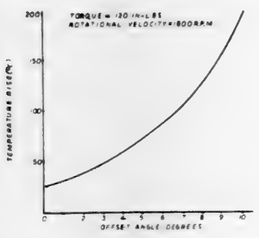
the improvement comprising selectively shielding at least a portion of one of said electrodes from said radio-fre-

quency energy in such manner as to prevent said portion from being heated bove about 350° C., said portion being



part of an electrode that faces another electrode that is to carry the anode voltage of said tube.

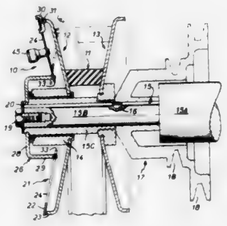
4,410,311
SELF-COOLING UNIVERSAL JOINT
Charles P. Hennessy, Glen Ellyn, Ill., assignor to Lovejoy, Inc., Downers Grove, Ill.
Filed Nov. 3, 1980, Ser. No. 203,470
Int. Cl.³ F16D *3/26, 3/38*
U.S. Cl. 464—17 **17 Claims**



1. In a universal joint of the pin and block type having two yokes each of which has two diametrically opposed yoke ears defining axially aligned journal bearings therein, and journal pins disposed within said journal bearings and pivotally connecting said yokes to said block so as to enable relative pivotal movement between said block and said yokes, the improvement wherein at least one of said journal pins has a hollow center, a heat transfer core disposed within said hollow center in thermal communication with the corresponding journal pin, and a heat dissipating cap formed on said heat transfer core so as to be disposed externally of the outside surface of the corresponding yoke, said heat dissipating cap including means operative to maintain said cap spaced from the outer surface of the corresponding yoke so that heat created within said at least one journal pin is conducted by said heat transfer core to said heat dissipating cap and dissipated to atmosphere in a manner to reduce the operating temperature of said universal joint.

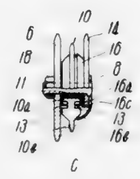
4,410,312
SPEED CHANGE DEVICE
Jacques Thirion de Briel, 83, Rue du President Wilson, 92300 Levallois-Perret, France
Continuation of Ser. No. 65,729, Aug. 10, 1979, abandoned. This application May 14, 1981, Ser. No. 263,757
Claims priority, application France, Aug. 21, 1978, 78 24276
Int. Cl.³ F16H *55/56*
U.S. Cl. 474—13 **15 Claims**

1. A variable pulley of the type comprising two coaxial frustoconical flanges facing each other, one of said flanges being a movable flange slidably mounted on and fixed for rotation with a rotary shaft and the other said flange being a fixed flange fixed for rotation with and connected at least in operation to said shaft, an annular diaphragm spring urging said movable flange toward said fixed flange and having a Belleville washer outer peripheral portion and a central portion divided into radial fingers fulcrumed on a fulcrum element fixed axially to said shaft and for rotation therewith, lugs coupling said fulcrum element for rotation with said diaphragm spring being integral with said diaphragm spring and in circumferential engagement with edges integral with said fulcrum element and parallel to the axis of the pulley, said edges integral with said fulcrum element and portions on said lugs in torque transmitting relationship therewith being parallel to a radial plane through the center line of the associated finger of



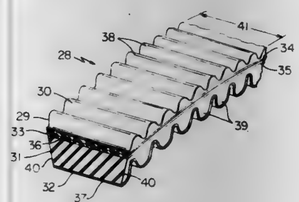
said diaphragm spring, said edges associated with each of said lugs defining at least two lines of contact with the associated portions of said lug, said at least two lines of contact lying in each of two planes parallel to the radial plane of the associated finger, and individual fulcrum surfaces on said fulcrum elment for said radial fingers of said diaphragm springs, each said fulcrum surfaces being part cylindrical and having axes perpendicular to a radial plane through a center line of their associated fingers.

4,410,313
REAR DERAILLEUR FOR A BICYCLE
Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed Mar. 3, 1981, Ser. No. 240,008
Claims priority, application Japan, Mar. 14, 1980, 55-34097[U]
Int. Cl.³ F16H *11/00*
U.S. Cl. 474—82 **5 Claims**



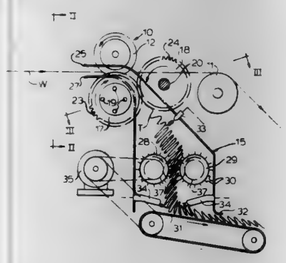
1. A rear derailleur for switching a driving chain of a bicycle to a desired one of a plurality of sprockets provided at a rear wheel of a bicycle comprising: a main body having a base member and a movable member movable axially of said sprockets with respect to said base member; and a changeover frame which is provided with a pulley plate supported swingably to said movable member, and a guide pulley and a tension pulley supported rotatably to said pulley plate, said changeover frame having first and second guard plates which prevent said chain from escaping from meshing with each of said pulleys, said first guard plate, which prevents said chain from escaping from meshing with said tension pulley, being positioned at a front edge in a forward movement direction of said bicycle, radially inwardly from the outer periphery of said tension pulley and first guard plate having interposed therebetween a pulley cap covering a lateral side of said tension pulley, said pulley cap having an extension extending radially outwardly of said tension pulley from the front edge of said first guard plate and then extending toward the lateral side of said tension pulley, said extension being positioned at the utmost end thereof in proximity to said tension pulley.

4,410,314
ENDLESS POWER TRANSMISSION V-BELT CONSTRUCTION AND METHOD OF MAKING THE SAME
Joseph P. Miranti, Jr., Porter Township, Christian County; Mark P. Foley, Springfield; Gerald C. Hollaway, Springfield; Larry R. Oliver, Springfield; Paul M. Standley, Springfield, and James A. Lewis, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio
Filed Feb. 11, 1982, Ser. No. 348,106
Int. Cl.³ F16G *1/00, 5/00*
U.S. Cl. 474—251 **22 Claims**



1. In an endless power transmission V-belt construction formed mainly of polymeric material and having rounded top and bottom teeth respectively extending along the length of the top and bottom surfaces of said belt construction, said belt construction comprising a tension section having said top surface, a compression section having said bottom surface, and a load-carrying section disposed intermediate said tension section and said compression section, the improvement wherein the quotient of the bottom to top tooth pitch is approximately 1.40, the quotient of the bottom to top tooth depth is approximately 1.77 and the quotient of the belt thickness to flex thickness is approximately 3.98.

4,410,315
LOW VELOCITY TRIM REMOVAL MEANS AND METHOD
Kenneth G. Frye, Egremont, Mass., assignor to Beloit Corporation, Beloit, Wis.
Filed Oct. 3, 1980, Ser. No. 193,821
Int. Cl.³ B31B *1/18*
U.S. Cl. 493—342 **34 Claims**



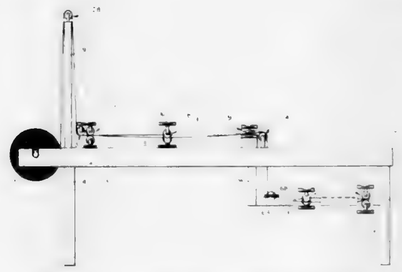
1. In combination with a slitter for marginally trimming a strip of material from a travelling web, and a trim chute extending angularly away from the slitter for receiving the trim strip:

rotary means cooperatively related to said slitter for receiving the trim strip therebetween and turning and biasing the trim strip from the slitter into the chute at substantially the speed of travel of said web;

and means in said chute for advancing the trim strip in the chute at a relatively lower velocity than said speed of travel;

said rotary means comprising annular drum surfaces spaced apart sufficiently to avoid nipping the trim strip but close enough for applying rotary frictional and air biasing components of force in the direction of travel of the trim strip.

4,410,316
METHOD FOR PRODUCTION OF CORRUGATED PAPER
James H. Yoke, Rte. 15, Box 395, Acton, Ind. 46259
Filed Mar. 18, 1982, Ser. No. 359,368
Int. Cl.³ B65H *45/22*
U.S. Cl. 493—399 **7 Claims**



1. A method for the production of corrugated paper which comprises the steps of:

a. feeding a continuous sheet of paper over a first elongated arcuate roller, said first arcuate roller being arcuately curved along its length and disposed in a first plane, said paper being fed to said first arcuate roller at an angle of about 90° to said first plane and said paper passing from said first arcuate roller in a path approximately along said first plane;

b. moving the paper along in said first plane to a second elongated arcuate roller also arcuately curved along its length while simultaneously making several longitudinal folds in said paper to reduce the overall width of said paper, said second arcuate roller being in said first plane, said first and second arcuate rollers having a common center of curvature about which they are curved, said longitudinal folds thereby extending radially between said first and second arcuate rollers;

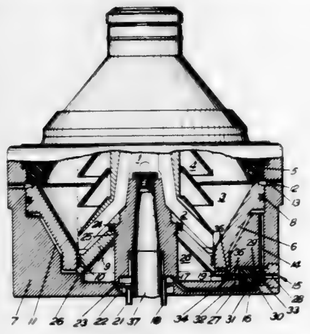
c. feeding the folded paper over said second arcuate roller, said folded paper being fed to said second arcuate roller in said first plane and said folded paper passing from said second arcuate roller along a path at an angle of about 90° to said first plane; and

d. opening the folds of the paper to yield a corrugated paper having several parallel ridges and grooves.

4,410,317
SELF-DISCHARGING CENTRIFUGAL DRUM
Hugo Zurbruggen, and Karl-Heinz Zettier, both of Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany
Filed Apr. 29, 1982, Ser. No. 373,200
Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119423
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—4 **8 Claims**

1. In a self-discharging centrifugal drum for clarifying and separating suspensions, the drum having a drum jacket, an axially displaceable piston valve that opens and closes expulsion openings in the circumference of the drum jacket to allow the removal of centrifuged solids, the piston valve being bounded above by a solids space and below by a closure compartment into which closure fluid is chargeable, a closure fluid

supply channel connected to the closure compartment including means forming an intermediate compartment for closure fluid and valving means activated by control fluid for evacuating the closure compartment by reducing the closure pressure in the closure compartment and leaving a part of the closure fluid in the intermediate compartment, the improvement wherein the supply channel includes a first channel connecting the intermediate and closure compartments and the valve



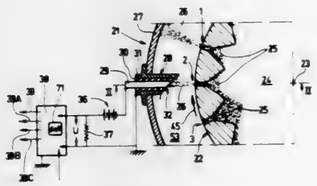
means comprises a centrifugal valve containing a radially movable cylindrical valve cone activated in response to control fluid applied thereto under pressure and having a valve projection fixed thereto which is smaller in diameter than the valve cone and projects radially inwardly therefrom and wherein the valve projection is sealed into the drum jacket behind the valve cone to close the first channel, when the valve cone opens.

4,410,318

METHOD AND ARRANGEMENT TO WATCH OVER SEPARATED SEDIMENT, WHICH IS THROWN OUT THROUGH NOZZLES OF A CENTRIFUGAL SEPARATOR

Johan E. G. Björk, Hägersten; Kaj Lindfors, Tumba, and Klaus H. D. Stroucken, Rönninge, all of Sweden, assignors to Alfa Laval AB, Tumba, Sweden

Filed Sep. 16, 1981, Ser. No. 302,740
Claims priority, application Sweden, Sep. 26, 1980, 8006732
Int. Cl.³ B01F *1/00, 9/14*
U.S. Cl. 494—10 **15 Claims**



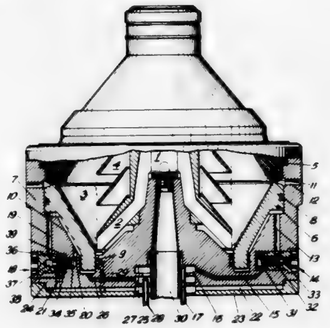
1. In the operation of a centrifugal separator having a rotor with a predetermined number of nozzles through which separated sediment is discharged in jets from the rotor, a method of monitoring said discharge of the jets which comprises directing said jets to influence a sensing means, causing said sensing means to give off a signal representing a measure of the quantity of a medium in each sensed jet, recording said signals in a recording apparatus, and using said recorded signals to give off a further signal from said apparatus if said quantity of the medium in at least one of the jets is changed.

4,410,319

SELF-DISCHARGING CENTRIFUGAL DRUM

Karl-Heinz Zettier, and Hugo Zurbrüggen, both of Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Apr. 28, 1982, Ser. No. 372,786
Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117807
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—29 **9 Claims**



1. A self-discharging centrifugal drum for clarifying and separating suspensions, the drum having a drum jacket, an axially displaceable piston valve that opens and closes expulsion openings in the circumference of the drum jacket to allow the removal of centrifuged solids, the piston valve being bounded by a solids space above and a closure compartment below into which closure fluid is chargeable and first fluid-activated centrifugal valving means in the drum jacket connected to the closure compartment by an evacuation channel that begins at the periphery of the closure compartment for vacating the closure compartment, the improvement comprising: means forming a closure fluid reservoir constantly filled with fluid under pressure during the operation of the centrifugal drum and second fluid-activated centrifugal valving means located in the drum jacket and connected to the closure compartment and to the reservoir for connecting the reservoir to the closure compartment when the closure compartment is being evacuated.

4,410,320

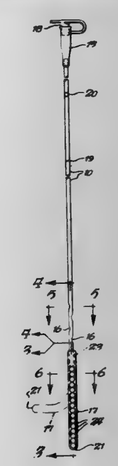
WEIGHTED ENTERIC FEEDING TUBE

Edward G. Dykstra, East Aurora, and Frank P. Wilton, Buffalo, both of N.Y., assignors to Ethox Corp., Buffalo, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,199
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—27 **8 Claims**

1. In an enteric feeding tube including a flexible, elongated tubular member adapted for nasogastric and naso-intestinal use, said tube having a weighted bolus at its distal end to facilitate the placement of said tube within the body and having a longitudinal axis, and a plurality of spaced openings in the wall of said tube adjacent the distal end thereof to permit the passage of fluids and comminuted solids to and from said tube, the proximal end thereof including means to facilitate the connection of said tube to a fluid feeding or fluid extraction arrangement, the improvement comprising said weighted bolus having an elongated, substantially cylindrical inner bore, a plurality of metallic weight means of a diameter substantially equal to and slightly smaller than said inner bore singularly positioned in side-by-side relationship within and extending longitudinally along said inner bore of said bolus, said weight means having adjacent surfaces of rounded shape and having an aggregate length less than the length of said inner bore to permit limited movement of said weight means relative to and along the

longitudinal axis of said bore and to permit said bolus to bend as necessary, said bolus having a rounded distal end to facilitate



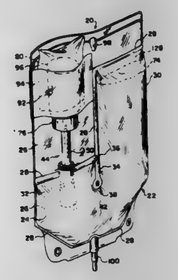
movement through the body passages and secured at its proximal end to said tube in sealing relationship.

4,410,321

CLOSED DRUG DELIVERY SYSTEM

Stephen Pearson, Ingleside, and Steffen A. Lyons, Grayslake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1982, Ser. No. 365,942
Int. Cl.³ A61J *1/00*
U.S. Cl. 604—56 **23 Claims**



1. A closed system for selectively mixing two separately stored components under sterile conditions, comprising:

(a) a compressible chamber including a selectively gas-trapping compartment and a reservoir compartment in open communication with said gas-trapping compartment, said compressible chamber containing the first component, which is a sterile liquid;

(b) a container containing the second component, which is sterile, at least one of said container and said chamber also containing a sterile gas;

(c) first means to access said chamber, adjacent said gas-trapping compartment;

(d) second means to access said container;

(e) junction means permanently affixed about at least the end portions of each of said access means, said junction means selectively maintaining said end portions in sterile relation;

(f) at least one of said access means including an element capable of selectively piercing said junction means so as to connect said first and second access means and establish a sterile pathway between said container and said chamber, through said first and second access means;

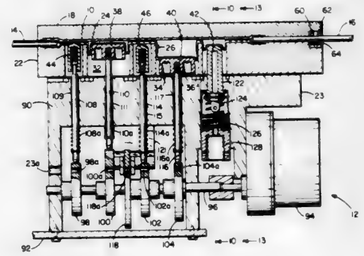
(g) whereupon after said sterile pathway is established, said gas-trapping and reservoir compartments may be selectively positioned to facilitate the proper mixing of the first and second components.

4,410,322

NONPULSATING TV PUMP AND DISPOSABLE PUMP CHAMBER

G. Kent Archibald, St. Paul, Minn., assignor to AVI, Inc., St. Paul, Minn.

Division of Ser. No. 19,223, Mar. 9, 1979, Pat. No. 4,236,880.
This application Sep. 10, 1980, Ser. No. 186,148
The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.
Int. Cl.³ A61M *5/00*
U.S. Cl. 604—153 **11 Claims**



1. A volumetric infusion pump for pumping fluid from a source to a patient comprising:

a pump inlet for receiving fluid from the source;

a pump outlet for supplying fluid under pressure to the patient;

a first pumping chamber having a first cylinder, a first piston, first flexible diaphragm means between the first cylinder and the first piston, a first inlet, and a first outlet, the first pumping chamber having a variable volume depending upon the relative positions of the first cylinder and first piston;

a second pumping chamber having a second cylinder, a second piston, second flexible diaphragm means between the second cylinder and the second piston, the second inlet connected to the first outlet, and a second outlet, the second pumping chamber having a variable volume depending upon the relative position of the second cylinder and second piston;

a third chamber having a third inlet and a third outlet, the third inlet being connected to the second outlet and the third outlet being connected to the pump outlet, the third chamber comprising a third cylinder, a third piston, and a third flexible diaphragm means between the third cylinder and the third piston so that the third piston moves in the third cylinder as a function of fluid pressure within the third chamber;

means for sensing fluid pressure within the third chamber by sensing position of the third piston;

first valve means for controlling fluid flow between the pump inlet and the first inlet;

second valve means for controlling fluid flow between the first outlet and the second inlet;

drive means for causing relative motion of the first cylinder and first piston and relative motion of the second cylinder and second piston;

valve control means for controlling the first and second valve means such that one of the first and second valve means is closed at all times; and

wherein the first, second and third flexible diaphragm

means, the pump inlet and the pump outlet form an integral disposable unit having a sealed main fluid flow passage between the pump inlet and the pump outlet, so that fluid is pumped from the pump inlet to the pump outlet without physically contacting the housing, the cylinders, the pistons, the valve means, the drive means, or the valve control means.

4,410,323

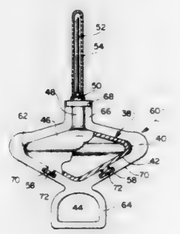
PREDOSED DISPOSABLE SYRINGE

Milton Hodosh, 72 Overhill Rd., Providence, R.I. 02906, and Milton H. Lipsky, Pine Tree La., West Greenwich, R.I. 02816

Continuation of Ser. No. 162,134, Jun. 23, 1980, abandoned, which is a continuation-in-part of Ser. No. 912,386, Jun. 5, 1978, abandoned, and a continuation-in-part of Ser. No. 931,209, Aug. 4, 1978, abandoned. This application May 3, 1982, Ser. No. 374,333

Int. Cl.³ A61M *1/00*

U.S. Cl. 604—212 **13 Claims**



1. A disposable syringe comprising a flexible compressible container for medication to be administered, means on said container for mounting a needle thereon, and means for compressing said container to eject the medication through said needle, said entire unit being sterilized, said compressing means comprising a holder for said container, means for mounting said container in said holder, said holder comprising a flat flexible member having a central opening for receiving said container therein, the bottom of said container being provided with outwardly extending tabs and said holder opening being provided with slots for receiving said tabs therein.

4,410,324

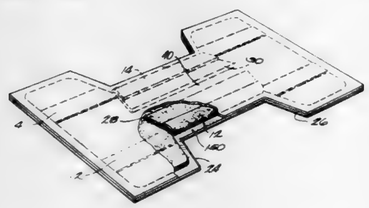
FORM FIT DIAPER WITH INSIDE SEAL AND THICKENED CROTCH AND METHOD OF MAKING THE SAME

Reinhardt N. Sabee, 728 S. Summit St., Appleton, Wis. 54911

Filed Mar. 16, 1981, Ser. No. 244,442

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—368 **13 Claims**



1. A disposable diaper having a generally rectangular outline and having an intermediate portion of less width than the end portions to provide a form fitting diaper crotch portion, said diaper comprising a moisture impervious backing sheet, an absorbent pad on the backing, with the pad being folded over upon itself in the crotch area to be of a thickness greater than the thickness in the waistband portions to provide increased absorbency in the crotch area, moisture impermeable strips between said filler and said backing, said strips being folded over the absorbent pad in the crotch area to lock the pad against shifting, and a moisture permeable facing sheet having a shape generally complementary to the backing sheet and sealed along its edges to the backing sheet, and including spaced elastic bands secured to one of said facing and backing sheets.

4,410,325

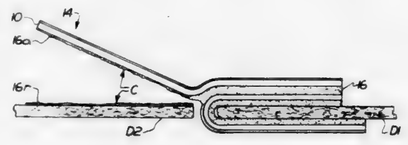
DIAPER TAB SEPARABLE AND REJOINABLE AT AN ADHESIVE INTERFACE

Donald W. Lare, Perry, Ohio, assignor to Avery International Corporation, Pasadena, Calif.

Filed Feb. 6, 1981, Ser. No. 232,151

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—389 **1 Claim**



1. A refastenable tab having at least a principal substrate having a "factory end" at which the tab is factory-applied by the manufacturer of diapers or the like to a first portion of a diaper or the like and a "user end" at which the tab is user-applied to a second portion of the diaper or the like to fasten or refasten the tab, principal substrate adhesive means at said factory end permanently associated, throughout the entirety of the thickness of said adhesive means, with said principal substrate at said factory end for permanently applying said factory end of said substrate to said first portion of a diaper or the like, and principal substrate adhesive means at said user end for temporarily manually applying said user end to said second portion of a diaper or the like by an initial manual application of pressure at an arbitrary level within a range to thereby fasten the tab by pressure-sensitively joining the adhesive means to said second portion along an interface between the adhesive means and said second portion, and for allowing manual removal of said user end from said second portion to thereby unfasten the tab by separation of said adhesive means from itself along an intra-adhesive cleavage interface, and for then manually reapplying said user end to said second portion by manual reapplication of pressure to thereby refasten the tab along said intra-adhesive cleavage face, and for allowing repeating of said unfastening and refastening along said intra-adhesive cleavage face as desired, said principal substrate adhesive means at said user end being permanently associated throughout only the adjacent portion of the entirety of the thickness of said adhesive means, with said principal substrate at said user end, and being disassociateable, throughout the remote remaining portion of the entirety of the thickness of said principal substrate adhesive means at said user end, from said principal substrate at said user end by self-division of said principal substrate adhesive means along said intra-adhesive cleavage interface to effect said unfastening of the tab and complete an entirely manually effected transfer, to a "landing zone" on said second portion of the diaper or the like, of said remote remaining portion of the entirety of the thickness of said principal substrate adhesive means at said user end, said adhesive means being rejoinable to itself at said intra-adhesive cleavage interface by said manual reapplication of pressure to effect said refastening of the tab, whereby the peel strength and degree of controlled and overcomeable resistance to unfastening of the user end of the tab upon both fastening and refastening of the tab is established by the tap manufacturer independently of the level of pressure of initial application and of any relatively high degrees of bond between the adhesive means

and the particular material of said second portion of the diaper or the like and without reliance for reclosed adhesion on the reclosing of an interface between an adhesive and a release coat, said principal substrate adhesive means at the user end consisting of a single layer of adhesive.

4,410,326

ADHESIVE-TYPE SECURING DEVICE FOR DISPOSABLE DIAPERS, AND DISPOSABLE DIAPER COMPRISING SUCH A SECURING DEVICE

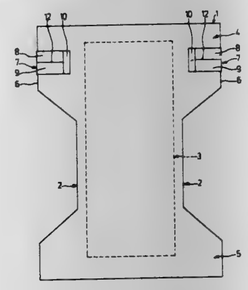
Jacques Dussaud, Lille, and Raphael De Jonckheere, Bondues, both of France, assignors to Boussac Saint Freres B.S.F., Lille, France

Filed Sep. 21, 1981, Ser. No. 304,440

Claims priority, application France, Sep. 23, 1980, 80 20442

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—390 **6 Claims**



1. In a disposable diaper of the type having a substantially moisture impervious thin backing sheet having a back part and a front part, and an inner face and an outerface, and carrying on its inner face an absorbent pad assembly with a permeable web facing sheet covering said backing sheet and absorbent pad assembly, and a pair of adhesive securing devices attached to a marginal portion of the back part of said backing sheet, the improvement wherein:

said diposable diaper is adapted for multiple putting on and taking off operations, with said securing device comprising;

a first longitudinal portion fixedly attached along its entire width to the marginal portion near the lateral edge of the outer face of said back part of said backing sheet;

a second longitudinal portion integral with said first longitudinal portion, and said second longitudinal portion divided along its entire length into at least two adhesive securing tabs positioned side by side and separated by a longitudinal split line which in use extends outside said lateral edge of said backing sheet, and each of said at least two adhesive securing tabs having an adhesive coating, on the face directed toward the inner face of said backing sheet, and each adapted to be contacted and adhered to the outerface of said front part of said backing sheet to close said disposable diaper around an infant; and

means for individually covering, before use, the respective adhesive coating of said at least two adhesive securing tabs, with said at least two adhesive securing tabs adapted for being respectively individually torn along a tear line running substantially along said lateral edge of the backing sheet, whereby when said diaper is first put on for wearing only one of said at least two adhesive securing tabs is adhered to the outerface of said backing sheet, and upon a subsequent opening and closing of said diaper, said one adhesive securing tab is individually torn along said tear line, and another of said at least two adhesive securing tabs is adhered to the outerface of said backing sheet.

4,410,327

DIAPER

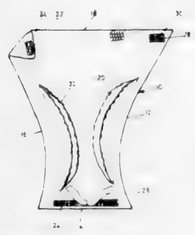
Norman E. Baggaley, Umhloti Beach, South Africa, assignor to Laboratories (South Africa)(Proprietary) Ltd., Johannesburg, South Africa

Filed Apr. 9, 1981, Ser. No. 252,551

Claims priority, application South Africa, Apr. 14, 1980, 80/2210

Int. Cl.³ A41B *13/02*

U.S. Cl. 604—391 **14 Claims**



1. A diaper comprising:

a body of material having a first edge adapted to encircle an infant, a second edge opposite said first edge, a first side, and a second side opposite said first side,

a first quick release means attached to said first said generally adjacent said first edge,

a second quick release means attached to said second side generally adjacent said first edge,

a third quick release means attached to said first side generally adjacent said second edge and adapted to coact with said second quick release means, and

a flexible element associated with said second edge, and including a fourth quick release means adapted to coact with said first quick release means.

4,410,328

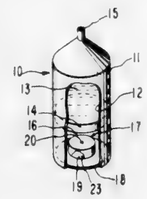
DISPENSING DEVICE WITH INTERNAL DRIVE

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Jul. 10, 1981, Ser. No. 281,952

Int. Cl.³ A61M *7/00*

U.S. Cl. 604—892 **1 Claim**



1. A dispensing device for delivering a beneficial agent to an environment of use, the dispensing device comprising:

(a) a housing comprising a shape retaining wall that defines an internal space, which housing has at its top an opening that connects the space with the exterior of the housing, and at its bottom a retaining member that lets an external fluid enter the housing;

(b) a piston in the housing that fits against the internal wall of the housing;

(c) a beneficial agent compartment for storing a beneficial agent in the housing, the beneficial agent compartment defined by the space below the top opening and above the piston; and,

(d) a driving compartment in the housing, the driving compartment defined by the space above the retaining member

and below the piston, the driving compartment containing an osmotic device comprising:

(1) a semipermeable wall that surrounds;

(2) an osmotic agent compartment containing an osmotically effective solute, with;

(3) a passageway through the semipermeable wall connecting the osmotic agent compartment with the exterior of the osmotic device, and wherein when in operation, beneficial agent is delivered from the dispensing device by (4) external fluid entering the dispensing device through the retaining member, and (5) being imbibed through the semipermeable wall into the osmotic agent compartment of the osmotic device to, (6) form a solution containing the osmotic solute that is pumped through the passageway from the osmotic device that, (7) fills the driving compartment, thereby (8) urging the piston forward in the dispensing device, and (9) concomitantly dispensing beneficial agent through the top opening to the environment of use.

4,410,329

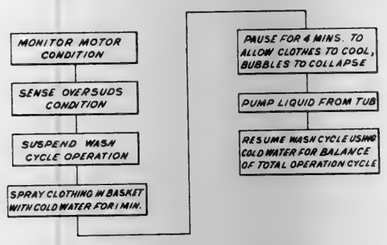
WASHING MACHINE WITH OVERSUDS DETECTION AND CORRECTION CAPABILITY

Theodore J. Blevins, Georgetown; Gerald L. Roberts, Louisville; Robert K. Hollenbeck, Louisville, and Jimmy R. Rickard, Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 6, 1981, Ser. No. 318,712

Int. Cl.³ D06F *33/02, 39/06*

U.S. Cl. 8—158 **13 Claims**



1. A clothes washing appliance of the type having a plurality of normal operating cycles including wash and spin cycles, said appliance comprising:

a substantially stationary tub;

a clothes receiving basket movably supported in said tub;

spray means for distributing fill water substantially over the topmost layer of articles received in said basket;

fill valve means for controlling the delivery of fill water from an external supply to said spray means;

motor means selectively operative in a wash mode and a spin mode to provide wash and spin operating cycles, respectively;

pump means for removing water from said tub;

control means comprising means for detecting an oversuds condition in said tub and said basket, and means responsive to said detection means operative upon detection of said oversuds condition to interrupt the wash cycle and to actuate said fill valve means, thereby causing water to be distributed over the clothes in said basket by said spray means and thereafter to resume the wash cycle.

4,410,330

METHOD OF PRODUCING MULTI-COLORED DYEINGS

Hans-Peter Stakelbeck, Binzen, Fed. Rep. of Germany, and Rudolf Sommerhalder, Basel, Switzerland, assignors to Sandoz, Ltd., Basel, Switzerland

Continuation of Ser. No. 65,695, Aug. 10, 1979, abandoned, which is a continuation-in-part of Ser. No. 933,422, Aug. 14, 1978, abandoned. This application Jan. 12, 1981, Ser. No. 224,105

Claims priority, application Switzerland, Aug. 19, 1977, 10200/77; Aug. 3, 1979, 7157/79

Int. Cl.³ D06P *5/12, 1/39, 3/87*

U.S. Cl. 8—455 **22 Claims**

1. A process for dyeing a voluminous flat form anionic dyeable substrate which comprises the steps of

(1) applying locally to the substrate a component having poor migration properties and selected from the group consisting of

(a) an acid dyestuff,

(b) an anionic optical brightener,

(c) a fibre-reactive group-containing reserving agent or a synthetic tannin blocking agent and

(d) a mixture of at least two of (a), (b) and (c),

with the proviso that, except when applied in admixture with a synthetic tannin, the acid dyestuff must have a molecular weight of 600 to 1050 and contain at least two sulpho groups and the anionic optical brightener must have a molecular weight of about 800 to 850 and contain at least one sulpho group,

(2) prefixing at a temperature from 100° C. to 160° C. for 30 to 180 seconds the component applied in step (1),

(3) in the absence of a washing or rinsing step, ground dyeing the treated substrate in a short bath at a liquor-to-goods ratio below 10:1 with a dyestuff having better migration properties than the component applied in step (1), which dyestuff is suitable for dyeing anionic-dyeable substrates by the cold retention process,

(4) rolling up the substrate, and

(5) rotating the rolled-up substrate at a temperature of from 15° to 60° C. for 1 to 48 hours, to effect fixation of the dyestuff.

4,410,331

CONDENSATION PRODUCTS CONTAINING SULPHONIC ACID GROUPS: ADDITIVES FOR DYEING SYNTHETIC POLYAMIDE

Albert Würmli, Riehen, and Hans U. Berendt, Allschwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

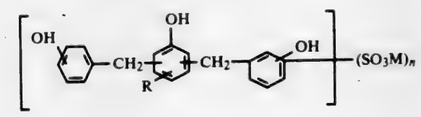
Division of Ser. No. 167,578, Jul. 11, 1980, Pat. No. 4,322,372, which is a continuation of Ser. No. 937,367, Aug. 28, 1978, abandoned, which is a continuation of Ser. No. 769,376, Feb. 16, 1977, abandoned, which is a continuation of Ser. No. 659,309, Feb. 19, 1976, abandoned, which is a continuation of Ser. No. 365,886, Jun. 1, 1973, abandoned. This application Aug. 13, 1981, Ser. No. 292,546

Claims priority, application Switzerland, Jun. 15, 1972, 8980/72

Int. Cl.³ C07C *139/00, 143/42;* **D06P** *1/84*

U.S. Cl. 8—589 **10 Claims**

1. A process for dyeing synthetic polyamide fibres with anionic dyes, wherein the dyeing preparations contain a condensation product of the formula



wherein R represents alkyl, cycloalkyl, aralkyl, aryl or halogen, M represents hydrogen, an alkali metal or alkaline earth metal, or an ammonium group, and n is a number from 1 to 3.

4,410,332

PROCESS FOR THE LEVEL DI- AND TRICHROMATIC DYEING OF POLYACRYLONITRILE MATERIALS WITH MIGRATING AND NON-MIGRATING CATIONIC DYES

Manfred Herrmann, Steinbach, Fed. Rep. of Germany; Rico Jenny, and Manfred Motter, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 11, 1982, Ser. No. 344,466

Claims priority, application Switzerland, Feb. 4, 1981, 742/81

Int. Cl.³ D06P *3/76*

U.S. Cl. 8—644 **9 Claims**

1. A process for the level di- and trichromatic dyeing of polyacrylonitrile materials or of blended yarns containing polyacrylonitrile, which process comprises using for the dyeing an aqueous dyeing liquor which contains at least two dye mixtures, each dye mixture consisting of at least (a) one migrating cationic dye, the cation weight of which is less than 310, the parachor of which is less than 750 and the log P of which is less than 3.6, and (b) one non-migrating cationic dye, at least one parameter of which is outside the definition given under (a), and using the components (a) and (b) in a mixing ratio which is such that during the dyeing process the migrating and non-migrating dyes migrate on the fibre on tone.

4,410,333

STABLE AND HOMOGENEOUS FUEL COMPOSITION FOR INTERNAL COMBUSTION ENGINE AND PROCESS FOR PREPARING THE SAME

Shigenobu Fujimoto, Kamakura, Japan, assignor to Daishin Sangyo Kabushiki Kaisha, Kamakura, Japan

Filed Mar. 26, 1982, Ser. No. 362,476
Claims priority, application Japan, Mar. 31, 1981, 56-48205
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **9 Claims**

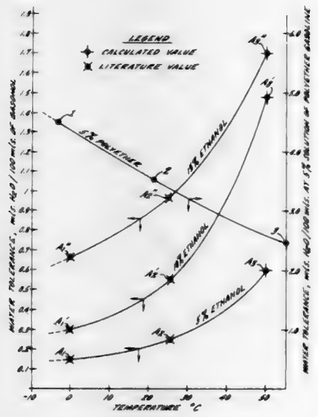
1. A process for preparing a stable and homogeneous fuel composition for an internal combustion engine, comprising the steps of applying a high-frequency electric current of 500 kHz to 50 MHz to water, mixing said water with an alcohol selected from the group consisting of methanol and ethanol to obtain a mixture, applying a high-frequency electric current of 500 kHz to 50 MHz to said mixture, admixing said mixture with gasoline to obtain an admixture, and applying a high-frequency electric current of 500 kHz to 50 MHz to said admixture.

4,410,334

HYDROCARBON FUEL COMPOSITION

Harold B. Parkinson, Monroe St., Gardner, Ill. 60424

Filed Oct. 30, 1981, Ser. No. 316,747
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **17 Claims**



1. A fuel composition comprising a major amount of a hydrocarbon base fuel, up to about 20% by volume of a supplemental fuel component having a research blending octane number in excess of about 100 and at least about 1% by volume of a polyether more soluble in said hydrocarbon base fuel than in water, said fuel composition being capable of tolerating water in an amount greater than the tolerance of a blend of the hydrocarbon base fuel and the supplemental fuel component.

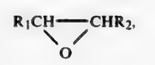
4,410,335

MULTIFUNCTIONAL GASOLINE ADDITIVES

Michael E. Childs, Wilmette, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 306,263, Sep. 28, 1981, abandoned, which is a continuation of Ser. No. 161,829, Jun. 23, 1980, abandoned. This application Feb. 16, 1982, Ser. No. 349,431
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—72 **22 Claims**

1. A composition comprising a major amount of a fuel oil and a minor amount greater than about 10 parts per million but less than about 100 ppm of the reaction product of 1 mole proportion of an epoxide of the formula



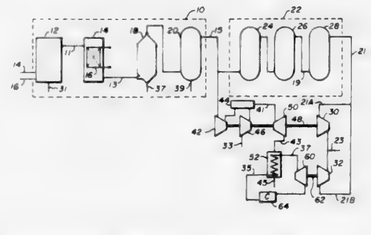
where R_1, R_2 are selected from the group consisting of hydrogen and hydrocarbyl containing up to about 18 carbon atoms, where the sum of carbon atoms in R_1, R_2 is at least 4 but not greater than about 18, with an equivalent of a polyamine selected from the group consisting of unsubstituted alkylenediamines, where the alkylene group contains from about 2 to about 8 carbon atoms, N-alkyl alkylenediamines, where the alkyl group contains from about 6 to about 22 carbon atoms, N-alkoxyalkyl alkylenediamines, where the alkoxy group contains from about 1 to about 25 carbon atoms and the alkyl portion is an alkylene group containing from about 2 to about 8 carbon atoms, and polyamines of the formula $H_2N(CH_2CH_2NH)_xH$, where x is an integer from about 2 to about 8.

4,410,336

PRODUCTION OF PIPELINE GAS FROM COAL

Henry J. Blaskowski, Avon, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 24, 1982, Ser. No. 351,838
Int. Cl.³ C10J *3/00*
U.S. Cl. 48—210 **4 Claims**



1. A low pressure gasification process for producing pressurized pipeline gas from coal comprising:

a. gasifying coal in oxygen at a relatively low pressure of less than about 5 atmospheres to produce a raw gas containing carbon monoxide, hydrogen, carbon dioxide, gaseous sulfur compounds and particulates;

b. cooling the raw gas produced in the gasification step to a temperature in the range of about 200 C. to about 400 C.;

c. purifying the cooled raw gas thereby removing substantially all of the sulfur compounds and particulates contained therein;

d. converting the carbon monoxide and hydrogen in the substantially sulfur-free and particulate-free gas to methane to yield an enriched ggas containing methane and carbon dioxide;

e. removing the carbon dioxide from the methane enriched gas;

f. compressing a portion of the substantially sulfur-free and particulate-free gas produced in step (c);

g. combusting the pressurized substantially sulfur-free and particulate-free gas with compressed air to provide a high temperature, high pressure flue gas;

h. expanding the high temperature, high pressure flue gas through a gas turbine to drive a first gas compressor;

i. passing the flue gas exhausted from the gas turbine in heat exchange relationship with a pressurized vaporizable liquid to produce a pressurized vapor;

j. expanding the pressurized vapor through a vapor turbine to drive a second gas compressor; and

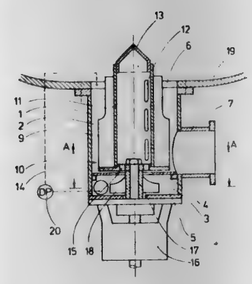
k. passing the methane enriched gas through the first and second gas compressors to compress the methane enriched gas to pipeline pressure.

4,410,337

METHOD AND AN APPARATUS FOR SEPARATING A GAS FROM A FIBRE SUSPENSION

Johan Gullichsen, Siuntio; Jaakko P. Kujala, Karhula; Toivo J. Niskanen, Hamina; Voitto O. A. Reponen, Karhula, all of Finland, and Esko J. Härkönen, Karlstad, Sweden, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Apr. 7, 1980, Ser. No. 139,162
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—21 **8 Claims**



1. A method of operating an apparatus for separating gas from a fibre suspension of high consistency, the apparatus including a housing having an upper chamber and a lower chamber, an upper inlet being provided in the upper chamber for receiving the fibre suspension and an outlet being provided for discharging the fibre suspension after separation of gas therefrom; in the lower chamber there being provided an inlet for receiving separated gas from the upper chamber and an outlet for discharging said gas from the lower chamber; the apparatus further including a rotor in the upper chamber that is rotatably driven to effect such separation of the gas from the fibre suspension; which method comprises the steps of:

(a) sensing the difference in pressure between said upper inlet of the upper chamber, where the fibre suspension is received, and said gas discharge outlet of the lower chamber, and;

(b) operating a control valve connected to said gas discharge outlet in accordance with said sensed pressure difference to maintain said pressure difference at a value within given limits.

3. An apparatus for separating gas from a fibre suspension of high consistency, which comprises:

(a) a housing having an upper chamber provided with an upper inlet for receiving the fibre suspension and a lower outlet for discharging said fibre suspension after separation of gas therefrom;

(b) a lower chamber in said housing provided with an upper inlet communicating with said upper chamber for receiving said separated gas from said upper chamber and an outlet for discharging said gas from said lower chamber;

(c) a shaft extending in said upper and lower chambers, said shaft being rotatable relative thereto;

(d) a first rotor disposed in said upper chamber and connected to said shaft for rotation therewith, said first rotor having blades positioned to define a clearance space extending radially about the axis of rotation, said clearance space communicating with said lower chamber through said upper inlet thereof to pass into said lower chamber gas centrifugally separated from the fibre suspension by the rotation of said first rotor;

(e) said first rotor having a plate disposed substantially transverse to the axis of said rotor and located adjacent to the upper inlet of said lower chamber, said plate of the first rotor having at least one open passage allowing said gas to pass therethrough; and

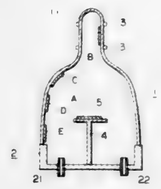
(f) a second rotor disposed in said lower chamber and connected to said shaft for rotation therewith, said second rotor having blades effective to remove from said lower chamber through the outlet thereof such fibre as may enter said lower chamber.

4,410,338

GAS SEPARATING MEMBERS AND A METHOD OF MAKING THE SAME

Minoru Yamamoto; Masana Hirai, and Jiro Sakata, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Continuation of Ser. No. 159,275, Jun. 13, 1980, abandoned. This application Jun. 15, 1982, Ser. No. 388,577
Claims priority, application Japan, Jun. 25, 1979, 54-79952; Oct. 17, 1979, 54-134466
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—158 **19 Claims**



1. A method of making a gas separating member which comprises the steps of setting a porous substrate in the form of a film, wall or hollow fiber in a plasma generator,

activating an organosilane monomer by plasma to form a plasma polymerized film of said organosilane as a first layer having high gas permeability on a surface of the substrate, and

activating a second monomer other than the organosilane by plasma to form a plasma polymerized layer as the second layer having high gas separation factor on the organosilane first layer.

6. A gas separating member comprising a porous substrate in the form of a film, wall or hollow fiber and a plasma polymerizate polymer film on a surface of the substrate, the polymer film including two layers formed by plasma polymerization, the two layers being a first layer having high gas permeability formed from an organosilane formed on a surface of the substrate by plasma polymerization and the second layer having high gas separation factor formed of a monomer other than an organosilane formed on the first layer by plasma polymerization.

4,410,339

APPARATUS FOR WASHING AIR IN AIR-CONDITIONING SYSTEMS

Bruno Bachhofer, Säntisstr. 85, Bavendorf, Fed. Rep. of Germany D-7981, and Anton Locher, Bergstr. 6, Ravensburg, Fed. Rep. of Germany D-7980

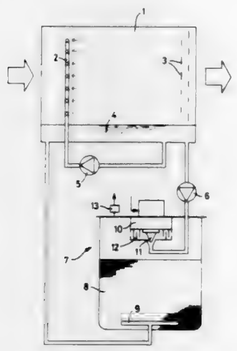
Continuation of Ser. No. 175,902, Aug. 6, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,383
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1979, 2934846
Int. Cl.³ B01D *47/06*; A61L *9/14*
U.S. Cl. 55—228 **4 Claims**

1. Apparatus for removing impurities from air in an air-conditioning system comprising:

a first cyclic unit including a spray chamber having a plurality of nozzles for spraying a fluid comprising a mixture of water and a halogen into air passing therethrough, said spray chamber further having a fluid supply including said mixture of water and halogen and located in the bottom of said spray chamber to provide fluid to said spray nozzles, and a first fluid connector with an inlet for receiving fluid from said fluid supply and an outlet coupled to said spray

nozzles for transferring fluid from said fluid supply in said spray chamber to said spray nozzles; and

a second cyclic unit spaced apart from said first cyclic unit and including a tank, an ozone treatment unit mounted in said tank, said ozone treatment unit including an ozone generator therein, a second fluid connector having an inlet in said fluid supply spaced apart from said inlet of said first fluid connector and an outlet, said second cyclic unit further including a mixer chamber connected to said out-



let of said second fluid connector for receiving the ozone generated by said ozone generator and the fluid flowing through said second fluid connector and mixing said ozone and said fluid to remove impurities from said fluid, a third fluid connector having an inlet in said tank and an outlet coupled to said fluid supply for transferring said ozone treated fluid from said tank to said fluid supply, said tank including a filter section located between said ozone treatment unit and said inlet of said third fluid connector through which filter section the ozone treated fluid passes.

4,410,340

APPARATUS FOR SEPARATING FIBRE MATERIAL

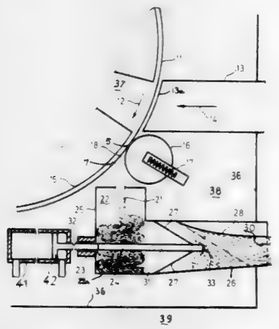
Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

Filed Mar. 1, 1982, Ser. No. 353,648

Claims priority, application Switzerland, Jun. 3, 1981, 1517/80

Int. Cl.³ B01D *46/38*

U.S. Cl. 55—290 **11 Claims**



1. An apparatus for separating fibre material from an air stream of a pneumatic transporting system, comprising:

a rotatable filter drum internally of which there prevails a vacuum during operation of the separating apparatus;

said filter drum containing a substantially sieve-like drum jacket at which merges said transporting system;

said filter drum including a fibre take-off zone from which there is removed the fibre material;

screen means for covering an inner surface of the drum jacket at the region of said fibre take-off zone;

a receiving container arranged below the fibre take-off zone for taking-up a fibre layer removed at the take-off zone and dropping into said receiving container;

a delivery channel provided with an exit opening;

said delivery channel leading away from said receiving container towards said exit opening;

an intermittently operating plunger for displacing fibre layer collected in said receiving container from said receiving container into said delivery channel;

means for intermittently operating said plunger;

said receiving container having a container floor;

the spacing of the fibre take-off zone from the floor of said container failing to exceed that length of the dropping fibre layer at which, during operation of the separating apparatus, there still can be just avoided tearing of the fibre layer;

closure flap means located in said delivery channel;

said closure flap means being movable into a sealing position extending from an attachment point of said closure flap means in said delivery channel towards said exit opening at an angle with respect to the lengthwise axis of said delivery channel and across said lengthwise axis; and

said closure flap means being structured to be elastically pre-biased against the fibre layer located in said delivery channel.

4,410,341

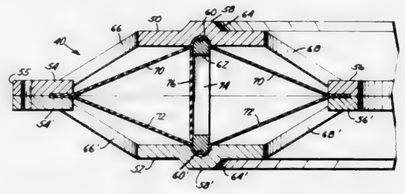
FLUID FILTER CARTRIDGE

William J. Edwards, and John D. Stricklin, both of Oklahoma City, Okla., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.

Filed Sep. 27, 1982, Ser. No. 424,928

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—482 **4 Claims**



1. A filter cartridge for filtering fluid caused to circulate within an enclosed housing by rotation of a structure within the housing, said cartridge comprising, in combination:

(a) a rigid body portion having a pair of confronting mating halves forming an internal filter cavity, each of said halves comprising:

(i) an inner ring portion and an outer ring portion;

(ii) an annular portion between said inner and outer ring portion;

(iii) a frustoconical portion joining said annular portion to said inner and outer ring portions, said frustoconical portion having a sloped inner member joining said annular portion to said inner ring and having a sloped outer member joining said annular portion to said outer ring; and

(iv) a plurality of first apertures through said sloped inner member and a plurality of second apertures through said sloped outer member;

(b) first and second annular sheets of filter media engaged about their outer peripheries between the outer ring portions of said confronting havles and about their inner peripheries between the inner ring portions of said confronting halves; and

(c) a ring member supported by said annular portions within said filter cavity between said first and second sheets of filter material to engage said first sheet of filter material against an internal surface of the annular portion of one of said confronting halves and to engage said second sheet of filter material against an internal surface of the annular portion of the other of said confronting halves, said ring member having a plurality of third apertures therethrough;

said confronting halves being permanently joined together at the inner and outer ring portions thereof with said first and second sheets of filter media engaged therebetween, whereby fluid flowing radially between the outside and the inside of the annulus formed by the cartridge passes through at least two regions of filter media.

4,410,342

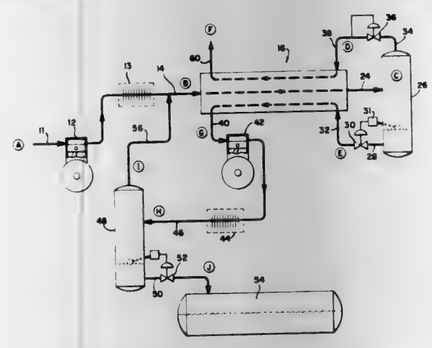
METHOD AND APPARATUS FOR SEPARATING A LIQUID PRODUCT FROM A HYDROCARBON-CONTAINING GAS

John L. Horton, Shreveport, La., assignor to United States Riley Corporation, Shreveport, La.

Filed May 24, 1982, Ser. No. 381,215

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—23 **15 Claims**



1. A method of separating a liquid product from a hydrocarbon-containing feed gas comprising

introducing the feed gas to a heat exchanger;

cooling said feed gas in said heat exchanger to condense a portion of said feed gas to form a first vapor fraction and a rich liquid fraction;

flowing said first vapor fraction at a predetermined inlet pressure through an expansion valve to reduce the pressure of said first vapor fraction to a pressure at or below ½ of the expansion valve inlet pressure, thereby substantially cooling said first vapor fraction;

flowing said rich liquid fraction at a predetermined inlet pressure through a second expansion valve to reduce the pressure of said rich liquid fraction to a pressure at or below ½ of the second expansion valve inlet pressure, thereby substantially cooling said rich liquid fraction;

introducing said cooled first vapor fraction and said cooled rich liquid fraction into said heat exchanger for indirect heat-exchange with said feed gas to cool said feed gas, to heat said cooled first vapor fraction and to heat said rich liquid fraction to form a rich gas;

removing said rich gas from said heat exchanger;

condensing a portion of said rich gas to form a liquid product and a rich vapor fraction; and

adding said rich vapor fraction to said feed gas and recycling said rich vapor fraction, in admixture with said feed gas, to said heat exchanger to decrease the concentration of the ligher hydrocarbons in the liquid product.

11. A method of separating a hydrocarbon feed into a liquid heavier fraction and a lighter vapor fraction comprising:

introducing the feed into an intermediate passage of a heat exchanger and cooling said feed from surrounding passages of said heat exchanger to partially condense said feed to form a first liquid fraction and a first vapor fraction;

cooling said first vapor fraction and said first liquid fraction;

introducing said cooled first vapor fraction and said cooled first liquid fraction into said surrounding passages of said heat exchanger to heat said first vapor fraction and said first liquid fraction, to vaporize at least a portion of said first liquid fraction and to cool said feed;

removing said heated first vapor fraction from said heat exchanger as said lighter vapor fraction;

removing said heated first liquid fraction from said heat exchanger and condensing at least a portion of said vapors from said first liquid fraction to form said heavier liquid fraction and a second vapor fraction and

recirculating said second vapor fraction through said intermediate passage of said heat exchanger to increase the concentration of the lighter hydrocarbons in the lighter vapor fraction.

4,410,343

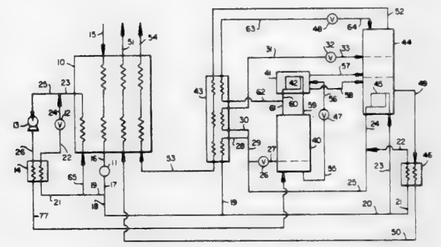
AIR BOILING PROCESS TO PRODUCE LOW PURITY OXYGEN

John H. Ziemer, Grand Island, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 24, 1981, Ser. No. 334,238

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—29 **10 Claims**



1. In a process for the production of oxygen by the fractionation of air, wherein feed air at greater than atmospheric pressure and substantially free of water and carbon dioxide is introduced (a) into a medium pressure column where it is separated by rectification into a nitrogen-rich fraction and an oxygen-enriched fraction, and (b) into a low pressure column where it is separated by rectification into a nitrogen-rich fraction and a product oxygen fraction; and wherein the low pressure column bottoms are reboiled in a main condenser to produce vapor reflux by indirect heat transfer with a higher pressure condensing feed air stream, the improvement comprising:

(1) introducing from about 50 to 75 percent of the gaseous feed air into the main condenser as said condensing feed air stream;

(2) introducing from about 25 to 50 percent of the gaseous feed air into the medium pressure column at a pressure lower than the pressure of said condensing feed air stream;

(3) expanding the condensed feed air stream to a lower pressure;

(4) introducing from about 50 to 75 percent of the condensed feed air stream into the medium pressure column as additional feed; and

(5) introducing from about 25 to 50 percent of the condensed feed air stream into the low pressure column as feed;

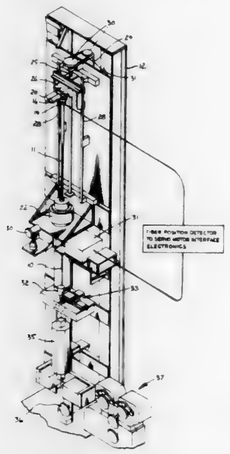
thereby enabling both the low pressure column and the medium pressure column to be operated at down to the lowest effective pressure and up to the most efficient reflux ratio.

4,410,344

OPTICAL WAVEGUIDE FIBER DRAW GUIDING AND COATING METHOD AND APPARATUS

Rama Iyengar, Lilburn, Ga., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,561
Int. Cl.³ C03B *37/025, 37/07*
U.S. Cl. 65—3.11 **13 Claims**



1. A method of guiding an optical waveguide fiber being drawn from an optical waveguide fiber preform comprising the steps of sensing an actual position of the fiber, comparing the sensed position with a preselected position located along a preselected path of fiber travel, and moving the preform in response to deviations in the sensed position from the preselected position so as to maintain the fiber travelling substantially along the preselected path.

7. A method of uniformly coating an optical waveguide fiber comprising the steps of positioning an elongated glassy optical fiber preform in an upright orientation; heating the preform; drawing fiber from the bottom of the heated preform and passing the drawn fiber through a tubular coating applicator located beneath the preform; sensing the position of the fiber being drawn from the preform; and repositioning the preform in response to sensed deviations in fiber position from along a preselected path that extends through the tubular coating applicator along the applicator axis so as to return the drawn fiber to the preselected path and thereby maintain its travel through the coating applicator substantially along the applicator axis.

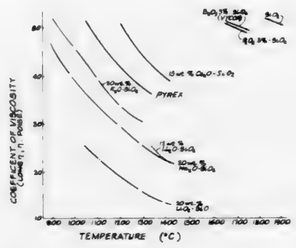
4,410,345

METHOD OF PRODUCING OPTICAL WAVEGUIDE

Yuichi Usui, Yokohama; Shigeo Murai, Kyoto; Shiro Kurosaki, Nishinomiya, and Minoru Watanabe, Yokohama, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 110,705, Jan. 9, 1980, abandoned. This application Aug. 21, 1981, Ser. No. 295,069
Claims priority, application Japan, Jan. 11, 1979, 54-2719; Feb. 1, 1979, 54-11047
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.15 **9 Claims**

1. A method of producing an optical wave guide comprising an optical fiber by the drawing of a doped, transparent, glass rod to form said fiber which comprises the steps of preparing said doped, glass rod by stuffing a porous glass rod with two classes of dopant materials, refractive index increasing (Rii) dopant materials and viscosity reducing (V-R) dopant materials; unstuffing the refractive index dopant materials from at least the outer portions of the porous rod by solvent diffusion to form a cladding portion of lower refractive index around a high refractive index core portion; maintaining the viscosity-reducing dopant materials, at least at said outer cladding portion, at a concentration sufficient to provide dopants which reduce the viscosity of the cladding at drawing temperatures to approach and match the viscosity of the high-refractive index



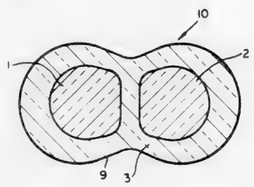
core, said viscosity-reducing dopant materials being selected from the group of water-soluble compounds consisting of the elements which form glass viscosity-reducing oxides selected from the group consisting of oxides of P,B,Li,Na,K,Mg and Ca, said refractive index-increasing dopant materials being selected from the group consisting of water-soluble compounds and mixtures thereof of Cs, Rb, Pb, Ba, Al, Na, Nd, B and K which upon heating, form refractive-index-increasing oxides for glass; heating said so-diffused rods to convert said dopant materials to dopants to form said doped, transparent glass rods; and drawing the doped transparent rod to a fiber.

4,410,346

METHOD FOR MANUFACTURING DISTRIBUTOR AND MIXER ELEMENTS FOR OPTICAL COMMUNICATION TECHNOLOGY

Hubert Aulich, Munich, and Karl-Heinz Eisenrith, Schliersee, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 291,019
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1980, 3035089
Int. Cl.³ C03B *37/025, 37/075*
U.S. Cl. 65—4.2 **9 Claims**



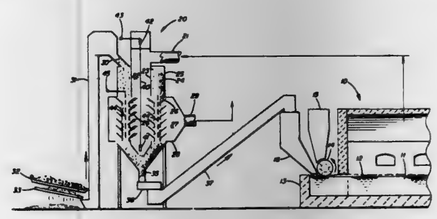
1. A method for manufacturing distributor and mixer elements for optical communications technology, which elements have at least two glass fiber light waveguides fused to one another along a given segment with free fiber ends extending from each end of the segment, said method consisting of the steps of forming a preform for drawing a fiber by arranging at least two glass rods to extend parallel to each other, fusing the arranged rods to one another in at least one sharply limited longitudinal area spaced from the ends of the rods, then subsequently heating the preform and drawing the elements having a fused segment with free fibers extending from each end of the segment from said heated preform.

4,410,347

GLASS MELTING METHOD USING CULLET AS PARTICULATE COLLECTION MEDIUM

John F. Krumwiede, Indiana Township, Allegheny County, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 249,310, Mar. 31, 1981, Pat. No. 4,350,512. This application Mar. 29, 1982, Ser. No. 363,210
The portion of the term of this patent subsequent to Sep. 21, 1999, has been disclaimed.
Int. Cl.³ C03B *1/00*
U.S. Cl. 65—27 **9 Claims**



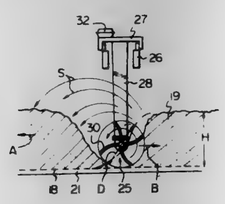
1. A method of melting glass in a furnace from which is discharged an exhaust gas stream that includes particulate materials, comprising: classifying cullet to consist essentially of cullet particles each of whose maximum dimension is at least 2 millimeters and no greater than 40 millimeters by subjecting the cullet to a first vibratory screening operation and transferring and subjecting the cullet to a second screening operation; passing a stream of the exhaust gas prior to discharge to the atmosphere through a bed of the classified cullet, thereby depositing at least some of the particulate materials on the cullet; and feeding the cullet with the deposited materials thereon into the melting furnace.

4,410,348

METHOD FOR COMPOSTING

Kanichi Ito, Yokohama; Yoshio Hirayama, Zushi; Ryoichi Takeuchi, Kamakura; Masanori Kodaira, Tokyo, and Gorou Iizuka, Fujisawa, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Continuation of Ser. No. 150,652, May 16, 1980, abandoned. This application Jan. 28, 1982, Ser. No. 344,074
Claims priority, application Japan, May 26, 1979, 54-65249; Jul. 11, 1979, 54-87576
Int. Cl.³ C05F *9/04*
U.S. Cl. 71—9 **10 Claims**



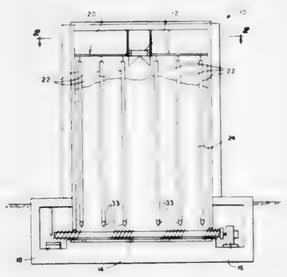
1. A method for composting organic materials, said method comprising:
providing a layer of organic materials to be composted in a generally rectangular zone including first and second spaced parallel side edges and first and second parallel end edges;
providing proper temperature, moisture, aeration and micro-organism content for said layer of organic materials, to compost said layer of organic materials;
positioning an agitator adjacent said first end edge and said first side edge, and rotating said agitator in a manner to scrape a predetermined width of said materials from said layer in a first direction parallel to said side edges and to throw the thus scraped materials upwardly above said layer in a second direction opposite to said first direction, such that the thus thrown materials fall back down to reform the layer in a loose and non-packed manner;
traversing said agitator from said first side edge to said second side edge in a third direction transverse to said first and second directions, while continuing rotation of said agitator, thereby scraping and throwing a band of said material of said predetermined width adjacent said first end edge;
thereafter returning said rotating agitator from said second side edge to said first side edge by traversing said agitator in a fourth direction parallel to said third direction, and repeating said operations of traversing said rotating agitator in said third and fourth directions, which periodically shifting said agitator in said first direction by incremental distances equal to said predetermined width, until said agitator has reached said second end edge and said entire layer has been scraped and thrown in incremental said bands of said predetermined width; and
returning said agitator from said second end edge to said first end edge and repeating said above operations as the materials are composting.

4,410,349

COMPOST AIR INJECTION AND EVACUATION SYSTEM

John G. Laurenson, Jr., 5480 Rivertrail Rd. S., Jacksonville, Fla. 32211

Filed Mar. 31, 1982, Ser. No. 364,003
Int. Cl.³ C05F *11/08*
U.S. Cl. 71—9 **10 Claims**



1. A method for treating compost, comprising:
injecting a fluid flow into the compost in a first substantially uniform pattern through a plurality of lances through at least one fluid flow passageway in each lance;
evacuating the fluid from the compost in a second substantially uniform pattern, substantially equally spaced from said first pattern through a second plurality of lances through at least one fluid flow passageway in each lance;
directing the fluid flow towards and away from said lances through manifold means coupled to the fluid flow passageways in said lances, said manifold means defining said first and second substantially uniform patterns in a substantially vertical plane with respect to the compost; and
coupling said lances to said manifold means to define said first and second substantially uniform patterns in a plane substantially perpendicular to said substantially vertical plane, at least some of said lances include a pattern of orifices spaced along the length thereof coupled to said passageway providing access for fluid flow to and from

the compost and placing said pattern of orifices along the length of the lances in accordance with the compost requirements.

4,410,350

PRODUCTION OF PELLETS AND PELLET-CONTAINING FERTILIZER COMPOSITION

George G. Judd, Woodville, Ohio, assignor to Martin Marietta Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 135,008, Mar. 31, 1980, abandoned. This application Mar. 18, 1982, Ser. No. 359,236
Int. Cl.[3] C05D *11/00*
U.S. Cl. 71—63 4 Claims

1. A composition comprising a physical mixture of an agricultural fertilizer and pellets, said fertilizer being predominantly in the minus six plus thirty mesh size and said pellets being predominantly minus six plus thirty mesh in size and consisting essentially of at least one hydroxide, oxide or carbonate of calcium, magnesium or both, said pellets constituting from 5 to 90 percent by weight of the composition, and containing at least 2 percent by weight of calcium, magnesium or both in the form of the oxide, the hydroxide or both, calculated as the oxide whereby said physical mixture exhibits a comparatively high order of resistance to caking by comparison with the resistance to caking of the fertilizer therein.

4,410,351

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

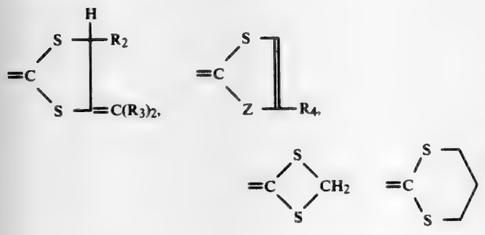
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 170,505, Jul. 21, 1980, Pat. No. 4,321,082, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jan. 21, 1982, Ser. No. 341,433
Int. Cl.[3] A01N *43/02, 37/18*
U.S. Cl. 71—90 13 Claims

1. A method of reducing injury to rice, sorghum and wheat due to the application thereto of alachlor or butachlor which comprises applying to the plant locus a safening effective amount of a compound having the formula

R—N=A

or an agriculturally acceptable acid addition salt thereof, wherein R is lower alkyl A is



R_2 is hydrogen or methyl; R_3 is hydrogen or Cl; R_4 is hydrogen, methyl or phenyl; Z is oxygen or sulfur.

4,410,352

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

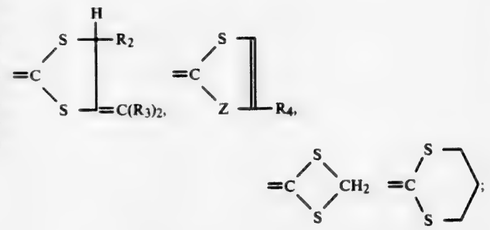
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 170,505, Jul. 21, 1980, Pat. No. 4,321,082, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jan. 21, 1982, Ser. No. 341,435
Int. Cl.[3] A01N *43/02, 37/00*
U.S. Cl. 71—90 12 Claims

1. A method of reducing injury to rice, sorghum and wheat due to the application thereto of triallate which comprises applying to the plant locus a safening effective amount of a compound having the formula

R—N=A

or an agriculturally acceptable acid addition salt thereof, wherein R is lower alkyl and A is



R_2 is hydrogen or methyl; R_3 is hydrogen or Cl; R_4 is hydrogen, methyl or phenyl; Z is oxygen or sulfur.

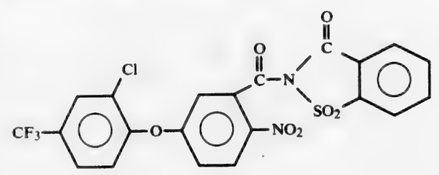
4,410,353

HERBICIDAL N-SULFONYL 5-[SUBSTITUTED PHENOXY]-2-SUBSTITUTED BENZAMIDES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 17, 1981, Ser. No. 284,304
Int. Cl.[3] C07D *275/06*
U.S. Cl. 71—91 3 Claims

1. A herbicidal compound of the formula



4,410,354

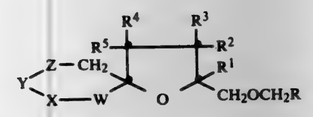
SPIRO ETHER HERBICIDES

Kurt G. R. Sundelin, Modesto; James E. Powell, Ripon, and Willy D. Kollmeyer, Modesto, all of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 1, 1982, Ser. No. 344,282
Int. Cl.[3] A01N *43/40*; C07D *491/10, 491/20, 495/20*
U.S. Cl. 71—94 14 Claims

1. A compound of the formula I

I



wherein R^1, R^2, R^3, R^4, R^5 each individually is a hydrogen atom or an alkyl group containing from 1 to 4 carbon atoms; W is an oxygen atom or —CH_2—; X is an oxygen atom or —CH-$_{26}$—; Y is a carbon-carbon bond, an oxygen atom, —CH_2—, —C_2H_4— or —CHR^6— in which R^6 is an alkoxymethyl group containing from 1 to 4 carbon atoms in the alkyl portion thereof; Z is a carbon-carbon bond, an oxygen atom, —CH_2—, or —C_2H_4—; with the proviso that no two adjacent of W, X, Y and Z are simultaneously either oxygen atoms or —C_2H_4— and the sum of ring atoms in W, X, Y and Z is an integer of from 2 to 5; and R is an alkenyl or alkynyl group containing from 2 to 4 carbon atoms, a 2-furanyl group, a 2-pyridinyl group or a phenyl group optionally substituted by one or more of halogen, amino, monoalkylamino, dialkylamino, alkyl, haloalkyl, alkoxy, haloalkoxy or alkylthio.

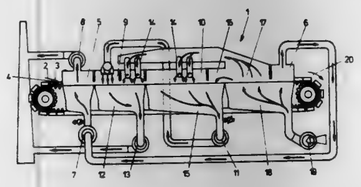
14. A method of controlling undesirable plant growth at a locus consisting essentially of applying to the locus or the plants a herbicidally effective amount of a compound according to claim 1.

4,410,355

PROCESS FOR CONTROLLING A PELLETIZING PLANT FOR FINE-GRAINED ORES

Hanns E. Feichtner; Johann Haslmayr; Christian Jaquemar, all of Linz; Friedrich Hoislbauer, Neuhofen a/d Krems; Friedrich Rappold, and Franz Feigl, both of Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Nov. 5, 1980, Ser. No. 204,377
Claims priority, application Austria, Nov. 6, 1979, 7139/79
Int. Cl.[3] C22B *1/20*
U.S. Cl. 75—5 6 Claims



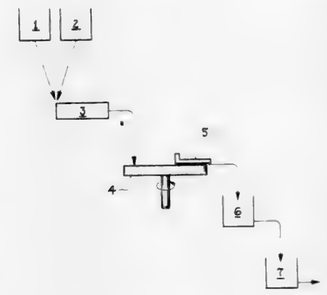
1. Process for monitoring a pelletizing plant for green pellets of fine-grained ores, in which the humidity content of the green pellets is adjusted by adding water with consideration of the humidity content of the fine ores and humidified ores, together with optional additives, are charged to a travelling grate in an amount to form a layer and are hardened on the grate in a sintering zone by a heat treatment carried out by passing a process gas through the layer of pellets, said process gas having a process gas temperature and a process gas pressure, characterized in that the green pellets are charged onto the travelling grate and the permeability of the pellet layer is measured, in that the measured values for the permeability of the layer and a value for the humidity of the green pellets are supplied to a process calculator for monitoring the process on the basis of the process gas pressure, in that the sintering temperature is maintained constant, and in that the process is monitored by comparing the position of the sintering point on the travelling grate at the end of the sintering zone, as calculated on basis of the process gas pressure, with a nominal value for this position of the sintering point.

4,410,356

PROCESS FOR PRODUCING SALT-COATED MAGNESIUM GRANULES

Edward J. Skach, Jr., Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 8, 1982, Ser. No. 439,700
Int. Cl.[3] B22F *9/08*
U.S. Cl. 75—0.5 B 20 Claims



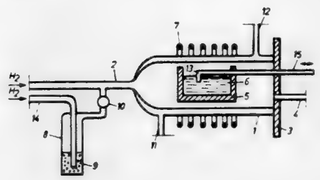
1. A a process for preparing Mg or Mg alloy granules dispersed in a friable salt matrix, said process comprising
continuously feeding to a mixer a molten flow of Mg or Mg alloy simultaneously with a molten flow of a salt mixture, the flow ratios of the molten materials being pre-determined to provide an amount up to about 68% of Mg or Mg alloy by volume in the mixture, thereby dispersing the molten Mg or Mg alloy as globules in the molten salt,
continuously withdrawing from the mixer the molten salt having the molten Mg or Mg alloy dispersed therein, and
quickly chilling the mixture to cause it to freeze thereby entrapping solid Mg or Mg alloy granules dispersed in a friable salt matrix.

4,410,357

METHOD OF PURIFYING INDIUM

Tsviatko S. Ganev, Uppsala, and Mats A. H. Jansson, Taby, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 23, 1982, Ser. No. 410,577
Claims priority, application Sweden, Feb. 2, 1982, 8200829
Int. Cl.[3] C22B *58/00*
U.S. Cl. 75—10 V 4 Claims

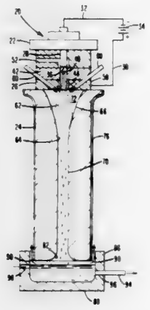


1. A method of purifying indium from silicon comprising the steps of baking an indium melt containing silicon at a predetermined baking temperature in a crucible positioned in a quartz container, maintaining the quartz container at a given temperature lower than the predetermined baking temperature, passing a hydrogen gas with a predetermined water content through said quartz container and over the indium melt in said crucible whereby the silicon leaves the indium as silicon oxide, and breaking up the surface skin of the indium melt at least one during the baking.

4,410,358
PLASMA RECOVERY OF TIN FROM SMELTER DUST

Bahman Heshmatpour, Woburn, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed Dec. 13, 1982, Ser. No. 449,116
Int. Cl.³ C22B 25/00
U.S. Cl. 75—10 R 13 Claims



1. A method of recovering tin from dust produced during tin smelting, said dust containing tin oxides as the principal constituent, without pre-agglomerating the dust, comprising the steps of:

providing a plasma reactor including a plasma head and a reactor tube adjacent to said plasma head;

introducing a stream of plasma gas into said plasma head and ionizing said gas to produce a plasma arc whose tail flame is directed into said reactor tube;

feeding a mixture of said dust and a reducing carrier gas into said reactor tube at a location near the downstream end of said plasma head such that said dust contacts the tail flame of said plasma arc and tin oxides in said dust are heated and reduced to liquid tin in passing through said reactor tube; and

removing said liquid tin from said reactor tube.

4,410,359
PROCESS FOR PRODUCTION OF STAINLESS STEEL

Harry L. Bishop, Jr., Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

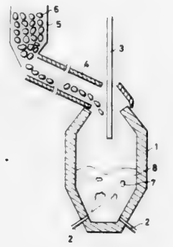
Filed Sep. 3, 1982, Ser. No. 414,546
Int. Cl.³ C21C 5/34
U.S. Cl. 75—49 6 Claims

1. A process for producing stainless seel in a top blown oxygen converter having an oxygen lance adapted to introduce oxygen to the surface of a chromium-containing molten charge of a composition slightly higher than desired in the stainless steel to be produced and contained within a converter vessel, said vessel including a bottom section having a tuyere, said method comprising while maintaining a subatmospheric pressure in said converter vessel blowing oxygen through said lance and onto or beneath the surface of said charge within said converter vessel, during said oxygen blowing simultaneously introducing an inert gas through said tuyere and into said charge, when the carbon content of said charge is decreased to less than about 0.10% by weight introducing oxygen mixed with said inert gas through said tuyere and into said charge until carbon has been reduced to the required level in said charge and removing stainless steel from said converter vessel.

4,410,360
PROCESS FOR PRODUCING HIGH CHROMIUM STEEL

Hiroyuki Katayama; Hidetake Ishikawa; Chikara Saito, and Hirofumi Wakimoto, all of Fukuoka, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,719
Claims priority, application Japan, Dec. 1, 1979, 54/154990
Int. Cl.³ C22C 33/00
U.S. Cl. 75—60 15 Claims



1. A process for producing chromium steel which comprises:

supplying molten iron in a smelting furnace with a solid chromium source, carbonaceous powder and oxygen-containing gas in amounts so controlled as to keep the melt, without using electricity as a heat source, at a temperature in the range of less than 1650° C. and above the minimum melt temperature at the specific carbon and chromium levels in the melt and which is capable of performing preferential decarbonization while inhibiting the oxidation of chromium, said solid chromium source comprising one or more substances selected from the group consisting of high carbon ferrochrome, medium carbon ferrochrome, low carbon ferrochrome, metallic chromium, chrome ore, partially reduced chromium pellets and chromium-bearing scrap, and containing unmelted chromium, to produce a medium carbon, high chromium molten iron containing 4 to 65 wt% of chromium and a Cr/C ratio of from 8 to 30, and

refining said medium carbon, high chromium molten iron into chromium steel.

4,410,361
METHOD FOR DESILVERIZING AND REMOVAL OF OTHER METAL VALUES FROM LEAD BULLION

Jitesh R. Mehta, Eagan, Minn., and Francis M. Dunlevey, Lake Oswego, Oreg., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed Dec. 29, 1981, Ser. No. 335,411
Int. Cl.³ C22B 13/06
U.S. Cl. 75—63 42 Claims

1. A process for refining lead bullion containing antimony and silver in an amount less than about 0.005% by weight, comprising the steps of:

(a) adding lead bullion to a container in which said bullion is to be heated;

(b) heating said bullion above its melting temperature to form a molten lead bullion;

(c) adding a calcium affording compound to said molten lead bullion;

(d) mixing the calcium into said molten bullion to form a floating silver-rich dross and a desilverized molten lead bullion;

(e) separating said desilverized molten lead bullion from said dross;

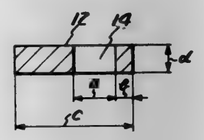
(f) repeating said steps (a) through (e) in successive batch operations; and

(g) accumulating in said container the silver-rich dross resulting from each of said successive batch operations.

4,410,362
HEAT RESISTANT CAST IRON-NICKEL-CHROMIUM ALLOY

Junichi Sugitani, Hirakata; Teruo Yoshimoto, Suita, and Makoto Takahashi, Hirakata, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Dec. 22, 1981, Ser. No. 333,471
Claims priority, application Japan, Jan. 12, 1981, 56-3603; Jan. 12, 1981, 56-3604
Int. Cl.³ C22C 30/00
U.S. Cl. 420—584 4 Claims



1. A heat resistant cast iron-nickel-chromium alloy consisting essentially of the following components in the following proportions in terms of % by weight:

C—0.3–0.6,
O<Si≦2.0,
O<Mn≦2.0,
Cr—20–30,
Ni—30–40,
Nb+Ta 0.3–1.5,
W—0.5–3.0,
N—0.04–0.15,
B—0.0002–0.004,
Ti—0.04–0.50 and
Al—0.02–0.50,

the balance being substantially Fe.

4,410,363
UNDERWATER APPLICABLE ANTIFOULANT PAINT COMPOSITION

Robert F. Supcoe, Annapolis, Md.; Thomas Radakovich, Dequesne, Pa., and Stephen D. Rodgers, Bowie, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 21, 1981, Ser. No. 285,663
Int. Cl.³ C09D 5/08
U.S. Cl. 106—18.29 1 Claim

1. A wax-based antifoulant coating for application to submerged surfaces consisting of a mixture, by weight percent, of

(a) from about 6.0% to about 75.0% of a mixture of chlorinated aliphatic wax polymers having a recurring unit of C_2Cl_4 and an average molecular weight range of between about 400 to about 1200 wherein said mixture of chlorinated aliphatic wax polymers, by weight percent consist of from:

(i) about 6.0% to about 10.0% of on aliphatic liquid wax polymer having a chlorine content, by weight percent, of from about 68.0% to about 72.0%;

(ii) about 22.0% to about 26.0% of on aliphatic resinous wax polymer having a chlorine content, by weight percent, of from about 68.0% to about 72.0%;

(iii) about 19.0% to about 23.0% of on aliphatic liquid wax polymer having a chlorine content, by weight percent, of from about 58.0% to about 62.0%; and

(iv) about 19.0% to about 23.0% of on aliphatic liquid wax polymer having a chlorine content, by weight percent, of from about 38.0% to about 42.0%

(b) from about 22.0% to about 26.0% of a biocide antifoulant for preventing marine growth selected from the group consisting of cuprous oxide, organo-tin compounds, and 2,4,5,6-tetrachloroisophthalonitrile; and

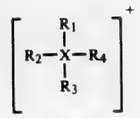
(c) from about 1.0% to about 3.0% of a fumed silica thixotropic agent having a particle size of from about 7 to about 14 millimicrons in diameter.

4,410,364
PRINTING INK COMPOSITIONS

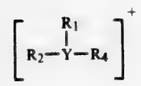
Claude M. Finlayson, Houston, Tex., and Wilbur S. Mardis, Trenton, N.J., assignors to NL Industries, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 207,542, Nov. 17, 1980. This application Oct. 19, 1981, Ser. No. 313,032
Int. Cl.³ C09D 11/02
U.S. Cl. 106—20 8 Claims

1. A printing ink comprising an organic ink vehicle having dispersed therein an ink coloring material and an organophilic clay gellant comprising the reaction product of (a) a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay, (b) an organic anion derived from an organic acid having a pK_A less than about 11.0, said organic anion being present in the range of from 10 to 50 milliequivalents per 100 grams of clay, 100% active clay basis, and (c) an organic cation selected from the group consisting of:



and



wherein X is nitrogen or phosphorus, Y is sulfur, and wherein R_1 is an alkyl group containing 12 to 22 carbon atoms, and wherein R_2, R_3 and R_4 are selected from the group consisting of hydrogen, saturated and unsaturated alkyl groups containing 1 to 22 carbon atoms, aryl groups, aralkyl groups containing 1 to 22 carbon atoms on the alkyl chain, hydroxyalkyl groups having 2 to 6 carbon atoms and mixtures thereof, said organic cation being present in a sufficient quantity to at least satisfy the cation exchange capacity of the clay and the cationic activity of the organic anion, wherein an organic cation—organic anion complex is intercalated with the smectite-type clay and the cation exchange sites of the smectite-type clay are substituted with the organic cation.

4,410,365
BINDER

Viktor D. Glukhovsky, bulvar Lenina, 10, kv. 31; Pavel V. Krivenko, ulitsa Milchakova, 3-a, kv. 81; Galina S. Rostovskaya, prospekt Vossoedinenia, 3-b, kv. 19; Vasily J. Timkovich, ulitsa Volynskaya, 11/14, kv. 117, all of Kiev, and Vitaly L. Pankratov, ulitsa Letnaya, 18, korpus 3, kv. 73, Mytyschi, Moskovskaya oblast, all of U.S.S.R.

Filed Aug. 28, 1981, Ser. No. 296,939
Int. Cl.³ C04B 19/04
U.S. Cl. 106—84 3 Claims

1. A binder consisting essentially of granulated blast furnace slag, a compound of an alkali metal selected from those compounds which give an alkaline reaction in an aqueous medium and an additive selected from the group consisting of portland cement clinker, sodium sulphate and potassium sulphate in the ratio of the components being the following % by weight:

granulated blast furnace slag	79 to 98.5
compound of an alkali metal selected from those compounds which give an alkaline reaction in an aqueous medium	1 to 12
additive selected from the group consisting of portland cement clinker, sodium sulphate and potassium sulphate.	0.5 to 9

4,410,366
CEMENT COMPOSITION AND PRODUCT

James D. Birchall, Mouldsworth; Anthony J. Howard, Warrington; Kevin Kendall, and James H. Raistrick, both of Runcorn, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 14, 1981, Ser. No. 330,585

Claims priority, application United Kingdom, Dec. 22, 1980, 8041640; Jul. 27, 1981, 8123103

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **19 Claims**

1. A cementitious composition comprising

(a) at least one hydraulic cement,

(b) water in a proportion of not more than 25% by weight of the composition, and

(c) at least one water-soluble or water-dispersible organic polymer or copolymer in a proportion of 1 to 15% by weight of the hydraulic cement in the composition,

characterised in that the hydraulic cement and the polymer or copolymer are selected such that a test composition comprising 100 parts by weight of hydraulic cement, 5 parts by weight of the polymer or copolymer, and 16 parts by weight of water then extruded in a capillary rheometer undergoes an increase of at least 25% in shear stress when a ten-fold increase in the shear rate of the test composition is effected when the shear rates as measured are within the range 0.1 to 5 second^{-1}.

4,410,367
METHOD FOR TREATING AGGREGATE AND PRODUCTS OBTAINED THEREFROM

Donald G. LeGrand, Burnt Hills, N.Y., assignor to General Electric Co., Schenectady, N.Y.

Filed Jun. 10, 1982, Ser. No. 386,854

Int. Cl.³ C04B *31/44*

U.S. Cl. 106—308 N **12 Claims**

1. A method for enhancing the resistance of aggregate to the effects of atmospheric degradation and improve its ability to resist separation from cured asphalt concrete when incorporated into asphalt cement prior to cure to reinforce the resulting asphalt concrete mixture which comprises,

(1) treating the aggregate with an aqueous polyelectrolyte-surfactant mixture having at least 1% by weight of polyelectrolyte with a molecular weight of up to about 1000 and 0.001% to 1% by weight of surfactant, based on the weight of the mixture, where the surfactant is selected from the class consisting of a cationic surfactant, an anionic surfactant, a nonionic surfactant, and an amphoteric surfactant,

(2) and thereafter allowing the treated aggregate to dry by heating or exposure to ambient conditions.

4,410,368
PROCESS FOR LIQUEFACTION OF STARCH

Yoshiyuki Takasaki; Yoshimasa Takahara, both of Ibaraki; Chikashi Izumi, Kitami; Atsuhi Mori, Kitami; Masahiko Nishiguchi, Kitami, and Masaru Yamada, Kitami, all of Japan, assignors to Agency of Industrial Science & Technology; Ministry of International Trade & Industry and Hokkaido Sugar Co., Ltd., all of Tokyo, Japan

Filed Oct. 6, 1981, Ser. No. 309,099

Claims priority, application Japan, Oct. 11, 1980, 55-142174

Int. Cl.³ C13K *1/06*

U.S. Cl. 127—38 **4 Claims**

1. A process for the liquefaction of starch in the manufacture of maltose, by the liquefaction of starch and the subsequent saccharification of the resultant liquid starch solution with a saccharifying enzyme which optimumly functions at a pH value within the range of 6 to 8, which process comprises the steps of:

(a) suspending an amount of starch in water such that the resulting suspension has a solids concentration of 15 to 30% by weight;

(b) adding to said starch suspension a carbonate in an amount sufficient to function as a buffer and α-amylase capable of functioning even at a temperature above 100° C.;

(c) adjusting the pH value of the suspension of step (b) to within th range of 7.5 to 8.0;

(d) heating the resultant starch suspension up to a temperature in the range of 100° to 110° C. over a time period in the range of 5 to 15 minutes and retaining said temperature for 3 to 5 minutes in order to effect primary gelation of said starch suspension;

(e) heating the processed starch suspension of step (d) to a temperature within the range of 140° to 150° C. and retaining the starch suspension at this temperature for 15 to 40 minutes, thereby inactivating said α-amylase and at the same time swelling and rupturing the starch particles in said suspension;

(f) rapidly cooling the resultant enzyme inactivated starch suspension to a temperature in the range of 95° to 100° C.;

(g) adding to the cooled starch suspension 0.05 to 0.3%, based on the starch content of the suspension, of α-amylase capable of functioning even at temperatures above 100° C. and retaining the starch mixture at a temperature of 95° to 100° C. for 5 to 30 minutes; and

(h) heating the mixture to a temperature in the range of 135° to 145° C. and retaining this temperature for about 5 minutes in order to inactivate said amylase enzyme.

4,410,369
MANUFACTURE OF ELECTRICALLY WELDED STEEL PIPE

George M. Waid, Burton; Joseph E. Franklin, Medina, and Dionisyj W. Demianczuk, Parma, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Dec. 12, 1980, Ser. No. 216,012

Int. Cl.³ C21D *8/10*

U.S. Cl. 148—2 **7 Claims**

1. In a method of making electrically welded pipe in which elongated steel skelp is first shaped to a cylindrical contour about its longitudinal axis and has its longitudinal edges juxtaposed to provide a cleft for butt welding, and thereafter said edges are butt welded electrically together along said cleft, the procedure of making such skelp and pipe therefrom which comprises pouring an ingot mold 80 to 95% full of molten steel that is free of deoxidizing elements which would be sufficient to kill the steel, allowing said filling to rest while a shell of non-killed steel solidifies next to the mold wall surrounding a still-molten core, then completing pouring of said molten steel into a mold while adding to the molten steel in the mold sufficient deoxidizing material in the finished core to provide a killed or semi-killed core, said first pouring step, said resting step and said second pouring step being performed and controlled so that in the solidified ingot said non-killed shell is at least ¾ inch thick; and after solidification of the ingot, converting the same by hot rolling to elongated steel skelp of primarily killed or semi-killed character having a width of at least about 3 inches and along each of its longitudinal edges an integral zone of non-killed steel at least ¼ inch wide, finishing each edge zone to a shape at least ¼ inch wide, for butt welding, and completing making the pipe by shaping the skelp to cylindrical contour and electrically butt welding said edge zones together.

4,410,370
AIRCRAFT STRINGER MATERIAL AND METHOD FOR PRODUCING THE SAME

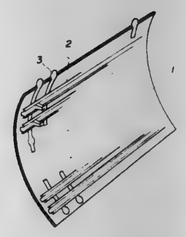
Yoshio Baba; Teruo Uno, and Hideo Yoshida, all of Nagoya, Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,529

Claims priority, application Japan, Sep. 29, 1979, 54-125989; Dec. 14, 1979, 54-163193; Dec. 21, 1979, 54-165696; Jun. 27, 1980, 55-87592; Jun. 27, 1980, 55-87593

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **20 Claims**



1. A method for producing an aluminum alloy product having a grain size not exceeding 100 μm and useful as an aircraft stringer material, comprising the steps of:

homogenizing an aluminum alloy consisting essentially of 5.1 to 8.1 wt. % zinc, 1.8 to 3.4 wt. % magnesium, 1.2 to 2.6 wt. % copper, at least one of 0.18 to 0.35 wt. % chromium and 0.05 to 0.25 wt. % zirconium, up to 0.20 wt. % titanium, up to 0.50 wt. % iron, up to 0.40 wt. % silicon, up to 0.70 wt. % manganese, and the balance being aluminum and incidental impurities wherein said impurities do not include any of the components named above, thereby to produce an homogenized alloy;

then hot rolling said homogenized alloy to provide a shaped object;

then cold rolling said shaped object to provide a plate having a selected thickness;

then rapidly heating said plate at an average heating rate exceeding 11° C./min. to a temperature of 320° to 500° C. and thereby annealing said plate and effecting recrystallization to form a uniformly fine recrystallized grain structure.

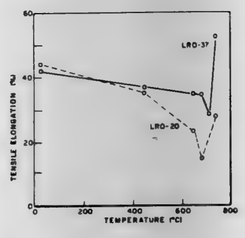
4,410,371
LONG RANGE ORDERED ALLOYS MODIFIED BY GROUP IV-B METALS

Chain T. Liu; Henry Inouye, and Anthony C. Schaffhauser, all of Oak Ridge, Tenn., assignors to the United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed May 22, 1981, Ser. No. 266,246

Int. Cl.³ C22F *1/00*; C22C *30/00*

U.S. Cl. 148—11.5 R **7 Claims**



1. A long range ordered alloy composition, said alloy having the nominal composition $(V,M)(Fe,Ni,Co)_3$, and obtained by modification of an alloy selected from the group of long range ordered alloys consisting of a cobalt-based alloy comprising by weight 22–23% V, 14–30% Fe, 37–64% Co, and 0–10% Ni, and of an iron-based alloy comprising by weight 22–23% V, 35–50% Fe, 0–22% Co, and 19–40% Ni, wherein said modification comprises the substitution of 0.4–1.4 wt.% of a metal, M, selected from the group consisting of Ti, Zr, Hf, and their mixtures, for a like amount of V in either of said cobalt or iron-based alloys.

6. A method for fabricating articles from the alloy of claim 1 comprising deforming said alloy at a temperature above the critical ordering temperature of said alloy to provide a wrought article and annealing said wrought article for a sufficient time to provide a long range ordered structure in said wrought article.

4,410,372
PROCESS FOR PRODUCING DEEP-DRAWING, NON-AGEING, COLD ROLLED STEEL STRIPS HAVING EXCELLENT PAINT BAKE-HARDENABILITY BY CONTINUOUS ANNEALING

Nobuyuki Takahashi; Masaaki Shibata, and Yoshikuni Furuno, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 386,095

Claims priority, application Japan, Jun. 10, 1981, 56-89142; Sep. 18, 1981, 56-147589

Int. Cl.³ C21D *8/04*

U.S. Cl. 148—12 C **10 Claims**

1. A process for producing non-ageing, deep-drawing steel strip having excellent paint bake-hardening property by continuous annealing, consisting essentially of without overaging subjecting an Al-killed steel containing 0.001 to 0.01% C, not larger than 1.5% Mn, 0.005 to 0.20% Al, not larger than 0.007% N and B in an amount equivalent to B/N ratio ranging from 0.5 to 2.5 to ordinary hot and cold rolling steps, soaking thus obtained steel strip in a temperature range of from 730° C. to A_3 point in a continuous annealing system, and rapidly cooling the strip thus soaked down to a temperature not higher than 250° C., the rapid cooling starting from a temperature ranging from 775° to 600° C. with an average cooling rate not lower than 200° C./second, to produce a strip having an increase in yield stress due to ageing at 100° C. for 30 minutes of not over 0.3 kg/mm^2.

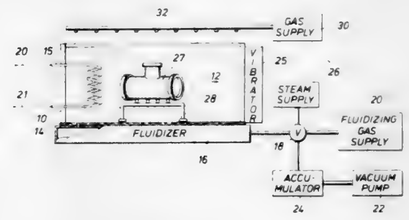
4,410,373
PROCESS FOR HEAT TREATMENT OF A METAL WORKPIECE

Willard E. Kemp, 1035 Dairy Ashford, Suite 146, Houston, Tex. 77079

Filed Sep. 30, 1981, Ser. No. 307,027

Int. Cl.³ C21D *5/16, 1/53*

U.S. Cl. 148—16 **2 Claims**



1. A process for malleabilizing a white iron casting, comprising the steps of:

(a) subjecting the casting to a fluidized particulate bed at a temperature of about 1750° F. until the casting is heated throughout to substantially this temperature;

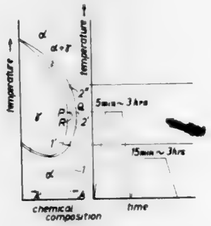
(b) terminating fluidization of the bed and leaving the casting therein for a period of several hours whereby the casting remains packed in a bed at a relatively constant temperature of about 1750° F. as its combined carbon undergoes graphitization;
(c) subjecting the casting to a fluidized particulate bed at a temperature of about 1400° F. until the casting is cooled rapidly throughout to substantially this temperature;
(d) terminating fluidization of the bed and leaving the casting packed therein tightly to prevent changes in the external shape and at a relatively constant temperature of about 1400° F. for a sufficient time period for completing the desired conversion of its combined carbon to graphite;
(e) removing the casting from the bed for subsequent utilization; and
(f) wherein in steps (b) and (d), each bed is subject to vibration to tightly pack the bed material about the casting therein.

4,410,374

STEEL HAVING EXCELLENT VIBRATION ATTENUATION PERFORMANCE AND METHOD OF MANUFACTURING THE SAME

Namio Urabe, Kamakura, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 47,498, Jun. 11, 1979, abandoned. This application Dec. 3, 1980, Ser. No. 212,501
Claims priority, application Japan, Jun. 22, 1978, 53-74879
Int. Cl.³ C21D *1/18*
U.S. Cl. 148—143 **13 Claims**



6. A process for improving the vibration attenuation characteristics of an alloyed steel consisting essentially of 0.02–0.6% by weight of carbon, less than 0.6% by weight of silicon, 0.5–1.5% by weight of manganese, either one or both of 5–15% by weight of chromium and 2–9% by weight of tungsten, either one or both of 0.03–2% by weight of aluminum and 0.1–5% by weight of cobalt, and the balance of iron; comprising heating and maintaining said steel at a temperature in which austenite and ferrite coexist; cooling said steel to transform the austenite to martensite; and tempering said steel at a temperature of from 400° C. to a temperature lower than the transformation point thus forming a structure of ferrite and tempered martensite and improving the vibration attenuation characteristics of said steel and then contacting said steel with an environment comprising vibratory motion.

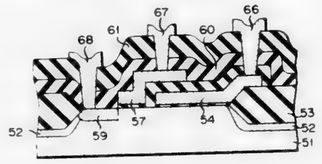
4,410,375

METHOD FOR FABRICATING A SEMICONDUCTOR DEVICE

Shizuo Sawada, Yokohama; Hiroshi Iwai, Tokyo, and Satoshi Maeda, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 2, 1981, Ser. No. 307,875
Claims priority, application Japan, Oct. 9, 1980, 55-141714
Int. Cl.³ H01L *21/225*
U.S. Cl. 148—187 **14 Claims**

1. A method for fabricating a semiconductor device comprising the steps in the following order:
forming a contact hole in an insulating film to partially expose a semiconductor region on a semiconductor substrate underlying said insulating film or an electrode layer formed on said semiconductor region underlying said insulating film;
forming a silicate glass layer doped with an impurity on said insulating film, covering said contact hole;



subjecting the resultant structure to a phosphorus getter treatment at a high temperature in a phosphorus oxychloride atmosphere and thereby diffusing said impurity from said silicate glass layer into said semiconductor region or into said electrode layer through said contact hole; and
removing at least the part of said silicate glass layer within said contact hole, thereby exposing said underlying semiconductor region or electrode layer.

4,410,376

BONDING AGENT FOR POLYURETHANES

Rolf S. Bruenner, Orangevale, and Adolf E. Oberth, Fair Oaks, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 28, 1982, Ser. No. 393,170
Int. Cl.³ C06B *45/10*
U.S. Cl. 149—19.4 **3 Claims**

1. A novel solid rocket propellant comprising a polyurethane binder, an oxidizing agent and an effective bond improving amount of a composition having the general formula

$$[X_2N(CH_2CH_2NX)_nCH_2CH_2NX_2](HO_3SC_6H_4CH_3)_z$$

wherein n is an integer having a value of 1 to 11, X is —H or $—CH_2CH_2CN$; wherein the amount of $—CH_2CH_2CN$, expressed as y, is in the approximate range of 0.15 (n+4) to 0.45 (n+4), the amount of $HO_3SC_6H_4CH_3$, expressed as z, is in the approximate range of 0.01 (n+4) to 0.25 (n+4), and the ratio y:z is in the range of 1.5:1 to 3:1.

4,410,377

NF_3-F_2 GAS GENERATOR COMPOSITIONS

Karl O. Christe, Calabasas, and William W. Wilson, Canoga Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 25, 1982, Ser. No. 361,638
Int. Cl.³ C06B *43/00*
U.S. Cl. 149—109.4 **6 Claims**

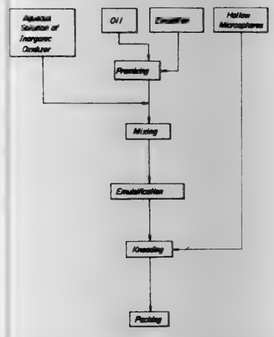
1. Solid propellant NF_3-F_2 gas generator composition comprising $(NF_4)_2TiF_6$ with LiF as a clinker forming agent.

4,410,378

METHOD OF PRODUCING WATER-IN-OIL EMULSION EXPLOSIVE

Katsuhide Hattori; Yoshiaki Fukatsu; Shigeru Kakino, all of Chita; Hideo Moriyama, Tokoname, and Hidekazu Sakakibara, Handa, all of Japan, assignors to Nippon Oil and Fats Co. Ltd., Tokyo, Japan

Filed Jan. 21, 1983, Ser. No. 460,402
Claims priority, application Japan, Jan. 27, 1982, 57-10194
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—109.6 **1 Claim**



1. In a method of producing water-in-oil emulsion explosive, comprising a step for conditioning an aqueous solution of inorganic oxidizer, a step for conditioning an oil, an emulsifier, or a mixture of oil and emulsifier, a step for mixing the aqueous solution of inorganic oxidizer with the oil and the emulsifier, a step for emulsifying the resulting mixture, a step for kneading the resulting water-in-oil emulsion together with hollow microspheres, and a step for packing the resulting water-in-oil emulsion explosive, the improvement comprising said emulsifying step and said kneading step being carried out in one step, wherein the hollow microspheres, and the mixture of the aqueous solution of inorganic oxidizer, the oil and the emulsifier are separately supplied into a common passage; the hollow microspheres and the mixture of the aqueous solution of inorganic oxidixer, the oil and the emulsifier are emulsified and kneaded on the surface of a disc, which is arranged on the downstream side of the passage and has projection, while rotating the disc; the emulsified and kneaded mixture is flowed down from the outer peripheral portion of the disc into a kneading room formed under the disc, while continuing the emulsification and kneading; the emulsified and kneaded mixture is fully emulsified and kneaded in the kneading room; and then the resulting water-in-oil emulsion explosive is taken out from the kneading room.

4,410,379

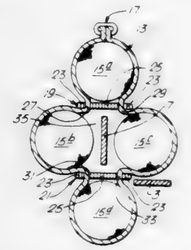
METHOD OF MAKING A BRANCH-OFF SYSTEM

Joris R. I. Franckx, Bonheiden, Belgium, assignor to N.V. Raychem S.A., Belgium

Filed Oct. 15, 1981, Ser. No. 311,707
Int. Cl.³ H01B *13/26*; B32B *1/08*
U.S. Cl. 156—54 **8 Claims**

1. An assembly for sealing with a heat-activatable sealant a branch off between at least two substrates, comprising:
a heat-recoverable sleeve positionable around the substrates, the substrates arranged to define a central crutch region and the substrates extend from one end of the sleeve to the other; and
a thermally conductive member comprising
a first generally fin-shaped portion that is positionable outside the sleeve,
a second elongate portion including a heat-activatable sealant means arranged in use to extend between the substrates in the central crutch and the second elongate portion being severable from the first portion, and
a thermally-conductive bridging portion that interconnects the first and second portions, wherein heat applied to the first portion is conducted by the bridging portion to the second portion causing at least a portion of the heat-activatable sealant means to become severed and to seal the central crutch region.

4. A method of sealing with a heat-activatable sealant a branch-off between at least two substrates extending from an end of a heat-recoverable sleeve and defining a central crutch region, comprising:



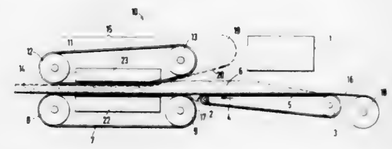
positioning a thermally-conductive member as set forth in claim 1 at the end of the sleeve such that the first fin-shaped portion of the member is located outside the sleeve and the second portion extends within the sleeve between the substrates at the central crutch region; and
applying heat to the first portion whereupon heat is conducted to the second portion through the thermally-conductive bridging portion causing the heat-activatable sealant means to fail and flow into the crutch region for sealing the branch-off.

4,410,380

METHOD FOR THE CONTINUOUS MANUFACTURE OF SHEETS OF MATERIAL ESPECIALLY WOOD CHIP BOARD

Karl-Heinz Ahrweiler, Krefeld, and Eduard Küsters, Gustav-Fünders-Weg 18, D-4150 Krefeld, both of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,669
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1978, 2843460
Int. Cl.³ B29J *5/00*
U.S. Cl. 156—62.2 **5 Claims**



1. In a method for the continuous manufacture of sheets of material such as wood chip board which includes the steps of applying a bed of particles which are self-bonding or which have been provided with a binder to a first endless, revolving, substantially horizontal conveyor belt; transferring said bed of material from said first belt to a second endless revolving substantially horizontal belt following said first belt, said second belt cooperating with a third endless belt disposed parallel and on top thereof, said two belts revolving in the same direction, to form a press section; compressing said bed between said belts in said press section and solidifying said bed under the action of the pressure and, optionally, heat to form a sheet

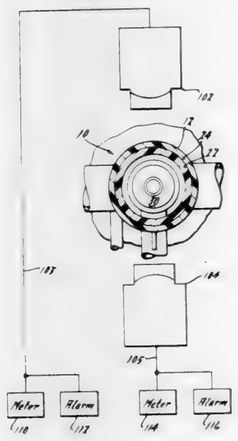
web, the improvement comprising feeding a paper web onto said first conveyor belt so that said paper web travels with said first and said second conveyor belts, said paper web being at least as wide as said bed; applying said bed to said paper web; pressing said paper web with said bed to form said sheet web; and subsequently grinding said paper off of said sheet web.

4,410,381

METHODS AND APPARATUS FOR TESTING THE QUALITY OF AN ULTRASONIC WELD IN THERMOPLASTIC MATERIAL

Gilbert B. Chapman, II, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 26, 1982, Ser. No. 342,971
Int. Cl.³ G05G *15/00*
U.S. Cl. 156—64 **7 Claims**



1. An apparatus for testing the quality of an ultrasonic weld in thermoplastic material comprising:

means for sensing electromagnetic radiation within a predetermined range of wavelengths emitted from said welded material for a period of time immediately following said weld;

means connected to said sensing means for responsively producting an output signal having values directly related to said sensed radiation; and

means receiving said output signal for comparing the highest value thereof occuring during said period of time with a predetermined value corresponding to that of an acceptable weld and indicating whether said highest value is above or below said predetermined value.

4,410,382

TELLTALE STRUCTURE AND METHOD OF PRODUCING SAME

Robert Varela, 9302 Cosgrove, Pico Rivera, Calif. 90660

Filed Oct. 30, 1981, Ser. No. 316,563
Int. Cl.³ B32B *3/00*; B65B *11/00*
U.S. Cl. 156—70 **4 Claims**

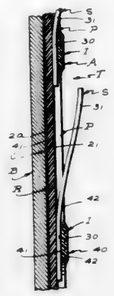
1. The method of producing a telltale structure which is to be affixed to the surface of an object, which includes the steps of:

providing a length of base tape of thin, flexible material having flat outer and inner surfaces;

providing a length of overlay tape of thin, flexible material having an inner surface and containing a plurality of longitudinally-extending, spaced-apart apertures;

providing a length of thin, flexible streamers material;

bonding the inner surface of the overlay tape to the outer surface of the base tape in longitudinal alignment therewith and with the streamer material held captive therebetween, with the streamer material extending longitudinally of the tapes and having portions thereof exposed in said apertures; and



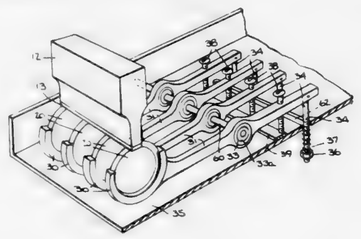
severing one end of each exposed portion of the streamer material.

4,410,383

METHOD FOR THE MANUFACTURE OF THERMOPLASTIC TUBULAR MEMBERS

Charles P. Lipari, Setauket, N.Y., assignor to Rai Research Corporation, Hauppauge, N.Y.

Filed Aug. 27, 1981, Ser. No. 296,804
Int. Cl.³ B29C *27/08*; B32B *31/18*
U.S. Cl. 156—73.1 **37 Claims**



32. A method for manufacturing thermoplastic tubular members comprising:

providing an ultrasonic welding device having a horn with an elongated tip;

providing at least two surface areas on a resiliently mounted anvil member wherein said surface areas are closely adjacent said tip for applying pressure substantially perpendicular to said tip on a workpiece passed between said tip and said surface areas with said anvil surface areas being spaced apart in the direction of said tip elongation;

bringing together two thin sheet-like ionically permeable membranes of thermoplastic material in close substantially parallel relationship;

conveying said sheet-like membranes between said tip and said anvil member surface areas wherein the direction of said conveying is substantially perpendicular to the direction of said elongation of said tip;

cooling said thermoplastic sheets to at least about 10° C. prior to their conveyance between said tip and said anvil member surface areas;

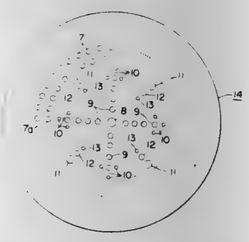
causing said ultrasonic device to vibrate said horn at ultrasonic frequencies during said conveying to produce high frequency mechanical impulses to ultrasonically weld together regions of contact of said membranes between said tip and said anvil surface areas whereby continuous seams substantially parallel to the direction of said conveying are formed joining said conveyed membranes; and cutting said seams substantially parallel to the direction of said conveying such that said membranes remain joined adjacent each side of said cut.

4,410,384

METHOD FOR PRODUCING CAPILLARY NIBS FOR INSCRIBING INSTRUMENTS

Akio Ito, Inazawa, and Masao Ito, Nagoya, both of Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 84,304, Oct. 22, 1979, which is a continuation-in-part of Ser. No. 723,133, Sep. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 523,876, Nov. 14, 1974, abandoned. This application Jul. 23, 1980, Ser. No. 171,538
Claims priority, application Japan, Nov. 19, 1973, 48-129881
Int. Cl.³ D04H *3/16*; B43K *1/06*
U.S. Cl. 156—167 **7 Claims**



1. A method of producing a bar-like capillary nib for use in an inscribing instrument, said method comprising the setps of:

extruding a molten, thermoplastic material through a plurality of orifices in an extrusion die and thereby forming a plurality of filaments of said thermoplastic material;

adhering said filaments longitudinally to each other before their surfaces are completely solidified to form a plurality of regularly spaced fluid channels of capillary dimensions extending longitudinally between said filaments;

providing said orifices of varying diameter and arranging said orifices such that said filaments, upon being extruded and adhered together, are positioned relative to each other to form each said fluid channel to extend continuously throughout the length of the nib and to have a substantially constant width across its transverse cross-sectional area, thereby producing a nib having substantially constant capillarity at any cross-sectional position in each said fluid channel; and

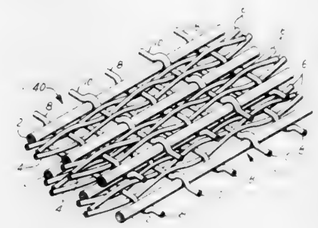
arranging said orifices such that said filaments, upon being extruded and adhered together, are positioned to form a transverse cross-sectional configuration including an outer shell portion formed of mutually adhered filaments, and a total of eight projections formed of mutually adhered filaments, said projections being integrally joined at respective bases thereof to said outer shell portion at equal angularly spaced intervals, said projections extending centripetally toward the axial center of the cross-section, four of said projections at equal angularly spaced intervals extending fully to said center and being joined thereat, thereby to form a cross-shaped figure, with each limb of said cross-shaped figure having two lateral projections extending from opposite lateral sides thereof, and said fluid channels being between said projections.

4,410,385

METHOD OF MAKING A COMPOSITE ARTICLE

Guy C. Murphy; Jackie D. Jones, both of Fairfield, and Charles T. Salemme, Madeira, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 229,047, Jan. 28, 1981. This application Apr. 7, 1982, Ser. No. 366,410
Int. Cl.³ B29N *9/04*
U.S. Cl. 156—181 **7 Claims**



1. In a method of making a substantially dry composite fabric preform the steps of:

providing a plurality of layers of a first fabric which includes within its weave a thermoplastic fibrous material intermixed with a structural fibrous material selected from the group consisting of carbon, graphite, glass, boron, silicon, refractories and their combinations:

disposing the plurality of layers in a stacked assembly with the layers sequentially adjacent each other; and

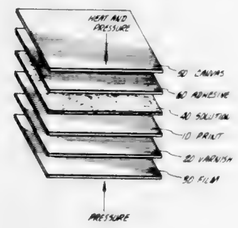
heating the layers at a temperature sufficient to promote a bonding action by the thermoplastic fibrous material at junctures between the fibrous materials.

4,410,386

PHOTOGRAPHIC MOUNTING PROCESS AND COMPOSITION

David F. Free, 1236 Deertark Dr., Fullerton, Calif. 92631

Continuation-in-part of Ser. No. 259,151, Apr. 30, 1981, which is a continuation of Ser. No. 63,861, Aug. 6, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,205
Int. Cl.³ B44C *1/16*; B32B *31/00*
U.S. Cl. 156—235 **32 Claims**



1. A process for bonding a print such as a photograph or lithograph to a textured surface comprising the steps of:

stripping the backing from the print,

applying a chemical solution to the back of the print, said solution including a surfactant and an optical brightener, and

bonding the print to a textured surface at elevated temperature and pressure.

31. A process for bonding a print such as a photograph to a textured surface comprising the steps of:

(a) stripping the backing from the print;

(b) applying a chemical solution to the back of the print, the

solution comprising water, surfactant, and optical brightener;

(c) coating the textured surface to form a white tacky coating, the coating comprising gelatin and an inorganic white pigment; and

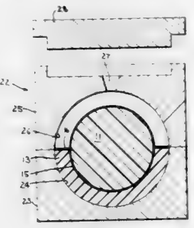
(d) bonding the print to the coated textured surface at elevated temperature and pressure.

4,410,387

BALL SEALERS AND METHOD OF PREPARATION

Russell J. Halkerston, and Jay E. Meili, both of Milwaukee, Wis., assignors to Molded Dimensions Inc., Port Washington, Wis.

Filed Feb. 27, 1980, Ser. No. 125,204
Int. Cl.³ B28B *9/00*; B29F *1/10*; B29H *9/11*
U.S. Cl. 156—245 **5 Claims**



1. A method of preparing a ball sealer with an inner core and an outer continuous layer of resilient compliant elastomer which method comprises preparing a first hemispheric cap of the elastomer, said cap having a central cavity adapted to receive one half of an inner core, placing an inner core in said cavity and then molding a second hemispheric cap of the same elastomer to the inner core and to the first cap to form an outer continuous layer of elastomer about the inner core.

3. A method of preparing a ball sealer which has an inner core and an outer continuous layer of resilient, compliant elastomer which comprises preparing a first hemispheric cap having a central cavity adapted to receive one-half of an inner core, placing the cap in a cap receiving cavity of a bottom plate of a mold, coating the outside of an inner core or the inside of the cavity of the cap with an adhesive that will bind the material of the cap to the core, placing the core within the cavity of the cap and positioning a plate having a cap-forming cavity on top of the bottom plate of the mold with the exposed upper half of the inner core received within the cap-forming cavity of the transfer plate, charging the mold with an uncured elastomer formula, and then closing the mold and curing the elastomer to form a second cap in situ which is bound to the inner core and to the first cap.

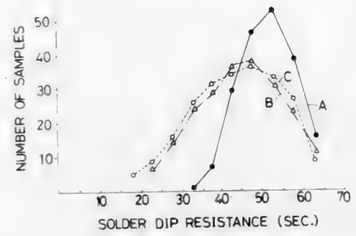
4,410,388

PRODUCTION OF METAL CLAD LAMINATES

Masayuki Oizumi, Ohtsu; Masaharu Abe, Kobe, and Yasuo Fushiki, Takatsuki, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 22, 1981, Ser. No. 304,691
Claims priority, application Japan, Sep. 25, 1980, 55-133814
Int. Cl.³ C09J *5/02*; H05K *3/00*
U.S. Cl. 156—307.3 **11 Claims**

1. In a process for producing a metal clad laminate comprising the steps of impregnating a cellulosic fiber paper substrate with a curable resin, combining a plurality of substrates thus impregnated, bonding a cladding metal foil on one or both sides of the combination, and curing the resultant green clad laminate, the improvement consisting essentially of aging the resultant cured clad laminate in an atmosphere having a temperature of 70° to 110° C. and a relative humidity of higher than 75% subsequent to said curing step to form a metal clad laminate having greatly minimized variations in solder dip resistance, peel strength, surface resistivity, and warp as compared to otherwise identical unaged or insufficiently aged laminates.

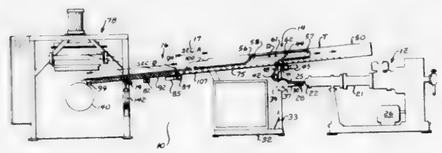


4,410,389

BEAD AND FILLER ASSEMBLY MACHINE

Leon J. Cole; Edwin E. Mallory, both of Niles, Mich., and Hugh Bourassa, Cleveland, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed Apr. 2, 1981, Ser. No. 250,159
Int. Cl.³ B29H *17/34*
U.S. Cl. 156—398 **5 Claims**



1. A bead filler assembly comprising:

an extruder for continuously extruding bead filler material;

at least one work station positioned to receive bead filler material from said extruder, for receiving a tire bead ring and a strip of extruded bead filler material of predetermined length, forming and rotating said filler material onto a bead ring, placing the bead ring and the filler material in cylindrical form, and discharging the finished bead filler rings;

conveying means interposed between said extruder and said work station for moving said bead filler material from the extruder to said work station, said movement of said bead filler material defining a path of said bead filler material, said conveying means including an accumulator and feed means, said accumulator interposed between said extruder and work station to receive and store bead filler material, said feed means interposed between said accumulator and work station to receive bead filler material from said accumulator and feed said material onto said work station;

cutting means interposed between said extruder and work station to sever said bead filler material into strips, said cutting means including a frame, blade means movably secured to said frame for lateral movement across the path of said bead filler material, said blade movement defining a blade path, blade power means coupled to said blade means to move said blade means across the path of said bead filler material, and bead filler material clamping means, said clamping means including, a fore platform and an aft platform, said fore and aft platforms and extending laterally across said conveying means, juxtaposed to the blade path beneath the path of said bead filler material, a fore securing strap and an aft securing strap, said fore and aft securing straps above respective fore and aft platforms and affixed to said frame for movement between a first elevated position above the path of said bead filler material and a second depressed position in close proximity to said platforms to clamp said bead filler material in place as said blade means moves laterally across the path of said bead filler material, said fore platform and fore securing strap positioned on side of blade means towards said extruder and said aft platform and aft securing strap positioned on side of blade means toward said work station, said fore platform elevated with respect to said aft platform to introduce tension into the filler material as it is clamped by said securing straps to reduce blade drag, said clamping means including strap power means coupled to said securing straps to power said straps between said first and second position; and,

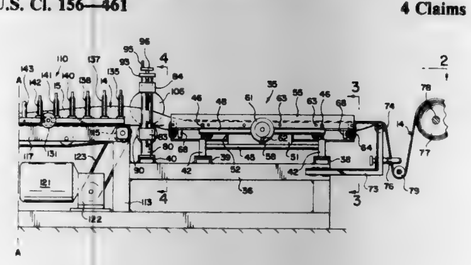
measuring means interposed between said extruder and work station for measuring a predetermined length of extruded bead filler material, said measuring means coupled to said cutting means to activate cutting means to cut extruded bead filler material into strips of predetermined lengths.

4,410,390

BELT FOLDING APPARATUS

Robert E. Farrell, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,324
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—461 **4 Claims**



1. An apparatus for making folded belts comprising support means; conveyor means mounted on said support means for providing a longitudinal moving support with a longitudinal center line; said conveyor means having a receiving end and a discharge end; first supply means for supplying in a continuous length an elongated fabric reinforced belt material with spaced side edges for movement onto said receiving end of said conveyor means for movement therewith; guide means cooperative with said conveyor means for maintaining one edge of said fabric belt material a predetermined distance from said center-line; fold-over means on said support means for folding the other one of said side edges of said belt fabric material over into said fabric material in overlapping relationship forming an overlapping portion to locate said other edge between said center line and the folded edge being formed; stitching means mounted on said support means for stitching a portion of said overlapped portion only onto said moving belt being formed into firm adhesion to each other to form a belt; wind-up means located adjacent said discharge end of said conveyor for winding up said formed belt;

said stitching means having a pair of rollers located in tandem; the terminal ends of said rollers contracting said overlapping portion is located closer to said folded edge than said center line;

said fold-over means includes a pair of vertically aligned overlapping discs that fold said other edge upwardly relative to said belt material conveyed by said conveyor means; a plurality of inclined rollers downstream from said discs operative to fold over said upwardly extending portion in progressive steps onto said moving fabric reinforced belt material to form said folded belt;

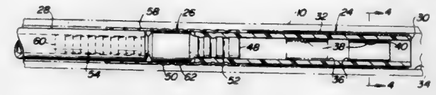
a second conveyor cooperates with said fold-over means to maintain support for said folding and stitching; and said first mentioned conveyor means is inclined towards said guide means to maintain a predetermined alignment and distance of said fabric reinforced belt material as it is fed to said fold-over means.

4,410,391

APPARATUS FOR RELINING AN UNDERGROUND GAS LINE OR THE LIKE WITHOUT EXCAVATION

William R. Thomas, Malvern, and George S. Sykora, Strafford-Wayne, both of Pa., assignors to UMAC, Inc., Paoli, Pa. and Brooklyn Union Gas Company, Brooklyn, N.Y., a part interest

Division of Ser. No. 227,336, Jan. 22, 1981, Pat. No. 4,394,202.
This application Dec. 13, 1982, Ser. No. 449,047
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—574 **22 Claims**



1. An apparatus for repairing or relining an underground pipeline or the like without excavation to obtain access to the pipe, comprising:

an expandable sealing unit comprising a tubular member of thermally stabilized cross-linked material mounted over at least one resilient member, said resilient member having a force tending to expand the diameter of said tubular member, said thermally cross-linked material having been preshrunk after cross-linking to form a smaller diameter tubular member wherein said material will expand to its cross-linked condition upon being heated, and a layer of bonding material mounted over said cross-linked material providing a bonding material between the cross-linked material and the inner surface of the pipeline into which it is to be inserted;

a predetermined length of flexible tubing material; and

a connecting means for connecting said expandable sealing unit to one end of said flexible tubing whereby said expandable sealing unit, connecting means and one end of said flexible tubing may be inserted into said pipeline from a point beyond where the pipeline exits from the earth to a point beyond where said pipeline needs repair, said expandable sealing unit being heatable by a heating unit insertable into said expandable sealing unit causing said cross-linked material and said resilient member to expand forming a bond utilizing said bonding material between said expandable sealing unit and the inner surface of the pipeline.

4,410,392

PROCESS FOR RESTRUCTURING THIN STRIP SEMI-CONDUCTOR MATERIAL

Joseph Winter, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 194,539, Oct. 6, 1980, Pat. No. 4,356,861. This application Mar. 18, 1981, Ser. No. 245,009
Int. Cl.³ C30B *1/02*
U.S. Cl. 156—603 **10 Claims**

1. A process for restructuring a solid state thin strip semiconductor material comprising the steps of:

a. providing a heating station;

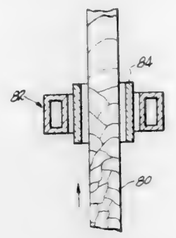
b. conveying said solid state thin strip to said heating station at a first desired speed;

c. heating said solid state thin strip material in said heating station to a desired temperature above the recrystallization temperature and below the melting temperature;

d. maintaining said desired temperature in said solid state thin strip as said strip passes through said heating station

for simultaneously recrystallizing and relieving stress within said thin strip;

e. placing longitudinal tension on said thin strip to activate the recrystallization and stress relief within said thin strip; and



f. conveying restructured solid state thin strip material from said heating station at a second desired speed greater than said first desired speed for placing the longitudinal tension on said thin strip.

4,410,393

PREPARATION OF STEEL SURFACES FOR ADHESIVE BONDING BY ETCHING WITH H_3PO_4-POLYHYDRIC ALCOHOL MIXTURE

William J. Russell, Sparta, and Roberta Rosty, Saddlebrook, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 24, 1982, Ser. No. 391,793

Int. Cl.³ C23F *1/00;* **B32B** *31/24*

U.S. Cl. 156—629 **7 Claims**

1. A process for adhesive bonding of steel parts, wherein the steel parts are subjected to an etching process to produce a surface preparatory to adhesive bonding, which comprises contacting the steel parts with a liquid etchant composition consisting essentially of about

phosphoric acid (85%)	10 to 40 vol. %
polyhydric alcohol	50 to 90 vol. %
water	0 to 10 vol. %

4,410,394

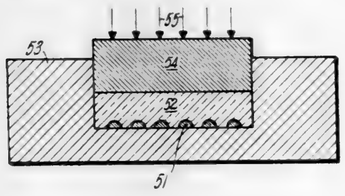
METHODS OF MAKING COOLED, THERMALLY STABLE COMPOSITE MIRRORS

Robert K. Stalcup, Lake Park, Fla., and Karl M. Prewo, Vernon, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 219,771, Dec. 23, 1980, Pat. No. 4,386,825, which is a continuation-in-part of Ser. No. 54,098, Jul. 2, 1979, Pat. No. 4,256,378. This application Jan. 10, 1983, Ser. No. 456,883

Int. Cl.³ B44C *1/22;* **C03C** *15/00, 25/06;* **G02B** *5/08*

U.S. Cl. 156—630 **11 Claims**



1. A method of making a graphite-glass laser mirror containing cooling channels comprising laying a mixture of graphite fibers and particulate glass on a mold surface, laying a plurality of channel forming inserts in the desired cooling channel pattern on the laid graphite-glass, covering said inserts with additional graphite fibers and particulate glass, hot pressing the laid graphite-glass-insert mixture, and removing the inserts.

4,410,395

METHOD OF REMOVING BULK IMPURITIES FROM SEMICONDUCTOR WAFERS

Charles H. Weaver, Santa Rosa, and Bela L. Kaltenekker, Healdsburg, both of Calif., assignors to Fairchild Camera & Instrument Corporation, Mountain View, Calif.

Filed May 10, 1982, Ser. No. 376,890

Int. Cl.³ H01L *21/306;* **B44C** *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—662 **10 Claims**

1. A method of removing bulk impurities from a semiconductor wafer comprising the steps of:

lapping the front and back surfaces of said wafer for removing damage caused to said surfaces during slicing of said wafer from an ingot and for making said surfaces parallel to within a predetermined degree of parallelism;

heating said wafer at a predetermined temperature for a predetermined period of time after said step of lapping without any intermediate step of intentionally damaging either surface of said wafer for causing said bulk impurities to migrate substantially equally to said front and back surfaces of said wafer;

etching said front and back surfaces of said wafer for removing a second predetermined thickness of material therefrom after said step of heating; and

polishing said front surface of said wafer for removing a third predetermined thickness of material from said front surface after said step of etching.

4,410,396

METAL STRIPPING COMPOSITION AND PROCESS

Gerardus A. Somers, Langenboom, and Jan J. M. Hendriks, St. Oedenrode, both of Netherlands, assignors to Occidental Chemical Corporation, Warren, Mich.

Filed Nov. 23, 1982, Ser. No. 443,977

Claims priority, application United Kingdom, Nov. 24, 1981, 8135327

Int. Cl.³ C23F *1/00*

U.S. Cl. 156—664 **20 Claims**

1. A chemical stripping composition suitable for removing tin and tin-lead alloys from a metallized substrate which is an aqueous solution comprising:

A. hydrogen peroxide in an amount of from about 0.1 to about 10 molar,

B. ammonium bifluoride or ammonium fluoride in an amount of from about 0.4 to about 10 molar,

C. an acid in an amount such as to maintain the pH of the solution at the surface being stripped below the value at which smut formation occurs or compounds of the metal of the metallized surface and the metal complexing compound are deposited on the metallized surface, and

D. a metal complexing compound which is an 8-hydroxyquinoline compound in an amount of at least 0.005 molar, and

wherein the molar ratio of component B to component D is at least 125:1 and the molar ratio of component A to component D is at least 50:1.

10. A process for stripping tin and tin-lead alloy solders from a metallized substrate which comprises contacting the solder coated substrate with the composition of claim **1** for a period of time sufficient to remove substantially all of said solder without significant attack on said substrate.

4,410,397

DELIGNIFICATION AND BLEACHING PROCESS AND SOLUTION FOR LIGNOCELLULOSIC PULP WITH PEROXIDE IN THE PRESENCE OF METAL ADDITIVES

Arthur W. Kempf, Warwick, N.Y., assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 48,651, Jun. 14, 1979, abandoned, which is a continuation of Ser. No. 894,605, Apr. 7, 1978, abandoned. This application Dec. 24, 1980, Ser. No. 220,162

Int. Cl.³ D21C *9/16*

U.S. Cl. 162—78 **23 Claims**

8. In a process for delignifying and brightening lignocellulosic pulp for use in a paper-making process, the improvement comprising employing an aqueous acidic slurry of lignocellulosic pulp having a pulp consisting of 3% to 50% and consisting essentially of lignocellulosic pulp; from about 0.1% to about 20% by weight, based on O.D. pulp, of peroxide; from about 0.1% to about 10% by weight, based on O.D. pulp, of a metal-containing additive whose metallic portion is selected from the group consisting of tin, titanium and vanadiam; and sufficient acid to maintain the pH of the pulp slurry between about 1 and about 7; whereby that pulp viscosity loss and degradation are substantially avoided.

4,410,398

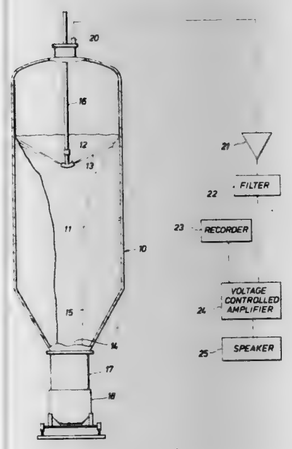
METHOD AND APPARATUS FOR MONITORING THE CUTTING OF COKE IN A PETROLEUM PROCESS

Arthur H. T. Chipman, Long Beach, and Ernest M. Bony, Palos Verdes Estates, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 22, 1982, Ser. No. 350,948

Int. Cl.³ C10B *33/00, 41/04, 43/08, 55/00*

U.S. Cl. 201—1 **3 Claims**



1. A method for assisting an operator in cutting coke in a coke drum comprising:

measuring the vibrations produced in the coke drum during a coke cutting operation;

filtering the measured vibrations to obtain the frequencies between 1000 and 2000 hertz;

displaying graphically said frequencies of interest; and

forming an audio display of the amplitude of said frequencies whereby said operator can observe the graphic display and listen to the audio display during the coke cutting operation.

4,410,399

SELF-SEALING DOOR ASSEMBLY FOR A COKE OVEN

Wilhelm Holz, Gelsenkirchen-Buer, and Helmut Lukaszewicz, Bottrop, both of Fed. Rep. of Germany, assignors to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

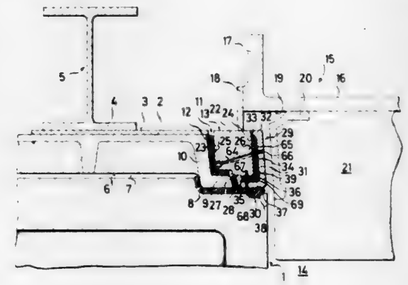
PCT No. PCT/DE81/00101, § 371 Date Jan. 11, 1982, § 102(e) Date Jan. 11, 1982

PCT Filed Jun. 29, 1981, Ser. No. 341,998

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024514

Int. Cl.³ C10B *25/06, 29/04*

U.S. Cl. 202—248 **6 Claims**



1. A self-sealing door assembly for a coke oven comprising a door frame and a door having a body, said door frame being affixed around the oven opening, the surfaces of the frame facing the oven defining a gap that is filled with heat insulating material and the outer front surfaces of the frame cooperating with sealing strips on the body of the door, said gap being defined between the vertical and transverse surfaces on the door frame facing the oven and an internal cover divided around the periphery of the door frame into a plurality of overlapping sections, said cover being angle-sectioned and having a first flange engaging the rear of the door frame, a second flange overlapping the surface of the door frame facing the opening, and having connected thereto a further flange that is in alignment with the front surface of the door frame, said first flange being provided with bores for receiving clamping bolts, and said second flange being provided with bores for receiving clamping bolts and with projections, each in the shape of a cone, for engagement with the door frame.

4,410,400

EXTRACTIVE DISTILLING WITH REWORKING OF RESIDUE

Gerhard Preusser, Essen, and Martin Schulze, Neviges, both of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 289,718

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032780

Int. Cl.³ B01D *3/40, 3/42*

U.S. Cl. 203—3 **14 Claims**

1. Method for working up residues of extractive distilling process for obtaining pure hydrocarbons comprising

feeding the residue to be worked up from an extractive distilling column to the about middle part of a distilling column including plates and bottom boiler;

distilling the hydrocarbons in the distilling column;

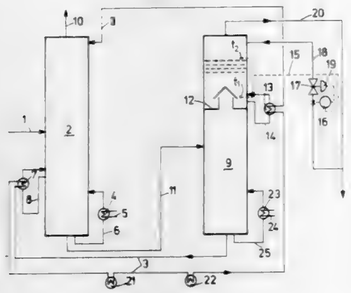
removing the hydrocarbons at the head of the distilling column;

removing the solvent at the bottom of the distilling column;

removing a sidestream from the distilling column at a position above the feed plate for the residue from the extractive distilling column via a so-called reflux evaporator plate with elevated level of liquid;

heating the sidestream by indirect heat exchange with the solvent flowing from the distilling column;

feeding back the heated-up side stream into the distilling column to a plate at or above the reflux evaporator plate; and



controlling the concentration of solvent at the reflux evaporator plate by the amount of reflux at the head of the column.

4,410,401

METHOD FOR MANUFACTURING A DIE

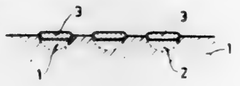
Lodewijk Anselrode, St. Anthonis, Netherlands, assignor to Stork Screens B.V., Oxmeer, Netherlands

Filed Dec. 15, 1980, Ser. No. 216,779

Claims priority, application Netherlands, Dec. 17, 1979, 7909089

Int. Cl.³ C25D *1/08, 1/20*

U.S. Cl. 204—11 **12 Claims**



1. A method of manufacturing a sieve, said method comprising providing a base with a conducting surface, irradiating said conducting surface in a pattern thereon with short bursts of high energy radiation to form a die with irradiative spots at the irradiated locations, the high energy radiation being obtained by a laser beam or an electron beam to cause local heating and melting at said irradiated locations to convert the conducting surface at said locations to an insulating surface by chemical reaction and forming a sieve from said die by electrolytic action in which the insulating surfaces on said die at a said irradiated locations provide a desired pattern of openings in said sieve.

4,410,402

DEGRADATION OF HALOGENATED CARBON COMPOUNDS

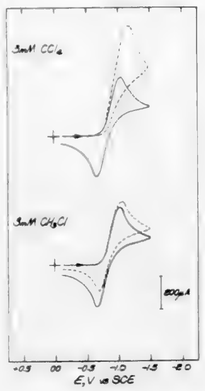
Donald T. Sawyer, Riverside, and Julian L. Roberts, Jr., Redlands, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Dec. 29, 1980, Ser. No. 221,077

Int. Cl.³ C25B *3/02*

U.S. Cl. 204—59 R **14 Claims**

1. A process for the degradation of an aliphatic carbon containing compound containing at least three halogen atoms selected from iodine, bromine and chlorine, on the same aliphatic carbon, said carbon compound being capable of undergoing bimolecular and nucleophilic substitution, comprising



reacting said carbon compound with superoxide in an aprotic solvent which is essentially free of water.

4,410,403

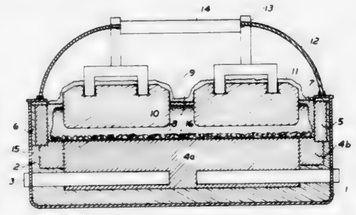
ELECTROLYSIS METHOD

Stanley C. Jacobs, Lower Burrell; Raymond D. Wiltzius, New Kensington; John R. Minick, Leechburg, and Perry A. Foster, Jr., New Kensington, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jun. 17, 1980, Ser. No. 160,236

Int. Cl.³ C25B *1/00, 1/34;* **C25C** *3/00, 3/08*

U.S. Cl. 204—67 **7 Claims**



1. In an electrolysis method, including electrolyzing, between anodic and cathodic surface areas, a compound dissolved in a solvent, wherein a liquid cathodic body is located in a region such that it is possible for waves in the body to touch anodic surface area, the improvement comprising placing a bed of objects into said region, the objects touching one another in said body, there being interstices between the objects for accommodating liquid of said body.

4,410,404

MEMBRANE CELL AT INCREASED CAUSTIC CONCENTRATION

Craig S. Warburton, Mentor, and Stanley K. Baczek, Painesville, both of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jun. 26, 1981, Ser. No. 277,906

Int. Cl.³ C25B *1/34*

U.S. Cl. 204—98 **12 Claims**

1. A process for producing high purity caustic in a chlor-/alkali membrane cell utilizing a sulfonamide membrane and also utilizing a substantially saturated brine feed concentration comprising:

(a) operating said cell normally until the current efficiency of said cell has dropped below an acceptable level;

(b) increasing the caustic concentration to a substantially greater than normal level, restoring or improving said current efficiency of said cell thereby; and

(c) operating said cell at said restored or improved current efficiency level;

wherein the brine feed concentration of said cell is maintained at a substantially saturated brine concentration level.

4,410,405

SILICA SOL PROCESS

Horacio E. Bergna, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Co., Wilmington, Del.

Continuation-in-part of Ser. No. 101,877, Dec. 10, 1979, abandoned, which is a continuation of Ser. No. 732,751, Oct. 15, 1976, abandoned, which is a continuation of Ser. No. 591,097, Jun. 27, 1975, abandoned. This application Apr. 10, 1981, Ser. No. 252,885

Int. Cl.³ B01J *13/00;* **B01D** *57/02*

U.S. Cl. 204—180 P **6 Claims**

1. In a method for preparing concentrated aqueous silica sols of small silica particles about 10 nm or less in diameter and substantially uniform in size by the deposition of silica upon already-formed silica nuclei particles dispersed in a heated aqueous solution of alkali metal silicate at a temperature of 50°–100° C., the nuclei having been formed by reducing the pH to 8–9.5 at a temperature of 10°–50° C. thereby spontaneously forming silica nuclei particles which are dispersed in the solution, the improvement comprising forming the nuclei and maintaining a substantially constant number of particles by:

(a) forming an aqueous solution which contains dissolved therein an alkali metal salt of a nonsiliceous anion at a concentration of about 0.03 to about 0.08 N, and has a concentration of alkali metal silicate in the solution no greater than about 1% wt., basis SiO_2, and reducing the pH of the solution to effect nucleation by electrodialysis of the solution at pH 8–9.5 by which alkali metal ions are removed through a cation-selective membrane;

(b) raising the temperature of the formation solution by at least 10° C. to the deposition temperature of 50°–100° C.; and

(c) removing alkali metal ions from the system to maintain the pH in 8–9.5 range while adding alkali metal silicate at a rate of 0.05–6 g of SiO_2/hr/1000 cm^2 of surface of the silica nuclei in the system when the growth temperature is less than 70° C., and a rate of 1–10 g/hr/1000 cm^2 when the growth temperature is in the range of 70°–100° C.

4,410,406

PROCESS FOR PREPARING MAGNETIC RECORDING MEDIUM

Osamu Kohmoto, and Takahiro Yamamoto, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 12, 1981, Ser. No. 320,439

Claims priority, application Japan, Nov. 24, 1980, 55-164899

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 M **7 Claims**

1. A process for preparing a magnetic recording medium comprising a thin magnetic layer of the formulation

$$(CO_{100-x}Ni_x)_{100-y}P_y$$

wherein x is in a range of 0 to 35 wt. % and y is in a range of up to 6 wt. %, which process comprises forming said thin magnetic layer upon a non-magnetic substrate by a sputtering method carried out in an inert atmosphere with a target comprising a Co-Ni-P alloy of said formulation.

4,410,407

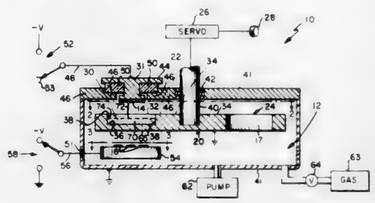
SPUTTERING APPARATUS AND METHODS

Alexander Macaulay, Cupertino, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 22, 1981, Ser. No. 333,532

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 EC **11 Claims**



4. A method of sputter depositing material onto an object in a sputtering chamber, comprising the steps of:

(a) positioning a walled object obscuring portion of a shutter between a source of the material and the object;

(b) bombarding the source with ions produced in the chamber with the walled object obscuring portion of the shutter positioned between the source and the object and collecting matter dislodged from the source by such bombarding onto the object obscuring portion of the shutter;

(c) moving the shutter to position an apertured portion of such shutter between such source and the object and repositioning the walled object obscuring portion of the shutter to a region in the chamber displaced from the object;

(d) bombarding the source with ions produced in the chamber with the apertured portion of the shutter positioned between the source and the object and depositing matter dislodged from such source by such bombarding and passing through the apertured portion of the shutter onto the object; and

(e) confining particles of the matter previously collected on the walled object obscuring portion of the shutter during step (b) to such walled object obscuring portion while the dislodged matter is deposited on the object.

4,410,408

METHOD OF PREPARING ZINC OXIDE FILM

Suehiro Kato, Nagaokakyo, and Kenji Ando, Kyoto, both of Japan, assignors to Murata Manufacturing Company, Ltd., Japan

Filed Jan. 5, 1982, Ser. No. 337,081

Claims priority, application Japan, Jan. 12, 1981, 56-3567

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 SP **6 Claims**

1. A method of making zinc oxide film comprising the steps of forming a first zinc oxide layer on a substrate by radio-frequency sputtering of zinc oxide from a target of zinc oxide and then forming a second zinc oxide layer on said first zinc oxide layer by reactive direct-current or radio-frequency sputtering of zinc from a target of zinc metal in an oxidizing atmosphere.

4,410,409

AMPEROMETRIC GAS SENSOR, CATHODE ASSEMBLY THEREFOR AND METHOD OF MAKING SAID CATHODE ASSEMBLY

John N. Harman, III, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 335,019

Int. Cl.³ G01N *27/30, 27/54*

U.S. Cl. 204—415 **12 Claims**

1. In an electrochemical gas sensor of the type having a gas permeable membrane, a housing defining an electrolyte chamber for receiving an electrolyte solution, an electrode, and an electrode mounting element for mounting the electrode in the

electrolyte chamber in the vicinity of the gas permeable membrane, the improvement comprising:

(a) a quantity of an electrochemically inert, electrically nonconductive fluid which is immiscible with the electrolyte solution,

(b) means for sealing said quantity of fluid, within the electrode mounting element, in direct contact with the inner surface of the electrode,

(c) whereby the electrolyte solution is substantially prevented from entering the mounting element and coming into contact with the inner surface of the electrode.

5. An electrode assembly for use in electrochemical gas sensors of the type having a gas permeable membrane and an electrolyte chamber containing an electrolyte solution, said electrode assembly being characterized by:

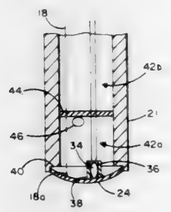
(a) an electrode,

(b) an electrode mounting element for supporting the electrode in the electrolyte chamber in the vicinity of the membrane,

(c) a conductor within the mounting element for connecting the electrode in a remote measuring circuit,

(d) an electrochemically inert, electrically insulating water repellant fluid,

(e) means for sealing a body of said fluid within the electrode



mounting element in direct contact with the inner surface of the electrode,

(f) whereby said fluid covers the inner surface of the electrode and prevents the electrolyte solution from entering the electrode mounting element.

10. A method for forming an electrode assembly for use in an electrochemical gas sensor of the type having a gas permeable membrane, an electrolyte chamber, and an electrode, said method including the steps of:

(a) producing an electrode mounting element having an axial opening,

(b) attaching a conductor to one side of the electrode,

(c) glueing the electrode on one end of the mounting element to form a substantially fluid tight seal therewith, said conductor projecting into the axial opening of the mounting element,

(d) injecting an electrochemically inert water repellant fluid into the axial opening to form a layer of fluid covering the inner surface of the electrode and the attached end of the conductor,

(e) inserting a fluid barrier into the axial opening to cover said fluid layer, and

(f) injecting a sealing compound into the axial opening to cover the fluid barrier and thereby seal the interior of the electrode assembly.

4,410,410

INTERNALLY SUPPORTED ELECTRODE

Gary A. Deborski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,741

Int. Cl.³ C25B *9/00, 11/03, 15/08*

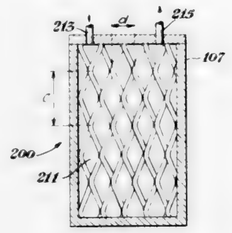
U.S. Cl. 204—277 **8 Claims**

1. An internally supported electrode comprising:

(a) a gas permeable support section having at least two surface portions; and

(b) at least two exposed members individually supported by a surface portion of the support section;

wherein a plurality of projections, separated by at least about 0.1 inch, are on each of the surface portions, and at



least a portion of said projections are at least partially imbedded into and bonded with an exposed member, and wherein the gas permeable support section comprises a plurality of articles having flat surfaces.

4,410,411

DIMENSIONALLY STABLE ASBESTOS DIAPHRAGMS

Robert W. Fenn, III, Painesville; Emory J. Pless, Cleveland Heights; Richard L. Harris, Painesville, and Kevin J. O'-Leary, Cleveland Heights, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Jan. 17, 1973, Ser. No. 324,508

Int. Cl.³ C25B *13/06, 13/07*

U.S. Cl. 204—283 **22 Claims**

1. A method of providing a hydraulically permeable dimensionally stable diaphragm on a foraminous chlor-alkali electrolytic cell cathode, which method comprises:

(a) forming a slurry of fibrous asbestos and a particulate thermoplastic fluorine-containing polymer mechanically and chemically resistant to the cell environment by mixing together said asbestos and polymer, said polymer being present in an amount sufficient to prevent substantial swelling of the diaphragm;

(b) inserting the cathode to be coated into said slurry and depositing a uniform mixture of asbestos fibers and particulate polymer thereon by means of a vacuum;

(c) removing the coated cathode from the slurry and subjecting same to a temperature sufficient to allow the polymer to fuse and flow, without the application of pressure, and cause the polymer to bind adjacent fibers together without forming a continuous polymer coating on the fiber surface; and

(d) cooling the diaphragm coated cathode to substantially room temperature whereby there is obtained a diaphragm, dimensionally stable under operating cell conditions, characterized by asbestos fibers bearing a discontinuous fused polymer coating thereon.

14. The diaphragm-coated cathode product of the process of claim **1**.

4,410,412

CATHODE FOR AN ELECTROLYTIC CELL FOR PRODUCING ALUMINUM VIA THE FUSED SALT ELECTROLYTIC PROCESS

Tibor Kugler, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

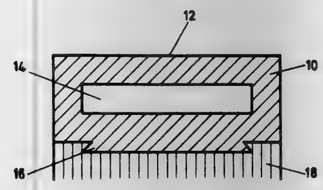
Filed Nov. 2, 1981, Ser. No. 317,189

Claims priority, application Switzerland, Nov. 26, 1980, 8737/80

Int. Cl.³ C25C *7/00, 3/06*

U.S. Cl. 204—286 **10 Claims**

1. An exchangeable, wettable, consumable solid cathode for use in a fused salt electrolytic cell for producing aluminum, wherein said cathode is made substantially entirely of an aluminide of at least one metal selected from the group consisting of titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum, tungsten and mixtures thereof without a binder of metallic aluminum such that the melting point of said consumable solid cathode is greater than the operating temperature of the electrolytic cell during aluminum production.



4,410,413

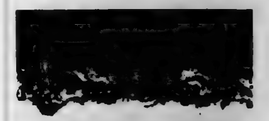
CATHODE FOR ELECTROLYTIC PRODUCTION OF HYDROGEN

Dale E. Hall, Monroe, N.Y., assignor to MPD Technology Corporation, Wyckoff, N.J.

Filed Oct. 5, 1981, Ser. No. 308,520

Int. Cl.³ C25B *11/04, 11/02*

U.S. Cl. 204—290 R **5 Claims**



1. A cathode for use in the electrolytic production of hydrogen employing an aqueous alkaline electrolyte having on at least a portion of the surface thereof a nickel or a nickel alloy from the group consisting of nickel-iron alloys, nickel-cobalt alloys, nickel-cobalt-iron alloys containing at least 60% by weight of nickel and nickel alloys containing up to 25% by weight in total of one or more chromium, molybdenum, vanadium and tungsten of suitable electrode character and configuration for production of hydrogen and including on said nickel or said nickel alloy a structure resulting from direct electrochemical cathodic action on an adherent non-spinel oxide produced by thermal oxidation of said nickel or said nickel alloy.

4,410,414

METHOD FOR HYDROCONVERSION OF SOLID CARBONACEOUS MATERIALS

Patrick B. Briley, Bolingbrook, Ill., assignor to Hybrid Energy Systems, Inc., Stillwater, Okla.

Continuation of Ser. No. 113,222, Jan. 18, 1980, Pat. No. 4,297,200. This application Oct. 23, 1981, Ser. No. 314,471

Int. Cl.³ C10G *1/00, 1/06, 47/00*

U.S. Cl. 208—8 LE **8 Claims**

1. A method of reacting hydrogen gas with hydrocarbon liquid and solids in a pressurized hydroconversion process to achieve a desired amount of hydroconversion, comprising the steps of:

cyclically circulating hydrocarbon liquid containing at least some dispersed solid carbonaceous material from a pressurized hydroconversion zone through an ejector having a motive inlet, a suction inlet, and an outlet such that the hydrocarbon liquid and solids enter the motive inlet of the ejector, exit through the outlet of the ejector to the pressurized hydroconversion zone and are returned from the pressurized hydroconversion zone to the motive inlet of the ejector;

continuously introducing hydrogen gas to said cyclically circulating hydrocarbon liquid and solids through the suction inlet of the ejector such that only the total amount of hydrogen gas required for the desired amount of hydroconversion in a cycle is distributively introduced throughout the cyclically circulating step;

continuously pressurizing the hydrocarbon liquid and solids circulating from the outlet of the ejector to the pressurized hydroconversion zone.

4,410,415

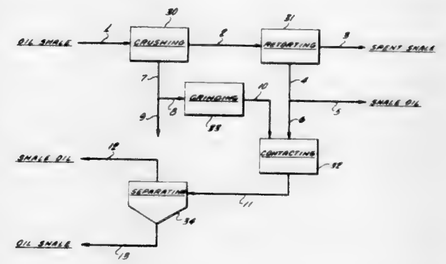
REDUCTION IN POUR POINT OF SHALE OIL

Walter H. Seitzer, West Chester, Pa., assignor to Sunoco Energy Development Co., Dallas, Tex.

Filed May 5, 1980, Ser. No. 146,906

Int. Cl.³ C01G *1/04*

U.S. Cl. 208—11 LE **5 Claims**



1. Process for lowering the pour point of shale oil comprising:

contacting liquid feed shale oil having an undesirably high pour point with an effective amount of fresh oil shale at a temperature not exceeding the thermal decomposition temperature of kerogen extracted from the oil shale in the contacting, for a sufficient time whereby afterwards the pour point of the resulting shale oil is lower than the pour point of the liquid feed shale oil prior to the contacting.

4,410,416

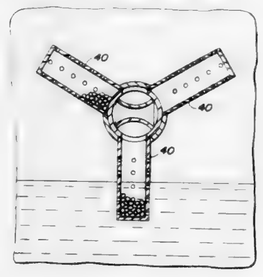
SPLIT HUB WHEEL APPARATUS AND USE OF SAME FOR SHALE OIL RETORTING

Carl G. Everman, P.O. Box 204, Grayson, Ky. 41143

Filed Apr. 17, 1981, Ser. No. 255,126

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **13 Claims**



1. A process for producing a combustible liquid from solid oil shale comprising subdividing said oil shale into suitably

sized particles, placing said particles in a perforated container capable of retaining said particles therein while allowing liquid to contact said particles therein, contacting said particles under air tight conditions with a liquid bath maintained at a temperature of between about 500° F. and about 1000° F. for a time sufficient to evolve vapor of said combustible liquid from said particles, and collecting and condensing said vapor to produce said combustible liquid.

4,410,417

PROCESS FOR SEPARATING HIGH VISCOSITY BITUMEN FROM TAR SANDS

Jan D. Miller, and Manoranjan Misra, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Oct. 6, 1980, Ser. No. 194,515
Int. Cl.³ C10G *1/00, 1/04*
U.S. Cl. 208—11 LE **6 Claims**

1. A process for recovering high viscosity bitumen from tar sand comprising:

obtaining a tar sand having a high viscosity bitumen, the viscosity of the bitumen being about 50 poise or greater at 90° C;

grinding the tar sand so as to mechanically fracture the bitumen and thereby disengage bitumen particles from sand particles, said mechanical fracture of the bitumen and said disengagement of the bitumen particles from the sand particles being facilitated by the high viscosity of the bitumen;

conditioning the bitumen particles with an oil to enhance the hydrophobicity of the bitumen particles; and

separating the bitumen particles from the sand particles by flotation.

4,410,418

METHOD FOR REDUCING CARBON FORMATION IN A THERMAL CRACKING PROCESS

Semyon Kukes; Jesse R. Harris; Randall A. Porter, and Larry E. Reed, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 30, 1982, Ser. No. 363,739
Int. Cl.³ C10G *9/16*
U.S. Cl. 208—48 R **9 Claims**

1. A method for reducing the formation of coke on the metals which are contacted with a gaseous stream containing hydrocarbons in a thermal cracking process comprising the steps of:

contacting said metals with a halogen containing silicon compound selected from the group consisting of halogen containing silanes, halogen containing disilanes, and halogen containing siloxanes; and

converting said halogen containing silicon compound to silicon dioxide to form a protective coating on said metals.

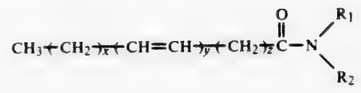
4,410,419

HEAT EXCHANGER ANTIFOULANT

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 14, 1982, Ser. No. 398,129
Int. Cl.³ C10G *9/16*
U.S. Cl. 208—48 AA **8 Claims**

1. A process for reducing heat exchanger fouling in which a liquid hydrocarbon stream is passed through a heat exchanger at a temperature from 0° to 1500° F. wherein from 1 to 500 parts per million of an antifouling additive is added to said hydrocarbon stream, said additive comprising a dialkyl fatty amide of the formula:



wherein:

X and Z are independently integers from 0 to 12 and X+Z is at least 4,

Y is an integer from 0 to 3, and

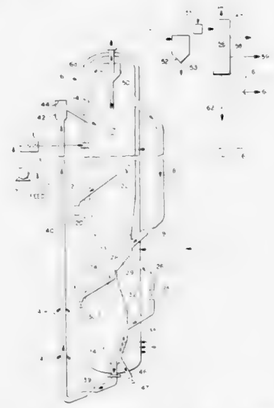
R_1 and R_2 are independently alkyl groups of 1 to 6 carbon atoms, or taken together with the amide nitrogen form a 5 or 6 membered heterocyclic ring.

4,410,420

MULTI-ZONE CONVERSION PROCESS AND REACTOR ASSEMBLY FOR HEAVY HYDROCARBON FEEDSTOCKS

Barry Liss, New York, N.Y.; Michael Calderon, Spotswood, and Marvin S. Rakow, East Brunswick, both of N.J., assignors to HRI, Inc., Lawrenceville, N.J.

Filed Jan. 15, 1982, Ser. No. 339,277
Int. Cl.³ C10G *9/32*
U.S. Cl. 208—127 **14 Claims**



1. A process for conversion of heavy hydrocarbon feedstocks to provide lighter hydrocarbon liquids and gas products, comprising:

(a) introducing a hydrocarbon feedstock into a pressurized upper fluidized bed primary cracking zone maintained at a temperature within the range of 850°-1400° F., said cracking zone containing a bed of particulate carrier material fluidized by upflowing reducing gases passing therethrough and providing primary cracking of the feedstock;

(b) passing the carrier material containing heavy hydrocarbon liquid and coke deposits from said cracking zone downwardly through a non-isothermal stripping zone contains a stationary packing to strip and further crack the liquid;

(c) passing the carrier material containing coke deposits downwardly into a subadjacent essentially isothermal interim zone free of packing to provide temperature control and secondary cracking of any remaining liquid at a controlled temperature within the range of 1000°-1650° F.;

(d) passing the carrier material from said interim zone downwardly into a lower fluidized bed gasification zone to gasify said coke deposits from the carrier material;

(e) injecting an oxygen-containing gas and steam into the lower gasification zone for reaction with said coke deposits on and within the carrier material and maintaining the gasification zone temperature within the range of 1600°-1900° F. for gasification and combustion of coke and to produce the reducing gases;

(f) passing said reducing gases upwardly successively through said interim zone, stripping zone and through said upper primary cracking zone to fluidize the beds, therein;

(g) passing the resulting hot decoked particulate carrier material from the lower gasification zone to a vertical transfer conduit, and recycling said solids upwardly into the upper primary cracking zone using a transport gas flowing in said conduit at velocity sufficient to carry said solids; and

(h) withdrawing effluent vapor phase products from said upper cracking zone.

4,410,421

PROCESS FOR NITROGEN REMOVAL FROM HYDROCARBONACEOUS MATERIALS

Linda Atherton, Santa Clara County, and Conrad J. Kulik, Alameda County, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Feb. 8, 1982, Ser. No. 346,926
Int. Cl.³ C10G *25/00*
U.S. Cl. 208—254 R **16 Claims**

1. A process for removing basic nitrogen heterocyclic compounds from a hydrocarbonaceous material comprising the steps of contacting particulate coal with said hydrocarbonaceous material at a temperature from about ambient to 600° F. at substantially atmospheric pressure for a period of time sufficient for said coal to sorb a substantial portion of said basic nitrogen heterocyclic compounds, and separating said coal from said hydrocarbonaceous material.

4,410,422

METHOD FOR REMOVING POLYHALOGENATED HYDROCARBONS FROM NONPOLAR ORGANIC SOLVENT SOLUTIONS

Daniel J. Brunelle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1981, Ser. No. 314,163
Int. Cl.³ C10G *29/04*
U.S. Cl. 208—262 **5 Claims**

1. A method of treating a PCB-contaminated solution of a substantially inert non-polar organic solvent having a concentration of polyhalogenated aromatic hydrocarbon at up to 1% by weight to reduce the polyhalogenated aromatic hydrocarbon concentration to less than 50 ppm, which comprises agitating at a temperature of 65° C. to 200° C. a mixture which comprises, by weight,

(A) up to 1% of polyhalogenated aromatic hydrocarbon,

(B) about 0.1 to 10% of RSH, where R is a $C_{2\text{-}20}$ hydrocarbon radical,

(C) about 0.1 to 10% of alkali metal hydroxide,

(D) about 0.1 to 20% of a phase transfer catalyst, and

(E) about 80–99.7% of substantially inert non-polar organic solvent,

where the sum of (A)+(B)+(C)+(D)+(E) is equal to 100%.

4,410,423

SEPARATION OF SPENT CATHODE CARBON AND ALKALINE ORE

William E. Walsh, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed Mar. 23, 1982, Ser. No. 360,829
Int. Cl.³ B03B *1/00*
U.S. Cl. 209—4 **6 Claims**

1. A method for separating Al_2O_3 alkaline ore and carbon fractions contained in a spent electrolytic cell cathode comprising the steps of:

(a) grinding the spent cathode to a suitable particle size;

(b) treating the product of step (a) with ultrasonic energy in a manner and for a time sufficient to reduce the Al_2O_3 alkaline ore particle size without substantially reducing the carbon particle size to achieve a measurable and useful particle size distinction between the Al_2O_3 alkaline ore and carbon fractions which will permit separation; and

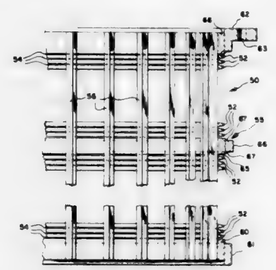
(c) separating the Al_2O_3 alkaline ore and carbon fractions by particle size.

4,410,424

SCREENING APPARATUS FOR PAPER MAKING STOCK

David E. Chupka, and Peter Seifert, both of Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Continuation-in-part of Ser. No. 145,654, May 2, 1980, Pat. No. 4,383,918. This application Mar. 11, 1982, Ser. No. 357,016
Int. Cl.³ B07B *1/20*
U.S. Cl. 209—273 **5 Claims**



1. A screening cylinder for use in pressure screening apparatus for removing contaminant particles from paper making stock and comprising a housing adapted to receive said cylinder and to have the interior thereof partitioned by said cylinder into a supply chamber and an accepts chamber respectively within and without said cylinder, and further comprising rotor means operative to circulate the stock to be screened within said supply chamber, said screening cylinder comprising:

(a) a plurality of groups of circular rings of metal rod material defining a corresponding plurality of sections of the wall of said cylinder,

(b) said rings in each said group being arranged in closely spaced relation axially of said cylinder to define a corresponding plurality of circumferentially extending screening slots of predetermined uniform width therebetween,

(c) a plurality of metal bars of rectangular section extending generally lengthwise of said cylinder in uniformly circumferentially spaced relation around the interior of said cylinder and welded to each of said rings to maintain said rings in said axially spaced relation thereof,

(d) said groups of rings being spaced axially of said cylinder to provide a corresponding plurality of gaps therebetween traversed by said bars,

(e) a cylindrical metal hoop having a flat inner surface interposed in each of said gaps in encircling relation with said bars and having the same inner diameter as said rings, and

(f) said hoops being welded to the portions of said bars which traverse said gaps to reinforce said cylinder as a whole.

4,410,425

FLOW LINE FILTER APPARATUS

Robert A. Gardes, 229 Smith Reed Rd., Lafayette, La. 70507

Continuation-in-part of Ser. No. 270,573, Jun. 4, 1981, abandoned. This application Aug. 5, 1981, Ser. No. 290,376
Int. Cl.³ B01D *23/02*
U.S. Cl. 210—167 **7 Claims**

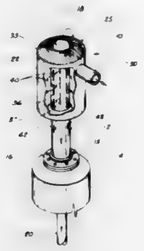
1. An apparatus for filtering drilling mud that is recirculated out of a well casing, comprising:

a. a flow conveying tubular section, sealably attachable at its

first lower end to the well casing for allowing fluid flow therethrough and open-ended at its top portion;

b. an outer tank portion encapsulating said tubular section having a substantially open-ended top portion and defining a container for receiving fluid flow from said open-ended tubular section, and for maintaining turbulence in said filtered fluid;

c. primary filter means on that portion of said tubular section housed within said tank portion comprising a plurality of vertical slotted vents equally and circumferencially



spaced around the wall of said tubular section and in fluid communication with said tank portion for filtering fluid flow out of said tubular section into said tank portion, said tank portion being substantially twice the diameter of said tubular section;

d. fluid conveying means for conveying filtered fluid out of said tank portion; and

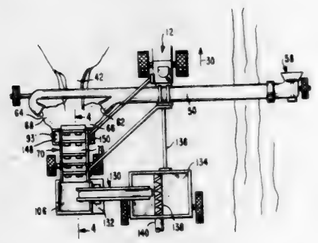
e. secondary filter means interconnecting the top of said tubular section to the top of said tank portion for filtering solids flowing out of the top of said tubular section and allowing filtered fluid to flow into said tank.

4,410,426

BEACH CLEANING METHOD AND APPARATUS THEREFOR

Charles C. Cloutier, P.O. Box 885, Morgan City, La. 70380

Continuation-in-part of Ser. No. 272,433, Jun. 10, 1981, Pat. No. 4,366,052, Division of Ser. No. 166,666, Jul. 7, 1980, Pat. No. 4,302,339. This application Jul. 30, 1982, Ser. No. 403,390
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—199 **4 Claims**



1. Apparatus for cleaning a beach to remove floatatable material such as oil residue and other debris, comprising:

means for flooding with a large volume of water under low pressure and low velocity a selected, localized area of the beach to be cleaned to cause floatatable debris to rise to the surface of the beach;

skimmer means adapted to pick up any floating debris and incidental quantities of said water from said localized area while said localized area is still flooded;

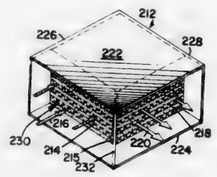
separator means adapted to separate picked-up water from said floating debris and to return the water to said localized area, said separator means including a sloping aperture plate, a detention chamber below said aperture plate, and at least one weir chamber adjacent said detention chamber and connected thereto by a flow channel, said weir chamber including a wall over which said picked-up water flows for return to the beach.

4,410,427

FLUID FILTERING DEVICE

Robert M. Wydeven, Egan, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Nov. 2, 1981, Ser. No. 317,275
Int. Cl.³ B01D *27/06*
U.S. Cl. 210—317 **7 Claims**



1. A fluid filter having four sides comprising:

(a) a pair of fluid impervious members in a spaced relationship forming a top and bottom barier;

(b) a filter element to be bounded on its upper and lower faces to said barrier elements, said element including a filter pack having:

a first layer of corrugated filter media having a surface of longitudinal peaks and valleys,

a second layer atop said first layer, said second layer being of substantially flat filter media,

a third layer atop said second layer, said third layer being of corrugated filter media having a surface of longitudinal peaks and valleys which are oriented orthogonally to the corrugations in said first layer,

sealant means for preventing entry or exit or fluid therethrough, applied to said first layer on peripheral edges thereof which are parallel to the axis defined by the longitudinal corrugations of said first layer,

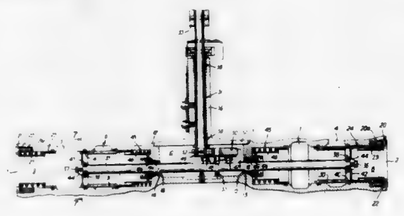
sealant means for preventing the entry or exit of fluid therethrough applied to said third layer on the peripheral edges thereof which are parallel to the axis defined by the longitudinal corrugations of said third layer.

4,410,428

DUPLEX CAM-OPERATED PRESSURE-BALANCED SLEEVE VALVE

Roydon B. Cooper, Locust Valley, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jul. 29, 1982, Ser. No. 403,182
Int. Cl.³ B01D *29/36*
U.S. Cl. 210—340 **11 Claims**



1. A duplex cam-operated pressure-balanced sleeve valve for controlling fluid flow from one fluid line into either one or both of two fluid lines, comprising, in combination;

(1) a valve housing;

(2) first and second valve chambers in the housing in alignment with a cam chamber therebetween;

(3) first, second, and third fluid flow ports in the housing communicating with the first valve chamber, and fourth, fifth, and sixth fluid flow ports in the housing communicating with the second valve chamber;

(4) a first reciprocable sleeve valve member in the first valve chamber, axially movable within the first valve chamber between positions controlling flow from the first fluid port to one or both of the second and third fluid flow ports;

(5) a second reciprocable sleeve valve member, preferably coaxial with the first sleeve valve member, in the second valve chamber axially movable within the second valve chamber with the first sleeve valve member between positions controlling flow from one or both of the fourth and fifth fluid flow ports to the sixth fluid flow port;

(6) cam-following vlave-actuating means in the cam chamber operatively connected to both the first and second sleeve valve members, for reciprocably moving both valve members together between their flow-controlling positions;

(7) a cam in the cam chamber movable between at least three selected positions and operatively connected with the cam-following valve-actuating means in a manner such that:

(a) with the cam in a first position, the first sleeve valve member is in a position communicating one of the second and third fluid flow ports with the first fluid flow port, and the second sleeve valve member is in a position communicating one of the fourth and fifth fluid flow ports with the sixth fluid flow port;

(b) with the cam in a second position, the first sleeve valve member is in a position communicating the other of the second and third fluid flow ports with the first fluid flow port, and the second sleeve valve member is in a position communicating the other of the fourth and fifth fluid flow ports with the sixth fluid flow port;

(c) with the cam in a third position, both the first and second sleeve valve members are in positions communicating the first with the second and third fluid flow ports and the fourth with the fifth and sixth fluid flow ports;

(8) means for moving the cam between each of the selected positions, thereby shifting the valves in unison;

(9) the first and second sleeve valve members each having an interior pressure-receiving surface exposed at all times to fluid pressure in the first and second valve chambers, respectively, and in the first and sixth fluid flow ports, respectively, and an exterior pressure-receiving surface exposed to fluid pressure in the second and third, and fourth and fifth, fluid flow ports, respectively, fluid flow through which is controlled by the respective sleeve valves, so that there is a zero component of force arising from any pressure differential across the valves tending either to move the sleeve valve members or to resist cam-operated movement of the sleeve valve members between their selected positions;

(10) the cam-following valve actuating means having opposed pressure-receiving surfaces, of which one is exposed to fluid pressure in the first valve chamber, and the other is exposed to fluid pressure in the second valve chamber;

(11) the opposed pressure-receiving surfaces of the cam-following valve-actuating means being of such small relative surface areas that any fluid pressure differential between first and second valve chambers on the opposed pressure-receiving surfaces thereof offers negligible resistance to cam-operated reciprocation of the sleeve valve members, so that such fluid pressure differential does not interfere with movement of the first and second sleeve valve members between their selected positions.

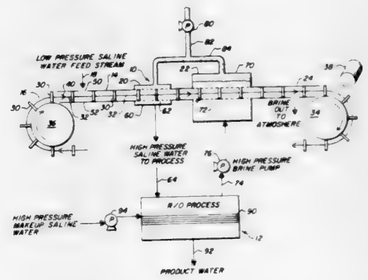
9. A duplex filter assembly comprising two filter assemblies arranged in parallel with each in series valve-controlled fluid flow connection with a fluid line in a manner such that either one filter assembly at a time or both filter assemblies together receives fluid flow from and returns fluid flow to the line, and a duplex sleeve valve according to claim 1 controlling flow to and from the fluid line and each filter assembly.

4,410,429

LINEAR POCKET ENERGY EXCHANGE DEVICE

Andrew C. Harvey, Waltham, and John C. Harding, Sudbury, both of Mass., assignors to Foster-Miller Associates, Waltham, Mass.

Continuation-in-part of Ser. No. 166,445, Jul. 7, 1980, abandoned. This application Apr. 16, 1981, Ser. No. 254,779
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—416.1 **6 Claims**



1. An hydraulic energy recovery system for use with a reverse osmosis desalinization process which discharges product water and brine comprising

a tube having an inlet for receiving low pressure salt water to be treated and an outlet for discharging brine,

a conveyor having a course which travels through the tube from the inlet to the outlet and motor means for driving the conveyor,

pocket means carried by the conveyor for conveying fluid,

first and second high pressure chambers consecutively communicating with the tube intermediate the tube inlet and outlet,

means including a pump for pressurizing said first and said second high-pressure chambers, said pressurizing means displacing low-pressure salt water from ones of said pocket means in said first high-pressure chamber and feeding the salt water to said desalinization process,

means including a pump for transporting the brine under pressure from said desalinization process to the second high-pressure chamber and into ones of said pocket means located within said second high-pressure chamber,

a duct connecting the first and second high-pressure chambers and communicating with said pressurizing means for equalizing the pressures in the second chamber and the first chamber.

4,410,430

STACKED-DISC STRUCTURE FOR FLUID FILTER OR VALVE SILENCER

Ray Hagler, Jr., Valencia, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 262,541, May 11, 1981, abandoned. This application Jun. 24, 1981, Ser. No. 277,064
Int. Cl.³ B01D *25/18*
U.S. Cl. 210—446 **10 Claims**

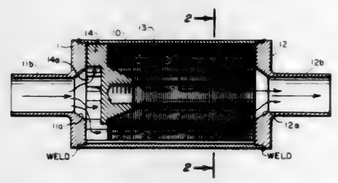
1. A stacked-disc structure comprising

a stack of annular discs shaped around their outer edge to provide lobes, each disc being etched in one face to provide lands that define straight passageways in each lobe from the outer edge into a common passageway extending from near the tip of the lobe to a hollow core, each of said

discs being stacked to place the etched face thereof against an unetched face of the next disc, and with said lands aligned,

housing means for retaining said stacked discs within an enclosure by the tips of their lobes, leaving spaces between lobes for fluid flow through said housing means, said housing means including apertures for fluid into and out of said housing means,

means at one end of said stack of annular discs for permitting fluid to flow freely only into said spaces between said stack and said housing means, and



means at the other end of said stack of annular discs for preventing fluid flow from exiting said spaces between said lobes and said housing means except through straight passageways and common passageways between discs, and then through said hollow core.

3. A stacked disc structure as defined in claim 1 or 2 for use as a filter wherein said passageways in said lobe are etched to a depth effective in filtering a specific size particle from said fluid flow.

4,410,431

COMPOSITION FOR ALTERING THE WATER FUNCTION CHARACTERISTICS OF MINERAL SLURRIES

William J. Roe, Aurora, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Apr. 1, 1982, Ser. No. 364,463
Int. Cl.³ C09K *3/18*; B01D *43/00*; F26B *1/00, 5/08*
U.S. Cl. 210—728 **10 Claims**

1. The method of dewatering a wet, particulate mineral mass which comprises the steps of: adding a composition comprising a surfactant material having a hydrophile-lipophile balance number of from about 6.0 to about 12.0 and a surfactant adsorption inhibitory amount of a fatty acid substance to a particulate mineral/water slurry in an amount of from about 0.1 to about 1.0 pounds per dry ton of particulate mineral material; and thereafter subjecting the slurry to a mechanical dewatering procedure.

4,410,432

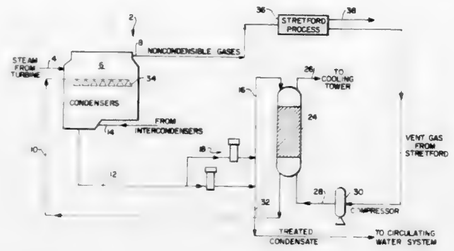
PROCESS FOR REMOVING HYDROGEN SULFIDE FROM FLUIDS

George Domahidy, Englewood, Colo., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Filed May 27, 1981, Ser. No. 267,502
Int. Cl.³ C02F *11/14*; B01D *19/04*
U.S. Cl. 210—750 **6 Claims**

1. A process for removing hydrogen sulfide from a fluid comprising the steps of:

separating the fluid containing hydrogen sulfide into a vapor and a condensate;



maintaining the condensate in a state that inhibits hydrogen sulfide from dissolving in the condensate by introducing carbonic acid into the condensate; and

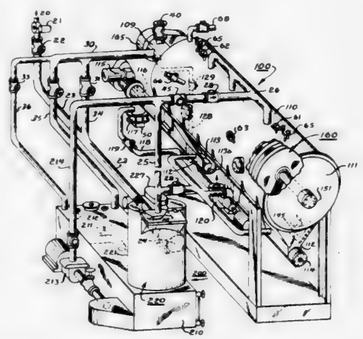
withdrawing the vapor.

4,410,433

VERTICAL FILTER SYSTEM

Kostas S. Arvanitakis, 14945 S. Dogwood, Orland Park, Ill. 60462

Continuation of Ser. No. 809,119, Jun. 22, 1977, abandoned. This application Jan. 21, 1981, Ser. No. 226,870
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—778 **8 Claims**



5. A method of clarifying a liquid bearing suspended and dissolved contaminants by removing and accumulating the contaminants from the liquid and disposing of the accumulants so removed comprising the sequential steps of

passing an unclarified contaminant bearing liquid through filter means carried within a contaminated liquid retaining container and including a contaminant accumulating filter cake supported by a filter septum,

discharging from the container clarified liquid passed through the filter means and accumulating contaminants on or in the filter cake supported by the filter septum,

interrupting the passing of unclarified contaminant bearing liquid to the filter means upon the accumulation of a predetermined amount of contaminants,

draining at least a portion of the unclarified contaminant bearing liquid from the container through the filter means at a flow rate sufficient to prevent separation of the contaminant bearing filter cake from the filter septum,

drying the contaminant bearing filter cake supported on the filter septum by introducing a pressurizing gas into the container and passing the pressurized gas through the contaminant bearing filter cake thereby removing a portion of the liquid contained therein and thereby maintaining a pressure differential across the filter cake,

removing at least a portion of the contaminant bearing filter cake from the filter septum and conveying the contaminant bearing filter cake removed from the filter septum out from the container,

refilling the container with liquid and scrubbing the filter septum to remove any residual filter cake remaining thereon after at least a portion has been removed therefrom to expose the filter septum,

adding a predetermined quantity of precoat filter cake forming material to the liquid contained within the container after scrubbing to expose the filter septum to form a precoat slurry and circulating the precoat slurry through the filter means to form a precoat filter cake on the scrubbed filter septum, and

resuming passing unclarified contaminant bearing liquid through the filter means carried within the contaminated liquid retaining container.

4,410,434

METAL SALTS OF PHOSPHOSULFURIZED POLYHYDROXYESTERS AND LUBRICANTS CONTAINING SAME

Harry J. Andress, Jr., Wenonah; Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Clementon, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 113,149, Jan. 18, 1980, abandoned. This application Jun. 17, 1981, Ser. No. 274,614
Int. Cl.³ C10M *1/48*
U.S. Cl. 252—32.7 R **18 Claims**

1. A compound prepared by

(1) reacting at a temperature of from about 60° C. to 140° C., about 1 mole of a phosphorus polysulfide with from about 2 to about 12 moles of an ester or mixtures of esters of the formula

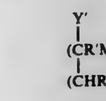


where R'' is hydrocarbyl containing 2 to 30 carbon atoms, R' is hydrogen or a lower alkyl containing 1 to 6 carbon atoms, M is oxygen or sulfur, x is 1 to 5, y is 1 to 3 and Y' is hydrogen or $(CHR'SCOR'')_y$ and

(2) reacting the product of (1) at a temperature of from about 50° C. to about 125° C. with from about a stoichiometric amount to a 100% excess of a salt-forming metal-containing compound wherein the metal in said metal-containing compound is selected from the group consisting of manganese, metals from Groups IIA, IIB, VIB or VIII of the Periodic Chart and mixtures thereof.

8. A composition comprising a major proportion of an oil of lubricating viscosity or grease prepared therefrom and a minor friction reducing amount of a compound prepared by

(1) reacting at a temperature of from about 60° C. to about 140° C., one mole of a phosphorus polysulfide with from about 2 to about 12 moles of an ester or mixtures of esters of the formula



where R'' is hydrocarbyl containing 2 to 30 carbon atoms, R' is hydrogen or a lower alkyl containing 1 to 6 carbon atoms, M is oxygen or sulfur, x is 1 to 5, y is 1 to 3 and Y' is hydrogen or $(CHR'SCOR'')_y$ and

(2) reacting the product of (1) at a temperature of from about 50° C. to about 125° C. with from about stoichiometric amounts to a 100% excess of a salt-forming metal-containing compound wherein the metal in said metal-containing compound is selected from the group consisting of manganese, metals from Groups IIA, IIB, VIB or VIII of the Periodic Chart and mixtures thereof.

4,410,435

LITHIUM COMPLEX GREASE AND ITS PRODUCING METHOD

Michiharu Naka; Takayuki Yatabe, both of Fujisawa, and Hideki Koizumi, Kamakura, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 169,929, Jul. 17, 1980, abandoned. This application Dec. 29, 1981, Ser. No. 335,389
Claims priority, application Japan, Aug. 16, 1979, 54-103513
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—42.1 **8 Claims**

1. A lithium complex grease comprising:

59 to 78 weight percent of a base oil;

16 to 30 weight percent of a mixture of a dicarboxylic acid of from 4 to 12 carbon atoms, an ester of the dicarboxylic acid of from 4 to 12 carbon atoms or mixtures thereof and a fatty acid of from 12 to 24 carbon atoms;

an equivalent amount of lithium hydroxide for saponifying the dicarboxylic acid, the ester of the dicarboxylic acid or mixtures thereof and the fatty acid; and

3 to 6 weight percent of a phosphate ester, a phosphite ester or mixtures thereof,

the ratio of the dicarboxylic acid component to the fatty acid component ranging from 0.4 to 1.5 based upon weight.

8. A method of producing a lithium complex grease comprising mixing in from 59 to 78 weight percent of a base oil, from 16 to 30 weight percent of a mixture of a dixarboxylic acid of from 4 to 12 carbon atoms, an ester of said dicarboxylic acid or mixtures thereof and a fatty acid of from 12 to 24 carbon atoms to obtain a mixture, said mixture being saponified with an equivalent amount of lithium hydroxide necessary for saponification of the mixture and, subsequently, reacting the mixture thus obtained with from 3 to 6 weight percent of a phosphate ester, phosphite ester or mixtures thereof at a temperature greater than 210° C.

4,410,436

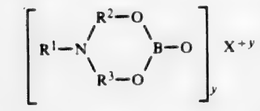
LUBRICATING OIL CONTAINING A BORON COMPOUND AND CORROSION INHIBITORS

Richard A. Holstedt, Whittier, Calif., and Peter Jessup, Millington, N.J., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 9, 1981, Ser. No. 319,073
Int. Cl.³ C10M *1/20, 1/32, 1/54*
U.S. Cl. 252—46.4 **24 Claims**

1. A lubricating composition comprising a major amount of a lubricating oil and a minor amount of:

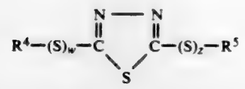
(A) An extreme pressure anti-wear and friction reducing boron compound of the formula:



wherein R^1 is hydrogen, alkyl, cyclic, alicyclic, aryl, alkylaryl, or arylalkyl radicals having from 1 to about 24 carbon atoms, R^2 and R^3 are the same or different, straight or branched carbon chains, cyclic, alicyclic, aryl, alkylaryl or arylalkyl radicals having from 2 to about 20 carbon atoms, y is a number from 1 to 4, and X is either hydrogen, a transition metal having an atomic number between 21 and 30 or a Group IVA metal of the Periodic Table and mixtures thereof;

(B) A copper corrosion inhibitor comprising a hydrocarbon

polysulfide derivative of 2,5-dimercapto-1,3,4-thiadiazole having the formula



wherein R^4 and R^5 are straight or branched chain alkyl, cyclic, alicyclic, aryl, alkylaryl or arylalkyl radicals having from 2 to about 30 carbon atoms and w and z are numbers from 1 to about 8; and

(C) a lead corrosion inhibitor comprising terephthalic acid.

4,410,437

AMINE SUBSTITUTED HYDROCARBON POLYMER DISPERSANT LUBRICATING OIL ADDITIVES

Timothy R. Erdman, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 966,179, Dec. 4, 1978, Pat. No. 4,275,006.
This application Mar. 13, 1981, Ser. No. 243,274
Int. Cl.³ C10M *1/38*
U.S. Cl. 252—47.5 **3 Claims**

1. A process for preparing a lubricating oil additive which consists essentially of reacting at a temperature of from 20° to 200° C. an oil-soluble amine-substituted hydrocarbon polymer viscosity index improver dispersant containing at least one primary or secondary amino group, wherein said hydrocarbon polymer is selected from an ethylene-propylene copolymer or terpolymer, with from 0.2 to 2 mols of SO_2 for every 2 mols of basic nitrogen present in said dispersant.

2. A lubricating oil additive prepared according to the process of claim 1.

3. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.1 to 10 percent by weight of the additive according to claim 2.

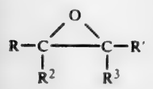
4,410,438

BORATED EPOXIDES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 11, 1981, Ser. No. 329,774
Int. Cl.³ C10M *1/54*
U.S. Cl. 252—49.6 **19 Claims**

1. A product of reaction made by reacting (1) an epoxide of the formula

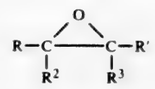


wherein R, R', R^2 and R^3 are hydrogen or hydrocarbyl groups containing from 8 to 30 carbon atoms, at least one of which is hydrocarbyl, with (2) a boron compound selected from boric acid, boric oxide and an alkyl borate of the formula

$(RO)_xB(OH)_y$

wherein x is 1 to 3, y is 0 to 2, their sum being 3, and R is an alkyl group having 1 to 6 carbon atoms, the reaction being carried out at from about 80° C. to about 260° C. using a molar ratio of epoxide to boron compound of from about 0.2 to 1 to about 4 to 1, respectively.

8. A lubricant composition comprising a major amount of an oil of lubricating viscosity or a grease therefrom and an antifriction amount of a product of reaction made by reacting (1) an epoxide of the formula



wherein R, R', R^2 and R^3 are hydrogen or hydrocarbyl groups containing from 8 to 30 carbon atoms, at least one of which is hydrocarbyl, with (2) a boron compound selected from boric acid, boric oxide and an alkyl borate of the formula ps

$(RO)_xB(OH)_y$

wherein x is 1 to 3, y is 0 to 2, their sum being 3, and R is an alkyl group having 1 to 6 carbon atoms, the reaction being carried out at from about 80° C. to about 260° C. using a molar ratio of epoxide to boron compound of from about 0.2 to 1 to about 4 to 1, respectively.

4,410,439

COLLECTOR COMPOSITIONS FOR FROTH FLOTATION AND PROCESS FOR MAKING SAME

Ronald D. G. Crozier, 4 Daisy La., Ridgefield, Conn. 06877

Division of Ser. No. 270,363, Jun. 4, 1981, Pat. No. 4,354,980.
This application Jul. 14, 1982, Ser. No. 398,428
Int. Cl.³ C22B *3/00*
U.S. Cl. 252—61 **8 Claims**

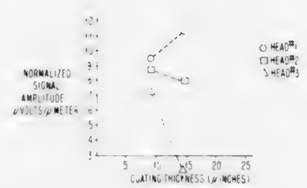
1. An improved flotation collector composition consisting essentially of an alkyl xanthogen alkyl formate and dialkyl xanthic anhydride.

4,410,440

POLYURETHANE MAGNETIC DISK COATINGS

Ming Ko, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1982, Ser. No. 352,737
Int. Cl.³ H01F *10/02, 1/02*
U.S. Cl. 252—62.54 **5 Claims**



1. A magnetic recording coating composition comprising:

a. 20–65 parts by weight of magnetic particles,

b. a polymeric binder system for said particles containing 5–30 parts by weight of acrylic resins which contain reactive hydrogens,

5–30 parts by weight of blocked isocyanates, and

5–30 parts by weight of blocked polyisocyanates.

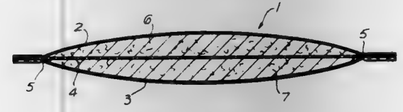
4,410,441

PRODUCT FOR TREATING FABRICS IN A WASHING MACHINE

James F. Davies, Wirral, and John B. Tune, Higher Bebington, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,646
Int. Cl.³ C11D *17/00*
U.S. Cl. 206—0.5 **8 Claims**

1. A fabric treatment product in the form of a bag, treatment being in a washing machine, the bag having two compartments and having a first outer wall formed of water-permeable water-insoluble material and bounding a first compartment of the bag; a second outer wall formed of water-impermeable water-insoluble synthetic plastics material and bounding a second compartment of the bag; an intermediate wall formed of water-permeable water-insoluble material and dividing the bag into



said first and second compartments; said first and said second compartments containing the same or different particulate fabric treatment compositions.

4,410,442

DISINFECTING SOLUTIONS FOR HYDROPHILIC CONTACT LENSES

Donald S. Lucas; Robert V. Mustacich, and Roger L. Stone, all of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 13, 1982, Ser. No. 339,218
Int. Cl.³ C11D *9/50*
U.S. Cl. 252—107 **19 Claims**

1. An aqueous isotonic solution having a pH between about 3.5 and 6.5, suitable for cleaning, disinfecting and storing hydrophilic soft contact lenses, comprising:

(a) from about 0.001% to about 3% of a fatty acid selected from the group consisting of n-pentanoic acid, n-hexanoic acid, n-heptanoic acid, n-octanoic acid, n-nonanoic acid, n-decanoic acid, n-undecanoic acid, and mixtures thereof;

(b) a sufficient amount of at least one water-soluble salt, compatible with occular tissue, to provide a solution salt content equivalent to from about 0.5% to about 1.8% sodium chloride;

(c) from about 0.01% to about 2% of a calcium chelator; and

(d) the balance water.

4,410,443

METHOD OF DISSOLVING IRON OXIDE-CHROME OXIDE SPENT SHIFT CATALYSTS TO PREPARE A NITRATE SOLUTION SUITABLE FOR USE IN PREPARING A NEW CATALYST

George N. Pessimisis, Westchester, Ill., assignor to Katalco Corporation, Oak Brook, Ill.

Filed May 24, 1982, Ser. No. 380,980
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—182 **1 Claim**

1. A method of preparing a solution of the nitrate of iron and mixed chromium from a spent iron oxide-chrome oxide shift catalyst which comprises dissolving said spent iron oxide-chrome oxide shift catalyst with nitric acid in the presense of from 5-25% by weight of the catalyst of an additive selected from the group consisting of ferrous sulfate and sodium thiosulfate.

4,410,444

PROCESS FOR THE PRODUCTION OF A STABLE PER SALT

Gerd Knippschild; Hans Klebe, both of Rheinfelden, and Hubert Schuster, Karsau-Beuggen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 246,947
Int. Cl.³ C01B *13/00, 15/00*
U.S. Cl. 252—186.21 **6 Claims**

1. In a process for the production of a stable per salt which contains sodium percarbonate and sodium perborate by bringing together a crystallization nucleus with an aqueous solution and volatilization of the water, the improvement comprising bringing together crystallization nuclei containing (1) sodium percarbonate, (2) sodium perborate or (3) a mixture of sodium percarbonate and sodium perborate with an aqueous solution containing between 20–40 weight % of dissolved solids and which is supersaturated in both sodium percarbonate and sodium perborate and also contains sodium silicate and sodium hexametaphosphate and wherein based on the dissolved solid portion 5 to 60 weight % is sodium carbonate as $Na_2CO_3.1.5H_2O$; 1 to 20 weight % is B_2O_3 as $NaBO_2.3H_2O_2$; 0.05 to 5 weight % is SiO_2 as sodium silicate and 0.01 to 5 weight % is P_2O_5 as sodium hexametaphosphate, said aqueous solution having been prepared in two parts, one part being an aqueous solution of sodium carbonate, sodium borate, sodium silicate and sodium hexametaphosphate and the other part being an aqueous solution of hydrogen peroxide and then the two parts having been mixed together.

4,410,445

LIQUID-CRYSTALLINE DIELECTRIC HAVING A STEEP CHARACTERISTIC CURVE

Günter Baur; Bernd Scheuble, both of Freiburg i.Br., and Georg Weber, Erzhausen, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,398
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023989
Int. Cl.³ C09K *3/34*; G02F *1/13*
U.S. Cl. 252—299.5 **19 Claims**

1. A liquid crystalline dielectric, comprising

(i) 5–85% by weight of at least one carboxylic acid ester of formula (I)

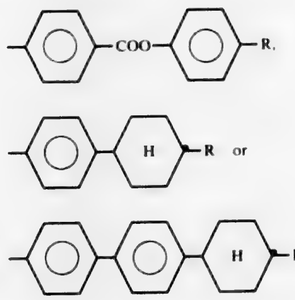
$$R_1—X—R_2 \quad (I)$$

wherein

X is —CO—O— or —O—CO—,

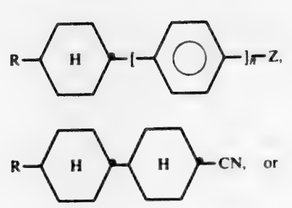
R_1 is alkyl of 1–7 C atoms,

R_2 is

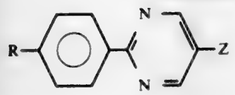


and R is alkyl of 1–7 C atoms which can be the same or different from R_1, and

(ii) 95–15% by weight of at least one compound of the formulae A-C,



-continued



(C)

wherein n is 1 or 2, Z is R', OR' or CN, R and R' being the same or different, and each being alkyl of 1-7 C atoms.

4,410,446

ZINC OXIDE DISPERSIONS BY DECOMPOSITION OF ZINC ACETATE

William J. Cheng, and David B. Guthrie, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Jun. 7, 1979, Ser. No. 46,594
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—309 **4 Claims**

1. A process of preparing a stable, fluid zinc-containing dispersion which comprises decomposing zinc acetate to ZnO at a temperature above about 270° C. in a dispersant-containing fluid, said fluid being a non-volatile process fluid capable of being heated to the decomposition temperature of zinc acetate, said dispersant being relatively stable under the high temperature conditions of this process and being capable of retaining the zinc compound formed by decomposition in stable suspension and being selected from the group consisting of saturated and unsaturated fatty acids, naphthenic acids and alkali and alkaline earth metal salts thereof, oxyalkylated fatty amines, alkylphenols, sulfurized alkylphenols and oxyalkylated alkylphenols.

4,410,447

LOW-FOAMING NONIONIC SURFACTANTS

Quintin W. Decker, St. Albans; Erich Marcus, Charleston, both of W. Va., and Robert J. Morlino, Port Chester, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 12, 1980, Ser. No. 206,145
Int. Cl.³ B01F *17/00*
U.S. Cl. 252—351 **6 Claims**

1. A liquid, low-foaming nonionic surfactant composition having a block-random structure represented by the formula:

R-O-A_x-B-H

wherein R is a primary alkyl group having from 7 to 11 carbon atoms; A is oxypropylene groups; x is an integer of from 2 to about 15 such that the sum of carbon atoms in said alkyl group and x is from 12 to about 22; and B is a random mixture of oxyethylene and oxypropylene groups the molar ratio of oxyethylene to oxypropylene being from 1:1 to about 5:1 such that the total molar ratio of oxyethylene to oxypropylene in A and B is from 0.2:1 to 1.5:1, said composition having a cloud point of about 20° to about 60° C.

4,410,448

METHOD FOR CONTROLLING THE CHANGE IN THE CRUSH STRENGTH OF A CATALYST PARTICLE DURING FINISHING CALCINATION

Wilfrid G. Shaw, Lyndhurst, and David R. Woodbury, Bedford Hts., both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 28, 1981, Ser. No. 335,313
Int. Cl.³ BO1J *21/00, 31/02, 21/02, 27/14*
U.S. Cl. 502—159 **18 Claims**

1. A method of controlling the change in the crush strength of a catalyst particle as the catalyst particle is transformed from a catalyst precursor to a finished catalyst by calcination, the method comprising:

1. Preparing a catalyst precusor containing at least one metal component,
2. Adjusting the volatile portion of the catalyst precursor to a predetermined level of 6-25 weight per-cent,
3. Adjusting the water content of the volatile-adjusted precursor of (2) to a predetermined level of 0.5-0.8 weight per-cent,
4. Forming a catalyst particle from the water-adjusted precursor of (3), and
5. Transforming the catalyst precursor particle of (4) into a finished catalyst particle by calcination.

4,410,449

RECOVERY AND REUSE OF HEAVY-METAL OXIDATION CATALYST FROM THE WITTEN DMT PROCESS

Karl-Heinz Diessel, Nienburg; Rudolf Modic, Steyerberg, and Friedrich Struss, Liebenau, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany.

Continuation of Ser. No. 215,340, Dec. 11, 1980, abandoned. This application Aug. 12, 1982, Ser. No. 407,619
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950318; Oct. 1, 1980, 2950318
Int. Cl.³ B01J *31/40;* **C07C** *69/82, 51/42;* **B01J** *1/04*
U.S. Cl. 502—24 **12 Claims**

1. A process for the recovery and reuse of a heavy-metal oxidation catalyst solution from a high-boiling distillation residue having a cobalt content of 1-10 g/kg of residue, which is obtained in the production of dimethyl terephthalate by the oxidation of mixtures containing p-xylene and/or methyl p-toluate in the liquid phase with oxygen or an oxygen-containing gas under a pressure of 4-10 bar and at a temperature of 140°-200° C. in the presence of dissolved heavy-metal oxidation catalyst, by subsequent esterification of the oxidation product with methanol under a pressure of 20-30 bar and at a temperature of 230°-280° C., and by a distillatory separation of the esterification product into a fraction rich in methyl p-toluate, a fraction rich in dimethyl terephthalate, and the high-boiling distillation residue, which comprises

effecting extraction of the heavy-metal oxidation catalyst from the high-boiling distillation residue with aqueous low-molecular aliphatic monocarboxylic acids of 1-4 carbon atoms, under heating,

treating the aqueous, acidic extract, which contains the heavy-metal oxidation catalyst and has a cobalt content of 0.2-20 g/l with a strongly acidic cation exchange resin in the alkali metal form at an elevated temperature until the exchange capacity has been reached, and

washing the cation exchange resin at an elevated temperature with water and regenerating the cation exchange resin at room temperature with a solution containing Na^{30} or K^+ acetate, thus displacing the catalyst components and obtaining an aqueous acetic acid catalyst solution containing the catalyst components.

5. A process for the recovery and reuse of a heavy-metal oxidation catalyst solution from a high-boiling distillation residue having a cobalt content of 1-10 g/kg of residue, which is obtained in the production of dimethyl terephthalate by the oxidation of mixtures containing p-xylene and/or methyl p-toluate in the liquid phase with oxygen or an oxygen-containing gas under a pressure of 4-10 bar and at a temperature of 140°-200° C. in the presence of dissolved heavy-metal oxidation catalyst, by subsequent esterification of the oxidation product with methanol under a pressure of 20-30 bar and at a temperature of 230°-280° C., and by a distillatory separation of the esterification product into a fraction rich in methyl p-toluate, a fraction rich in dimethyl terephthalate, and the high-boiling distillation residue; which comprises

(a) effecting combustion of the high-boiling residue to form ashes;

(b) obtaining an acidic extract by extracting the ashes resulting after combustion of the high-boiling distillation residue with aqueous mineral acids with the addition of oxidizing agents under heating, by subsequently diluting with water, by increasing the pH of the diluted extract with the addition of an alkali to precipitate iron and chromium as the hydroxides, by filtering to effect the combined removal of the hydroxides as well as insoluble ash components, by effecting dilution with water, then by effecting acidification of the filtrate with acetic acid, and by effecting removal of the Na^+ ions contained in the filtrate with the aid of a strongly acidic cation exchange resin loaded with Co^{2+}, Mn^{2+} and/or Ni^{2+} ions;

(c) treating the aqueous, acidic extract, which contains the heavy-metal oxidation catalyst and has a cobalt content of 0.2-20 g/l with a strongly acidic cation exchange resin in the alkali metal form at an elevated temperature until the exchange capacity has been reached; and

(d) washing the cation exchange resin at an elevated temperature with water and regenerating the cation exchange resin at room temperature with a solution containing Na^+ or K^+ acetate, thus displacing the catalyst components and obtaining an aqueous acetic acid catalyst solution containing the catalyst components.

7. A process according to claim 5, wherein the catalyst components are obtained from the ashes of the combustion of the high-boiling distillation residues by treatment with aqueous hydrochloric acid with the addition of aqueous H_2O_2 at about 95° C., for a duration of 0.1-4 hours, by subsequent increasing the pH value to a value of at least 6 with the addition of aqueous alkalis, by heating to about 95° C. for 0.1-2 hours, by effecting the combined removal of the thus-formed hydroxides of iron, chromium, as well as the insoluble ash components with filtration, and by effecting acidification of the filtrate with acetic acid to pH 5 or lower.

4,410,450

PROCESS FOR PRODUCING FLUID CATALYST HAVING GOOD ACTIVITY FROM COARSE CATALYST

Yutaka Sasaki; Kunio Mori, both of Yokohama, and Kiyoshi Moriya, Kanagawa, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1981, Ser. No. 278,154
Claims priority, application Japan, Jun. 30, 1980, 55-87829
Int. Cl.³ B01J *23/18, 23/92, 27/02, 27/30*
U.S. Cl. 502—22 **17 Claims**

1. A process for producing a fluid catalyst having good activity from a coarse catalyst wherein said fluid catalyst is suitable for oxidation, ammoxidation or oxidative dehydrogenation reaction of hydrocarbons which comprises

crushing a fluid catalyst, a greater part of which is composed of particles having a large particle size, to produce finely-divided particles,

adjusting the distribution of particle size of said catalyst so that the amount of particles of a size of about 20μ or less is about 30% by weight or less of the total weight of catalyst particles and the amount of particles having a weight average particle size (particle size at median (50%) by weight of the total weight of catalyst particles in the particle size distribution) is 90% by weight or less of the total weight of the catalyst particles, and

thereafter calcining said catalyst at a temperature of about 500° C.-about 1000° C. under a non-reducing atmosphere.

4,410,451

CATALYST AND PROCESS

Richard E. Dietz, and Melvin B. Welch, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 9, 1981, Ser. No. 328,982
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—110 **15 Claims**

1. A catalyst characterized by the product obtained by

(a) reacting finely divided particulate MgX_2 where X is Br, Cl or I with an excess of a secondary or tertiary alcohol under conditions which cause swelling of the particulate magnesium dihalide and forms an alcoholate of increased surface area and a final surface area ranging from about 75 to 150 m^2/g,

(b) removing excess or unreacted alcohol from the product formed in (a) under conditions sufficient to reduce the alcohol present to less than 2 moles per mole magnesium dihalide,

(c) contacting the finely divided alcoholate product substantially freed of unreacted alcohol obtained in (b) with a tetravalent halogenated titanium compound to form a catalyst component (A), and

(d) a cocatalyst component B comprising a metallic hydride or organometallic compound wherein said metal is selected from Groups IA, IIA, and IIIA of the Periodic Table.

4,410,452

METHOD OF PREPARATION OF COMPOSITE ZEOLITE CATALYSTS

Pochen Chu, West Deptford, N.J.; Francis G. Dwyer, West Chester, and Albin Huss, Chadds Ford, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 222,848, Jan. 6, 1981, Pat. No. 4,335,020. This application May 5, 1982, Ser. No. 375,078
Int. Cl.³ B01J *29/06, 29/28*
U.S. Cl. 502—60 **24 Claims**

1. A method of removing organic species from an organic nitrogen cation-containing zeolite to improve the dispersive properties thereof, in turn, resulting in catalysts of enhanced catalytic and physical properties which comprises contacting said zeolite with a solution comprising sodium hypochloride, said contact being conducted at temperatures below 100° F.

2. A method according to claim 1 wherein said cation consists of a primary alkylamine having 2 to 9 combinations.

3. A method according to claim 2 wherein said cation is n-propylamine, isopropylamine, butylamine, ethylamine, n-pentylamine, n-hexylamine, n-heptylamine, n-octylamine or n-nonylamine.

4. A method according to claim 1 wherein said cation consists of an alkyldiamine selected from the group consisting of pentanediamine, hexanediamine and combinations thereof.

4,410,453

ETHYLENE OXIDE CATALYST

Joseph R. Kiovsky, Boxborough, Mass.; George W. Young, Brimfield, Ohio, and Ramzi Y. Saleh, Baton Rouge, La., assignors to Norton Co., Worcester, Mass.

Continuation of Ser. No. 181,026, Aug. 25, 1980, abandoned. This application Feb. 1, 1982, Ser. No. 344,461
Int. Cl.³ B01J *21/04, 21/12, 23/50*
U.S. Cl. 502—253 **1 Claim**

1. A catalyst carrier body supporting metallic silver for the oxidation of ethylene to ethylene oxide, the carrier comprising alpha alumina, optionally including silica, and wherein the improvement consists of the inclusion of from 10 to 30% by weight of ZnO in the carrier body raw mix, and wherein the ZnO is converted to zinc spinel by the raw mix firing.

4,410,454

NOBLE METAL AND RARE EARTH METAL CATALYST

Gerald L. Faschingbauer, Bloomer, Wis., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 2, 1982, Ser. No. 353,790
Int. Cl.³ B01J *23/10, 23/12, 23/40*
U.S. Cl. 502—306 **19 Claims**

1. A catalyst composition consisting essentially of a platinum group noble metal, a rare earth metal and a metallic support, said platinum group noble metal and said rare earth metal having been electroplated on said metallic support.

4,410,455

PROCESS FOR PRODUCING A HYDROGENATION CATALYST

Peter J. Lambert, Billingham, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Sep. 28, 1981, Ser. No. 306,346

Claims priority, application United Kingdom, Oct. 22, 1980, 8033987

Int. Cl.³ B01J *21/04, 23/44, 23/58*

U.S. Cl. 502—327 **6 Claims**

1. A process for the manufacture of a precursor to a material suitable for use as a catalyst for the selective hydrogenation of highly unsaturated hydrocarbons in the presence of less unsaturated hydrocarbons comprising

(i) forming shaped pieces from a composition containing a calcium aluminate cement, said composition having a calcium:aluminium atomic ratio within the range 1:4 to 1:10,

(ii) calcining said shaped pieces at a temperature in the range 900° to 1050° C., and

(iii) applying an aqueous solution of a reducible palladium compound having a pH below 1.3 to said calcined shaped pieces.

4,410,456

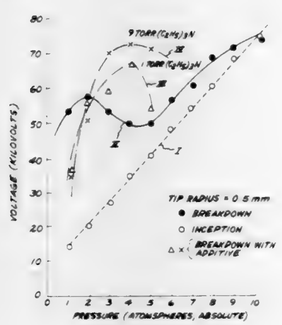
ADDITIVES FOR ENHANCING CORONA STABILIZATION IN ELECTRONEGATIVE GASES

John K. Nelson, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 5, 1982, Ser. No. 365,722

Int. Cl.³ H01B *3/16*

U.S. Cl. 252—571 **10 Claims**



1. A method for enhancing corona stabilization in electronegative, electrically insulating gases or gas mixtures comprising:

adding an additive gas to said insulating gas, said additive possessing an ionization potential which lies in a range in which the photon absorption characteristic of said insulating gas, as a function of ionization energy, exhibits minimal values.

4,410,457

CONDUCTIVE PASTE

Kenji Fujimura, Hachioji; Shigeru Sekiya, Oume; Kunimasa Kamio, Toyonaka; Koichi Okuno, Izumiotsu; Satoru Haraguchi, Minoo; Koiti Ohasi, Higashiosaka, and Hiroyuki Yamaguchi, Toyonaka, all of Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka and Sumitomo Metal Mining Company, Ltd., Tokyo, both of, Japan

Filed May 5, 1982, Ser. No. 375,096

Claims priority, application Japan, May 11, 1981, 56-71168

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—508 **6 Claims**

1. An electroconductive paste comprising:

(a) an electroconductive filler which is a powder of a member selected from the group consisting of noble metals, nickel, aluminum, copper and carbon;

(b) an epoxy group-containing reactive solvent; and

(c) a hardener comprising:

(c-1) an epoxy resin,

(c-2) a latent hardener selected from the group consisting of ureas, guanidines, hydrazines, hydrazides, amidines, triazines and azobenzenes, and

(c-3) an epoxy compound-dialkylamine adduct, the alkyl group of said dialkylamine component having 1 to 4 carbon atoms and being unsubstituted or substituted with a hydroxyl, vinyl or phenyl group;

the percent by weight of (a), (b) and (c) being 95 to 50, 1 to 20 and 4 to 30, respectively, and the weight ratio of (c-1):(c-2):(c-3) being 100:0 to 30:0.1 to 40.

4,410,458

PROCESS FOR PROVIDING AN OXIDIZED PENAM

Takashi Kamiya, Suita; Suita Saito, Takarazuka; Tsutomu Teraji, Hirakata; Osamu Nakaguti, Osaka, and Teruo Oko, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

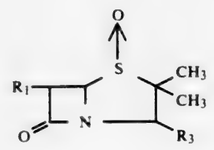
Division of Ser. No. 211,911, Dec. 1, 1980, which is a division of Ser. No. 852,053, Nov. 16, 1977, Pat. No. 4,267,340, which is a division of Ser. No. 711,980, Aug. 5, 1976, Pat. No. 4,071,527, which is a division of Ser. No. 430,688, Jan. 4, 1974, Pat. No. 3,993,646, which is a continuation-in-part of Ser. No. 266,470, Jun. 26, 1972, abandoned. This application Dec. 7, 1981, Ser. No. 328,267

Claims priority, application Japan, Jun. 24, 1971, 46-46158; Aug. 14, 1971, 46-61776; Aug. 14, 1971, 46-61777; Aug. 18, 1971, 46-62687; Aug. 21, 1971, 46-63885; Aug. 21, 1971, 46-63886; Sep. 9, 1971, 46-70018; Dec. 23, 1971, 47-2516

Int. Cl.³ C07D *499/04*

U.S. Cl. 260—239.1 **23 Claims**

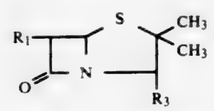
1. In a process for preparing an oxidized penam derivative of the formula:



wherein

R_1 represents an amino or protected amino radical, and

R_3 represents a radical selected from the group consisting of carboxy, protected carboxy, ester, acid amide, acid anhydride, acid halide, acid axide and carboxy salt, wherein a penam derivative of the formula:



is oxidized with an oxidizing agent selected from the group consisting of hydrogen peroxide, peracids, hydroperacids, and salts thereof, the improvement which comprises conducting said oxidation in the presence of a catalytic amount of a Group Vb or VIb of the Periodic Table metal compound.

4,410,459

PROCESS FOR PREPARATION OF CYTOSTATIC COMPOUNDS

Lajos Dancsi; Tibor Keve; Lajos Szabo; Katalin Honty; Sandor Eckhardt; Ivan Hindi; Sandor Kerpel-Fronius; György Fekete; Eszter Dezséri; Sándor Görög; Tibor Ács; Csaba Szántay; Zsuzsanna Relle nee Somfai, and Janos Sugar, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

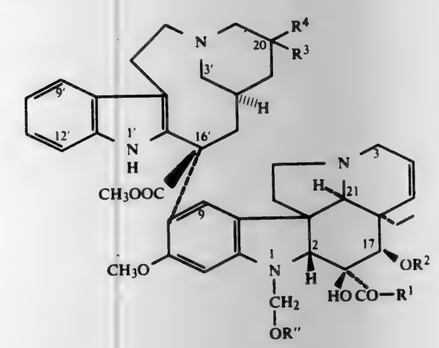
Filed Aug. 17, 1981, Ser. No. 293,611

Claims priority, application Hungary, Oct. 22, 1980, 2563

Int. Cl.³ C07D *519/04;* **A61K** *31/475*

U.S. Cl. 260—244.4 **6 Claims**

1. A process for the preparation of a compound of the formula



(I)

wherein

R^1 is methoxy;

R^2 is acetyl;

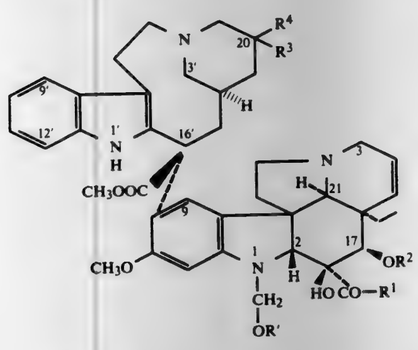
R^4 is β-hydroxyl and

R^3 is α-ethyl; or

R^4 is hydrogen and

R^3 is β-ethyl;

R'' is straight chain alkyl having from 1 to 10 carbon atoms or branched chain alkyl having from 3 to 10 carbon atoms, in which groups the carbon atom attached to the $>N_a—CH_2O—$ group has a primary or secondary configuration, or alkenyl having from 3 to 6 carbon atoms, alkinyl having from 3 to 6 carbon atoms, cycloalkyl having from 5 to 7 carbon atoms or benzyl, and optionally the epimers thereof, which comprises reacting a compound of the formula



(II)

wherein R^1, R^2, R^3 and R^4 are as defined above, R' is a straight chain alkyl having from 1 to 10 carbon atoms or a branched chain alkyl having from 3 to 10 carbon atoms, in which groups the carbon atom attached to the $>N_a—CH_2O—$ group has a primary or secondary configuration, or alkenyl having from 3 to 6 carbon atoms, alkinyl having from 3 to 6 carbon atoms, cycloalkyl having from 5 to 7 carbon atoms or benzyl, but for a given starting compound of the formula (II) R' is different from R'' in a product of the formula (I), prepared therefrom, with a large excess of an alcohol of the formula

$$R''—OH \qquad \text{(III)}$$

at a pH between 3 and 5, adjusting the pH of the reaction mixture to 7 to 8, isolating a compound of the formula (I) obtained and optionally epimers thereof and if desired, purifying the product.

4,410,460

PROCESS FOR THE REDUCTION OF UNSATURATED CARBOXYLIC ACIDS

Gail M. Qualeatti, Palatine, and Dalia Germanas, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 9, 1981, Ser. No. 329,357

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ C11C *3/12*

U.S. Cl. 260—409 **13 Claims**

1. A process for the reduction of an unsaturated carboxylic acid which comprises treating said acid in a reaction system in the presence of hydrogen and a reducing catalyst comprising from about 0.1 to about 2% by weight rhenium and from about 0.1 to about 10.0% by weight of said rhenium of a nitrogen-containing compound composited on a solid support, wherein said nitrogen-containing compound is selected from the group consisting of ammonia, ammonium hydroxide, a primary alkylamine, a secondary dialkyl amine, a tertiary trialkyl amine, an arylamine and a heterocyclic amine at treatment conditions, and recovering the resultant unsaturated alcohol, ester or alcohol and ester reaction product.

4,410,461

PRODUCTION OF BENZYLIC ESTERS

Peter E. Throckmorton, Plain City, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 18, 1981, Ser. No. 303,646

Int. Cl.³ C11C *3/04;* **C09F** *5/08;* **C07C** *67/00*

U.S. Cl. 260—410 **11 Claims**

1. A homogeneous liquid phase benzylic oxidation process which comprises reacting toluene, a C_6-C_{18} mono- or dicarboxylic acid and molecular oxygen in the presence of a catalytic amount of an organic soluble Pd(II)-Pb(II) co-catalyst system wherein the respective palladous atoms are complexed with at least a mole of a tertiary phosphine.

4,410,462

DIDODECYLDIMETHYLAMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,477

Int. Cl.³ C07F *11/00*

U.S. Cl. 260—429 R **4 Claims**

1. Didodecyldimethylammonium molybdates having the empirical formula

$$[(CH_3)_2(C_{12}H_{25})_2N]_aMo_bO_c$$

where a, b and c are (2,6,19); (6,7,24) or (4,8,26).

4,410,463
TETRAPENTYLAMMONIUM MOLYBDATES

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 28, 1982, Ser. No. 402,481
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R 6 Claims

1. Tetrapentylammonium molybdates having the empirical formula

$$[(C_5H_{11})_4N]_aMo_bO_cH_d$$

where a, b and c are (2,2,7); (3,5,17); (2,6,19); (6,7,24) or (4,8,26) and d is 0 or 1.

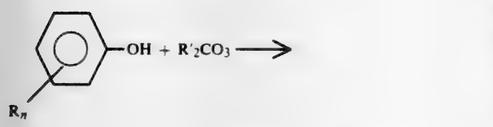
4,410,464
DIARYL CARBONATE PROCESS

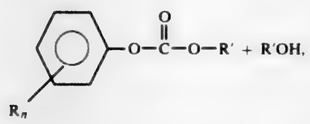
John E. Hallgren, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 15, 1982, Ser. No. 358,493
Int. Cl.³ C07C *68/06*
U.S. Cl. 260—463 7 Claims

1. A process for the production of diaryl carbonates comprising:

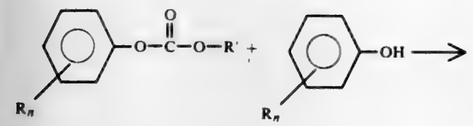
A. producing an aryl alkyl carbonate by reacting a dialkyl carbonate with a phenol in accordance with the equation:

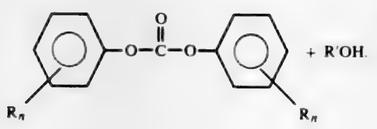




wherein R is selected from the class consisting of halogen, alkyl, alkoxy, aryl and aryloxy groups; n is a whole number from 0 to 3; and R' is methyl or ethyl, in the presence of an effective amount of a catalyst comprising a salt or alkoxide of Al^{+3}, Zn^{+2}, Ti^{+4}, Sn^{+4} or Zr^{+4} and a methanol- or ethanol-removing amount of a crystalline hydrated silica-alumina molecular sieve having a pore size from 4 Å to 5 Å, said methanol- or ethanol-removing amount being about 8 to 20 parts per part of methanol or ethanol liberated, and

B. reacting said aryl alkyl carbonate with an additional amount of said phenol at an elevated temperature in the presence of a catalyst, to produce the diaryl carbonate in accordance with the equation:



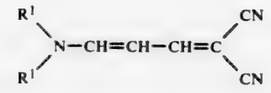


4,410,465
PREPARATION OF BUTADIENE DINITRILES

Rolf-Dieter Acker, Leimen, and Gerhard Hamprecht, Weinheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

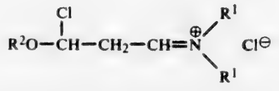
Filed Jan. 8, 1982, Ser. No. 338,113
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103066
Int. Cl.³ C07C *120/00, 121/30*
U.S. Cl. 260—465.5 R 8 Claims

1. A process for the preparation of a butadiene dinitrile of the formula



I

where the radicals R^1 are identical or different and each is an unsubstituted alkyl of 1 to 11 carbon atoms or an alkyl of 1 to 7 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms, wherein a quaternary ammonium compound of the formula



II

where R^1 has the above meaning and R^2 is an unsubstituted alkyl of 1 to 11 carbon atoms or an alkyl of 1 to 7 carbon atoms substituted by alkoxy of 1 to 4 carbon atoms,

(a) is reacted with malodinitrile in the presence of an alkanol of 1 to 10 carbons at a temperature of about 40° to 140° C. and

(b) the reaction mixture is then reacted with an alkali metal hydroxide, carbonate or alcoholate at a temperature of about −10° to +50° C.

4,410,466
PROCESS FOR EXTRACTIVELY SEPARATING A MIXTURE CONTAINING PHOSPHORIC ACID MONOALKYLESTERS INTO ITS COMPONENTS

Günther R. Schimmel, and Werner Klose, both of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,429
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046631
Int. Cl.³ C07F *9/09*
U.S. Cl. 260—990 9 Claims

1. A process for separating a mixture containing phosphoric acid monoalkylesters, phosphoric acid dialkylesters and minor proportions of diphosphoric acid dialkylesters, each with 6 to 12 carbon atoms in the alkyl radical, by extractively distributing them between an aliphatic or aromatic hydrocarbon as an unpolar solvent and a polar solvent, which comprises:

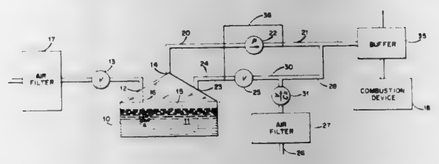
(a) admixing the ester mixture with the quantity of water stoichiometrically necessary for hydrolyzing the P-O-P-bond of the diphosphoric acid dialkylester with the resultant formation of the phosphoric acid monoalkylester, allowing the whole to remain for at least 1 hour at temperatures higher than 60° C., and

(b) treating the partially hydrolyzed ester mixture in a countercurrent apparatus comprising n-stages with the solvents, which are immiscible or partially miscible with one another, so as to ensure introduction of pure solvent into stage 1 and stage n, respectively, and the introduction of partially hydrolyzed mixture into one of the stages 2 to (n−1), n standing for a whole number of at least 3.

4,410,467
ION-VAPOR GENERATOR AND METHOD

Fred A. Wentworth, Jr., R.F.D. 2, Brentwood Rd., Exeter, N.H. 03833

Filed Nov. 9, 1981, Ser. No. 319,203
Int. Cl.³ B01F *3/04*
U.S. Cl. 261—18 A 5 Claims



1. A generator for vapor carrying a net surplus of electrically negative ions comprising:

(a) a container (10) partially filled with a dielectric liquid (11) including water;

(b) a first gas inlet connection (12) to below the liquid level (15) in said container (10);

(c) an outlet connection (14) from above the liquid level (15) in said container (10) for the outlet of gas;

(d) a pump (22) having an inlet and an outlet, said inlet being connected to said outlet connection (14);

(e) a first conduit (21) connected to said outlet;

(f) a recirculating conduit (24,28) connected to said first conduit (21) and to a point (23) preceding said pump (22) and following the liquid level (15) in the path of gas flow through the generator so as to provide a recirculating path around said pump (22);

(g) a second gas inlet connection (23) in the path of gas flow beyond said liquid level (15) for reducing gas flow through said liquid without changing gas flow through said outlet connection (14); and,

(h) an exhaust termination (35) of said first conduit providing a vapor output.

4,410,468
HOT PRESS-FORGING OF AN OPTICAL BODY WITH DYNAMIC CONSTRAINT BY CRYSTAL POWDER

Herbert Packer, Cleveland Heights, Ohio, assignor to The Harshaw Chemical Company, Cleveland, Ohio

Filed Jul. 6, 1981, Ser. No. 280,923
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.2 7 Claims

1. A two-stage process for hot press-forging an optical body, comprising,

(a) maintaining said optical body at an elevated temperature below its melting point in a die cavity so as to provide an annular space therein,

(b) peripherally surrounding said optical body with a crystal powder placed in said annular space, said crystal powder consisting essentially of an inorganic material having essentially the same coefficient of thermal expansion as that of said optical body, the volume of said crystal powder being equal to or less than that of said annular space,

(c) gradually press-forging said optical body at said temperature between opposed spaced-apart surfaces in solid-to-solid contact with opposed surfaces of said optical body, essentially free from contact with said crystal powder therebetween,

(d) exerting, in a first stage of said press-forging sufficient pressure on said opposed surfaces to move one surface closer to the other so as to impart a radially outward essentially unconstrained movement of the peripheral surfaces of said optical body,

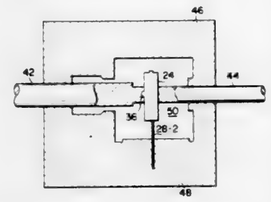
(e) transmitting, in a second stage of said press-forging, sufficient force from walls of said die cavity to compact said crystal powder and dynamically constrain radially outward movement of said peripheral surfaces, and

(f) providing a deformation ratio greater than 1 without changing the density of said optical body, so as to effect a change of its shape due to said press-forging and to obtain a forged optical body essentially free from surface defects and fissures near its periphery, yet maintaining its physical and optical integrity.

4,410,469
METHOD FOR MANUFACTURING A MODULE FOR A FIBER OPTIC LINK

Shuhei Katagiri, Tokyo; Kenichi Donuma, Koshigaya, and Makoto Ohashi, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 27, 1981, Ser. No. 325,486
Claims priority, application Japan, Nov. 28, 1980, 55-166686; Nov. 28, 1980, 55-166687
Int. Cl.³ G02B *5/174*
U.S. Cl. 264—1.5 11 Claims



10. A method of manufacturing a module for a fiber optic link using a pair of first dies each having opposing end portions, said first pair of dies reciprocably and coaxially movable relative to one another, and a pair of second dies defining a cavity, said second pair of dies transversely positioned with respect to said pair of first dies and reciprocably movable to clamp said first pair of dies so that said end portions are within said cavity, said method comprising the steps of:

(a) transfer molding a transparent first member having a predetermined shape and an optoelectric element embedded therein, said optoelectric element being operatively coupled to one of a plurality of leads outwardly extending from said first member,

(b) coaxially positioning said optoelectric element between said pair of opposing first dies,

(c) clamping said first member between said end portions of said pair of first dies after said optoelectric element is coaxially positioned according to step (b),

(d) positioning said first member clamped according to step (c) in said cavity and injecting a light-shielding molding material into said cavity,

(e) removing said first and second dies, one of said first dies after removal defining an optical path in said module, said optical path being coaxially aligned with said optoelectric element, the other of said first dies after removal defining an aperture in said module, said aperture coaxially opposing said optical path, and

(f) covering said aperture with a light-shielding cap,

whereby

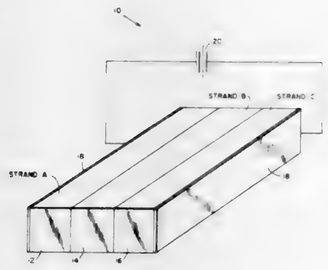
said optoelectric element is coaxially positioned with respect to said optical path and whereby simultaneous optical alignment and molding of said module is effected by virtue of said clamping relationship of said first member between said pair of first dies.

4,410,470

INCREASING BURNING RATE OF SOLID PROPELLANTS BY ELECTRIC FIELD EFFECTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1981, Ser. No. 222,400
Int. Cl.³ C06B *21/00*
U.S. Cl. 264—3 R **2 Claims**



1. A method for increasing the burning rate of solid propellants as well as correcting for the anisotropy of burning rate in propellants which contain metal fuel and a metal burning rate promoter selected from metal staples and metal flakes, said method comprising:

(i) providing a solid propellant composition comprised of a blended oxidizer of ammonium perchlorate of about 180 mμ particle size and ultrafine ammonium perchlorate of about 1 mμ particle size, aluminum powder metal fuel, aluminum metal burning rate promoter selected from aluminum staple and aluminum flake, a burning rate catalyst of n-hexylcarborane, and a hydroxylterminated polybutadiene binder which includes the additives of a bonding agent which is the reaction product of equimolar quantities of 12-hydroxylstearic acid and tris(2-methylaziridinyl)phosphine oxide, trimethylolpropane crosslinking agent, triphenylbismuthine quick cure catalyst, and isophorone diisocyanate curing and crosslinking agent;

(ii) placing said solid propellant composition in electrical contact with electrodes which are connected to a direct current power source;

(iii) applying a direct-current voltage from about 40 to about 120 volts to said solid propellant composition;

(iv) allowing said voltage to pass through said solid propellant composition for a predetermined time period from about two days to about eight days; and,

(v) disconnecting said direct current power source and electrodes from said solid propellant composition, said solid propellant composition characterized by having an increased burning rate as well as a corrected anisotropy of burning rate when compared with a control solid propellant composition having a like composition but to which no direct current voltage was applied.

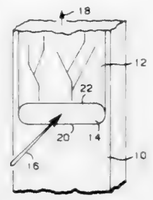
4,410,471

RIBBON-TO-RIBBON CONVERSION WITH SHAPED MOLTEN ZONE

Richard W. Gurtler, Mesa, and I. Arnold Lesk, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 23, 1981, Ser. No. 323,797
Int. Cl.³ B23K *28/00*
U.S. Cl. 264—25 **6 Claims**

1. In a method for converting a polycrystalline ribbon having first and second major surfaces to a macrocrystalline ribbon wherein energy impinging on said polycrystalline ribbon forms a molten zone therein extending through the thickness of said ribbon and intersecting said first and second major surfaces, and said ribbon is in motion relative to said impinging energy causing said molten zone to move along said ribbon, said macrocrystalline material forming as said molten zone passes and the material therein resolidifies, the improvement which comprises: supplying said impinging energy from first and second sources impinging on said first and second major



surfaces respectively; adjusting said first source to control the shape of said molten zone at said first major surface to have a first length along said ribbon at said first surface; and adjusting said second source to control the shape of said molten zone at said second major surface to have a second length along said ribbon, greater than said first length, at said second surface.

4,410,472

METHOD FOR MAKING SPHERICAL BINDERLESS PELLETS

Donald K. Grubbs, Rector, and Andrew T. Kochanowski, Spring Church, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 15, 1982, Ser. No. 339,323
Int. Cl.³ C10L *5/00*
U.S. Cl. 264—29.3 **7 Claims**

1. A method of forming a spherical binderless pellet, comprising:

charging a countercurrent rotating drum mixer with particles of at least one coking material and one noncoking, nonagglomerating material, the size of the coking material including particles having a size which will pass through a 100 mesh (Tyler Series) screen, and mixing said particles for a sufficient time to uniformly disperse said materials throughout a mixture;

adding sufficient water to said particles while mixing to form substantially spherical pellets having a compressive green strength after air drying of at least 10 lb/in² (0.07 MPa); and

heating said pellets at a temperature and for a time sufficient to carbonize said coking coal, the coking coal included in said mixture in an amount effective to bind together the pellet particles without fusing together the pellets at points of contact with one another.

4,410,473

PROCESS FOR MANUFACTURING A POLYESTER MULTIFILAMENT YARN

Kohichi Iohara, and Michikage Matsui, both of Ibaraki, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 16, 1981, Ser. No. 302,952
Claims priority, application Japan, Sep. 25, 1980, 55-132254
Int. Cl.³ D02G *1/20*
U.S. Cl. 264—103 **4 Claims**

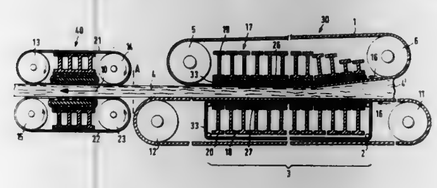
1. A process for manufacturing a polyester multifilament yarn, which comprises: melting independently (I) a polyester selected from the group consisting of polyethylene terephthalate, polytrimethylene terephthalate and polytetramethylene terephthalate or a polymer composition comprising at least two members selected from said polyesters and (II) a polymer composition comprising a substrate composed of a polyester selected from the group consisting of polyethylene terephthalate, polytrimethylene terephthalate and polytetramethylene terephthalate or at least two members selected from said polyesters and at least one polymer selected from the group consisting of thermoplastic styrenic polymers, methacrylic polymers and acrylic polymers, which is added to said substrate in an amount of 0.4 to 8% by weight based on said substrate; extruding said polymers (I) and (II) from different extrusion holes without mingling of the polymers to form filaments of polymers (I) and (II) wherein the average denier of filaments of polymer (I) is at least as large as the average denier of the filaments of polymer (II); and after cooling, doubling the extrudates without twisting and taking-up the resulting multifilament yarn.

4,410,474

METHOD AND APPARATUS FOR THE CONTINUOUS MANUFACTURE OF EXTRUDED MATERIALS

Karl-Heinz Ahrweiler, Krefeld, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,674
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1980, 3044671
Int. Cl.³ B29J *5/08*
U.S. Cl. 264—109 **11 Claims**



1. In a method for the continuous manufacture of extruded material by pressing, in which the material to be pressed is conducted in a pressing section between endless forming bands which co-circulate in the feeding direction of the extrusion, extend over the width of the extrusion and through which pressure and optionally heat are introduced into the material, the improvement comprising, exerting a pulling force on the extrusion of the finished material, in the feeding direction, at a point following the pressing section, to aid the feed.

4,410,475

PREPARATION OF METALLIC ARTICLE

Barry J. Chase; Roy W. E. Rushforth, and Gordon L. Selman, all of Reading, England, assignors to Johnson Matthey Public Limited Company, London, England

Continuation of Ser. No. 120,889, Feb. 12, 1980, Pat. No. 4,282,174, which is a continuation of Ser. No. 904,931, May 10, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,741
Claims priority, application United Kingdom, May 13, 1977, 20227/77
The portion of the term of this patent subsequent to Aug. 4, 1998, has been disclaimed.
Int. Cl.³ B29C *3/00*
U.S. Cl. 264—122 **3 Claims**

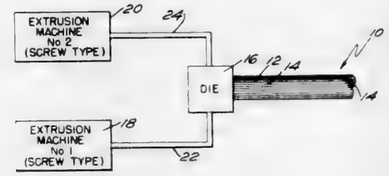
1. A process for producing a metallic article comprising forming a mixture of metallic particles and plastics particles, injecting said mixture under pressure and at elevated temperature into a die, allowing said die to cool and removing from said die said metallic article.

4,410,476

METHOD FOR MAKING RADIALLY COMPLIANT LINE ARRAY HOSE

John J. Redding, West Warwick, R.I., and Robert O. Hauptmann, Groton, Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 198,743, Oct. 20, 1980. This application Nov. 27, 1981, Ser. No. 325,419
Int. Cl.³ B29D *23/04*; B29F *3/00*
U.S. Cl. 264—173 **3 Claims**



1. A process for manufacturing a line array hose which comprises the steps of:

selecting a soft, flexible thermoplastic material having high damping characteristics for providing low self-noise and radial compliance as said hose is towed through the water;

selecting a stiffer, harder thermoplastic material having high wear and cut-through resistance for providing protection to said soft, flexible material;

heating said soft, flexible thermoplastic material above its melt temperature within a first screwtype extrusion machine;

heating said stiffer, harder thermoplastic material above its melt temperature within a second screwtype extrusion machine;

co-extruding said melted soft, flexible thermoplastic material and said melted stiffer, harder thermoplastic material concurrently through a single hose-forming die using well known methods such that said soft flexible thermoplastic material forms a long cylindrical tube and said stiffer, harder thermoplastic material forms a plurality of raised longitudinal ribs on the exterior surface of said cylindrical tube, said materials, being brought into intimate contact on a molecular scale while still in their respective melt stages thereby melt-bonding all along each surface in contact; and

cooling the resulting hose extrusion to room temperature thereby causing the materials to return to their former plastic state and resulting in the formation of a tenacious bond between the two materials.

4,410,477

EXTRUSION PROCESS AND APPARATUS USING CHANGEABLE FINE FILTERS

Marcel S. Claude, Pomponne Lagny, France, assignor to Trefi-cable Pirelli, Saint-Maurice, France

Filed Dec. 15, 1981, Ser. No. 331,126
Claims priority, application France, Dec. 29, 1980, 80 27952
Int. Cl.³ D01D *1/10*; B29F *3/10*; B01D *25/30*
U.S. Cl. 264—174 **17 Claims**

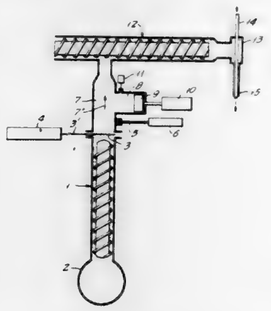
5. A method for operating a material extrusion system for extruding filtered insulating material around a wire, said system comprising a first extruder having an inlet and an outlet, an extrusion head connected to the outlet of said first extruder for receiving filtered material therefrom and for applying said filtered material around said wire as it is fed through said head; a second extruder having an inlet and an outlet; a material storage tank having an inlet connected to said inlet of said first extruder for material flow therebetween, a pressure applying means for applying pressure to the material therein, and means for preventing and alternately permitting material flow be-

tween said inlet of the tank and said inlet of said first extruder; a material conveying tube interconnecting said outlet of said second extruder to said inlet of said first extruder for material flow therebetween; filtering means insertable into said tube for filtering material flowing therethrough; and blocking means for blocking the flow of material through said tube and said filter, said method comprising:

inserting the filtering means in said tube and unblocking said tube by operating said blocking means;

supplying unfiltered said material to said inlet of said second extruder and operating said extruder to cause it to supply said last-mentioned material to said tube where it is filtered and then passes to said inlet of said first extruder;

while preventing flow of said material into said storage tank, operating said first extruder continuously to extrude material out of said outlet of said first extruder into said extrusion head, said second extruder being normally operated at a rate such that filtered material is supplied to the inlet of said first extruder at a rate which is sufficient to cause



said material to flow continuously out of the outlet of said first extruder;

when it is desired to change said filter, permitting said material to flow into said storage tank;

when said storage tank is filled with said material in an amount sufficient to replace the material extruded by said first extruder during the time required to change said filter, stopping said second extruder, blocking said tube with said blocking means and removing said filtering means from said tube;

while said blocking means is blocking said tube, applying pressure by said pressure applying means to the material in said tank in an amount sufficient to cause material in said tank to be supplied to said inlet of said first extruder at a rate which will maintain a continuous flow of the filtered material out of said outlet of said first extruder;

inserting a new filtering means in said tube and unblocking said tube by operating said blocking means; resuming the operation of said second extruder.

4,410,478

METHOD FOR MAKING TWO MOLDINGS AND COMBINING THEM TO MAKE A COMPOSITE PRODUCT

Bernhard Lindenmayer, Hessheim, and Lothar Fink, Achim, both of Fed. Rep. of Germany, assignors to Klockner-Werke A.G., Duisburg, Fed. Rep. of Germany

Division of Ser. No. 63,886, Aug. 3, 1979, Pat. No. 4,345,965. This application Mar. 8, 1982, Ser. No. 356,071

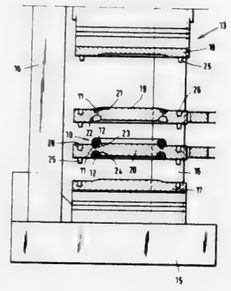
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1978, 2834211

Int. Cl.³ B29H *3/08, 5/01*

U.S. Cl. 264—248 **13 Claims**

1. A method of making composite molded articles each comprising at least two molded components which, in a first working step, are each separately molded and prehardened by the injection molding and prevulcanization of rubber materials, and, in a second working step, are joined with one another and hardened by final vulcanization, comprising the steps of:

separately molding two components (**11, 12**) in a molding press (**14**) having two planar mold plates each having a pair of cavities corresponding to the shapes of the first and second components;



changing the relative positions of the two planar mold plates so that said first and second components confront one another; and

simultaneously joining together said first and second components to form a composite molded article (**10**) during an additional closure operation and forming additional first and second components all in the same molding press.

4,410,479

METHOD OF MAKING A MOLDED-JOINT ASSEMBLY

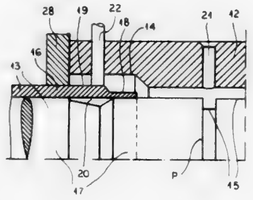
Wilhelm Cyriax, Meinerzhagen, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 84,196, Oct. 12, 1979, abandoned. This application Jun. 3, 1981, Ser. No. 269,820

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1978, 2845308; Sep. 6, 1979, 2936016

Int. Cl.³ B29C *5/08;* **B29D** *3/00, 23/02*

U.S. Cl. 264—255 **7 Claims**



1. A method of making a joint assembly having a concave outer element centered generally on an axis, formed with a radially throughgoing passage, and provided internally with a relatively soft seal having a sprue in the passage, said method using a mold having:

an inner mold part having sections displaceable between a first position wherein their outer surface is complementary to the inner surface of said assembly at said concave outer element and a second position wherein their outer surface is complementary to the inner surface of said seal ring,

at least one radially displaceable rod part movable between an inner position engaging said inner mold part and extending radially therefrom and an outer position clear of said inner mold part, and

an outer mold part having an inner surface complementary to the external surface of said assembly at said concave outer element, said method comprising the steps of:

forming by injection molding a relatively hard member in said mold in said first and inner positions of said parts thereof so that said member has at one end said concave element formed with said radially throughgoing passage;

displacing said inner mold part to said second position and thereafter injecting a hardenable material through said passage into a cavity defined by said hard member and said inner mold member and curing said hardenable material to form said relatively soft seal ring in said outer element with a sprue in said passage.

4,410,480

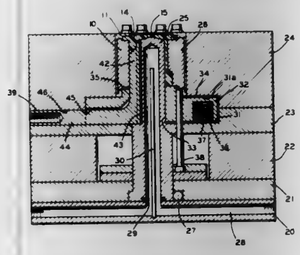
METHOD OF EMBEDDING ONE ARTICLE WITH ANOTHER

Gale E. Shafer, Jr., Rt. 3, Ottawa, Ohio 45875

Division of Ser. No. 233,032, Feb. 9, 1981, Pat. No. 4,344,600. This application May 17, 1982, Ser. No. 378,983

Int. Cl.³ B29C *5/00, 27/00*

U.S. Cl. 264—262 **3 Claims**



1. A method of positioning two members within an injection mold cavity having an opening formed in one surface thereof comprising the steps of:

(a) inserting the two members within the mold cavity;

(b) positioning the two members axially relative to each other within the mold cavity;

(c) axially supporting the one member to be bonded relative to the other member within the mold cavity; and

(d) resiliently urging the supported member toward the cavity opening whereby the shut height of the mold cavity is automatically adjusted to enable the two members to assume a desired axial relationship relative to each other.

4,410,481

INSULATING PLATE AND PROCESS FOR THE PREPARATION THEREOF

Herbert Mayerhoffer, Vienna, Austria, assignor to Osterreichische Hiag-Werke Aktiengesellschaft, Vienna, Austria

Filed Oct. 26, 1981, Ser. No. 314,935

Claims priority, application Austria, Oct. 27, 1980, 5297/80

Int. Cl.³ B29C *23/00*

U.S. Cl. 264—45.3 **10 Claims**

1. A process for the preparation of an insulating plate comprising impregnating a loose, non-woven matlike body of mineral fibers lying in all directions with an aqueous solution of a melamine-formaldehyde-resin or a melamine-rich aminoplastic synthetic resin to which a curing agent has been added and which has been adjusted to hot-curing in excess over the predetermined weight value of resin impregnation, reducing the amount of solution remaining in the non-woven matlike body to said predetermined weight value by removing the excess, placing the impregnated non-woven body in a mould determining the shape of the plate, and subjecting said non-woven body to the action of an electric microwave field to supply energy for the expansion and curing of the resin and thereafter said non-woven body is taken out from the mould and subjected to a subsequent heat treatment with hot air.

4,410,482

PROCESS FOR MAKING LAMINAR ARTICLES OF POLYOLEFIN AND A CONDENSATION POLYMER

Pallatheri M. Subramanian, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 161,451, Jun. 20, 1980, abandoned, which is a division of Ser. No. 18,057, Mar. 6, 1979, abandoned. This application Mar. 4, 1981, Ser. No. 241,051

Int. Cl.³ B29D *7/24;* **B29C** *17/07*

U.S. Cl. 264—515 **13 Claims**

1. A process for manufacturing a laminar, shaped, article of polymeric material comprising the steps of: (i) establishing a method, heterogeneous, blend of 60–95 weight percent polyolefin, 5 to 40 weight percent of a condensation polymer incompatible with the polyolefin, and 0.25 to 12 weight percent of an alkylcarboxyl-substituted polyolefin with an unsaturated monomer having a carboxylic moiety grafted to a polyolefin, by heating the blend above the melting point of the highest melting polymer component; and (ii) forming the melted blend by (a) stretching a body of the melt 100 to 500 percent in at least one direction and (b) cooling the stretched body to below the melting point of the lowest melting polymer component wherein the polyolefin is present, in the article, in the form of a continuous matrix phase and the condensation polymer incompatible with the polyolefin is present, in the article, in the form of a discontinuous distribution of thin, substantially two-dimensional, parallel and overlapping layers and the alkylcarboxyl-substituted polyolefin is present between the matrix and the layers and adheres the matrix and the layers together.

4,410,483

NEUTRON DETECTOR FOR USE WITHIN NUCLEAR REACTOR

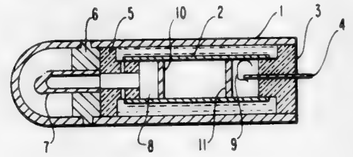
Toshimasa Tomoda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1981, Ser. No. 271,880

Claims priority, application Japan, Jun. 26, 1980, 55-88152

Int. Cl.³ G21G *17/00*

U.S. Cl. 376—154 **3 Claims**

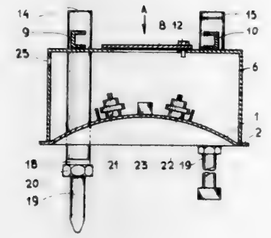


1. In an ionization chamber type neutron detector for use within a nuclear reactor, which detector utilizes enriched uranium U-235 as the neutron sensitive substance within the chamber and helium or argon as the ionizable fill gas within the chamber, the improvement comprising providing an atom ratio of U-235 to ionizable fill gas of 0.45 to 1.8 for helium fill gas, and 2.3 to 9 for argon fill gas.

4,410,484
PROCESS AND APPARATUS FOR ACOUSTIC AND ULTRASONIC DETECTION OF DEFECTIVE NUCLEAR REACTOR FUEL ASSEMBLIES

Jean Marini, Marly le Roi; Alain Gravelle, Fontenay-aux-Roses, and Jean-Claude Weilbacher, Champagne-sur-Oise, all of, France, assignors to Framatome, Courbevoie, France

Filed Sep. 18, 1980, Ser. No. 188,367
Claims priority, application France, Sep. 26, 1979, 79 23909
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—252 **8 Claims**

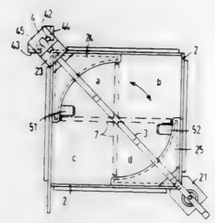


1. Process for acoustic detection of fuel assemblies of a nuclear reactor which have become defective in service in the reactor, by the appearance of cracks in the material of the sheath enclosing the fissile material of the fuel elements constituting a said assembly, comprising the steps of testing separately each of said assemblies while the same is totally immersed in a liquid for protection against radiation, by causing the expansion and release of the gas contained in the sheaths of said fuel elements through any cracks in said sheaths, and detecting this possible release of gas by recording an acoustic phenomenon associated with said release of gas into the protective medium, wherein said progress of bubbles of said gas in the protective liquid is arrested by means of a screen (1) located above said assembly, and the acoustic emission due to the impact of said gas bubbles on said screen is recorded, the appearance of this acoustic emission permitting detection of defective assemblies.

4,410,485
ASSEMBLY FIXTURE FOR CROSS-SHAPED CONTROL RODS OF BOILING WATER NUCLEAR REACTORS

Hans-Joachim Lippert, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Mar. 7, 1980, Ser. No. 128,275
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909793
Int. Cl.³ G21C *19/00*
U.S. Cl. 376—260 **2 Claims**

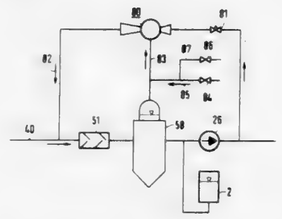


1. In a system for assembling the fuel assemblies and cross-shaped control rods of a boiling water reactor wherein said reactor has an upper core grid mesh for holding a core cell formed of four fuel assemblies having a gap therebetween and means disposed beneath the reactor core for driving the control rods in the gap, an assembly fixture comprising a frame having corners formed therein, said frame being substantially the size of a core cell and being disposable on the core grid, templates diagonally oppositely disposed on said frame and extending into the core cell for lateral guidance of the control rods, stops for the control rods disposed on said templates, and a carrying handle having a first portion thereof being pivotable at one of said corners of said frame and a second portion thereof being locked to an opposite corner of said frame in a disassembled condition and swung out of said locked condition in an assembled condition.

4,410,486
NUCLEAR REACTOR WITH A LIQUID COOLANT

Edgar Schick, Erlangen, and Peter Wisniewski, Stade, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Nov. 26, 1980, Ser. No. 210,375
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948297
Int. Cl.³ G21C *9/00*
U.S. Cl. 376—306 **3 Claims**



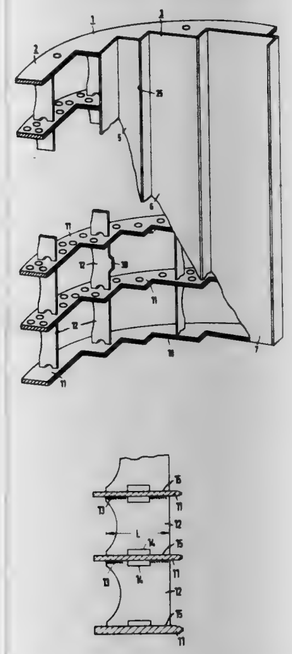
1. Nuclear reactor with a hydrogen-containing liquid coolant loop having an expansion tank for the coolant, a high pressure pump having a suction side and feeding coolant taken from the loop back into the loop after purification, a line bypassing the expansion tank and being connected to the suction side of the high-pressure pump, and means for introducing hydrogen gas into a liquid-filled section of the loop on the suction side of the high-pressure pump, comprising a liquid jet compressor for transporting hydrogen into the coolant.

4,410,487
CORE BAFFLE OR ENCLOSURE AND METHOD OF FABRICATING THE SAME

Jürgen Tautz, Hemhofen; Lothar Werres, Langensendelbach, and Gerd Reimer, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 34,122
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818886
Int. Cl.³ G21C *3/06, 21/00*; B23K *31/00*
U.S. Cl. 376—399 **7 Claims**

5. Core baffle comprising a plurality of integral horizontally disposed, parallel profile-rib rings for enclosing the fuel assemblies of a pressurized water reactor, said profile-rib rings being arranged in spaced, coaxial relationship, said profile-rib rings formed with respective cutouts having a polygonal contour at radially inner edges thereof corresponding to that of the reactor core and with baffle plates secured parallel to the axis of said profile-rib rings at said radially inner edges thereof and forming a casing matching the contours of the cutouts, each of said profile-rib rings being spaced by a plurality of ribs secured by the ends thereof, respectively, by weldment to said profile-rib rings at a spaced distance from the radially inner edges thereof, said profile-rib rings being secured by weldment to one another by said ribs so as to form a cage, said baffle plates being bent partly into profile sections and being braced against the cage in the form of a casing, said baffle plates being secured by weldment to one another and to said profile-rib rings at said



radially inner edges thereof, said ribs being formed with respective cutouts at edges located at opposite ends thereof facing the respective profile-rib rings so that the weldment between the profile-rib ring and rib is a spaced weld.

4,410,488
POWDER METALLURGICAL PROCESS FOR PRODUCING A COPPER-BASED SHAPE-MEMORY ALLOY

Gernot Gessinger, Birmenstorf; Oliver Mercier, Ennetbaden, and Helmut Riegger, Busslingen, all of Switzerland, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Jul. 27, 1981, Ser. No. 286,865
Claims priority, application Switzerland, Aug. 7, 1980, 5986/80
Int. Cl.³ B26D *5/20*; C21D *8/00*
U.S. Cl. 419—48 **8 Claims**

1. A process for producing a copper-based shape memory alloy by powder metallurgy, comprising:
providing a coarse-grained alloy powder having a particle size of 0.2 to 0.8 mm grain diameter;
introducing said powder into a container; evacuating said container;
sealing said container under vacuum;
hot isostatically pressing said powder at a pressure of 50 to 300 MPa in a temperature range from 750° to 950° C. for 1/5 to 5 hours, whereby a billet is formed; and
subjecting said billet to hot working at a temperature of 750° to 850° C.

4,410,489
HIGH CHROMIUM NICKEL BASE ALLOYS

Aziz I. Asphahani; William L. Silence, both of Kokomo, and Paul E. Manning, Bringhurst, all of Ind., assignors to Cabot Corporation, Kokomo, Ind.

Filed Jul. 17, 1981, Ser. No. 284,169
Int. Cl.³ C22C *19/05*
U.S. Cl. 420—453 **3 Claims**

1. An alloy characterized by a high degree of corrosion resistance to phosphoric acid consisting essentially of, in weight percent, chromium 26 to 35, molybdenum 3 to 6, tungsten 1 to 4, Cb plus Ta 0.3 to 2.0, copper 1 to 3, iron 10–18, manganese up to 1.5, silicon up to 1.0, carbon 0.10 maximum, aluminum up to 0.8, titanium up to 0.5 and the balance nickel plus incidental impurities wherein the ratio of molybdenum to tungsten is between 1.5 to 1 and 4 to 1 to provide said high degree of corrosion resistance.

4,410,490
NICKEL AND COBALT ALLOYS WHICH CONTAIN TUNGSTEN AAND CARBON AND HAVE BEEN PROCESSED BY RAPID SOLIDIFICATION PROCESS AND METHOD

Ranjan Ray, Burlington, and Viswanathan Panchanathan, North Billerica, both of Mass., assignors to Marko Materials, Inc., North Billerica, Mass.

Filed Jul. 12, 1982, Ser. No. 397,053
Int. Cl.³ C22C *38/08, 38/22*
U.S. Cl. 420—454 **11 Claims**

1. A metallic alloy in powder form having predominantly an amorphous structure with particle size below 4 mesh (U.S. Standard) and composition described by the formula:

$$(Ni,Co)_aW_b(Cr,Fe)_cB_dC_e$$

wherein Ni,Co,W,Cr,Fe,B, and C are respectively nickel, cobalt. tungsten, chromium, iron, boron, and carbon; b,d, and e respectively represent atom percent of W,B, and C; a represents atom percent of one or more Ni and Co; and c represents atom percent of one or more of Cr and Fe, (wherein a = 50–70, b = 15–35, c = 0–10, d = 1–4, and e = 5–25) with the provisos that a+b+c+d+e must be 100, wherein the said alloy is prepared by the method comprising the following steps:
(a) forming a melt of said alloy
(b) depositing said melt against a rapidly moving quench surface adapted to quench said melt at a rate in the range of approximately 10^5 to 10^7° C./second and form thereby a rapidly solidified brittle stratum of said alloys characterized by predominantly an amorphous structure, and hardness values between 1200 and 1900 Kg/mm², and
(c) comminuting said stratum into powders.

4,410,491
MATERIAL FOR ELECTRICAL CONTACTS

Böhm Wolfgang, Alzenau; Roger Wolmer, Frankfurt, and Willi Malikowski, Aschaffenburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 331,065
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1981, 3102067
Int. Cl.³ C22C *5/06*
U.S. Cl. 420—501 **18 Claims**

1. A material suitable for an electrical contact consisting essentially of 8 to 20% tin oxide, 0.05 to 4% of molybdenum oxide, germanium oxide or a mixture of molybdenum oxide and germanium oxide, or such a material wherein a portion of the molybdenum oxide, germanium oxide or mixture of molybdenum oxide and germanium oxide is replaced by tungsten oxide, the amount of tungsten oxide being insufficient to significantly increase the switching temperature after 30,000 switchings over the temperature when employing molybdenum ox-

ide, germanium oxide or a mixture of molybdenum oxide and germanium oxide without tungsten oxide, balance silver.

4,410,492

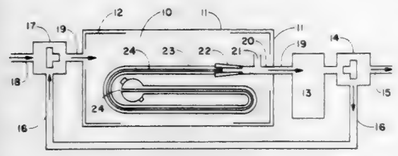
STERILIZING METHOD INCORPORATING RECIRCULATION OF CHAMBER ATMOSPHERE

Saul Kaye, Evanston, Ill., assignor to Ben Venue Laboratories, Inc., Bedford, Ohio

Continuation-in-part of Ser. No. 212,972, Feb. 13, 1981, Pat. No. 4,337,223. This application May 17, 1982, Ser. No. 378,505

Int. Cl.³ A61L *2/20*

U.S. Cl. 422—27 **5 Claims**



1. A method for sterilizing a medical instrument having passages therein comprising the steps of positioning said instrument totally within a sterilizing chamber, introducing a sterilant gas into said sterilizing chamber and exposing the interior and exterior surfaces of said instrument to said sterilant gas, said sterilant gas comprising an effective mixture of moisture and ethylene oxide, circulating and recirculating said sterilant gas through and around said instrument for a period of time to effect sterilization of said instrument, maintaining said instrument at a temperature between about 20° and about 70° C. during said step of circulating and recirculating said sterilant gas, and thereafter desorbing said sterilant gas from said surfaces of said instrument.

4,410,493

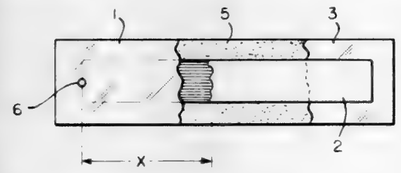
INDICATOR DEVICE FOR USE IN STEAM STERILIZATION

Larry J. Joslyn, Macedon, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed May 11, 1981, Ser. No. 262,497

Int. Cl.³ G01N *31/22*

U.S. Cl. 422—58 **5 Claims**



1. An indicator device suitable for use in steam sterilization which comprises:

a. an aluminum foil backing member;

b. an indicator chemical which comprises sebacic acid which has the capability of wicking through a wick material;

c. wicking means in the form of a length of filter paper with one end of said wicking means in physical contact with said indicator chemical;

d. said indicator chemical and wicking means being contained within a water vapor permeable polypropylene envelope with the top and bottom interfaces of said enveloppe being sealed together to mechanically bond the wicking means and indicator chemical along the entire film envelope interfaces;

e. with said envelope being mounted on said backing member.

5. An indicator device which is based upon the rate of an indicating chemical wicking through a wick material which comprises:

a. a solid indicator chemical having a defined melting point and which has the capability of wicking through a wick material at a given predetermined temperature or temperature range;

b. a wick material having one end of said wick material in contact with said indicator chemical;

c. said indicator chemical and wick material being contained in a film envelope with top and bottom interfaces of said envelope being sealed together to mechanically bond the wick material at the film envelope interfaces to prevent any significant flow of indicator chemical along the periphery of the wick during use.

4,410,494

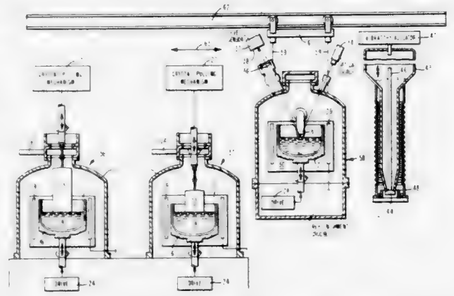
APPARATUS FOR CONTROLLING FLOW OF MOLTEN MATERIAL BETWEEN CRYSTAL GROWTH FURNACES AND A REPLENISHMENT CRUCIBLE

George Fiegl, Palo Alto, Calif., assignor to Siltec Corporation, Menlo Park, Calif.

Filed Apr. 13, 1981, Ser. No. 253,655

Int. Cl.³ C30B *15/20*

U.S. Cl. 422—106 **3 Claims**



1. Apparatus for replenishing molten semiconductor material in a plurality of growth crucibles from which one or more solid boules of such material are to be formed that includes means for furnishing a replenishment crucible within which a supply of said material can be melted and maintained in a molten condition, said apparatus comprising:

A. replenishment crucible which is portable between the locations of each of said growth crucibles and includes means for intermittently communicating with each separately for the flow of said material from said replenishment crucible to each of said growth crucibles, each of said crucibles being positioned within an isolation chamber for maintaining the molten material therein isolated from the ambient atmosphere, said communicating means including a conduit extending outwardly from said replenishment crucible into a chamber sleeve which encompasses said conduit when said conduit is not in communication with a growth crucible, which sleeve is connectable to an isolation chamber enclosing a growth crucible and is axially collapsible to permit the projection of said conduit into said growth crucible chamber to the location therein of said crucible for said intermittent communication;

B. means located at a stationary position relative to said replenishment crucible for feeding unmelted semiconductor material to said replenishment crucible, said replenishment crucible being movable into communication with said feeding means;

C. means for sensing the surface level of molten material in said replenishment crucible and generating an information signal representative of said level; and

D. means for utilizing said information signal to control the amount of molten material which flows from said crucible to said growth crucibles.

4,410,495

OZONIZER WITH SLEEVE ELECTRODES

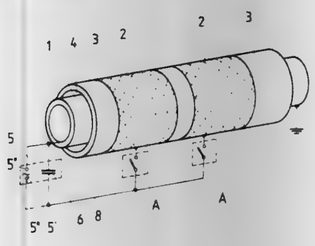
Peter Bässler, Bellikon, and Ulrich Kogelschatz, Hausen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 13, 1981, Ser. No. 224,698

Claims priority, application Switzerland, Jan. 14, 1980, 251/80

Int. Cl.³ C01B *13/12*

U.S. Cl. 422—186.18 **8 Claims**



1. An ozonizer provided with at least two electrodes of which at least one has a surface facing the other electrode and covered with a dielectric, said ozonizer connected to an energy supply device formed of a current source and a parallel connected storage capacitor, said current source having a first connecting terminal connected with one electrode of the ozonizer and a second connecting terminal connected by way of at least one switching element with the other electrode of the ozonizer, wherein at least one electrode comprises:

plural partial electrodes, each separated from one another and having at least one associated switching element, and each partial electrode having an associated switching element connected in parallel to the current source.

4,410,496

RECOVERY OF METAL VALUES FROM COMPLEX SULFIDES

Gary A. Smyres, Sparks, and Philip R. Haskett, Reno, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 7, 1982, Ser. No. 376,065

Int. Cl.³ C01G *3/05, 21/16, 9/04*

U.S. Cl. 423—1 **3 Claims**

1. A process for recovery of metal values from complex sulfide ores or concentrates comprising treating a slurry of the ores and concentrates in an aqueous solution consisting essentially of calcium chloride or barium chloride with gaseous oxygen at a temperature of about 80° to 150° C., the amount of the calcium or barium chloride being sufficient to provide a chloride concentration sufficient for efficient extraction of metal values.

4,410,497

SEPARATION OF URANIUM FROM CARBONATE CONTAINING SOLUTIONS THEREOF BY DIRECT PRECIPITATION

John B. Otto, Jr., Dallas, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

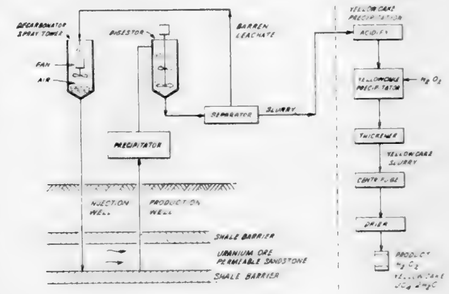
Filed Jan. 26, 1982, Ser. No. 342,863

Int. Cl.³ C22B *60/02*; C01G *43/01*

U.S. Cl. 423—16 **56 Claims**

1. A process for removing uranium values from a liquid solution at pH above about 7 containing carbonate and uranyl ions which comprises dissolving phosphate ions in said solution and lowering the pH of said solution sufficient to precipitate said uranium.

24. A process for recovering uranium values from a subterranean deposit which comprises (a) penetrating said deposit with at least one injection well and at least one production well in spaced relation with said injection well; (b) treating the subterranean deposit to obtain a first pH of at least about 8 and a



carbonate ion concentration of at least about 1000 ppm; (c) introducing into the deposit a source of phosphate ion and an oxidant capable of oxidizing said uranium to the hexavalent state; (d) producing leachate containing dissolved uranium values to the surface; and (e) lowering the pH of said leachate to a second pH at which the said uranium precipitates out of solution.

4,410,498

ACID LEACHING OF NICKEL FROM SERPENTINIC LATERITE ORES

William R. Hatch, Brampton, and Ronald R. Dunn, Holland Landing, both of Canada, assignors to Falconbridge Nickel Mines Limited, Toronto, Canada

Filed Oct. 16, 1981, Ser. No. 312,252

Claims priority, application United Kingdom, Nov. 5, 1980, 8035578

Int. Cl.³ C22B *23/04*; C01G *53/10*

U.S. Cl. 423—150 **6 Claims**



1. In the method of solubilizing magnesia and nickel in nickeliferous serpentine ore by leaching the ore with an aqueous solution of sulphuric acid to obtain maximum extraction of nickel consistent with minimum extraction of iron and magnesia and minimum acid consumption, the improvement which comprises maintaining the pH of the solution between 1.5 and 3.0, at atmospheric pressure, and increasing the reactivity of the serpentine by adding to the solution a reducing agent to maintain the redox potential of the solution at a value between 200 and 400 millivolts measured against SCE.

4,410,499

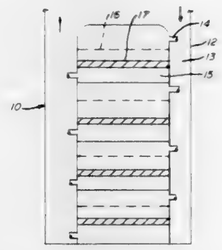
WASTE GAS PURIFICATION REACTOR AND METHOD

John E. Aiken, Monroeville Borough; William J. Didycz, Whitehall Borough, and Donald Glassman, Mt. Lebanon Township, Allegheny County, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 35,147, May 2, 1979, abandoned. This application May 4, 1981, Ser. No. 260,499

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—210 **13 Claims**



1. Process for removing oxidizable pollutants from a waste gas stream, comprising:

(1) introducing said waste gas stream through an inlet into a chamber containing a thin catalyst bed for oxidizing said pollutants, and wherein the superficial gas velocity is less than about 200 feet per minute, and wherein said waste gas stream is introduced into said chamber at a temperature sufficient to oxidize only a portion of the contaminants present in said waste gas stream, thereby heating the gas stream to the ignition temperature of the other contaminants therein;

(2) passing said waste gas stream through a distributor plate containing a plurality of openings extending therethrough located between said inlet and said catalyst bed in a manner such that said waste gas stream is substantially uniformly distributed over said catalyst bed, said distributor plate having openings creating in said plate surface a total open area of less than about 10 percent;

(3) passing said waste gas through said catalyst bed while maintaining said catalyst bed at a temperature sufficient to sustain catalytic oxidation of said oxidizable pollutants; and said catalyst bed having a temperature rise from the inlet side of said bed to the outlet side of between about 50° C. and about 400° C.; and wherein said catalyst bed has a thickness of less than about 8 inches; and

(4) withdrawing through in outlet of said chamber said waste gas stream which has passed through said catalyst bed.

4,410,500

SODIUM-LIMESTONE DOUBLE ALKALI FLUE GAS DESULFURIZATION METHOD

Kuei-Hsiung Wang, Arlington Heights; Robert J. Biolchini, Hanover Park, and L. Karl Legatski, Wheaton, all of Ill., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 10, 1982, Ser. No. 376,879

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **18 Claims**

1. A method for the continuous desulfurization of flue gas in an absorber with an aqueous solution of sodium sulfite and sodium bisulfite and regeneration of such solution with limestone, said method comprising: contacting absorber effluent solution having a pH within the range of from 5.8 to 6.6 with sufficient ground limestone to raise the pH to a value within the range of from 6.3 to 7.0 and to convert from 35 to 70% of the solution bisulfite content to sulfite, separating the by-product solids from the limestone-treated solution, and returning the regenerated solution to the absorber; the molar concentration of active sodium for the absorber effluent solution, measured as the sum of the bisulfite molar concentration plus twice the sulfite molar concentration, being maintained within the range of from 0.5 M to 0.9 M, and the amount of limestone being less than stoichiometric, based on the theoretical calcium carbonate required to completely neutralize the bisulfite content of such absorber effluent solution to sulfite.

4,410,501

PREPARATION OF POROUS CRYSTALLINE SYNTHETIC MATERIAL COMPRISED OF SILICON AND TITANIUM OXIDES

Marco Taramasso, San Donato Milanese; Giovanni Perego, Milan, and Bruno Notari, San Donato Milanese, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Continuation of Ser. No. 208,420, Nov. 19, 1980, abandoned. This application Jun. 29, 1982, Ser. No. 393,379

Claims priority, application Italy, Dec. 21, 1979, 28323 A/79

Int. Cl.³ C01B *33/20*

U.S. Cl. 423—326 **7 Claims**

1. The method of preparing a porous, crystalline material comprised of silicon oxide and titanium oxide wherein the ratio of said oxides is represented by the formula

$$xTiO_2 \cdot (1-x)SiO_2$$

in which x is a number between 0.0005 and 0.04, which comprises the steps of:

(1) preparing an aqueous mixture of starting reagents free from alkali- and alkaline-earth metals including a source of silicon oxide selected from the group consisting of silica gel and tetraalkylorthosilicates, a source of titanium oxide consisting of a hydrolysable titanium compound, and a nitrogenated organic base, and wherein the starting reagents have the following molar ratios:

SiO_2/TiO_2 from 5 to 200,

OH^-/SiO_2 from 0.1 to 1.0,

H_2O/SiO_2 from 20 to 200,

RN^+/SiO_2 from 0.1 to 2.0

wherein RN^+ is the cation of the nitrogenated organic base,

(2) subjecting said mixture to hydrothermal treatment in an autoclave at a temperature in the range of 130° to 200° centrigrade under its own pressure for a period of 6 to 30 days to obtain crystals and a mother liquor,

(3) separating said crystals from the mother liquor,

(4) washing the separated crystals with water and then drying the same, and

(5) heating the dried crystals in air so as to calcine the same and eliminate said nitrogenated base therefrom.

4,410,502

METHOD FOR MANUFACTURE OF SILICON CARBIDE

Masami Yamaguchi, Tokorozawa; Toshiyuki Nakazima, Yokohama; Yoshiro Tajitsu; Yoshiharu Kitahama, both of Kawasaki, and Isamu Iwami, Zushi, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Nov. 13, 1981, Ser. No. 321,258

Claims priority, application Japan, Nov. 13, 1980, 55-159856

Int. Cl.³ C01B *31/36*

U.S. Cl. 423—345 **9 Claims**

1. A method for the manufacture of a finely divided, high purity silicon carbide having a particle diameter of from 0.1 to 1.0μ and containing no SiO_2 as detected by X-ray diffractometry, which comprises subjecting a homogeneous mixture of a liquid silicic acid or a modified liquid silicic acid with carbon in the form of a powder or a precursor of carbon in the form of powder or a solution of heat treatment at a temperature of 1350° C. to 1850° C. in a non-oxidizing atmosphere.

4,410,503

PROCESS FOR THE REMOVAL OF UREA, AMMONIA, AND CARBON DIOXIDE FROM DILUTE AQUEOUS SOLUTIONS

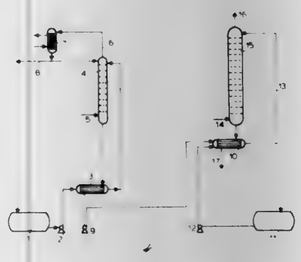
Petrus J. M. van Nassau, Sittard, and Adolphe M. Douwes, Geleen, both of Netherlands, assignors to Unie Van Kunst-Mestfabrieken, Maliebaan, Netherlands

Filed Mar. 1, 1982, Ser. No. 353,385

Claims priority, application Netherlands, Feb. 28, 1981, 8100989

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **11 Claims**



1. In a coupled process comprising an ammonia synthesis zone having a primary reformer in which a hydrocarbon gas is reacted with steam to form a synthesis gas, and a urea synthesis zone, wherein process condensate comprised of a dilute aqueous solution of ammonia and carbon dioxide obtained from said ammonia synthesis zone, and process condensate comprised of a dilute aqueous solution of urea, ammonia, and carbon dioxide from said urea synthesis zone, are treated to remove at least a portion of said urea, carbon dioxide, and ammonia therefrom by hydrolysis of said urea and desorption of ammonia and carbon dioxide, the improvement comprising:

introducing said urea synthesis zone process condensate into a desorption zone wherein at least a portion of said ammonia and carbon dioxide are removed as a gas mixture from said urea synthesis zone process condensate at a pressure of between about 1 and 5 bar so as to render it poor with respect to ammonia;

introducing said urea synthesis zone process condensate poor with respect to ammonia, and said ammonia synthesis zone process condensate, into a reaction column wherein said combined condensates are treated with steam at a pressure of between about 15 and 42 bar, and at a temperature of between about 200° C. and 320° C.;

removing from the bottom portion of said reaction column an aqueous liquid virtually free of urea, ammonia, and carbon dioxide; and

removing from the top portion of said reaction column a gas mixture containing ammonia, carbon dioxide, and water vapor, and introducing said gas mixture into said primary reformer as at least a part of said steam reacted to form said synthesis gas.

4,410,504

METHOD OF PRODUCING HIGH DENSITY CARBON

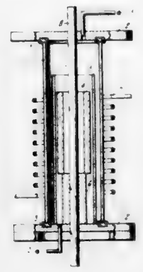
Francis S. Galasso, Manchester; Richard D. Veltri, East Hartford, and Philip J. Birbara, Windsor Locks, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 30, 1982, Ser. No. 373,767

Int. Cl.³ C01B *31/02;* **C09C** *1/48;* **C01B** *3/24*

U.S. Cl. 423—453 **6 Claims**

1. A method of producing high density carbon and hydrogen gas comprising flowing methane gas over a high temperature stable glass surface heated to a temperature of about 1000° C. to about 1200° C. to produce hydrogen gas and carbon deposits



having a density greater than about 2 grams per cubic centimeter.

4,410,505

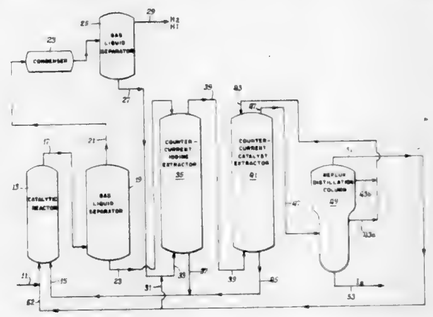
HYDROGEN IODIDE DECOMPOSITION

Dennis R. O'Keefe, and John H. Norman, both of San Diego, Calif., assignors to GA Technologies Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 375,803, May 7, 1982, abandoned. This application Jan. 20, 1983, Ser. No. 459,680

Int. Cl.³ E01B *3/02;* **C01B** *7/14*

U.S. Cl. 423—648 R **20 Claims**



1. A process for producing H_2 from liquid HI, which process comprises the steps of

causing said HI to undergo thermal decomposition in the presence of an aqueous solution of HI and a soluble catalyst at a pressure of between about 25 and about 300 atm.,

separating H_2 from the decomposed mixture,

treating said decomposed mixture to extract substantially all of the I_2 product therefrom, and

then returning said substantially iodine-free mixture, which contains at least 95 mole % of said catalyst, to said thermal decomposition step.

4,410,506

IMMUNOASSAY FOR VITAMIN K-DEPENDENT BONE PROTEIN

Paul A. Price, San Diego, Calif., and Satoru K. Nishimoto, Bristol, Conn., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 24, 1981, Ser. No. 246,972

Int. Cl.³ G01N *33/56, 33/58, 33/60*

U.S. Cl. 436—542 **14 Claims**

1. A method for determining vitamin K-dependent bone protein (BGP) in a sample suspected of containing said BGP, said method comprising:

combining in an aqueous buffered assay medium said sample

derived from a human, labeled cross-reacting BGP, wherein said label provides a detectable signal, and antibodies to BGP; and

determining the amount of labeled BGP either bound or unbound to said antibodies as a measure of human BGP in said sample.

4,410,507

PROCESS FOR THE PREPARATION OF PHYSIOLOGICALLY DEGRADABLE, COLLOIDAL RADIOISOTOPE CARRIERS AND THEIR USE

Han-Lie Chia, Reinach, and Siegfried Woltmann, Magden, both of Switzerland, assignors to Solco Basel AG, Basel, Switzerland

Filed Dec. 30, 1981, Ser. No. 336,006

Claims priority, application Switzerland, Aug. 28, 1981, 5560/81

Int. Cl.³ A61K *43/00, 49/00*

U.S. Cl. 424—1.1 **6 Claims**

5. A process for the preparation of a physiologically degradable, colloidal material which is labeled with technetium-99m, contains human serum albumin and is of small particle size and narrow and defined particle size distribution, which comprises mixing an aqueous solution of human serum albumin with a non-ionic surface-active agent and an aqueous acid solution of a tin(II) salt in the absence of ligands for the tin(II) salt, adjusting the pH values of the reaction mixture to a constant preselected pH value of 3.0 to 8.0 by the addition of a buffer solution, heating the mixture at a constant temperature in the range from 45° to 100° C. by the action of microwaves or whilst stirring until complete hydrolysis of the tin(II) salt and simultaneous denaturation of the human serum albumin have taken place, and treating the formed colloidal material with a solution of technetium-99m.

4,410,508

NOVEL AQUEOUS FOAM FORMULATION AND METHOD

Harry A. Brown, Jr., Fallston, and Robert F. Durgin, Abingdon, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 69,034, Aug. 23, 1979, abandoned. This application Jun. 19, 1981, Ser. No. 275,540

Int. Cl.³ A61K *31/78;* **A01N** *43/00;* **B01J** *13/00*

U.S. Cl. 424—81 **4 Claims**

1. An aqueous composition suitable for providing a high expansion foam having an expansion ratio of at least 200 and a stability of about 4 hours or more, said aqueous composition consisting essentially of

1% to 12% mixture of sodium lauryl sulfate and polyoxyethylated lauryl alcohol

8% to 12% glycerol

0.2% to 0.3% carboxyl vinyl polymer

up to 0.15% dibenz-(b,f)-1,4-oxazepine and water, percentages being by weight based on the aqueous composition.

3. A method of obtaining visual obscuration and area denial in military and riot control operations, which comprises disseminating a stable, high expansion foam consisting essentially of an aqueous composition consisting essentially of

1% to 12% mixture of sodium lauryl sulfate and polyoxyethylated lauryl alcohol

8% to 12% glycerol

0.2% to 0.3% carboxyl vinyl polymer

up to 0.15% dibenz-(b,f)-1,4-oxazepine and water, percentages being by weight based on the aqueous composition, as a deterrent to persons exposed to said foam.

4,410,509

SYNTHETIC FLY ATTRACTANTS

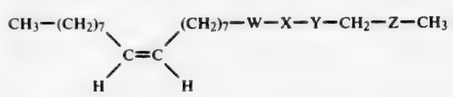
Felix A. Carroll, Davidson, N.C., assignor to Trustees of Davidson College, Davidson, N.C.

Filed Mar. 10, 1981, Ser. No. 242,315

Int. Cl.³ A01N *25/00*

U.S. Cl. 424—84 **7 Claims**

1. A method to attract flies to fly traps, which comprises placing a concentration of about 50 milligrams of a fly attractant chemical compound per about 1200 square centimeters of trap surface area on the fly trap and wherein said fly attractant chemical compound has the following formula:



where W is selected from the group consisting of —CH_2— and



where X is selected from the group consisting of —S—, —O—, —NH—, and —CH_2—;

where Y is selected from the group consisting of —CH_2— and



when W is —CH_2—;

where Y is —CH_2— when W is



where Z is —CH_2— when X is selected from the group consisting of —S—, —O—, and —NH—; where Z is



when W is —CH_2—, when X is —CH_2—, and when Y is —CH_2—; and where Z is —CH_2— when W is



4,410,510

METHOD FOR PREPARING A PURIFIED EXTRACTION RESIDUE FRACTION AND ITS USE IN STIMULATING THE IMMUNE RESPONSE

Virginia Livingston-Wheeler, 8492 Prestwick Dr., La Jolla, Calif. 92037, and John J. Majnarich, Mercer Island, Wash., assignors to Virginia Livingston-Wheeler, San Diego, Calif.

Continuation-in-part of Ser. No. 128,919, Mar. 10, 1980, abandoned, which is a continuation of Ser. No. 957,206, Nov. 3, 1978, abandoned. This application Apr. 20, 1981, Ser. No. 255,678

Int. Cl.³ A61K *39/02;* **C12N** *1/20*

U.S. Cl. 424—92 **4 Claims**

1. A method of protecting domestic chickens against avian leukosis virus, comprising:

culturing in a culture medium a *Progenitor cryptocides* microorganism identified by ATCC No. 31,874 as isolated from a warm blooded animal carrying a malignant tumor or maglignant tumor of a warm blooded animal, the microorganism having the capacity to synthesize the polypeptide known as chorionic gonadotropin in its total form or in its alpha and beta subunits,

isolating and extracting the antigen of the microorganism from the culture medium, and

administering a therapeutic amount of the antigen of the microorganism to the chickens.

4,410,511

BIOLOGICALLY ACTIVE PEPTIDES

David de Wied, Bilthoven, and Hendrik M. Greven, Heesch, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jun. 18, 1981, Ser. No. 275,049

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023813

Int. Cl.³ H61K *37/00*

U.S. Cl. 424—177 **5 Claims**

1. A pharmaceutical composition, useful in counteracting the effects of narcotic analgesia in humans, containing, as active ingredient, an anti-narcotic analgetic effective amount of a peptide of the formula:

R_1-L-Tyr-L-Val-L-Met-Gly-L-His-L-Phe-L-Arg-L-Trp-L-Asp-L-Arg-L-Phe-R_2

in which

R_1 is hydrogen or a lower aliphatic acyl (1-6 C) group, and R_2 represents a hydroxy group or the group —Gly—OH, or a salt, ester or amide thereof,

in admixture with the usual pharmaceutically acceptable diluents or carriers, in dosage units for parenteral administration to patients in amounts of 0.5 μg to 0.5 mg. per kg. of body weight per day; in dosage units for intranasal administration to patients in amounts of from 10 μg to 50 mg. per kg. of body weight per day; or in dosage units for sublingual or oral administration to patients in amounts from 5.0 μg to 5.0 mg. per kg. of body weight.

4,410,512

COMBINATIONS HAVING SYNERGISTIC PITUITARY GROWTH HORMONE RELEASING ACTIVITY

Cyril Y. Bowers, New Orleans, La., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 334,488

Int. Cl.³ A61K *37/02*

U.S. Cl. 424—177 **3 Claims**

1. A composition capable of releasing growth hormone from pituitary comprising an effective amount of a peptide having the formula

H_2-His-D-Trp-Ala-Trp-D-Phe-Eys-NH_2;

and the pharmaceutically acceptable salts thereof; and

zeranol, $C_{18}H_{26}O_5$,

in a ratio such that, such composition synergistically releases growth hormone from the said pituitary.

4,410,513

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

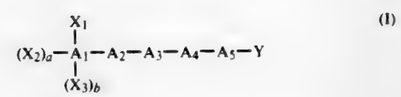
Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 28, 1981, Ser. No. 335,000

Int. Cl.³ C07C *103/52;* **A61K** *37/02*

U.S. Cl. 424—177 **15 Claims**

1. A peptide having a formula



(I)

wherein

X_1, X_2, and X_3 are selected from a group consisting of N-terminal and desamino alpha-carbon substitutions;

a and b are 0 or 1, provided that a and b are 0 when A_1 is a desamino residue;

A_1 and A_4 are selected from a group consisting of His, Arg, Lys, α-Naphth, β-Naphth, Iql, Tyr, Trp, Phe, homologues and analogues thereof, and, with respect to A_1, the desamino forms thereof;

A_2 and A_5 are selected from a group consisting of D-His, D-Arg, D-Lys, D-α-Naphth, D-β-Naphth, D-Iql, D-Tyr, D-Trp, D-Phe, homologues and analogues thereof, and, with respect to A_5, the descarboxy forms thereof;

A_3 is selected from a group consisting of Gly, Ala, Val, Leu, Ile, Pro, Ser, Thr, Met, Asp, Glu, Asn, Gln, His, D-Ala, D-Val, D-Leu, D-Ile, D-Pro, D-Ser, D-Thr, D-Met, D-Asp, D-Glu, D-Asn, D-Gln, D-His, and homologues and analogues thereof; and

Y is selected from a group consisting of C-terminal and descarboxy alpha-carbon substitutions;

and the pharmaceutically acceptable salts thereof;

provided that, when (1) a is 1 and b is 0 and X_1 and X_2 are selected from the group consisting of —H and —CH_3; (2) A_1 and A_4 are selected from the group consisting of Tyr, Trp, and Phe; (3) A_3 is selected from the group consisting of Gly, Ala, Val, Leu, Ile, Pro, Ser, Thr, Met, Asp, Glu, Asn, Gln, and His; and (4) Y is selected from the group consisting of —NR_1R_2, —CH_2OR, and —OR, wherein R, R_1, and R_2 are selected from a group consisting of hydrogen and straight and branched chain alkyl groups containing 1-6 carbon atoms; then at least one of A_2 and A_5 is selected such that it is not from the group consisting of D-Tyr, D-Trp, D-Phe, and, with respect to A_5, the descarboxy forms thereof; and

when (1) a is 1 and b is 0 and X_1 and X_2 are selected from the group consisting of —H and —CH_3; (2) A_2 and A_5 are selected from the group consisting of D-Tyr, D-Trp, D-Phe, and, with respect to A_5, the descarboxy forms thereof; (3) A_3 is selected from the group consisting of Gly, Ala, Val, Leu, Ile, Pro, Ser, Thr, Met, Asp, Glu, Asn, Gln, and His; and (4) Y is selected from the group consisting of —NR_1R_2, —CH_2OR, and —OR, wherein R, R_1, R_2 is selected from a group consisting of hydrogen and straight and branched chain alkyl groups containing 1-6 carbon atoms; then at least one of A_1 and A_4 is selected such that it is not from a group consisting of Tyr, Trp, and Phe.

4,410,514

GNRH AGONISTS

Wylie W. Vale, Jr., and Jean E. F. Rivier, both of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Filed Dec. 6, 1982, Ser. No. 447,091

Int. Cl.³ C07C *103/52;* **A61K** *37/02*

U.S. Cl. 424—177 **8 Claims**

1. A peptide having the formula

pGlu—His—Trp—Ser—Tyr—R_6—Trp—Leu—Pro—R_{10}—NHR

or a nontoxic salt thereof, wherein R_6 is a D-isomer of an α-amino acid selected from the group consisting of Trp, Ala, Phe, Lys, Pro, Met, Leu, Glu, Asn, Arg, Tyr, Cys, His, Chg, Nva, Orn, Thr, Abu, Phg, Ile, Glu, Asp, Nle and Val and wherein R_{10} is Gly or dés-R_{10} and R is H or $C_nY_{2n}CY_3$, with

Y being H or F and n being 0, 1, 2 or 3, provided that when R_{10} is des-R_{10}, n is not 0.

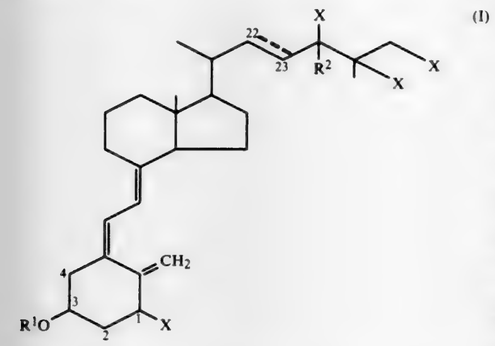
4,410,515

VITAMIN D GLYCOSIDES AND A METHOD OF USE

Sally A. Holick, and Michael F. Holick, both of Sudbury, Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Apr. 1, 1981, Ser. No. 249,922
Int. Cl.³ C07H *15/20, 15/18*
U.S. Cl. 424—180 **19 Claims**

1. A synthetic compound which is biologically active in maintaining calcium and phosphorous metabolism in animals, of the formula I:



(I)

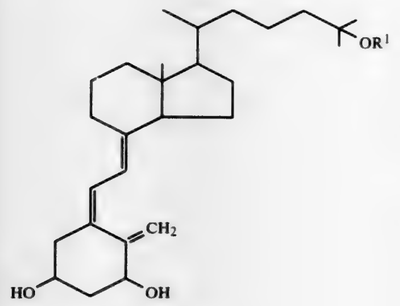
wherein

the double bond between positions C-22 and C-23 is single or double;

R^2 is hydrogen, methyl or ethyl;

X is selected from the group consisting of hydrogen and $-OR^1$, where R^1 is a glycoside selected from the group consisting of glucose, mannose, galactose, gulose, allose, altrose, idose, talose, fructose, arabinose, xylose, sucrose, cellobiose, maltose, lactose, trehalose, gentiobiose, melibiose, raffinose, gentianose, N-acetyl-D-galactosamine, N-acetyl-D-glucosamine, N-acetyl-D-mannosamine, N-acetylneuraminic acid, D-glucosamine, lyxosylamine, and D-galactosamine, with the proviso that the total number of glycosidic units per compound is not larger than 3.

10. The compound of claim **1** which is



wherein R^1 is as defined in claim **1**.

4,410,516

1-N(αHYDROXY-ω-AMINOALKANOYL) DERIVATIVES OF 5,3',4'-TRIDEOXY- OR 5,3', 4'-TRIDEOXY-6'-N-METHYL- OR 5, 3', 4',6''-TETRADEOXYKANNAMYCI B AND PRODUCTION THEREOF

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Filed Jul. 21, 1981, Ser. No. 285,550
Int. Cl.³ A61K *31/71*; C07H *15/22*
U.S. Cl. 424—180 **9 Claims**

8. An antibacterial composition comprising as the active ingredient a 1-N-[(α-hydroxy-ω-aminoalkanoyl)-5,3',4'-trideoxykanamycin B or a pharmaceutically acceptable acid-addition salt, a 1-N-(α-hydroxy-ω-aminoalkanoyl-5,3',4',6''-tetradeoxykanamycin B or a pharmaceutically acceptable acid-addition salt or 5,3',4',6''-tetradeoxykanamycin B or a pharmaceutically acceptable acid-addition salt in an anti-bacterially effective amount to inhibit the growth of bacteria, in combination with a carrier for the active ingredient compound.

4,410,517

VITAMIN E (TOCOPHEROL) COMPOSITIONS WHICH RESEMBLE PETROLATUM

Theodore Stillman, Box 63, Hardy, Ark. 72542

Continuation of Ser. No. 151,627, May 20, 1980, abandoned. This application Aug. 5, 1981, Ser. No. 290,157
Int. Cl.³ A61K *35/78, 31/355*
U.S. Cl. 424—195 **2 Claims**

1. A nontoxic sexual lubricant, which resembles solid petrolatum, prepared by combining from 12.5 to 25 parts by weight of glyceryl monostearate pure with from 50 to 66.4 parts by weight of alpha tocopherol acetate to form a solution with the aid of heat and thereafter incorporating from 12.5 to 25 parts by weight of jojoba oil to yield a mixture which is solid at room temperature.

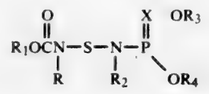
4,410,518

N-PHOSPHINOAMINOSULFINYLCARBAMATE ESTERS AND THEIR USE AS INSECTICIDES

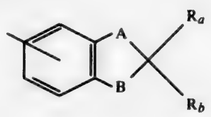
Tetsuo R. Fukuto, and Hiroki Ohta, both of Riverside, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 22, 1982, Ser. No. 360,719
Int. Cl.³ A01N *57/04, 57/08*; C07F *9/24*
U.S. Cl. 424—202 **23 Claims**

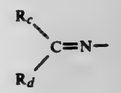
1. A compound of the formula



wherein R is alkyl of 1 to 4 carbon atoms; R_1 is a heterocyclic group of the formula



in which R_a and R_b are hydrogen or alkyl of 1 to 4 carbon atoms, A and B are each oxygen, or one and A and B is methylene and the other is oxygen or sulfur, wherein R_1 is attached at the 4 or 7 position; or an imino group of the formula



wherein R_c is hydrogen, a dialkylaminocarbonyl or alkyl of 1 to 4 carbon atoms and R_d is alkylthio or alkylthioalkyl and wherein the alkyl groups are the same or different and have 1 to 4 carbon atoms;

R_2 is alkyl of 1 to 12 carbon atoms; or cycloalkyl of 3 to 6 carbon atoms;

X is oxygen or sulfur; and

R_3 and R_4 are the same or different and are alkyl of 1 to 6 carbon atoms; or together constitute the carbons necessary to complete a 5 to 6 membered ring system which is either unsubstituted or substituted by 1 or 2 methyl groups at the fifth position.

23. The method of controlling insects which comprises applying to sites of insectile infestation an amount of a compound as defined in claim **1**, said amount being effective for said control.

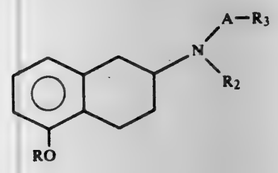
4,410,519

TETRALINE DERIVATIVES, THEIR PRODUCTION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Max P. Seiler, Basel, and Andre Stoll, Birsfelden, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 186,878, Sep. 12, 1980, abandoned. This application Mar. 12, 1981, Ser. No. 243,267
Claims priority, application Switzerland, Sep. 14, 1979, 8347/79; Jul. 18, 1980, 5547/80
Int. Cl.³ A61K *31/655, 31/275*; C07C *121/60, 117/00*
U.S. Cl. 424—226 **18 Claims**

1. An optically active or racemic compound of formula I



I

in which

R is hydrogen or a group R_1CO wherein R_1CO is a pharmaceutically acceptable acyl moiety which is hydrolysable under physiological conditions;

R_2 is alkyl of 1 to 4 carbon atoms;

A is alkylene of 1 to 5 carbon atoms, and

R_3 is CN or N_3

in free base form or the form of a pharmaceutically acceptable acid addition salt thereof.

12. The compound of claim **1** in which R is hydrogen and A is $(CH_2)_n$ and R_2, n and R_3 are C_3H_7, 3 and N_3, respectively, in free base form or in the form of a pharmaceutically acceptable acid addition salt thereof.

15. A method of treating Morbus Parkinson which comprises administering a therapeutically effective amount of a compound of claim **1** to a subject in need of such treatment.

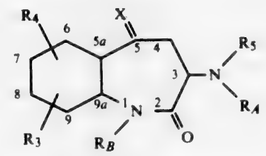
4,410,520

3-AMINO-[1]-BENZAZEPIN-2-ONE-1-ALKANOIC ACIDS

Jeffrey W. H. Watthey, Chappaqua, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

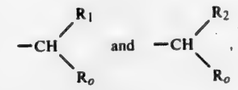
Continuation-in-part of Ser. No. 319,863, Nov. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 291,907, Aug. 11, 1981, abandoned. This application Jul. 19, 1982, Ser. No. 398,241
Int. Cl.³ C07D *223/16*; A61K *31/55*
U.S. Cl. 424—244 **29 Claims**

1. A compound of the formula



(I)

wherein R_A and R_B are radicals of the formula



respectively, in which

R_o is carboxy or functionally modified carboxy represented by COR_6 in radical R_A and represented by COR_7 in radical R_B wherein one or both of R_6 and R_7 represent hydroxy; lower alkoxy; (amino- or di-lower alkylamino)-substituted lower alkoxy; carboxy-substituted lower alkoxy; lower alkoxycarbonyl-substituted lower alkoxy; aryl-substituted lower alkoxy; (hydroxy, lower alkanoyloxy or lower alkoxy)-substituted lower alkoxy; (hydroxy, lower alkanoyloxy or lower alkoxy)-substituted lower alkoxymethoxy; bicyclo[2,2,1]heptyl-oxycarbonyl-substituted lower alkoxy; 3-phthalidoxy; (lower alkyl, lower alkoxy, halo)-substituted 3-phthalidoxy; amino; lower alkylamino; di-lower alkylamino; di-lower alkylamino in which both alkyl groups are linked by a carbon to carbon bond and together with the amino nitrogen form pyrrolidino, piperidino or perhydroazepino; (amino)-substituted lower alkylamino; α-(carboxy or lower alkoxycarbonyl)-substituted lower alkylamino; aryl-substituted lower alkylamino which can be substituted on the α-carbon by carboxy or lower alkoxycarbonyl;

R_1 is hydrogen, lower alkyl, amino (lower) alkyl, aryl, aryl (lower) alkyl, cycloalkyl or cycloalkyl (lower) alkyl;

R_2 is hydrogen or lower alkyl;

R_3 and R_4, each independently represent hydrogen, lower alkyl, lower alkoxy, lower alkanoyloxy, hydroxy, halogen, trifluoromethyl, or

R_3 and R_4 taken together represent lower alkylenedioxy;

R_5 is hydrogen or lower alkyl, and

X represents oxo, two hydrogens, or one hydroxy together with one hydrogen; and wherein the carbocyclic ring may also be hexahydro or 6,7,8,9-tetrahydro;

and wherein within the above definitons aryl represents phenyl unsubstituted or mono- or di-substituted by lower alkyl, lower alkoxy, lower alkylenedioxy, lower alkanoyloxy, hydroxy, halogen or trifluoromethyl; and cycloalkyl contains 3 to 8 carbons; or a pharmaceutically acceptable salt thereof.

27. A pharmaceutical composition suitable for oral or parenteral administration to mammals for the treatment or prevention of diseases responsive to inhibition of angiotensin-converting enzyme comprising an effective amount of a compound of claim **1** in combination with one or more pharmaceutically acceptable carriers.

4,410,521

AMINOCYCLOPENTANE ESTERS AND PHARMACEUTICAL FORMULATIONS

Eric W. Collington, Welwyn; Peter Hallett, Bassingbourn; Christopher J. Wallis, Royston; Norman F. Hayes, Hitchin; John Bradshaw, and Malcolm Carter, both of Ware, all of England, assignors to Glaxo Group Limited, England

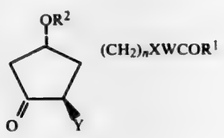
Filed Sep. 16, 1982, Ser. No. 418,975

Claims priority, application United Kingdom, Sep. 16, 1981, 8127982; May 6, 1982, 8213069

Int. Cl.[3] **A61K** *31/55, 31/535;* **C07D** *295/14*

U.S. Cl. 424—244 **9 Claims**

1. Compounds of the general formula (1)



(I)

wherein R^1 is

(a) $—AR^3$ where A is —O— or —S— and R^3 is phenyl [optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, methylthio, methylsulphinyl, methylsulphonyl, halogen, $—CO_2R^4$ [where R^4 is a hydrogen atom, C_{1-4} alkyl or phenyl], $—NHCOR^4$, $—CONR^5R^6$ [where R^5 and R^6 may be the same or different and are each a hydrogen atom or C_{1-4} alkyl], C_{1-4} alkylsulphonylamino, formyl, nitro, cyano, phenyl or $—NR^5R^6$];

(b) $—OCH_2COR^7$ where R^7 is phenyl (optionally substituted by a halogen atom, C_{1-4} alkyl or C_{1-4} alkoxy) or $—NH_2$;

(c) $—A(CH_2)_mBR^5$ where m is 1–3 and B is —O— or —S—, provided that when m is 1, R^5 is not a hydrogen atom;

(d) $—A(CH_2)_pR^8$ where p is 2 or 3 and R^8 is an N-attached C_{1-4} dialkylamino, morpholino, piperidino, pyrrolidino, acetylamino or benzoylamino group;

(e) $—OCH(CH_2N(CH_3)_2)_2$

(f)



where R^9 is a hydrogen atom, methyl or phenyl;

(g) $—OCH_2OCOR^{10}$ where R^{10} is C_{1-4} alkyl, methoxy or phenyl;

(h) $—OCH_2SCOR^{11}$ is C_{1-4} alkyl;

(i) pyridinyloxy or pyridinylthio;

(j) 1-(acetyloxy)ethoxy, (acetyloxy)phenylmethoxy, tetrahydro-5-oxo-2-furanyloxy, tetrahydro-2-oxo-3-furanyloxy, triphenylmethoxy or diphenylmethoxy; or

(k) $—OR^{12}$ where R^{12} is C_{3-6} alkenyl, C_{5-7} cycloalkyl (optionally substituted by one or more C_{1-4} alkyl groups), $—CH_2CCl_3$ or furanylmethyl;

n is 1 or 2;

W is straight or branched C_{1-7} alkylene;

X is cis or trans —CH=CH— or $—CH_2CH_2—$;

Y is a saturated heterocyclic amino group (attached to the cyclopentane ring via the nitrogen atom) which has 5–8 ring members and (a) optionally contains in the ring —O—, —S—, $—SO_2—$, or NR^{13} (where R^{13} is a hydrogen atom, C_{1-7} alkyl or aralkyl having a C_{1-4} alkyl portion); and (b) is optionally substituted by one or more C_{1-4} alkyl groups;

R^2 is (i) straight or branched C_{1-5} alkyl substituted by (a) phenyl [optionally substituted by C_{1-6} alkyl, C_{5-7} cycloalkyl, phenylalkyl having a C_{1-3} alkyl portion, thienyl, phenyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy or phenyl), benzoyl (optionally substituted by C_{1-4} alkyl, C_{1-4} alkoxy, halogen, trifluoromethyl or phenyl) or C_{5-7} cycloalkanoyl], (b) thienyl [optionally substituted by C_{5-7} cycloalkyl or phenyl (optionally substituted by C_{1-3} alkyl, C_{1-3} alkoxy or halogen)], or (c) naphthyl (optionally substituted by C_{1-4} alkyl or C_{1-4} alkoxy), or (ii) cinnamyl (optionally substituted by benzoyl); and the physiologically acceptable salts and solvates thereof.

9. A pharmaceutical composition comprising a compound as claimed in claim 1 and one or more pharmaceutical carriers.

4,410,522

CEPHALOSPORINS

Isamu Saikawa; Shuntaro Takano, both of Toyama; Chosaku Yoshida, Takaoka; Okuta Takashima, Toyama; Kaishu Momonoi, Shinminato; Seietsu Kuroda, Toyama; Miwako Komatsu, Fuchumachi; Takashi Yasuda, Kosugimachi, and Yutaka Kodama, Toyama, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Division of Ser. No. 654,060, Jan. 30, 1976, Pat. No. 4,112,090, which is a continuation-in-part of Ser. No. 571,479, Apr. 24, 1975, Pat. No. 4,087,424. This application Oct. 12, 1977, Ser. No. 841,608

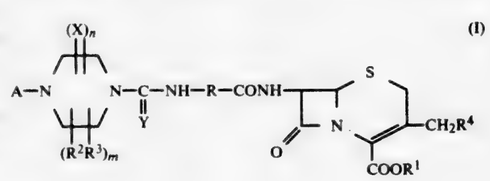
Claims priority, application Japan, May 9, 1974, 54-50663; May 13, 1974, 49-52254; May 31, 1974, 49-60787; Aug. 13, 1974, 49-91996; Sep. 26, 1974, 49-109954; Dec. 13, 1974, 49-142499; Mar. 27, 1975, 50-37207

The portion of the term of this patent subsequent to Apr. 5, 2000, has been disclaimed.

Int. Cl.[3] **A61K** *31/545;* **C07D** *501/56*

U.S. Cl. 424—246 **47 Claims**

1. An antibacterial compound of the formula (I),



(I)

wherein

R is a group represented by the formula

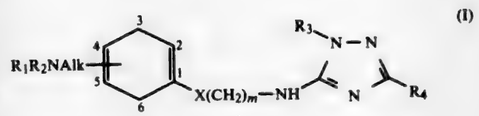


each of said moieties A, R^1, R^2, R^3, R^4, R^5 and R^6 is a conventional cephalosporin substituent selected from the radicals or atoms which each of said moieties represents as set forth subsequently, wherein R^5 represents alkyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, aralkyl, aryloxy, alkylthioalkyl, furyl, thienyl, oxazoly, thiazolyl, isoxazolyl, isothiazolyl, imidazolyl, pyrazolyl, pyridyl, pyrazyl, pyrimidyl, pyridazyl, quinolyl, isoquinolyl, quinazolyl, indolyl, indazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, 1,3,4-thiadiazolyl or 1,2,4-thiadiazolyl, any of which may be substituted by halogen, hydroxy, nitro, alkyl, alkoxy, alkylthio, acyl or alkyl-sulfonylamino; R^6 represents a hydrogen atom; and R^5 and R^6 together with a common carbon atom may form a cycloalkyl, cycloalkenyl or cycloalkadienyl ring;

R^1 represents a hydrogen atom, a blocking group of a conventional cephalosporin or a pharmaceutically acceptable salt-forming cation of a conventional cephalosporin;

n represents 1 or 2; each of the n X's, which may be identical or different from one another, represents individually an oxygen or sulfur atom, and the n X's are attached in any combination to the 2-, 3-, or 5-positions of the piperazine ring;

m represents 4 − n; each pair of R^2 and R^3 are linked to the same carbon atom, and each R^2 and R^3 of m pairs of R^2 and R^3, which may be the same or different, represent individually hydrogen, halogen, carboxyl, alkyl, cycloalkyl, aryl, acyl, aralkyl, alkoxycarbonylalkyl, acyloxyalkyl, alkoxy, alkoxycarbonyl, cycloalkyloxycarbonyl, aralkoxycarbonyl, aryloxycarbonyl, amino, N-alkylamino, N,N-dialkylamino, N-arylamino, cyclic amino or carbamoyl; any of which may be substituted by halogen, alkyl, alkoxy, alkylthio, acyl or nitro; and any pair of R^2 and R^3 together with a common carbon atom may form a cycloalkyl ring.



(I)

and physiologically acceptable salts and hydrates thereof in which R_1 and R_2, which may be the same or different, each represent hydrogen, C_{1-10} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; trifluoro C_{1-6} alkyl, heteroaralkyl wherein the heteroaryl portion is furan or pyrrole and the alkyl portion is a straight or branched C_{1-4} alkyl portion and the heteroaryl portion is linked to the alkyl portion through either a carbon or nitrogen atom; or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino, di C_{1-6} alkylamino or C_{3-8} cycloalkyl, or R_1 and R_2 may together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino, hexamethyleneimino, heptamethyleneimino, tetrahydropyridino, 4-hydroxypiperidino, 4-C_{1-3} alkylpiperidino, morpholino, 2,6-di-C_{1-3} alkylmorpholino or thiomorpholino group; Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms and is attached to the cyclohexadiene ring at the 4- or 5-position; X represents $—CH_2$ or —O—; m represents 2, 3, 4 or 5 and when X is —O— the chain $(CH_2)_m$ may be interrupted by an oxygen atom provided that there are at least two methylene groups between any two heteroatoms in the moiety $—X(CH_2)_mNH—$;

R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl groups or C_{1-3} alkoxy groups or halogen atoms; or C_{2-6} alkyl substituted by hydroxy or C_{1-6} alkoxy; and R_4 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl wherein the ar portion is phenyl or phenyl substituted by one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; hydroxy C_{1-6} alkyl, acyloxy C_{1-6} alkyl wherein the acyl portion is benzoyl or benzoyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms, ar C_{1-6} alkanoyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms, or C_{1-6} alkanoyl; C_{1-6} alkoxy C_{1-6} alkyl, aryloxy C_{1-6} alkyl wherein the aryl portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; ar C_{1-6} alkyloxy C_{1-6} alkyl wherein the aryl portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; amino C_{1-6} alkyl, C_{1-6} alkyl amino C_{1-6} alkyl, di C_{1-6} alkylamino C_{1-6} alkyl, hydroxy or C_{1-6} alkoxy or the group NR_5R_6 where R_5 represents hydrogen, C_{1-6}alkyl, C_{1-6}alkyl substituted by hydroxy or C_{1-3} alkoxy, C_{3-6} alkenyl, ar C_{1-6} alkyl wherein the aryl portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; or heteroar C_{1-6} alkyl wherein the heteroaryl portion is furyl, pyridyl, thiazolyl or thienyl; and R_6 represents any of the groups defined for R_5 or may represent the group COR_7 where R_7 represents hydrogen, C_{1-6} alkyl, phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; ar C_{1-6} alkyl wherein ar is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; C_{1-6} alkoxy, furyl, pyridyl, thiazolyl or thienyl group, or monocyclic heteroar C_{1-6} alkyl wherein the heteroaryl portion is furyl, pyridyl, thiazolyl or thienyl; or R_6 represents the group SO_2R_8 where R_8 represents C_{1-6} alkyl or phenyl or phenyl substituted by one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; or R_6 represents the group



where Y is oxygen or sulphur and R_9 represents hydrogen, C_{1-6} alkyl, C_{3-8} cycloalkyl, phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms;

A represents hydrogen, hydroxy, nitro, cyano, alkyl, alkenyl, alkynyl, alkadienyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aryl, acyl, aralkyl, acyloxyalkyl, alkoxy, cycloalkyloxy, alkoxycarbonyl, aryloxy, cycloalkyloxycarbonyl, aryloxycarbonyl, aralkoxycarbonyl, alkylsulfonyl, cycloalkylsulfonyl, arylsulfonyl, carbamoyl, N-alkylaminocarbonyl, N-arylaminocarbonyl, N,N-dialkylaminocarbonyl, cyclic aminocarbonyl, thiocarbamoyl, N-alkylaminothiocarbonyl, N-arylaminothiocarbonyl, N,N-dialkylaminothiocarbonyl, cyclic aminothiocarbonyl, acylcarbamoyl, acylthiocarbamoyl, alkylsulfonylcarbamoyl, arylsulfonylcarbamoyl, alkylsulfonylthiocarbamoyl, arylsulfonylthiocarbamoyl, sulfamoyl, alkoxycarbonylthioalkyl, alkoxythiocarbonylthioalkyl, amino, N-alkylamino, N,N-diathylomino, N-acylamino, cyclic amino, thiazolyl, pyridyl, pyridazyl, pyrazyl, thiadiazolyl, triazolyl, tetrazolyl or quinolyl, any of which may be substituted by halogen, hydroxyl, alkyl, alkoxy, alkylthio, nitro, cyano, amino, carboxyl, or acyl;

Y represents an oxygen or sulfur atom; and

R^4 represents hydrogen, halogen, hydroxy, cyano, azido, pyridinium, quinolinium, isoquinolinium, pyrimidinium, alkoxy, aryloxy, aralkoxy, acyloxy, carbamoyloxy, quanidino, amino, N-alkylamino, N,N-dialkylamino, cyclic amino, alkylthio, arylthio, aralkylthio, acylthio, thiocarbamoylthio, alkoxythiocarbonylthio, aryloxythiocarbonylthio, cycloalkyloxythiocarbonylthio, amidinothio, oxazolylthio, thiazolylthio, isoxazolylthio, isothiazolylthio, imidazolylthio, pyrazolylthio, pyridylthio, pyrazinylthio, pyrimidinylthio, pyridazinylthio, quinolylthio, isoquinolylthio, quinazolylthio, indolylthio, indazolylthio, oxadiazolylthio, thiadiazolylthio, [triazolylthio,] tetrazolylthio, triazinylthio, benzimidazolylthio, benzoxazolylthio, benzothiazolylthio, triazolopyridylthio, purinylthio, pyridine-1-oxide-2-ylthio or pyridazine-1-oxide-6-ylthio each of which may be substituted by halogen, alkyl, nitro, cyano, carboxyl or carbamoyl; thiazolinylthio or 3-(2,6-dimethyl-5-oxo-2,5-dihydro-1,2,4-triazinyl)-thio, with the proviso that when R^4 is pyridinium, quinolinium, isoquinolinium, or pyrimidinium there is present a pharmaceutically acceptable counter-ion.

31. A pharmaceutical composition comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

4,410,523

HETEROCYCLIC DERIVATIVES

William D. Ollis, Sheffield; Barry J. Price, Hertford; Linda Carey, Royston; Roger Hayes, Potters Bar; John W. Clitherow, Sawbridgeworth; John Bradshaw, and John W. M. Mackinnon, both of Ware, all of England, assignors to Glaxo Group Limited, London, England

Filed Oct. 22, 1980, Ser. No. 199,522

Claims priority, application United Kingdom, Oct. 22, 1979, 7936544; Aug. 27, 1980, 8027739

Int. Cl.[3] **A61K** *31/395;* **C07D** *249/10*

U.S. Cl. 424—246 **9 Claims**

1. A compound of the formula (I)

or ar C_{1-6} alkyl wherein the aryl portion is phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms; or R_5 and R_6 taken together may represent the group $=CR_{10}R_{11}$ where R_{10} represents phenyl or phenyl substituted with one or more C_{1-3} alkyl or C_{1-3} alkoxy groups or halogen atoms or furyl, pyridyl, thiazolyl or thienyl group; and R_{11} represents hydrogen or C_{1-6} alkyl.

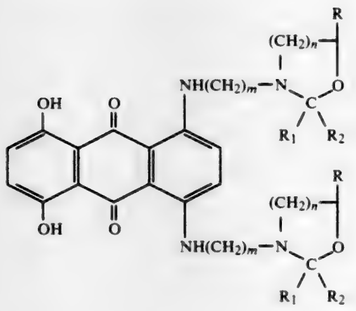
9. A method of treating a condition mediated through histamine H_2-receptors which comprises administering to a patient an effective amount of a compound according to claim **1** to relieve said condition.

4,410,524
NOVEL 1,4-BIS(SUBSTITUTED-AMINO)-5,8-DIHYDROXYANTHRAQUINONES AND LEUCO BASES THEREOF

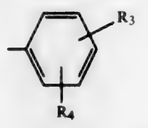
Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 1, 1982, Ser. No. 383,363
Int. Cl.[3] **A61K** *31/42, 31/535;* **C07D** *263/06, 265/06*
U.S. Cl. 424—248.51 **37 Claims**

1. A compound selected from the group consisting of those of the formula:



wherein m is the integer 2 or 3; n is the integer 1 or 2; R is hydrogen or methyl; R_1 is hydrogen or methyl; and R_2 is alkyl (C_1–C_6), ethenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-pyrrolyl, 3-pyrrolyl, 1-naphthyl, 2-naphthyl, pentafluorophenyl or moieties of the formula:



wherein R_3 and R_4 may be the same or different and are hydrogen, fluoro, chloro, bromo, hydroxy, methoxy, methyl, benzyloxy, cyano, amino, nitro or trifluoromethyl; and R_1 and R_2 taken together is alkylene (C_2–C_6); and the pharmacologically acceptable acid-addition salts thereof.

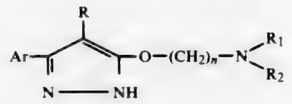
36. The method of inducing regression of leukemia and/or inhibiting growth of tumors in a mammal comprising administering to said mammal an effective amount of a compound selected from the group consisting of those of claim **1** or **2**.

4,410,525
ALKOXY PYRAZOLE DERIVATIVES AND COMPOSITIONS

Francois X. Jarreau, Versailles, and Jean-Jacques Koenig, Vernou La Celle sur Seine, both of France, assignors to Etablissements Nativelle S.A., Paris, France

Filed Sep. 29, 1982, Ser. No. 427,344
Claims priority, application France, Oct. 2, 1981, 81 18596
Int. Cl.[3] **A61K** *31/535, 31/415;* **C07D** *413/12, 231/20*
U.S. Cl. 424—248.57 **7 Claims**

1. A 3-aryl-5-alkoxy-pyrazole represented by general formula (I):



(I)

wherein Ar represents an aryl group which may be substituted; R represents a hydrogen atom or an alkyl, phenyl or benzyl group; R_1 and R_2, which may be the same or different, each represent a hydrogen atom or an alkyl group, or together form a 5 to 7 membered heterocyclic ring with the nitrogen atom to which they are attached; n is an integer of from 1 to 4; and the pharmaceutically acceptable acid salts thereof.

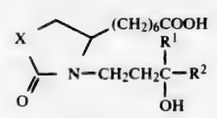
7. A pharmaceutical composition containing a therapeutically effective amount of 3-aryl-5-alkoxy-pyrazole or a pharmaceutically acceptabel salt thereof of claim **1**, **2**, **3**, **4**, **5** or **6**, and a pharmaceutically acceptable carrier or diluent.

4,410,526
OXAZOLIDIN-2-ONE PROSTAGLANDIN COMPOUNDS

Joseph M. Muchowski, Sunnyvale, Calif., and Angel Guzman, Mexico City, Mexico, assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 20, 1981, Ser. No. 323,152
Int. Cl.[3] **A61K** *31/42, 31/425;* **C07D** *263/22, 277/14*
U.S. Cl. 424—250 **11 Claims**

1. A compound of the formula



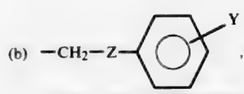
(I)

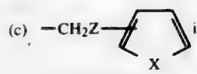
and the pharmaceutically acceptable, non-toxic salts and esters (alkyl, 1–6C) thereof, wherein:

X is O;

R^1 is selected from the group consisting of:

(a) alkyl(1–6C) or cycloalkyl of 3–8 carbons,

(b)  , in which Z is O, S or $-CH_2$, and Y is lower alkyl (1-4C), lower alkoxy (1-4C), halo, or $-CF_3$, and

(c)  in which Z and X are as herein defined; and

herein defined; and

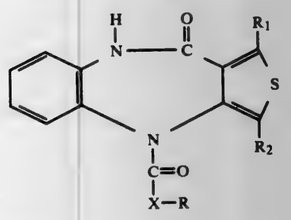
R^2 is hydrogen or methyl.

4,410,527
SUBSTITUTED THIENOBENZODIAZEPINONES AND SALTS THEREOF

Wolfhard Engel; Günther Schmidt; Wolfgang Eberlein, all of Biberach; Günter Trummlitz, Warthausen, all of Fed. Rep. of Germany; Rudolf Hammer, Milan, and Piero Del Soldato, Monza, both of Italy, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach an der Riss, Fed. Rep. of Germany

Filed Jan. 31, 1983, Ser. No. 462,182
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204169
Int. Cl.[3] **A61K** *31/55;* **C07D** *417/06*
U.S. Cl. 424—250 **8 Claims**

1. A compound of the formula



wherein
R is 1-methyl-4-piperidinyl, 4-methyl-1-piperazinyl, or 3α- or 3β-tropanyl, each of which may optionally have another methyl substituent attached to the heterocyclic ring;
R_1 is hydrogen or alkyl of 1 to 4 carbon atoms;
R_2 is hydrogen, halogen or alkyl of 1 to 4 carbon atoms; and
X is oxygen, —NH— or $—N(CH_3)—$; a geometric isomer or enantiomer thereof; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

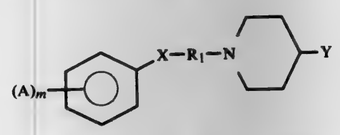
8. The method of inhibiting the formation of gastric ulcers in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective anti-ulcerogenic amount of a compound of claim **1**.

4,410,528
HYPOTENSIVE PIPERIDINE DERIVATIVES

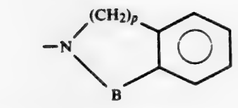
Masayuki Teranishi; Hiroyuki Obase; Nobuhiro Nakamizo, all of Machida, Japan; Kazuhiro Kubo, Berchem, Belgium, and Yutaka Kasuya, Kanagawa, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,810
Claims priority, application Japan, May 16, 1980, 55-65094; May 21, 1980, 55-66531; May 21, 1980, 55-66532; Aug. 22, 1980, 55-114759
Int. Cl.[3] **A61K** *31/505;* **C07D** *401/04*
U.S. Cl. 424—251 **4 Claims**

4. A pharmaceutical composition having hypotensive activity which comprises at least one pharmaceutically acceptable carrier and an effective amount of a compound represented by the formula:

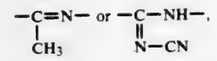


wherein A is lower alkoxy; m is 0 or an integer of 1–5, and when m is 2 or more, each A is the same group or each A is a different group and each A has the same definition as defined heretofore or two A groups may combine to form lower alkylenedioxy; X is carbonyl or hydroxymethylene; R_1 is a straight-chain alkylene having 1–4 carbon atoms with or without lower alkyl substituent(s); and Y is one of the following groups:

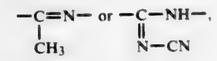


(1)

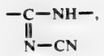
wherein p is 0 or 1, B is —N=N—,



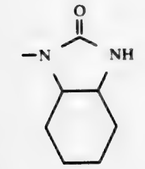
when p is 0, B is —N=N—,



and when p is 1, B is



and (2)



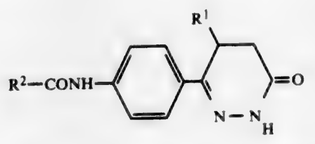
or a pharmacologically acceptable acid addition salt thereof.

4,410,529
NOVEL DIHYDROPYRIDAZINONES, THEIR PREPARATION AND THERAPEUTIC AGENTS CONTAINING THESE COMPOUNDS

Marco Thyes; Horst Koenig; Dieter Lenke, all of Ludwigshafen; Hans D. Lehmann, Hirschberg-Leutershausen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 12, 1981, Ser. No. 272,992
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1980, 3022176
Int. Cl.[3] **C07D** *237/04;* **A61K** *31/50*
U.S. Cl. 424—250 **3 Claims**

1. A 6-(p-acylaminophenyl)-4,5-dihydro-3(2H)-pyridazinone of the formula I



I

where R^1 is hydrogen or methyl, R^2 is unsubstituted cyclopropyl.

3. A process for treating high blood pressure and/or thrombotic diseases which comprises: orally administering to the subject to be treated a composition in dosage form comprising from 1 to 100 mg. of a compound of the formula I of claim **1** and a pharmacologically acceptable carrier or diluent.

4,410,530
2-(3-AMINO-2-HYDROXY-PROPOXY)-MONO-AND DIAZINES

Jörg Frei, Schönenbuch; Knut A. Jaeggi, Basel; Franz Ostsewrmayer, Riehen, and Herbert Schröter, Füllinsdorf, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

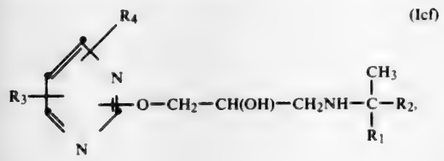
Continuation of Ser. No. 81,408, Oct. 3, 1979, abandoned, and a continuation-in-part of Ser. No. 883,434, Mar. 3, 1978, Pat. No. 4,195,090, which is a division of Ser. No. 757,529, Jan. 7, 1977, Pat. No. 4,115,575, which is a continuation of Ser. No. 590,363, Jun. 25, 1975, abandoned, which is a continuation-in-part of Ser. No. 442,711, Feb. 14, 1974, abandoned. This application May 22, 1981, Ser. No. 266,546

Claims priority, application Switzerland, Feb. 20, 1973, 21444/73

Int. Cl.[3] **C07D** *239/34, 241/18, 237/14;* **A01K** *31/505*

U.S. Cl. 424—251 **8 Claims**

1. A compound of the formula



(Icf)

wherein R_1 is hydrogen or methyl, R_2 is lower alkyl or phenyl-lower alkyl, R_3 is hydrogen, cyano, lower alkoxycarbonylamino-lower alkyl, R_4 is hydrogen, hydroxyl, lower alkyl, lower alkenyloxy, lower alkanoylamino, lower alkoxycarbonyl, lower alkoxy-lower alkyl, lower alkylthio-lower alkyl, di-(lower) alkyl)-amino, or lower alkylaminocarbonyl in the form of an isomer mixture, a pure racemate on optical antipode or a therapeutically usable acid addition salt thereof.

2. A pharmaceutical composition useful as β-receptor blocking agent in the treatment of angina pectoris, hypertonia or disturbances of the rhythm of the heart comprising a therapeutically effective amount of a compound of the formula (Icf) as claimed in claim 60, wherein R_1 and R_2 have the meanings given, R_3 and R_4 have the meanings given with the proviso, that, R_3 and R_4 are not both hydrogen and with the proviso that neither R_3 nor R_4 are hydroxyl or a therapeutically usable acid addition salt thereof together with a pharmaceutically usable excipient.

4,410,531
ENZYME DERIVED FROM HYALURONIDASE

Derek J. Pope, Milton Keynes, and Lily Baxendale, Arkley, both of England, assignors to Biorex Laboratories Limited, England

Filed Nov. 23, 1981, Ser. No. 323,990

Claims priority, application United Kingdom, Dec. 8, 1980, 8039310

Int. Cl.[3] **A61K** *37/48;* **C12N** *9/26*

U.S. Cl. 424—94 **9 Claims**

1. An enzyme which is an odorless, white powder, the pH of a 15000 to 22000 IU/ml. solution of which is carbon dioxide-free physiological saline solution suitable for injection is 4.5 to 7.5, the solution being clear and colorless; a solution of 50000 IU of which in 3 ml. carbon dioxide-free physiological saline solution suitable for injection has a light absorption of not more than 0.60 at 280 nm and of not more than 0.37 at 260 nm; the enzyme having the following percentage amino acid analysis:

Asp 11.1 ± 0.4;	Thr 5.8 ± 0.1;	Ser 6.4 ± 0.2;
Glu 9.1 ± 0.2;	Pro 5.0 + 0.5;	Gly 6.6 ± 0.2;
Ala 7.4 ± 0.1;	Val 7.9 + 0.5;	Met 0.8 ± 0.1;
Ile 5.2 ± 0.2;	Leu 10.9 + 0.2;	Tyr 4.4 ± 0.1;
Phe 4.5 ± 0.1;	His 2.8 + 0.2;	Lys 7.6 ± 0.4;

-continued

Arg 5.6 ± 0.1;

said enzyme having a total hexose content of 10.6+0.003%; said enzyme containing not more than 5 μg. albumin per 220000 KU of activity, said enzyme having a molecular weight of 62000 to 70000 determined by gel infiltration and said enzyme having a specific activity of at least 35000 IU/mg.

2. The enzyme according to claim 1, produced by a process which comprises:

subjecting crude hyaluronidase to an ammonium sulphate fractionation by adding ammonium sulphate to a buffered solution of crude hyaluronidase until the degree of ammonium sulphate saturation is about 50%, the precipitate obtained being discarded and the supernatant being adjusted to 70% ammonium sulphate saturation, the precipitate obtained being dialyzed and then applied to a cross-linked polyacrylic divinylbenzene resin, whereafter the resin is first washed with 0.1 M phosphate buffer and subsequently eluted with 0.3 M phosphate buffer, the eluate then being subjected to gel filtration through a cross-linked dextran gel which does not contain active carboxymethyl groups followed by isolation of the enzyme.

4,410,532
N-SUBSTITUTED AZIRIDINE-2-CARBOXYLIC ACID DERIVATIVES AND THEIR IMMUNO-STIMULATION COMPOSITIONS AND METHODS

Elmar Bosies, Weinheim; Herbert Berger, Mannheim; Wolfgang Kampe, Heddesheim; Uwe Bicker, Mannheim, and Alfred Grafe, Mörlenbach, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

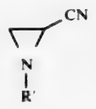
Continuation-in-part of Ser. No. 59,863, Jul. 23, 1979, Pat. No. 4,321,194. This application Dec. 28, 1981, Ser. No. 334,614

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2833986

Int. Cl.[3] **A61K** *31/44;* **C07D** *203/08, 213/36*

U.S. Cl. 424—251 **6 Claims**

1. A 2-cyanaziridine derivative of the formula



wherein

R′ is a straight-chained or branched, saturated or mono- or polyunsaturated aliphatic hydrocarbon radical with up to 8 carbon atoms, which is substituted by a pyridine or pyrimidine radical optionally substituted by halogen, alkoxy with up to 8 carbon atoms, alkyl with up to 8 carbon atoms, hydroxyl, carbalkoxy with up to 9 carbon atoms, carbamoyl, dialkylamino the alkyl moieties of which having up to 8 carbon atoms, cycloalkylamino, the cycloalkyl moiety having 3–10 carbon atoms, acetylamino, nitro, cyano, acetyl, alkylthio with up to 8 carbon atoms, alkylsulphinyl with up to 8 carbon atoms, alkylsulphonyl with up to 8 carbon atoms, sulphamoyl, phenyl, trifluoromethyl, phenoxy, acetoxy or methylenedioxy;

or a pharmacologically acceptable salt thereof.

5. A method of stimulating an immune response in a patient which comprises administering to the patient an immunostimulating effective amount of a 2-cyanaziridine derivative or salt thereof according to claim 1.

4,410,533
β-LACTAM ANTIBIOTICS, THEIR PREPARATION AND USE

Roger J. Ponsford, Horsham; Pamela Brown, Guildford, and Steven Coulton, Horsham, all of England, assignors to Beecham Group p.l.c., England

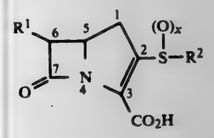
Filed Feb. 3, 1982, Ser. No. 345,485

Claims priority, application United Kingdom, Feb. 4, 1981, 8103348

Int. Cl.[3] **C07D** *487/04;* **A61K** *31/505*

U.S. Cl. 424—251 **10 Claims**

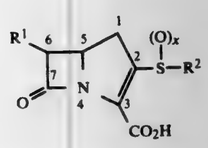
1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt or a pharmaceutically acceptable ester thereof that hydrolyzes in the human body to produce the free acid or salt wherein R^1 is hydrogen, α-sulphonato-oxyethyl. α-sulphonato-oxypropyl or is $CR^3R^4R^5$ wherein R^3 is hydrogen or hydroxy; R^4 is hydrogen or C_{1-6} alkyl; and R^5 is hydrogen or C_{1-6} alkyl, benzyl, or phenyl or is joined to R^4 to form together with the carbon atom to which they are joined a carbocyclic ring of 5 to 7 carbon atoms; R^2 is pyrimidinyl substituted by one, two or three groups selected from nitro, halo, amino, alkylamino of 1 to 6 carbon atoms in the alkyl moiety, alkylamido of 2 to 6 carbon atoms in the alkyl moiety, phenalkylamido wherein the alkyl moiety has 2 to 6 carbon atoms, phenoxyalkylamido wherein the alkyl moiety has 2 to 6 carbon atoms, and dialkylamino of 1 to 6 carbon atoms in each alkyl moiety, and in addition may be optionally substituted by one or two C_{1-6} alkyl as the degree of substitution permits; and x is zero or one.

9. A pharmaceutical composition useful for treating bacterial infections in mammals including humans which comprises an antibacterially effective amount of a compound of the formula (I):



(I)

a pharmaceutically acceptable salt thereof or a pharmaceutically acceptable ester thereof that hydrolyzes in the human body to produce the free acid or salt, wherein R^1 is hydrogen, α-sulphonato-oxyethyl, α-sulphonato-oxypropyl or a group of the formula $CR^3R^4R^5$ wherein R^3 is hydrogen or hydroxy, R^4 is hydrogen or alkyl of 1–6 carbon atoms; and R^5 is hydrogen, alkyl of 1–6 carbon atoms benzyl or phenyl, or R^5 is joined to R^4 to form together with the carbon atom to which they are attached a carbocyclic ring of 5–7 carbon atoms; R^2 is pyrimidinyl substituted by one, two or three members selected from the group consisting of nitro, halo, amino, alkylamino of 1–6 carbon atoms in the alkyl moiety, alkylamido of 2–6 carbon atoms in the alkyl moiety, phenylalkylamido wherein the alkyl moiety has 2–6 carbon atoms phenoxyalkylamido of 2–6 carbon atoms in the alkyl moiety and dialkylamino of 1–6 carbon atoms in each alkyl moiety, or by one, two or three of said substituents and by one or two alkyl moieties of 1–6 carbon atoms as the degree of substitution permits; and x is zero or one, in combination with a pharmaceutically acceptable carrier.

4,410,534
3-SUBSTITUTED-5,6,7,8-TETRAHYDROPYRROLO[1,2-a]-PYRIDINE-AND 6,7,8,9-TETRAHYDRO-5H-PYRROLO[1,2-a]-AZEPINE CARBOXYLIC ACID DERIVATIVES USEFUL AS BLOOD PLATELET AGGREGATION INHIBITORS

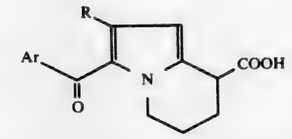
Joseph M. Muchowski, Sunnyvale, and Arthur F. Kluge, Los Altos, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 107,219, Dec. 26, 1979. This application Mar. 13, 1981, Ser. No. 243,322

Int. Cl.[3] **A61K** *31/44;* **C07D** *221/02*

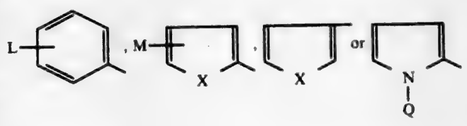
U.S. Cl. 424—263 **4 Claims**

1. A therapeutic composition having an inhibiting activity on blood platelet aggregation comprising, as active ingredient, an effective amount of a compound selected from the group of those represented by the formula:



and the pharmaceutically acceptable, non-toxic alkyl esters having from 1 to 12 carbon atoms and salts thereof, wherein

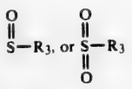
Ar is a radical selected from the group of those having the formula:



in which

X is selected from the group consisting of sulfur or oxygen,

L is selected from the group consisting of hydrogen, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 4 carbon atoms, Br, Cl, F, CF_3, CN, SR_3,



wherein R_3 is alkyl containing 1 to 4 carbon atoms

M is selected from the group consisting of hydrogen, methyl, Cl or Br,

Q is selected from the group consisting of hydrogen or alkyl containing 1 to 4 carbon atoms; and

R is selected from the group consisting of hydrogen, alkyl containing from 1 to 4 carbon atoms, Cl or Br, in admixture with a pharmaceutically acceptable excipient.

4,410,535
AZA-BICYCLO-BENZAMIDE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS AND USE THEREOF

Eric A. Watts, Harlow, England, assignor to Beecham Group Limited, England

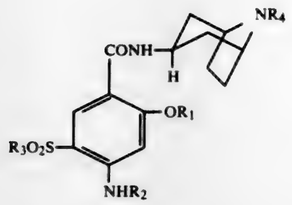
Filed Nov. 30, 1981, Ser. No. 325,978

Claims priority, application United Kingdom, Dec. 12, 1980, 8039823

Int. Cl.[3] **A61K** *31/46;* **C07D** *451/04*

U.S. Cl. 424—265 **8 Claims**

1. A compound of the formula (I) and pharmaceutically acceptable salts thereof:



(I)

wherein:

R_1 is C_{1-6} alkyl;

R_2 is hydrogen or C_{1-7} acyl;

R_3 is C_{1-6} alkyl;

R_4 is a group CH_2R_5 wherein R_5 is hydrogen, C_{3-8} cycloalkyl or phenyl optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-4} alkoxy, trifluoromethyl and halogen.

8. A method of treatment of animals including humans suffering from emesis and/or disorders related to impaired gastrointestinal motility, comprising the administration to the sufferer of an effective amount of a compound according to claim **1** or a pharmaceutically acceptable salt thereof.

4,410,536

7,8,9,10-TETRAHYDROTHIENO[3,2-e]PYRIDO[4,3-b]INDOLE COMPOUNDS AND THEIR ANTI-DEPRESSANT USE

Karl-Heinz Boltze, Bergisch-Gladbach; Peter-Rudolf Seidel, Cologne; Haireddin Jacobi, Leichlingen; Helmut H. Schwarz, Bergisch-Gladbach; Günter Schöllnhammer, Bergisch-Gladbach, and Hans-Dieter Dell, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. K.G., Cologne, Fed. Rep. of Germany

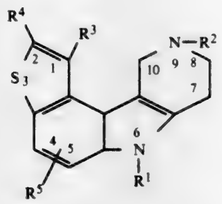
Continuation of Ser. No. 97,094, Nov. 23, 1979, abandoned. This application Apr. 27, 1981, Ser. No. 258,174

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1978, 2854014

Int. Cl.[3] **C07D** *471/22;* **A61K** *31/44, 31/495, 31/54*

U.S. Cl. 424—267 **24 Claims**

1. A 7,8,9,10-tetrahydrothieno pyrido indoles of the formula



(I)

a C_1–C_4-alkyl quaternary ammonium halide or hydroxyalkyl halide thereof, or an acid or base addition salt thereof, in which

R^1 R^2 and R^3 are identical or different and each denotes a hydrogen atom, a straight-chain or branched alkyl, alkenyl or alkinyl group each having up to 12 carbon atoms and in which one CH_2 group is optionally replaced by an oxygen atom or an unsubstituted or C_1–C_4-alkyl-substituted nitrogen atom and in which one hydrogen atom is optionally replaced by halogen or hydroxy, denotes a mono-or bi-cyclic carbocyclic aryl or ar-C_1–C_2-alkyl group, in which the aryl ring is optionally substituted by 1 or 2 lower alkyl or alkoxy, halogen, hydroxyl groups or one trifluoromethyl group, denotes a C_3–C_6-cycloalkyl or C_3–C_6-cycloalkyl-C_1–C_3-alkyl group, in which the cycloalkyl radical is optionally substituted by lower alkyl or halogen, denotes a mono-or bi-cyclic carbocyclic aryloxyalkyl, in which the aryl radical is optionally substituted by 1 or 2 lower alkyl or alkoxy, hydroxyl or halogen, denotes a mono-or bi-cyclic carbocyclic aroylalkyl group, in which the aroyl group is optionally substituted by 1 or 2 lower alkyl or alkoxy or by halogen atoms, denotes a heterocyclic or heterocycloalkyl group which is a member selected from the group consisting of piperidino-ethyl pyrrolidinopropyl, morphilinopropyl, thiomorpholinopropyl, morpholinobutyl, morpholinopentyl, piperazinoethyl, piperazinopropyl, piperazinobutyl and 4-piperidyl, which is optionally substituted by a lower alkyl group, an unsubstituted or substituted mono- or bi-cyclic carbocyclic aryl or aralkyl group in which the substituents on the aryl portion are halogen, methyl or methoxy, denote a carboxyl or optionally esterified carboxyl group, the ester radicals being straight-chain or branched C_1–C_6 alkyl group in which one hydrogen atom is optionally replaced by phenyl, hydroxyl, C_1–C_{12}-alkoxy, amino or lower C_1–C_{12}-alkylamino or di-C_1–C_{12}-alkylamino, denotes a carboxamide grouping, in which the nitrogen atom is optionally substituted by lower alkyl groups,

R^4 denotes a hydrogen atom, a lower alkyl group, an aryl group which is unsubstituted or substituted by one or two methyl or ethyl groups, halogen atoms or methoxy groups, or R^4 is a carboxyl group, a carboxyl group esterified by a lower alkyl or aralkyl, or an optionally substituted carboxamide group selected from the group consisting of an aminocarbonyl, methyl- or dimethyl-amino-carbonyl, ethyl- or diethyl-aminocarbonyl, phenylaminocarbonyl, benzylaminocarbonyl or cycloalkylaminocarbonyl group, the cycloalkyl ring containing 3 to 6 ring members and

R^5 denotes a hydrogen or halogen atom or a lower alkyl group or an alkoxy group.

13. A pharmaceutical composition containing as an active ingredient an anti-depressively effective amount of a compound according to claim **1** in admixture with a solid, liquid or liquefied pharmaceutically acceptable diluent.

4,410,537

PHARMACEUTICAL ETHERS

Geoffrey Kneen, Bromley, England, assignor to Burroughts Wellcome Co., Research Triangle Park, N.C.

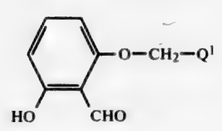
Continuation of Ser. No. 163,589, Jun. 27, 1980, abandoned. This application Jun. 9, 1981, Ser. No. 271,950

Claims priority, application United Kingdom, Jun. 29, 1979, 7922781

Int. Cl.[3] **A61K** *31/41, 31/275;* **C07C** *121/75;* **C07D** *257/04*

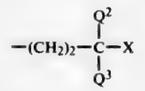
U.S. Cl. 424—269 **58 Claims**

1. A compound of formula (I)

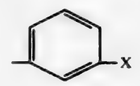


(I)

wherein Q^1 is selected from

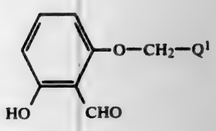


and



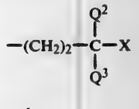
where Q^2 and Q^3 are independently selected from hydrogen and alkyl of 1 to 4 carbon atoms, and X is selected from cyano, carboxyl and 5-tetrazolyl; salts thereof and, when X is carboxyl, esters and amides thereof,

28. A pharmaceutical formulation comprising a compound of formula (I)

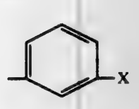


(I)

wherein Q^1 is selected from



and



where Q^2 and Q^3 are independently selected from hydrogen and alkyl of 1 to 4 carbon atoms, and X is selected from cyano, carboxyl and 5-tetrazolyl, a pharmacologically acceptable salt thereof or, when X is carboxyl, an ester or an amide thereof, together with an acceptable carrier therefor.

4,410,538

N-DISUBSTITUTED ANILINE DERIVATIVES, THEIR PREPARATION, THEIR USE AS MICROBICIDES AND AGENTS FOR SUCH USE

Gerhard Hamprecht, Weinheim; Eberhard Ammermann, Ludwigshafen; Ernst-Heinrich Pommer, Limburgerhof, and Peter Plath, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

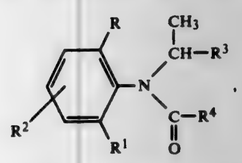
Filed Jul. 28, 1981, Ser. No. 287,684

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1980, 3030736

Int. Cl.[3] **C07D** *285/06;* **A01N** *43/82*

U.S. Cl. 424—270 **7 Claims**

1. An N-disubstituted aniline derivative of the formula



I

where R is C_1–C_4-alkyl, C_1–C_4-alkoxy, C_2–C_4-alkoxyalkyl or halogen, R^1 is C_1–C_4-alkyl or halogen, R^2 is hydrogen, C_1–C_4-alkyl or halogen, R^3 is $CH[OR^5]_2$, $COOR^5$ or $COSR^5$, R^5 being C_1–C_4-alkyl, and R^4 is unsubstituted or methyl-, nitro- or halogen-substituted 1,2,3-thiadiazol-4-yl.

5. A microbicidal agent comprising at least one N-disubstituted aniline derivative of the formula I as defined in claim **1** and a solid or liquid carrier.

4,410,539

HETEROCYCLIC THROMBOXANE SYNTHETASE INHIBITORS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Peter E. Cross, Canterbury; Roger P. Dickinson, Dover, and Geoffrey N. Thomas, Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

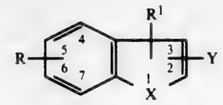
Filed Oct. 20, 1981, Ser. No. 313,121

Claims priority, application United Kingdom, Oct. 23, 1980, 8034198

Int. Cl.[3] **A61K** *31/415;* **C07D** *405/06, 409/06, 403/06*

U.S. Cl. 424—273 R **10 Claims**

1. A compound of the formula:



(I)

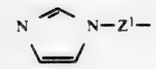
wherein

R^1, which is attached to the 2-, 3- or 4-position, is hydrogen, halogen, C_1–C_4 alkyl, hydroxy, or C_1–C_4 alkoxy;

Y, which is attached to the 2- or 3-position, is —COOH, —COO(C_1–C_4alkyl) or —$CONH_2$;

X is O, S, NH or N(benzyl); and

R, which is attached to the 5-, 6- or 7-position, is a group of the formula:



wherein Z^1 is —CH_2—, —CH_2CH_2— or —CH_2CH_2O—; or a pharmaceutically acceptable salt thereof.

10. A method for treating an animal having a condition characterized by an imbalance of the prostacyclin:thromboxane A_2 ratio which comprises administering to said animal a sufficient amount of a compound according to claim **1** restore the prostacyclin:thromboxane A_2 balance in said animal.

4,410,540

CARDIOTONIC 4-AROYLIMIDAZOLIDIN-2-ONES

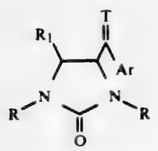
Richard A. Schnettler; Richard C. Dage, both of Cincinnati, Ohio, and J. Martin Grisar, Strasbourg, France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 4, 1981, Ser. No. 317,963

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **5 Claims**

1. A method for the treatment of a condition requiring the strengthening of heart action in a patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of the structure



wherein Ar is furanyl, thienyl, 1H-pyrrolyl, phenyl, monosubstituted phenyl substituted at the ortho, meta or para position with X_1, or disubstituted phenyl substituted at the ortho, meta or para position with X_2 and substituted at the meta or para position with X_3; X_1 is halogen, hydroxy, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfoxide, lower alkylsulfone, trifluoromethyl, —$SO_2N(R_2)_2$, NR_3R_4, pyrrolidino, piperidino, morpholino, piperazino or N′-alkyl-piperazino; X_2

and X_3 are each halogen, hydroxy, lower alkyl, lower alkoxy or when X_2 and X_3 are substituted on adjacent carbon atoms of the phenyl ring together they may form a methylenedioxy; R is hydrogen, lower alkyl, lower alkylcarbonyl, or benzoyl; each of R_1, R_2, R_3 and R_4 is hydrogen or lower alkyl; T is an oxygen atom or a divalent sulfur atom; or a pharmaceutically acceptable salt thereof.

4,410,541

COMPOSITE FOR IMPROVING LIPID METABOLISM

Hiroshi Kamimae, Yokohama, and Tadashi Ishikawa, Sagamihara, both of Japan, assignors to Nihon Nosan Kogyo K.K., Yokohama, Japan

Filed Feb. 22, 1982, Ser. No. 351,177

Claims priority, application Japan, Mar. 2, 1981, 56-028482

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **3 Claims**

1. A method for increasing the constitution ratio of haematic high-density lipoprotein, increasing lipoprotein lipase activity, and decreasing plasma triglyceride, which comprises dosing humans with an egg product containing monoiodohistidine, wherein the amount of monoiodohistidine comprises 200 to 2,000 μg per day for at least a month.

4,410,542

DISULFIDE COMPOUNDS

Jun-ichi Iwao, Takarazuka; Masayuki Oya, Ibaraki, and Tadashi Iso, Tondabayashi, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

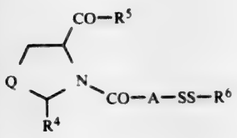
Division of Ser. No. 104,970, Dec. 18, 1979, Pat. No. 4,347,371. This application Sep. 11, 1980, Ser. No. 186,271

Claims priority, application Japan, Dec. 30, 1978, 53-163964; Jan. 29, 1979, 54-009392; Mar. 17, 1979, 54-031334; Jun. 26, 1979, 54-081043; Jul. 3, 1979, 54-084837

Int. Cl.³ C07D *207/16;* **A61K** *31/40*

U.S. Cl. 424—274 **14 Claims**

1. A compound of the formula



wherein

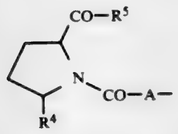
Q is methylene;

A is alkylene having 1 to 3 carbon atoms;

R^4 is phenyl, substituted phenyl wherein the substituent is lower alkyl, hydroxy, alkoxy, lower alkanoyloxy, benzoyloxy or benzyloxycarbonyloxy;

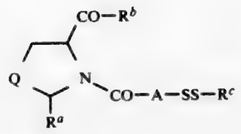
R^5 is hydroxy, lower alkoxy, amino, phenoxy, substituted lower alkoxy wherein the substituent is phthalimido or lower alkanoyloxy;

R^6 is alkyl having 1 to 10 carbon atoms, lower alkenyl, tetrahydrofuryl-lower alkyl,



or substituted lower alkyl wherein the substituents are 1 to 2 groups independently selected from carboxy, carbamoyl, amino, lower alkanoylamino, benzoylamino and benzyloxycarbonylamino.

2. A compound of the formula



wherein

Q is methylene;

R^a is lower alkyl;

R^b is R^{14}, or R^{17};

R^c is R^{15}, or R^{18};

and when

R^b is R^{14}, R^c is R^{15}; and when R^b is R^{17}, R^c is R^{18};

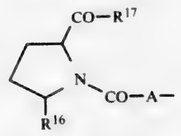
A is alkylene having 1 to 3 carbon atoms;

R^{14} is hydroxy, amino or lower alkoxy;

R^{15} is alkyl having 8 to 10 carbon atoms, lower alkenyl, tetrahydrofuryl-lower alkyl, phenyl-lower alkyl, substituted lower alkyl wherein the substituent is carboxy or carbamoyl;

R^{17} is phenoxy or substituted lower alkoxy wherein the substituent is hydroxy, succinimido, maleimido, phthalimido or lower alkanoyloxy;

R^{18} is alkyl having 1 to 10 carbon atoms, lower alkenyl, tetrahydrofuryl-lower alkyl or



R^{16} is hydrogen or lower alkyl.

11. A pharmaceutical composition for treating a person having high blood pressure comprising a compound as claimed in claim 1 in an amount sufficient to reduce blood pressure, and at least one pharmaceutically acceptable excipient.

4,410,543

CARBOXYLATED OXIME-CARBAMATES AND THEIR USE IN CONTROLLING PESTS

Jozef Drabek, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

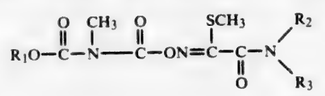
Filed Mar. 19, 1982, Ser. No. 360,024

Claims priority, application Switzerland, Mar. 26, 1981, 2073/81; Jan. 8, 1982, 100/82

Int. Cl.³ A01N *47/22;* **C07D** *307/86;* **C07C** *153/00*

U.S. Cl. 424—278 **10 Claims**

1. A carboxylated oxime-carbamate of the formula



in which

R_1 represents phenyl, naphthyl or dihydrobenzofuranyl, optionally substituted by halogen, dioxolanyl, dioxanyl, C_1–C_6-alkyl, C_2–C_6-alkenyl, C_2–C_6-alkynyl, C_1–C_6 alkoxy or C_1–C_6-alkylthio, the alkyl, alkenyl, alkynyl, alkoxy and alkylthio groups themselves optionally substituted by halogen or C_1–C_6-alkoxy, and

R_2 and R_3 independently of one another represent hydrogen or C_1–C_4-alkyl.

10. A method of combatting pests of the class Insecta or of the order Acarina at a locus, which method comprises applying to the locus an insecticidally or acaricidally effective amount of a compound as claimed in claim 1.

4,410,544

PLATINUM-DIAMINE COMPLEXES, A METHOD FOR THE PREPARATION OF A MEDICINE USING SUCH A PLATINUM-DIAMINE COMPLEX FOR THE TREATMENT OF MALIGNANT TUMOR IN MICE

Jan Berg, Nieuwegein; Francois Verbeek, Harmelen, and Eric J. Bluten, Blaricum, all of Netherlands, assignors to Nederlandse Centrale Organisatie voor Toegespastnatuurwetenschappeliukonderzoek, Juliana van Stolberglaan, Netherlands

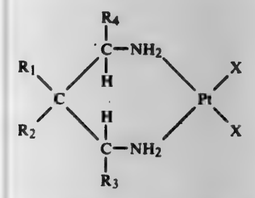
Continuation-in-part of Ser. No. 54,891, Jul. 5, 1979, abandoned. This application Jul. 27, 1981, Ser. No. 287,531

Claims priority, application Netherlands, Jul. 6, 1978, 7807334

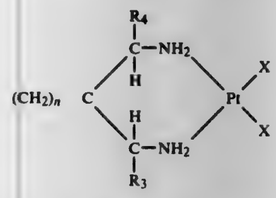
Int. Cl.³ C07F *15/00;* **A61K** *31/28*

U.S. Cl. 424—287 **29 Claims**

1. Platinum-diamine complexes having the formula:



wherein R_1 and R_2 independently of each other may be selected from the group consisting of hydrogen, an alkyl group having 1–20 carbon atoms, a cycloalkyl group having from 3–7 carbon atoms in the ring, an aralkyl group, and an aryl group having 1–20 carbon atoms, whereas R_1 and R_2 together may form a cycloalkyl group having 3–7 carbon atoms in the ring and having the formula:



wherein n is 2 to 7 and wherein R_3 and R_4 independently of each other are selected from the group consisting of hydrogen, an alkyl group having 1–20 carbon atoms, an aryl group or an aralkyl group having 1–20 carbon atoms in the alkyl group and X is an anionic group, providing that when X is either chlorine or malonato, R_1, R_2, R_3 and R_4 are not each H; when X is chlorine and R_1 and R_2 are each H, R_3 and R_4 are not each methyl; when X is chlorine and R_1 and R_2 are each methyl; R_3 and R_4 are not each H, and when X is chlorine R_1 is hydrogen and R_2 is methyl, R_3 and R_4 are not each hydrogen.

4,410,545

CARBONATE DIESTER SOLUTIONS OF PGE-TYPE COMPOUNDS

Cheng-Der Yu, Mountain View, and Ursula Bruenner, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

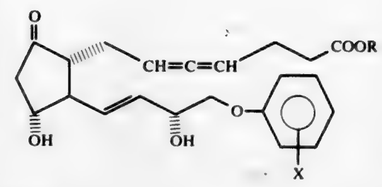
Continuation of Ser. No. 234,240, Feb. 13, 1981, Pat. No. 4,328,245. This application May 10, 1982, Ser. No. 376,353

The portion of the term of this patent subsequent to May 4, 1999, has been disclaimed.

Int. Cl.³ A61K *31/215, 31/19*

U.S. Cl. 424—305 **4 Claims**

1. A stable pharmaceutical composition of a PGE-type compound having the following formula:



(d1)

wherein:

R is hydrogen, a lower alkyl group of 1 to 4 carbon atoms, or the pharmaceutically acceptable, non-toxic salts of compounds in which R is hydrogen; and

X is hydrogen, o-, m- or p-halo, o, m- or p-methyl or o-, m- or p-methoxy comprising a solution of said compound in propylene carbonate which may contain water in an amount up to the solubility limit of water for propylene carbonate.

4,410,546

ANTIALLERGIC COMPOSITIONS

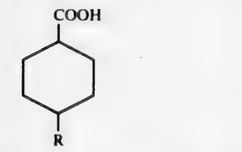
Kanji Noda, Chikushino; Akira Nakagawa, Tosu; Munehiko Hirano, Tosu; Kenji Yamagata, Tosu; Yoichi Nakashima, Tachiaraimachi; Terumi Hachiya, Chiyodamachi; Hiroyuki Ide, Fukuoka, and Akihide Koda, Gifu, all of Japan, assignors to Hisamitsu Pharmaceutical Co., Inc., Tosu, Japan

Filed May 5, 1981, Ser. No. 260,580

Int. Cl.³ A61K *31/19*

U.S. Cl. 424—317 **2 Claims**

1. An antiallergic composition comprising as a daily dose of the effective ingredient, 50–900 mg of a compound in the trans form represented by the following general formula (I)



(I)

wherein R is n-butyl group or n-pentyl group, and a carrier material for mixing with the effective ingredient, said carrier material being at least one member selected from the group consisting of glucose, saccharose, lactose, millet jelly, honey, methylcellulose, hydroxypropylcellulose, corn starch, potato starch, gum arabic, tragacanth gum, powdered glycyrrhiza, rude extract of glycyrrhiza, powdered gentian, extract of gentian, dry yeast, extract of yeast, gelatine, powdered agar-agar, propylene glycol, glycerine, polyvinylpyrrolidone, sorbitol, suspending agents, emulsifiers, surfactants, calcium stearate, magnesium stearate, methyl p-oxybenzoate, silicon, talc, crystalline cellulose, carboxymethylcellulose and sodium alginate.

4,410,547

SORBIC ACID-CONTAINING POWDER OR GRANULES

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami, and Shigeo Inamine, Kobe, all of Japan, assignors to Kabushiki Kaisha Vend Seiyako Oyo Kenkyujo, Osaka, Japan

Division of Ser. No. 9,348, Feb. 5, 1979, Pat. No. 4,308,281, which is a continuation of Ser. No. 848,667, Nov. 4, 1977, Pat. No. 4,172,897. This application Aug. 6, 1981, Ser. No. 290,595

Claims priority, application Japan, Mar. 17, 1977, 52/28592

Int. Cl.³ A61K *31/19;* **A23L** *3/34*

U.S. Cl. 424—317 **8 Claims**

1. A readily water-soluble food preservative additive powder or granule composition consisting essentially of 5 to 90% by weight of finely divided sorbic acid having a particle diame-

ter of 50μ or less, and 10 to 95% by weight of a normally solid water-soluble sugar alcohol and wherein said powder granules have a particle diameter of 300μ or more.

4,410,548

PROPANOLAMINE DERIVATIVES

Andrew J. G. Baxter, Shepshed, and Malcolm Myers, Hull, both of England, assignors to Reckitt & Colman Products Limited, London, England

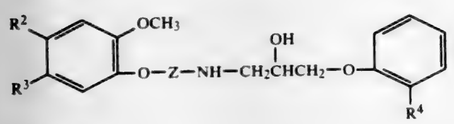
Filed Jun. 26, 1981, Ser. No. 277,610

Claims priority, application United Kingdom, Jul. 9, 1980, 8022464

Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **10 Claims**

1. A compound of the formula:



II

wherein

R^2 is CH_3SO or CH_3SO_2;

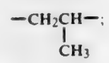
R^3 is hydrogen, methyl or methoxy; or

R^2 and R^3 are together $—S(O)_m(CH_2)_4—$ when S is attached at R^2 or

$—(CH_2)_nS(O)_m—$ when S is attached at R^3 (where m=1 or 2 and n=3 or 4);

R^4 is hydrogen or alkyl C_{1-4};

Z is $—(CH_2)_2—$ or



and their non-toxic salts.

4,410,549

PREPARATION OF A LOW CALORIE, LOW FAT FRUIT-CONTAINING YOGURT

Donald B. Baker, Tulsa, Okla., assignor to The Pro-Mark Companies, Tulsa, Okla.

Continuation-in-part of Ser. No. 272,350, Jun. 10, 1981, abandoned, which is a continuation of Ser. No. 80,151, Sep. 28, 1979, abandoned. This application Nov. 10, 1981, Ser. No. 319,891

Int. Cl.³ A23C *9/123, 9/133*

U.S. Cl. 426—43 **10 Claims**

1. A method for making less than 1% by weight total carbohydrate, less than about 0.2% by weight fat, low calorie yogurt product containing fruit in an amount from 15 to 20% by weight of the yogurt product, said method comprising the steps of:

(a) admixing pasteurized skim milk having a fat content of less than about 0.2% by weight, stabilizers and an amount of nonfat dry milk solids effective to improve texture and flavor, said nonfat dry milk solids being derived from a process in which condensed skim milk is subjected to non-coagulative direct steam heating prior to spray drying;

(b) heating said mixture to a temperature in the range from about 190° to 195° F. (87.7° to 90.6° C.) for a time sufficient to form a uniform, substantially homogeneous mixture and to effect pasteurization;

(c) homogenizing said pasteurized mixture at pressures in the range 500 to 5000 psig (35.15 to 351.5 kg/cm^2);

(d) cooling said homogenized mixture to a temperature of about 90° to 120° F. (32.3° to 48.9° C.);

(e) innoculating said cooled homogenized mixture with a lactic acid producing bacterial yogurt culture mixture consisting essentially of, by weight, 30–50% *Lactobacillus acidophilus*, balance *Lactobacillus bulgaricus* and *Streptococcus thermophilus* in approximately equal proportions;

(f) maintaining said innoculated mixture at a temperature of about 90° to 120° F. (32.2° to 48.9° C.) for a time sufficient to produce a pH in the range of about 3.8 to 4.8 and to form an acceptable taste and texture in said innoculated mixture;

(g) cooling said innoculated mixture to a temperature in the range 50° to 75° F. (10° to 23.9° C.);

(h) forming said cooled innoculated mixture into a smooth textured product;

(i) blending said smooth textured product with low calorie fruit preserves, said low calorie fruit preserves comprising about 40% to 50% by weight of fruit and a syrup for said fruit, said syrup including invert sugar containing at least 36% by weight fructose, said low calorie fruit preserves containing not more than 825 calories per pound (1817 calories per kilogram) thereof; and

(j) cooling said blend of fruit preserves and smooth textured product to a temperature sufficiently low to stop fermentation.

4,410,550

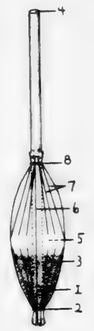
APPARATUS AND METHOD FOR MAKING A BEVERAGE

Paul C. Gaskill, R.D. 1, Box 426, Dilliner, Pa. 15327

Continuation-in-part of Ser. No. 254,859, Apr. 16, 1981, abandoned. This application Apr. 6, 1982, Ser. No. 366,052

Int. Cl.³ A23F *3/18, 5/26*; B65D *33/01*

U.S. Cl. 426—80 **6 Claims**



2. A beverage making infusion device to mix by air agitation an infusible beverage substance with a potable liquid, comprising: a hollow conduit dimensioned to be hand held, a mixing chamber of liquid porous material secured to the conduit and either containing or being adjacent an air exit passage of the conduit, the chamber being partially filled with an infusible beverage substance accumulated and covering the exit passage, and an opening in the conduit at one end of the conduit opposite from said chamber, said opening dimensioned to allow the opening to be received by a human mouth and to admit air blown by mouth and under pressure, and the exit passage allowing fluid communication between the conduit and the chamber to allow air under pressure to exit the conduit, diffuse through and against the infusible substance and to agitate the infusible substance together with a potable liquid that is in the chamber and permitted to pass through the porous material.

4,410,551

GRAVY FORMING INTERMEDIATE MOISTURE PET FOOD

Daniel K. Comer, Creve Coeur, Mo., assignor to Ralston Purina Company, St. Louis, Mo.

Continuation of Ser. No. 150,272, May 15, 1980, abandoned. This application Dec. 17, 1982, Ser. No. 450,843

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—99 **23 Claims**

1. An intermediate moisture pet food comprising a microbiologically stabilized proteinaceous-farinaceous mixture having about 15–55% by weight of moisture, coated with about 0.25–10% by weight of particles of a fat encapsulated gravy forming material, said particles being resistant to moisture penetration during storage but producing a gravy upon the addition of an aqueous liquid to the pet food, said particles containing from about 20% to about 60% by weight fat.

4,410,552

COMPOSITE CONFECTION

Bernard J. Gaffney, Mohnton, Pa., and Terence W. Richardson, Oakland, Calif., assignors to Godiva Chocolatier, Inc., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,497

Claims priority, application PCT Int'l Appl., Aug. 13, 1981, US81/01082

Int. Cl.³ A23G *9/00*

U.S. Cl. 426—103 **7 Claims**

1. A chocolate confectionary product having enhanced mouth feel and taste properties comprising an outer chocolate coating surrounding a composite center, said composite center having a core of semiplastic confection having a density of from about 1.0 to about 1.25 g/cm^3, said core being substantially coated with an expanded fat-based jacket having a density of from about 0.2 to 1.0 g/cm^3 wherein said jacket is a mixture comprising from about 15 to about 40% by weight of an edible fat component, said fat component comprising at least one fat which is solid at room temperature, from about 20 to about 60% by weight of a sugar component, from about 0.1 to about 10% by weight of a colloid and from about 6 to about 20% by weight of water, and wherein said core exhibits relatively intense flavor characteristics and said jacket exhibits relatively less intense flavor characteristics as compared to said core whereby the interface between said core and said jacket provides a significant contrast in mouth feel and taste properties which can be perceived by a consumer of said confectionary product.

4,410,553

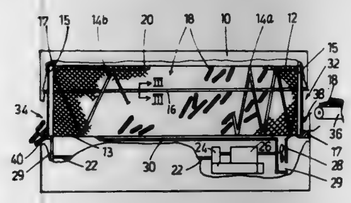
METHOD AND APPARATUS FOR COOKING PARTICULATE FOODSTUFFS

James McGinty, 107 Ferguson St., Palmerston North, New Zealand

Filed Aug. 28, 1981, Ser. No. 297,101

Int. Cl.³ A23L *1/00*; A47J *27/026*

U.S. Cl. 426—243 **7 Claims**



1. A method of continuously cooking particulate foodstuffs comprising feeding the foodstuff into an elongate receptacle at a feed end thereof, providing helical conveying means in said receptacle having a lesser pitch at said feed end than at a discharge end of said receptacle, conveying the foodstuff through said receptacle and adjacent a source of radiant heat within said receptacle for cooking the foodstuff as it progresses through said receptacle, causing the foodstuff to cascade as it progresses through said receptacle, whereby the foodstuff is moved through said receptacle more slowly and thereby cooked more quickly near said feed end, and moved more quickly and thereby cooked more slowly near said discharge end.

4,410,554

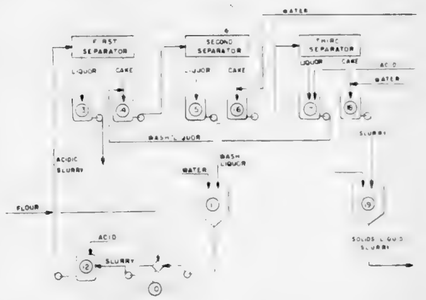
SOY PROTEIN PRODUCT AND PROCESS

Donald E. Sailer, Fort Wayne, Ind., assignor to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Nov. 12, 1981, Ser. No. 320,295

Int. Cl.³ A23J *1/14*

U.S. Cl. 426—302 **7 Claims**



1. A process for preparing a novel soy protein concentrate having functional properties normally associated with soy protein isolate comprising

aqueous acid leaching a slurry of finely divided soy flour having a Nitrogen Solubility Index of from about 65 to about 75 percent with a member selected from the class consisting of hydrochloric acid and phosphoric acid and in the absence of sulfur dioxide and the salts of sulfurous acid and at a temperature in the range of about 60° to about 90° F., the water-flour ratio during said acid leaching being in the range of about 5:1 to about 10:1 on a volume-weight basis while limiting the time said flour is in slurry including any washing subsequent to initial separation to less than about one hour, the pH during leaching being in the range of about 4.4 to about 4.6,

separating the undissolved solids from said slurry to provide a wet cake of concentrate,

neutralizing said cake once the same has a solids content in the range of about 10% to about 16% with a member selected from the class consisting of sodium hydroxide and potassium hydroxide to a pH in the range of about 6.5 to about 7.5,

pasteurizing the neutralized cake at a relatively low temperature, and

drying said cake at a restricted temperature to provide a product having a Nitrogen Solubility Index of at least about 70%, a heat gelability to provide a viscosity of at least about 5,000 poise, with the voscosity level maintained when a heat-formed gel of the concentrate is in the presence of 3% sodium chloride, a water holding ability of at least about 5 grams of bound water per gram of bound sample, and frying losses below about 12% of meat emulsified with said concentrate.

4,410,555

EXPANDED FOOD PRODUCTS

Terence W. Richardson, Oakland, Calif., assignor to Godiva Chocolatier, Inc., New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,498

Claims priority, application PCT Int'l Appl., Aug. 13, 1981, US81/01082

Int. Cl.³ A23G *9/00*

U.S. Cl. 426—572 **5 Claims**

1. A process for making a stable expanded homogenous confectionary product having a soft light aerated creamy structure, a density of from about 0.2 to 1.0 g/cm³ and comprising from about 15 to about 40% by weight of an edible fat component, said fat component comprising at least one fat which is solid at room temperature, from about 20 to about 60% by weight of a sugar component, from about 6 to about 20% by weight of water and from about 0.1 to about 10% by weight of a colloid said process comprising the steps of

(a) providing a low-cooked sugar syrup;

(b) forming a stable whipped aerated material from said sugar syrup;

(c) separately forming a stable whipped aerated material from a fat component having sufficient plasticity to whip but sufficient room temperature crystallinity to give the product body; and

(d) mixing together the stable aerated material of steps (b) and (c) to form an homogenous stable expanded product.

4,410,556

POWDERED TEA EXTRACT

Tito-Livio Lunder, and Corine-Madeleine Nielsen, both of Lausanne, Switzerland, assignors to Societe d'Assistance Technique Pour Produits Nestle S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 272,669, Jun. 11, 1981, abandoned. This application Oct. 13, 1981, Ser. No. 310,743

Int. Cl.³ A23F *3/16*

U.S. Cl. 426—597 **12 Claims**

1. A process for preparing a powdered tea extract which is readily soluble in cold water comprising:

(a) extracting tea leaves selected from the group consisting of black teas and their blends and caffeine-bearing tea-like leaves and their blends for at least one minute at ambient temperature with an aqueous medium containing, based on the weight of the tea leaves, from 1 to 25% of a food-acceptable aliphatic di- or tri- carboxylic acid or from 0.25 to 10% of a corresponding food-acceptable salt or a mixture thereof containing at least 1% of the acid or at least 0.25% of the salt to obtain a first extract;

(b) separating the first extract from the extracted tea leaves;

(c) extracting the extracted tea leaves for at least one minute at a temperature of at least 60° C. with an aqueous medium in the absence of said carboxylic acid or its salts to form a second extract;

(d) separating the second extract from the twice extracted tea leaves;

(e) combining the first and second extracts and drying the combined extracts.

4,410,557

REARRANGED TRIGLYCERIDES AND PROCESS FOR MAKING SAME

Donald E. Miller, Strongsville, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 332,670

Int. Cl.³ A23D *5/00*

U.S. Cl. 426—607 **10 Claims**

1. A process for making a hard butter of enhanced palatability, having a Wiley Melting Point in the range of 84° to 120° F., and an SFI at 100° F. less than 7 comprising blending first and second solvent derived fat fractions in a weight proportion of 20:80 to 80:20, and rearranging said blend, said first fat fraction being a normally liquid lauric residual fraction from a predominantly C_{12}/C_{14} high lauric content edible oil substantially free of combined fat-forming acids in a trans configuration, having a lauric content of about 40–55% and a combined lauric and myristic content of about 65–88%, and said second fat fraction being a stearine fraction from an edible selectively hydrogenated and elaidenized preponderantly C_{16}/C_{18} edible vegetable fat having from about 20–50% of its combined fat forming acids in a trans configuration, said vegetable fat being soybean oil derived, cottonseed oil derived, or blend thereof, hydrogenated to an IV of about 50–70.

4,410,558

CONTINUOUS AMORPHOUS SOLAR CELL PRODUCTION SYSTEM

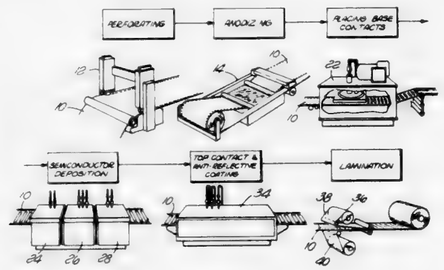
Masatsugu Izu, Birmingham; Vincent D. Cannella, Detroit, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 151,301, May 19, 1980. This application Mar. 16, 1981, Ser. No. 240,493

The portion of the term of this patent subsequent to May 19, 2000, has been disclaimed.

Int. Cl.³ H01L *31/04*

U.S. Cl. 427—39 **21 Claims**



1. A method of continuously producing photovoltaic devices of amorphous silicon comprising the steps of: anodizing an insulator layer on an elongated planar strip of aluminum substrate; placing a series of spaced base contacts on the anodized surface; providing a plurality of glow discharge plasmas, each of said plasmas being of a preselected character; providing a flow of gas to isolate plasmas of differing character; advancing said substrate through said plurality of plasmas in accordance with a preselected sequence; depositing from each of said glow discharge plasmas amorphous silicon over at least a portion of each base contact; and depositing a top contact over at least a portion of the deposited layer of amorphous silicon.

4,410,559

METHOD OF FORMING AMORPHOUS SILICON FILMS

Yoshihiro Hamakawa, 3-17-4, Minami-Hanayashiki, Kawanishi, Hyogo, and Yoshihisa Tawada, 14-39, Oike-Miyamadai, Kita-ku, Kobe, Hyogo, both of Japan

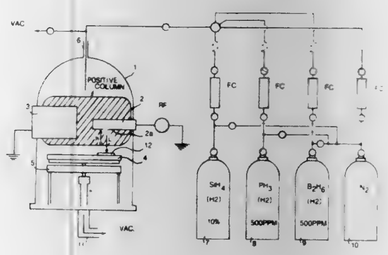
Filed Oct. 29, 1981, Ser. No. 316,422

Claims priority, application Japan, Oct. 31, 1980, 55-154475

Int. Cl.³ C23C *11/00*; H01L *31/18*

U.S. Cl. 427—39 **9 Claims**

1. In a method of forming a layer of an amorphous silicon compound on a top surface of a substrate by subjecting a gas containing a silane compound to glow discharge decomposition in the presence of said substrate in an apparatus comprising an anode and a cathode, the improvement wherein said anode and said cathode are positioned such that a line extending through both said anode and said cathode is at a right angle to a line extending perpendicularly from said top surface of said substrate, and said top surface of said substrate is positioned within 3 cm from the lower end of a positive column formed by glow discharge, said 3 cm being the distance between said top surface of said substrate and said lower end of



said positive column, said distance being measured perpendicular to said top surface of said substrate.

4,410,560

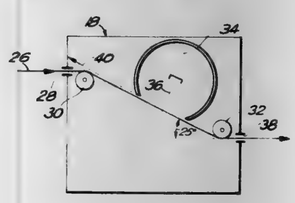
CONTINUOUS WEB PRINTING APPARATUS, PROCESS AND PRODUCT THEREOF

Donald W. Kosterka, Chicago, Ill., assignor to Album Graphics, Inc., Chicago, Ill.

Filed Oct. 9, 1981, Ser. No. 309,923

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **5 Claims**



1. An apparatus for printing on a continuous web of material, comprising:

at least one printing station for receiving a continuous web of material for printing a radiation curable ink thereon to provide an uncured, printed, continuous web;

an electron beam curing unit for receiving said uncured, printed, continuous web for providing an electron beam directed at said continuous web to thereby rapidly cure said ink printed thereon, said electron beam curing unit including an enclosure having an input slot and an output port which are vertically displaced relative to each other, with first and second rollers displaced horizontally and vertically from each other and respectively disposed adjacent said input slot and output port, said web entering said enclosure through said input slot and around said first and second rollers and thence out the output port such that the web is oriented within the electron beam curing unit at an angle to the horizontal between said first and second rollers, said curing unit further including a linear cathode accelerator between said first and second rollers for providing an electron beam, said accelerator oriented with respect to said web such that said beam passes through said web substantially perpendicularly so as to reduce radiation leakage from the curing unit; and

means for continuously transporting said continuous web through said at least one printing station and said curing unit, whereby said ink is rapidly and continuously cured along said web as said web is transported through said curing unit to provide a high speed and high quality printing of said web.

4,410,561

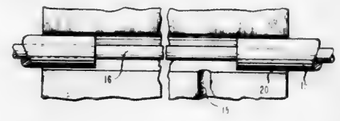
METHOD OF FORMING COATED OPTICAL FIBER

Arthur C. Hart, Jr., Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1981, Ser. No. 288,789

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **7 Claims**



1. A method of fabricating a continuously coated optical fiber comprising,

aligning an uncoated portion of a coated optical fiber with a groove in an open, grooved, split mold, the groove extending beyond the uncoated portions of the fiber to the coated portion of the fiber which adjoins the end of the uncoated portion of the fiber, the groove having a diameter, D, greater than the diameter, d, of the coated portion of the optical fiber,

tensioning the optical fiber,

reducing the distance between the open mold and the fiber so that the coated portion of the fiber contacts the groove surface while the uncoated portions of the fiber do not contact the groove surface,

aligning the groove in the second half of the split mold with the optical fiber,

closing the split mold,

injecting a curable coating material into the groove until the coating material flows at least to the coated portion of the fiber and,

curing the coated material,

whereby a continuously coated optical fiber is obtained.

4,410,562

METHOD FOR FORMING A CURED RESIN COATING HAVING A DESIRED PATTERN ON THE SURFACE OF A SUBSTRATE

Yuhei Nemoto, Tokyo, and Shiro Takahashi, Ohmiya, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Nov. 24, 1981, Ser. No. 324,651

Claims priority, application Japan, Nov. 29, 1980, 55-168295

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **1 Claim**



1. A method for forming a cured resin coating having a desired pattern on the surface of a substrate, which comprises

a first step of applying a coating of an ultraviolet light-curable resin to the surface of the substrate;

a second step of pre-curing said coating by irradiating ultraviolet light thereto;

a third step of applying a printed layer of a predetermined pattern partly to the surface of the pre-cured coating with a light-insensitive non-transparent printing ink;

a fourth step of irradiating ultraviolet light to the product obtained in the third step to cure completely that part of the pre-cured coating on which the printed layer is absent, while that part of the pre-cured coating which exists beneath the printed layer is maintained intact; and

dissolving or peeling the printed layer and the pre-cured layer existing beneath it, whereby the resin coating having the desired pattern which is in a complementary relation to the pattern of said printed layer is formed on the surface of the substrate.

4,410,563

REPELLENT COATINGS FOR OPTICAL SURFACES

Herbert P. Richter, and Eugene J. Dibble, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 22, 1982, Ser. No. 351,059

Int. Cl.³ C03C *17/30*; G02B *1/10*

U.S. Cl. 422—108 **16 Claims**

1. A method for applying a water repellent coating to a surface of an optical element comprising:

applying fluid comprising a composition selected from the group consisting of chloromethylsilanes, a mixture of amino-functional polydimethylsiloxane copolymers, and a mixture of a perfluorocarboxylic acid and N,beta-aminoethyl-gamma-aminopropyltrimethoxysilane to said surface of said optical element; and

allowing said composition to react at said surface of said optical element to form said repellent coating thereon.

4,410,564

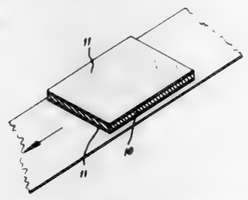
MANUFACTURING PROCESS FOR HEAT EMITTING PLATES

Joaquin F. Cenefels, Barcelona, Spain, assignor to Raivi S.A., Barcelona, Spain

Filed Oct. 19, 1981, Ser. No. 313,153

Int. Cl.³ B05D *1/02, 3/10, 5/12*

U.S. Cl. 427—123 **13 Claims**



1. A method for manufacturing heat emitting plates comprising the steps of:

coating both surfaces of a metal plate with a dielectric coating;

heating the coated plate to a temperature between 300° C. and 400° C.; and

spraying molten conductive metal over at least one of the coated surfaces in a manner such that the depth of the conductive metal sprayed onto the coated surface is uniform along any transverse section of the plate; wherein the step of spraying includes moving the plate relative to a spraying means at a relatively non-uniform speed so as to vary the thickness of the metal sprayed onto the plate along different portions of the length of the plate.

4,410,565

METHOD OF MAKING A MAGNETIC RECORDING MEDIUM

Tatsuji Kitamoto; Ryuji Shirahata, and Yasuo Tamai, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

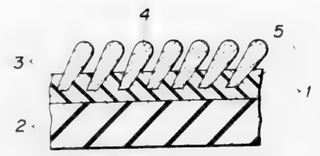
Filed Feb. 25, 1982, Ser. No. 352,224

Claims priority, application Japan, Feb. 27, 1981, 56-28194

Int. Cl.³ H01F *10/02*

U.S. Cl. 427—130 **13 Claims**

1. A method of preparing a magnetic recording medium which comprises applying a thermoplastic prime-coating layer onto a substrate, forming a ferromagnetic metal layer having columnar grain structures on said prime-coating layer by means of vapor deposition, and thereafter pressing said ferromagnetic metal layer from the top thereof, whereby said prime-coating layer is at least partially integrated with said ferromagnetic metal layer.



4,410,566

METHOD AND APPARATUS FOR THE REMOVAL OF MILDEW AND OTHER STAINS FROM PAPER OR PARCHMENT

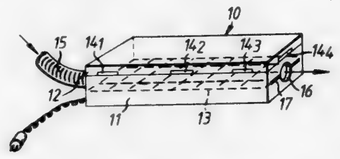
Brian W. Mills, Cranley Ct., 59 Cranley Rd., Guildford, Surrey, England

Filed Nov. 25, 1981, Ser. No. 325,047

Claims priority, application United Kingdom, Dec. 11, 1980, 8039693

Int. Cl.³ B05D *3/00*; D06L *3/02, 3/04*

U.S. Cl. 427—161 **14 Claims**



1. A method for the treatment of paper or parchment to remove mildew or other stains therefrom consisting in passing, for a predetermined period of time, ozone over the paper or parchment in a bleaching chamber after said paper or parchment has been thoroughly wetted, and subsequently giving said paper or parchment an inhibitory treatment to raise the pH value of said paper or parchment from that value existing before treatment to a higher value, such that said inhibitory treatment prevents the mildew or stains from reappearing.

4,410,567

OPTICAL FIBRES AND COATINGS THEREFOR

Paul W. France, Newbourne, Nr. Woodbridge, and George R. Newns, Hintlesham, both of England, assignors to Post Office, London, England

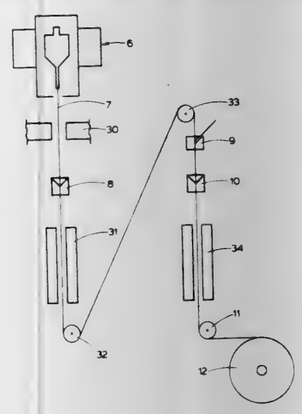
Continuation of Ser. No. 117,040, Jan. 31, 1980, abandoned. This application Apr. 15, 1982, Ser. No. 368,510

Claims priority, application United Kingdom, Feb. 1, 1979, 7903532

Int. Cl.³ B05D *5/06*

U.S. Cl. 427—163 **14 Claims**

1. A method of improving the resistance of a glass optical fibre to attack by atmosphere, such as water, comprising the sequential steps of coating the fibre with a plastics material and drawing said plastics coated fibre through a metal melt, the surface of which is exposed to an oxygen rich atmosphere and thus forming an oxide layer on said plastics coated fibre.



4,410,568

PROCESS FOR PREPARING SELECTIVE PERMEABLE MEMBRANE

Akio Iwama; Yasuo Kihara; Masao Abe, and Yoshitaka Kazuse, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

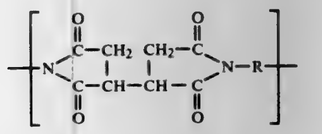
Continuation of Ser. No. 961,167, Nov. 16, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 195,038

Claims priority, application Japan, Jan. 10, 1978, 53-1730

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—244 **17 Claims**

1. A process for preparing a selective permeable membrane having self-supporting property, which comprises coating on a supporting substrate a dope comprising a polyimide polymer consisting essentially of a repeating imide ring containing unit of the formula:



wherein R is a divalent organic group selected from the group consisting of (1) a divalent aromatic group, (2) a divalent aromatic group where at least two aromatic groups are linked with a divalent group, (3) a divalent aliphatic group, (4) a divalent aliphatic group where at least two aliphatic groups are linked with a divalent group, (5) a divalent alicyclic group, and (6) a divalent alicyclic group where at least two alicyclic groups are linked with a divalent group, wherein the nitrogen atom of each imide ring is bonded to a carbon atom in said divalent organic group R and wherein said divalent organic group R is capable of sterically fully rotating about its bonds in the main chain of said polyimide polymer; an inorganic salt and an organic solvent, as a dope solvent, capable of dissolving the mixture of the polymer and the inorganic salt to form a homogenous system, to prepare a dope coated supporting substrate, heat treating the substrate at a temperature which does not cause the organic solvent in the dope to boil, and then coagulating the substrate in a coagulation medium.

4,410,569

PALLADIUM (II) BIS(HEXAFLUOROACETYLACETONATE), ADDUCTS DERIVED THEREFROM AND USES THEREOF

Allen R. Siedle, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 159,367, Jun. 13, 1980. This application Feb. 23, 1982, Ser. No. 351,505

Int. Cl.³ B05D *3/04*

U.S. Cl. 427—304 **15 Claims**

1. A method for making a catalytically active surface of palladium, said method comprising heating the compound palladium(II) bis(hexafluoroacetylacetonate), thereby causing said compound to sublime onto a basic substrate and then reducing said deposited compound.

4,410,570

COMPOSITIONS CONTAINING LIQUID-CRYSTALLINE PHASES

Franz-Heinrich Kreuzer, Martinsried, and Magdi E. Gawhary, Munich, both of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1982, Ser. No. 352,422

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110048

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—374.1 **7 Claims**

6. A process for coating a substrate which comprises coating a substrate with a cyclic organopolysiloxane having at least one mesogenic group chemically bonded to the cyclic organopolysiloxane and thereafter cooling the coated substrate.

4,410,571

ABSORBENT PRODUCTS, PROCESS AND COMPOSITIONS FOR IMMOBILIZATION OF PARTICULATE ABSORBENTS

Ralf Korpman, Bridgewater, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 181,289, Aug. 25, 1980, abandoned, and Ser. No. 248,387, Mar. 27, 1981. This application Jun. 22, 1981, Ser. No. 274,232

Int. Cl.³ A23L *2/02*

U.S. Cl. 427—385.5 **28 Claims**

1. An absorbent-immobilizing composition in liquid form comprising:

(a) at least about 25 to no greater than about 125 parts of a particulate water-insoluble, water-swellable absorbent polymer having a gel capacity of at least 10, said absorbent polymer being other than a hydrolyzed starch/polyacrylonitrile graft copolymer, and

(b) 100 parts by weight of a liquid polyhydroxy organic compound having vicinal hydroxy groups.

4,410,572

PROCESS FOR PRODUCING AROMATIC POLYCARBONATE ARTICLE HAVING HEAT-CURED SURFACE LAYER

Shigeru Sasama; Nobuhiko Nakao, both of Mihara, and Osamu Ohara, Matsuyama, all of Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Feb. 25, 1982, Ser. No. 352,221

Claims priority, application Japan, Mar. 2, 1981, 56-28384

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—407.1 **8 Claims**

1. A process for producing a molded article of an aromatic polycarbonate having a heat-cured surface layer, which comprises:

(1) coating an aromatic polycarbonate article pre-treated with a solution of an amino alcohol containing a primary or secondary amino group and a hydroxyl group and having a boiling point of not more than 300° C. in a sol-

vent for the aromatic polycarbonate, with a heat-curable film-forming liquid composition consisting of a solution, in a non-solvent for the aromatic polycarbonate, of

(A) 100 parts by weight of methyl-etherified methylolmelamine,

(B) 20 to 100 parts by weight of a short-chain glycol having 2 to 8 main-chain atoms between the two hydroxyl groups and represented by the following formula

$$HO-R^1O-_mH \quad (1)$$

wherein R^1 represents a main-chain alkylene group having at least 2 carbon atoms which may have an alkyl group with not more than 2 carbon atoms at a side chain, and m represents 1, 2 or 3,

(C) 20 to 100 parts by weight of a long-chain glycol having at least 11 main-chain atoms between the two hydroxyl groups and represented by the following formula

$$HO-R^2O-_mH \quad (2)$$

wherein R^2 represents a main-chain alkylene group having at least 2 carbon atoms which may have an alkyl group with not more than 2 carbon atoms at a side chain, and n represents an integer of from 3 to 20, the total amount of the components (B) and (C) being 50 to 120 parts by weight,

(D) 4 to 200 parts by weight of an initial condensate resulting from hydrolysis of a compound of the following formula

$$R^3-Si-OR^4)_3 \quad (3)$$

wherein R^3 represents a hydrocarbon group having 1 to 6 carbon atoms and R^4 represents an alkyl group having 1 to 4 carbon atoms, and

(E) 1 to 20 parts by weight of a curing agent; and

(2) heat-treating the coated aromatic polycarbonate article until the temperature is higher than 160° C. but does not exceed about 180° C. and maintaining it at a temperature within said range for about 10 to 60 minutes.

4,410,573

BOARD MADE OF FIBROUS MATERIAL

Regina A. Narymskaya, ulitsa Orbeli, 18, kv. 23; Yakov V. Nikitin, pereulok Pirogova, 21, kv. 24, both of Leningrad; Tatyana K. Toropova, pochtovoe otdelenie "Kommunar" Tekhnichesky pereulok, 7, kv. 4, Leningradskaya oblast; Vladimir G. Ignatenko, ulitsa Spirina, 2 korpus 1, kv. 404; Jury I. Chernousov, ulitsa Marshala Kazakova, 10. korpus 1, kv. 581, both of Leningrad; Vladimir A. Chuiko, ulitsa Udaltsova, 22, kv. 51, Moscow; Mikhail T. Kalinin, ulitsa 50-letia Oktyabrya, 30, kv. 15, Arkhangelsk, and Jury M. Fedotov, ulitsa Stoikosti, 35, kv. 69, Leningrad, all of U.S.S.R.

Continuation of Ser. No. 243,874, Mar. 16, 1981, abandoned. This application Jun. 3, 1982, Ser. No. 384,623

Int. Cl.³ B65D *71/00*

U.S. Cl. 428—2 **6 Claims**

1. A board comprising, outer layers and an inner layer, said outer layers defining outer surfaces made of a fibrous material of a vegetable origin, the inner layer being made completely of a protein-containing activated sewage sludge biomass, the content of the components in the total mass of the board in percent by mass being as follows:

fibrous material of vegetable origin	85–99.5
activated sewage sludge biomass	0.5–15.0

and the activated sludge biomass comprising a suspension having concentration of 10 to 30 g./l. after gravitational compression or a concentration of 30 to 50 g./l. after flotation compression upon introduction into the board for forming said inner layer.

4,410,574

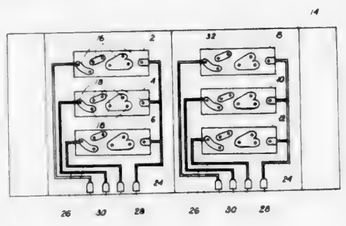
PRINTED CIRCUIT BOARDS AND METHODS FOR MAKING SAME

George Battochio, Old Greenwich, Conn., assignor to Xexex Industries, Inc., Norwalk, Conn.

Filed May 22, 1981, Ser. No. 266,552

Int. Cl.³ B32B *3/10*

U.S. Cl. 428—43 **8 Claims**



1. A printed circuit panel comprising:

a: a solid insulating base, with at least one separable circuit board outline defined therein;

b: at least one group of strips of conducting material each of which group is located within one of said circuit board outlines;

c: an output track extending from each said group of strips, across said circuit board outline, to a testing location on said base; and

d: an input track extending from an input location on said base to an input of a group of strips, whereby said output track and said input track enable each separable board outline to be tested as a group.

4,410,575

LAP WELDING METHOD FOR TEXTILE FABRICS

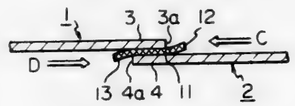
Tsutomu Obayashi, Tokyo, and Hideyuki Hiraoka, Musashino, both of Japan, assignors to Hiraoka & Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,396

Claims priority, application Japan, Jul. 16, 1981, 56/109963

Int. Cl.³ B65H *69/02, 69/06*

U.S. Cl. 428—57 **10 Claims**



1. A lap welding method for use with textile fabrics, comprising the steps of:

superposing two textile fabric end portions one over the other while interposing a piece of bonding tape consisting essentially of a thermally melting synthetic polymer material between said superposed end portions, and;

applying high frequency waves and/or heat treatment to at least the interposed portion of said bonding tape and pressing said superposed end portions and said interposed portion of said bonding tape together to melt the interposed portion of said bonding tape and to lap weld said superposed end portions to each other;

wherein at least one side edge portion of said interposed bonding tape extends outwardly over a corresponding edge of one of said end portions, and;

wherein, after said end portions have been lap welded together, said extended side edge portion of said interposed bonding tape remains unmelted and in the form of a fin-shaped projection.

4,410,576

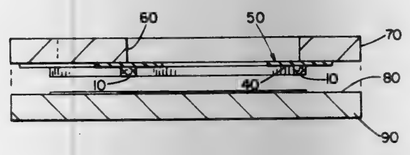
PRE-INKED TAPE

Robert L. Publicover, 846 Massachusetts Ave., Arlington, Mass. 02174

Filed May 18, 1981, Ser. No. 264,642

Int. Cl.³ B32B *3/02*; B41M *5/00*; C09J *7/00*

U.S. Cl. 428—79 **8 Claims**



1. Apparatus for the transfer of a design or other outline from a surface (a) to a surface (b) comprising:

a flexible tape strip having a first pressure-sensitive adhesive surface for applying said tape to said surface (a) and a second, opposite surface, and

ink-bearing means for transferring a visually noticeable impression onto said surface (b) upon contact, with said surface (b), of said tape strip applied to said surface (a),

said ink-bearing means being positioned on said second surface of said tape strip,

said transfer occurring when said tape strip is interposed between surface (a) and surface (b).

4,410,577

WOVEN LAYERED CLOTH REINFORCEMENT FOR STRUCTURAL COMPONENTS

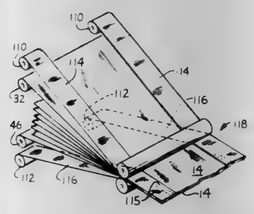
Raymond J. Palmer, Newport Beach, Calif., and Dominique Micheaux, Villette d'Anthon, France, assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jan. 8, 1982, Ser. No. 337,994

Claims priority, application France, Jan. 12, 1981, 81 00499

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—85 **26 Claims**



1. A process for producing a woven layered cloth reinforcement for structural components, which comprises

(a) providing a plurality of plies of woven cloth, said plies having different orientation patterns,

(b) prelocating said plies in spaced relation to each other,

(c) placing said plies in contact with each other in a predetermined stacking sequence, and

(d) securing the plies together to form a unitary drapeable assembly of plies in stacked relation, said securing said plies together being carried out by sewing, stitching, stapling or tufting said plies together.

4,410,578

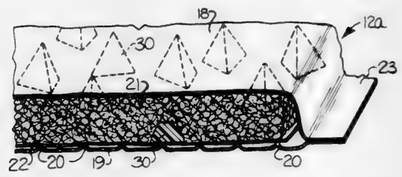
RECEPTACLE FOR MOISTURE EXUDING FOOD PRODUCTS

Alan H. Miller, River Rd., Patterson, N.C. 28661

Division of Ser. No. 258,616, Apr. 29, 1981, Pat. No. 4,321,997, which is a continuation-in-part of Ser. No. 96,797, Nov. 23, 1979, Pat. No. 4,275,811, which is a continuation-in-part of Ser. No. 69,074, Aug. 23, 1979, abandoned, which is a continuation of Ser. No. 885,622, Mar. 13, 1978, abandoned. This application Feb. 10, 1982, Ser. No. 347,627

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—117 **7 Claims**



1. An absorbent pad useful in a food package to separate and maintain the exuded liquids from the food product to thereby minimize contamination of the food product, and comprising:

a mat of liquid absorbent material,

a first sheet of plastic material overlying and covering one side of said mat of liquid absorbent material, and

a second sheet of plastic material overlying and covering the other side of said mat of liquid absorbent material, the peripheral edges of said first and second sheets being sealed together to enclose said mat therebetween, and at least one of said sheets having a plurality of openings which permit the passage of a liquid into said mat, and

space means dispersed substantially within said mat of liquid absorbent material extending substantially the entire distance between said first and second sheets for maintaining the separation of said sheets under the compressive load exerted by a food product or the like resting thereupon, and to thereby minimize the compression of the mat and the reduction in the ability of the mat to absorb liquids when subjected to such load.

4,410,579

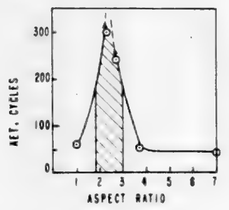
NONWOVEN FABRIC OF RIBBON-SHAPED POLYESTER FIBERS

Martha M. Johns, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 24, 1982, Ser. No. 423,061

Int. Cl.³ D04H *3/08*; D06C *1/06*

U.S. Cl. 428—131 **3 Claims**



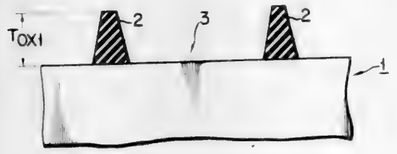
1. An improved apertured nonwoven fabric consisting essentially of hydraulically entangled staple fibers of polyester polymer, wherein the improvement comprises for increased resistance to disentanglement, the staple fibers being of ribbon-shaped cross-section whose aspect ratio is in the range of 1.8:1 to 3:1.

4,410,580

SEMICONDUCTOR WAFER

Kinnosuke Okutsu, Oita, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 882,154, Feb. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 738,951, Nov. 4, 1976, abandoned. This application Nov. 15, 1979, Ser. No. 94,562
Claims priority, application Japan, Nov. 6, 1975, 50-133417
Int. Cl.³ B32B *3/00, 9/04*
U.S. Cl. 428—156 **8 Claims**



1. A semiconductor wafer for having formed thereon a plurality of integrated circuits by the use of masks and photoengraving processes, said wafer comprising:

a substrate including a plurality of areas for the formation of said integrated circuits and dicing lines surrounding each of said areas; and

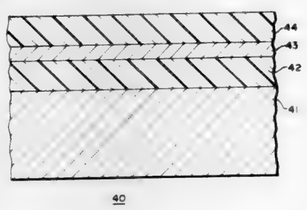
a plurality of projections formed along said dicing lines to support a said mask above the surface of said area, said projections (1) being formed either from an oxidation film formed on said substrate or from said substrate, itself, (2) having a height of more than 1.5 micrometers, and (3) being spaced apart from each other to enable the dissipation of gases generated during said photoengraving processes from the space between said substrate and a said supported mask.

4,410,581

LASER RECORDING MEDIUM

Billie Nam, Cupertino, Calif., assignor to Omex, Santa Clara, Calif.

Continuation of Ser. No. 80,517, Oct. 1, 1979, abandoned. This application Aug. 4, 1981, Ser. No. 289,975
Int. Cl.³ G01G *15/34*
U.S. Cl. 428—195 **7 Claims**



1. A laser recording medium comprising: a substrate; a first layer of plastic material formed on said substrate; a layer of optical energy absorbing material formed on said first layer of plastic material; and a second layer of plastic material formed on said layer of energy absorbing material to provide a protective coating therefor; said plastic material of said first layer being a crosslinked polymeric material characterized by high optical clarity and substantial resistance to solvents, and said plastic material of said second layer being a solvent-based plastic material, said medium thereby being characterized by undisturbed bonding integrity between said first layer of plastic material and said layer of optical energy absorbing material.

4,410,582

MULTI-LAYERED POLYOLEFIN LAMINATED FILM

Kenji Tsunashima, Kyoto; Toshiya Yoshii, Ohtsu, and Takeo Fukuyama, Hikone, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,202
Claims priority, application Japan, Dec. 10, 1980, 55-173171; Jun. 12, 1981, 56-89658
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—212 **37 Claims**

1. A multi-layered polyolefin laminated film of a three-layered structure consisting essentially of:

(A) a center layer being biaxially oriented and consisting of a crystalline low molecular weight polyolefin (a) having an intrinsic viscosity of 0.5 to 1.4; and

(B) surface layers disposed on both sides of said center layer (A) and each being biaxially oriented and consisting of a crystalline polyolefin (b) having a melting point higher than that of said crystalline low molecular weight polyolefin (a);

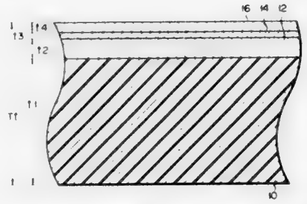
whereby the thickness of said center layer (A) accounts for 30 to 98% of the total thickness of said laminated film.

4,410,583

FERROMAGNETIC RECORDING MEDIUM

Naohiro Hanaoka, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1981, Ser. No. 244,807
Claims priority, application Japan, Mar. 21, 1980, 55-35815
Int. Cl.³ G11B *5/70*; B32B *7/02*
U.S. Cl. 428—213 **93 Claims**



1. A ferromagnetic recording medium comprising:

a base;

a first magnetic layer which includes ferromagnetic material formed on said base;

a second ferromagnetic layer which includes a fine grain metal which is ferromagnetic and which does not contain a binder formed on said first ferromagnetic layer, said second ferromagnetic layer being a thin layer which has a rough surface; and

a third ferromagnetic layer having a smooth outer surface formed on said second ferromagnetic layer, said third ferromagnetic layer includes ferromagnetic material admixed with a binder which is formed of a synthetic resin and has a predetermined average thickness between 0.3 and 1 micron and sufficient to cover all of the rough surface of said second ferromagnetic layer and functions as a protective layer for said second magnetic layer.

17. A recording medium according of claim 1, wherein said base is a nonmagnetic film.

26. A recording medium according of claim 17, wherein the thickness of said film is larger than the thickness of said first magnetic layer, and the thickness of said second or third magnetic layer is substantially equal to that of said first magnetic layer or smaller than the thickness of said first magnetic layer.

4,410,584

ELECTROSTATIC RECORDING MEMBER

Hirotaka Toba; Masanori Itoh, both of Ohimachi; Keita Nakano, Ebina; Shoji Wakoh, Ebina; Toshihiko Toyoshima, Ebina, and Hidemasa Todd, Ebina, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai and Fuji Xerox Co., Ltd., Tokyo, both of, Japan

Filed Jun. 17, 1981, Ser. No. 274,683
Claims priority, application Japan, Jun. 24, 1980, 55-85519
Int. Cl.³ G01D *15/06*
U.S. Cl. 428—215 **8 Claims**

1. An electrostatic recording member adapted to be used for repetitive formation and development of electrostatic latent images, followed by transfer of the developed images from said member to successive separate paper sheets, said member consisting essentially of:

a support in the form of a film or sheet, said support consisting essentially of a synthetic resin;

an electrically conductive layer laminated directly on top of said support, and electrically conductive layer being free of pin holes, having a thickness of from 5 to 30 microns and consisting essentially of 2 to 40 parts by weight of fine powder of electrically conductive material uniformly dispersed in 60 to 98 parts by weight of an organic polymer binder selected from the group consisting of cross-linked polyurethane, cross-linked acrylic resin and cross-linked methacrylic resin, so that the sum of said binder and said powder is 100 parts by weight, said electrically conductive layer having a surface resistivity in the range of from 10^6 to 10^8 ohms; and

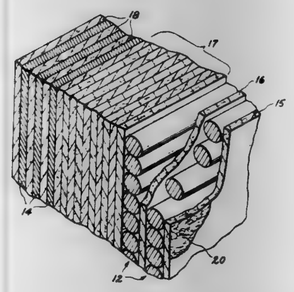
a recording layer laminated directly on top of said electrically conductive layer, said recording layer having a thickness of from 1 to 20 microns and consisting essentially of a dielectric material having a volume resistivity of at least 10^{12} ohm.cm.

4,410,585

LAYER INSULATION FOR USE IN HIGH-VOLTAGE ELECTRICAL EQUIPMENT

Joseph R. McLoughlin, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 239,296, Mar. 2, 1981, abandoned. This application Oct. 21, 1982, Ser. No. 435,856
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—215 **11 Claims**



1. Layer insulation for use in high-voltage electrical equipment, consisting of:

(a) an intermingled array of inorganic fibers;

(b) inorganic particles; and

(c) inorganic cement;

(d) said inorganic particles being bonded together and to said inorganic fibers with said inorganic cement to form a generally planar insulation layer reinforced by said inorganic fibers.

4,410,586

POLYMERS IN MATRIX REINFORCEMENT

Noe H. Ladizesky; Ian M. Ward, both of Leeds, and Leslie N. Phillips, Farnborough, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, London, England

Filed Apr. 1, 1982, Ser. No. 364,458
Claims priority, application United Kingdom, Apr. 4, 1981, 8110613
Int. Cl.³ B32B *7/00*; D03D *3/00*; B44C *1/22*; C03C *15/00*
U.S. Cl. 428—245 **26 Claims**

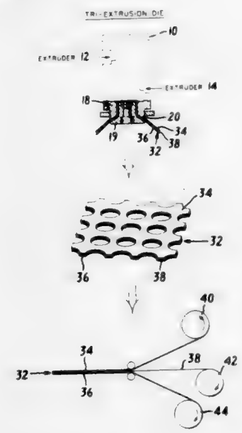
1. A method of producing a composite material in which a reinforcement material is embedded in a matrix material wherein the improvement comprises the reinforcement material comprising a polymer material having a draw ratio of at least 12:1 which is treated, prior to incorporation in the matrix, by exposing its surface to a plasma discharge, whereby improved adhesion is obtained between the reinforcement material and the matrix material.

4,410,587

CO-EXTRUDED FUSIBLE NET

Timothy K. Fair, Blaine, and Richard C. Mudge, Minneapolis, both of Minn., assignors to Conwed Corporation, St. Paul, Minn.

Filed Jul. 6, 1982, Ser. No. 395,585
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—247 **16 Claims**



1. A method of manufacturing a net product comprising the steps of extruding a first polymer net layer and simultaneously extruding in contact with the first net layer a second polymer net layer of different polymer than said first polymer net layer, said first and second net layers being extruded so that strands of each are in register with one another so as to form a composite net structure thereof, said first polymer net layer being weakly bonded to said second polymer net layer, and subsequently delaminating the first polymer net layer from the second polymer net layer before orienting the structure for forming a net structure of each polymer layer.

4,410,588

PROCESS FOR SIZING TEXTILE YARNS

Chi-Fei Ling, Edison, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 1, 1981, Ser. No. 268,925
Int. Cl.³ B05D *3/02*; B32B *7/00, 23/00*; D03D *3/00*
U.S. Cl. 428—248 **8 Claims**

1. A process for sizing a textile substrate material comprising

applying to the textile material a composition comprising an aqueous solution of at least 3% by weight solids content of a segmented copolymer of acrylamide and at least one vinyl or vinylidene polymerizable monomer, the amount of the polymerizable monomer in the composition being at a concentration from about 1% to about 40%, based on the weight of acrylamide in the composition, and thereafter drying the treated substrate, the composition being applied in an amount and the drying being at a temperature, respectively, sufficiently high to impart a high order of abrasion resistance to the textile material, the composition being capable of being removed from said textile substrate material by aqueous washing.

4. The process according to claim 1 wherein the textile material is a cotton yarn, cotton/polyester yarn or polyester yarn.

8. The treated textile material of claim 4.

4,410,589

PROCESS FOR IMPROVING THE MINERAL ASPHALT COATINGS FOR STREETS AND PATHS AND PRODUCTS

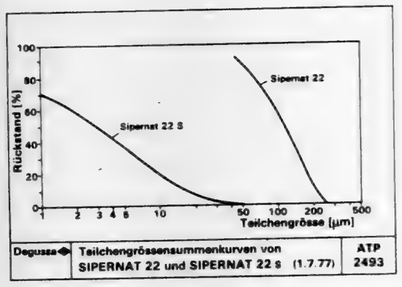
Karl-Hans Müller, Bruchkobel; Walter Barthel, Langenselbold, and Rolf Oelmüller, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 142,747, Apr. 22, 1980, abandoned, which is a continuation of Ser. No. 957,823, Nov. 6, 1978, abandoned. This application Mar. 26, 1981, Ser. No. 247,866

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1977, 2755450

Int. Cl.³ B32B *5/16, 9/00, 15/00*

U.S. Cl. 428—331 **32 Claims**



1. A process for improving a mineral asphaltic layer of a pavement consisting essentially of homogeneously admixing 0.1 to 10 weight % of silica into mineral asphalt and then converting this into a pavement layer, said silica being either (1) a precipitated silica, (2) a precipitated and spray dried silica or (3) a pyrogenically produced silica.

2. The product prepared by the process of claim 1.

4,410,590

MAGNETIC RECORDING MEDIUM

Hiroshi Kawahara; Hitoshi Azegami, and Eiji Horigome, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

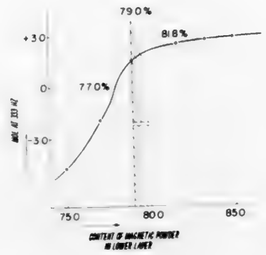
Filed Oct. 14, 1981, Ser. No. 311,180

Claims priority, application Japan, Oct. 14, 1980, 55-143395

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—336 **4 Claims**

1. A magnetic recording medium which comprises a lower magnetic layer containing a magnetic powder having a coercive force of 700 Oe or higher dispersed in an organic binder which is coated on a non-magnetic substrate and an upper magnetic layer containing a magnetic powder having a coercive force higher than the coercive force of said lower magnetic layer dispersed in an organic binder which is coated on said lower magnetic layer and said lower magnetic layer has a content of said magnetic powder of 79% or more wherein the content of said magnetic powder is given by the equation:



$$\frac{\text{Weight of magnetic powder}}{\text{Weight of magnetic powder} + \text{Weight of binder}} \times 100.$$

4,410,591

FISHING NETS OF POLYAMIDE RESINS

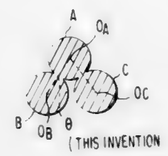
Shigetomi Okamoto, Nara, and Yoshio Tonomura, Kyoto, both of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Jul. 30, 1982, Ser. No. 403,387

Claims priority, application Japan, Jul. 30, 1981, 56-120095

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—255 **6 Claims**



1. A conjugated yarn, polyamide resin fishing net, comprising:

a monofilament yarn (A);

a monofilament yarn (B) conjugated longitudinally to the filament yarn (A); and

a monofilament yarn (C) conjugated longitudinally to the filament yarn (A), and the filament yarns (A), (B) and (C) having center points O_A, O_B and O_C and being connected such that the center points form a conjugated angle θ which is greater than 60° and not greater than 120°.

4,410,592

POWER INSERTABLE NYLON COATED MAGNET WIRE

Hollis S. Saunders; Richard V. Carmer, and Lionel J. Payette, all of Fort Wayne, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

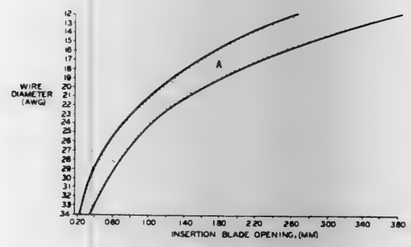
Filed Oct. 19, 1981, Ser. No. 312,214

Int. Cl.³ B32B *27/00;* **H01B** *7/00*

U.S. Cl. 428—383 **11 Claims**

1. A lubricated magnet wire comprising an electrically conducting substrate having an electrically insulating nylon outer coating, and a lubricant coating on the nylon outer coating comprising a mixture of paraffin wax and hydrogenated triglyceride in a ratio by weight of 1:30 to 30:1, the paraffin wax having a melting point of 50° C. to 52.8° C., a refractive index of 1.4270 at 80° C., a specific gravity of 0.839 at 15.6° C., and a flash point of 212.8° C., the hydrogenated triglyceride having a melting point of 47° C. to 50° C., an Iodine Number of 22 to 35, a Saponification No. of 188 to 195, a maximum Acid No. of 5 and approximate fatty acid component proportions of 8% C_{14}, 34% C_{16}, 27% C_{18}, 16% C_{20} and 15% C_{22} fatty acids, the coated magnet wire capable of power insertion into coil slots in its locking wire size range.

3. The wire of claim 1 having an electrically insulating layer of polyester polyvinylformal or polyurethane between the substrate and the nylon outer coating.



5. The wire of claim 1 which additionally contains in the nylon insulating layer about 0.05% to about 8% by weight of an internal lubricant comprising esters of fatty acids and fatty alcohols.

4,410,593

ELECTRICALLY CONDUCTING FIBER AND METHOD OF MAKING SAME

Shinji Tomibe, Kyoto; Reizo Gomibuchi, Uji, and Kiyofumi Takahashi, Yawata, all of Japan, assignors to Nihon Sanmo Dyeing Co., Ltd., Kyoto, Japan

Filed Sep. 3, 1980, Ser. No. 183,639

Claims priority, application Japan, Mar. 5, 1980, 55-28386

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—389 **12 Claims**

1. An electrically conducting fiber consisting essentially of an acrylic or modacrylic fiber which is impregnated with copper sulfide.

4,410,594

ULTRAVIOLET RADIATION STABILIZED COATED POLYCARBONATE ARTICLE

Daniel R. Olson, Schenectady, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Apr. 10, 1981, Ser. No. 252,872

Int. Cl.³ B32B *27/36, 9/04;* **B05B** *5/00*

U.S. Cl. 428—412 **46 Claims**

1. An improved coated polycarbonate article exhibiting improved resistance to degradation by ultraviolet radiation comprising a polycarbonate substrate having durably adhered on at least one surface thereof a coating comprised of (i) an adhesion promoting primer layer containing a thermoset acrylic polymer disposed on said surface, and (ii) adherently disposed on said primer layer a top coat layer containing a colloidal silica filled thermoset organopolysiloxane; the improvement consisting essentially of said polycarbonate surface on which said coating is disposed being impregnated with at least one ultraviolet radiation absorbing compound.

4,410,595

LAMINATE OF THERMOPLASTIC RESINOUS COMPOSITION

Koichi Matsumoto; Yoshihiko Katayama, and Hisaya Sakurai, all of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 126,273, Mar. 3, 1980. This application Aug. 31, 1982, Ser. No. 413,597

Claims priority, application Japan, Mar. 8, 1979, 54/26136; Mar. 27, 2979, 54/35070; Apr. 13, 1979, 54/44272; Jun. 29, 1979, 54/81446; Jul. 4, 1979, 54/83896

Int. Cl.³ B32B *27/36, 27/38, 27/40*

U.S. Cl. 428—412 **9 Claims**

1. A laminate having at least two laminae bonded to each other;

at least one of the laminae being comprised of a thermoplastic resinous composition consisting essentially of, based on the weight of the resinous composition,

(a) 5 to 70% by weight of a thermoplastic polyurethane elastomer, and

(b) 30 to 95% by weight of a modified polyolefin which is an olefin polymer having grafted thereon 0.005% through 5% by mole of maleic acid or maleic anhydride per mole of the recurring unit in the olefin polymer, and

the other of the laminae being comprised of at least one material selected from the group consisting of vinyl chloride polymer resins, vinylidene chloride polymer resins, thermoplastic polyester resins, ethylene/vinyl alcohol copolymer resins, polyamide resins, polyacrylonitrile and nitrile copolymer resins comprising at least 50% by weight of units derived from an unsaturated nitrile, polystyrene and styrene copolymer resins, polymethyl methacrylate and acrylic or methacrylic acid ester copolymer resins, polyurethane resins, olefin polymer resins, polyacetal resins, polyvinyl acetal resins, polycarbonate resins, polyphenylene oxide resins, polysulfone resins, epoxy resins, phenol-formaldehyde resins, unsaturated polyester resins, melamine-formaldehyde resins, urea-formaldehyde resins, natural and synthetic rubbers, cellulosic materials, cement, glass and other ceramic materials and metals.

4,410,596

PROCESS FOR PREPARING EPOXY RESINS HAVING IMPROVED PHYSICAL PROPERTIES WHEN CURED

Ross C. Whiteside, Jr., Angleton; Adolphus V. Gist, Lake Jackson, both of Tex., and George A. Doorakian, Bedford, Mass., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 212,959, Dec. 4, 1980, Pat. No. 4,352,918. This application Dec. 14, 1981, Ser. No. 330,046

Int. Cl.³ B32B *27/38, 17/10*

U.S. Cl. 428—413 **24 Claims**

1. In a process for preparing resin impregnated substrates for use in preparing electrical laminates by a process which comprises:

(I) saturating said substrate with a resin forming mixture comprising;

(A) an epoxy resin having an epoxide equivalent weight of from about 300 to about 600 which has been prepared by reacting

(1) a glycidyl ether of a dihydric phenol having an average of more than one epoxide group per molecule and an epoxide equivalent weight (EEW) of from about 156 to about 400; with

(2) a dihydric phenolic compound; in the presence of

(3) a phosphonium catalyst for effecting the reaction between (1) and (2), wherein components (1) and (2) are employed in quantities which provide a theoretical percent epoxide of the reaction product of from about 8 to about 15;

(B) a curing agent for said epoxy resin and

(C) a solvent system for Components (A) and (B);

(II) heating the resultant impregnated substrate to B-stage the resin and remove the solvent system;

the improvement which comprises:

employing as the catalyst, Compound (A-3), a phosphonium salt or complex thereof which has at least one aromatic ring attached to the phosphorus atom of the phosphonium group and at least one aliphatic hydrocarbon group attached to said phosphorus atom, said catalyst being employed in a quantity such that the epoxy resin which would result when subjecting a mixture of components (A-1), (A-2) and (A-3) to suitable reaction conditions produces an advanced epoxy resin wherein the difference obtained by subtracting the precent epoxide obtained by analysis from the theoretical percent epoxide is from about 0.5 to about 4.

2. The process of claim 1 wherein (a) components (A-1) and (A-2) are employed in quantities which provide a theoretical percent epoxide of the reaction product of from about 9.5 to about 13; (b) component (A-3) has two aromatic rings attached to the phosphorous atom; and (c) the difference obtained by subtracting the percent epoxide obtained by analysis from the theoretical percent epoxide is from about 1 to about 2.

3. The process of claim 2 wherein component (A-1) is a glycidyl ether of bisphenol A having an average epoxide equivalent weight of from about 156 to about 400; (b) component (A-2) is bisphenol A; and (c) component (A-3) has three aromatic rings attached to the phosphorus atom.

4. The process of claim 3 wherein component (A-1) has an average epoxide equivalent weight of from about 177 to about 190.

11. A resin impregnated substrate prepared by the process of claims 1, 2, 3 or 4.

4,410,597

POLYURETHANE RESINS AND POLYURETHANE RESIN COATING COMPOSITIONS

Masaki Nishino, Kawasaki; Yutaka Yasuhara, Nagoya; Tadanori Fukuda, Otsu, and Sadayuki Sakamoto, Koga, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Dec. 31, 1979, Ser. No. 108,865

Claims priority, application Japan, Dec. 28, 1978, 53-161804

Int. Cl.³ B32B *27/40*; C08G *18/34*

U.S. Cl. 428—423.1 **13 Claims**

1. A polyurethane resin having an excellent weather resistance, which resin is a reaction product obtained by causing a polyol to react with 1,6,11-undecanetriisocyanate.

3. A coated article which comprises a substrate and a film coating adhered thereon, said film coating comprising a polyurethane resin, the resin being a reaction product obtained by causing a polyol to react with 1,6,11-undecanetriisocyanate.

4,410,598

PROCESS FOR PREPARATION OF INSULATING COATINGS UPON STEEL

Radomir Kuzel, Prague; Josef Broukal, Hradec Kralove, and Vaclav Bouse, Pribram, all of Czechoslovakia, assignors to Universita Karlova, Prague, Czechoslovakia

Filed Jan. 20, 1982, Ser. No. 341,134

Claims priority, application Czechoslovakia, Jan. 21, 1981, 442-81

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—427 **8 Claims**

1. A process for the production of an insulating coating upon a steel product which comprises the steps of:

(a) coating the steel product with a uniform first layer comprising a ground barium-borate glass consisting of,

(1) from 10–80 weight percent of barium oxide,

(2) from 10–70 weight percent of boron trioxide,

(3) from 0.1 to 10 weight percent of silicon dioxide, and

(4) from 0.1 to 40 weight percent of aluminum fluoride;

(b) firing said first layer at a temperature within the range of 700–1000 degree C.,

(c) depositing a second uniform layer comprising a paste upon said first layer, said paste consisting of:

(1) from 4–99.9 parts by weight of the said barium-borate glass,

(2) from 0.1 to 96 parts by weight of aluminum oxide, and

(3) an evaporable liquid, the parts by weight of said second layer being based upon a composition comprising 100 parts by weight, and

(d) firing said second layer of a tempertaure ranging from 700–1000 degree C.

4,410,599

COMPOSITIONS FOR REDUCING THE FREEZE-ADHERENCE OF PARTICULATE MINERALS TO THE WALLS OF TRANSPORT BINS AND THE LIKE

William J. Roe, Aurora, and Jacqueline L. Perisho, Oak Park, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Mar. 8, 1982, Ser. No. 355,903

Int. Cl.³ B32B *15/04, 15/08*; B22B *15/18*

U.S. Cl. 428—469 **5 Claims**

1. The method of reducing the freeze-adherence of coarse mineral particles to the metal surfaces of shipping containers and the like, which method comprises the step of applying to said surfaces a coating composition comprising brine and a sufficient amount of polymeric ethylene oxide in said brine to form a gel upon exposure to temperatures of less than about 65° F., wherein said brine is a water solution of an alkali metal or alkaline earth metal salt, wherein said salt is present in said brine in a concentration of about 10% to about 35% by weight, wherein said polymeric ethylene oxide is a homopolymer having a molecular weight of between about 100,000 and about 600,000, and wherein said polymeric ethylene oxide is present in said brine in a concentration of between about 0.2% and about 3.0% by weight.

4,410,600

COATED POLYESTER FILM AND POLYESTER/POLYOLEFIN LAMINATES PRODUCED THEREFROM

Patrick T. McGrail, Hitchin, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 2, 1982, Ser. No. 404,489

Claims priority, application United Kingdom, Aug. 17, 1981, 8125097

Int. Cl.³ B32B *27/08, 27/36*

U.S. Cl. 428—483 **5 Claims**



1. Coated polyester film which consists of biaxially oriented poly(ethylene terephthalate) film coated with a cross-linked styrene polymer which is deposited from an aqueous coating composition comprising:

(A) 100 parts by weight of a copolymer of:

(i) 50–75 mole % of styrene units which may be alpha- and/or ring-substituted with methyl or halogen;

(ii) 25–50 mole % of comonomer units selected from units of acrylic, methacrylic, itaconic and maleic acids, alkyl half-esters of itaconic and maleic acids, alkyl acrylates and methacrylates and dialkyl maleates;

the comonomer units being such as to provide the copolymer with 10–50 mole % of carboxylic groups which may be present as salts and 20–50 mole % of alkyl carboxylate groups in which the alkyl groups may each have up to 10 carbon atoms;

(B) 10–20 parts by weight of cross-linking agent selected from condensation products of formaldehyde and melamine and said condensation products having hydroxyl groups converted into methoxy, ethoxy, propoxy or butoxy groups.

4,410,601

COLLOIDAL SOLUTIONS, PROCESSES FOR PRODUCING THE SAME AND USES THEREOF

Morio Gaku, Showamachi; Nobuyuki Ikeguchi, and Hidenori Kimbara, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 332,878

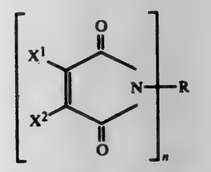
Claims priority, application Japan, Dec. 23, 1980, 55-182642; Jul. 7, 1981, 56-106005

Int. Cl.³ C08J *3/08*

U.S. Cl. 428—290 **11 Claims**

1. A process for producing a colloidal solution of a curable resin which comprises:

blending (a) 5 to 90% by weight of (i) a polyfunctional maleimide component represented by the following general formula



wherein R represents a divalent to pentavalent aromatic or a bicyclic organic group, each of X1 and X2 represents a hydrogen atom, halogen atom or alkyl groups, and M represents an integer of 2–5, (ii) a prepolymer of (i) or (iii) a coprepolymer of (i) and an amine, and (b) 95 to 10% by weight of at least one thermosetting resin, heating them to form a composition, the composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product, and blending the resulting composition with at least one low boiling point solvent, wherein the solvent or solvents is used in such an amount that not all the amount of the polyfunctional maleimide component is dissolved therein at room temperature, has a boiling point of more than room temperature and less than 150° C., and has solubility characteristics such that more than 100 parts by weight of the thermosetting resin and less than 67 parts by weight of the polyfunctional maleimide component are soluble in 100 parts by weight of said solvent or solvents at room temperature, thereby forming a colloidal solution of curable resin.

7. A method of forming a prepreg which comprises application of the product produced by the process of claim 1 to a reinforcing material.

4,410,602

MULTI-LAYER LAMINATED RESIN FILM

Hirohisa Komoda, Zama, and Masatomo Ishihara, Tokyo, both of Japan, assignors to Toyo Seikan Kaisha Ltd. and Tokan Kogyo Co. Ltd., both of, Japan

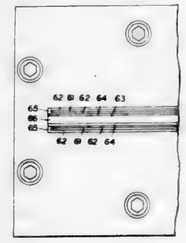
Filed Apr. 30, 1981, Ser. No. 258,916

Claims priority, application Japan, May 8, 1980, 55-59977

Int. Cl.³ B32B *27/08*; B29C *29/00*

U.S. Cl. 428—516 **2 Claims**

1. A coextruded integrally laminated synthetic resin film comprising a pair of outer layers, an inner layer disposed between said outer layers, and a pair of adhesive layers bonding surfaces of said inner layer to opposed surfaces of said outer layers, each of said outer layers including a central reclaimed resin layer having a relatively low decomposition temperature and a virgin resin film having a relatively high decomposition temperature, said virgin resin film totally encompassing said reclaimed resin layer, said reclaimed resin layer being a mixture of at least two different reclaimed resins, said inner layer being formed of a resin having a high decomposition temperature which temperature is greater than the decomposition temperature of that one of said reclaimed resins which has the lowest decomposition temperature, and said inner resin also having physical properties different than the physical properties of said reclaimed resins and said virgin resin whereby during the conextrusion and lamination of said inner and outer layers the customary higher temperature associated with said inner layer resin is absorbed sufficiently by said virgin resin film to prevent the decomposition of said reclaimed resins.



4,410,603

MAGNETIC RECORDING MEDIUM

Kazuyoshi Yamamori, Kawasaki; Reiji Nishikawa, Tokyo; Tatsuo Fujiwara, and Toshimitsu Asano, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 22, 1981, Ser. No. 304,676

Claims priority, application Japan, Sep. 22, 1980, 55-132144

Int. Cl.³ H01F *1/00*

U.S. Cl. 428—611 **7 Claims**



1. A magnetic recording medium which comprises:

a low coercive force material; and

a magnetic recording layer which is formed on the low coercive force layer and whose magnetic anisotropy is perpendicular to the surface of said recording layer,

and wherein the magnetic recording layer is of a smaller thickness than 0.3 μm.

4,410,604

IRON-BASED BRAZING ALLOY COMPOSITIONS AND BRAZED ASSEMBLIES WITH IRON BASED BRAZING ALLOYS

Matthew J. Pohlman, Huntington Beach, and Lynn E. Kindlimann, Woodland Hills, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 16, 1981, Ser. No. 321,950

Int. Cl.³ C22C *38/32, 38/34*

U.S. Cl. 428—681 **6 Claims**

1. An iron-based brazing filler alloy composition characterized by a flow temperature of under 2,200 degrees F., consisting essentially of: 15 to 40 weight percent nickel; 2 to 20 percent chrominum; 2 to 5 weight percent boron; 5 to 12 weight percent silicon; a maximum of 0.5 weight percent carbon; and at least 50 weight percent iron.

4,410,605

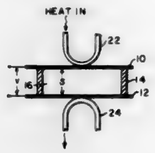
THERMAL GALVANIC CELLS

Robert L. Peck, Windham Center, Conn., assignor to Kali, Inc., Lebanon, Conn.

Continuation of Ser. No. 129,417, Mar. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 959,058, Sep. 9, 1978, Pat. No. 4,211,828. This application Oct. 26, 1981, Ser. No. 314,519

Int. Cl.³ H01M *6/36*

U.S. Cl. 429—11 **25 Claims**



1. A method of utilizing thermal energy comprising the steps of:

filling at least a portion of the space between a pair of spacially displaced generally parallelly related conductive electrodes with a liquid electrolyte;

including in the electrolyte a barrier material which impedes the establishment of thermal convection currents therein;

establishing an average temperature differential between the electrolyte contacting facing surface areas of the electrodes;

establishing a temperature gradient along at least a portion of the electrolyte contacting surface of at least one of the electrodes, said temperature gradient being in a direction which is transverse to said temperature differential; and

establishing electrical contact with the electrodes whereby current may flow in a circuit including the electrodes and electrolyte.

4,410,606

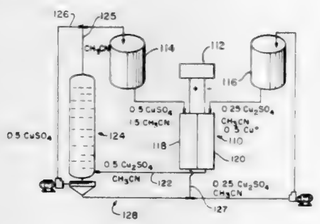
LOW TEMPERATURE THERMALLY REGENERATIVE ELECTROCHEMICAL SYSTEM

Raouf O. Loutfy, Tucson, Ariz.; Alan P. Brown, Bolingbrook, and Neng-Ping Yao, Clarendon Hills, both of Ill., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Apr. 21, 1982, Ser. No. 370,639

Int. Cl.³ H01M *8/18*

U.S. Cl. 429—17 **18 Claims**



1. An electrochemical system comprising an electrochemical cell having first and second electrodes and two compartments separated by an ion exchange membrane and containing first and second water-based electrolytes in respective contact with said first and second electrodes, at least one of the first and second electrolytes containing a complexing agent and a salt of a multivalent metal whose respective order of potentials for first and second redox couples in water are reversed by the addition of said complexing agent in an amount sufficient to cause said reversal, said agent being present in at least said amount, said one electrolyte being converted to a third electrolyte in the operation of the cell, and means for regenerating said first or second electrolyte from said third electrolyte in a sequence of steps, said regeneration means including thermal means for removing at least a portion of said complexing agent from said third electrolyte to reverse the order of said potentials and form a fourth electrolyte and means for adding said complexing agent to a fifth electrolyte derived from said electrolytes in said cell to form said first or second electrolyte.

4,410,607

POROUS ELECTRODE PREPARATION METHOD

Richard M. Arons, Wheaton, and Joseph T. Dusek, Downers Grove, both of Ill., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Sep. 17, 1981, Ser. No. 303,325

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—40 **16 Claims**



1. A method of preparing a sintered oxide plaque having bimodal porosity for use as a substrate having large pores for a gas flow and small pores for providing a large surface area comprising:

providing particulate oxide material of a first particle size;

blending said particulate material with a decomposable, resinous binder to form a solid mass;

comminuting the solid mass into agglomerates of a second particle size larger than said first particle size;

compacting said agglomerates into a porous cohesive plaque having a coarse porosity among said agglomerates; and

sintering said compacted plaque at a sufficient temperature for a sufficient time to sinter bind the particles of first size into a structure of fine porosity within said agglomerates while driving off said decomposable resinous binder but substantially maintaining said course porosity among said agglomerates.

4,410,608

ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, and Kathleen M. Kealey, Newburyport, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 333,160

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—101 **22 Claims**

1. An electrochemical cell, comprising:

a metal housing and a cover for said housing, said cover having a metal electrical terminal extending therethrough; and

an electrochemical system within the metal housing and including an electrolytic solution and a battery stack exposed to the electrolytic solution, said electrolytic solution including a catalytically-reducible soluble cathode, and said battery stack comprising:

a cathode structure adjacent to the metal housing and operative during discharge of the cell to catalytically reduce the soluble cathode of the electrolytic solution; and

an anode structure comprising:

a metal electrode spaced from the cathode structure and the metal housing and having a predetermined initial surface area; and an elongated thin, bare, flexible, metal element at the potential of the metal electrode



and disposed between the metal electrode and the electrical terminal in the cover, said metal element having a surface area of from 1–10 percent of the initial surface area of the metal electrode for minimizing the parasitic catalytic reduction of the soluble cathode at the surface of the metal element.

4,410,609

ELECTROCHEMICAL CELL

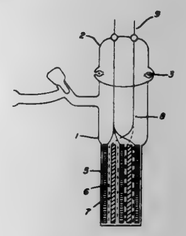
Emanuel Peled, Hanotea St., Even Yehuda (a Settlement), and Hertzel Yamin, 12 Habitachon St., Kiron, both of Israel

Filed Sep. 17, 1981, Ser. No. 303,020

Claims priority, application Israel, Sep. 19, 1980, 61085

Int. Cl.³ H01M *6/16*

U.S. Cl. 429—105 **19 Claims**



1. A primary cell comprising in combination:

a. an anode consisting of lithium, sodium or a dischargeable alloy of same having a melting point above 80° C.

b. an electrolyte comprising a solvent or mixture of solvents of suitable melting and boiling point adapted to dissolve a polysulfide at a concentration above 0.01 M and to dissolve an electrolyte salt to make a solution of at least 0.1 M, said solvent having an own EMF against the anode which is low enough so that it will not prevent the reaction of the anode material with said polysulfide to form a M_2S solid electrolyte interphase, said electrolyte containing a polysulfide M_2S_n where M is a metal selected from lithium and sodium, the concentration of the polysulfide being high enough and n being low enough to result in a predetermined low selfdischarge of the cell, and

c. an inert porous cathodic current collector, which may be loaded with sulfur.

4,410,610

POLE BUSHING FOR BATTERIES

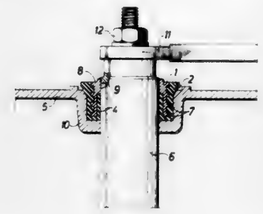
Kaj Quist, Oljobergsvägen, Sweden, assignor to AB Tudor, Nol, Sweden

Filed Sep. 24, 1980, Ser. No. 190,335

Claims priority, application Sweden, Oct. 4, 1979, 7908222

Int. Cl.³ H01M *2/00*

U.S. Cl. 429—181 **2 Claims**



1. A pole bushing for a lead acid battery of the type having a cover and a lead post connected to electrode plates and passing through the cover, said bushing comprising:

a lead sleeve provided with grooves and embedded in an elastic rubber sealing material to form therewith a sealing element having an extended sealing path therewithin;

one end of said sleeve projecting beyond the sealing material and being rigidly connected to said lead post so that said lead post and said sealing element are rigidly and immovably interconnected for common movement in the axial direction of said post;

said sealing element including:

an internal surface defined partially by said elastic rubber sealing material and partially by an internal surface of said one end of said lead sleeve, said internal surface of said sealing element being in close and immovable contact with the lead post; and

an external surface slidingly bearing against the battery cover, permitting said sealing element and said post to move relative to the battery cover, said external surface of said sealing element being defined by said elastic rubber sealing material which constitutes the sole fluid seal between the cover and the sealing element.

4,410,611

HARD AND ADHERENT LAYERS FROM ORGANIC RESIN COATINGS

Bernard A. MacIver, Lathrup Village, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 297,916, Aug. 31, 1981, abandoned, which is a division of Ser. No. 144,579, Apr. 28, 1980, abandoned. This application Jan. 31, 1983, Ser. No. 462,302

Int. Cl.³ G03G *1/68;* **B05D** *3/06*

U.S. Cl. 430—5 **12 Claims**

1. A method of making a hard and adherent coating, comprising the steps of:

applying to a substrate a coating of a sulfur-free organic resin that shrinks in thickness when subjected to ion bombardment, the coating having an implantation surface and providing a coating-substrate interface,

implanting ions into the implantation surface, at a first energy that provides complete penetration of the resin coating at the beginning of bombardment, for a duration long enough to at least partially carbonize the coating, and

subsequently implanting ions into the implantation surface, at at least one lesser energy that lodges the ions at or near the coating-substrate interface, for a duration that enhances hardness and scratch resistance of the coating over that obtained by the first-mentioned ion implantation.

4,410,612

ELECTRICAL DEVICE FORMED FROM POLYMERIC HEAT RESISTANT PHOTOPOLYMERIZABLE COMPOSITION

David L. Goff, Springfield; Edward L. Yuan, Philadelphia, both of Pa., and Stephen Proskow, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

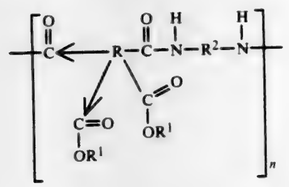
Continuation-in-part of Ser. No. 183,648, Sep. 3, 1980, Pat. No. 4,329,419. This application Dec. 24, 1981, Ser. No. 334,166

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—18 **10 Claims**

1. An electrical device having at least one semiconductive dielectric layer and a relief structure thereon; wherein the relief structure consists of a stable heat resistant polyimide material formed by applying a solvent soluble radiation sensitive polyamide ester resin composition to a substrate, drying the composition, exposing the composition to radiation through a pattern, dissolving the unradiated portions and converting the resulted relief structure by heating to form a polyimide structure and wherein the polyamide ester resin composition consists essentially of

(a) a polyamide ester resin containing photopolymerizable groups comprising the following structure:



wherein →denotes isomerism, R is an aromatic radical, R^1 is an organic radical containing a photo polymerizable olefinic double bond, R^2 is an aromatic, aliphatic or cycloaliphatic radical and n is a positive integer sufficiently large to provide the resin with a weight average molecular weight of about 5,000 to 75,000 determined by gel permeation chromatography;

(b) solvent for the resin;

(c) radiation sensitive polymerizable polyfunctional acrylate compound and

(d) photopolymerization initiator of an aromatic biimidazole; wherein the polyamide ester resin being converted by heating to a polyimide structure.

4,410,613

PROCESS AND EQUIPMENT FOR ENLARGEMENT OF COLOR-BALANCED PRINTS IN ADDITIVE SYSTEM

Miklos Soskuthy, Budapest, Hungary, assignor to Ofotert Optikai Finommechanikai es Fotocikkeket Ertekesito Vallalat, Budapest, Hungary

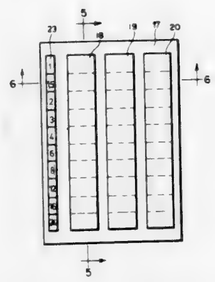
Filed Sep. 14, 1981, Ser. No. 301,968

Int. Cl.³ G03C *7/16*

U.S. Cl. 430—30 **6 Claims**

1. A process for the colour-balanced enlargement of coloured prints using the additive method wherein a plurality of coloured filters are sequentially placed in the light path of an enlarger, with the light thereof directed onto a trial print to determine the exposure time, the improvement comprising the steps of passing the light of said enlarger through the negative to be enlarged and a light diffuser element integrating the colour of said light from said negative, placing a plurality of additive filters in the path of said integrated light whereby such integrated light simultaneously impinges on and passes through each of the additive filters for exposure on the trial print, placing a grey wedge between the trial print and the additive filters, the grey wedge having a plurality of density gradations thereon that darken relatively gradually along a given direction with each gradation corresponding to a given time, each of the additive filters producing respective coloured fields of yellow, magenta, and cyan on the trial print with each of the coloured fields having corresponding density gradations which correlate to a given time,

said fields being at least 50% darker than the faintest colour shades recognizable by eye and of a density value of a



minimun of 0.2.D and comparing the density gradations of the respective coloured fields of the trial print to a coloured reference having a given colour density so that the time of exposure for a colour-balanced enlargement corresponding to the colour density of the reference can be found.

4,410,614

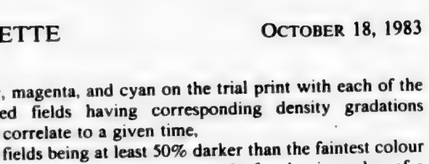
POLYMERIC ELECTRICALLY ACTIVE CONDUCTIVE LAYER (EAC) FOR ELECTRICALLY ACTIVATABLE RECORDING ELEMENT AND PROCESS

Mark Lelental, and James M. Pearson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 14, 1982, Ser. No. 388,376

Int. Cl.³ G03G *13/22, 17/00*

U.S. Cl. 430—45 **36 Claims**



30. A dry, electrically activatable recording process for producing a dye-enhanced silver image in an electrically activatable recording element comprising, in sequence:

(a) a first support having thereon

(b) a first electrically conductive layer, and

(c) a photoconductive layer, having thereover

(d) an electrically activatable recording layer separated from (c) by (i) an air gap of up to 20 microns or (ii) by an electrically conductive interlayer, said electrically activatable recording layer comprising, in an electrically conductive polyacrylamide binder,

(A) a dye-forming coupler consisting essentially of a compound selected from the group consisting of 2,6-dihydroxyacetanilide and 2',6'-dihydroxytrifluoroacetanilide and combinations thereof, and

(B) an oxidation-reduction combination comprising

(i) an organic silver salt oxidizing agent consisting essentially of a silver salt of 3-amino-5-benzylthio-1,2,4-triazole, with

(ii) a reducing agent consisting essentially of 4-amino-2-methoxy-N,N,5-trimethyl aniline sulfate,

(e) a polymeric electrically active conductive layer consisting essentially of poly(tribromophenoxypropyl acrylate),

(f) an electrically conductive cermet layer, and

(g) a second support;

said process comprising the steps of:

(I) imagewise altering the conductivity of said photoconductive layer in accord with an image to be recorded;

(II) applying an electrical potential across said photoconductive layer and recording layer of a magnitude and for a time sufficient to produce a latent image in said recording layer corresponding to said image to be recorded; and,

(III) heating said recording layer substantially uniformly at a temperature and for a time sufficient to produce a dye-enhanced silver image in said recording layer.

4,410,615

LAYERED ELECTROPHOTOGRAPHIC PHOTOSENSITIVE ELEMENT HAVING HYDRAZONE CHARGE TRANSPORT LAYER

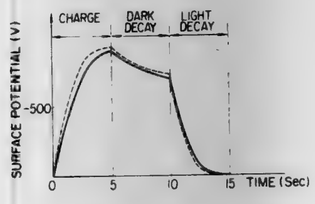
Satoshi Goto; Akira Kinoshita; Tsuneo Wada, all of Hino; Yoshiaki Takei, Hachioji; Naoko Akashi, Hachioji, and Hiroyuki Nomori, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1981, Ser. No. 307,087

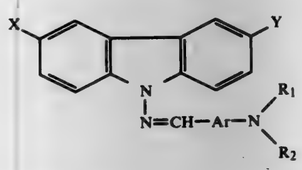
Claims priority, application Japan, Oct. 23, 1980, 55-147544

Int. Cl.³ G03G *5/14*

U.S. Cl. 430—59 **26 Claims**



1. An electrophotographic photosensitive element having a conductive support provided thereon with a photosensitive layer comprising a carrier-generating phase containing a carrier-generating material selected from the group consisting of perylene dyes, polycyclic quinones and azo dyes and a carrier-transporting phase containing a carrier-transporting material wherein said carrier-transporting phase comprises a hydrazone compound represented by the formula



wherein, X and Y each represent a hydrogen or a halogen, R_1 and R_2 each represent an aryl group which may have a substituent or substituents, and Ar represents an arylene group which may have a substituent or substituents.

4,410,616

MULTI-LAYERED AMBIPOLAR PHOTORESPONSIVE DEVICES FOR ELECTROPHOTOGRAPHY

Clifford H. Griffiths, Pittsford, and Andrew R. Melnyk, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 10, 1982, Ser. No. 376,078

Int. Cl.³ G03G *5/14*

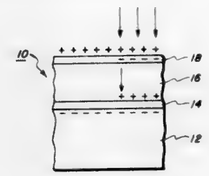
U.S. Cl. 430—59 **24 Claims**

1. An improved ambipolar photoresponsive device useful in imaging systems for the production of positive images from either positive or negative originals, comprised of:

(a) a supporting substrate,

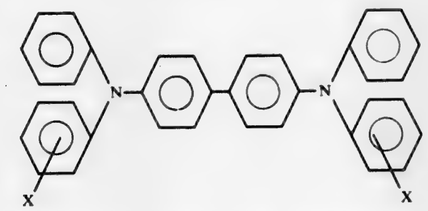
(b) a first photogenerating layer,

(c) a charge transport layer, and



(d) a second photogenerating layer,

wherein the charge transport layer is comprised of a highly insulating organic resin having dissolved therein small molecules of an electrically active material of the formula:



wherein X is selected from the group consisting of alkyl and halogen.

4,410,617

COLORED TONER AND DEVELOPER COMPOSITION

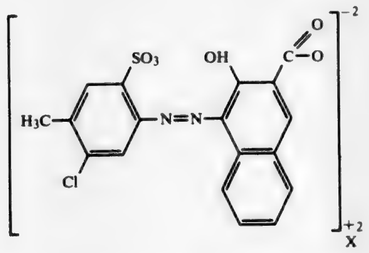
Chin H. Lu, Webster, and Christopher J. AuClair, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,192

Int. Cl.³ G03G *9/10*

U.S. Cl. 430—106 **19 Claims**

1. An improved developer composition comprised of carrier particles, resin particles, and dispersed in the resin particles pigment particles, wherein one of the pigments is comprised of the alkaline earth salts of 4-amino-2-chlorotoluene-5-sulfonic acid coupled to 3-hydroxy-2-napthalene carboxylic acid of the formula



wherein X is the cation calcium, barium or strontium.

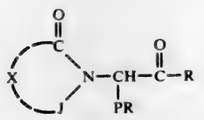
4,410,618

BLOCKED PHOTOGRAPHIC REAGENTS

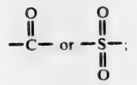
James P. Vanmeter, and Chin H. Chen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 11, 1982, Ser. No. 387,398
Int. Cl.³ G03C *1/40, 1/10, 5/54, 7/00*
U.S. Cl. 430—219 **21 Claims**

1. A photographic image transfer film unit comprising:
(a) a photosensitive element comprising a support bearing a layer of a silver halide emulsion having associated therewith a dye-image-providing material, and
(b) a dye image-receiving layer, the film unit containing an α-ketoimidomethyl blocked photographic reagent having the structure:



wherein:
J represents



X represents the atoms to complete a heterocyclic nucleus containing at least one 5- or 6-membered ring;
R represents alkyl of 1 to 30 carbon atoms or aryl of 6 to 30 carbon atoms; and
PR represents the residue of a development inhibitor containing a sulfur or nitrogen atom through which it is joined to the α-ketoimidomethyl blocking group.

4,410,619

PHOTOGRAPHIC MATERIAL

Massashi Kubbota, and Touru Noda, both of Toyko, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Apr. 8, 1982, Ser. No. 366,690
Claims priority, application Japan, Apr. 11, 1981, 56-54849
Int. Cl.³ G03C *1/86, 1/06*
U.S. Cl. 430—234 **11 Claims**

1. A photographic material comprising a support and, provided thereon, a photographic constitution layer or layers at least one of which contains at least one silver halide developer characterized in that said support is obtained by coating a film-forming resin on base paper surface-treated with at least one compound expressed by the general formula (I):

$$R—SO_2M \quad (I)$$

wherein R represents an alkyl group, substituted alkyl group, aryl group or substituted aryl group; M represents a hydrogen atom, alkali metal atom, alkaline earth metal atom or ammonium, the amount of the compound expressed by the general formula (I) being 50–5000 mg per m^2 of the base paper.

4,410,620

OFFSET PLATES IN STEEL, USING SURFACES CONTAINING CHROMIUM OXIDE

Jean-Marie Nouel, 67 rue de Miromesnil, Paris, France 75008

Filed Apr. 10, 1981, Ser. No. 253,040
Claims priority, application France, Apr. 16, 1980, 80 08538
Int. Cl.³ G03C *1/94*
U.S. Cl. 430—276 **5 Claims**

1. An offset plate comprising a steel support having a water-accepting matte surface of dull chromium which is coated with a photosensitive polymer printing layer effective after light exposure to form an ink absorbing offset printing image on said dull chromium layer and wherein between said steel support and said dull chromium layer is provided a shiny chromium-chromium oxide layer of thickness less than 0.5 micron.

4,410,621

PHOTOSENSITIVE RESIN CONTAINING A COMBINATION OF DIPHENYL-IMIAZOLYL DIMER AND A HETEROCYCLIC MERCAPTAN

Minoru Wada, Nishinomiya, and Minoru Fukuda, Nagaokakyo, both of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Apr. 3, 1981, Ser. No. 250,805
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—281 **4 Claims**

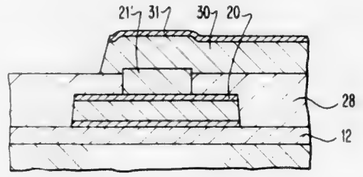
1. A photosensitive resin composition which comprises (1) an ethylenically unsaturated compound which can be addition polymerized to form a high molecular compound, said addition polymerization being initiated by a free radical and chain-propagating, (2) a 2-polycyclic aryl-4,5-diphenylimidazolyl dimer wherein the polycyclic aryl group at the 2-position comprises at least two benzene rings condensed each other and (3) a heterocyclic mercaptan compound, the molar ratio of the 2-polycyclic aryl-4,5-diphenylimidazolyl dimer and the heterocyclic mercaptan compound being from 5:1 to 1:5.

4,410,622

FORMING INTERCONNECTIONS FOR MULTILEVEL INTERCONNECTION METALLURGY SYSTEMS

Hormazdyzr D. Dalal; Bisweswar Patnaik, both of Wappingers Falls, and Homi G. Sarkary, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 179,209, Aug. 18, 1980, abandoned, which is a continuation of Ser. No. 974,572, Dec. 29, 1978, abandoned. This application Nov. 18, 1982, Ser. No. 442,534
Int. Cl.³ B05D *3/06*
U.S. Cl. 430—312 **9 Claims**



1. A method for making a connective system for electrically connecting regions of a semiconductor substrate, the method comprising the steps of:
a. forming a patterned composite metal film at select regions of the substrate, the composite metal film being formed with a first metallic layer in contact with the substrate, a second metallic layer overlaying the first layer and a third metallic layer overlaying the second layer, the metal of the second layer having an etch rate substantially less than the etch rate of the third layer when reactive ion etched in a gas mixture including argon and chlorine;
b. forming a positive patterning composition reactive ion etch mask at select regions of the composite metal film, the composite mask including a first mask layer of Novolak-resin-based photoresist of predetermined thickness overlaying the composite metal film, a second masking layer of methylsiloxane resin of predetermined thickness overlaying the first masking layer and a third masking layer of radiation sensitive material overlaying the second masking layer;
c. patterning the composite etch mask by selectively exposing the third layer thereof to radiation in accordance with the pattern desired, developing the third layer, patterning the mask second layer with a reactive ion etch in a gas mixture including fluorine and oxygen in accordance with the pattern of the third layer; and thereafter patterning the mask first layer with a reactive ion etch of oxygen in accordance with the pattern of the second layer so that the second layer does not overhang the first layer;
d. patterning the third metallic layer of the composite metal film by reactive ion etching with a gas mixture including argon and chlorine so that the predetermined thickness of the etch mask second and third layer sustains a residual thickness after etch which is sufficient to assure formation of a metallic stud in the third layer substantially in conformity with the mask pattern, the second metallic layer of the metal film acting as an etch stop;
e. removing the residual composite reactive ion etch mask;
f. depositing a nonconducting film over the patterned composite metal film and the substrate; and
g. etching the nonconductive film to expose at least a portion of the stud formed in the third layer of the composite metal film.

4,410,623

PHTHALALDEHYDE ADDUCT AND IMAGING COMPOSITIONS, ELEMENTS AND METHODS INCORPORATING SAME

Thap DoMinh, and Max H. Stern, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,544
Int. Cl.³ G03C *1/52*
U.S. Cl. 430—341 **13 Claims**

1. In an unexposed imaging composition comprising a source of phthalaldehyde and an energy-activatible material capable of generating an amine that reacts with said phthaladehyde to form a dye, said material including a cobalt(III) complex;
the improvement wherein said source of phthalaldehyde comprises an adduct of phthalaldehyde in an amount sufficient to produce in said composition a maximum neutral density of at least 1.0, when coated onto a support in an amount of about 0.16 mmoles/dm^2, dried and exposed at a distance of 2.5 cm for 30 sec to three 60-watt UV-fluorescent lamps and developed by heating for 10 sec at a temperature of 135° C.

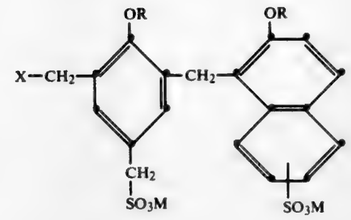
4,410,624

METHOD OF DISPERSING OIL SOLUBLE PHOTOGRAPHIC ADDITIVES

Dieter Plaschnick, Wolfen; Christoph Roth, Halle-Neustadt; Bernd Noll; Walter Kroha, both of Wolfen, and Lothar Kuhnert, Berlin, all of German Democratic Rep., assignors to VEB Filmfabrik Wolfen, Wolfen, German Democratic Rep.

Filed Mar. 26, 1982, Ser. No. 362,218
Claims priority, application German Democratic Rep., Sep. 10, 1981, 230681
Int. Cl.³ G03C *7/00, 1/40*
U.S. Cl. 430—377 **24 Claims**

1. A process of dispersing oil-soluble photographic additives in aqueous gelatins or other hydrophilic binding agents in the presence of auxiliary dispersing agents, characterized in that dispersion is carried out in the presence of compounds of the general formula



as auxiliary dispersing agents,
wherein
R represents hydrogen, alkyl with 1 to 8 C atoms,
M represents hydrogen, an alkali metal, ammonium, and
X OR or SO_3M.

4,410,625

SALT-TOLERANT MICROBIAL XANTHANASE AND METHOD OF PRODUCING SAME

Martin C. Cadmus, Peoria, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 4, 1982, Ser. No. 345,512
Int. Cl.³ C12P *39/00*
U.S. Cl. 435—42 **8 Claims**

1. A method for degrading xanthan gum comprising fermenting said gum with a mixed culture comprising: (1) a first soil bacterium bearing the ARS Culture Collection Accession No. NRRL B-4529; and (2) at least one other soil bacterium capable of enhancing the growth of said first soil bacterium when in mixed culture therewith on a xanthan-containing medium; wherein the fermentation is conducted under aerobic conditions suitable for the growth of said first soil bacterium and for the elaboration of xanthanase by said first soil bacterium.

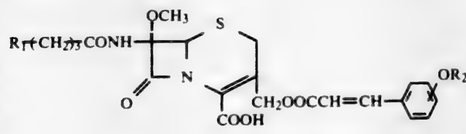
4,410,626

PROCESS FOR THE PRODUCTION OF 7α-METHOXYCEPHALOSPORIN DERIVATIVES

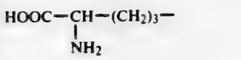
Hiroshi Gushima, Ageo; Shunichi Watanabe, Omiya; Takeshi Saito, Tokyo; Toshio Sasaki, Toda; Hideo Eiki, Omiya; Yoshihiko Oka, Kawagoe, and Takashi Osono, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co. Ltd., Tokyo, Japan

Division of Ser. No. 97,823, Nov. 27, 1979, Pat. No. 4,259,326. This application Oct. 29, 1980, Ser. No. 201,739
Claims priority, application Japan, Dec. 12, 1978, 53-153871
Int. Cl.³ C12P *35/08*; C12N *9/06*; C12R *1/465, 1/52*
U.S. Cl. 435—48 **10 Claims**

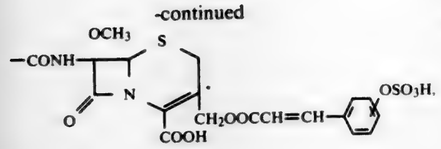
1. A process of producing the 7α-methoxycephalosporin derivative represented by the general formula



wherein R_1 represents a carboxy group and R_2 represents a sulfo group which comprises cultivating a strain belonging to the genus Streptomyces which is capable of producing the 7α-methoxy-cephalosphorin derivative shown by the formula



-continued



reacting the resulting product with a D-aminoacid oxidizing enzyme produced by a Trigonopsis strain capable of producing said enzyme, and recovering the thus resulting product.

4,410,627

GLUCOSE ISOMERASE PROCESS

Norman E. Lloyd, Clinton, Iowa, and Robert O. Horwath, Westport, Conn., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,848
Int. Cl.³ C12P *19/24*
U.S. Cl. 435—94 **39 Claims**

1. A process for isomerizing glucose to fructose which comprises contacting a glucose-containing feed liquor containing from about 20 to about 65 weight percent glucose with glucose isomerase at a temperature of from about 90° C. to about 130° C. at a pH of from about 3.5 to about 8 and a contact time of from about 10 seconds to about 5 hours to convert at least about 53 to about 60 weight percent of the glucose present in said liquor to fructose with no substantial formation of psicose and/or other non-fructose, non-glucose sugars with the product fructose-glucose syrup.

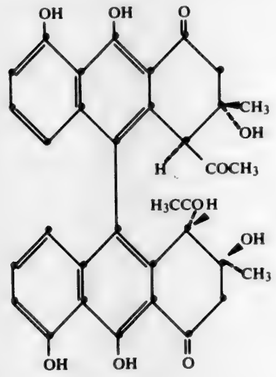
4,410,628

A-39183 ANTIBIOTICS AND PROCESS FOR PRODUCTION THEREOF

Kay F. Koch, North Salem, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 90,386, Nov. 1, 1979, Pat. No. 4,283,390.
This application Feb. 9, 1981, Ser. No. 232,921
Int. Cl.³ C12P *15/00*; C12N *15/00*; C12R *1/465*
U.S. Cl. 435—127 **1 Claim**

1. The method of producing antibiotic A-39183 factor A having the structure



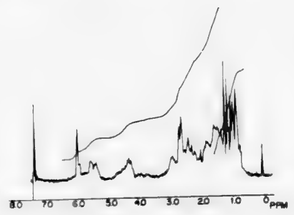
which comprises (a) producing the A-39183 complex by cultivating Streptomyces sp. NRRL 12049, or an A-39183-producing variant or mutant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced; (b) isolating the A-39183 antibiotic complex from the culture medium; and (c) isolating A-39183 factor A from the separated A-39183 complex.

4,410,629

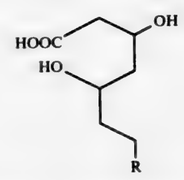
ML-236B DERIVATIVES AND THEIR PREPARATION

Akira Terahara, and Minoru Tanaka, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Division of Ser. No. 270,846, Jun. 5, 1981, Pat. No. 4,346,227.
This application Feb. 24, 1982, Ser. No. 351,974
Claims priority, application Japan, Jun. 6, 1980, 55-76127; Aug. 22, 1980, 55-115483; Sep. 8, 1980, 55-124385; Sep. 19, 1980, 55-130311
Int. Cl.³ C12P *7/42*
U.S. Cl. 435—146 **24 Claims**

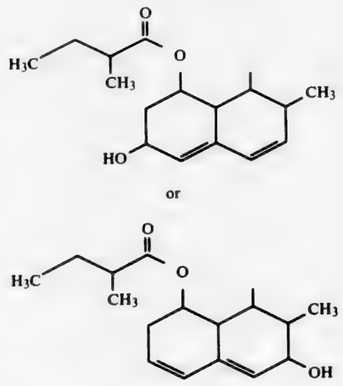


1. A process for preparing a compound of the formula (I).

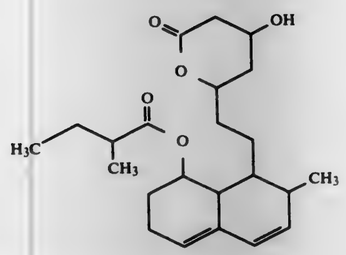


(I)

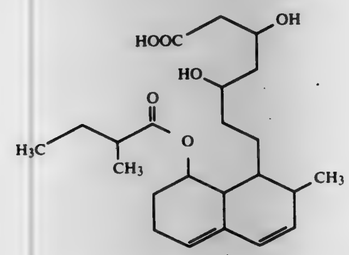
wherein R represents a group of formula



or a ring-closed lactone, salt or ester thereof which comprises enzymatically hydroxylating a substrate selected from ML-236B having the formula



or ML-236B carboxylic acid having the formula



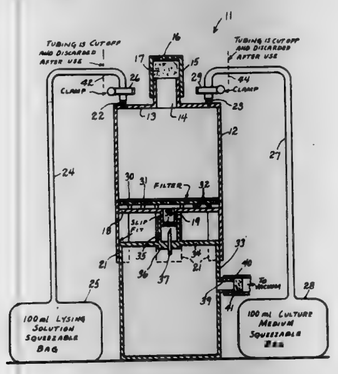
or a salt or ester of said ML-236B carboxylic acid with a microorganism of the genera Mucor, Rhizopus, Zygorynchus, Circinella, Actinomucor, Gongronella, Phycomyces, Martierella, Pycnoporus, Rhizoctonia, Absidia, Cunninghamella, Syncephalastrum and Streptomyces or with a cell-free, enzyme containing extract from said microorganisms to produce said compound of the formula (I), and recovering said compound of the formula (I).

4,410,630

LYSIS FILTRATION CULTURE CHAMBER

Charles H. Zierdt, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 11, 1981, Ser. No. 330,020
Int. Cl.³ C12M *3/00*
U.S. Cl. 435—284 **15 Claims**



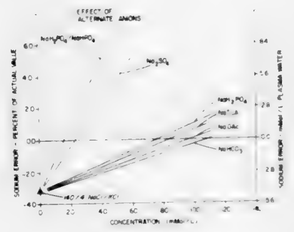
1. An apparatus for blood sample treatment involving lysis, filtration and culture, said apparatus comprising an upper chamber for receiving a blood sample, a first flexible bag containing lysing solution, a first flexible severable conduit connecting said first flexible bag to the upper chamber, a first removable clamp on said first flexible conduit, a second flexible bag containing culture medium, a second flexible severable conduit connecting said second flexible bag to said upper chamber, a second removable clamp on said second flexible conduit, said upper chamber having a bottom wall provided with a depending discharge spout, a filter member mounted in said upper chamber above said bottom wall, a lower chamber below said upper chamber and having a top wall provided with a cup member telescopically engaged with said discharge spout, said discharge spout being provided with a penetrable diaphragm normally sealing the spout, a pointed upstanding hollow needle mounted in said cup member and being arranged to penetrate the diaphragm when the upper and lower chambers are pressed together, to thereby communicatively connect the chamber, vacuum conduit means connected to said lower chamber, and wherein said penetrable diaphragm is sealingly secured in the bottom rim portion of said discharge spout.

4,410,631

COMPENSATED REFERENCE LIQUID

John D. Czaban, Bradford, and Alan D. Cormier, Newburyport, both of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 170,599, Jul. 21, 1980, abandoned. This application Jun. 15, 1981, Ser. No. 271,321
Int. Cl.³ G01N *27/26*; C09K *3/00*
U.S. Cl. 436—8 **24 Claims**



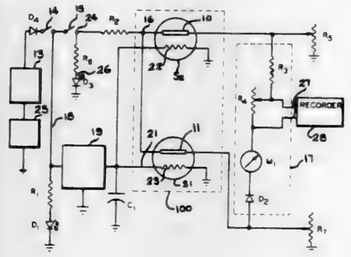
1. A compensated reference liquid for use with a chemical analyzer that has an ion selective electrode comprising
a first component that provides ions of a first element to be measured present in a predetermined concentration, and
an error compensation component for adjusting
(a) the activity coefficient factor (Equation 12), and/or
(b) the junction potential factor (Equation 13)
said error compensation component being present in a concentration sufficient to reduce the error in said compensated reference liquid at least fifty percent from the error in a corresponding reference liquid without said error compensation component.

18. A calibrant solution for the calibration of a chemical analyzer that has sodium and potassium ion selective electrodes comprising:
a first component that has a predetermined concentration of sodium ions,
a second component that has a predetermined concentration of potassium ions, and
an error compensation component present in a concentration such that the product of:
(a) the ratio of the activity coefficients of the sodium and potassium ions in said calibrant solution and in an undiluted speciment to be analyzed and
(b) the logarithmic quantity (exp_{10}) of the difference between the liquid junction potentials of said calibrant solution and said undiluted specimen to be analyzed divided by the slope of the ion selective electrode essentially is unity.

4,410,632
GAS SENSING APPARATUS AND METHOD

David R. Dilley, East Lansing; Julian J. L. Lee, Lansing, both of Mich., and Mikal E. Saltveit, Jr., Raleigh, N.C., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Continuation of Ser. No. 29,293, Apr. 12, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,676
Int. Cl.³ G01N *33/02, 27/16*
U.S. Cl. 436—20 9 Claims



1. A method for determining the concentration of small amounts of oxidizable gases in a carrier gas which comprises:
(a) providing a sealed flow path with identical P or N type semi-conductor heated sensing elements therein which decrease or increase in resistance as a function of the increasing absorption of small amounts of the oxidizable gas in a carrier stream on the sensing elements;
(b) introducing a carrier gas stream into said sealed flow path whereby the carrier gas enters a first zone containing a first one of said sensing elements in a first direction in said first zone and exits said zone of the first detector in a direction perpendicular to the direction of entry;
(c) removing said sensed carrier gas stream and injecting therein a second gas stream containing an oxidizable component having a concentration significantly less than 100 ppm thereby forming a combined gas stream to be sensed;
(d) conveying said combined gas stream through a conduit which directly connects and communicates said first and second identical sensing elements and said first zone with a second zone and forms the sealed flow path;
(e) introducing the combined gas stream into said second zone containing the second identical sensing element in a first direction;
(f) contacting the combined gas stream with said second sensing element and removing the sensed combined gas stream from said second zone along a direction perpendicular to the direction of entry;
(g) sensing the resistance of the respective sensors in the first and second zones; and
(h) determining the difference in resistance of the respective sensors as a current output as an indication of the oxidizable gas to be detected, wherein concentrations of ethylene as the oxidizable component in the carrier gas between 0.1 and 10 ppm can be detected.

4,410,633
METHOD FOR THE MEASUREMENT OF FREE THYROXINE OR 3,5,3'-TRIIODOTHYRONINE IN A LIQUID SAMPLE

William Hertl, Corning; Frank B. Ward, Painted Post, and Howard H. Weetall, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

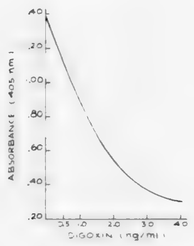
Filed Sep. 22, 1980, Ser. No. 176,654
Int. Cl.³ G01N *33/56, 33/58, 33/60*
U.S. Cl. 436—500 15 Claims

1. An immunoassay for the direct measurement of free thyroxine in a liquid sample in which the thyroxine is present in both free and combined states, which immunoassay comprises the steps of:
A. combining the sample with a labeled thyroxine-horseradish peroxidase conjugate which does not significantly interact with the thyroxine-binding globulin and thyroxine-binding prealbumin originally present in the sample and immobilized antibody which is specific for thyroxine;
B. Incubating the resultant mixture;
C. separating a solid phase from the liquid phase; and
D. measuring the amount of labeled thyroxine-horseradish peroxidase conjugate present in either phase by means of the activity of the label;
in which the conjugate is radiolabeled, fluorescent labeled, or chemiluminescent labeled.

4,410,634
METHOD OF PASSIVELY ADSORBING IMMUNO-REACTIVE HAPTENS TO SOLID PHASES

Harold R. Cooper, and Andrew O'Beirne, both of Walkersville, Md., assignors to Dynasciences Corporation, Los Angeles, Calif.

Continuation of Ser. No. 88,697, Oct. 26, 1979, abandoned. This application Nov. 12, 1981, Ser. No. 320,919
Int. Cl.³ G01N *33/54*
U.S. Cl. 436—500 7 Claims



1. A method of readily adsorbing immuno-reactive hapten to a solid phase for an immuno-assay, which hapten otherwise would not readily adsorb to said solid phase and retain its immuno-reactivity, which method retains said immuno-reactivity and comprises:
a. covalently binding an immuno-reactive hapten selected from the group consisting of digoxin, thyroxin, gentamicin, and triiodothyronine to a macromolecular carrier selected from the group consisting of bovine serum albumin, and human serum albumin through the use of a coupled agent selected from the group consisting of glutaraldehyde, and periodate with sodium borohydride;
b. contacting the resulting hapten-carrier conjugate with a solid phase selected from the group consisting of polystyrene, and polyvinyl acetate until a desired concentration of said hapten-carrier conjugate is adsorbed to the surface of said solid phase; and,
c. thereafter removing unbound hapten-carrier conjugate from said solid phase and recovering said solid phase containing said bound hapten-carrier conjugate.

4,410,635
DISCONTINUOUS SILICON CARBIDE FIBER REINFORCED CERAMIC COMPOSITES

John J. Brennan, Portland, and Karl M. Prewo, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 5, 1982, Ser. No. 345,998
The portion of the term of this patent subsequent to Mar. 2, 1999, has been disclaimed.
Int. Cl.³ C04B *35/56;* C03C *3/22*
U.S. Cl. 501—88 6 Claims

1. A silicon carbide fiber reinforced ceramic composite consisting essentially of about 15% to about 50% by volume high strength and high modulus of elasticity discontinuous silicon carbide fibers laid up in substantially in-plane random orientation in a substantially titanium-free glass-ceramic matrix selected from the group consisting of lithium aluminosilicate, magnesium aluminosilicate, barium aluminosilicate, aluminosilicate, and combinations thereof, so as to produce strength and fracture toughness properties greater than that of the matrix at temperatures in excess of 800° C. in an oxidizing environment.

4,410,636
METHOD OF MANUFACTURING A SINTERED MATERIAL BASED ON SILICON NITRIDE, AND MATERIAL OBTAINED BY THE METHOD

Louis Minjolle, Tarbes, and Serge Chateigner, Rabastens de Bigorre, both of France, assignors to Societe Anonyme Dite: Ceraver, Paris, France

Filed Dec. 7, 1982, Ser. No. 447,556
Claims priority, application France, Dec. 8, 1981, 81 22912
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—98 9 Claims

1. A method of manufacturing a silicon nitride based material, said material being obtained by natural sintering in the presence of a small quantity of yttrium oxide, the improvement wherein the method consists essentially of the steps of:
mixing silicon powder with relatively small quantities of aluminum powder and yttrium oxide powder;
substantially totally nitriding the mixture of powders;
re-crushing the nitrided mixture of powders;
shaping the re-crushed powders; and
sintering the shaped re-crushed powders in a nitrogen atmosphere.

9. A silicon nitride based sintered material of specific mass greater than 95% of the theretical specific mass obtained by natural sintering in the presence of a small quantity of yttrium oxide according to the method comprising the steps of:
mixing silicon powder with relatively small quantities of aluminum powder and yttrium oxide powder;
substantially totally nitriding the mixture of powders;
re-crushing the nitrided mixture of powders;
shaping the re-crushed powders; and
sintering the shaped re-crushed powders in a nitrogen atmosphere;
and wherein said material consists essentially of a crystaline phase having crystal parameters close to those of beta silicon nitride, and a vitreous phase rich in yttrium oxide, the combination of the two phases consisting essentially of a mixture of silicon nitride and aluminum nitride with 90% to 100% by weight silicon nitride, and 0% to 10% aluminum nitride, together with 1% to 10% yttrium oxide by weight relative to the total weight of the nitrides.

4,410,637
PROCESS FOR THE PREPARATION OF A HYDROCARBON MIXTURE FROM H_2/CO MIXTURES

Andras G. T. G. Kortbeek; Emmanuel E. A. Neel, and Guy Barre, all of Grand Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 23, 1981, Ser. No. 314,264
Claims priority, application France, Dec. 15, 1980, 80 26564
Int. Cl.³ C07C *1/04*
U.S. Cl. 518—714 6 Claims

1. A process for the preparation of a hydrocarbon mixture consisting substantially of C_5–C_{12} hydrocarbons from a mixture of hydrogen and carbon monoxide, which comprises contacting said H_2/CO mixture under suitable reaction conditions with a catalyst combination containing one or more metal components with catalytic activity for the conversion of an H_2/CO mixture into acyclic hydrocarbons and as a carrier, magadiite, a laminar crystalline silicate compound capable of absorbing metal ions or metal salts by intercalation.

4,410,638
DIAPHRAGM FOR ELECTROLYSIS AND PROCESS FOR THE PREPARATION THEREOF BY POLYMERIZING IN FLUORINATED MILROPOROUS MEMBRANE

Jean Bachot, Fontenay-aux-Roses, and Jean Grosbois, L'Isle Adam, both of France, assignors to Chloe Chimie, Paris, France

Division of Ser. No. 226,693, Jan. 21, 1981, Pat. No. 4,341,615. This application May 14, 1982, Ser. No. 378,075
Claims priority, application France, Jan. 29, 1980, 80 01843
Int. Cl.³ B01J *47/12*
U.S. Cl. 521—27 12 Claims

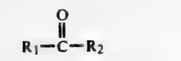
1. A method of preparing a porous hydrophilic diaphragm having a base of fluorinated polymers for electrolysis, said diaphragm characterized by the fact that it is microporous and covered on at least a part of the inner surface of its pores with a copolymer of mono-unsaturated carboxylic acid and non-ionic unsaturated monomer, the porosity being from about 50 to about 95 percent, the equivalent average diameter of the pores being from about 0.1 to about 12 micrometers, and 0.1 to 6 percent of the pore volume being occupied by dry polymer; said method characterized by forming a microporous sheet having a base of fluorinated polymers, impregnating said sheet with a liquid mixture comprising at least one mono-unsaturated carboxylic acid monomer, a non-ionic monomer, and a polymerization initiator, and causing the copolymerization.

4,410,639
CURING POLYEPOXIDE RESIN BINDERS IN HIGH DENSITY SYNTACTIC FOAM FORMING COMPOSITIONS

Robert W. Bouley, East Springfield, and Robert F. Kovar, Wrentham, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,927
Int. Cl.³ C08J *9/32*
U.S. Cl. 521—54 3 Claims

1. A method of curing the polyepoxide resin binder component of a syntactic foam forming composition, which comprises in admixture a curable polyepoxide resin matrix, and a filler which comprises a plurality of hollow microspheres, said foam having a density in excess of 35 lbs./ft³, comprising the steps of; curing the polyepoxide component with a curing agent which is the reaction product consisting essentially of (1) an organic polyepoxide curing agent possessing a primary amine group and (2) a mode of a ketone of the formula:


(I)

wherein R_1 and R_2 are each independently selected from the

group consisting of monovalent organic radicals for each of said amine groups, said reaction product having been premixed and reacted before addition to the curable polyepoxide resin binder component, whereby said curing occurs.

4,410,640

PROCESS FOR PRODUCING A GEL-LIKE COMPOSITION OF A HIGH POLYMER OF ACETYLENE, AND PROCESS FOR MOLDING SAID COMPOSITION

Yukio Kobayashi; Hideki Shirakawa, both of Yokohama, and Sakuji Ikeda, Tokyo, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan

Division of Ser. No. 224,517, filed as PCI JP 80/00053, on Mar. 28, 1980, published as WO80/02143, on Oct. 16, 1980, § 102(e) date, Nov. 19, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,890

Claims priority, application Japan, Mar. 29, 1979, 54-36283; Mar. 29, 1979, 54-36288; Apr. 25, 1979, 54-50244; May 4, 1979, 54-54017; May 4, 1979, 54-54018

Int. Cl.³ C08J *9/28*

U.S. Cl. 521—63 **2 Claims**

1. A process for producing a porous acetylene high polymer, which comprises lyophilizing a gel-like composition composed of 1 part by weight of an acetylene high homopolymer having a fibril structure and 1 to 1,000 parts by weight of an organic solvent, said gel-like composition being a member selected from the group consisting of (1) a product prepared by polymerizing acetylene in a polymerization solvent containing a catalyst system composed of (A) a transition metal compound containing at least one transition metal selected from transition metals of Groups IVa, Va, VIa and VIII of the periodic table and (B) an organometallic compound containing at least one metal selected from metals of Groups IIa, IIb, IIIb and IVb of the periodic table, the concentration of the transition metal compound being 0.0001 to 0.1 mole per liter of the polymerization solvent, and (2) a product in which all or a major portion of the polymerization solvent in the product of said (1) is replaced by an organic solvent having a freezing point of −50° to 50° C.

4,410,641

POLYSIOCYANURATE-POLYURETHANE FOAMS

Thirumurti Narayan, Grosse Ile; Theodore O. Stolz, Detroit, and John T. Patton, Jr., Wyandotte, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jan. 4, 1982, Ser. No. 336,877

Int. Cl.³ C08G *18/14, 18/32*

U.S. Cl. 521—167 **3 Claims**

1. A process for the preparation of polyisocyanurate-polyurethane foams comprising reacting an organic polyisocyanate with a polyol at an isocyanate index of 150 to 470 in the presence of a blowing agent and an effective amount of a trimerization catalyst, the improvement comprising employing as the polyol component oxyethylated toluene diamine and diethylene glycol.

4,410,642

COATING COMPOSITIONS

John M. Layton, Wellingborough, England, assignor to Scott Bader Company Limited, Wollaston, England

PCT No. PCT/GB81/00157, § 371 Date Apr. 5, 1982, § 102(e) Date Apr. 5, 1982, PCT Pub. No. WO82/00653, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 6, 1981, Ser. No. 375,135

Claims priority, application United Kingdom, Aug. 15, 1980, 8026663

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—122 **10 Claims**

1. A composition for use as an anti-fouling coating on a substrate, the composition including particles of a heavy metal selected from the group consisting of copper and copper alloys to give fouling resistance and a resin comprising an unsaturated polymer and a monomer copolymerizable therewith, which resin is curable by a free-radical-initiated crosslinking mechanism and has an acid value of less than about 10 mg KOH/g.

4,410,643

METHOD OF MAKING AND THE COMPOSITION FOR AN INITIALLY ERASABLE INK FOR A BALL POINT WRITING INSTRUMENT

Frank A. Muller, Los Angeles, Calif., assignor to Scripto, Inc., Doraville, Ga.

Continuation-in-part of Ser. No. 247,982, Mar. 26, 1982, Pat. No. 4,349,639. This application May 7, 1982, Ser. No. 376,119

Int. Cl.³ B41K *7/00;* **C08K** *5/01;* **B43K** *7/10;* **C09D** *11/18*

U.S. Cl. 523—161 **5 Claims**

1. In a ball point writing instrument containing an ink capable of depositing a trace on an absorbent, paper-like writing surface having minute voids therein, said trace being characterized by initial erasability thereof by ordinary pencil erasers and developing permanence over a period of time, said ink comprising pre-pigmented elastomer dispersed in a solvent system, said pre-pigmented elastomer comprising a pigment and a solid hydrocarbon elastomer component in which the elastomer component has a Mooney viscosity within a desired range and being selected from styrene butadiene rubber, with or without polyisobutylene rubber, and the pigment is force impregnated into the elastomer component prior to the pre-pigmented elastomer being dispersed in the solvent system, said pre-pigmented elastomer and said solvent system comprising a volatile component and an essentially non-volatile component both of which are solvents for the elastomer component and in which the volatile component has a boiling point of less than 180° C. and is present in amount of 30% or less of the weight of the ink, said essentially non-volatile component having a boiling point of greater than 180° C. and being present in an amount to result in a final ink viscosity of between 0.5×10^6–4×10^6 cps.

4,410,644

FLOWABLE ANAEROBIC SEALANT COMPOSITION

James L. Bunyan, Akron, Ohio, assignor to Cajon Company, Macedonia, Ohio

Continuation of Ser. No. 139,634, Apr. 11, 1980, Pat. No. 4,331,580. This application Dec. 7, 1981, Ser. No. 328,203

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.³ C08K *5/10*

U.S. Cl. 523—176 **1 Claim**

1. A method of producing a flowable anaerobic sealant composition which is characterized by its ability to remain stable for an extended period of time prior to solidifying which method comprises mixing together;

(a) a polymerizable acrylate ester monomer;

(b) a hydroperoxide polymerization catalyst for said acrylate ester monomer in an amount sufficient to cause said monomer to polymerize under anaerobic conditions;

(c) a quinone polymerization inhibitor in an amount sufficient to prevent said monomer from polymerizing when standing for long periods of time;

(d) an organic sulfimide accelerator in an amount sufficient to increase the rate of polymerization of said monomer under anaerobic conditions;

(e) a thickening agent in an amount sufficient to render said sealant composition flowable at room temperature;

(f) a coloring agent in an amount sufficient to render said sealant composition non-transparent;

(g) a viscosity controlling agent in an amount sufficient to cause said sealant composition to flow into said threads when applied thereto without excessive runoff;

(h) an effective amount of tetrafluorethylene polymer as an anti-galling agent; and

(i) at least one plasticizer selected from the group consisting of animal fats and oils in an amount sufficient to render the solidified composition relatively non-brittle.

4,410,645

AQUEOUS SIZING COMPOSITION AND SIZED GLASS FIBERS AND METHOD

Balbhadra Das, and L. Dow Moore, both of Allison Park, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 273,791, Jun. 15, 1981, Pat. No. 4,338,233. This application Mar. 29, 1982, Ser. No. 363,164

Int. Cl.³ C08K *9/06*

U.S. Cl. 523—206 **3 Claims**

1. Reinforced polymeric materials selected from sheet molding compounds, bulk molding compounds and thick molding compounds having as reinforcement glass fiber strands where the glass fibers have the dried residue of an aqueous sizing composition for use in reinforcing polymeric materials, wherein the aqueous sizing composition comprises:

(a) a major amount of the solids of the sizing composition being one or more cross-linkable film forming polymers compatible with the polymeric matrix to be reinforced with glass fibers,

(b) one or more organo-silane coupling agents in an amount up to about 20 weight percent of the solids of the sizing composition,

(c) an interaction product of an epoxidized polar thermoplastic copolymer and an unhydrolyzed or partially hydrolyzed amino-containing organo-silane coupling agent in an amount of about 10 weight percent up to about 50 weight percent of the solids of the sizing composition, wherein the interaction product is formed by contacting the epoxidized copolymer which has about 2 to about 12 parts of epoxidized monomer per 100 parts of copolymer and which has a glass transition temperature from about −10° C. to about 70° C. with the amino-containing organo-silane coupling agent wherein the amount of the amino silane coupling agent is in the range of about 0.1 to about 1.2 weight percent of an aqueous mixture having at least 20 weight percent of the epoxidized copolymer, and

(d) an amount of water sufficient to make the percent solids of the sizing composition in the range of about 2 to about 30 weight percent.

4,410,646

FORM MASSES FROM THERMOPLASTIC SYNTHETIC MATERIALS AND RESIDUES OF COAL HYDROGENATION

Ingo Romey, Hünxe, Fed. Rep. of Germany, and Menachem El-Roy, Haifa, Israel, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 280,512, Jul. 6, 1981, abandoned, which is a continuation of Ser. No. 75,742, Oct. 29, 1979, abandoned. This application May 19, 1982, Ser. No. 380,009

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—65 **9 Claims**

1. Form mass, comprising

(a) thermoplastic material mixtures of polyolefins and/or olefin copolymers which contain polar, aromatic or cyclic monomers and

(b) liquefaction products of coal and

(c) where appropriate conventional fillers, wherein said liquefaction product is a residue occurring in extractive coal hydrogenation with a softening point of from 70° to 200° C., according to DIN (German Industrial Standard) 1995.

4,410,647

EPOXY COMPOSITION AND SEALING OF INTEGRATED CIRCUIT MODULES THEREWITH

John R. Susko, Vestal, and Robin A. Wheater, Owego, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 28, 1980, Ser. No. 210,917

Int. Cl.³ C08K *3/34, 5/45*

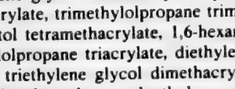
U.S. Cl. 524—88 **18 Claims**

1. A composition containing:

A. about 50–65% by weight of an epoxy polymer having an epoxy equivalent of at least about 400;

B. about 2–15% by weight of 4,4'-(2-acetoxy-1,3-glyceryl)-bis anhydrotrimellitate;

C. about 2–15% by weight of a polyanhydride solid at room temperature having the formula:



wherein m is a whole number integer of 4–8 and n is an integer such that said polyanhydride is solid at room temperature; and

D. about 10–45% of a solid filler having a particle size of about 5–50 microns.

4,410,648

FLAME RETARDING ORGANIC HIGH POLYMER COMPOSITION

Hiroshi Kato, and Chiaki Momose, both of Amagasaki, Japan, assignors to Dainichi-Nippon Cables, Ltd., Hyogo, Japan

PCT No. PCT/JP80/00325, § 371 Date Aug. 17, 1981, § 102(e) Date Aug. 17, 1981, PCT Pub. No. WO81/01852, PCT Pub. Date Jul. 9, 1981

PCT Filed Dec. 25, 1980, Ser. No. 293,638

Claims priority, application Japan, Dec. 25, 1979, 54-169931

Int. Cl.³ C08K *5/53, 5/52, 5/41, 5/15, 5/13, 5/09, 5/06*

U.S. Cl. 524—101 **21 Claims**

1. An ethylenically unsaturated monomer-derived organic high polymer composition having an improved flame retarding property which comprises a flame resistive composition comprising (a) an ethylenically unsaturated monomer-derived hydrocarbon polymer, (b) a halogen-containing and/or phosphorus-containing organic flame retardant and (c) incombustible active inorganic powder in a mixing ratio: (a):(b):(c)=100-:5–100:10–300 by weight and as supplemental components to be added thereto (d) a polyfunctional compound having at least two ethylenically unsaturated groups and a molecular weight of 100 to 10,000 which polyfunctional compound is selected from the group consisting of

(1) Aromatic polyfunctional compounds selected from the group consisting of divinyl-benzene, diallyl phthalate, diallyl isophthalate, 4,4'-isopropylidene diphenol bis(-diethylene glycol methacrylate) ether, triallyl trimellitate and 2,2'-bis(4-acryloxydiethoxy-phenyl)propane

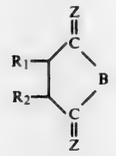
(2) Aliphatic polyfunctional compound selected from the group consisting of syn-1-2-polybutadiene, 1,4,-butylene dimethacrylate, 1,4-anediol diacrylate, pentaerythritol triacrylate, N,N-methylene-bisacrylamide, ethylene glycol dimethacrylate, neopentyl glycol dimethacrylate, 1,3-butylene glycol dimethacrylate, polyethylene glycol dimethacrylate, trimethylolpropane trimethacrylate, pentaerythritol tetramethacrylate, 1,6-hexanediol diacrylate, trimethylolpropane triacrylate, diethyleneglycol dimethacrylate, triethylene glycol dimethacrylate, dipropylene glycol dimethacrylate, polyethylene glycol diacrylate, 1,6-hexanediol dimethacrylate and tetraethylene glycol dimethacrylate

(3) Aliphatic polyfunctional cyclic compound selected from the group consisting of triallyl isocyanurate, triallyl cyan-

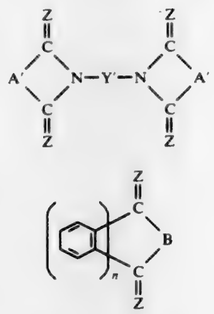
urate, triacryloylhexahydro-1,3,5-triazine and diallyl chlorendate and

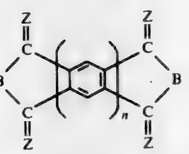
(4) Metal-containing polyfunctional compounds selected from the group consisting of aluminum acrylate, aluminum methacrylate, zinc methacrylate, zinc acrylate, magnesium methacrylate, magnesium acrylate, calcium methacrylate, calcium acrylate, zirconium acrylate, and zirconium methacrylate,

and (e) an organic compound selected from the group consisting of



wherein R_1 and R_2 are each a hydrogen atom, a halogen atom or an organic group having not more than 30 carbon atoms, Z is an oxygen atom or a sulfur atom, and B is an oxygen atom or an imino group: —NY (Y being a hydrogen atom, a halogen atom or an organic group having not more than 30 carbon atoms) or its hydrolyzate;





wherein A′ is a substituted or unsubstituted divalent hydrocarbon group having a straight chain of 2 to 20 carbon atoms, Y′ is a divalent hydrocarbon group having a straight chain of not larger than 20 carbon atoms, n is an integer of 1 to 3, and B and Z are as defined above, and benzene rings may bear substituents, each of the components (d) and (e) being added in an amount of at least 0.05 part by weight to 100 parts by weight of the component (a).

4,410,649

ETHYLENE POLYMER COMPOSITIONS HAVING IMPROVED TRANSPARENCY

Gary S. Cieloszyk, Somerville, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 31, 1982, Ser. No. 363,831
Int. Cl.³ C08L *5/00*
U.S. Cl. 524—108 **29 Claims**

1. An ethylene polymer plastic composition having improved optical properties which comprises a narrow molecular weight distribution, ethylene polymer resin, from about 0.09% to about 0.35% by weight based on the total weight of the composition of dibenzylidene sorbitol and from about 0.02% to 0.2% by weight based on the total weight of the composition of a fatty acid amine of the formula:



wherein

R is C_{12}–C_{24} alkyl or alkylene;

R′ is hydrogen, lower alkyl, alkanol, 1,3-propylene diamine or an ethoxy group of the formula: $(C—C—O)_xH$ wherein x is an integer between 2 and 5; and

R″ is R or R′.

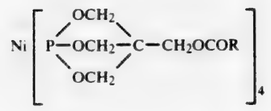
4,410,650

LIGHT-STABLE POLYOLEFINS

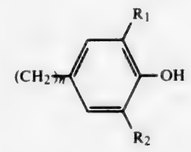
Elyse M. Lewis, Williamstown, W. Va., and Leo L. Valdiserri, Belpre, Ohio, assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Aug. 9, 1982, Ser. No. 406,737
Int. Cl.³ C08K *5/53*
U.S. Cl. 524—119 **8 Claims**

1. A polymer composition comprising an olefin polymer and a minor proportion, sufficient to inhibit deterioration of said olefin polymer ordinarily resulting from exposure to ultraviolet light, of a zerovalent nickel complex having the structural formula



where R is alkyl of 1–18 carbon atoms, phenyl, alkylphenyl, hydroxyphenyl, or



where R_1 and R_2 are lower alkyl, and n is 0–2.

4,410,651

IMPACT RESISTANT POLYPHENYLENE ETHER RESIN COMPOSITIONS

William R. Haaf, Voorheesville; Gim F. Lee, Jr., Albany, and Sai P. Ting, Delmar, all of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Mar. 26, 1982, Ser. No. 362,308
Int. Cl.³ C08K *5/52*
U.S. Cl. 524—127 **11 Claims**

1. A thermoplastic composition comprising

(a) a polyphenylene ether resin together with a rubber modified high impact polystyrene; and

(b) a Gardner impact strength improving amount of a copolymer or terpolymer of ethylene containing one or more hydroxyl functional groups and one or more carbonyl functional groups.

4,410,652

REACTION PRODUCTS USEFUL FOR IMPROVING THE WETFASTNESS OF DIRECT AND REACTIVE DYES ON CELLULOSIC SUBSTRATES

Tibor Robinson, Birsfelden; Walter Knobel, Pratteln, and Bruno Kissling, Riehen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 235,301, Feb. 13, 1981, abandoned. This application Feb. 9, 1982, Ser. No. 347,138
Claims priority, application Switzerland, Feb. 22, 1980, 1436/80; Fed. Rep. of Germany, Sep. 24, 1980, 3035942; Sep. 24, 1980, 3035893; Nov. 26, 1980, 3044441
Int. Cl.³ C08L *61/32*
U.S. Cl. 524—195 **26 Claims**

1. A water-soluble product obtained by reacting together

(A) the product of reacting a mono- or polyfunctional primary or secondary amine in free base or salt form with cyanamide, dicyanodiamide, guanidine or biguanidine; said product containing reactive hydrogen atoms bound to nitrogen,

and (B) an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide in aqueous solution.

4,410,653

FLAME-RETARDANT POLYAMIDE BLENDS

Melvin I. Kohan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1980, Ser. No. 138,587
Int. Cl.³ C08K *5/06*
U.S. Cl. 524—371 **9 Claims**

1. A polyamide molding blend consisting essentially of

(a) between about 40 and about 90 percent by weight of composition of a polyamide of film-forming molecular weight,

(b) between about 5 and about 30 percent by weight of blend of decabromodiphenyl ether,

(c) between about 1 and about 20 percent by weight of blend of an olefin polymer selected from

(i) an adduct of an unsaturated carboxylic anhydride and a hydrocarbon polymer having a saturated backbone chain and unsaturated hydrocarbon side chains, which contains between about 0.5 and 9 percent, preferably 1–4 percent, by weight of adduct, of the dianhydride, or

(ii) an ionic copolymer of an α-olefin and an α,β-ethylenically unsaturated carboxylic acid in which the acid monomer content of the copolymer is between about 0.2 and 25 mol percent based on the copolymer, in which at least 10 percent of the carboxyl groups of the acid are neutralized with metal ions, or

(iii) an unsubstituted polyolefin, or

(iv) a copolymer of an ω-olefin and at least one comonomer copolymerizable therewith,

wherein the ratio component c/component b is greater than 0.20.

4,410,654

THERMOPLASTIC MOLDING MATERIALS

Franz Brandstetter, Neustadt; Helmut Muenstedt, Wachenheim, and Edmund Priebe, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 5, 1982, Ser. No. 365,527
Int. Cl.³ C08K *3/34*
U.S. Cl. 524—487 **3 Claims**

1. A thermoplastic molding material comprising an impact resistant styrene polymer and polyphenylene ether wherein the molding material contains 0.1 to 5 percent by weight, based on the mixture of styrene polymer and polyphenylene ether, of a hydrocarbon wax having a melt viscosity of less than 500 centistokes measured at 120° C.

4,410,655

AQUEOUS DISPERSION OF ETHYLENE/α,β-UNSATURATED CARBOXYLIC ACID COPOLYMER BLEND

Katsumi Funakoshi, Iwakuni; Hideyuki Itoi, Yamaguchi, and Toshifumi Konishi, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 112,087, Jan. 14, 1980, abandoned. This application Jun. 5, 1981, Ser. No. 270,878
Claims priority, application Japan, Jan. 17, 1979, 54/2879
Int. Cl.³ C08L *35/00, 33/02*
U.S. Cl. 524—522 **1 Claim**

1. An aqueous dispersion of improved stability, said dispersion consisting essentially of a mixture of

(A) 30 to 50% by weight of an ethylene/α,β-unsaturated carboxylic acid copolymer containing 12 to 20% by weight on an average of α,β-unsaturated carboxylic acid units or the metal salt there of, and

(B) 70 to 50% by weight of an ethylene/α,β-unsaturated carboxylic acid copolymer containing 5 to 12% by weight on an average of α,β-unsaturated carboxylic acid units or the metal salt there of,

both components (A) and (B) having a melt index of from 0.5 to 100, said mixture containing 8 to 20% by weight on an average, based on the weight of the mixture of the α,β-unsaturated carboxylic acid units, 40 to 80% of which units are present in the form of metal salts, and said mixture not containing more than 5% by weight, based on the weight of the mixture, of a fraction of the ethylene/α,β-unsaturated carboxylic acid having an α,β-unsaturated carboxylic acid unit content of less than 5% by weight or its salt, and more than 10% by weight, based on the weight of the mixture, of a fraction of the ethylene/α,β-unsaturated carboxylic acid having an α,β-unsaturated carboxylic acid unit content of more than 20% by weight or its salt, the α,β-unsaturated carboxylic acid being selected from the group consisting of acrylic acid, methacrylic acid, α-ethylacrylic acid, maleic acid, fumaric acid, and itaconic acid and the metal salt being selected from the group consisting of an alkali metal salt, an alkaline earth metal salt and a zinc salt.

4,410,656

METHOD FOR RUBBER TREATMENT

Aubert Y. Coran; Charles P. Rader, and Chester D. Trivette, Jr., all of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed May 3, 1982, Ser. No. 374,451
Int. Cl.³ C08J *3/20;* **C08L** *7/00, 9/00, 9/06*
U.S. Cl. 524—529 **39 Claims**

1. The method of improving the properties of diene rubber comprising masticating solid diene rubber, in the presence of a modification promoting amount of (A) sulfur or an organic sulfur compound capable of generating thiyl radicals, with (B) maleic acid or anhydride at an appropriate temperature above 130° C. for a time sufficient to increase the green strength or tack of the diene rubber but insufficient to decrease its tack, wherein the time is from 0.1 to 20 minutes and (A) and (B) are present in amounts of from 0.01–15 and 0.1–20 parts by weight, respectively, per 100 parts diene rubber by weight.

4,410,657

PIGMENT PASTES AND THEIR USE

Werner Loch, Erpolzheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,019
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043601
Int. Cl.³ C08K *5/06*
U.S. Cl. 524—548 **8 Claims**

1. A pigment paste, essentially comprising

(A) from 20 to 85% by weight of one or more organic solvents,

(B) from 0.1 to 20% by weight of a copolymer of
(a) from 10 to 75% by weight of one or more water-immiscible, or only partially water-miscible, copolymerization α,β-olefinically unsaturated compounds and
(b) from 25 to 90% by weight of one or more water-soluble copolymerizable N-vinyl compounds selected from the group consisting of N-vinylpyrrolidone, N-vinylpiperidone and N-vinylimidazole, and
(C) from 10 to 79% by weight of one or more finely divided pigments or fillers, or a mixture of pigment and filler, dispersed in the mixture of (A) and (B), the sum of the percentages of (A), (B) and (C) being 100.

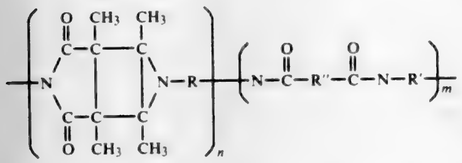
4,410,658

POLYIMIDES-AMIDES AND COPOLYIMIDES-POLYAMIDES FROM TETRAMETHYLCYCLOBUTANE-1,2,3,4-TETRACARBOXYLIC DIANHYDRIDE, DICARBOXYLIC ACIDS AND A MIXTURE OF DIAMINES

Tayseer S. Nimry, Wheaton, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 286,696, Jul. 24, 1981, Pat. No. 4,358,579. This application Sep. 29, 1982, Ser. No. 427,016
Int. Cl.³ C08G *73/10*
U.S. Cl. 524—600 **26 Claims**

1. A polymer comprising the following recurring structure



wherein R, R′ and R″ are the same or different divalent aliphatic or aromatic hydrocarbon radicals and n and m are the same or different integers from about 1:10 to about 10:1.

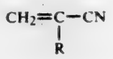
4,410,659

MANUFACTURE OF RUBBER MODIFIED COPOLYMERS IN AN EXTRUDER TYPE REACTOR

Robert W. Lee, Houston, Tex., and William J. Miloscia, Shaker Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

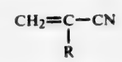
Continuation-in-part of Ser. No. 92,260, Nov. 7, 1979, abandoned. This application Oct. 8, 1981, Ser. No. 309,718
Int. Cl.³ C08F *279/02, 279/04*
U.S. Cl. 525—53 **27 Claims**

1. A process for preparing resin comprising the reaction product of a rubbery polymer with one or more ethylenically-unsaturated monomers comprising the steps of:
introducing a mixture of the rubbery polymer and one or more ethylenically unsaturated monomers into a feed section of a screw extruder, wherein at least one of said monomers is selected from the group consisting of olefinically unsaturated nitriles having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms or a halogen;
polymerizing the monomers with the rubbery polymer in one or more additional reaction sections of the extruder, each section containing means to remove the heat of reaction to control the temperature therein; and
extruding the copolymer formed at its melt temperature through a die head to produce the resin.

16. A process for the impact modification of a plastic with a rubbery polymer to form a thermoplastic resin in a reactor extruder comprising the steps of:
dissolving a rubbery polymer in at least one ethylenically unsaturated monomer to form a feed solution, wherein at least one of said monomers is selected from the group consisting of olefinically unsaturated nitriles having the structure



wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms or a halogen;
introducing said feed solution into the feed section of a twin screw reactor extruder;
heating said feed solution under pressure to a temperature sufficient for polymerization to begin;
shearing said feed solution until the solids content formed is equal to at least about twice the rubber content in said feed solution to produce a phase inversion product wherein discrete particles of rubber become encapsulated in a continuous phase of plastic polymer formed from said ethylenically unsaturated monomer;
thereafter reacting said phase inversion product until at least about 70 weight percent of said feed solution has been converted to a thermoplastic resin; and,
extruding said thermoplastic resin through a die.

4,410,660

BINDING ASSAY FOR THE DETECTION OF MYCOBACTERIA

Eugene W. Straus, New York, N.Y., assignor to Montefiore Medical Center, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,294
Int. Cl.³ C07G *7/00*
U.S. Cl. 525—54.1 **36 Claims**

1. A heat stable charcoal-adsorbable labeled protein obtained from the growth media of *M. tuberculosis*, said protein having a molecular weight of between 20,000 and 30,000, immunochemical stability over a temperature range of 4° C.-250° C., a pH range of 3.0–9.0 and exhibiting comigration towards the anode in the presence of bovine serum albumin and borate buffer at a pH of 8.6 with an applied voltage of 80 volts on starch gel electrophoresis for 12 hours.

4,410,661

TOUGHENED POLYAMIDE BLENDS

Bennett N. Epstein, Wilmington, Del., and Rolando U. Pagilagan, Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 295,018, Aug. 21, 1981, abandoned. This application Sep. 29, 1982, Ser. No. 427,414
Int. Cl.³ C08L *77/00*
U.S. Cl. 525—66 **12 Claims**

1. A blend containing (I) 99–60% by weight thermoplastic polyamides comprising complementally
(a) about 20 to 90 percent by weight, based on total polyamide, of at least one thermoplastic semicrystalline polyamide of film-forming molecular weight,
(b) about 80 to 10 percent by weight, based on total polyamide, of at least one thermoplastic amorphous polyamide obtained from at least one aromatic dicarboxylic acid containing 8–18 carbon atoms and at least one diamine selected from the class consisting of
(i) 2–12 carbon normal aliphatic straight-chained diamine
(ii) 4–18 carbon branched aliphatic diamine, and

(iii) 8–20 carbon cycloaliphatic diamine containing at least one cyclohexane moiety,
and wherein optionally, up to 50 weight percent of the amorphous polyamide may consist of units obtained from lactams or ω-aminoacids containing 4–12 carbon atoms, or from polymerization salts of aliphatic dicarboxylic acids containing 4–12 carbon atoms and aliphatic diamines containing 2–12 carbon atoms,
with complementally (II) 1–40% by weight of blend of at least one toughening agent having a maximum tensile modulus of 80,000 psi, that is an organic polymer of film-forming molecular weight which imparts to Component (a) a notched Izod value at least 50% greater than the notched Izod value of Component (a) alone when 20% by weight of the toughening agent is present with Component (a).

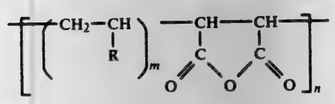
4,410,662

POLYCARBONATE HAVING AN IMPROVED IMPACT PERFORMANCE

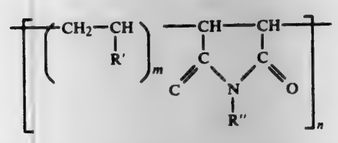
Mark W. Witman, New Martinsville, W. Va., and Gerard E. Reinert, McMurray, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Mar. 30, 1981, Ser. No. 249,276
Int. Cl.³ C08L *69/00*
U.S. Cl. 525—148 **9 Claims**

1. A thermoplastic aromatic polycarbonate composition characterized by its improved impact performance comprising
(a) an aromatic polycarbonate resin and
(b) from about 0.1 to about 50% by weight relative to the weight of the composition of an additive selected from the group consisting of
(i) a linear copolymer of maleic acid anhydride and an α-olefin of the general formula:



where R is a C_6–C_{28} alkyl radical and n is from 1 to 200, and m is 1 to 3 and,
(ii) a linear copolymer of an imidized derivative of maleic acid anhydride and an α-olefin of the general formula



wherein R′ is a C_6–C_{28} alkyl, R″ is an aryl radical having 6 to 12 carbon atoms or an aliphatic radical having 1 to 30 carbon atoms, n is from 1 to 200, and m is 1 to 3.

4,410,663

STORABLE, SAPONIFICATION-RESISTANT AQUEOUS LACQUER BINDERS

Peter Höhlein, Kempen, and Jochen Schoeps, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,625
Claims priority, application Fed. Rep. of Germany, May 19, 1981, 3119928
Int. Cl.³ C08L *61/28*
U.S. Cl. 525—162 **4 Claims**

1. A water-dilutable lacquer binder comprising a mixture of
A. 50–94% by weight of a copolymer comprising copolymerised units of
a. 30–65% by weight of an aromatic vinyl or isopropenyl compound having 8–14 C-atoms or of a methacrylic acid alkyl ester having 1–4 C-atoms in the alcohol component or a mixture thereof;
b. 10–30% by weight of at least one acrylic acid alkyl ester having 1–8 C-atoms in the alcohol component;
c. 1–20% by weight of maleic acid, fumaric acid, itaconic acid or a semiester thereof having 1–8 C-atoms in the alcohol component, (meth)acrylic acid or a mixture of these monomers;
d. 0–20% by weight of at least one hydroxyalkyl ester of (meth)acrylic acid having 2–4 C-atoms in the alkyl group or glycidyl(meth)acrylate or a mixture of these monomers;
e. 10–30% by weight of N-methylol(meth)acrylic acid amide or N-methoxymethyl(meth)acrylic acid amide and
f. 2–40% by weight of a reaction product of an allyl glycidyl ether and aliphatic, cycloaliphatic, araliphatic or an aromatic monocarboxylic acid having 2–30 C-atoms or a mixture thereof;
B. 6–50% by weight of an aminoplast resin; and
C. 0–30% by weight, based on copolymer, of a lactam, 30–100% of the number of carboxyl groups of component A.c incorporated in the copolymer blend neutralised by ammonia or mono- or polyamines.

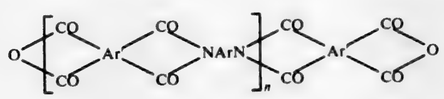
4,410,664

POLYIMIDE-EPOXY THERMOSET RESINS

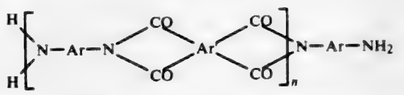
Chung J. Lee, Sheboygan, Wis., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed Sep. 20, 1982, Ser. No. 420,565
Int. Cl.³ C08G *59/40, 73/10*
U.S. Cl. 525—180 **16 Claims**

1. The process of reacting a polyepoxide with a solution of a polyimide dianhydride together with another polyimide component selected from the class consisting of polyimide dianhydrides and polyimide diamines, at least one of which polyimide components is insoluble in the selected solvent in the absence of said other polyimide component or components, the proportion of the said insoluble component or components representing 15 to 65 percent by weight of the total combined weight of said polyimide components, the anhydride activity of each of said polyimide dianhydride components being at least 0.17 as determined by the infrared spectrum, and the ratio of epoxy equivalents to anhydride plus amine equivalents being at least 1:1, the concentration of said polyimide components in said solvent comprising at least 5 percent by weight, in which polyimide components the polyimide dianhydride is represented by the formula;



and the polyimide diamine is represented by the formula:



wherein Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical except that in the case of the Ar′ being a naphthalene radical one or both pairs of the carbonyl groups may be attached to peri carbon atoms; Ar is a divalent aromatic radical; and n is an integer of at least one; in which polyimide components there may be as much as 50 percent of the cyclic polyimide structure in the intermediate amic acid structure, the solubility of said polyimide compo-

nents being determined by heating one gram of said component in 4 ml. of the selected solvent at a temperature of 167° C. for 5 minutes.

4,410,665

BORANE REDUCING RESINS

Larry Manziek, Lansdale, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 226,656, Jan. 21, 1981, Pat. No. 4,355,140, which is a continuation-in-part of Ser. No. 749,560, Dec. 10, 1976, abandoned. This application May 19, 1982, Ser. No. 379,693

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—328.4 **1 Claim**

1. A nonionic borane reducing resin which comprises a solid, cross-linked copolymer of dimethylaminopropyl methacrylamide and phosphine borane adducts.

4,410,666

CURABLE RESIN COMPOSITION

Nobuyuki Ikeguchi, and Hidenori Kimbara, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,988

Claims priority, application Japan, Jan. 29, 1980, 55-9163

Int. Cl.³ C08F *283/00*

U.S. Cl. 525—417 **3 Claims**

1. A curable resin composition comprising:

(a) at least one cyanate ester compound selected from the group consisting of:

(1) a polyfunctional aromatic cyanate ester monomer having the formula:

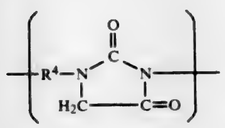
$$R\text{-}(O\text{—}C{\equiv}N)_m$$

wherein m is 2 to 5 and R is an aromatic organic group, the cyanate groups being bonded to an aromatic ring of said aromatic organic group,

(2) a prepolymer of one or more cyanate esters of (1), and

(3) a coprepolymer of (1) and an amine; and

(b) a polyhydantoin resin having a hydantoin ring in the main chain and having the following repeating units:



R^4 is R or imide ring said composition including a mixture of components (a) and (b), a preliminary reaction product of components (a) and (b), or the combination of said mixture and said preliminary reaction product.

4,410,667

ELASTOMERIC COATING COMPOSITIONS

Samuel Porter, Jr., Natrona Heights; Robert M. Piccirilli, Pittsburgh; Wen-Hsuan Chang; James B. O'Dwyer, both of Gibsonia, all of Pa., and Kyu-Wang Lee, Danville, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 29, 1982, Ser. No. 343,784

Int. Cl.³ C08L *67/02, 75/04, 61/24, 61/28*

U.S. Cl. 525—440 **11 Claims**

1. A thermosetting, liquid, elastomeric, film-forming composition sprayable at a resin solids content of at least 35 percent by weight and being flexible such that when the coating composition is deposited on an elastomeric substrate and cured, the coated elastomeric substrate can be bent around a ¼-inch mandrel with the coating facing outwardly and the coating exhibits no breaks or cracks when tested at 0° F., comprising as the film-forming constituents:

(A) a polyester polyol having at least 20 percent by weight cyclic moieties and the percentage of cyclic moieties being not greater than than required to achieve said flexibility, having a hydroxyl value of at least 80 and the hydroxyl content being not greater than that required to achieve said flexibility, having a molecular weight of 300 or greater but not greater than that required for formulating said coating composition with a sprayability of at least 35 percent by weight, and a Sward Hardness value of at least 15,

(B) a polyurethane polyol having a molecular weight of 8000 or less but not less than that required to achieve said flexibility and a Sward Hardness value of less than 10,

(C) a polyurethane polyol having a molecular weight of at least 12,000 but not greater than that required for formulating said coating composition with a sprayability of at least 35 percent by weight, and a Sward Hardness value of less than 10, and

(D) a curing agent capable of reacting with the active hydrogens in (A), (B) and (C) to form a cross-linked coating selected from the class consisting of aminoplast and polyisocyanates;

the difference in Sward Hardness values between (A) and (B) and (A) and (C) each being greater than 10; the weight ratio of (A)+(B)+(C):(D) is within the range of 5 to 0.5:1; the weight ratio of (A)+(D):(B)+(C) is within the range of 100 to 1:1 and the weight ratio of (B):(C) is within the range of 4 to 0.5:1.

4,410,668

ELASTOMERIC COATING COMPOSITIONS

Robert M. Piccirilli, Pittsburgh; Wen-Hsuan Chang, Gibsonia; Samuel Porter, Jr., Natrona Heights; James B. O'Dwyer, Gibsonia, all of Pa., and Kyu-Wang Lee, Danville, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 29, 1982, Ser. No. 344,082

Int. Cl.³ C08L *61/32, 67/04*

U.S. Cl. 525—440 **9 Claims**

1. A thermosetting, liquid, elastomeric, film-forming composition which is flexible such that when the coating composition is deposited on an elastomeric substrate and cured, the coated substrate can be bent around a ¼ inch mandrel with the coating facing outwardly and the coating exhibits no breaks or cracks when tested at 32° F., comprising as the film-forming constituents:

(A) a polyester polyol having from 25 to 50 percent by weight cycloaliphatic moieties, having a hydroxyl value of at least 80 and the hydroxyl value being not greater than that required to achieve said flexibility, a molecular weight of 300 to 3000 and a Sward Hardness value of at least 15,

(B) a polyurethane polyol having a molecular weight of 2,000 to 20,000 and a Sward Hardness value of less than 10, and

(C) a curing agent capable of reacting with the active hydrogens in (A) and (B) to form a crosslinked coating selected from the class consisting of aminoplast and polyisocyanates;

the difference in Sward Hardness values between (A) and (B) being greater than 10; the ratio of (A)+(B):(C) being within the range of 5 to 0.5:1; the weight ratio of (A)+(C):(B) being within the range of 100 to 1:1.

4,410,669

POLYMERIC AMMONIUM COMPOUNDS WITH A SILICA-TYPE BACKBONE, PROCESSES FOR THEIR PREPARATION AND USE

Peter Panster, Rodenbach, and Peter Kleinschmit, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

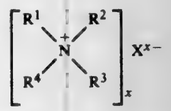
Filed May 10, 1982, Ser. No. 376,881

Claims priority, application Fed. Rep. of Germany, May 21, 1981, 3120195

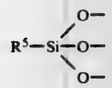
Int. Cl.³ C08F *283/00*

U.S. Cl. 525—474 **59 Claims**

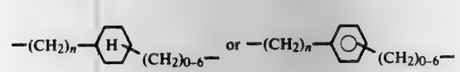
1. A polymeric ammonium compound with a silica-type backbone, comprising units of the general formula

 (1)

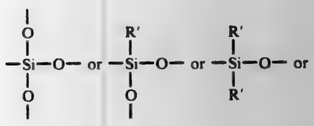
in which R^1 and R^2 represent a group of the general formula (2)

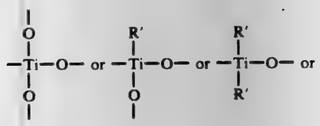
 (2)

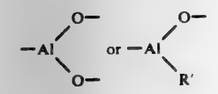
in which R^5 is linear or branched alkylene having 1 to 10 C atoms, cycloalkylene having 5 to 8 C atoms,



in which n is a number from 1 to 6 and indicates the number of nitrogen-terminated methylene groups, and R^1 and R^2 can be the same or different, and the free valencies of the oxygen atoms are saturated either by silicon atoms of further groups of the formula (2) and/or by crosslinking bridge members of the formula:







in which

R' is methyl or ethyl and the ratio of the silicon atoms in (2) to the bridge atoms silicon, titanium and aluminum is 1:0 to 1:10,

R^3 and R^4 can have the same scope of meaning as R^1 and R^2 or represent hydrogen, a linear or brached alkyl containing 1 to 20 C atoms, cycloalkyl containing 5 to 8 C atoms or the benzyl group and

R^3 and R^4 can be identical or different and be identical or different to R^1 and/or R^2,

X represents an inorganic or organic, 1- to 3-valent anion of an inorganic or organic protonic acid which forms stable salts with amine bases and x is a number from 1 to 3.

4,410,670

PROCESS FOR PREPARING POLYOLEFINS

Yoshio Tajima, Tokyo; Kazuo Matsuura, Kawasaki; Nobuyuki Kuroda, Yokohama, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 45,961

Claims priority, application Japan, Jun. 13, 1978, 53-70366; Jun. 13, 1978, 53-70367

Int. Cl.³ C08F *4/66*

U.S. Cl. 526—114 **17 Claims**

1. A process for polymerizing olefins using a catalyst, said catalyst consisting of:

A: a solid component obtained by contacting (1) a magnesium oxide, (2) an aluminum trihalide selected from the group consisting of aluminum chloride, aluminum bromide and aluminum iodide, (3) monohydroxy alcohol containing only carbon, hydrogen and oxygen atoms represented by the general formula ROH wherein R is a group containing 1 to 20 carbon atoms and (4) a titanium halide and/or an addition product of a titanium halide and an aromatic carboxylic acid ester selected from the group consisting of benzoic acid esters, hydroxybenzoic acid esters, alkoxybenzoic acid esters, alkyl benzoic acid esters, amino benzoic acid esters and naphthoic esters; and

B: an organometallic compound and/or an addition product of an organometallic compound said organometallic compound being of Group I to IV of the Periodic Table and an aromatic carboxylic acid ester of the group set forth in Section A hereof.

4,410,671

CATALYST, METHOD OF PRODUCING THE CATALYST, AND POLYMERIZATION PROCESS EMPLOYING THE CATALYST

Melvin B. Welch, Bartlesville, Okla.; Richard E. Dietz, Borger, Tex., and Charles E. Capshew, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 177,312, Aug. 12, 1980, Pat. No. 4,326,988. This application Feb. 22, 1982, Ser. No. 350,686

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—119 **34 Claims**

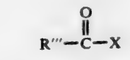
1. A process for producing a polyolefin comprising contacting at least one polymerizable compound selected from the group consisting of aliphatic mono-1-olefins, conjugated diolefins, vinyl aromatic compounds and mixtures of any two or more thereof under polymerization conditions with a cocatalyst comprising at least one organometallic compound selected from the group consisting of organometallic compounds of Groups I to III of the Periodic Table and a catalyst prepared by

(A) mixing a first catalyst component solution and a second catalyst component, wherein the first catalyst component is formed by the chemical combination of:

(1) a metal halide compound selected from the group consisting of metal dihalide compounds and metal hydroxyhalide compounds and the metal of the metal halide compound is selected from the group consisting of Group IIA metals and Group IIB metals, and

(2) a transition metal compound in which the transition metals are selected from Groups IVB and VB and the transition metal is bonded to at least one radical selected from the group consisting of hydrocarbyloxides, amides, imides, and mercaptides; and wherein the second

catalyst component comprises a precipitating agent selected from the group consisting of (a) organometallic compounds of Groups I, II, and III selected from the group consisting of lithium alkyls, Grignard reagents, dialkyl magnesium compounds, dialkyl zinc compounds, and organoaluminum compounds, (b) metal halides and oxyhalides of metals of Groups IIIA, IVA, IVB, VA, and VB, hydrogen halides, and organic acid halides selected from the group consisting of compounds having the formula



wherein R''' is an alkyl, aryl, or cycloalkyl group or combinations thereof and X is a halide, and

(B) depositing prepolymer on said catalyst in an aount sufficient to reduce the amount of polymer fines resulting from said polymerization by contacting said catalyst with monomer in the presence of an adequate amount of a cocatalyst selected from the group consisting of organometallic compounds of Groups I to III of the Periodic Table.

4,410,672

POLYMERIZATION CATALYSTS AND PROCESS FOR THE PRODUCTION OF ETHYLENIC POLYMERS BY USE THEREOF

Shintaro Inazawa, Oita, Japan, assignor to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1981, Ser. No. 256,186

Claims priority, application Japan, Apr. 23, 1980, 55-52876; Apr. 24, 1980, 55-53597; Feb. 27, 1981, 56-26928

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—124 **16 Claims**

1. A process for producing ethylenic polymers which comprises homopolymerizing ethylene or copolymerizing ethylene with an α-olefin containing 3 to 12 carbon atoms by the use of a catalyst system comprising:

(A) a solid catalyst component prepared by treating

(1) a solid ingredient containing 0.1 to 50% by weight of a magnesium atom, 0.01 to 30% by weight of titanium element, and at most 90% by weight of at least one halogen atom selected from the group consisting of a chlorine atom and a bromine atom, with

(2) a 4- to 8-membered cyclic organic compound having a total number of oxygen and nitrogen atoms in the cyclic group of said cyclic organic compound of from 1 to 3 and having a total number of carbon atoms in the substituent of at most 32, said cyclic organic compound being used in the amount of 10 to 10,000 moles per gram equivalent of the titanium element of the solid ingredient; and

(B) an organoaluminum compound, wherein said ethylenic polymer contains 30 mole % or less of said α-olefin, and said magnesium in said solid ingredient is derived from a magnesium compound selected from the group consisting of compounds represented by Formulae (I) and (II):

$$Mg(OR^1)_mX^1_{2-m} \quad (I)$$

$$MgR^2_nX^2_{2-n} \quad (II)$$

wherein R^1 and R^2 are each a hydrogen atom or a hydrocarbon group selected from the group consisting of an aliphatic hydrocarbon group containing 1 to 16 carbon atoms, an alicyclic hydrocarbon group containing 3 to 16 carbon atoms, and an aromatic hydrocarbon group containing 6 to 16 carbon atoms when m is 0 or 1 and n is 1 or 2, respectively, and when m is 2, R^1 and R^2 are each a hydrocarbon group selected from the group consisting of an aliphatic hydrocarbon group containing 1 to 16 carbon atoms, an alicyclic hydrocarbon group containing 3 to 16 carbon atoms, and an aromatic hydrocarbon group containing 6 to 16 carbon atoms, and X^1, and X^2 are each a halogen atom.

4,410,673

SUSPENSION POLYMERIZATION WITH COSOLVENT PARTITIONING

Gerald O. Schulz, and Dennis M. Wilson, both of Racine, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 30, 1981, Ser. No. 288,566

Int. Cl.³ C08F *2/18, 220/06*

U.S. Cl. 526—202 **9 Claims**

1. Aqueous suspension process for preparing low molecular weight alkali-soluble polymers from a water insoluble vinylic monomer and an acid-containing water soluble vinylic monomer, which comprises:

(a) conducting a polymerization reaction between said water soluble monomer and water insoluble monomer within nonaqueous copolymer droplets, under steady state conditions of (i) reduced steady state monomers concentration and (ii) enhanced polymerization rate, said droplets dispersed in a stabilized aqueous suspension of from 15 to 42 weight percent based on total nonvolatiles of a polar, water-insoluble lower alkanol;

(b) employing (1) an oil soluble initiator and (2) a mercaptan chain transfer agent having low water solubility, to foster polymerization in said non-aqueous phase and to promote homogeneous molecular weight distribution for said copolymer product, wherein said lower alkanol efficiently partitions said water-soluble monomer, said initiator and said chain transfer agent into the polymer droplet to replace polymerized monomers therein, and;

(c) removing said lower alkanol by distillation under surfactant stabilization to prevent agglomeration of said copolymer product.

4,410,674

SILICONE-VINYL ACETATE COMPOSITION FOR CONTACT LENSES

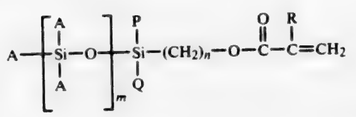
Edward J. Ivani, 2360-E. 74St., Brooklyn, N.Y. 11234

Filed Nov. 17, 1981, Ser. No. 322,266

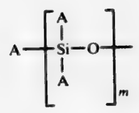
Int. Cl.³ C02C *7/04;* **C08F** *218/08, 230/08*

U.S. Cl. 526—279 **8 Claims**

1. A composition specially adapted for the manufacturing of contact lenses having increased oxygen permeability, consisting essentially of a copolymer of comonomers consisting of about 10–90 parts by weight of a vinyl siloxane monomer copolymerized with 90–10 parts by weight of a vinyl acetate, the vinyl siloxane monomer being a polysiloxanylalkyl ester having as its structure:



wherein P and Q are selected from the group consisting of (C_1–C_7)alkyl, phenyl, and Z groups; Z is



wherein A is selected from the group consisting of (C_1–C_7) alkyl and phenyl groups; R is selected from the group consisting of methyl, ethyl, and butyl groups and hydrogen; m and n are integers of at least 1 and less than 8.

4,410,675

RESINOUS SALTS, THEIR PREPARATIONS, AND THEIR USE IN COATINGS

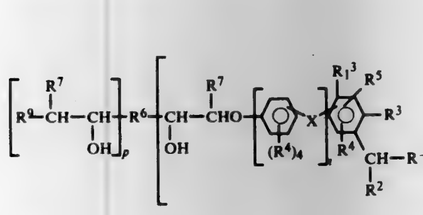
Christopher G. Demmer, Cambridge, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 15, 1982, Ser. No. 449,954

Int. Cl.³ C08G *59/06, 59/14, 59/16*

U.S. Cl. 525—533 **11 Claims**

1. Salts of formula



I

where

R^- represents either a group of formula

II

or a group of formula



III

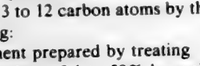
wherein R^1 represents an aliphatic, aromatic, or araliphatic divalent group of 1 to 10 carbon atoms,

R^2 represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms,

one of R^3 and $R_1{}^3$ represents a hydroxyl group and the other represents a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, or an alkenyl group of 2 to 4 carbon atoms,

each R^4 represents a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, or an alkenyl group of 2 to 4 carbon atoms,

R^5 represents an atom or a group bonded to a ring carbon atom which is ortho or para to the group R^3 or $R_1{}^3$ that represents a hydroxyl group and is a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, an alkenyl group of 2 to 4 carbon atoms, a group of formula $-CH(R^2)OH$, a group of formula $-CH(R^2)OR^8$, or a group of formula



IV

wherein R^8 represents either an alkyl group of from 1 to 6 carbon atoms or an alkoxyalkyl group wherein the alkoxy group and the alkyl group each have from 1 to 6 carbon atoms,

R^6 represents the residue of a polyepoxide after removal of (m+p) 1,2-epoxide groups,

each R^7 represents either a hydrogen atom or a covalent bond which is linked to the group R^6 to form a cycloaliphatic ring,

R^9 represents the residue of a monohydric phenol, a secondary monoamine, or a monocarboxylic acid after removal therefrom of the hydrogen atom of the phenolic hydroxyl group, the secondary amino group, or the carboxylic acid group,

m represents 1, 2, 3, or 4,

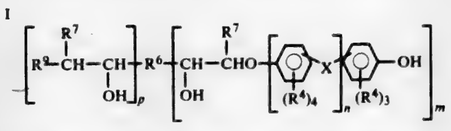
n represents zero or 1,

p represents zero or 1, such that (m+p) is at least 2 and at most 4,

X represents an alkylene or alkylidene group of 1 to 3 carbon atoms, a carbonyl or sulfonyl group, an oxygen or sulfur atom, or a valence bond, and

M^+ represents a hydrogen ion, a cation derived from an alkali metal, ammonia, or an amine, or one valence of a polyvalent cation, with the proviso that at least 25% of the ions M^+ are a said cation.

5. A process for the preparation of resinous salts which are at least dispersible in water, comprising reaction of a phenol-terminated resin of formula



VIII

with the proviso that at least one of the two carbon atoms ortho, or the one carbon atom para, to the carbon atom bearing the indicated phenolic hydroxyl group is unsubstituted, in the presence of a source of M^+ ions with an aldehyde of formula

$$R^2CHO \quad IX$$

and a mercaptocarboxylic acid of formula

$$HS-R_1{}^1-COOH \quad X$$

where

R^2 represents a hydrogen atom or an alkyl group of 1 to 4 carbon atoms,

each R^4 represents a hydrogen atom, a halogen atom, an alkyl group of 1 to 4 carbon atoms, or an alkenyl group of 2 to 4 carbon atoms,

R^6 represents the residue of a polyepoxide after removal of (m+p) 1,2-epoxide groups,

each R^7 represents either a hydrogen atom or a covalent bond which is linked to the group R^6 to form a cycloaliphatic ring,

R^9 represents the residue of a monohydric phenol, a secondary monoamine, or a monocarboxylic acid after removal of the hydrogen atom of the phenolic hydroxyl group, the secondary amino group, or the carboxylic acid group,

m represents 1, 2, 3, or 4,

n represents zero or 1,

p represents zero or 1, such that (m+p) is at least 2 and at most 4,

X represents an alkylene or alkylidene group of 1 to 3 carbon atoms, a carbonyl or sulfonyl group, an oxygen or sulfur atom, or a valence bond,

M^+ represents a hydrogen ion, a cation derived from an alkali metal, ammonia, or an amine, or one valence of a polyvalent cation, with the proviso that at least 25% of the ions M^+ are a said cation, and

$R_1{}^1$ represents an aliphatic, aromatic, or araliphatic divalent group of 1 to 10 carbon atoms.

4,410,676

PHENOLIC-CURED PHTHALONITRILE RESINS

Teddy M. Keller, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1981, Ser. No. 295,915

Int. Cl.³ C08G *73/00*

U.S. Cl. 528—9 **23 Claims**

1. A phthalonitrile resin obtained by admixing a phenol in an amount from about 1 weight percent to about 40 weight percent with a diphthalonitrile monomer at a temperature from about the melting point of said monomer to about the decomposition temperature of said resin.

4,410,677
LOW MODULUS ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS

Warren R. Lampe, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 927,787, Jul. 25, 1978, abandoned. This application Mar. 28, 1983, Ser. No. 479,342
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—17 **34 Claims**

1. A low modulus room temperature vulcanizable silicone rubber composition comprising:

(A) 100 parts by weight of a silanol terminated diorganopolysiloxane polymer having a viscosity ranging from 50,000 centipoise to 350,000 centipoise at 25° C. and where the organo groups are monovalent hydrocarbon radicals; and

(B) 1 to 20 parts by weight of a catalyst mixture per 100 parts by weight of (A), said catalyst mixture comprising:

(1) 60 to 100 parts by weight of an acyloxy functional silane of the formula

$$R—Si—(OCOR^1)_3$$

where R and R^1 are monovalent hydrocarbon radicals and

(2) a co-catalyst comprising:

(a) 0.1 to 5 parts by weight of an alkyl tin salt of a carboxylic acid and

(b) 0.001 to 0.4 parts by weight of a zinc salt of a carboxylic acid, a zirconium salt of a carboxylic acid or mixture thereof.

4,410,678
COATING COMPOSITION COMPRISING CHAIN-EXTENDABLE CROSSLINKABLE POLYOL AND DIBLOCKED DIISOCYANATE DIUREA OLIGOMER

Joseph W. Holubka, Livonia, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,796
Int. Cl.³ C08G *18/32, 18/80;* **C08L** *63/00*
U.S. Cl. 528—45 **16 Claims**

1. A resin composition comprising:

chain-extendable, crosslinkable polyol of molecular weight about 200 to 1000, having at least three hydroxyl groups, selected from polyhydroxy functional straight or branched chain saturated or unsaturated hydrocarbons, optionally comprising one or more oxy or ester moieties and optionally comprising one or more heterocyclic atoms, aromatic and/or heterocyclic rings, the heterocyclic atom(s) being selected from N, O and S;

chain-extendable, diblocked diisocyanate diurea oligomer of molecular weight about 300 to 1500, comprising the reaction product of a half-blocked diisocyanate with diamine in molar ratio of about 2:1, respectively, the blocking group of which oligomer has a de-blocking temperature of about 100° C. to about 190° C.; and

a crosslinking agent reactive with the hydroxy functionality of said polyol and substantially unreactive with de-blocked isocyanate functionality of said diblocked diisocyanate diurea oligomer, wherein said crosslinking agent and said polyol are present in a molar equivalent ratio of about 1:1 to about 1:15, respectively.

4,410,679
COATING COMPOSITION COMPRISING CHAIN-EXTENDABLE CROSSLINKABLE POLYOL AND DIBLOCKED DIISOCYANATE DIURETHANE OLIGOMER

Joseph W. Holubka, Livonia, and Ray A. Dickie, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,797
Int. Cl.³ C08G *18/32, 18/80;* **C08L** *63/00*
U.S. Cl. 528—45 **14 Claims**

1. A resin composition comprising:

chain-extendable, crosslinkable polyol of molecular weight about 200 to about 1000, having at least three hydroxyl groups, selected from polyhydroxy functional straight or branched chain saturated or unsaturated hydrocarbons, optionally comprising one or more oxy or ester moieties and optionally comprising one or more heterocyclic atoms, aromatic and/or heterocyclic rings, the heterocyclic atom(s) being selected from N, O and S;

chain-extendable, diblocked diisocyanate diurethane oligomer reaction product of diol with a half-blocked diisocyanate in molar ratio of about 1:2, respectively, said oligomer being of molecuar weight about 300 and about 1500, the blocking group of which oligomer has a de-blocking temperature of about 100° C. to about 190° C.; and

a crosslinking agent reactive with the hydroxy functionality of said polyol and substantially ureactive with de-blocked isocyanate functionality of said diblocked diisocyanate diurethane oligomer, wherein said crosslinking agent and said polyol are present in a molar equivalent ratio of about 1:1 to about 1:15, respectively.

4,410,680
TWO-PHASE, HEAT-CURABLE POLYEPOXIDE-UNSATURATED MONOMER COMPOSITIONS

Thomas F. Brownscombe, Houston, and William W. C. Hart, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 4, 1982, Ser. No. 439,256
Int. Cl.³ C08G *59/56*
U.S. Cl. 528—88 **9 Claims**

1. A curable thermosetting resin composition comprising a blend of

(1) 100 parts by weight of a epoxy compound containing at least one vicinal epoxy group in the molecule,

(2) from about 10 to about 200 parts by weight of at least one ethylenically unsaturated aromatic monomer,

(3) a curing amount of 4,4'-di(cyclohexylamino)methane and

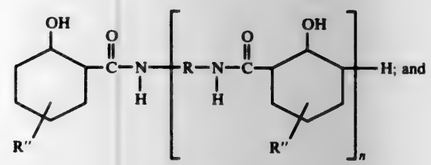
(4) an effective amount of 2,5-dimethyl-2,5-bis(2-ethylhexanoylperoxy)hexane.

4,410,681
EPOXY RESINS CURED WITH SALICYLOYL HYDROCARBYLAMINES

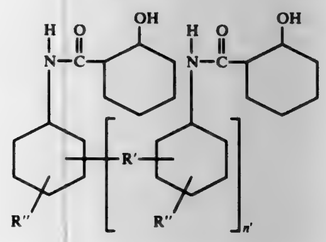
Hershel B. Prindle, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 22, 1982, Ser. No. 360,711
Int. Cl.³ C08G *59/44, 59/62*
U.S. Cl. 528—98 **12 Claims**

1. A curable composition comprising (A) an epoxy resin having an average of more than one 1,2-epoxy groups per molecule and (B) a curing quantity of at least one curing agent represented by the formulas



I.



II.

wherein R is a divalent hydrocarbyl group having from 1 to about 10, preferably from about 2 to about 6, carbon atoms; R′ is a divalent hydrocarbyl group having from 1 to about 6 carbon atoms; R″ is hydrogen or a hydrocarbyl group having from 1 to about 10 carbon atoms; n has a value of 1 and n′ has an average value of from about 1.01 to about 5.

4,410,682
FLUOROETHER MODIFIED EPOXY COMPOSITES

Robert W. Rosser, San Jose, and Mark S. Taylor, Palo Alto, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 23, 1982, Ser. No. 452,464
Int. Cl.³ C08G *59/18, 59/30;* **C08K** *5/06*
U.S. Cl. 528—110 **14 Claims**

1. A curable liquid epoxy formulation comprising

(a) an epoxy resin,

(b) a curing agent for said epoxy resin, and

(c) a perfluorinated alkyl ether diacyl fluoride.

4,410,683
AROMATIC, MELT-PROCESSIBLE (CO)POLYESTERS

David M. Gale, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1981, Ser. No. 328,841
Int. Cl.³ C08G *63/18, 63/60*
U.S. Cl. 528—125 **20 Claims**

1. An aromatic, melt-processible, fiber-forming (co)polyester having the general formula QX_n wherein

Q is $R^1—O—_n$ or $R^2—CO—_n$ where R^1 and R^2 are n-valent hydrocarbyl radicals of 4–20 carbon atoms and n is an integer from 2–10; and

X consists essentially of 2–4 different recurring hydroxy acid units $—OR^3\text{-}CO—$ wherein R^3 for each different acid unit is independently a divalent aryl radical of 6–30 carbon atoms selected from the group consisting of

(1) a single aromatic ring or fused, co-linear, aromatic ring system of 2–3 six-membered rings wherein chain extending bonds of the ring system are

(a) in 1,4-, or 1,3-positions if said bonds are attached to the same ring or in 1,2-, or 1,3- or 1,4-positions if the divalent aryl radical has a single ring;

(b) in 1,5-, 2,6-, or 2,7-positions if said bonds are attached to different rings of a fused two-ring or three-ring system; and

(2) an aromatic two-ring system in which individual rings are joined by a single bond or a divalent radical selected from

I.

$$—C—,\ —SO_2—,\ —O—,\ —CH_2—,\ —CH_2CH_2—,$$

$$—CH(CH_3)—,\ —C(CH_3)_2—,\ —CH(C_2H_5)—,\ \text{and}\ —N{=}N—$$

and in which chain extending bonds of each ring are in 1,3- or 1,4-positions;

with the proviso that one of the different recurring units is present in from about 20 to about 80 mole percent and the other different recurring unit(s) are present in a total of from about 80 to about 20 mole percent, based on the total hydroxy acid units; and the total number, m, of said units per X moiety is from about 10 to about 3000;

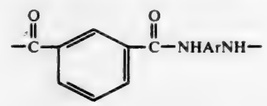
said (co)polyester having a flow temperature of from about 200° C. to about 375° C.

4,410,684
AROMATIC COPOLYAMIDES CONTAINING ETHER LINKAGES

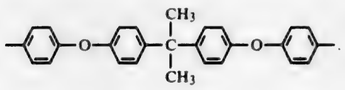
Robert G. Nelb, II, and Kemal Onder, both of North Haven, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 7, 1983, Ser. No. 464,316
Int. Cl.³ C08G *69/32, 69/40*
U.S. Cl. 528—185 **3 Claims**

1. A copolyamide having the recurring unit



wherein Ar in about 65 to about 85 percent of the recurring units is m-phenylene and in the remainder of the recurring units Ar is a phenylene ether having the formula



4,410,685
HYDROLYTICALLY STABLE UREA-FORMALDEHYDE RESINS AND PROCESS FOR MANUFACTURING THEM

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Filed Sep. 10, 1982, Ser. No. 416,573
Int. Cl.³ C08G *12/12*
U.S. Cl. 528—259 **47 Claims**

1. A process for preparing a urea-formaldehyde base resin having a F/U mole ratio of 1.0:1–1.2:1, that is hydrolytically stable, which comprises

adjusting an aqueous formaldehyde solution to a pH of from about 0.5 to about 2.5,

slowly charging urea to said formaldehyde solution while maintaining the temperature of the solution in the range from about 50° to about 70° C.,

neutralizing the reaction mixture after attaining 2.9–3.1:1 mole ratio of formaldehyde to urea and a Gardner viscosity in the range of T+-V+ and then

adding the final charge of urea to achieve the desired mole ratio.

2. The process of claim 1, wherein the mole ratio is substantially 1:1.

9. A process for preparing a urea-formaldehyde base resin having a F/U mole ratio of 1.0:1–1.2:1, and that is hydrolytically stable, which comprises

adjusting an aqueous formaldehyde solution containing from

about 49.8% to about 50.2% formaldehyde to a pH of 0.5–2.5 using formic acid, hydrochloric acid, sulfuric acid or p-toluenesulfonic acid, or a mixture of two or more of them,

slowly charging urea to said formaldehyde solution while maintaining the temperature of the solution at 50°–70° C. until a 2.9–3.0 mole ratio of formaldehyde to urea is obtained,

neutralizing the reaction mixture to a pH of 7.2–7.5 after obtaining a Gardner viscosity in the range of T+-V+, using sodium hydroxide and/or triethanolamine, and

adding the final charge of urea while maintaining the pH at 7.2–7.5 and stirring for at least long enough to permit equilibration.

11. A urea-formaldehyde base resin having a mole ratio of 1.0:1–1.2:1 and being hydrolytically stable which is prepared by the process of claim **1** or **9**.

22. A process for curing a resin prepared in accordance with claim **1** or **2** comprising heating said resin at a pH in the range from about 7.2 to about 7.5 at 135° C. to 193° C.

4,410,686

NORBORNYL MODIFIED POLYESTERAMIDES AND PROCESS FOR PREPARING SAME

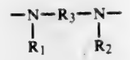
Robert E. Hefner, Jr., and James C. Uroda, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 21, 1981, Ser. No. 333,221
Int. Cl.³ C08G *63/44, 69/44*
U.S. Cl. 528—288 **70 Claims**

1. A norbornyl modified polyesteramide composed of:

(A) a central esteramide chain consisting essentially of:

(a) diamino groups of the formula:



wherein

R_1 and R_2 are independently selected from the group consisting of hydrogen, aliphatic, cycloaliphatic and aromatic or R_1 and R_2 together form an aliphatic ring, and R_3 is a divalent organic radical selected from the group consisting of alkylene, ether-linked alkylene, ether-linked arylene, alkylene amino-linked alkylene, alkylene amino-linked cycloalkylene, cycloalkylene, polycycloalkylene, arylene, alkylarylene bis(alkyl)cycloalkylene and bis(alkyl)polycycloalkylene,

(b) bisalkoxy groups of the formula:

—O—R_3—O—

wherein

R_3 is a divalent organic radical as before defined,

(c) carboxylic acid groups at least a part of which are α,β-unsaturated carboxylic groups with any remainder being saturated aliphatic carboxylic groups, aromatic carboxylic groups or mixtures thereof,

(B) at least one terminal group of said polyesteramide being a norbornyl radical.

4,410,687

POLYESTER DISPERSANTS FOR COATING COMPOSITIONS

Karl F. Schimmel, Verona; Michael A. Traficante, Pittsburgh, and Rostyslaw Dowbenko, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 29, 1982, Ser. No. 445,314
Int. Cl.³ C08G *63/48*
U.S. Cl. 528—295.5 **26 Claims**

1. A polyester dispersant resin consisting essentially of:

(a) from about 10 percent to about 30 percent of units provided by a dicarboxylic acid or anhydride;

(b) from about 40 percent to about 75 percent oxyalkylene units, provided by (i) an alkylene oxide, said units each having 2 or 3 carbon atoms, (ii) a monoalkoxypolyoxyalkylene glycol wherein the alkoxy unit has 1 to 3 carbon atoms, (iii) a polyoxyalkylene glycol wherein the oxyalkylene units of (ii) and (iii) have 2 or 3 carbon atoms and the glycols have a molecular weight of from about 350 to about 2000, as determined by gel permeation chromatography, using a polystyrene standard, or (iv) mixtures thereof;

(c) from about 5 percent to about 15 percent of units provided by a polyhydric compound; and

(d) from about 10 percent to about 30 percent of units provided by a drying oil fatty acid

wherein said resin is made by first reacting the dicarboxylic acid or anhydride with the compound providing the oxyalkylene units and the drying oil fatty acid and then reacting the resultant product with the polyhydric compound.

4,410,688

MACROMOLECULAR HIGHLY BRANCHED HOMOGENEOUS COMPOUND

Robert G. Denkewalter, Anchorage, Ak.; Jaroslav F. Kolc, Randolph, and William J. Lukasavage, Great Meadows, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 258,707, Apr. 29, 1981, Pat. No. 4,360,646, which is a division of Ser. No. 27,622, Apr. 6, 1979, Pat. No. 4,289,872. This application Dec. 11, 1981, Ser. No. 329,780
The portion of the term of this patent subsequent to Jul. 15, 1998, has been disclaimed.
Int. Cl.³ C08G *69/10*
U.S. Cl. 528—328 **10 Claims**

1. An organic macromolecular compound in which essentially are constituent macromolecules are alike in composition, chemical structure, and size and composed of identical trifunctional units (M), interior and exterior, each interior units having attached, to one of the two terminal carbon atoms of an alkylene hydrocarbon diradical of at least 3 carbons, a carbonyl moiety A of one functional group A′, and having attached to the other terminal carbon atom of such diradical, an amino moiety B of a different functional group B′ reactive with the group A′, said moieties A and B serving to link a carbon atom of one such interior unit (M) to a carbon atom of a second like unit by a linkage AB; and such one interior unit having attached, to a third carbon atom in its skeleton, a second carbonyl moiety (A) of the functional group A′ reactive with group B′ and serving to link said one interior unit to a third like unit, via said moiety A and said moiety (B) being attached to a carbon atom of said third unit (M); and the aforesaid exterior units being linked to interior units by linkages AB; the total number of units (M), interior and exterior, in such macromolecule being essentially $2^n - 1$ with n being the number of successive layers of units (M) added onto a source unit (S), and being at least 4; each exterior unit having at least one of its two moieties A in the form of a part of an original unreacted functional group, or in the form of a linkage between such exterior unit and a surface unit (R) different from the said units (M); and said macromolecule containing additionally one source unit (S) having at least one of said A or B moieties therein linking the unit (S) on an interior unit (M) via said moiety B being attached to a carbon atom of unit (M); source unit (S) being linked with units (M) only via one or more linkages with said moiety B or unit (M).

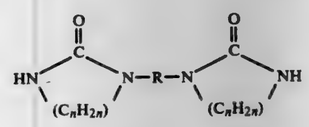
4,410,689

PREPARATION OF POLYURETHANE FROM BIS(CYCLIC UREA) AND POLYMERIC POLYOL

Edward A. Barsa, East Haven; Chung-Yuan Lin, Northford, and Fred A. Stuber, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 205,632, Nov. 10, 1980, Pat. No. 4,349,663. This application Jun. 16, 1982, Ser. No. 389,090
Int. Cl.³ C08G *71/04*
U.S. Cl. 528—367 **7 Claims**

1. A process for the preparation of a polyurethane resin which comprises heating a mixture of bis(cyclic urea) having the formula:



wherein:

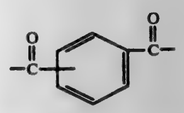
R is a divalent radical selected from the class consisting of

(a)

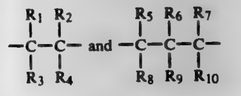


wherein alkylene contains from 1 to 11 carbon atoms, inclusive; and

(b)



and C_nH_{2n} is alkylene selected from the class consisting of



wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and R_{10} are each independently selected from the class consisting of hydrogen and an inert substituent, a polyurethane catalyst, and a polymeric polyol to a temperature in the range of about 100° C. to about 250° C.

4,410,690

PROCESS FOR PREPARATION OF MODIFIED AROMATIC HYDROCARBON RESIN

Akira Miyamoto, Hiratsuka; Katsuo Sato; Toshiaki Nishimura, both of Kanagawa; Yoshitaka Yamagishi, and Yoshimasa Mitui, both of Hiratsuka, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Apr. 30, 1982, Ser. No. 373,693
Claims priority, application Japan, May 7, 1981, 56-68651
Int. Cl.³ C08G *2/28*
U.S. Cl. 528—486 **12 Claims**

1. A process for the preparation of a modified aromatic hydrocarbon resin which comprises reacting an aromatic hydrocarbon-formaldehyde resin with an unsaturated polybasic acid or an anhydride thereof in the presence or absence of water, while introducing steam into the reaction system removing by-produced formaldehyde out of the reaction system, and reacting the formed reaction product with at least one dihydroxy compound selected from the group consisting of (A) a glycol and (B) a hydroxy-terminated oligomer obtained by reacting a glycol with an unsaturated polybasic acid or an anhydride thereof.

4,410,691

PRECIPITATION OF POLYCYCLOOLEFINS

Parley C. Lane, Jr., Cuyahoga Falls; Linwood P. Tenney, Hudson, and Gerald V. Wootton, Akron, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 10, 1982, Ser. No. 376,311
Int. Cl.³ C08F *6/12*
U.S. Cl. 528—495 **12 Claims**

1. Process for precipitating a polymer from a cement comprising said polymer dissolved in a solvent, said process comprising the steps of contacting said cement at an elevated temperature with a sufficient amount of a nonsolvent and water coagulant to precipitate said polymer in the form of solid particles that are dispersed in a liquid phase as a polymer slurry, and separating said polymer from said liquid phase; said contacting step being carried out at the elevated temperature from near or at the boiling point of a ternary azeotrope to the boiling point of the system whereby said ternary azeotrope is removed as a vapor; said ternary azeotrope comprising water, said solvent, and said nonsolvent that is miscible with said solvent but is a nonsolvent for said polymer and is selected from alcohols containing 2 to 8 carbon atoms; and said polymer is a reaction product formed by ring opening polymerization in said solvent of at least one norbornene-type monomer.

4,410,692

PRECIPITATION OF POLYMERIC CYCLOOLEFINS

Linwood P. Tenney, Hudson, and Gerald V. Wootton, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed May 10, 1982, Ser. No. 376,367
Int. Cl.³ C08F *6/12*
U.S. Cl. 528—495 **10 Claims**

1. Process for precipitating a polymer from a cement comprising said polymer dissolved in a solvent, said process comprising contacting said cement with a sufficient amount of water and a nonsolvent precipitant whereby said polymer precipitates and forms a dispersion of solid polymer particles dispersed in a liquid phase containing said solvent, nonsolvent, and water; and separating said polymer from the dispersion; said nonsolvent, being miscible with said solvent but being a nonsolvent for said polymer, is selected from alcohols containing 2 to 8 carbon atoms and said polymer being a reaction product formed by ring opening polymerization of at least one norbornene-type monomer.

4,410,693

PROCESS FOR PREPARING CELLULOSE DERIVATIVES

Clark W. Gibson, Bainbridge, Ga., and Carl P. Strange, Walker, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 12, 1982, Ser. No. 407,382
Int. Cl.³ C08B *9/06, 11/02, 11/193*
U.S. Cl. 536—56 **9 Claims**

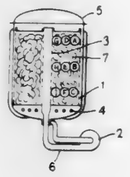
1. An improved process for preparing cellulose derivatives having controlled solution viscosities wherein said cellulose derivative is prepared in a reaction vessel by reacting cellulose pulp with an alkali metal hydroxide and at least one other reagent which reacts with alkali cellulose to form a cellulose derivative, said improvement comprising (a) adjusting the concentration of oxygen in the head space of the reaction vessel until said quantity of oxygen as measured by analyzing the gases in said head space for oxygen is such that the cellulose derivative prepared in said reaction vessel has a desired solution viscosity and then (b) preparing the cellulose derivative by reacting cellulose pulp, an alkali metal hydroxide and at least one other reagent in said reaction vessel while excluding

the entry of substantial amounts of oxygen into said reaction vessel.

4,410,694
PROCESS FOR PRODUCING FIBROUS CARBOXYMETHYL CELLULOSE

Mutsuo Nakayama; Hiromi Yamaguchi, and Harumasa Yamasaki, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Mar. 4, 1982, Ser. No. 354,856
Claims priority, application Japan, Mar. 18, 1981, 56/38861
Int. Cl.³ C08B *11/00*
U.S. Cl. 536—98 **11 Claims**



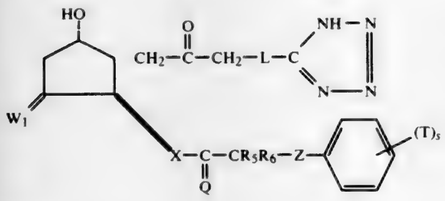
1. A process for the preparation of carboxymethyl cellulose fibers comprising continuously circulating a homogeneous alkaline reaction liquid through cellulose fibers packed in a reaction vessel, which cellulose fibers are selected from the group consisting of natural cellulose fibers and regenerated cellulose fibers, at a flow rate of said reaction liquid of greater than 10 l/min per Kg of said cellulose fibers, said reaction liquid comprising an effective amount of an etherifying agent selected from the group consisting of monochloroacetic acid and salts thereof, dissolved in a homogeneous alkaline solvent which consists essentially of ethanol and water, for a period of time sufficient to substantially completely convert said cellulose fibers into said carboxymethyl cellulose fibers.

4,410,695
2-DECARBOXY-2-TETRAZOLYL-6-KETO-PG COMPOUNDS

Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 959,400, Nov. 9, 1978, Pat. No. 4,215,222, which is a division of Ser. No. 819,857, Jul. 28, 1977, Pat. No. 4,158,667, which is a continuation-in-part of Ser. No. 725,548, Sep. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 716,972, Aug. 23, 1976, abandoned, which is a continuation-in-part of Ser. No. 655,110, Feb. 4, 1976, abandoned. This application Oct. 17, 1979, Ser. No. 85,834
Int. Cl.³ C07D *257/04*; A61K *31/41*
U.S. Cl. 542—426 **1 Claim**

1. A prostacyclin of formula



wherein

W_1 is α-OH:β-H, α-H:βOH, oxo, methylene, α-H:β-H, α-CH_2OH:β-H;

wherein L is

(1) $-(CH_2)_d-C(R_2)_2$,

(2) $-CH_2-O-CH_2-Y-$, or

(3) $-CH_2CH{=}CH-$,

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and wherein Y is a valence bond, $-CH_2-$ or $-(CH_2)_2$,

wherein Q is keto, α-H:β-H, α-OH:βR_8 or α-R_8:β-OH

wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_5 and R_6 hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (-O-); wherein Z represents an oxa atom (-O-) or C_jH_{2j}, wherein C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive, between CR_5R_6- and the phenyl ring; wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or $-OR_7-$, wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and s is zero or one; and

wherein X is

(1) trans-CH=CH-,

(2) cis-CH=CH-,

(3) -C≡C-, or

(4) $-CH_2CH_2-$;

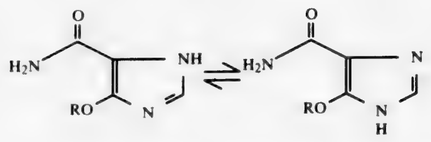
including the lower alkanoates thereof.

4,410,696
ANTITUMOR AND IMMUNOSUPPRESSIVE 4-CARBAMOYLIMIDAZOLIUM-5-OLATE DERIVATIVES

Toshio Atsumi, Kawanishi; Tetsutaro Sanjiki, Ibaraki, and Takao Kiyohara, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Sep. 24, 1981, Ser. No. 305,347
Int. Cl.³ C07D *233/90*
U.S. Cl. 542—427 **11 Claims**

1. A compound of the formula:



wherein R is cinnamoyl which is unsubstituted or substituted at its α position or phenyl ring with a member selected from the group consisting of alkyl, alkoxy, aryl, nitro, methylenedioxy, formyl, halogeno-alkyl, halogen, hydroxy, carboxyl, amino and cyano,

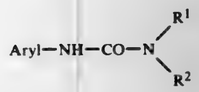
or a non-toxic salt thereof.

4,410,697
PROCESS FOR THE PREPARATION OF N-ARYL-N'-(MONO- OR DI SUBSTITUTED)-UREA DERIVATIVES

Sandor Török; Lajos Vöröshazy; Peter Galambos; Ivan Daroczi, and Zoltan Ormenyi, all of Budapest, Hungary, assignors to Reanal Finomvegyszergyar, Hungary

PCT No. PCT/HU81/00003, § 371 Date Aug. 28, 1981, § 102(e) Date Aug. 28, 1981, PCT Pub. No. WO81/02156, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 23, 1981, Ser. No. 299,030
Claims priority, application Hungary, Jan. 25, 1980, 157/80; Jan. 25, 1980, 158/80
Int. Cl.³ C07C *127/19, 127/17*
U.S. Cl. 544—165 **5 Claims**

1. A process for the preparation of N-aryl-N'-(mono- or disubstituted)-urea derivatives having the formula (I),



(I)

wherein

Aryl is an optionally substituted phenyl group, and

R^1 and R^2 each stand for an optionally substituted alkyl, cycloalkyl, alkoxy or phenyl group, or

R^1 and R^2 may form, together with the adjacent nitrogen atom, a nitrogen-containing heterocyclic group which may contain a further hetero atom, or

one of R^1 and R^2 may also stand for hydrogen,

with the proviso that if one of R^1 and R^2 is an optionally substituted phenyl group, the other may represent only hydrogen atom or an optionally substituted alkyl or alkoxy group,

by reacting a carbamate of the formula (II) with an amine of the formula (III),

$$R^1R^2N—CO—X \quad (II)$$

$$Aryl—NH_2 \quad (III)$$

or a carbamate of the general formula (IV) with an amine of the general formula (V),

$$Aryl—NH—CO—X \quad (IV)$$

$$R^1R^2NH \quad (V)$$

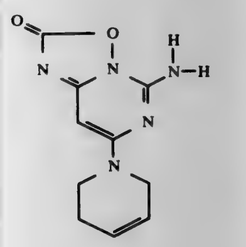
wherein R^1, R^2 and Aryl are as defined above and X is a lower alkoxy, phenoxy or substituted phenoxy group, in the presence of a tertiary amine catalyst, characterized in that a tertiary alkylamine containing altogether at least 6 carbon atoms and minimum one alkyl chain with at least 4 carbon atoms or a mixture of such tertiary alkylamines is applied as catalyst.

4,410,698
OXADIAZOLOPYRIMIDINE DERIVATIVES

Urs Hengartner, Basel, Switzerland; Jean-Claude Muller, Rixheim, France, and Henri Ramuz, Birsfelden, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 327,384, Dec. 4, 1981, Pat. No. 4,360,521. This application Aug. 13, 1982, Ser. No. 407,870
Claims priority, application Switzerland, Dec. 19, 1980, 9410/80; Oct. 2, 1981, 6350/81
Int. Cl.³ C07D *498/22*; A61K *31/505*
U.S. Cl. 544—255 **1 Claim**

1. The compound 5-amino-7-[3,6-dihydro-1(2H)-pyridyl]-2H-[1,2,4]oxadiazolo[2,3-c]pyrimidin-2-one of the formula



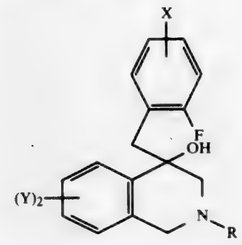
II

4,410,699
SUBSTITUTED 1,2,3,4-TETRAHYDRO-4-ISOQUINOLINOLS

Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Joseph T. Klein, Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 290,987, Aug. 7, 1981, Pat. No. 4,374,137. This application Nov. 29, 1982, Ser. No. 444,945
Int. Cl.³ C07D *217/24*
U.S. Cl. 546—141 **6 Claims**

1. A compound of the formula



wherein R is loweralkyl or benzyl; X is hydrogen or halogen; Y is hydrogen or methoxy.

4,410,700
PREPARATION OF CHIRAL 1-BENZYL-1,2,3,4-TETRAHYDROISOQUINOLINES BY OPTICAL RESOLUTION

Kenner C. Rice, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 165,690, Jul. 3, 1980, abandoned. This application May 20, 1981, Ser. No. 265,469
Int. Cl.³ C07D *217/20*
U.S. Cl. 546—149 **1 Claim**

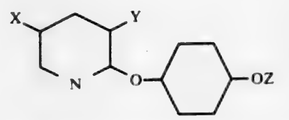
1. In a process for producing natural or unnatural morphine-type agonists and antagonists which includes a step producing a chiral hydroxy or lower alkoxy 1-benzyl-1,2,3,4-tetrahydroisoquinoline optically opposite from the desired optical morphine type and which comprises recycling the undesired optically opposite chiral lower alkoxy 1-benzyl-1,2,3,4-tetrahydroisoquinoline to a racemic mixture, the step which comprises oxidizing the chiral isoquinoline with hypohalide and base to produce an intermediate of 1-benzyl-1,2-dehydroisoquinoline and reduction of the dehydro intermediate to form a racemate of 1-benzyl-1,2,3,4-tetrahydroisoquinoline.

4,410,701
PROCESS FOR MAKING PYRIDYLOXYPHENOL COMPOUNDS

Richard C. Krauss, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

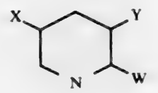
Continuation-in-part of Ser. No. 269,300, Jun. 1, 1981, abandoned. This application Apr. 30, 1982, Ser. No. 373,386
Int. Cl.³ C07D *213/64*
U.S. Cl. 546—302 **7 Claims**

1. Process for making pyridyloxyphenol compounds having the formula



wherein X is chloro or trifluoromethyl, Y is hydrogen or

chloro and Z is hydrogen, sodium or potassium, which consists essentially of dissolving hydroquinone in a polar aprotic solvent, heating under vacuum to degas, adding sufficient aqueous sodium or potassium hydroxide to neutralize from 75 to 100 percent of the hydroquinone, while continuing to heat under vacuum to distill off the water until less than 1 weight percent water, based on total weight of solvent and reactants, remains, releasing the vacuum with a dry inert gas, cooling and adding a 2-halopyridine having the formula



wherein X and Y are as above defined and W is bromo, chloro, fluoro or iodo, and heating whereby the said halopyridine reacts with the neutralized and dried hydroquinone, producing the desired mono- or disubstituted-2-pyridyloxy phenolic derivative wherein the reaction is carried out at a temperature of from 25° to 150° C.

4,410,702

HYDROQUINONE DERIVATIVES OF PYRIDINECARBOXYLIC ACIDS

Stephen R. Postle, Brentwood, and Patrick D. P. Thomas, Chelmsford, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

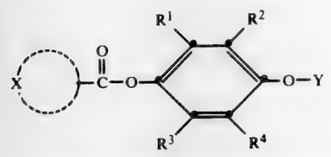
Filed Sep. 29, 1981, Ser. No. 306,847

Claims priority, application United Kingdom, Oct. 2, 1980, 8031835

Int. Cl.³ C07D *213/55*

U.S. Cl. 546—322 **5 Claims**

1. A substituted hydroquinone compound of the formula



(1)

wherein R^1, R^2, R^3 and R^4 are each hydrogen, X represents the atoms necessary to complete a 2-, 3- or 4-pyridyl ring quaternized by alkyl or aralkyl sulfate having from 1 to 7 carbon atoms and Y is hydrogen.

4,410,703

SUBSTITUTED DIMERCAPTO THIADIAZOLES AND LUBRICANT COMPOSITIONS CONTAINING SAME

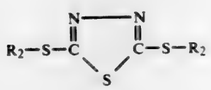
Abraham O. M. Okorodudu, West Deptford, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 172,304, Jul. 25, 1980, abandoned, which is a continuation-in-part of Ser. No. 914,119, Jun. 9, 1978, abandoned, which is a division of Ser. No. 788,064, Apr. 15, 1977, Pat. No. 4,107,168, which is a continuation-in-part of Ser. No. 699,812, Jun. 2, 1976, abandoned, which is a division of Ser. No. 598,953, Jun. 24, 1975, Pat. No. 3,980,573. This application Aug. 10, 1981, Ser. No. 291,652

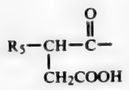
Int. Cl.³ C07D *285/12*; C10M *1/38, 3/32, 5/22*

U.S. Cl. 548—142 **4 Claims**

1. A compound of the formula

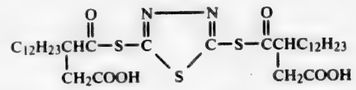


wherein R_2 is an alkenylsuccinic acid group of the formula

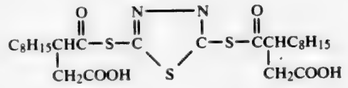


wherein R_5 is an alkenyl group containing 15 to 200 carbon atoms.

2. A compound having the formula



3. A compound having the formula



4,410,704

N-SUBSTITUTED BENZOTHIAZOLE-2-SULFONAMIDES; METHOD OF THEIR PREPARATION; METHOD OF PREVENTING SCORCHING OF RUBBER

Yutaka Kawaoka; Hideo Oda; Masataka Yasumoto, all of Yanai; Kazuya Hirota; Yuji Ishinaga, both of Yamaguchi, and Masakazu Morita, Yanai, all of Japan, assignors to Sanshin Kagaku Kogyo Co., Ltd., Yamaguchi, Japan

Filed Apr. 15, 1981, Ser. No. 254,544

Claims priority, application Japan, May 16, 1980, 55-65040; May 16, 1980, 55-65041; May 16, 1980, 55-65042

Int. Cl.³ C07D *277/76*

U.S. Cl. 548—166 **3 Claims**

1. The compound N-cyclohexylthio-N-cyclohexyl benzothiazole-2-sulfonamide.

4,410,705

NOVEL SPIRO OXAZOLINE COMPOUNDS AND METHODS FOR THEIR PREPARATION AND USE

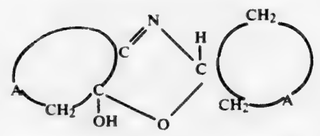
Divakaran Masilamani, Morristown, and Edward H. Manahan, Morris Plains, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 31, 1981, Ser. No. 298,050

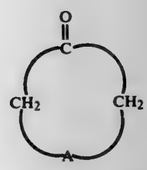
Int. Cl.³ C07D *498/00*; A61K *31/42*

U.S. Cl. 548—216 **17 Claims**

1. A process for preparing a compound of the formula:



which comprises reacting a compound of the formula:



with ammonia and oxygen in the presence of a catalytically effective amount of a catalytically effective transition metal cation, wherein:

A is a straight or branched chain alkylene having from about 3 to about 20 carbon atoms completing a 5, 6, 7 or 8 membered monocyclic ring structure, either unsubstituted or substituted with one or more substituents selected from the group consisting of halo, lower haloalkyl, lower alkyl, lower alkoxy, lower alkylidene, lower phenylalkylidene, amino, lower dialkylamino, and lower alkoxyalkyl.

4,410,706

PREPARATION OF 2-VINYLIMIDAZOLES BY DEHYDROGENATION OF 2-ETHYLIMIDAZOLES AND 2-ETHYLIMIDAZOLINES

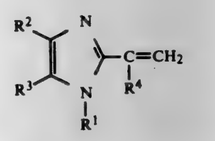
Alan S. Rothenberg, Norwalk; Hans P. Panzer, Stamford; Joseph L. Schmitt, Bethel, and Roger J. Card, Stamford, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 19, 1982, Ser. No. 379,608

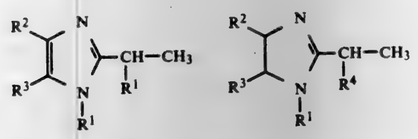
Int. Cl.³ C07D *233/58*

U.S. Cl. 548—335 **9 Claims**

1. A method for preparing a 2-alkenylimidazole having the following structure:



wherein R^1 is hydrogen or methyl, R^2 and R^3 are hydrogen, methyl or phenyl and R^4 is hydrogen or methyl comprising selecting a compound selected from the group consisting of 2-alkylimidazole (I) and 2-alkylimidazoline (II) having the following structure:



wherein R^1, R^2, R^3 and R^4 have the same significance as above and dehydrogenating the compound in the presence of a dehydrogenation catalyst consisting of a supported or unsupported mixture of chromium oxide and copper oxide to yield the 2-alkenylimidazole.

4,410,707

PROCESS FOR THE MANUFACTURE OF 3-AMINO-1-PHENYLPYRAZOL-5-ONE

Wolfgang Tronich, Eppstein; Wolfgang Rieper, Frankfurt am Main, and Peter Böhme, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 21, 1981, Ser. No. 285,469

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027845

Int. Cl.³ C07D *231/52*

U.S. Cl. 548—360 **11 Claims**

1. In a process for the manufacture of 3-amino-1-phenylpyrazol-5-one by heating phenylhydrazine and a lower cyanoacetic acid alkyl ester in a polar solvent with a lower alcoholate of an alkali metal as the condensation agent, the improvement comprising initially taking the phenylhydrazine in an excess of 10 to 200 mole % and 1 to 1.2 moles of the alcoholate, each per mole of lower cyanoacetic acid alkyl ester, metering in the cyanoacetic ester and carrying out the reaction at 105° to 140° C., volatile alcohols which have been liberated being distilled off at the reaction temperature, and subsequently mixing the reaction mixture with water and precipitating the 3-amino-1-phenyl-pyrazol-5-one with an inorganic or organic acid at a pH value not less than 6.

4,410,708

CHROMOGENIC FLUORAN DERIVATIVES AND THE PREPARATION AND USE THEREOF

Masakichi Yahagi, Tokyo; Shoichi Horiuchi, Fujimi; Takahumi Toyama, Tokyo; Akio Kashiwagi, Ageo; Teruo Suzuki, Tokyo; Tetsuo Igaki, Kawagoe; Kazuyuki Horisawa, and Mituhiro Shoji, both of Tokyo, all of Japan, assignors to Shin Nisso Kako Co., Ltd., Tokyo, Japan

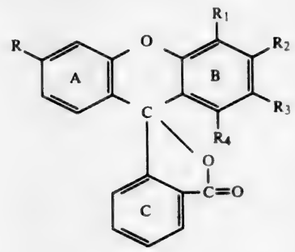
Division of Ser. No. 472,204, May 21, 1974, Pat. No. 3,959,571. This application Feb. 3, 1976, Ser. No. 654,732

Claims priority, application Japan, May 22, 1973, 48-56278; Aug. 22, 1973, 48-93260; Mar. 8, 1974, 49-26876

Int. Cl.³ C07D *311/88, 311/96, 491/107, 493/10*

U.S. Cl. 548—407 **19 Claims**

1. A fluoran derivative of the formula,



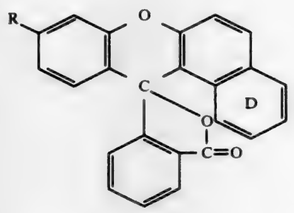
wherein R is, pyrrolidino, morpholino, cyclohexylamino, N-methyl- or N-ethyl-cyclohexylamino or N-benzylcyclohexylamino; R_1 is hydrogen, C_1 to C_4-alkyl, halogen, or amino which may be mono- or di-substituted with C_1 to C_4-alkyl, benzyl, C_1 to C_4-alkylbenzyl or halobenzyl; R_2 is hydrogen, C_1 to C_4-alkyl, C_1 to C_4-alkoxy or halogen; R_3 is phenyl, piperidino, methylpiperidino, pyrrolidino, morpholino, a group of the formula



where X represents hydrogen, acetyl, benzoyl, C_1 to C_{12}-alkyl, benzyl, C_1 to C_4-alkylbenzyl, halobenzyl, cyclohexyl, or phenyl or naphthyl both of which may be substituted with C_1

to C_4-alkyl, C_1 to C_4-alkoxy, halogen or dimethylamino and Y represents hydrogen, C_1 to C_4-alkyl, benzyl, C_1 to C_4-alkylbenzyl, halobenzyl, C_1 to C_4-alkoxy, or diphenylmethylamino which phenyl portion may be substituted with a methyl group or with a halogen atom; and R_4 is hydrogen, C_1 to C_4-alkyl or C_1 to C_4-alkoxy; and wherein R_1 and R_2, and R_3 and R_4, may be groups represented by the formula —CH=CH—CH=CH—, and, in this case, the naphthalene ring may have halogen or an amino group which may be mono-or di-substituted with C_1 to C_4-alkyl, benzyl, C_1 to C_4-alkylbenzyl, halogenzyl, acetyl or benzoyl, and the benzene ring C may have 1 to 4 halogen atoms.

4. A fluoran compound of the formula,



wherein R is pyrrolidino, the D ring may have a halogen or an amino group which may be substituted with C_1 to C_4-alkyl, benzyl, C_1 to C_4-alkylbenzyl, halobenzyl, acetyl or benzoyl.

4,410,709

SULFOBETAINES

Roland Ohme; Detlef Ballschuh; Jochen Rusche; Horst Seibt; Kristina Geneis, and Günter Kretzschmar, all of Berlin, German Democratic Rep., assignors to Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

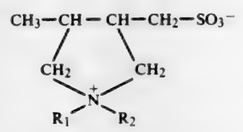
Filed Jul. 8, 1981, Ser. No. 281,432

Claims priority, application German Democratic Rep., Jul. 11, 1980, 222563

Int. Cl.³ C07D *207/08*

U.S. Cl. 548—570 **10 Claims**

1. A sulfobetaine compound of the following formula I



I

wherein R_1 is hydrogen, straight-chained or branched alkyl groups of one to 22 carbon atoms or benzyl, R_2 is straight-chained or branched alkyl groups of 1 to 22 carbon atoms, and R_1 and R_2 may be the same or different.

4,410,710

CONVERSION OF IRIDOIDS TO PROSTAGLANDINS

William F. Berkowitz, Queens, N.Y.; Satish C. Choudhry, Corvallis, Oreg., and Joseph A. Hrabie, Atlanta, Ga., assignors to Research Foundation of the City University of New York, New York, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,601

Int. Cl.³ C07D *307/93*

U.S. Cl. 549—312 **3 Claims**

1. A process for the synthesis of prostaglandin intermediates from iridoids comprising the steps of:

(1) forming a tetraacetate of a C-1 glycoside a 10 carbon aglucone;

(2) hydrogenating the tetraacetate to eliminate all olefinic double bonds and form tetrahydroaglucone glycoside tetraacetate;

(3) forming an acetal between C-1 and C-10 by hydrolysis;

(4) treating the acetal with titanium tetrachloride and acetyl chloride or an enol acetate to open the five membered ring of the tetracyclic acetal forming an hydroxyl in the C-1 position;

(5) applying Wadsworth-Emmons reaction to the hydroxyl compound formed in Step (4) to produce a 3-oxo-1[E]-octenyl chain at the C-1 position and opening the ring at the 0–2 and C-1 positions and having an hydroxyl group at C-3; and

(6) oxidizing the hydroxyl to carboxylic acid with Jones reagent and decarboxylating the carboxylic acid to produce a prostaglandin intermediate.

4,410,711

METHOD FOR THE SYNTHESIS OF LEPIOCHLORIN, AN ANTIBIOTIC

Trevor C. McMorris, La Jolla, and John R. Donaubauer, San Diego, both of Calif., assignors to The Reagents of the University of California, Berkeley, Calif.

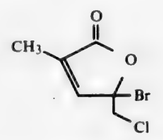
Filed Jun. 29, 1981, Ser. No. 278,100

Int. Cl.³ C07D *307/32*

U.S. Cl. 549—313 **2 Claims**

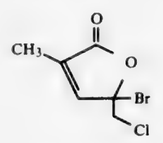


1. The method of preparing lepiochlorin which comprises reacting:



with silver acetate in the presence of a trace of acetic acid, and recovering lepiochlorin.

2. The method of preparing lepiochlorin which comprises reacting:



in tetrahydrofuran as a solvent, wherein finely divided silica is added prior to refluxing, and recovering lephiochlorin.

4,410,712

ANTIBIOTICS X-14873 A, G AND H

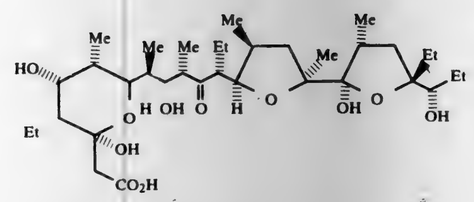
Chao-min Liu, Cedar Grove, N.J.; Homer D. Tresner, La Farge, Wis., and John Westley, Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Mar. 10, 1982, Ser. No. 356,654

Int. Cl.³ C07D *309/06*

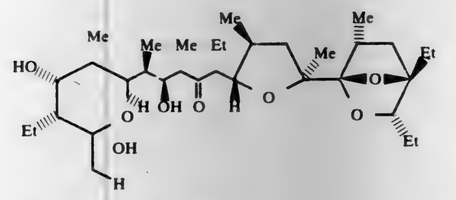
U.S. Cl. 549—414 **3 Claims**

1. A compound of the formula

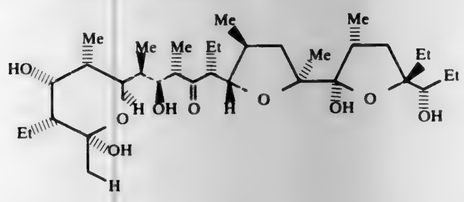


and the pharmaceutically acceptable salts thereof.

2. A compound of the formula



3. A compound of the formula



4,410,713

PREPARATION OF FURAN COMPOUNDS

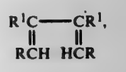
Donald I. Garnett, Hockessin, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Apr. 28, 1982, Ser. No. 372,559

Int. Cl.³ C07D *307/36*

U.S. Cl. 549—505 **5 Claims**

1. Process comprising contacting and reacting the polyperoxide of the diolefin of the formula



wherein each R is independently selected from H and C_{1-4} alkyl and each R^1 is independently selected from H, halogen and C_{1-4} alkyl, with an acidic aqueous medium containing cuprous and cupric ions and a water-soluble agent which forms a water-soluble complex with cuprous ions, and recovering a furan compound from the reaction mixture.

4,410,714

PRODUCTION OF EPOXY COMPOUNDS FROM OLEFINIC COMPOUNDS

George J. Apanel, Bloomfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed May 3, 1979, Ser. No. 35,559

Int. Cl.³ C07D *301/26*

U.S. Cl. 549—521 **7 Claims**

1. In a process for producing an epoxy compound by chlorinating a tertiary alkanol to a tertiary alkyl hypochlorite, reacting the tertiary alkyl hypochlorite with water and olefinically unsaturated compound to produce the corresponding chlorohydrin and saponifying the chlorohydrin to the corresponding epoxy compound, the improvement comprising:

effecting chlorinating of the tertiary alkanol and said saponification with calcium oxide in an aqueous solution of calcium chloride having a combined concentration of calcium oxide and calcium chloride equivalent to at least 25 wt. percent expressed as calcium chloride; and recovering from said chlorinating and said saponification an aqueous solution of calcium chloride having a calcium chloride concentration of at least 25% by weight; combining calcium oxide with a portion of said recovered aqueous solution of calcium chloride to provide said calcium oxide in an aqueous solution of calcium chloride for the chlorinating and saponification.

4,410,715

PROCESS FOR THE EPOXIDATION OF OLEFINS USING A GROUP V METAL CO-CATALYST I AND A PHENOLIC HYDROCARBON CO-CATALYST II

Charles H. McMullen, Allendale, N.J.; Eugene E. Fehskens, Suffern, and Jeffrey S. Plotkin, Monsey, both of N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 14, 1982, Ser. No. 398,086

Int. Cl.³ C07D *301/12*

U.S. Cl. 549—531 **13 Claims**

1. A process for epoxidizing at least one olefinic compound having at least one ethylenic unsaturation which comprises contacting said olefinic compound with hydrogen peroxide in the presence of a catalyst composition comprising at least one Co-catalyst I and at least one Co-catalyst II, in a manner and under conditions sufficient to oxidize at least one of said ethylenically unsaturated groups to its corresponding epoxide group, and wherein said catalyst composition:

(i) said Co-catalyst I comprises at least one Group V element containing compound which is capable of catalyzing the oxidation reaction between hydrogen peroxide and the ethylenic unsaturation, said Group V element being selected from As, P, Sb, Bi, and mixtures thereof; and

(ii) said Co-catalyst II is at least one organic compound having a pK_a of from about 5 to about 13 and at least one hydroxy group substituted on an aromatic ring.

4,410,716

DIBENZO[a,d]CYCLOHEPTENE DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Tetsutaro Hayasaka; Kuniro Saito; Sen-ichi Narita, all of Fukushima; Takao Goto, Koori; Shin-ichi Yamada, Fukushima; Teruo Saito, Date, and Kazuyoshi Okutani, Fukushima, all of Japan, assignors to Toa Eiyo Kagaku Kogyo Co. Ltd., Tokyo, Japan

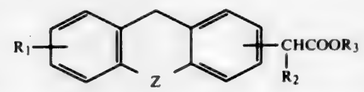
Filed Sep. 24, 1980, Ser. No. 190,270

Claims priority, application Japan, Sep. 29, 1979, 54-124741

Int. Cl.³ C07C *69/76*

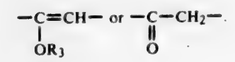
U.S. Cl. 560—51 **12 Claims**

1. A dibenzo[a,d]cycloheptene derivative of the general formula



(I)

wherein R_1 represents a hydrogen atom, a halogen atom or a lower alkyl group, R_2 and R_3 each represent a hydrogen atom or a lower alkyl group, and Z represents a group of the formula



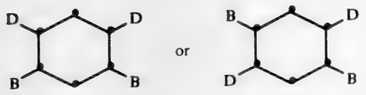
4,410,717

HYDROCARBON ESTERS OF BENZENE POLYCARBOXYLIC ACIDS

Bryce C. Oxenrider, Florham Park, and Alson K. Price, Chester, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 5, 1982, Ser. No. 374,840
Int. Cl.³ C07C *69/773, 153/07*
U.S. Cl. 560—87 **5 Claims**

1. A compound having the formula



(I) or (II)

or mixtures thereof wherein B is $COOCH_2CHOHCH_2Q$ where Q is Cl, OH, H or Br, and D is $COW(CH_2)_nCH_3$, with W being —O—, —NH—, —S— or —N(CH_3)— and n being an integer from 2 to 24.

4,410,718

PROCESS FOR FORMING ESTERS (I)

James M. Renga, and Pen-Chung Wang, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 295,429, Aug. 24, 1981, abandoned. This application Jun. 11, 1982, Ser. No. 387,624
Int. Cl.³ C07C *69/76, 79/46, 69/84, 69/34*
U.S. Cl. 560—103 **7 Claims**

1. A process for preparing an ester or polyester corresponding to the formula:



where

R is an aromatic or aliphatic moiety of up to 20 carbons having valence n selected from the group consisting of carbocyclic or nitrogen-, sulfur- or oxygen-containing heterocyclic aromatic groups, alkyl, cycloalkyl, alkylene or cycloalkylene groups and derivatives thereof containing non-interfering substituents;

R_1 is a moiety of up to about 6 carbons having valence m selected from the group consisting of primary alkyl, primary alkylene, cycloalkyl, and primary alkenyl; and

m and n are one or two,

comprising contacting a carboxylic acid of the formula R—$COOH)_n$ wherein R and n are as previously defined with an organic ester of trichloroacetic acid corresponding to the formula

wherein R_1 and m are as previously defined in the presence of a catalytic amount of an initiator at a temperature from about 100° C. to about 180° C.

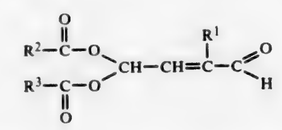
4,410,719

PREPARATION OF 2-ALKYL-4,4-DIACYLOXYBUT-2-ENALS

Rolf Fischer, Heidelberg; Hans-Martin Weitz, Bad Durkheim, and Joachim Paust, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

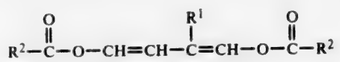
Filed Jun. 29, 1982, Ser. No. 393,499
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1981, 3125891
Int. Cl.³ C07C *67/29, 67/297, 69/025, 69/145*
U.S. Cl. 560—112 **3 Claims**

1. A process for the preparation of a 2-alkyl-4,4-diacyloxybut-2-enal of the formula



I

where R^1 is alkyl of 1 to 5 carbon atoms and R^2 and R^3 are each hydrogen, an aliphatic radical of 1 to 15 carbon atom, a cycloaliphatic radical of 5 to 7 carbon atoms or an aromatic radical, wherein a 2-alkyl-1,4-diacyloxybuta-1,3-diene of the formula



II

where R^1 and R^2 have the above meanings, is reacted with oxygen or an oxygen, donor, in the presence of a carboxylic acid of the formula

R^3—COOH III

where R^3 has the above meanings.

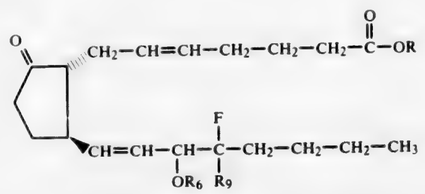
4,410,720

16-FLUORO PROSTAGLANDINS

George W. Holland, Cedar Grove; Jane L. Jernow, Verona, and Perry Rosen, North Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 245,289, Mar. 19, 1981, abandoned, which is a continuation of Ser. No. 132,720, Mar. 24, 1980, abandoned, which is a division of Ser. No. 26,126, Apr. 2, 1979, Pat. No. 4,227,019, which is a division of Ser. No. 780,878, Mar. 24, 1977, abandoned, which is a division of Ser. No. 614,044, Sep. 17, 1975, Pat. No. 4,036,871, which is a division of Ser. No. 480,458, Jun. 18, 1974, Pat. No. 4,052,446, which is a continuation-in-part of Ser. No. 386,117, Aug. 6, 1973, abandoned. This application Oct. 26, 1981, Ser. No. 314,828
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **4 Claims**

1. A composition of matter comprising a compound of the formula:



wherein R is hydrogen or lower alkyl; R_6 is hydrogen or lower alkanoyl, tetrahydropyranyl, benzoyl, trialkylsilyl, benzyl, benzhydryl, trityl; and R_9 is hydrogen or lower alkyl or enantiomers or racemates thereof.

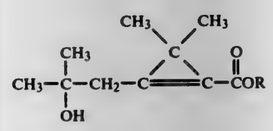
4,410,721

PROCESS FOR THE PREPARATION OF CYCLOPROPENE INTERMEDIATES

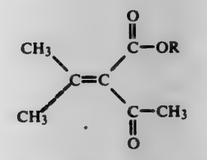
Michel Franck-Neumann, Strasbourg, and Michel Miesch, Mulhouse, both of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 182,062, Aug. 28, 1980, Pat. No. 4,299,973. This application Jul. 16, 1981, Ser. No. 284,125
Claims priority, application France, Sep. 10, 1979, 79 22559
Int. Cl.³ C07C *67/303*
U.S. Cl. 560—124 **2 Claims**

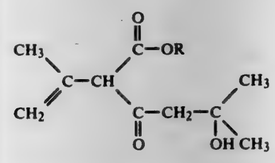
1. A process for the preparation of a compound of the formula



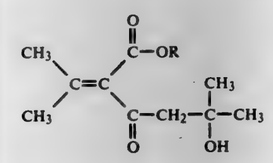
wherein R is alkyl of 1 to 6 carbon atoms comprising reacting a compound of the formula



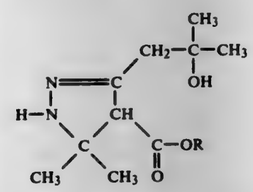
wherein R has the above definition with a strong base and then with an organolithium and reacting the resulting product with acetone to obtain a compound of the formula



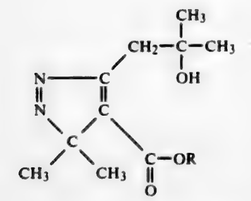
reacting the latter with a basic agent or an acid agent to isomerize the compound to a compound of the formula



and reacting the latter with hydrazine in acetic acid to obtain a compound of the formula



and treating the latter with an oxidation agent in a heterogenous phase to obtain a compound of the formula



and subjecting the latter to irradiation to obtain the desired compound.

4,410,722

PROCESS FOR PREPARING OXALIC ACID DIESTERS USING PLATINUM GROUP METALS SUPPORTED ON ALUMINA

Haruhiko Miyazaki; Yasushi Shiomi, both of Ube; Satoru Fujitus, Yamaguchi; Katsuro Masunaga, and Hiroshi Yanagisawa, both of Ube, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Jan. 11, 1982, Ser. No. 338,242
Claims priority, application Japan, Jan. 23, 1981, 56-7909; Jan. 23, 1981, 56-7911; Jan. 26, 1981, 56-9034
Int. Cl.³ C07C *67/36*
U.S. Cl. 560—204 **8 Claims**

1. In a process for preparing a diester of oxalic acid by the vapor phase catalytic reaction of carbon monoxide with an ester of nitrous acid in the presence of a catalyst composed of a solid carrier and a platinum-group metal or a salt thereof supported on the carrier, the improvement wherein said solid carrier is alumina having a specific surface area of not more than 90 m^2/g.

4,410,723

OXYDEHYDROGENATION PROCESS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 9, 1982, Ser. No. 406,623
Int. Cl.³ C07C *67/317, 51/377*
U.S. Cl. 560—214 **5 Claims**

1. In a process for the catalytic conversion of isobutyric acid or ester to the corresponding alpha, beta-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen; the improvement comprising carrying out the process at a temperature in the range of from about 260° C. to 450° C. using as catalyst a material having the gram-atom formula $K_aCe_bP_cMo_dO_x$ wherein a is 0.01–3.0, b is 0.01–1.5, c is 0.5–3.0, d is 6–12.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,410,724

PROCESS FOR PRODUCTION OF O-(2,6-DICHLOROANILINO)-PHENYLACETIC ACID

Muneaki Takase, Oizumi; Tadahiro Nakamura, Niiza; Kazuo Kamiya, Higashikurume; Toshiyuki Takezawa, Urawa; Hiroaki Yamazaki, Fujishiro, and Takashi Iwaki, Tokyo, all of Japan, assignors to Zenyaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,080
Claims priority, application Japan, Oct. 20, 1980, 55-146500
Int. Cl.³ C07C *99/00*
U.S. Cl. 562—456 **12 Claims**

1. A process for production of o-(2,6-dichloroanilino)-phenylacetic acid which comprises reacting an o-chlorophenylacetic acid compound selected from the group consisting of o-chlorophenylacetic acid and alkali metal salts thereof

with 2,6-dichloroaniline in the presence of a base and at least 0.5 mol of a copper catalyst per mol of o-chlorophenylacetic acid, said copper catalyst being selected from the group consisting of a copper salt, a copper powder and a mixture thereof.

4,410,725

PROCESS FOR PREPARING UNSATURATED ACIDS WITH MO, V, TA-CONTAINING CATALYST

Harry J. Decker, and Erlind M. Thorsteinson, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

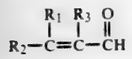
Continuation-in-part of Ser. No. 408,417, Oct. 23, 1973, abandoned. This application Sep. 13, 1974, Ser. No. 505,783

Int. Cl.³ C07C *51/25, 57/055*

U.S. Cl. 562—534 **18 Claims**

1. A process for the production of unsaturated aliphatic carboxylic acid by vapor phase catalytic oxidation of the corresponding unsaturated aliphatic aldehyde with molecular oxygen in the presence of steam

said aldehyde having the structure



wherein R_1 is H or a C_1-C_6 alkyl radical and R_2 and R_3 are the same or different and are H or CH_3

which comprises contacting the reaction mixture with catalytically effective amounts of a calcined oxidation catalyst consisting essentially of the elements Mo, V, Ta, and X in the ratio

$$Mo_aV_bTa_cX_d$$

wherein X is selected from the group consisting of Fe, Cu, Co, Cr, and/or Mn

a is 12,

b is 1 to 14,

c is 0.1 to 12, and

d is 0 to 3.0.

4,410,726

VINYLATION REACTION

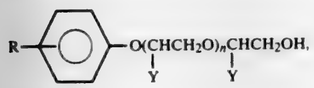
R. Parthasarathy; Eugene V. Hort, both of Wayne, and Paritosh M. Chakrabarti, Cedar Grove, all of N.J., assignors to GAF Corporation, New York, N.Y.

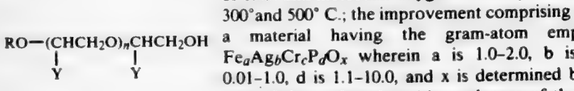
Filed Jun. 12, 1981, Ser. No. 273,178

Int. Cl.³ C07D *207/263;* **B01J** *31/12*

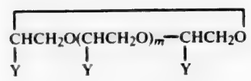
U.S. Cl. 548—543 **13 Claims**

1. A vinylation catalyst composition for use in the vinylation of pyrrolidone with acetylene consisting essentially of a sodium or potassium salt of pyrrolidone as a catalyst and an effective co-acting catalytic amount of a polyoxyalkylene compound selected from the group consisting of a compound having the formula





or a crown ether having the formula



wherein

R is hydrogen or alkyl of from 1 to 24 carbon atoms;

Y is hydrogen or methyl;

n has a value of 6 to 36 and

m has a value of 2, 4 or 6.

4,410,727

OXYDEHYDROGENATION OF ISOBUTYRIC ACID AND ITS LOWER ALKYL ESTERS

Ferdinand A. Ruszala, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Mar. 8, 1982, Ser. No. 355,828

Int. Cl.³ C07C *51/377, 57/05, 67/317, 69/54*

U.S. Cl. 562—599 **5 Claims**

1. In a process for the catalytic conversion of isobutyric acid or a lower alkyl ester thereof to the corresponding alpha, beta-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at a temperature between about 300° C. and 500° C., the improvement comprising using as catalyst a material having the empirical formula $Fe^{II}Fe_2^{III}(PO_4)_2(OH)_2$ which can exist in the form of Barbosalite and/or Lipscombite.

4,410,728

OXYDEHYDROGENATION PROCESS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 19, 1982, Ser. No. 369,385

Int. Cl.³ C07C *51/377, 67/317*

U.S. Cl. 562—599 **3 Claims**

1. In a process for the catalytic conversion of isobutyric acid or ester to the corresponding α,β-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at a temperature between about 300° and 500° C.; the improvement comprising using as catalyst a material having the gram-atom empirical formula $Fe_aCe_bP_cO_x$ wherein a is 1.0–2.0, b is 0.01–2.0, c is 1.0–6.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,410,729

OXYDEHYDROGENATION PROCESS FOR PREPARING METHACRYLIC ACID AND ITS LOWER ALKYL ESTERS

Chelliah Daniel, Columbus, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Apr. 26, 1982, Ser. No. 371,409

Int. Cl.³ C07C *51/377, 57/05, 67/317, 69/54*

U.S. Cl. 562—599 **3 Claims**

1. In a process for the catalytic conversion of isobutyric acid or lower alkyl ester thereof to the corresponding α,β-olefinically unsaturated derivative by oxydehydrogenation wherein a catalyst is contacted with a gaseous stream containing said acid or ester and molecular oxygen at a temperature between about 300°and 500° C.; the improvement comprising using as catalyst a material having the gram-atom empirical formula $Fe_aAg_bCr_cP_dO_x$ wherein a is 1.0–2.0, b is 0.01–1.0, c is 0.01–1.0, d is 1.1–10.0, and x is determined by satisfying the sum of the unshared positive valences of the other elements shown in the formula.

4,410,730

PROCESS FOR THE PRODUCTION OF O-(N-MONOSUBSTITUTED AMINO)BENZYL ALCOHOLS

Tsutomu Sugasawa, Kobe, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Continuation of Ser. No. 675,892, Apr. 12, 1976, abandoned. This application Jun. 28, 1979, Ser. No. 53,183

Int. Cl.³ C07C *87/28*

U.S. Cl. 564—327 **8 Claims**

1. In a process which comprises reacting an N-monosubstituted aniline with boron tribromide or boron trichloride to form the corresponding N-monosubstituted anilinoborane dihalogenide, the improvement wherein said N-monosubstituted anilino-borane dihalogenide is subsequently reacted with about 1.0 to about 1.5 mol equivalents, per equivalent of said N-monosubstituted aniline, of an aldehyde selected from the group consisting of paraldehyde and compounds of the formula RCHO wherein R represents a member selected from the group consisting of hydrogen, methyl, ethyl, propyl, butyl, pentyl, hexyl, amyl, stearlyl, vinyl, propenyl, butenyl, pentenyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, benzyl, phenethyl, phenylpropyl, phenylpentyl, phenylvinyl, phenylpropenyl, phenylbutenyl, phenyl, tolyl, xylyl, naphthyl, pyridyl, thienyl and furyl, said R being unsubstituted or substituted by chlorine, bromine, iodine, fluorine, methyl, ethyl, propyl, ispropyl, butyl, isobutyl, pentyl, methoxy, ethoxy, propoxy, butoxy, acetoxy, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, butoxycarbonyl, trifluoromethyl, nitro or cyano, in the presence of at least about 1.0 mol equivalent, per equivalent of said N-monosubstituted aniline, of a base selected from the group consisting of t-butylisopropylamine, diisopropylamine, di-t-butylamine, dicyclohexylamine, t-butylcyclohexylamine, isopropylcyclohexylamine, t-butylaniline, isopropylaniline, cyclohexylaniline, diphenylamine, triethylamine, tripropylamine, triisopropylamine, tributylamine, triisobutylamine, dibutylethylamine, dipropylisopropylamine, diisopropylethylamine, diisobutylamine, butylethylpropylamine, dipropylbutylamine, methylpyrrolidine, ethyldicyclohexylamine, butyldicyclohexylamine, ethylpiperidine, propylmorpholine, dimethylaniline, diethylaniline, methylethylaniline, dimethylbenzylamine, diethylbenzylamine, methylethylbenzylamine, picoline, 2,6-luthidine, 2,4,6-collidine, pyridine, 2-isopropylpyridine and 2-t-butylpyridine at a temperature from about −30° C. to about 100° C. to regiospecifically introduce a 1-hydroxyalkyl or 1-hydroxysubstituted alkyl group into the ortho position of said N-monosubstituted aniline and thus produce an o-(N-monosubstituted amino) benzyl alcohol.

4,410,731

PROCESS FOR THE MANUFACTURE OF METHYL MERCAPTAN FROM CARBON OXIDES

Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 212,942, Dec. 4, 1980, abandoned, which is a continuation of Ser. No. 11,977, Feb. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 883,438, Mar. 6, 1978, abandoned. This application Dec. 23, 1981, Ser. No. 334,034

Int. Cl.³ C07C *148/00*

U.S. Cl. 568—70 **8 Claims**

1. A continuous process for the manufacture of methyl mercaptan by contacting an intimate mixture of carbon oxide, sulfur or hydrogen sulfide, and hydrogen is elevated temperature and pressure at least sufficient to maintain sulfur in the molten state and at a carbon oxide space velocity of between about 5 and about 200 with a preformed single-phase, solid catalyst system comprising from about 10 to about 90%, based on the weight of said system, of a porous alumina-containing support and, upon which is deposited, from about 10 to 90%, based on the weight of said system, of a mixture of

(a) from about 65 to about 95% based on the weight of said mixture, of at least one sulfide selected from the group consisting of sulfides of iron, nickel, zinc, chromium, cobalt and molybdenum, and

(b) from about 5 to about 35%, based on the weight of said mixture, of an alkali metal sulfide.

4,410,732

PHENYL KETONE DERIVATIVES

Kiyomi Ozawa; Yasuyuki Nakajima, and Makoto Tsugeno, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

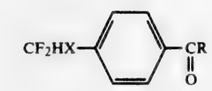
Filed Jun. 14, 1982, Ser. No. 387,778

Claims priority, application Japan, Jul. 7, 1981, 56-105020

Int. Cl.³ C07C *49/825*

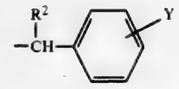
U.S. Cl. 568—337 **9 Claims**

1. Ketone derivatives represented by the general formula (I)

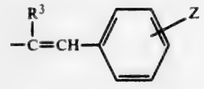


(I)

where R is $—CH_2R^1$ (where R^1 is a hydrogen atom or an alkyl group), a halogen-substituted alkyl group, a cyano-substituted alkyl group, a cyclopropyl group,



(where R^2 is a hydrogen atom or an alkyl group and Y is a hydrogen atom or a halogen atom) or



(where R^3 is a hydrogen atom, an alkyl group, a phenyl group or a halogen-substituted phenyl group, and Z is a hydrogen atom or a halogen atom), and X is an oxygen atom or a sulfur atom.

4,410,733

PREPARATION OF ACETALS OF MALONALDEHYDE

Dietrich Mangold, Neckargemuend; Josef Wahl, Schifferstadt, and Wolf-Karlo Aders, Ellerstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

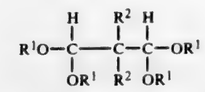
Filed Jan. 6, 1982, Ser. No. 337,487

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1981, 3106576

Int. Cl.³ C07C *41/54*

U.S. Cl. 568—603 **9 Claims**

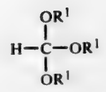
1. A process for the preparation of an acetal of malonaldehyde of the formula



I

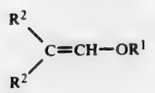
where the individual radicals R^1 and R^2 can be identical or different and each is an aliphatic, cycloaliphatic, araliphatic or aromatic radical, and R^2 can also be hydrogen, which process comprises:

reacting



II

where R^1 has the above meanings, with a vinyl ether of the formula



III

where R^1 and R^2 have the above meanings, in an excess of II over III and in the presence of a catalytic amount of not more than 0.004 mole of $FeCl_3$ per mole of starting material II, at a temperature of from 0° to 70° C., and

isolating the end product I from the reaction mixture.

4,410,734

OPTICALLY ACTIVE PHENYLPROPANE DERIVATIVES, THEIR PREPARATION AND THEIR USE FOR THE PREPARATION OF FUNGICIDES

Christoph Martin, Mannheim; Walter Himmele, Walldorf, and Hardo Siegel, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 8, 1980, Ser. No. 213,792

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001303

Int. Cl.³ C07C *33/18*

U.S. Cl. 568—715 **1 Claim**

1. (S)-3-(p-tert.-Butylphenyl)-2-methyl-propanol.

4,410,735

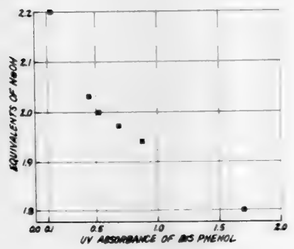
METHOD FOR MAKING BISPHENOXIDE SALTS

Brent A. Dellacoletta, Evansville, Ind., and John W. Verbicky, Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,878

Int. Cl.³ C07C *39/16*

U.S. Cl. 568—722 **6 Claims**



1. A method for making anhydrous alkali metal bisphenol salt as the result of the reaction between bisphenol and an alkali metal hydroxide, where the proportions of the bisphenol or alkali metal hydroxide in the anhydrous alkali metal bisphenol salt do not exceed a 1.5% variance from stoichiometry, which comprises

(1) making an aqueous alkali metal bisphenol salt solution from substantially equivalent amounts of bisphenol and alkali metal hydroxide,

(2) contacting at least a portion of the aqueous solution of (1) with an immiscible organic solvent to produce a two phase mixture,

(3) obtaining a UV absorbance value of the organic phase of (2),

(4) applying the absorbance value found in (3) in a predetermined concentration curve showing equivalents of alkali metal hydroxide against UV absorbance values and calculating alkali metal hydroxide variance from stoichiometry,

(5) adding additional alkali metal hydroxide or bisphenol to the aqueous bisphenoxide salt solution of (1) to obtain an alkali metal bisphenoxide salt mixture having a substantial stoichiometric relation between alkali metal hydroxide and bisphenol, and

(6) effecting the separation of water from the resulting aqueous bisphenoxide salt mixture of (5) to produce the anhydrous alkali metal bisphenoxide salt within a 1.5% stoichiometric relationship between bisphenol and alkali metal hydroxide.

4,410,736

COUPLING OF PHENOLS WITH DIPHENOQUINONES

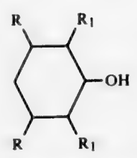
Robert M. Strom, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 6, 1981, Ser. No. 251,627

Int. Cl.³ C07C *39/15*

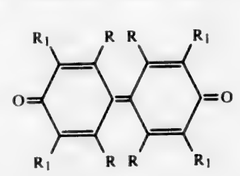
U.S. Cl. 568—730 **6 Claims**

1. In the process for making substituted biphenols by contacting a substituted phenol or mixture thereof of the formula



[I]

wherein each R is hydrogen, halogen or R_1; and each R_1 is a substituent having up to 10 carbons selected from the group consisting of hydrocarbon, halohydrocarbon and hydrocarbonoxy with a substituted diphenoquinone of the formula



[II]

wherein R and R_1 are as previously defined in a liquid reaction medium, the improvement wherein the liquid reaction medium comprises a lower alkanol and the reaction is conducted in the substantial absence of base.

4,410,737

PREPARATION OF META-CHLOROPHENOLS BY SELECTIVE HYDRODECHLORINATION OF POLYCHLOROPHENOLS

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Industries, Paris, France

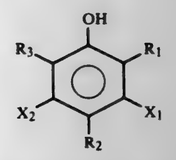
Filed Dec. 21, 1981, Ser. No. 332,833

Claims priority, application France, Dec. 24, 1980, 80 27936

Int. Cl.³ C07C *39/24*

U.S. Cl. 568—774 **26 Claims**

1. A process for the selective preparation of a meta-chlorophenol, comprising selectively catalytically hydrodechlorinating, with hydrogen, a polychlorophenol having the structural formula (I):



(I)

wherein X_1 and X_2, which may be identical or different, each represents a chlorine atom, a hydrogen atom or an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of X_1 or X_2 being a chlorine atom, and R_1, R_2 and R_3, which may also be identical or different, each represents a chlorine atom, a hydrogen atom, an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of R_1, R_2 or R_3 being a chlorine atom, and said selective catalytic hydrodechlorination being carried out at elevated temperatures in liquid phase in an acid solvent medium which is at least partially aqueous and which comprises halide ions, in the presence of a Group VIII noble metal catalyst.

4,410,738

PREPARATION OF META-CHLOROPHENOLS BY SELECTIVE HYDRODECHLORINATION OF POLYCHLOROPHENOLS

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Industries, Paris, France

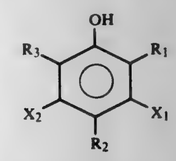
Filed Dec. 21, 1981, Ser. No. 332,740

Claims priority, application France, Dec. 24, 1980, 80 27937

Int. Cl.³ C07C *39/24*

U.S. Cl. 568—774 **29 Claims**

1. A process for the selective preparation of a meta-chlorophenol, comprising selectively catalytically hydrodechlorinating, with hydrogen, a polychlorophenol having the structural formula (I):



(I)

wherein X_1 and X_2, which may be identical or different, each represents a chlorine atom, a hydrogen atom or an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of X_1 or X_2 being a chlorine atom, and R_1, R_2 and R_3, which may also be identical or different, each represents a chlorine atom, a hydrogen atom, an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of R_1, R_2 or R_3 being a chlorine atom, and said selective catalytic hydrodechlorination being carried out at elevated temperatures in liquid phase in an acid solvent medium which is at least partially aqueous, in the presence of a Group VIII noble metal catalyst and at least one Group 1b, 2b, 3a, 4a or 5a heavy metal.

4,410,739

PREPARATION OF META-CHLOROPHENOLS BY SELECTIVE HYDRODECHLORINATION OF POLYCHLOROPHENOLS

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Dec. 21, 1981, Ser. No. 332,846

Claims priority, application France, Dec. 24, 1980, 80 27938

Int. Cl.³ C07C *39/24*

U.S. Cl. 568—774 **24 Claims**

1. A process for the selective preparation of a meta-chlorophenol, comprising selectively catalytically hydrodechlorinating, with hydrogen, a polychlorophenol having the structural formula (I):

(I)

wherein X_1 and X_2, which may be identical or different, each represents a chlorine atom, a hydrogen atom or an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of X_1 or X_2 being a chlorine atom, and R_1, R_2 and R_3, which may also be identical or different, each represents a chlorine atom, a hydrogen atom, an alkyl, aryl, arylalkyl, alkoxy or aryloxy radical, at least one of R_1, R_2 or R_3 being a chlorine atom, and said selective catalytic hydrodechlorination being carried out at elevated temperatures in liquid organic phase, and in the presence of at least one Lewis acid and a Group VIII noble metal catalyst.

4,410,740

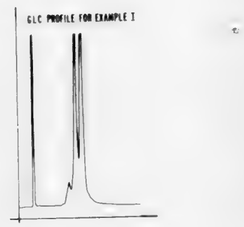
SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

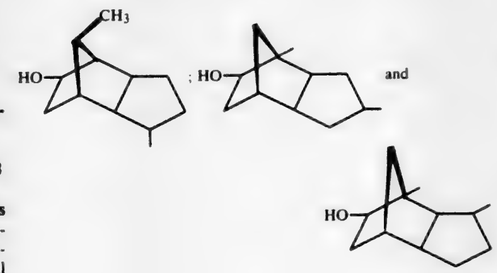
Division of Ser. No. 294,732, Aug. 20, 1981, which is a division of Ser. No. 220,628, Dec. 29, 1980, abandoned, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Sep. 23, 1982, Ser. No. 422,461

Int. Cl.³ C07C *35/22*

U.S. Cl. 568—817 **4 Claims**



1. A hydroxyl substituted tricyclic hydrocarbon derivative having a structure selected from the group consisting of:



4,410,741

PROCESS FOR MANUFACTURE OF CYCLOHEXANOL FROM PHENOL

Jan F. Van Peppen, Chester, Va., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Mar. 3, 1982, Ser. No. 354,471
Int. Cl.³ C07C *35/08*
U.S. Cl. 568—835 **5 Claims**

1. In the batch-type method of manufacture of cyclohexanol by the hydrogenation of phenol in the presence of a nickel catalyst in an amount of about 2 to 10 percent by weight catalyst, at a temperature of from about 100° to 200° C. and a pressure of from about atmospheric to 250 psig (1.72×10^6 pascals), with agitation of liquid phenol and catalyst suspended therein, then allowing the catalyst to settle and separating the catalyst from the reactants, the improvement comprising

maintaining a hydrogen atmosphere during the entire period that catalyst is in contact with reactants, particularly including during the time when catalyst is separated from the reactants, whereby yield of cyclohexanol is improved and yield of by-product cyclohexanone is decreased.

4,410,742

ORGANOMAGNESIUM ALKOXIDES AND METHOD FOR MAKING THE SAME

Karl H. Mueller, Werne, both of Fed. Rep. of Germany, assignor to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany and Ulrich Schroeer, Kamen-Methler

Continuation-in-part of Ser. No. 192,104, Sep. 29, 1980, abandoned. This application Jun. 4, 1982, Ser. No. 384,787
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1979, 2941048
Int. Cl.³ C07C *29/68*
U.S. Cl. 568—851 **4 Claims**

1. A method for making an organomagnesium alkoxide, free of halogen and soluble in hydrocarbons, of the formula

$$R^1_aR^2_bMg(OR^3)_c(OR^4)_d$$

wherein R^1 and R^2 are the same or different and are phenyl or alkyl having 1 to 12 carbon atoms, R^3 and R^4 are the same or different and are alkyl having 2 to 6 carbon atoms, and wherein (a+b) and (c+d) are both equal to 1, which method comprises reacting a reagent consisting essentially of a hydrocarbon-soluble diorganomagnesium compound of the formula

$$(R^1_aR^2_b)_2Mg$$

at a temperature from about 50° C. to about 160° C. with a compound of the formula

$$Mg[(OR^3)_c(OR^4)_d]_2$$

in an ether-free inert hydrocarbon solvent.

4,410,743

PROCESS FOR THE PREPARATION OF 2,3-DIMETHYLBUTANE-2,3-DIOL

Klaus G. Wilms, Dormagen; Helmut Waldmann, and Johann Grolig, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 1, 1982, Ser. No. 364,344
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1981, 3116294
Int. Cl.³ C07C *31/20, 29/03*
U.S. Cl. 568—860 **20 Claims**

1. A process for the preparation of 2,3-dimethylbutane-2,3diol which comprises contacting 2,3-dimethylbutene with oxygen or an oxygen-containing gas in the presence of 0.01 to 20 parts by weight of water relative to the 2,3-dimethylbutene, at a temperature of from 40° to 180° C. without the addition of a catalyst and in the presence of not more than 5% by weight of an inert organic solvent.

4,410,744

MAKING 1,2,4-BUTANETRIOL BY HYDROFORMYLATION OF GLYCIDOL

Carol J. Campbell, Logan, and Jerald C. Hinshaw, Ogden, both of Utah, assignors to Thiokol Corporation, Chicago, Ill.

Filed Aug. 2, 1982, Ser. No. 404,168
Int. Cl.³ C07C *31/22, 29/16*
U.S. Cl. 568—864 **15 Claims**

1. A method for producing 1,2,4-butanetriol, comprising:

hydroformylating a solution of glycidol in a solvent under conditions of elevated temperature and elevated pressure sufficient to cause hydroformylation of said glycidol under an atmosphere containing CO and H_2, and in the presence of a catalyst to produce a reaction product; and

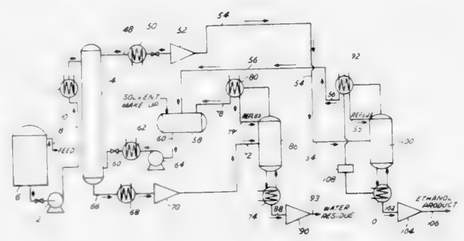
reducing said reaction product to produce 1,2,4-butanetriol.

4,410,745

ETHANOL EXTRACTION PROCESS

John G. Victor, Indian Head Park, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed May 3, 1982, Ser. No. 374,402
Int. Cl.³ C07C *29/86*
U.S. Cl. 568—916 **7 Claims**



1. A process for extracting ethanol from an aqueous solution containing ethanol which comprises contacting the solution with propylene (propene) solvent at conditions of pressure and temperature sufficient to maintain the solvent in the liquid state, and to selectively extract at least a portion of the ethanol from the solution and to provide two separate liquid phases including a solvent phase containing the extracted ethanol.

4,410,746

PREPARATION OF NITRO-OLEFINS

Paul E. Eckler, Terre Haute, Ind., assignor to Angus Chemical Company, Northbrook, Ill.

Filed Jun. 4, 1982, Ser. No. 385,150
Int. Cl.³ C07C *76/02*
U.S. Cl. 568—943 **7 Claims**

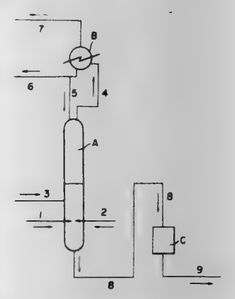
1. A process for the preparation of nitro-olefins comprising reacting a nitrodiol with an aldehyde acceptor in the presence of a catalyst.

4,410,747

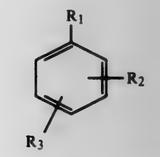
PROCESS FOR PRODUCING 1,2-DICHLOROETHANE

Tsunekazu Akiyama, Kurashiki; Tetsuaki Kihara, Yokohama; Kazunaga Komizo, and Hiroshi Kameo, both of Kurashiki, all of Japan, assignors to Ryo-nichi Company Ltd., Tokyo, Japan

PCT No. PCT/JP80/00330, § 371 Date Jun. 11, 1981, § 102(e) Date Jun. 11, 1981, PCT Pub. No. WO82/02197, PCT Pub. Date Jul. 8, 1982
PCT Filed Dec. 26, 1980, Ser. No. 276,351
Int. Cl.³ C07C *17/02*
U.S. Cl. 570—247 **6 Claims**



1. A process for producing 1,2-dichloroethane which comprises reacting ethylene with chlorine by a liquid phase reaction at a reaction temperature of 65° to 160° C. in a reaction medium containing 1,2-dichloroethane as a main component in the presence of a metal chloride catalyst, wherein at least one aromatic compound selected from the group consisting of benzene type hydrocarbons having the formula



wherein R_1, R_2 and R_3 respectively represent hydrogen or C_1–C_5 alkyl and chlorinated derivatives thereof, as a side reaction inhibitor, is present in an amount of at least 0.001 wt.% based on the liquid phase in the liquid phase of the reaction zone.

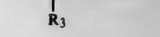
4,410,748

HIGH DENSITY INFORMATION DISC LUBRICANTS

Pabitra Datta, Cranbury, and Eugene S. Poliniak, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,534
Int. Cl.³ B32B *3/02*; C10M *3/44*
U.S. Cl. 585—4 **9 Claims**

1. A high density information record adapted for use with a playback stylus to effect recovery of signals occupying a bandwidth of at least several megahertz when relative motion at a desired rate is established between said record and said stylus, said record comprising a disc of a conductive material containing an information track constituted by a surface relief pattern in said track to accommodate recovery of signals of said bandwidth upon establishment of relative motion at said rate, said record coated with a hydrocarbon lubricant of the formula



wherein R_3 is a long chain alkyl group of 4 to 20 carbon atoms and z is an integer, containing one or more polar dopants substituted with a long chain alkyl group.

4,410,749

LIQUID HYDROCARBON AIR BREATHER FUEL

George W. Burdette, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 13, 1981, Ser. No. 310,553
Int. Cl.³ C10C *1/16*
U.S. Cl. 585—14 **1 Claim**

1. A composition of matter having a density of about 1.020 gram/per cubic centimeter and a viscosity of about 8 centipoises at 20° C., a viscosity of about 154 centipoises at −40° C. and a flash point of about 66° C., useful as a fuel, consisting essentially of about 60 weight percent RJ-5, a production run fuel having as components at least two different isomers of perhydrodinorbornadiene, and about 40 weight percent JP-10, exo-tetrahydrodicyclopentadiene.

4,410,750

PREPARATION OF LINEAR OLEFIN PRODUCTS

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 330,479, Dec. 14, 1981, Pat. No. 4,377,720. This application Dec. 29, 1982, Ser. No. 454,378
Int. Cl.³ C07C *3/21*
U.S. Cl. 585—521 **11 Claims**

1. A process for preparing linear alpha olefins and waxes having a total product M_n in the range 200 to 700, which comprises polymerizing an ethylene-containing gas in the presence of the reaction product of a Zr metal compound having the formula ZrX_aA_b wherein a=3 or 4, b=0 or 1 and a+b=4 and X—Cl or Br and A is Cl, Br, I, OR or OOCR with an aluminum cocatalyst selected from the group consisting of R_2AlOR' and R_2AlNR_2'', wherein R is a primary, secondary or tertiary alkyl group having about 1 to about 20 carbon atoms and R′ or R″ is a primary, secondary or tertiary alkyl group having about 1 to about 20 carbon atoms or an aryl or substituted aryl group, in the presence of a pi base and in the presence of a diluent at a temperature of about 50° to 200° C. and an ethylene pressure above about 3.5 MPa, wherein the M_n of said reaction product, is controlled by the molar ratio of aluminum cocatalyst/Zr, said molar ratio being less than about 1.

4,410,751

PRODUCTION OF OLEFINS FROM A LOWER ALCOHOL OR DIMETHYL ETHER

Shigemitsu Shin, Yatabe; Kunio Suzuki, Sakura; Yoshimichi Kiyozumi, Yatabe; Kiyoshi Ogawa, Yokohama; Haruo Takaya, Abiko; Kenichiro Bando, Yatabe; Yasuo Takami, Tokyo; Yasuhiko Kohtoku, Tsuchiura; Hideo Watanabe, Tokyo; Kichinari Kawamura, Tsuchiura, and Yuzi Shimazaki, Sakura, all of Japan, assignors to Director-General of Agency of Industrial Science & Technology, Tokyo, Japan

Filed Mar. 12, 1982, Ser. No. 357,461
Claims priority, application Japan, May 15, 1981, 57-73939
Int. Cl.³ C07C *1/24*
U.S. Cl. 585—640 **8 Claims**

1. A process for subjecting methanol or dimethyl ether to pyrolysis to obtain olefins, comprising contacting a gas stream containing methanol or dimethyl ether with a catalyst which comprises a smectite composed of superimposed aluminosilicate layers, and zirconium oxide intercalated between said layers.

4,410,752

PROCESS FOR THE OXYDEHYDROGENATION OF ETHANE TO ETHYLENE

Patricia R. Blum, Macedonia, and Ernest C. Milberger, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 168,240, Jul. 10, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 346,029

Int. Cl.³ C07C *5/38, 5/48*

U.S. Cl. 585—658 **12 Claims**

1. A process for the oxydehydrogenation of ethane comprising the step of:

contacting ethane and an oxygen-containing gas at a temperature of at least 300° C. with a catalyst composition having the formula $V_{1.0}P_aM_bO_x$ wherein M is a promoter element selected from the group consisting of Co, Cu, Fe, Ni, Nb, Mo, Cr, W, U, Ta, Ti, Zr, Zn, Hf, Mn, Pt, Pd, Sn, Sb, Bi, Ce, As, Ag and Au; a is 0.5 to 3.0; b is 0.0 to 1.0 and x is the value which satisfies the valence requirements of all the elements, said catalyst having a crystalline structure represented substantially by the X-ray diffraction pattern

d(A)	I
6.3	Weak
4.8	Weak
3.9	Strong
3.13	Strong
2.93	Moderate
2.65	Weak.

4,410,753

PROCESS AND CATALYST FOR SKELETAL ISOMERIZATION OF OLEFINS

Alexander J. Reid, Feasterville, and Kenneth R. Olson, Wynnewood, both of Pa., assignors to Publicker Industries, Inc., Greenwich, Conn.

Filed Mar. 20, 1981, Ser. No. 242,300

Int. Cl.³ C07C *5/30;* **B01J** *26/06*

U.S. Cl. 585—671 **19 Claims**

1. An olefin isomerization catalyst consisting essentially of fluorine-activated gamma-alumina having a fluorine content of from about 0.5 to about 2.0% by weight, and a sufficient amount of bismuth oxide for enhancing the effectiveness and prolonging the active life of said fluorine-activated catalyst.

4,410,754

BUTYLENE ISOMERIZATION PROCESS

Steve A. Gewartowski, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Sep. 29, 1982, Ser. No. 428,499

Int. Cl.³ C07C *5/24, 7/04*

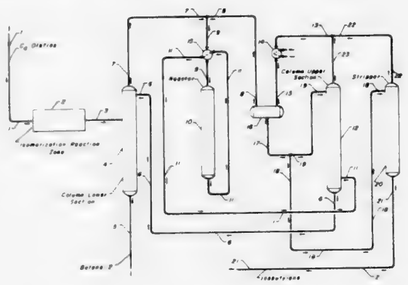
U.S. Cl. 585—671 **9 Claims**

1. A hydrocarbon conversion process for the isomerization of acyclic olefinic hydrocarbons which comprises the steps of:

(a) passing a feed stream comprising a first, a second and a third acyclic olefinic hydrocarbon, all of which have the same number of carbon atoms per molecule, through a first catalytic isomerization reaction zone maintained at isomerization conditions and thereby producing a first reaction zone effluent stream which has a higher concentration of the first olefinic hydrocarbon than the feed stream;

(b) separating the first reaction zone effluent stream in a first fractionation zone into a first bottoms liquid stream having a higher concentration of the first olefinic hydrocarbon than the first reaction zone effluent stream and a first vapor stream having a higher concentration of the second olefinic hydrocarbon than the first reaction zone effluent stream and which is removed from an upper portion of the first fractionation zone;

(c) passing the first vapor stream through a second catalytic isomerization reaction zone maintained at isomerization



conditions and thereby producing a second reaction zone effluent stream which has a higher concentration of the first olefinic hydrocarbon than the first vapor stream;

(d) separating the second reaction zone effluent stream in a second fractionation zone into a second bottoms liquid stream comprising the first olefinic hydrocarbon and a second vapor stream, which is rich in the third olefinic hydrocarbon;

(e) passing the second bottoms liquid stream into an upper portion of the first fractionation zone; and,

(f) recovering a product stream which is rich in the third olefinic hydrocarbon from said vapor stream.

4,410,755

METHOD TO PURIFY ALPHA-METHYL STYRENE PRIOR TO CATALYTIC HYDROGENATION

William B. Fisher, and Jan F. Van Peppen, both of Chester, Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 208,903, Nov. 11, 1980, Pat. No. 4,334,107. This application Jun. 4, 1982, Ser. No. 385,238

Int. Cl.³ C07C *7/00*

U.S. Cl. 585—800 **7 Claims**

1. A method to purify crude alpha-methyl styrene containing acetol prior to hydrogenation comprising

contacting the crude alpha-methyl styrene with a catalyst while

heating the crude alpha-methyl styrene and catalyst to a temperature between about 24° C. and about 400° C.

at a pressure between about atmospheric and about 1000 psig in an inert atmosphere

so that the catalyst causes a reaction between the impurity acetol and alpha-methyl styrene to form cumene and pyruvic aldehyde, then

heating the resultant compounds for a period of 0.1 to about six hours under an inert gas sweep to a temperature of from about 24° C. to about 400° C. until the pyruvic aldehyde decomposes and its decomposition products are swept away in the gas sweep.

4,410,756

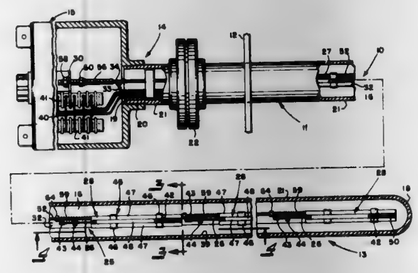
FLEXIBLE TYPE MULTIPOINT THERMOCOUPLE ASSEMBLY

William H. Schwagerman, McHenry, Ill., assignor to Pneumo Corporation, Boston, Mass.

Filed Jul. 28, 1982, Ser. No. 402,596

Int. Cl.³ G01K *7/04;* **H01L** *35/02*

U.S. Cl. 136—221 **32 Claims**



1. A multipoint thermocouple assembly useful in an axially elongate hollow well for monitoring temperatures at various locations in a utilization environment, comprising an elongate thermocouple support member insertable lengthwise into the well, a plurality of thermocouples held in generally parallel relation to said support member and having measuring junctions, an elongate actuation member coextensive with and mounted on said support member for relative longitudinal movement therebetween, and means responsive to such relative longitudinal movement for urging the measuring junctions of said thermocouples away from said support member and into thermal conductive engagement with respective wall portions of the well.

4,410,757

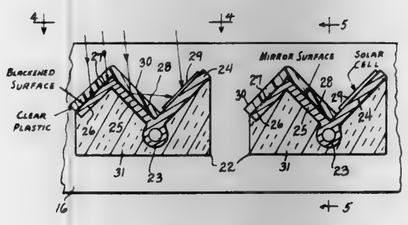
ADJUSTABLE COLLECTION MEMBERS FOR SOLAR ENERGY SYSTEMS

Reinhard Stamminger, Gaithersburg, and Herbert M. Cullis, Silver Spring, both of Md., assignors to Monegon, Ltd., Gaithersburg, Md.

Filed Mar. 22, 1982, Ser. No. 360,790

Int. Cl.³ H01L *31/04;* **F24J** *3/02*

U.S. Cl. 136—248 **11 Claims**



1. In a solar energy collection system, a supporting frame, at least one vane structure transversely mounted in said supporting frame, said vane structure comprising a generally Z-shaped bar member of heat-conducting material having oppositely extending top and bottom longitudinal flanges and a longitudinal web portion connecting said flanges, said bar member being formed with a longitudinal tubular conduit having extended opposite end portions supportingly engaged with said frame, one of said flanges having a darkened top surface, whereby to absorb solar radiant energy to convert it into heat which is conducted to said conduit, and photovoltaic means mounted on the top surface of the other flange in a position to receive solar radiation and thereby generate electrical current.

4,410,758

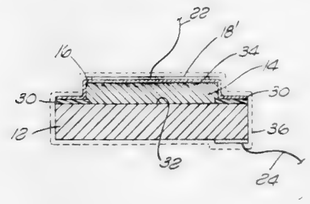
PHOTOVOLTAIC PRODUCTS AND PROCESSES

Arthur J. Grolitzer, Tarzana, Calif., assignor to Columbia Chase, Inc., Braintree, Mass.

Continuation-in-part of Ser. No. 234,492, Feb. 17, 1981, abandoned, which is a continuation-in-part of Ser. No. 122,259, Feb. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 25,224, Mar. 29, 1979, abandoned. This application Apr. 27, 1982, Ser. No. 372,154

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—254 **45 Claims**



2. A photovoltaic cell which comprises:

(A) an electrically conductive substrate;

(B) a layer of cesium fluoride-like material on one surface of said substrate, said layer containing first and second portions, said first, lower portion adjacent said substrate being non-stoichiometric cesium fluoride-like material, and said second, upper portion being non-stoichiometric cesium fluoride-like material having a highly doped P+ doping, the transition between said first and second portions being graded with respect to said doping; and

(C) an electrically conductive substantially transparent metallic layer over said supper portion of said cesium fluoride-like layer.

4,410,759

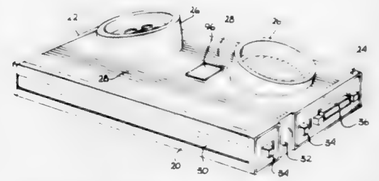
ELECTRONICS PACKAGE

Bayard F. Kessler, 20409 Prairie, Chatsworth, Calif. 91311

Division of Ser. No. 971,538, Dec. 20, 1978, Pat. No. 4,297,530. This application Jun. 8, 1981, Ser. No. 271,242

Int. Cl.³ H04M *11/00;* **H05K** *5/00*

U.S. Cl. 174—52 R **7 Claims**



1. An electronic package comprising;

an extruded plastic central body having first and second open ends and an approximately rectangular section defining inner and outer section surfaces, said inner section surface having at least two facingly disposed slots formed therein for receiving and supporting the side edges of at least one printed circuit board within said central body,

a first end cap having a portion thereof fitting within a first end of said central body for alignment therewith, said first end cap enclosing at least a substantial portion of said first end of said central body,

a second end cap having a portion thereof fitting within a second end of said central body for alignment therewith,

said second end cap enclosing at least a substantial portion of said second end of said central body, at least one of said end caps having an opening for electrical connection to said circuit board therein, and

retaining means for retaining said first and second end caps on said first and second ends, respectively, of said central body.

4,410,760

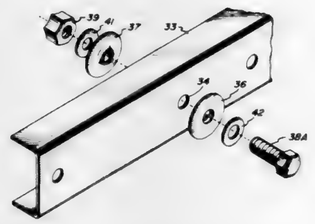
MEANS FOR SUPPORTING A BUS BAR IN SWITCHBOARD HOUSING APPARATUS

David B. Cole, Ballwin, Mo., assignor to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 219,551, Dec. 23, 1980, Pat. No. 4,366,528. This application Jul. 6, 1982, Ser. No. 395,184

Int. Cl.³ H01B *17/18*

U.S. Cl. 174—171 **5 Claims**



1. In a switchboard housing apparatus, means for supporting a bus bar comprising

an elongated steel member having at least one bolt hole therethrough, said member being coated with an insulative material;

a first formed washer of protective material adapted to seat within said hole at one side of said member;

a second formed washer of protective material adapted to seat within said hole at a side opposite to said one side of said member;

a metal bolt adapted to fit within said washers and said hole;

a nut adapted to engage with said bolt; and

a flat washer adapted to fit between said nut and said second formed washer.

4,410,761

STEREO LOUDSPEAKER SYSTEM FOR A PICTURE REPRODUCING SCREEN

Willi Schickedanz, Langener Strasse 70, 6050 Offenbach am Main, Fed. Rep. of Germany

Filed Nov. 5, 1980, Ser. No. 202,832

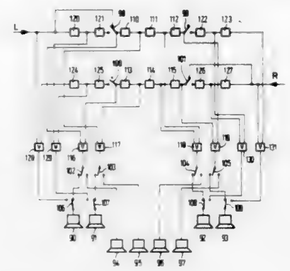
Int. Cl.³ H04R *5/00*

U.S. Cl. 358—335 **20 Claims**

1. A stereo loudspeaker system for a picture reproducing screen, said loudspeaker system comprising:

(a) at least one loudspeaker arrangement being arranged on a horizontal axis with respect to the screen, said arrangement comprising a plurality of loudspeaker units which are distributed from at least the left end to at least the right end of the screen, the one end of said loudspeaker arrangement being supplied with right channel stereo signals and the other end being supplied with left channel stereo signals;

(b) a circuit for successively delaying the right channel stereo signal and the left channel stereo signal from one loudspeaker unit to the other in such a manner that the loudspeaker unit at the one end of the loudspeaker arrangement receives the least delayed right channel stereo signal as well as the most delayed left channel stereo signal, whereas the loudspeaker unit at the other end of the loudspeaker arrangement receives the least delayed left channel signal as well as the most delayed right channel signal.



4,410,762

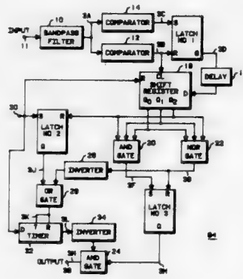
DUAL MODE TONE DETECTOR CIRCUIT

Lawrence M. Ecklund, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 12, 1981, Ser. No. 262,839

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—15 **11 Claims**



1. Dual mode tone detector means comprising:

input means for receiving signals which may include one signal of a predetermined frequency;

filter means coupled to the input means for outputting only those received signals at or near the predetermined frequency;

first circuit means coupled to the filter means output and including comparator means for determining the peak amplitude of each filtered signal cycle, shift register means coupled to the comparator means, and logic means coupled to the shift register means outputs for providing a first output signal only in response to the reception of a first predetermined number of consecutive cycles of said signal frequency, each said cycle having at least a predetermined peak amplitude, and a second output signal only in response to the reception of a second predetermined number of consecutive cycles of said signal frequency having an absolute value less than the predetermined peak amplitude;

second circuit means coupled to the shift register means outputs and the logic means output and including timing means for providing a timed output signal of a predetermined period in response to the reception of the second predetermined number of consecutive cycles having an absolute value less than the predetermined peak amplitude, said second predetermined number of cycles following at least one cycle having at least the predetermined peak amplitude and gating means; and

means coupled to the first and second circuit means and responsive to the first and second output signals, the gating means decoupling the responsive means from the logic means during said timed output signal.

4,410,763

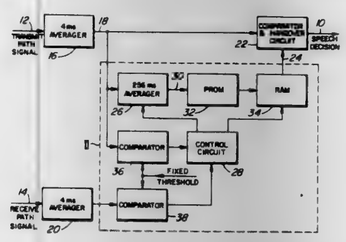
SPEECH DETECTOR

Leo Strawczynski, Ottawa, and Hing-Fai Lee, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 9, 1981, Ser. No. 271,971

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **15 Claims**



1. A speech detector for detecting the presence of speech in a voice channel signal, comprising:

means for producing a control signal in response to the voice channel signal falling below a first speech threshold;

means responsive to the control signal for determining a noise level of the voice channel signal while the voice channel signal is below the first speech threshold;

means for determining a second speech threshold in dependence upon the determined noise level; and

means for indicating the presence of speech in response to the voice channel signal exceeding the second speech threshold.

4,410,764

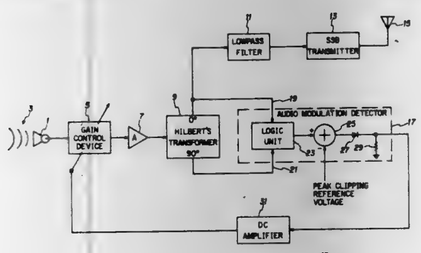
SPEECH PROCESSOR FOR PROCESSING ANALOG SIGNALS

Willard F. Werth, and Robert L. Craiglow, both of Cedar Rapids, Iowa, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 29, 1981, Ser. No. 278,017

Int. Cl.³ G10L *1/00*

U.S. Cl. 364—513.5 **18 Claims**



1. A speech processor for processing an analog signal comprising:

gain control means for controlling the amplitude of the analog signal, the gain control means being controlled by a peak limited modulation envelope signal to provide a limited analog signal;

Hilbert transformer means for performing a Hilbert transform on the limited analog signal to provide thereby an inphase signal and a quadrature phase signal;

audio modulation detector means for detecting the peak limited modulation envelope signal, the audio modulation detector means includes a logic means for extracting the square root of the sum of the squares of the inphase signal and the quadrature phase signal to obtain thereby a peak limited signal, reference means for providing a peak reference signal, comparator means for comparing the peak reference signal with the peak limited signal to obtain an analog peak limited modulation signal thereby, and detector means for separating the peak limited modulation envelope signal from the analog peak limited modulation signal; and

feedback path means for coupling the peak limited modulation envelope signal to the gain control means.

4,410,765

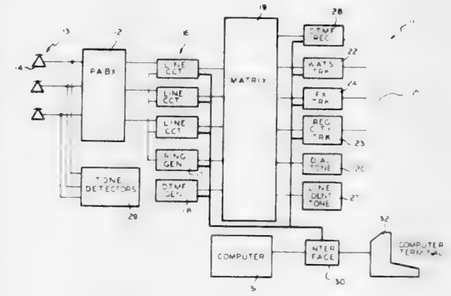
TELEPHONE CALL ROUTING AND CHARGING SYSTEM

Alfred M. Hestad, and Harry O. Hansen, both of Chicago, Ill., assignors to United Networks, Inc., Chicago, Ill.

Filed Jun. 4, 1981, Ser. No. 270,385

Int. Cl.³ H04M *15/18, 17/00*

U.S. Cl. 179—7.1 R **25 Claims**



1. A telephone least cost routing and charging arrangement for enabling private branch systems to route calls from a calling station to a distant called station so as to obtain the least charge for the call, said arrangement comprising:

a calling station,

dial means at said calling station for generating control signals indicative of the called station,

computer means including stored information for selecting the least cost route responsive to said control signals in said stored information,

means for connecting the calling station to the called station over said selected route,

means for detecting data signals from one of said stations,

means for distinguishing between data signals originating at the called station and at the calling station, and

means for automatically timing the duration of the call for charge purposes from the time a data signal from said called station is detected until the termination of the call independently of telephone answer supervision.

4,410,766

POWER SAVING LINE CIRCUIT

Patrick R. Beirne, Stittsville, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed Jul. 21, 1981, Ser. No. 285,659

Claims priority, application Canada, Feb. 20, 1981, 371392

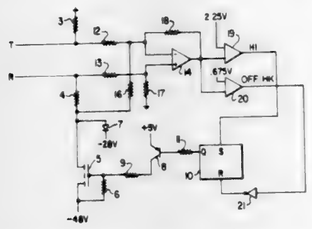
Int. Cl.³ G05F *1/613;* **H04M** *1/76, 19/00*

U.S. Cl. 179—16 F **9 Claims**

1. A power saving circuit comprising:

(a) means for supplying power alternatively from a first

voltage source or a second voltage source applying voltage lower than the first voltage source to a line,
(b) means for detecting current drawn by said line which is higher than a first predetermined current level, when the first voltage source is connected to the line,
(c) means for switching the second voltage source to the line in substitution for the first voltage source upon detection



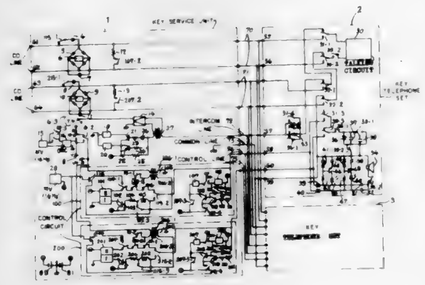
of said first current draw which is higher than the first predetermined level,
(d) means for detecting current drawn by the line which is below a second predetermined current level which is lower than the first predetermined current level, and
(e) means for switching the first voltage source to the line upon detection of said current drawn below said second predetermined current level.

4,410,767

KEY TELEPHONE SYSTEM

Kouichi Sekiguchi, Asaka, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 797,696, May 17, 1977, abandoned. This application Aug. 16, 1979, Ser. No. 66,927
Claims priority, application Japan, May 17, 1976, 51/55315; May 17, 1976, 51/55316; May 17, 1976, 51/55317; May 17, 1976, 51/55318; May 17, 1976, 51/55319
Int. Cl.³ H04Q *5/20*; H04M *9/06*
U.S. Cl. 179—99 R **34 Claims**



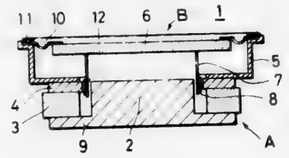
1. A key telephone system comprising:
a plurality of key telephone sets;
at least one pair of CO lines, an equal number of control lines and a common line;
a key service unit for selectively connecting said key telephone sets to said at least one pair of CO lines under control of said common line and said control lines;
said key service unit comprising: a DC power source for continuously producing two output voltages respectively having a certain positive voltage difference and a negative voltage difference with respect to a reference voltage, said output voltages being representative of an initial state and an operating state, respectively; a number of first detectors equal to the number of pairs of CO lines and respectively connected to the control line for detecting the initial state in which one of the two output voltages from said DC power source is applied across the control line and the common line to flow a current of predetermined value in a DC loop including the control line, one of said key telephone sets and the common line and for generating an output in response to the detected state; a number of second detectors equal to the number of pairs of CO lines and respectively connected to the control line in response to the output of a corresponding one of the first detectors for detecting the operating state in which the other of the two output voltages from said DC power source is applied across the control line and the common line so as to flow a current larger than a certain value in said DC loop and for generating an output in response to the state detected; and switching means for disconnecting said first detector from the control line in response to the output of a corresponding one of the second detectors and for connecting a corresponding second detector to the control line when the first detector produces said output.

4,410,768

ELECTRO-ACOUSTIC TRANSDUCER

Akira Nakamura, Shizuoka, and Takao Nakaya, Hamamatsu, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 15, 1981, Ser. No. 283,367
Claims priority, application Japan, Jul. 23, 1980, 55-100857; Jul. 23, 1980, 55-100858; Jul. 23, 1980, 55-104211[U]; Jul. 30, 1980, 55-103712
Int. Cl.³ H04R *7/00, 9/00*
U.S. Cl. 179—115.5 R **25 Claims**



1. An electro-acoustic transducer, comprising:
a vibration system having a diaphragm, a voice coil bobbin and a voice coil wound about the bobbin;
a magnetic circuit system forming a magnetic gap in which is positioned said voice coil; and
a frame supporting, via a suspension member, said diaphragm,
wherein at least one of the constituent members of said vibration system is comprised of a composite material of cellular plastics and reinforcing fibers integral with the cellular plastics.

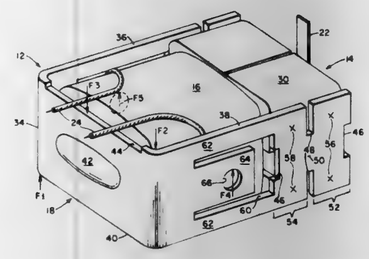
4,410,769

TRANSDUCER WITH ADJUSTABLE ARMATURE YOKE AND METHOD OF ADJUSTMENT

George C. Tibbetts, Camden, Me., assignor to Tibbetts Industries, Inc., Camden, Mass.

Filed Dec. 9, 1981, Ser. No. 328,857
Int. Cl.³ H04R *11/00*
U.S. Cl. 179—119 A **24 Claims**

1. An electromechanical transducer having, in combination,
polarizing flux means comprising at least one permanent magnet and a pair of spaced, facing pole surfaces defining a working gap,
an electrical coil, and
armature means comprising an elongate, flux conductive armature leg extending through the coil into the gap, a flux conductive crosspiece fixed to the armature leg remote from the gap and extending laterally from the armature leg, and an elongate, flux conductive yoke arm fixed to the crosspiece and extending in the general direction of the armature leg, the lengthwise dimension of the yoke arm comprising first and second sections, the first section being secured to the polarizing flux means and the second



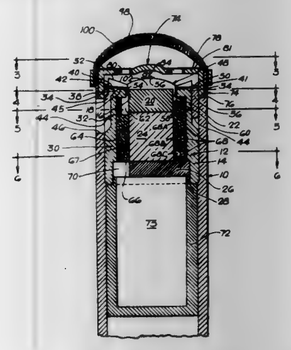
section comprising a plurality of mutually spaced plastically deformable struts that extend along a substantial portion of the yoke arm.

4,410,770

DIRECTIONAL MICROPHONE

Lee Hagey, Buchanan, Mich., assignor to Electro-Voice, Incorporated, Buchanan, Mich.

Filed Jun. 8, 1981, Ser. No. 271,621
Int. Cl.³ H04R *1/31*
U.S. Cl. 179—121 D **7 Claims**



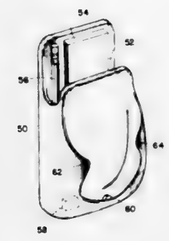
1. A directional microphone comprising a casing having a cavity therein, said casing having an opening communicating with the cavity, an electroacoustical transducer disposed within the cavity of the casing, said transducer having a vibratile diaphragm confronting the opening and being acoustically sealed on the casing to divide the cavity into a first portion confronting the opening and a second portion, means disposed in the second portion of the cavity defining a first chamber disposed on the side of the diaphragm opposite the opening and a second chamber, said casing having an aperture extending to the exterior thereof, and said chamber defining means being provided with a first passage from the first chamber to the aperture, and said chamber defining means being provided with a second passage extending between the first chamber and the second chamber, characterized by the improved construction wherein the second passage contains an elongated portion filled with a mass of acoustical resistance material, the density of said mass increasing with distance from the first chamber.

4,410,771

TELEPHONE HANDSET RECEPTACLE FOR OFF-HOOK PLACEMENT

Victor Y. Nishijima, 336 W. 42nd Ave., San Mateo, Calif. 94403

Filed Mar. 27, 1981, Ser. No. 246,001
Int. Cl.³ H04M *1/04*
U.S. Cl. 179—146 R **9 Claims**



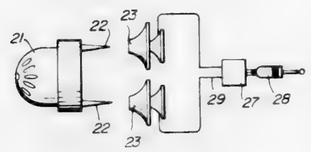
1. A receptacle for a telephone handset, for use adjacent to a telephone, which comprises:
a base having a curved edge and at least one aperture for a fastening means passing through said base for mounting said base on a substantially vertical surface, and
a pair of curved, arcuate, opposed extensions integrally formed with the curved edge of said base, said extensions being dimensioned and configured to engage the telephone handset so that the handset may be hangingly supported by said receptacle, and
an enclosure for a note pad formed by substantially rectangular portions of said base.

4,410,772

SUPERMINIATURE MICROPHONE DEVICE

Masanobu Sato, Hachioji, Japan, assignor to Olympus Optical Company Limited, Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,117
Claims priority, application Japan, Apr. 23, 1981, 56/58928[U]; Apr. 23, 1981, 56/58929[U]
Int. Cl.³ H04R *23/00*
U.S. Cl. 179—157 **3 Claims**

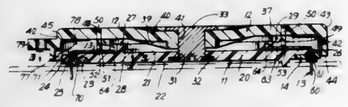


1. A superminiature microphone device comprising an accessory body having a decoration pattern, a microphone unit including lead wires incorporated in said accessory body, a plug connected to the microphone unit through said lead wires, and an electric cord connector for connection to the plug for connecting the microphone unit to a power supply source through an electric cord, wherein the plug has at least one pin-shaped terminal and the cord connector comprises a conical collet chuck having a tip portion at one end for holding the plug, a conical clamp member for clamping the tip portion of the collet chuck about the plug, and an elastic spring provided between the collet chuck and the clamp member for continually pushing the clamp member onto the peripheral surface of the collet chuck.

4,410,773
MULTIPOLE DATA SWITCH

Paul V. De Luca, Plandome Manor, and David Rawlings, Bayville, both of N.Y., assignors to Porsa Systems Corp., Syosset, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,124
Int. Cl.³ H01H *19/54*
U.S. Cl. 200—11 K **4 Claims**

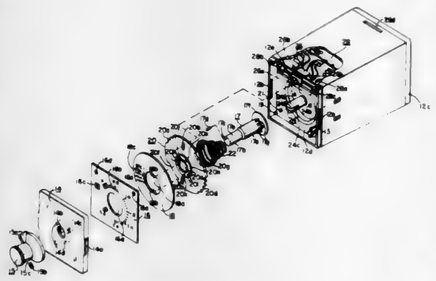


1. A rotary type multipole switch comprising: a stator element and a rotor element arranged in parallel planes for relative incremental movement; said stator element including a contact-supporting area defining a plurality of parallel bores, a plurality of elongated wire-like flexible contacts each having first and second generally rectilinear portions interconnected by a bent portion, said first portions of said contacts being disposed within said bores, said second portions overlying a surface of said stator element in mutually spaced juxtaposed relation; means on said stator element for limiting resilient flexing movement of said second portions to planes perpendicular to said surface of said stator element; said rotor element having a surface facing said surface on said stator element, said rotor element having a plurality of contact members projecting outwardly of said facing surface, and overlying said second portions of said coniacts on said stator element to selectively bridge adjacent pairs thereof.

4,410,774
SINGLE KNOB VARIABLE RANGE TIMER

Grover K. Houpt, Wayne, and George F. Updegrove, Spring City, both of Pa., assignors to American Manufacturing Company, Inc., King of Prussia, Pa.

Filed Jun. 10, 1982, Ser. No. 387,220
Int. Cl.³ H01H *19/54, 7/08*
U.S. Cl. 200—14 **24 Claims**



1. Control apparatus comprising:

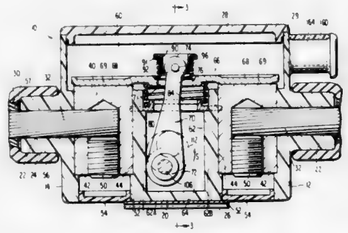
(a) first rotatable means adapted to be coupled to a first rotatable utilization apparatus, said means being coupled in a first pre-determined axial position to said first utilization apparatus for control thereof by rotation and,

(b) second rotatable means coupled to second utilization apparatus but normally not coupled to said first rotatable means in said first axial position, said second means being adapted to be coupled to said first rotatable means when the latter is in a second predetermined axial position whereupon said first rotatable means rotates said second rotatable means which thereupon controls said second utilization apparatus.

4,410,775
SNAP-ACTION BATTERY CABLE SWITCH

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 78213

Continuation-in-part of Ser. No. 66,971, Aug. 16, 1979, Pat. No. 4,306,126. This application Oct. 13, 1981, Ser. No. 310,698
Int. Cl.³ H01H *5/00*
U.S. Cl. 200—52 R **14 Claims**



1. A switch apparatus for selectively connecting a source of electrical power to an electrical system, said apparatus comprising:

a support;

at least two electrically conductive bodies mounted on said support in spaced relation to each other;

fastening means for connecting one of said conductive bodies to an electrical cable connected to said source of electrical power and the other of said conductive bodies to an electrical cable connected to said electrical system;

an electrically conductive contactor movable between a close position in contact with each of said at least two conductive bodies and an open position out of contact with each of said at least two conductive bodies;

connecting means for moving said contactor from said open position to said closed position and for releasing said contactor for snapping movement from said closed position to said open position, said connecting means having a first position corresponding to the closed position of said contactor, a second position corresponding to the open position of said contactor, and a release position between said first and second positions;

a first biasing mean for biasing said contactor toward its said open position; and,

actuator means for moving said connecting means from said second position to said first position to close said contactor and from said first position to said release position to open said contactor, said connecting means being movable from said release position to said second position independently of further opening movement by said actuator means such that said first biasing means causes rapid movement of said connecting means relative to said actuator means and said contactor to snap from said closed position to said open position.

4,410,776
CONTROL DEVICE

Donald H. Stoll, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Mar. 16, 1981, Ser. No. 244,021
Int. Cl.³ H01H *35/34*
U.S. Cl. 200—83 P **14 Claims**

1. A control device including:

a pair of housing members;

one of said housing members being formed of a dielectric material and including a pair of opposite end walls, a pair of stepped bores intersecting with said opposite end walls, respectively, a pair of sets of generally opposite recesses in one of said opposite end walls, respectively, and a pair of threaded openings intersecting with the other of said opposite end walls and one of said recess sets, respectively;

the other of said housing members being formed of an electrically conductive material and including a sidewall extending generally in confronting relation about said one housing member and secured thereto, a base wall integral with said sidewall and extending over said one opposite end wall of said one housing member, and at least one pressure fluid passage extending through said base wall;

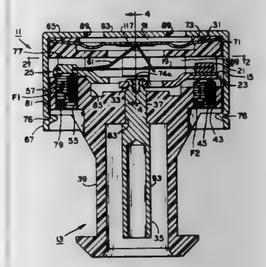
a pair of generally annular spacers seated on said one opposite end wall of said one housing member and said base wall of said other housing member, respectively;

a diaphragm seated between said spacers and said diaphragm defining with said other housing member a chamber in communication with said at least one pressure fluid passage in said base wall of said other housing member;

a terminal extending through the smaller of said stepped bores of said one housing member and mounted thereto, said terminal having a mounting section within said larger stepped bore of said one housing member and an electrical connection section extending exteriorly thereof;

a terminal extension having a pair of opposite end portions with a first deformable section therebetween, one of said opposite end portions being secured to said mounting section of said terminal and the other of said opposite end portions extending into one of said opposite recesses in said one recess set in said one opposite end wall of said one housing member so as to be disposed at least adjacent one of said threaded openings in said one housing member, and a first contact on said terminal extension at least adjacent said other opposite end portion thereof;

a supporting member including a bridge section extending



into the other of said opposite recesses of said one recess set in said one opposite end wall of said one housing member so as to be disposed at least adjacent the other of said threaded openings in said one housing member, a pair of arms integral with said bridge section and spanning a part of said larger stepped bore generally between the other of said recess sets in said one opposite end wall of said one housing member, respectively, a pair of depending flanges on said arms received in said opposite recesses of said other recess sets in said one opposite end wall of said one housing member, respectively, a pair of means on said flanges for abutment in electrical conductive relation with said sidewall of said other housing member when said flanges are received in said opposite recesses of said other recess set, respectively, and a pair of second deformable sections in said arms and spaced from said flanges, respectively;

switch means adapted for actuation in response to movement of said diaphragm upon the occurrence of fluid pressure in excess of a preselected value at said at least one pressure fluid passage and in said chamber acting on said diaphragm, said switch means including a resilient electrically conductive switch blade having a first mounting end secured to said bridge section of said supporting member and a free end portion generally opposite said first mounting end extending into said one opposite recess of said one recess set in said one opposite end wall of said one housing member, a second contact of said free end portion of said switch blade, a tongue on said free end portion of said switch blade extending therefrom generally in a direction toward said first mounting end thereof and having a first pivoted end, a spring blade engaged with said diaphragm and having a second mounting end secured to said bridge section of said supporting member and a second pivot end generally opposite said second mounting end pivotally engaged with said first pivot end on said tongue of said switch blade so as to urge said second contact thereon toward engagement with said first contact on said other opposite end portion of said terminal extension, said spring blade being conjointly movable with said diaphragm in response to the fluid pressure in excess of the preselected value acting thereon to drive said tongue in a direction to effect snap action movement of said switch blade toward a position disengaging said second contact from said first contact;

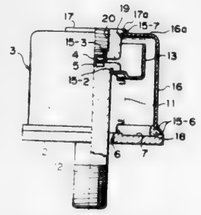
a first adjusting screw threadedly received in said one threaded opening in said one housing member so as to engage with said one opposite end portion of said terminal extension, said first adjusting screw being adjustably movable in response to a first manual adjusting force exerted thereon to effect deformation of said first deformable section of said terminal extension and adjustably move said first and second contacts into an adjusted position defining the force of the preselected value of the fluid pressure acting on said diaphragm upon the actuation of said switch means to effect the disengagement of said second contact from said first contact;

a second adjusting screw threadedly received in said other threaded opening in said one housing member so as to engage with said bridge section of said supporting member, said second adjusting screw being adjustably movable in response to a second manually applied force exerted thereon to effect the deformation of said second deformable sections generally about said flanges of said supporting member received in said opposite recesses of said other recess set in said one opposite end wall of said one housing member so as to stress said switch blade urging said second contact thereon in a direction toward its engagement with said first contact thereby to adjust a differential between the force of the first named preselected value acting on said diaphragm upon the actuation of said switch means to effect the disengagement of said second contact from said first contact and the force of another preselected value of the fluid pressure acting on said diaphragm to actuate said switch means and effect the reengagement of said second contact with said first contact.

4,410,777
VACUUM CIRCUIT INTERRUPTER

Shinzo Sakuma, Yokohama; Junichi Warabi, Shizuoka, and Yukio Kobari, Tokyo, all of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed May 22, 1981, Ser. No. 266,391
Claims priority, application Japan, May 23, 1980, 55-68453; May 23, 1980, 55-68454
Int. Cl.³ H01H *33/66*
U.S. Cl. 200—144 B **11 Claims**

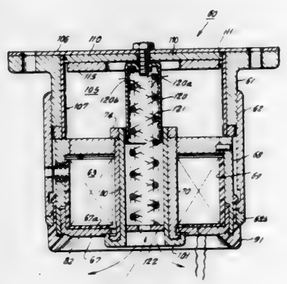


1. A vacuum interrupter, which comprises:

(a) a ceramic insulation disk having a hole at the center thereof;
(b) a bell-shaped metal casing having a fixed contact mounting portion projecting inwardly, an open end of said casing being joined hermetically by brazing to the outer periphery of said ceramic insulation disk to form a vacuum vessel, at least said open end of the casing being made of plastically deformable copper to thereby reduce thermal stress generated during cooling down of said casing to room temperature after said ceramic insulation disk has been brazed thereto;
(c) a fixed contact joined to a fixed contact mounting portion of said bell-shaped metal casing;
(d) a bellows disposed concentrically with said casing, one end of said bellows being joined hermetically to the inner surface of the disk near the central hole;
(e) a movable electrode rod having a movable contact mounting portion at one end thereof, said movable electrode rod being loosely inserted into the central hole of the ceramic insulation disk so as to be freely moveable, said movable electrode rod being joined hermetically to the other end of said bellows; and
(f) a movable contact fixed to the contact mounting portion of said movable electrode rod, said movable contact being brought into contact with or away from said fixed contact when said movable electrode rod is moved together with said bellows to make or break a circuit connected therewith.

4,410,778
ARC SPINNER WITH MAGNETICALLY DRIVEN PUFFER

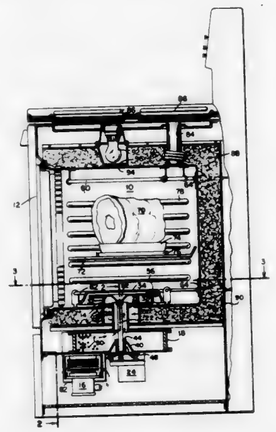
Donald E. Weston, Lansdale, Pa., assignor to Brown Boveri Electric Inc., Spring House, Pa.
Filed Sep. 12, 1980, Ser. No. 186,609
Int. Cl.³ H01H *33/88, 33/18*
U.S. Cl. 200—148 A **14 Claims**



1. An arc spinner interrupter comprising, in combination: a movable contact; an arc runner disk formed of a flat disk of conductive material engageable by said movable contact, and having one surface area for receiving the arc root of an arc drawn between said movable contact and said arc runner disk; a coil connected in series with said arc runner disk and fixed adjacent to the surface of said coil which is opposite to said one surface area; an arc extinguishing fluid disposed in the region between said movable contact and said arc runner disk; a gas-filled volume disposed adjacent said coil on the side of said coil away from said arc runner disk; a puffer piston movably supported in said gas-filled volume and containing a ferromagnetic member, whereby the magnetic field produced by current flow in said coil applies a force on said puffer piston to compress said gas-filled volume; and gas flow channel means connecting said region between said movable contact and said arc runner disk to said gas-filled volume whereby, when said interrupter is operated, relatively cool gas from said gas-filled volume flows, in a non-blast mode, into said region to increase the density of gas in said region and to reduce the temperature of gas in said region after an interruption operation.

4,410,779
COMBINATION MICROWAVE OVEN CONTROL SYSTEM

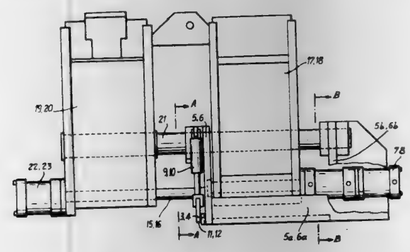
Bernard J. Weiss, Barto, Pa., assignor to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 120,013, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 892,538, Apr. 3, 1978, abandoned. This application Sep. 3, 1981, Ser. No. 298,868
Int. Cl.³ H05B *6/72*
U.S. Cl. 219—10.55 F **3 Claims**



1. A self-cleaning combination microwave and conventional heat oven comprising:
a microwave energy conductive enclosure containing an elongated resistive heating element adjacent to the floor thereof and substantially parallel thereto;
a magnetron positioned outside said enclosure;
a multi-element rotating microwave radiator positioned in the central bottom region of said enclosure;
a stationary concave dish having its opening facing said radiator, said dish being transparent to said microwave energy, the sides of said dish extending between said radiator and said resistive heating element for providing thermal insulation for said radiator, the rim of said dish being removably supported by at least three upward protrusions spaced from each other in said floor of said enclosure, said protrusions elevating said rim above said floor of said enclosure defining gaps between portions of said rim and said floor; and
a waveguide connected to a coaxial conductor for coupling said microwave energy from said magnetron to said radiator, said waveguide and said coaxial conductor providing a path for natural convection air into said cavity during self-clean of said oven, a portion of said natural convection air impinging on said radiator to maintain said radiator at a temperature significantly lower than the self-cleaning temperature, said natural convection air flowing through said gaps between said rim and said floor into said enclosure.

4,410,780
MACHINES FOR WELDING RAILS OR SIMILAR ARTICLES

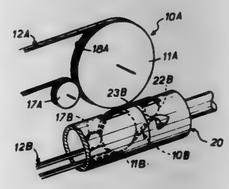
Marcel A. Mutti, Neuilly sur Seine, France, assignor to Matix Industries, Paris, France
Filed Apr. 8, 1981, Ser. No. 252,264
Claims priority, application France, Apr. 11, 1980, 80 08163
Int. Cl.³ B23K *9/225*
U.S. Cl. 219—53 **7 Claims**



1. A machine for flash welding of rails comprising
a shaft;
first and second gripping clamps each having a pair of conductive jaws pivotally mounted on said shaft;
means for moving at least one said gripping clamp along the shaft relative to the other gripping clamp;
a flash removing clamp having clamp halves pivotally and slidably mounted on said shaft independently of said gripping clamps;
and means for moving said flash removing clamp relative to and independently of said gripping clamps.

4,410,781
LAP-SEAMING ELECTRICAL RESISTANCE WELDING MACHINE FOR CAN BODIES

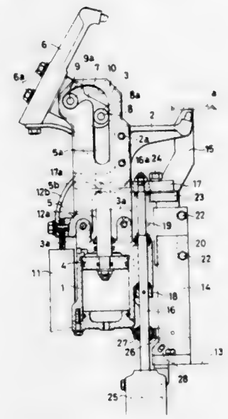
Maurice Riviere, Boulogne Billancourt, France, assignor to Carnaud Emballage, Seine, France
Filed Jun. 3, 1981, Ser. No. 270,055
Claims priority, application France, Jun. 5, 1980, 80 12493
Int. Cl.³ B23K *11/06, 11/30, 31/06*
U.S. Cl. 219—64 **10 Claims**



1. A continuous lap-seaming electrical resistance welding machine comprising two electrode units cooperatively defining a welding passage through which laps of sheet metal to be seamed are passed for welding, each of said electrode units including a band electrode running over at least one electrode roller having a stationary axis, at least one of said electrode units being provided with at least one band supporting guide roller located in the vicinity of said at least one electrode roller in continuation of said welding passage and downstream thereof relative to a direction of displacement of said laps through said welding passage, whereby a straight-line section of said band electrodes between said at least one electrode roller and said supporting guide roller of said two elctrode units is provided.

4,410,782
SPOT WELDING APPARATUS

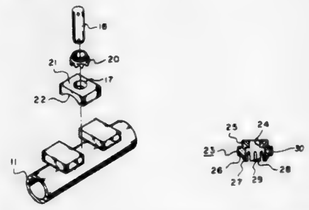
Mitsuo Konno, Kawagoe; Ryo Niikawa, Sayama, and Kenzo Sato, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 20, 1981, Ser. No. 200,580
Int. Cl.³ B23K *11/10*
U.S. Cl. 219—89 **6 Claims**



1. A spot welding apparatus, comprising:
a stanchion adapted to be secured to a support surface;
a workpiece support carried by the stanchion;
a fluid-operated piston and cylinder arrangement supported from said stanchion; spaced parallel cam plates carried by said cylinder, each of which includes a generally L-shaped cam track;
a fixed electrode carried by said cam plates;
a movable electrode having spaced laterally extending pins slidably received within a cam track of the respective cam plates; and an interconnection between said movable electrode and and said piston and cylinder arrangement for moving said electrode under the control of said cam tracks.

4,410,783
BOILER TUBE WEARBAR, STUD WELDER AND ARC SHIELD

Charles C. Pease, Vincentown, and Eugene P. Schaeffer, Marlton, both of N.J., assignors to Omark Industries, Inc., Portland, Oreg.
Division of Ser. No. 207,665, Nov. 17, 1980. This application Feb. 16, 1962, Ser. No. 349,057
Int. Cl.³ B23K *9/20*
U.S. Cl. 219—98 **5 Claims**



1. In stud welding apparatus employing a stud welding gun, a stud carried by the stud welding gun and an arc shield surrounding the stud wherein the arc shield is carried by the stud welding gun at one end and terminates at its opposite end in an arc shield body, the improvement in the arc shield permitting

welding of the stud through an aperture of a given configuration in a first workpiece comprising: a projection extending from the arc shield body of configuration complementary with the aperture to align the stud in respect to the aperture to prevent shorting of the stud with the aperture of the first workpiece.

4,410,784

METHOD FOR MODIFYING SURFACE PROPERTIES OF A DISC-LIKE SHAPED ARTICLE OF A VINYL CHLORIDE-BASED RESIN

Kiyoshi Imada, Omiya; Susumu Ueno, Ibaraki; Yasuhide Nishina, Ibaraki, and Hirokazu Nomura, Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1981, Ser. No. 230,070

Claims priority, application Japan, Feb. 7, 1980, 55-14062; Feb. 7, 1980, 55-14063

Int. Cl.³ B23K 9/00

U.S. Cl. 219—121 PY **6 Claims**



1. A method for modifying surface properties of a disc-like shaped article made of a vinyl chloride-based resin by exposing the surface to low temperature plasma which comprises transferring the disc-like shaped article through a space between a first and a second parallel array of electrodes with surface of the disc-like shaped article substantially in parallel to the arrays of the electrodes, each of the electrodes in the first array oppositely facing one of the electrodes in the second array and each of the electrodes in the first array being connected to the terminal of a high frequency generator of a different polarity from the terminal to which the oppositely facing electrode in the second array is connected, and each of the electrodes in an array of the electrodes being connected to a terminal of the high frequency generator having a polarity different from the terminal to which the directly adjacent electrodes in the same array are connected, and generating low temperature plasma in the space between the arrays of the electrodes kept under a pressure of from 0.001 to 10 Torr of an inorganic gas by supplying a high frequency electric power to the arrays of the electrodes while the disc-like shaped article is being transferred through the space between the arrays of the electrodes.

4,410,785

METHOD AND APPARATUS FOR PERFORATION OF SHEET MATERIAL BY LASER

A. Clifton Lilly, Jr., Richmond; Warren E. Claflin, Bon Air; Edward B. Stultz, Richmond; Ulysses A. Brooks, Glen Allen, and Peter Martin, Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 31,073, Apr. 18, 1979, abandoned, which is a continuation of Ser. No. 913,466, Jun. 7, 1978, abandoned. This application Nov. 2, 1981, Ser. No. 317,058

Int. Cl.³ B23K 27/00

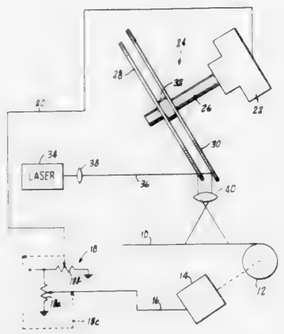
U.S. Cl. 219—121 LK **12 Claims**

1. A method of making plural spaced rows of spaced perforations in sheet material comprising the steps of:

(a) projecting a beam of light energy and focusing said projected beam;

(b) successively intercepting said focused beam at respective different locations along its axis and redirecting said beam from each such location as a modified beam, said modified beams each being divergent about an axis of symmetry parallel, initially, to the axes of symmetry of the other modified beams, said modified beams redirected from said different locations having unequal cross-sectional expanse;

(c) establishing a common lens for at least each two adjacent modified beams at a position beyond the location at which said projected beam is focused, the parallel axes of symmetry of said modified beams being parallel, at incidence, to the optical axis of said common lens;



(d) collecting said adjacent modified beams having parallel axes of symmetry exclusively in said common lens and disposing said sheet material in a location juxtaposed with the locations at which said modified beams are focused by said common lens, said focus locations of said modified beams being at different distances outward of said common lens so that as said sheet material is conveyed past said focus locations the successive interception of said focused beam results in spaced plural rows of spaced perforations in said sheet material.

4,410,786

METHOD OF ALIGNING A WELDING TORCH WITH A SEAM TO BE WELDED AND OF WELDING SUCH SEAM

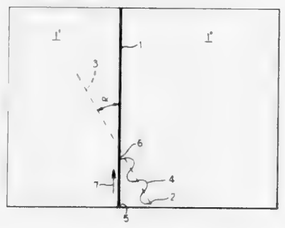
Erwin Cloos, Haiger, Fed. Rep. of Germany, assignor to Carl Cloos Schweisstechnik GmbH, Haiger, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,727

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103016

Int. Cl.³ B23K 9/12

U.S. Cl. 219—124.22 **4 Claims**



1. A method of using an arc welding tool movable relative to a workpiece means to locate and weld a welding seam which is provided in said workpiece means and has a predetermined path, comprising the steps of: simultaneously supplying said tool with a low welding current, moving said tool along a line which is adjacent said workpiece means and is arranged at an acute angle of up to 30° with respect to said predetermined path of said welding seam, swinging said tool transversely of said line, and sensing variations in said low welding current caused by changes in the distance between said tool and said workpiece means until the sensed magnitude of said low welding current indicates said tool is aligned with said welding seam; thereafter simultaneously supplying said tool with said low welding current, moving said tool along said welding seam, and sensing variations in said low welding current until the sensed magnitude of said low welding current indicates said tool is aligned with a first end of said welding seam, and thereafter simultaneously supplying said tool with a high welding current and moving said tool at a higher rate of speed along said predetermined path of said welding seam toward a second end thereof.

4,410,787

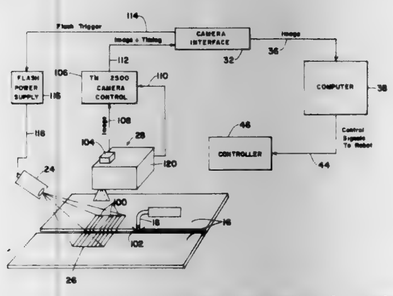
IMAGE ACQUISITION APPARATUS AND PROCESS

Jan H. Kremers, Boulder Creek, and Alfred E. Brain, Santa Cruz, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Aug. 31, 1981, Ser. No. 297,911

Int. Cl.³ B23K 9/10

U.S. Cl. 219—124.34 **6 Claims**



1. In an apparatus for controlling positioning of a workpiece relative to a welding head while the welding head produces a welding arc by directing light in a predetermined pattern at the workpiece and sensing the light image from the pattern reflected from the workpiece to obtain information about the workpiece, the combination comprising:

an image-sensing means positioned to avoid sensing of light directly from the welding arc,

means for directing the light at the workpiece in at least one pulse having a peak intensity substantially greater than intensity of the welding arc, and

means for blocking the light image from the sensing means except during a pulse from said light-directing means.

4,410,788

POWER AND FLUID SUPPLY SOURCE WITH MULTI-FUNCTION CUTTING AND WELDING CAPABILITIES

John E. Summers, and Randolph F. Howell, both of P.O. Box 5433, Charlotte, N.C. 28225

Continuation-in-part of Ser. No. 140,761, Apr. 16, 1980, abandoned. This application Jun. 2, 1981, Ser. No. 269,733

Int. Cl.³ B23K 9/10

U.S. Cl. 219—130.1 **6 Claims**

1. A power and fluid supply system for a multiple function welding and cutting apparatus, comprising:

tool coupling means for coupling a selected working head to said system;

fluid supply means connected to said tool coupling means for selectively delivering appropriate fluids to said tool coupling means;

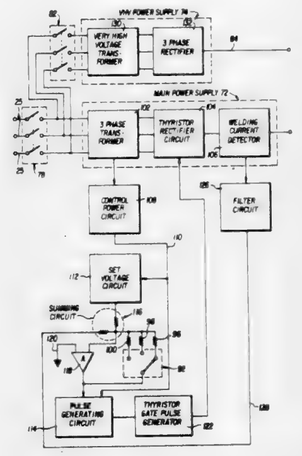
power supply means connected to said tool coupling means for selectively supplying appropriate voltage and current levels to said tool coupling means;

selector switch means coupled to said fluid supply means and to said power supply means for selectively changing the outputs thereof;

main power transformer for supplying a main welding current;

very high voltage transformer means for supplying very high voltages required in plasma cutting;

transformer switching means coupled between said main transformer means and said very high voltage transformer means for selectively connecting said main transformer means and said very high voltage transformer means in parallel;



thyristor rectifier means coupled to said main power transformer means for rectifying the output thereof;

a plurality of curve characteristics setting impedance means coupled to said thyristor rectifier means for adjusting the operating characteristics thereof; and

solenoid driven impedance selector switch means coupled to said plurality of curve characteristics setting impedance means for selectively utilizing one of said curve characteristics setting impedance means.

4,410,789

REMOTE CONTROL FOR WELDING MACHINE AMPERAGE

Alan R. Story, P.O. Box 2065, Mills, Wyo. 82644

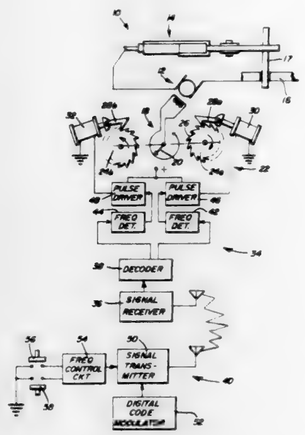
Filed Sep. 9, 1981, Ser. No. 300,493

Int. Cl.³ B23K 9/10

U.S. Cl. 219—132 **4 Claims**

1. In combination with an amperage control device for welding apparatus having a welding generator, a rotatable rheostat for regulating welding current conducted to a welding electrode, a reversible step motor connected to the rheostat, pulse driving means connected to the step motor for incremental displacement of the rheostat and frequency responsive means connected to the pulse driving means for selecting the direction in which the step motor displaces the rheostat, the improvement including a radiant energy receiver, decoding means connected to the receiver for transmitting only digitally coded signals to the frequency responsive means, remote transmitter means for radiating said digitally coded

signals to the receiver, and directional control means connected to the transmitter means for selecting two frequencies at



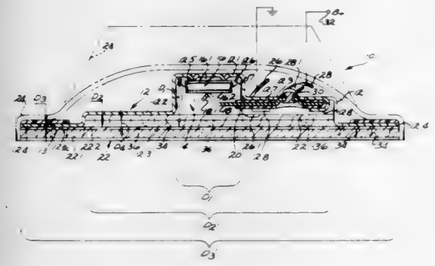
which the digitally coded signals are transmitted by the frequency responsive means to the pulse driving means.

4,410,790

HEATED AUTOMOBILE MIRROR

Peter G. Berg, Attleboro Falls, Mass., and Stephen J. Strobel, Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 17, 1981, Ser. No. 328,322
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—219 **6 Claims**



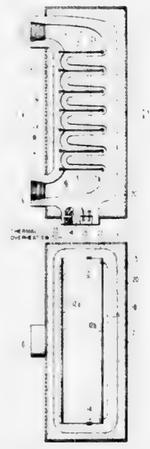
1. A defogging mirror unit comprises a plate of thermally and electrically conductive metal material formed to provide a recess at one side of the plate, a self-regulating electrical resistance heater of a material of positive temperature coefficient of resistivity having one side mounted in electrically and thermally conducting relation to said one side of the plate inside the recess, contact means for electrically connecting the other side of the heater to a power source for energizing the heater to self-heat and stabilize at a relatively high self-regulated heater temperature, and a glass reflecting member disposed over the plate recess enclosing the heater in the recess so that heat from the heater is distributed to the glass reflecting member for defogging the member, characterized in that, a first part of the plate mounts the heater thereon and forms a central bottom portion of the recess having a first selected spacing from the glass reflecting member for heating a portion of the member overlying the first plate part to a selected temperature, at least one additional plate part forms at least one additional recessed bottom portion surrounding the central recess bottom portion having relatively lesser spacing from the glass reflecting member for heating portions of the member overlying each said additional plate part to corresponding temperature, and peripheral parts of the plate disposed around said additional plate part mount marginal portions of the glass reflecting member thereon and have relatively lesser spacing from the member than the additional plate part for heating said marginal portions of the member to corresponding temperature, whereby heat is distributed to the member for heating said various portions of the member to a substantially uniform temperature.

4,410,791

ELECTRIC INSTANT WATER HEATER

Calvin W. Eastep, Houston, Tex., assignor to Kowah, Inc., Houston, Tex.

Filed Sep. 2, 1981, Ser. No. 298,649
Int. Cl.³ F24H *1/10*; H05B *3/24, 3/82*
U.S. Cl. 219—307 **6 Claims**



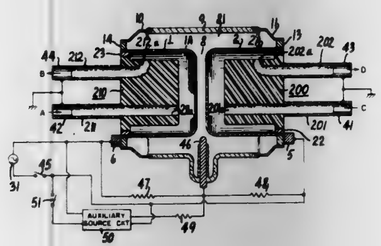
1. An electric instant water heater comprising a core having a passage extending therethrough, a cold water inlet connected to one end of said passage, a hot water outlet connected to the opposite end of said passage, a plurality of parallel, spaced, heating plates positioned within said passage, one edge of each plate being connected to the core on one side of said passage, the opposite edge of each plate extending freely within said passage, a plurality of projections connected to said core on the opposite side of said passage and extending into said passage and the spaces between said heating plates, said core consisting of a molded refractory material, said one edge of each heating plate being embedded within the core, said projections being of molded refractory material integrally formed with said core, said one edge of each heating plate being rolled to provide an anchorage for the edge embedded in the refractory core, the opposite edge of each plate being rolled to thereby stiffen the free edges of the plates, and electrical circuit means connected to said heating plates, whereby the heating plates and projections form a serpentine flow path within the passage to thereby cause water to be heated to flow across each face of the heating plates.

4,410,792

GLOW DISCHARGE HEATING APPARATUS

Hirotsugu Komura; Shigeo Ueguri, and Youichiro Tabata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Division of Ser. No. 6,780, Jan. 26, 1979, Pat. No. 4,329,563.
This application May 22, 1980, Ser. No. 152,500
Claims priority, application Japan, Feb. 7, 1978, 53-13090
Int. Cl.³ H01S *3/097*; B23K *9/00*
U.S. Cl. 219—383 **14 Claims**



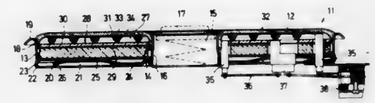
1. A glow discharge heating apparatus comprising at least one pair of discharge electrodes disposed in opposite relationship to form a predetermined gap therebetween, AC source means for applying across said discharge electrodes a voltage not less than a minimum voltage for maintaining a glow discharge within said gap to cause a principal glow discharge therebetween, said principal glow discharge supplying thermal energy to the discharge electrode acting as a cathode during said principal glow discharge, and a liquid to be heated flowing through said discharge electrodes to be heated with said thermal energy, wherein an area with which said discharge electrodes are opposite to each other is smaller than an area of a portion of one of said discharge electrodes having caused thereon said principal glow discharge thereby to impart a positive resistance to the current-to-voltage characteristic of said glow discharge, and wherein when said voltage across said discharge electrodes approximately reaches said glow discharge hold minimum voltage, a voltage higher than a discharge breakdown voltage for said gap is applied across said discharge electrodes to cause a pilot glow discharge therebetween, said pilot glow discharge inducing said principal glow discharge, auxiliary electric source means connected across said pair of discharge electrodes for generating a voltage not less than the discharge breakdown voltage across said pair of discharge electrodes thereby to enable said glow discharge between said discharge electrodes to be initiated at said minimum voltage for maintaining a glow discharge from said AC source means and at a frequency related to the frequency of said AC source means, and said auxiliary source means includes a current path switch consisting of a bidirectional triode thyristor connected between one of said discharge electrodes and said AC source means, a first transformer for supplying the voltage across said auxiliary source means between said pair of discharge electrodes, impedance means for providing an impedance serially connected between an output terminal of said first transformer and said one discharge electrodes, a second transformer connected across said impedance means, and pilot glow discharge generation and detection means connected to the secondary side of said second transformer for controlling said bidirectional triode thyristor.

4,410,793

ELECTRIC HOTPLATE

Karl Fischer, Am Gänsberg 23, D-7519 Oberderdingen, Fed. Rep. of Germany; Hermann Knauss, and Felix Schreder, both of Oberderdingen, Fed. Rep. of Germany, assignors to Karl Fischer, Fed. Rep. of Germany

Filed Sep. 2, 1981, Ser. No. 298,750
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033828
Int. Cl.³ H058 *3/68*
U.S. Cl. 219—460 **35 Claims**



1. An electric hotplate having a metal hotplate member with, in the heated area, an upper, substantially closed planar cooking surface and a smooth, unribbed bottom surface, at least one tubular heater embedded in electrically insulating material and having a flat surface for engaging the bottom surface of the hotplate member and a base plate connected to the hotplate member and enclosing the at least one tubular heater, the hotplate comprising:

at least one spring element supported between the at least one tubular heater and base plate for resiliently pressing the the least one tubular heater against the bottom surface of the hotplate member;

a heat-resistant insulation layer interposed between the spring member and the at least one tubular heater;

the tubular heater being thin and flexible, and so arranged as to define an unheated central area;

the hotplate member having a thermostat opening in the central area, surrounded by a downwardly directed inner rim; and,

a thermostat support sleeve press-fitted in the thermostat opening defining an annular enclosure for the at least one tubular heater, the base plate being connected to the support sleeve in the central area whereby heat conduction to the cooking surface is enhanced and energy losses due to thermal inertia are reduced.

4,410,794

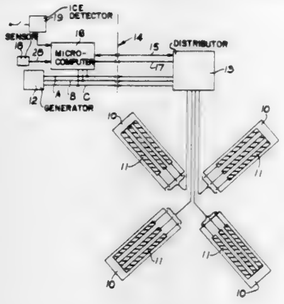
SWITCHING SYSTEM FOR CYCLIC SUPPLY OF ELECTRICAL POWER TO A PLURALITY OF LOADS

David C. Williams, Kings Langley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 29, 1981, Ser. No. 258,722
Claims priority, application United Kingdom, May 8, 1980, 8015301
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—486 **8 Claims**

1. A switching system for maintaining substantially constant the load on a three-phase supply voltage when switching among a plurality of loads, each of said loads comprising a plurality of elements arranged in at least one three wire group, said system comprising a plurality of switch means for connecting respective at least ones of said loads to said supply, means for providing a plurality of signal codes in a predetermined sequence, a decoding circuit, responsive to said signal codes, for supplying control signals to at least ones of said switch means indicated by said signal codes, and for causing said switching in a sequence indicated by said codes, inhibiting means for preventing operation of said switch means except when the voltages on the respective supply phases have substantially zero magnitudes, means for generating first indicating signals when the magnitude of the voltage on one of said phases is adjacent zero, and means for generating second indicating signals on a subsequent occasion when the magnitude of

the voltage on said one phase is adjacent zero, said inhibiting means including means, responsive to said first indicating signals, for preventing supply of said control signals except those for switch means between a predetermined two of said



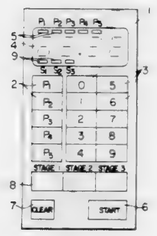
phases and means, responsive to said second indicating signals, for preventing supply of said control signals to said switch means between said predetermined two phases and for permitting supply of said control signals to the remainder of said switch means.

4,410,795

HEATING APPARATUS WITH PROGRAMMABLE TIMER

Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 148,484, May 9, 1980, abandoned. This application Feb. 3, 1982, Ser. No. 345,375
Claims priority, application Japan, May 15, 1979, 54-60103
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—492 **1 Claim**



1. Apparatus including a programmable timer to control a heating sequence for heating a product in stages, each stage having a selected heating level and heating time comprising:

at least one heating source for heating said product, the output of said heating source being switchable between at least two heating levels;

output setting means for selecting one of said heating levels;

timer means for controlling the heating time at said selected level;

heating time setting means for setting said timer means to provide heating at said selected level for a selected heating time;

memory means for storing said selected heating level and heating time comprising said heating sequence;

display means for displaying said selected heating level and heating time;

stage recall means with independent input means for selectively displaying the heating time of each of said stages at any time;

a main controller for controlling said heating source and each of said aforesaid means, said main controller continuously storing in said memory means the heating sequences selected for at least two of said stages and correcting the display recalled by said stage recall means from said memory and indicated on said display means when a new heating level and heating time are inputted into said apparatus by resetting said output setting means and said heating time setting means; and

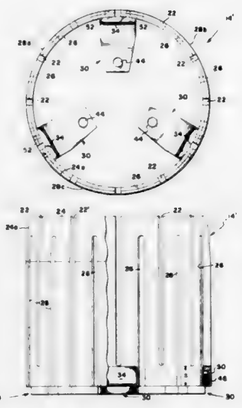
clearing means for clearing the contents of said memory means, actuation of said clear key during operation of said stage recall means causing said main controller to clear only the contents of the corresponding stage in said memory means and reediting said heating sequence.

4,410,796

SEGMENTED HEATER ASSEMBLY

Harvey J. Wilsey, Sherman, Tex., assignor to Ultra Carbon Corporation, Bay City, Mich.

Filed Nov. 19, 1981, Ser. No. 323,122
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—553 **8 Claims**



1. For use in a high temperature furnace of the type having a resistance heating element of cylindrical shell-like shape having a plurality of like uniformly spaced slots extending axially less than the axial length of the shell alternately from opposite ends of the element;

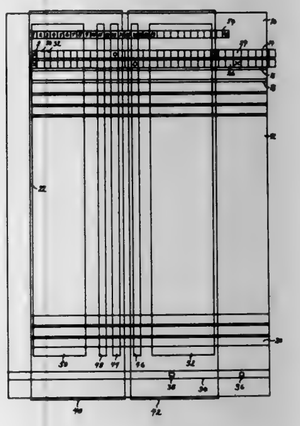
a heating element assembly comprising a plurality of like discrete cylindrical shell segments of rigid graphite each having n like uniformly spaced slots extending axially from one end of the segment and n+1 like slots extending axially from the opposite end of the segment uniformly spaced between the first mentioned slots, and a plurality of detachable discrete connectors of graphite mechanically and electrically connecting said segments to each other at the respective one ends of said segments to assemble the individual segments into a rigid cylindrical shell, each connector being secured to a pair of adjacent shell segments and having an arcuate flange abutting said segments which extends a distance axially approximately equal to the difference between the axial length of a slot and the axial length of a segment.

4,410,797

CALCULATION TABLE FOR FAMILY PLANNING

Otfried Hatzold, Turfstrasse 3, D-8000 München 81, Fed. Rep. of Germany

Filed Dec. 5, 1980, Ser. No. 213,757
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1979, 2949087
Int. Cl.³ G06C *27/00*
U.S. Cl. 235—69 **7 Claims**



1. A calculation table for family planning comprising

(a) a guide plate;

(b) a plurality of parallel guides on said guide plate;

(c) a slide longitudinally slidable in each of said guides and bearing divisions for a sequence of days for at least two consecutive months, said slides being severable between said divisions;

(d) a cover plate attached to said guide plate and having windows above said slides;

(e) stop means on each of said guides extending in a line perpendicular to said guides on the descending side of said sequence of days;

(f) a marking guide on said guide plate outside the area of said other guides, comprising a marking and, at a distance corresponding to fifteen daily divisions in ascending sequence, a window which penetrates said cover plate

(g) two strip-shaped marker slides extending perpendicularly to said parallel guides and slidably arranged above said guide plate and cover plate arrangement;

(h) the marker slide on the downward side with reference to said daily sequence of said slides being provided with two windows separated by two daily divisions and extending transversely over said parallel guides and the marker slide on the upward side having a window of the width of one daily division extending transversely over said guides.

4,410,798

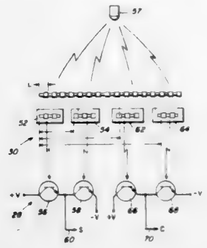
INCREMENTAL OPTICAL ENCODER SYSTEM WITH ADDRESSABLE INDEX

Donald H. Breslow, Framingham, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Jun. 10, 1981, Ser. No. 272,272
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—231 SE **15 Claims**

1. An incremental angular encoder system including an encoder having a code track and a coarse index formed thereon, means for detecting the code track and index, and a multiplier circuit for generating a high angular resolution signal which divides each code cycle into angular segments, the system characterized by:

a multibit binary output from said multiplier circuit, the binary output word having an angular resolution matching that of said high resolution signal; and



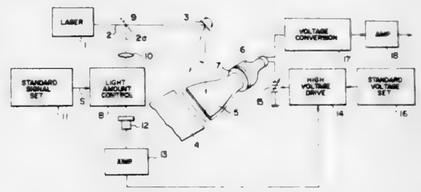
a logic circuit for generating a precise index signal within a code cycle indicated by the coarse index at an angular location determined by the multibit binary output.

4,410,799

DEVICE FOR CONTROLLING RADIATION IMAGE INFORMATION READ OUT GAIN

Yoshihiko Okamoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

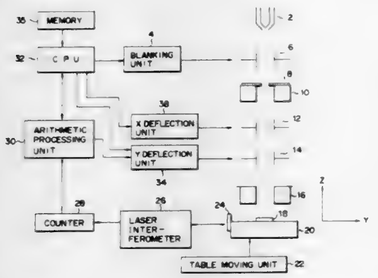
Filed Jul. 7, 1981, Ser. No. 281,079
Claims priority, application Japan, Jul. 10, 1980, 55/94248
Int. Cl.³ G03C *5/16*; G01J *1/42*
U.S. Cl. 250—327.2 **5 Claims**



1. In a radiation image information read out apparatus for scanning a stimulable phosphor plate, which carries radiation image information, with a light beam of stimulating rays to convert the radiation image information stored therein into light emitted according to the radiation image information and reading out the emitted light with a read out system including a photodetector,

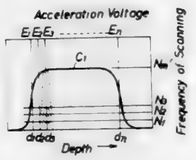
a device for controlling the radiation image information read out gain comprising an additional photodetector arranged separately from said photodetector, a means for introducing a part of said stimulating rays into said additional photodetector during the read out operation, a first gain controlling means for controlling the read out gain according to a fluctuation of the intensity of the stimulating ray source by controlling the gain of said read out system during the read out operation by means of the output from said additional photodetector, a means for generating the standard signal according to the radiographic conditions during a recording step for storing and recording said radiation image information, and a second gain controlling means for controlling the read out gain according to the radiographic conditions by controlling the gain of said read out system by means of said standard signal.

4,410,800
ELECTRON BEAM EXPOSURE SYSTEM
Ryoichi Yoshikawa, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Sep. 17, 1981, Ser. No. 302,983
Claims priority, application Japan, Sep. 17, 1980, 55-128843
Int. Cl.³ H01J *37/00*; G21K *5/10*
U.S. Cl. 250—442.1 **8 Claims**



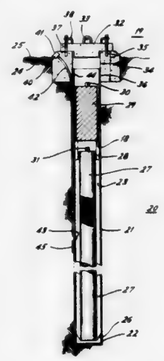
1. An electron beam exposure system of hybrid raster scanning type, comprising:
an electron gun for emitting an electron beam;
means for mounting a target to be exposed to the electron beam;
means for accelerating the mounting means in a predetermined direction for a predetermined time and then decelerating the mounting means for a predetermined time;
means for detecting the moving speed of the mounting means and generating an electric signal corresponding to the moving speed detected;
means for deflecting the electron beam from a deflection starting point in a deflection direction, both said deflection starting point and said deflection direction being variable;
means connected to receive the electric signal from the detecting means for generating, according to the electric signal, a deflection signal which defines the deflection starting point and the deflection direction and supplying the deflection signal to the deflecting means; and
means for directing the electron beam through the deflecting means to the target for an exposure time including at least a fraction of the time of acceleration and deceleration of said mounting means.

4,410,801
ION IMPLANTATION EQUIPMENT
Junji Sakurai, Tokyo, and Haruhisa Mori, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 18, 1980, Ser. No. 217,758
Claims priority, application Japan, Dec. 26, 1979, 54-169610
Int. Cl.³ H01J *37/317*
U.S. Cl. 250—492.2 **7 Claims**



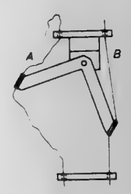
1. An equipment for implanting impurity ions by scanning two dimensionally the surface of a substrate and processing same with a beam of accelerated ions of impurity material, said equipment comprising (a) means for scanning the substrate with a beam of accelerated ions and (b) means for supplying acceleration voltage and for continuously, periodically and automatically changing the acceleration voltage of the ions within a predetermined range during said scanning relative to the scanning speed.

4,410,802
STORAGE DEPOT FOR RADIOACTIVE MATERIAL
Milton J. Szulinski, Richland, Wash., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.
Filed Apr. 15, 1976, Ser. No. 677,339
Int. Cl.² G21F *3/00*
U.S. Cl. 250—515.1 **5 Claims**



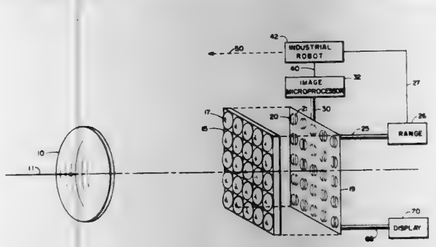
1. A system for the storage of radioactive material, said system comprising a storage depot, security means restricting unauthorized entry to the storage depot, and a plurality of vertical storage caissons dug in the soil of said depot, each caisson having a removable closure lid thereover to permit surface access to such caisson for placement or retrieval of containers in such caisson by authorized personnel operating hoisting equipment, each caisson having a depth sufficient to accommodate in a storage cavity at least one but not more than three vertically stacked containers of a type accommodating vertically aligned depleted fuel rods from a light water reactor, a support at a level above said storage cavity for supporting a massive radiation shield, each caisson having a removable massive radiation shield resting on said support and above said storage cavity, said massive radiation shield having at least some portion of greater horizontal cross sectional area than the horizontal cross-sectional area of a container, said massive radiation shield being adapted to provide nonlinearity for any path between said container and the atmosphere whereby said massive radiation shield prevents linear escape of radioactive radiation from the radioactive material to the atmosphere, said massive radiation shield being heavier than could be readily lifted without hoisting equipment, each caisson having a liner extending from the caisson bottom to said support, a collar anchored at least partly beneath the soil adjacent said caisson, the collar extending to a depth greater than its width, an upper wall portion extending from the level of said support to the level of said collar, securing means for attaching said closure lid to said collar, said storage depot having said caissons spaced apart sufficiently to permit atmospheric dissipation of heat from said radioactive material by heat conduction through said liner and said soil to the soil surface between caissons and by dissipation of heat from such soil surface to the atmosphere.

4,410,803
THREAD-MONITORING DEVICE FOR TEXTILE MACHINES
Bernhard Henze, Emmerthal, Fed. Rep. of Germany, assignor to Seil Textilmaschinenzubehor GmbH, Emmerthal, Fed. Rep. of Germany
Filed Oct. 21, 1981, Ser. No. 313,277
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1980, 3039954
Int. Cl.³ G01N *21/86*
U.S. Cl. 250—561 **3 Claims**



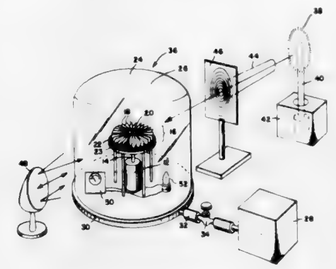
3. A thread-monitoring device for a textile machine, the device being of the type wherein a plurality of threads running side-by-side in a row are monitored with the aid of a light beam which extends transversely of the threads and parallel to the plane defined by the thread row, to stimulate a light sensor of the device; the device including a plurality of two-arm levers each of which is mounted in a pendulum-like manner and is provided at the free ends of its arms with guide elements for guiding two threads to be monitored.

4,410,804
TWO DIMENSIONAL IMAGE PANEL WITH RANGE MEASUREMENT CAPABILITY
Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 13, 1981, Ser. No. 282,379
Int. Cl.³ G01C *3/08*; H04N *9/56*
U.S. Cl. 250—578 **6 Claims**



1. An image detection array comprising:
lens means for transmitting radiation from a remote object;
a lenslet matrix comprising a predetermined number of lenslets arranged in rows and columns and mounted to receive radiation transmitted by the lens means; and
a detector array mounted adjacent the lenslet matrix and comprising a plurality of substantially equal sized detectors arranged in pairs with at least one pair behind each lenslet so as to receive an image of the exit pupil of the lens means, the outputs of the detectors producing a first resultant signal indicative of the shape of the remote object.

4,410,805
RADIOMETER GENERATOR
Lawrence F. Berley, 19 Chipmunk La., Media, Pa. 19063
Filed Jun. 26, 1978, Ser. No. 918,772
Int. Cl.³ F03G *7/00*
U.S. Cl. 290—1 R **27 Claims**



1. An electric generator comprising a dynamoelectric machine having an input drive shaft and output electrical terminals, a torque converter having an output member connected to rotate said drive shaft and energy receiving means for driving said drive shaft, and means including a radiation absorber/emitter surface operatively associated with said torque converter for absorbing radiation and transmitting it to nearby gas molecules and imparting energy to them to cause them to travel and impart energy to said energy receiving means, said absorber/emitter surface and nearby gas molecules imparting kinetic energy to said torque converter responsively to incident radiation.

4,410,806
CONTROL SYSTEM FOR A VERTICAL AXIS WINDMILL
Robert V. Brulle, St. Louis County, Mo., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.
Filed Sep. 3, 1981, Ser. No. 298,990
Int. Cl.³ F03D *7/00*; H02P *9/04*
U.S. Cl. 290—44 **9 Claims**



1. In a windmill including a support means, a rotor assembly rotatably mounted to said support means, said rotor assembly including a plurality of blades movably mounted to said rotor assembly and rotatable therewith, the improvement comprising a control system for controlling the windmill operation, said control system including means for adjusting the angle of attack of said blades during rotation of the rotor assembly, a processor having memory associated with it, a plurality of different rock angle profiles stored in said memory, each of said rock angle profiles corresponding to a pattern of predetermined blade positions for an orbit of said blade based upon a

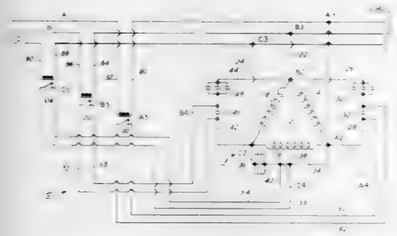
particular available wind speed, and means for selecting the optimum rock angle profile based on the rotational speed of said rotor assembly, said processor providing an electrical signal output corresponding to said selected rock angle profile.

4,410,807

REGULATING DEVICE FOR POLYPHASE ELECTRICAL CIRCUITS

James F. Buffington, Plymouth, Ind., assignor to Kay Industries, Inc., Plymouth, Ind.

Filed Mar. 26, 1982, Ser. No. 362,256
Int. Cl.³ H02J *9/00*
U.S. Cl. 307—68 **12 Claims**



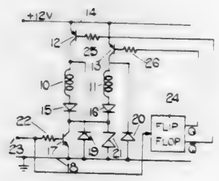
1. A regulating device for three phase electrical circuits having three main supply lines of different phases, said device having phase conversion and transient suppression capabilities, comprising a motor having three windings of different phases corresponding to the phases of the main supply lines, leads for connecting said windings to said main supply lines, lead means arranged in parallel with the windings of said motor, terminals for connecting said lead means with respective windings, a relatively low m.f.d. capacitor and a relatively high m.f.d. capacitor in each of said lead means, a by-pass circuit for each of said supply lines connected to separate said lead means on opposite sides of the respective low m.f.d. capacitor with one connection therof being between said capacitors, and relay means disposed in each by-pass circuit and being responsive to the current in the respective supply line for closing the respective circuit to by-pass the low m.f.d. capacitor in the respective lead means and to render said high m.f.d. capacitor operable when the current in the respective main supply line is interrupted.

4,410,808

ELECTRICAL CIRCUIT FOR DRIVING A PLURALITY OF INDUCTIVE LOADS

Richard G. Woodhouse, Birmingham, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Oct. 14, 1980, Ser. No. 196,237
Claims priority, application United Kingdom, Oct. 24, 1979, 7936860
Int. Cl.³ H03K *3/01, 17/60;* **H01H** *47/00*
U.S. Cl. 307—254 **5 Claims**



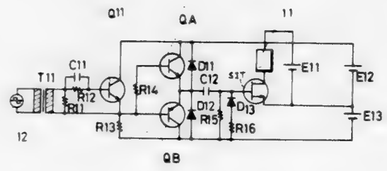
1. An electrical circuit comprising a plurality of inductive loads, a plurality of low voltage transistors having their collector-emitter paths connecting one end of respective ones of the loads to one terminal of a supply, the other ends of the loads being connected to a common point, a single high voltage transistor having its collector-emitter path connecting said common point to the other terminal of said supply and capable of being turned on and off by a pulsating DC signal applied to its base, and means for selectively turning on said voltage transistors one at a time, and further comprising a plurality of diodes connecting said other end of respective ones of the loads to said common point, and further comprising a plurality of further diodes connecting said one end of respective ones of the loads to said other terminal.

4,410,809

STATIC INDUCTION TRANSISTOR GATE DRIVING CIRCUIT

Shuhei Furuichi, Shiga; Masakazu Suzuki, Nakamachi, and Toshiaki Ikeda, Yahata, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Jun. 23, 1981, Ser. No. 276,719
Claims priority, application Japan, Jun. 27, 1980, 55-88059
Int. Cl.³ H03K *3/01, 17/60*
U.S. Cl. 307—255 **2 Claims**



1. A static inductor transistor (junction type vertical field effect transistor) gate driving circuit comprising:

a complementary-connected NPN and PNP transistors of which respective collectors are connected to a positive voltage source and a negative voltage source which can sufficiently cut off the static induction transistor, so that the transistors can be driven alternately;

a capacitor connected between the gate of said static induction transistor and the emitters common to both NPN and PNP transistors;

a high value resistor directly connected between the gate of said static induction transistor and said negative voltage source; and

a series connection of a diode and a resistor parallel-connected to said high value resistor;

whereby said static induction transistor gate driving circuit is constructed to switch said static induction transistor by driving said NPN and PNP transistors alternately.

4,410,810

HIGH SPEED TRANSISTOR SWITCHING CIRCUIT

Roland W. Christen, Rockford, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

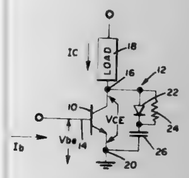
Filed Aug. 6, 1981, Ser. No. 290,504
Int. Cl.³ H03K *3/335, 3/33*
U.S. Cl. 307—300 **21 Claims**

1. A switching circuit for turning a power transistor on and off, the transistor having a base, a collector, and an emitter, said switching circuit comprising:

drive means connected to the base of the transistor for providing a positive current to the transistor to turn the transistor on, and for providing a negative current to the transistor to turn the transistor off;

means for sensing the saturation level of the transistor to provide a signal when the transistor reaches a level of guasi-saturation; and

logic means connected to the drive means and having a first state for controlling the drive means to provide a positive current to the transistor to turn the transistor on, the logic means having a second state for controlling the drive means to cease providing current to the transistor to initiate the switching of the transistor off, and the logic means



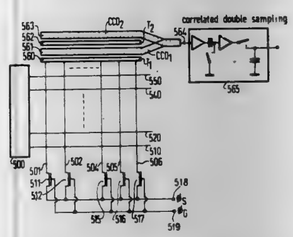
having a third state initiated in response to the quasi-saturation signal from the sensing means, for controlling the drive means to provide a negative current to the transistor when the transistor is in a linear region to turn the transistor off rapidly.

4,410,811

METHOD FOR THE OPERATION OF A CID SENSOR MATRIX

Rudolf Koch, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 18, 1977, Ser. No. 778,987
Int. Cl.³ H03K *3/42;* **H01L** *29/78, 27/14, 31/00*
U.S. Cl. 307—311 **5 Claims**



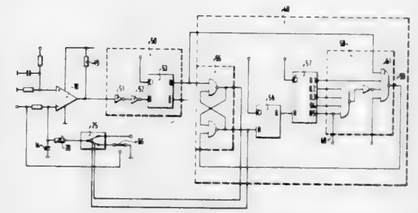
1. In a method for the operation of a charge injection device (CID) sensor matrix, in accordance with the parallel injection readout method, having coordinate row and column lines, and light sensing elements at the line intersections, in the operation of which the sensed information charges of the sensing elements of a row are transferred to the column lines and sensed information there stored is read from the column lines in parallel into a charge-coupled shift device and the read-in information is serially read out from the latter, the combination of the steps of erasing in parallel the charges on the sensing elements, following a first readout, and repeating a readout from the same row, in such manner that the light sensing duration is sufficiently short that no appreciable information produced by light can be stored prior to such repeat readout, reading out such "zero information", stored in the column lines, in parallel into a second charged-coupled shift device, serially reading out the information of the two shift devices in common, and forming the difference between the stored information, in each shift device, pertaining to the same column, with such difference value representing the output signal for such column.

4,410,812

VOLTAGE-FREQUENCY CONVERTER

Günter Hönig, Ditzingen; Edmund Jeenicke, Schwieberdingen; Immanuel Krauter, Erbstetten, and Manfred Schenk, Fellbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 219,136
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952156
Int. Cl.³ H03K *3/023, 5/00*
U.S. Cl. 307—350 **4 Claims**



1. In a voltage-frequency converter for converting a voltage input signal to a frequency output signal, in particular for use in electric control systems of motor vehicles, wherein the converter includes a memory which can be charged and discharged, a comparator for comparing the charge of the memory with a reference signal and generating an output signal indicating the results of the comparison, and a multivibrator means which functions at a relatively high clock frequency which is connected to receive the comparator output signal and which generates an output signal controlling the charging or discharging of the memory and which comprises a bistable multivibrator, connected by a flip-flop means to a counter, the output of which is connected to a decoder, the improvement which comprises:

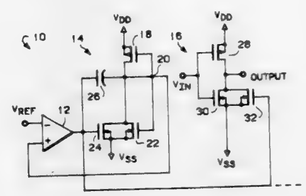
switching means connected to and controlled by the output signal of said bistable multivibrator for supplying charging and discharging signals to the memory, at least one of the charging and discharging signals being a variable or time dependent signal for non-linear, voltage frequency conversion.

4,410,813

HIGH SPEED CMOS COMPARATOR CIRCUIT

Charles E. Barker, Round Rock, and Michael D. Smith, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 14, 1981, Ser. No. 292,772
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—362 **7 Claims**



1. A high speed CMOS comparator circuit for comparing an input signal with a reference voltage, comprising:

first inverter means;

second inverter means;

operational amplifier means having a first input coupled to a reference voltage, a second input coupled to said first inverter means, and an output coupled to said second inverter means; and

control means coupled to said first and second inverter

means and said operational amplifier means, for establishing a switch point of said first and second inverter means at said reference voltage.

4,410,814

SIGNAL BUFFER CIRCUIT IN AN INTEGRATED CIRCUIT FOR APPLYING AN OUTPUT SIGNAL TO A CONNECTING TERMINAL THEREOF

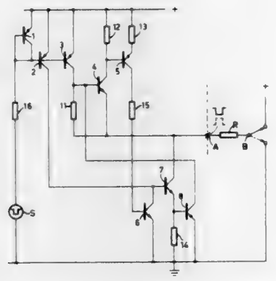
Peter A. Duijkers, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 29, 1981, Ser. No. 288,249

Claims priority, application Netherlands, Aug. 19, 1980, 8004675

Int. Cl.³ H03K *19/092, 17/60;* **H03F** *3/26*

U.S. Cl. 307—475 **3 Claims**



1. A signal buffer circuit for providing and interface between a connecting terminal of an integrated circuit and an external circuit, said signal buffer circuit including a series arrangement of a first and a second output transistor connected between terminals of a supply voltage source, a first electrode of said first output transistor and a first electrode of said second output transistor being connected to the connecting terminal; a first driving transistor having a control electrode connected to an input signal source on said integrated circuit and a first output electrode connected to a control electrode of said first output transistor; and a load resistor external to said integrated circuit for alternatively coupling said connecting terminal to a first or a second biasing voltage in which said first biasing voltage causes said first output transistor to conduct and said second output transistor to be cut off while said second biasing voltage causes said first output transistor to be cut off and said second output transistor to conduct; characterized in that said signal buffer circuit further comprises a second driving transistor having a control electrode connected to said input signal source and a first output electrode connected to a control electrode of said second output transistor; a first current measuring impedance connected between one of said supply voltage source terminals and a second electrode of said first output transistor for measuring the direction of current flowing through said load resistor; a third driving transistor having a control electrode connected to the junction of said first current measuring impedance and said second electrode of said first output transistor, and a first output electrode coupled to the control electrode of said second output transistor for cutting off said second output transistor in dependence on said current; a second current measuring impedance connected between the other of said supply voltage source terminals and a second electrode of said second output transistor; and a fourth driving transistor having a control electrode connected to the junction of said second current measuring impedance and said second electrode of said second output transistor, and a first output electrode coupled to said control electrode of said first output transistor for cutting off said first output transistor in dependence on said current.

4,410,815

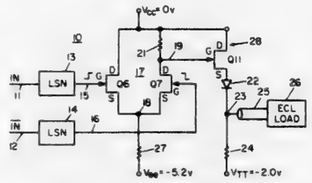
GALLIUM ARSENIDE TO EMITTER COUPLED LOGIC LEVEL CONVERTER

Stephen A. Ransom, Huntington Valley; Tedd K. Stickel, and Joseph B. Tomei, both of Chalfont, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,320

Int. Cl.³ H03K *19/092*

U.S. Cl. 307—475 **12 Claims**



1. A gallium arsenide (GaAs) level converter for employing gallium arsenide logic source input signals to drive emitter coupled logic (ECL) circuitry, comprising:

a non-inverting gallium arsenide logic source input,

an inverting gallium arsenide logic source input,

a plurality of series connected gallium arsenide level shifting diodes connected in each said gallium arsenide logic source input,

a voltage source,

a first gallium arsenide differential amplifier connected to said voltage source,

said first gallium arsenide differential amplifier having a non-inverting input transistor whose gate is coupled to said non-inverting gallium arsenide logic source input and having an inverting input transistor whose gate is coupled to the inverting logic source input,

a resistive pull-up load connected intermediate said voltage source and the drain of said inverting input transistor,

a low reference voltage,

a resistive common source impedance connected between the source of said input transistors and said low reference voltage,

an output line connected to the drain of said inverting input transistor,

a termination voltage,

an output load branch having a series connected gallium arsenide transistor, a gallium arsenide level shifting diode and a precision termination resistor connected between said voltage source and said termination voltage,

said output key being connected to the gate of said output load branch transistor, and

a converter output line connected intermediate said gallium arsenide diode and said precision termination resistor, whereby said converter output line is provided with a full range of output voltage swings adapted to drive emitter coupled logic loads.

4,410,816

ECL INTEGRATED CIRCUIT

Yasunori Kanai, Inagi, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 4, 1981, Ser. No. 327,692

Claims priority, application Japan, Dec. 25, 1980, 55-184563

Int. Cl.³ H03K *19/003, 19/086*

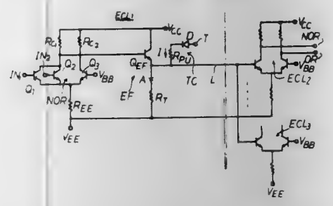
U.S. Cl. 307—455 **9 Claims**

1. An ECL integrated circuit comprising:

at least one ECL circuit having an emitter-follower transistor at the output stage and pull-down means connected to said emitter-follower transistor;

a subsequent stage connected to the emitter follower transistor;

a test circuit, connected to the output of said emitter-follower transistor for causing an auxiliary current to flow only at the time of a test, said auxiliary current having a



value smaller than the current flowing through said pull-down means but larger than the input current flowing to said subsequent stage during normal operation.

4,410,817

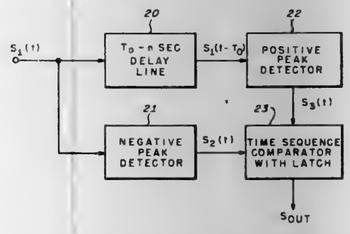
PRECISION TIME DURATION DETECTOR

Chao S. Chi, Shrewsbury, Mass., and John W. Craig, Scottsdale, Ariz., assignors to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 153,492, May 27, 1980. This application May 3, 1982, Ser. No. 374,543

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—514 **4 Claims**



1. Apparatus for detecting whether the time duration between a first and a second peak of an analog waveform is greater or less than a predetermined interval, comprising

detector means responsive to said analog waveform for detecting said first peak and for providing a first signal at the time of occurrance thereof and for detecting said second peak and providing a second signal at the time of occurance thereof,

delay means for delaying said first signal thereby providing a delayed first signal, and

time sequence comparator means coupled to receive said delayed first signal and said second signal for providing a first indication when said delayed first signal occurs prior to said second signal and a second indication when said second signal occurs prior to said delayed first signal.

4,410,818

SYNCHRONOUS MOTOR

Hiroshi Omata, Gotemba, and Saichi Katumata, Susono, both of Japan, assignors to Mitsubishi Mallory Metallurgical Co., Ltd., Tokyo, Japan

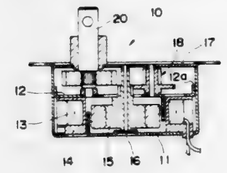
Filed Sep. 17, 1982, Ser. No. 419,621

Claims priority, application Japan, Dec. 26, 1981, 56-210598

Int. Cl.³ H02K *7/10*

U.S. Cl. 310—41 **2 Claims**

1. In a synchronous motor comprising a rotor having a plurality of permanent magnetic poles around its periphery and having a drive gear formed integrally with and coaxially with said rotor, said rotor having an engaging portion; a reduction gear train operatively connecting said rotor to an output shaft, said reduction gear train comprising a plurality of gear members having respective shafts about which they are rotated, said shafts being parallel to the axis of rotation of said rotor and disposed therearound in spaced relation to each other, a first gear member of said reduction gear train being in mesh with said drive gear; a stator having a plurality of electromagnetic poles disposed around said rotor; and a retaining member rotatably mounted on said first gear member and frictionally engaging said first gear member for angular movement about the axis thereof, said retaining member having an abutment lug which is engageable with said engaging portion when said



rotor is rotated in one direction whereupon said engaging portion rebounds from said lug to cause said rotor to rotate in the opposite direction; the improvement wherein the shaft of said first gear member is disposed at a position angularly displaced about the axis of said rotor from a predetermined point of said rotor by an angle of $360°/P \times n$ when said engaging portion is brought into engagement with said abutment lug wherein P is the number of the magnetic poles around said rotor and n is an integer (0, 1, 2, 3 . . .).

4,410,819

ELECTROMAGNETIC COUPLING DEVICE

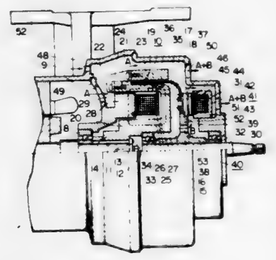
Takanori Kobayashi; Masahisa Kato, and Hiroshi Kumatani, all c/o Mitsubishi Denki Kabushiki Kaisha Nagoya Works, No. 1-14, Yadaminami 5-chrome, Higashi-ku, Nagoya-shi, Aichi, Japan

Filed Jul. 24, 1980, Ser. No. 171,856

Claims priority, application Japan, Jul. 25, 1979, 54-94561; Jul. 25, 1979, 54-94562; Jul. 25, 1979, 54-94563; Jul. 25, 1979, 54-94564; Jul. 25, 1979, 54-94565; Jul. 25, 1979, 54-94566; Jul. 25, 1979, 54-94567; Aug. 28, 1979, 54-109311

Int. Cl.³ H02K *49/02*

U.S. Cl. 310—105 **12 Claims**



1. An electromagnetic coupling device for selectively transmitting the rotary motion of a drive rotary shaft to an output rotary shaft, comprising:

said drive rotary shaft;

a magnetic drive member fixed to said drive rotary shaft, said magnetic drive member having generally an S-shape and comprising (a) a generally cylindrically shaped first magnetic pole member fixed directly to said drive rotary shaft, (b) a generally annularly shaped second magnetic pole member extending radially outwardly from a forward side of said first magnetic pole member and magnetically coupled to said first magnetic pole member, an outer portion of said second magnetic pole member being

formed as a plurality of pawls extending circumferentially and axially, (c) a generally cylindrically shaped third magnetic pole member extending rearwardly from an outward portion of said second magnetic pole member parallel to said first magnetic pole member with a relatively wide first gap therebetween, said third magnetic pole member comprising a plurality of magnetic pole pieces engaged alternating with said pawls with gaps therebetween, (d) a non-magnetic ring interconnecting said second and third magnetic pole members, (e) a non-magnetic support member having an inward end fixed to a rearward end of said third magnetic pole member, and (f) a generally cylindrically shaped fourth magnetic pole member having an uninterrupted cylindrical surface and having a rearward end fixed to an outward end of said non-magnetic support member, said fourth magnetic pole member extending parallel to said first and third magnetic pole member with a relatively narrow second gap being formed between said third and fourth magnetic pole members;

a stationarily mounted magnetic pole member extending into a rearward portion of said first gap;

an exciting coil fixed to said stationarily mounted magnetic pole member and extending into a forward portion of said first gap;

said output shaft; and

a generally U-shaped follower comprising (a) a boss fixedly directly to said output shaft, (b) a radially extending disc fixed to said boss, and (c) a conductive plate fixed to said disc, said conductive plate having a generally cylindrically shaped portion extending through said second gap parallel to said first, third and fourth magnetic pole members.

4,410,820

AXIAL FLUX ELECTRIC MACHINE

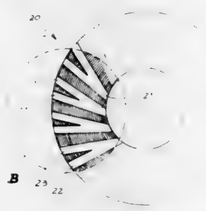
Louis Stanley, Peakhurst, Australia, assignor to Card-O-Matic Pty. Ltd., Australia

Filed Jul. 24, 1981, Ser. No. 286,505

Claims priority, application Australia, Jul. 29, 1980, PE4753; Nov. 11, 1980, PE6426

Int. Cl.³ H02K *1/00*

U.S. Cl. 310—216 **7 Claims**



1. A rotor core for an axial flux induction electric machine, said core being formed of metal strip wound about a central axis, said strip being punched to have a first set of holes which are spaced longitudinally of the strip so as to form a first set of radially extending slots when located on the core, and wherein said slots have side walls which diverge radially outwardly so that the angular area of the slots increases radially outwardly.

4,410,821

SLIP-RING ARRANGEMENT FOR ELECTRICAL MACHINES

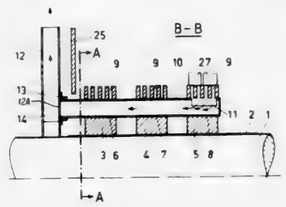
Thoma Kurt, Birr, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Nov. 12, 1981, Ser. No. 320,438

Claims priority, application Switzerland, Nov. 13, 1980, 8417/80

Int. Cl.³ H02K *9/28*

U.S. Cl. 310—227 **9 Claims**



1. A slip-ring arrangement for electrical machines comprising:

a fan;

at least first and second slip rings axially positioned adjacent one another, each of said first and second slip rings having a plurality of axially extending, aligned cooling-gas holes formed therein and a radially extending slot formed therein in communication with said holes and through which air is drawn; and

an axially extending insulating tube mounted in and interconnecting each of said holes, a first end of said tube being closed and a second end of said tube being connected to and, communicating with said fan and through which said air is discharged to said fan.

4,410,822

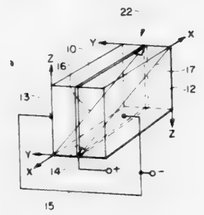
ACCELERATION-RESISTANT CRYSTAL RESONATOR

Raymond L. Filler, Freehold, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 17, 1982, Ser. No. 389,315

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—311 **10 Claims**



1. A composite resonant crystal structure comprising:

first and second resonant crystals, each having an acceleration sensitivity vector of substantially equal magnitude corresponding to the magnitude and direction of maximum frequency shift per change in acceleration;

said crystals being positioned in a fixed relationship such that the acceleration sensitivity vector of said first crystal is disposed in an antiparallel relationship with the acceleration sensitivity vector of said second crystal whereby the effect of acceleration in all directions on the resonant frequency of the composite structure is minimized; and,

said first and second crystal being electrically coupled to each other.

4,410,823

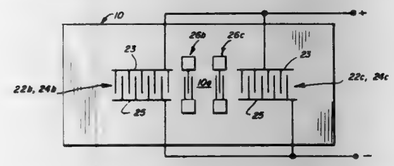
SURFACE ACOUSTIC WAVE DEVICE EMPLOYING REFLECTORS

Robert L. Miller, Urbana, and Adrian DeVries, Mount Prospect, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Nov. 13, 1981, Ser. No. 321,134

Int. Cl.³ H03H *9/25, 9/64*

U.S. Cl. 310—313 D **2 Claims**



1. A resonant surface acoustic wave device comprising:

a substrate comprising piezoelectric ceramic material;

one or more surface acoustic wave transducers each disposed exclusively on only one selected surface of said substrate, and each comprising a pair of electrodes formed with substantially linear, parallel, and mutually interdigitated fingers, said electrodes all being disposed on said same substrate surface and adapted to be connected to opposite sides of an electrical circuit;

and at least two surface acoustic wave reflectors disposed on said same substrate surface on opposite sides of said transducer or transducers and acoustically coupled thereto, such reflectors being disposed exclusively at locations spaced apart from said transducer or transducers in directions parallel to said substrate surface and comprising a plurality of individual substantially linear reflector elements which are disposed substantially parallel to said transducer electrode fingers and spaced respective different distances from said fingers such that their respective surface acoustic reflections are substantially in phase with respect to a surface acoustic wave which is within a selected frequency range;

said reflector elements each comprising a remanent electric domain reversal which is formed in said piezoelectic ceramic material adjacent said same substrate surface.

4,410,824

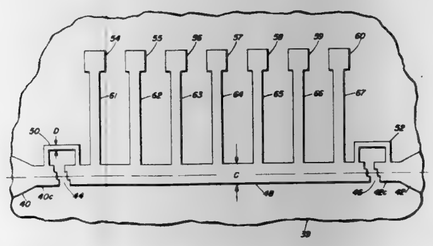
MEANS FOR PREVENTING CRACKS IN THE GAP REGION OF A SURFACE ACOUSTIC WAVE DEVICE

Ronald F. Steinberg, Cockeysville, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 3, 1982, Ser. No. 404,785

Int. Cl.³ H03H *9/26;* H01L *41/22*

U.S. Cl. 310—313 R **9 Claims**



1. In a surface acoustic wave device having at least two thin film structures disposed on the surface of a substrate, there being a gap between said structures, said structures being arranged so that a surface acoustic wave traversing a first of said structures is communicated across said gap to the second of said structures, and a thin film loop electrically shunting said gap to prevent cracks in the gap region of said substrate from being induced during fabrication of said surface acoustic wave device.

4,410,825

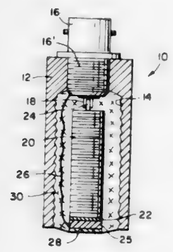
PIEZOELECTRIC PRESSURE TRANSDUCER WITH THREADED DAMPER BAR

George S. Lobastov, 495 - 45th Ave., San Francisco, Calif. 94121

Filed Apr. 10, 1981, Ser. No. 253,001

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—327 **6 Claims**



1. A pressure transducer comprising:

an elongated hollow housing having an open front end and a rear end;

electrical connector means mounted to said rear end of said housing;

an elongated damping bar mounted at one end thereof to said connector means, said damping bar being disposed within and spaced away from the interior surface of said housing, said damping bar being threaded on the outer surface thereof;

a piezoelectric crystal mounted to the free end of said damping bar in a manner to be spaced away from the interior surface of said housing; and

a filler material disposed within said housing surrounding said damping bar and said crystal, said filler material functioning to support said damping bar and crystal in spaced relationship to said housing whereby said threaded damping bar and said filler material cooperate to inhibit the transmission of spurious oscillations imparted to said housing directly to said crystal.

4,410,826

ULTRASONIC IMAGING APPARATUS USING A COUPLING FLUID MIXTURE OF PROPYLENE OXIDE, ETHYLENE OXIDE DERIVATIVE AND GLYCERINE

Albert S. Waxman, Los Gatos, and James F. Havlice, Los Altos, both of Calif., assignors to Diasonics, Inc., Milpitas, Calif.

Continuation of Ser. No. 153,586, May 27, 1980, abandoned, which is a division of Ser. No. 925,701, Jul. 18, 1981. This application Apr. 12, 1982, Ser. No. 367,766

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—336 **6 Claims**

1. In an ultrasonic imaging head employing at least one transducer spaced-apart from the body under examination, an improved housing for said transducer comprising:

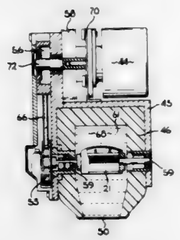
a chamber for retaining a liquid and for receiving said transducer;

a one-piece semirigid membrane for providing an interface between said body and said chamber, and for providing a window for ultrasound from said transducer;

said membrane having a thickness approximately equal to $n\lambda/2$ where λ is the wavelength of said ultrasound in said membrane, and n is a whole number greater than 0;

a liquid dispersed in said chamber, said liquid comprising a

mixture of propylene oxide and ethylene oxide derivative and glycerine;
the acoustic impedance of said liquid being approximately equal to the acoustic impedance of said membrane;



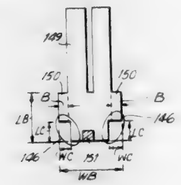
whereby optimized transmission of said ultrasound into said body is obtained.

4,410,827

MODE COUPLED NOTCHED TUNING FORK TYPE QUARTZ CRYSTAL RESONATOR

Shigeru Kogure, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Apr. 24, 1981, Ser. No. 257,296
Claims priority, application Japan, Apr. 24, 1980, 55-54811; Oct. 28, 1980, 55-150598
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—370 **28 Claims**



1. A tuning fork type resonator comprising:
a resonator leaf having a base and arms extending from said base, said resonator leaf having a plurality of vibrational modes, at least two of said vibrational modes being coupled, said coupled modes being a flexural mode and a torsional mode;
projections extending laterally from the sides of said base, said projections extending at the upper part of said base, not extending from the bottom end of said base;
notch portions laterally recessed at the lower part of said base including said bottom end;
a mounting plug;
resilient support means, said support means being connected at one end thereof to said base where said recessed notch portions narrow the width of said base, and at the other end said resilient support means being connected to said mounting plug.

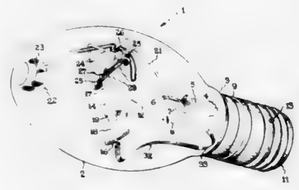
4,410,828

JACKETED LAMP HAVING TRANSVERSE ARC TUBE

Paul W. Ernest, Cleveland Hts., Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,505
Int. Cl.³ H01J *61/52;* H01K *1/58*
U.S. Cl. 313—25 **6 Claims**

1. An electric lamp comprising:
a glass jacket having a bulb portion with a reduced diameter neck portion closed by a stem having at least a pair of lead-in wires sealed therethrough,
a base fastened to the end of said neck and having contact members,
an arc tube within the bulb portion of greater overall length than the internal diameter of the neck portion, said arc tube having electrodes attached to inleads sealed into opposite ends of the tube,
a flexible strap directly interconnecting the inlead at one end of the arc tube with one of the pair of lead-in wires in said stem;



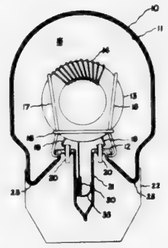
and a mount structure comprising a single rod for providing the support of said arc tube within said bulb portion and extending from the other of said lead-in wires in said stem into the bulb portion, a single hinged attachment of one end of the arc tube to said single support rod, said single hinged attachment constituting the sole means for hingedly supporting said arc tube and allowing folding of said mount structure substantially in line with said single support rod for passage through the neck and thereafter transverse erection of the arc tube within the bulb, and latching means for holding said arc tube in a transverse attitude after erection.

4,410,829

USE OF AMALGAMS IN SOLENOIDAL ELECTRIC FIELD LAMPS

John M. Anderson, Scotia, and Peter D. Johnson, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 214,903, Dec. 10, 1980, abandoned, which is a division of Ser. No. 954,411, Oct. 25, 1978, Pat. No. 4,262,231.
This application Jul. 21, 1982, Ser. No. 400,326
Int. Cl.³ H01J *19/28;* B23K *31/00*
U.S. Cl. 313—490 **13 Claims**



1. A method of forming a helical wire coil containing a lead-bismuth-tin alloy useful for controlling the mercury vapor pressure in a solenoidal electric field discharge lamp, comprising the steps of:
casting said alloy into a tubular segment insertable into said helical wire coil;
inserting said segment into said coil; and
heating said coil and alloy in a hydrogen atmosphere at a temperature sufficient to wet said alloy to said wire.

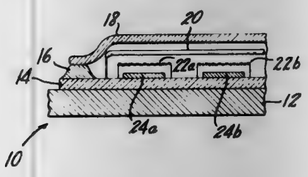
12. A method of wetting lead-bismuth-tin alloy to metal comprising:
heating said alloy in contact with said metal in a hydrogen atmosphere at a temperature sufficient to wet said alloy to said metal.

4,410,830

VACUUM FLUORESCENT DISPLAY DEVICE WITH SUBSTRATE INCLUDING A METAL PLATE

Richard DuBois, Jr., No. Caldwell, N.J., assignor to Edison International Inc., Rolling Meadows, Ill.

Filed Mar. 3, 1981, Ser. No. 239,204
Int. Cl.³ H01J *63/02, 63/06*
U.S. Cl. 313—497 **12 Claims**



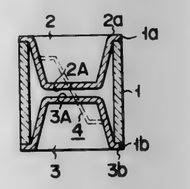
1. A vacuum fluorescent device comprising:
(a) a metal plate;
(b) a coating of insulation on said metal plate, said insulating coating and metal plate forming an insulated substrate;
(c) at least one anode coated with fluorescent material disposed on said coating of said insulated substrate;
(d) a transparent cover hermetically sealed to said substrate, said cover and substrate forming an enclosure for said at least one anode, said metal plate extending outwardly beyond the periphery of said cover wherein the metal plate extending outwardly beyond the cover has no insulating coating whereby the metal plate outside said cover may be cold formed; and
(e) means in said vacuum fluroescent device for selectively exciting said at least one anode.

4,410,831

OVERVOLTAGE PROTECTING ELEMENT

Daizo Shigemori, Sagamihara, and Yuji Muramatsu, Machida, both of Japan, assignors to Kabushiki Kaisha Sankosha, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,613
Claims priority, application Japan, Jul. 28, 1981, 56-111846[U]
Int. Cl.³ H01J *17/00, 21/00*
U.S. Cl. 313—325 **7 Claims**



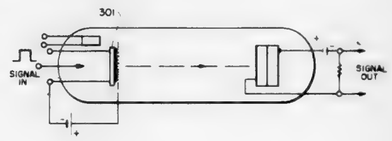
1. An overvoltage protecting element comprising a hollow cylindrical body of an insulating member; a pair of main electrodes which are hermetically sealed to both opening ends of said cylindrical body to define a sealed chamber therebetween and discharging surfaces of which oppose each other with a gap therebetween in said cylindrical body; and a conductive member having a plurality of extended parts and a connecting part, said extended parts extending along an inner wall surface of said cylindrical body in the circumferential direction thereof, to oppose said main electrodes with a gap therebetween, said extended parts being spaced apart from each other in the axial direction of said cylindrical body, and said connecting part extending along said inner wall surface to electrically connect said plurality of extended parts spaced apart in the axial direction of said cylindrical body.

4,410,832

EBS DEVICE WITH COLD-CATHODE

Bernard Smith, Ocean, and Stanley Dubuske, Lincroft, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 216,588, Dec. 15, 1980. This application Jan. 27, 1983, Ser. No. 461,291
Int. Cl.³ H01J *23/16, 29/96*
U.S. Cl. 315—3 **4 Claims**



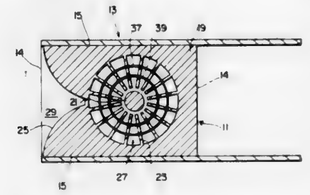
1. An electronic tube device comprising:
an EBIT electron beam injected target means;
a cold cathode emitting means comprising tungsten uranium oxide material, for bombarding said target means with electrons;
grid means comprising molybdenum material, for modulating said electrons including means for directing said electrons toward said target means further, including means for electrically biasing said modulating and directing means;
sealed tube means comprising sapphire ceramic material for completely enclosing said target means, emitting means, and means for modulating and directing, in a vacuum of 10^{-7} to 10^{-8} Torr, further including a getter means specifically used for maintaining said vacuum; and
means for conducting input electrical signals into, and output electrical signals from, the said electronic tube device, whereby amplification of said input electrical signals may be accomplished by use of the said electronic tube device.

4,410,833

SOLID STATE MAGNETRON

Achintya K. Ganguly, Alexandria, Va., and Denis C. Webb, College Park, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 2, 1981, Ser. No. 269,456
Int. Cl.³ H01J *25/50*
U.S. Cl. 315—39.51 **18 Claims**



1. A planar solid-state magnetron comprising:
a plate whose body is formed from a semiconductor material and whose top surface is partially coated with a conducting film,

the partial conducting film coating including a cathode and a plurality of anode members radially spaced from the cathode,

adjacent anode members together with the space therebetween defining resonant cavities; and

means for directing electrons from the cathode to the anode by electrical conduction through the semiconductor body of the plate.

4,410,834

CIRCULAR FLUORESCENT LAMP WITH IMPROVED HOUSING CONTAINING BALLAST AND STARTING DEVICE

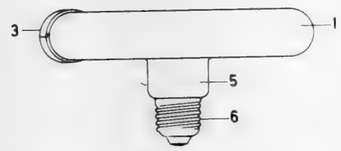
Dieter Witte, Düsseldorf; Alfons Jendrewski, and Gerhard Nadler, both of Munich, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,781

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014640

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—58 **8 Claims**



1. A circular fluorescent lamp structure comprising:

a circular fluorescent lamp (**1**) having two opposite ends;

a housing (**2, 5**) located substantially completely inside the inner spaced formed by the circular fluorescent lamp (**1**);

an integrated ballast (V) and starting device (Z) and a base (**6**) for direct connection to a supply voltage, said ballast and starting device being completely contained within said housing (**2, 5**);

said base (**6**) being affixed to said housing (**2, 5**) concentrically with said circular fluorescent lamp (**1**);

said housing comprising first and second housing parts (**2, 5**), said first housing part (**2**) being an elongate hollow body which extends only diametrically across said inner space formed by said circular fluorescent lamp (**1**) with the remainder of said inner space being open, said first housing part (**2**) comprising two interconnected formlocking housing cup-shaped members (**8, 11**) fixedly connected together, and said second housing part (**5**) being integrally formed with said first housing part (**2**) on one of said cup-shaped members and said second housing part (**5**) extending substantially perpendicularly to said first housing part (**2**) concentrically with said circular fluorescent lamp (**1**), one end (**3**) of at least one of said cup-shaped members (**8, 11**) of said first housing part (**2**) completely enclosing and mounting said opposite ends of said circular fluorescent lamp (**1**), and the other end (**4**) of at least one of said cup-shaped members (**8, 11**) of said first housing part enclosing and bearing against at least a portion of the wall of said circular fluorescent lamp (**1**) facing said inner space at a location opposite said ends of said circular fluorescent lamp;

said base (**6**) being secured non-detachably to an end of said second housing part(s); and

the height of said first housing part (**2**) within said inner space formed by said circular fluorescent lamp (**1**) being no greater than the tube diameter of said circular fluorescent lamp so that said first housing part is within the confines of said lamp in said inner space.

4,410,835

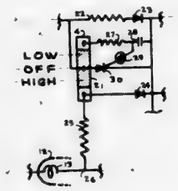
UTILITY EMERGENCY LAMP AND SOLID STATE SWITCHING AND BATTERY CHARGING CIRCUIT THEREFOR

Stanley E. Zabroski, 910 N. G St., Oxnard, Calif. 93030

Filed Apr. 1, 1981, Ser. No. 250,033

Int. Cl.³ H05B *39/10*

U.S. Cl. 315—87 **5 Claims**



1. A modular main and emergency lighting capability device for use in conventional table lamps, using a high voltage lamp filament normally operated by a main power supply, and one normally unenergized relatively very low voltage lamp filament, and having a standby battery and a switching having OFF, LOW and/or HIGH positions, including in combination:

a transistor switching means which, in its low impedance state, sends power from said battery to said low voltage filament:

a bias means which changes said transistor means to its high impedance state, stopping the flow of said power from said battery, when said high voltage filament is energized from said main power supply; means for connecting said high voltage filament in series with said battery and said main power supply whereby said battery charging current passes through said high voltage filament; means for blocking the change of said transistor means to its low impedance state momentarily, between positive full wave consecutive charging pulses of said main power supply, during the intervals when said charging pulses are lower than said battery voltage,

a bleeder circuit means to pass only a relatively extremely low current through said high voltage filament to maintain said high impedance state of said transistor means while said main power supply is energized, and said high voltage filament illumination is not visible, whenever said OFF, LOW and/or HIGH switch is in the OFF position,

a phase pulse width control circuit for providing reduced power from said main power supply to said high voltage filament whenever said OFF, LOW and/or HIGH switch is in the LOW position,

a resistor means for shunting only the appropriate rate of said battery charging current from the total current of said high voltage filament, whenever said OFF, LOW and/or HIGH switch is in the HIGH position.

4,410,836

VOLTAGE LIMITED BALLAST FOR GASEOUS DISCHARGE DEVICES

William J. Roche, Merrimac, Mass., assignor to GTE Products Corporation, Stamford, Conn.

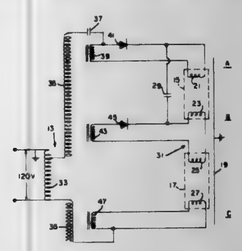
Filed Oct. 5, 1981, Ser. No. 308,303

Int. Cl.³ H05B *41/14*

U.S. Cl. 315—96 **15 Claims**

1. A ballast apparatus for starting and operating at least one pair of series-sequenced low pressure gaseous discharge devices comprising a starting capacitor shunting one of said pair of discharge devices and a transformer coupled to a potential source, said apparatus characterized by the improvement comprising a first rectifier means coupling one end of said pair of discharge devices to said transformer, circuit means series

connecting a filament of each of said pair of discharge devices, a second rectifier means coupling said circuit means to said



transformer and said transformer directly coupled to the other end of said pair of discharge devices.

4,410,837

DISCHARGE LAMP LIGHTING DEVICE

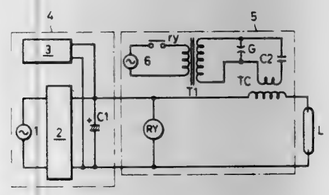
Shunichi Suzuki, Himeji, and Masaharu Kotaka, Takasago, both of Japan, assignors to Ushio Denki Kabushiki Kaisha, Japan

Filed Jul. 28, 1981, Ser. No. 287,575

Claims priority, application Japan, Aug. 20, 1980, 55-113371

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—289 **1 Claim**



1. A discharge lamp lighting device, comprising:

a ballast circuit (**4**) for supplying electrical energy to a discharge lamp (L), said ballast circuit including a first power supply circuit (**2**), a second power supply circuit (**3**) connected in parallel with said first power supply circuit, said second power supply circuit providing a voltage output higher than said first power supply circuit output voltage, and a storage capacitor (**C1**) connected across said parallel connected first and second power supply circuits; and

a discharge lamp circuit connected to said ballast circuit (**4**) and including a series-connected discharge lamp (L) and secondary of a Tesla Coil (TC) connected across said storage capacitor (**C1**), and a starter circuit for starting said discharge lamp, said starter circuit including a high voltage pulse transformer (T2) having a primary and secondary, said primary of said pulse transformer connected through a thyristor (Th) across a starter energizing capacitor (**C3**), said starter energizing capacitor connected in parallel circuit with said storage capacitor (**C1**), said secondary of said high voltage pulse transformer and a series-connected diode (D) connected first in shunt acrosss a discharge gap (G) and secondly in shunt across a series-connected starter capacitor (C2) and a primary of said Tesla Coil, the ignition voltage of said thyristor being higher than the output voltage of said main power supply circuit.

4,410,838

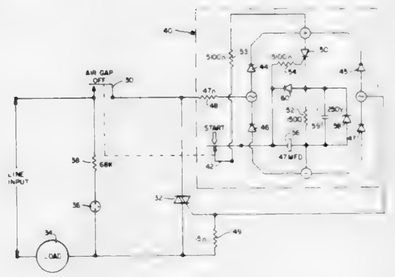
APPARATUS FOR CONTROLLING POWER CONSUMPTION IN LIGHTING LOADS AND THE LIKE

Kurt A. Hirschfeld, Santa Rosa, and Gordon H. Bowman-Jones, Pacifica, both of Calif., assignors to Automatic Energy Control Corporation, San Rafael, Calif.

Filed Jul. 2, 1981, Ser. No. 279,774

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—320 **1 Claim**



1. A method of controlling power consumption in a plurality of lighting circuits connected in parallel and maintaining conduction of said load circuits after a momentary loss of electrical power comprising the steps of:

providing a first switch means in series with all loads for removing electrical power to all loads on opening of said first switch means,

providing a plurality of second switch means, each of said second switch means being serially connected with a load, each of said second switch means including first and second serially connected switches each having a conducting state and a non-conducting state, said first switch having an off position for immediately removing power to a load, an on position, and a reset position and said second switch having a conduction gating terminal and control means for applying an ignition signal to said conduction gating terminal and for maintaining ignition signal for a limited period of time after removal of power and thereafter rendering said second switch non-conductive, said control means reapplying the ignition signal upon movement of said first switch to said reset position and thereby reigniting said second switch

removing electrical power to all loads by opening said first switch means for at least said limited period of time, reclosing said first switch means, and selectively reenergizing a lighting circuit by moving a first switch to said reset position thereby applying an ignition signal to the conduction gating terminal of the serially connected second switch.

4,410,839

APPARATUS FOR CONTROLLING POWER CONSUMPTION IN LIGHTING LOADS AND THE LIKE

Robert C. Dobkin, Hillsborough, Calif., assignor to Hybrinetics, Inc., Santa Rosa, Calif.

Filed Jul. 2, 1981, Ser. No. 279,775

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—320 **3 Claims**

1. Switch apparatus for selectively applying a line voltage to a load and responsive to intermittent removal of line voltage comprising

a first switch having an open position, a closed position, and a reset position,

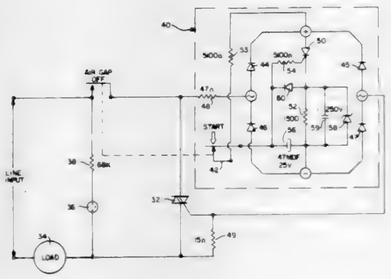
a first conduction device serially connected with said first switch, said first conduction device having an electrode for receiving a conduction gating signal, said first conductive device being rendered conductive by a gating signal applied to said electrode, and

conduction control means for said first conduction device, said control means including

a full wave rectification bridge having two ac terminals and two dc terminals with one ac terminal connected through said first switch to receive line voltage,

a second conduction device connected across said dc terminals of said bridge to permit the conduction of current, said second conduction device having a gate electrode for receiving a conduction gating signal,

a second switch mechanically coupled to said first switch, said second switch normally being open and being closed by movement of said first switch to said reset position,



means serially connecting said second switch between one of said terminals of said bridge and said gate electrode of said second conduction device for applying a conduction gating signal to said gate electrode,

means responsive to conduction of current through said second conduction device for applying a conduction gating signal to said first conduction device, timing means for maintaining a conduction gating signal to said second conduction device for a predetermined period of time after removal of said line voltage, and conductive means for serially connecting said switch apparatus to a load.

4,410,840

COLOR CATHODE RAY TUBE DISPLAY APPARATUS WITH COMPENSATION FOR ERRORS DUE TO INTERFERING MAGNETIC FIELDS

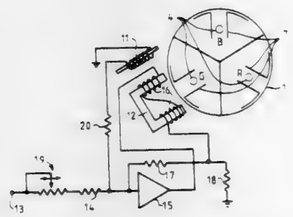
John S. Beeteson; Brian L. Holloway, and Krzystof T. Jarzebowski, all of Winchester, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1981, Ser. No. 281,810

Claims priority, application European Pat. Off., Oct. 24, 1980, 80303789.4

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—368 **6 Claims**



1. A color cathode ray tube display apparatus comprising in combination a color cathode ray tube,

a deflection yoke for causing the electron beams of the cathode ray tube to scan the screen thereof, and

a convergence assembly on the neck of the tube to which waveforms can be supplied for adjusting the convergence of the beams, characterized in that compensation means are provided for compensating for errors in the convergence assembly waveforms due to an induced current signal caused by interaction of the magnetic field from said deflection yoke with said convergence assembly.

4,410,841

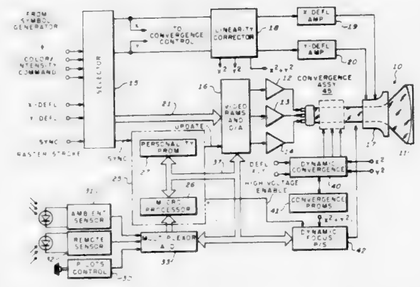
ROPING AND MOIRE REDUCTION IN PATTERNED SCREEN CATHODE RAY TUBE DISPLAYS

Christopher R. Dusard, and Thomas W. Spilsbury, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,452

Int. Cl.³ H01J *29/58*

U.S. Cl. 315—382 **9 Claims**



1. Cathode ray tube beam focus tracking control apparatus for reducing roping and moire effects in a color cathode ray tube display instrument system subjected to viewing under a wide range of ambient light conditions comprising

(a) a cathode ray tube having a display screen comprised of a predetermined phosphor dot pattern, beam deflection means and a plurality of beam producing cathode means for producing color images by deflecting the cathode beams along paths of predetermined width to excite corresponding dots of said dot pattern, said predetermined width of said paths being such as to reduce said roping and moire effects,

(b) focus electrode means and means for energizing said focus electrode means for controlling said beam path width,

(c) ambient light sensor means for providing a signal corresponding to the range between the extremes of ambient light conditions existing in the vicinity of said display instrument,

(d) computer means including

(i) memory means containing data representing the focus electrode means energizations required to produce said predetermined beam path width over said range of ambient light conditions, and

(ii) processor means responsive at least in part to said light sensor means for continuously computing a reference display brightness and for deriving from said memory means focus electrode energization data required to produce said predetermined beam width at the existing ambient light conditions, and

(e) means for supplying said energization data to said focus electrode energization means for energizing said focus electrode to thereby produce said predetermined beam width at the existing ambient light conditions.

4,410,842

BATTERY-POWERED ELECTRIC VEHICLE D.C. MOTOR CONTROL

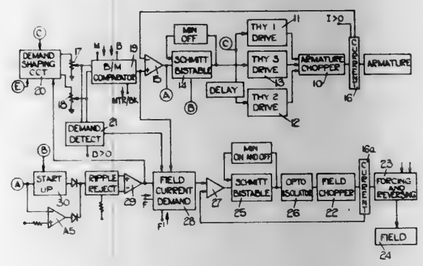
Richard A. Owen, Warley, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 22, 1981, Ser. No. 304,386

Claims priority, application United Kingdom, Oct. 2, 1980, 8031860

Int. Cl.³ B60K *41/00*

U.S. Cl. 318—139 **4 Claims**



1. A battery-powered electric vehicle d.c. motor control comprising a first potentiometer actuable by an accelerator pedal, a second potentiometer actuable by a brake pedal, motor current control means connected to control the current flow in the motor in accordance with a demand signal determined by the signals at the sliders of said potentiometers, contactor means for varying the connection configuration of the motor to provide motoring mode operation or regenerative braking mode operation, contactor control means sensitive to the signal at the slider of the first potentiometer only so as to switch the contactors to provide braking mode operation except when the accelerator pedal is depressed out of its rest position, means for generating a non-zero minimum demand signal when both pedals are in their rest positions and means for overridingly causing the contactor control means to switch the contactors to said motoring mode operation, and for cancelling said minimum demand signal in certain vehicle operating conditions.

4,410,843

ELECTRICALLY CONTROLLED SLIDING WINDOW AND PROXIMITY DETECTOR

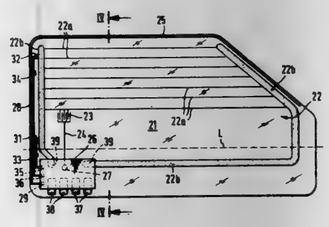
Gerd Sauer, Stolberg-Venwegen, and Dieter Unbehaun, Nuremberg, both of Fed. Rep. of Germany, assignors to Saint-Gobain Vitrage, Courbevoie, France

Filed Mar. 25, 1982, Ser. No. 362,038

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111724

Int. Cl.³ H01H *47/12*

U.S. Cl. 318—317 **8 Claims**



1. An electrically operated sliding window equipped with a saftety device, said safety device comprising:

electrical contacts located on a surface of said window and along the edge of the window for sensing the height of the window,

electrical conductors, in the form of a conductive strip, fabricated from substantially the same material as said contacts and located on a surface of said window, for connecting said contacts to an electrical control circuit, and

said electrical control circuit, attached to a surface of said window in a stationary positional relationship with respect to said contacts and said conductors, for controlling the height of said window.

4,410,844
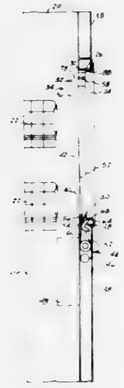
SLIDING DOOR ACTUATING MECHANISM

James D. Plenzler, Toledo, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed May 26, 1982, Ser. No. 382,256

Int. Cl.³ H02P *7/10*

U.S. Cl. 318—280 **3 Claims**



1. A control circuit for controlling an electric motor, having first, second and third windings, including:

a source of electrical power;

first relay means for operating first relay contact means;

second relay means for operating second relay contact means;

third relay means for operating third relay contact means;

first manual switch means sequentially operable to a first position, a second position and a de-energized position;

second switch means operable sequentially to make a first electrical circuit and then break a second electrical circuit and operable to sequentially break said first electrical circuit and then make said second electrical circuit;

said first manual switch being connected to said first relay means for energizing said relay means when said switch is operated to said first position;

said first manual switch means being further connected to said second switch means, said second electrical circuit of said second switch means being interposed between said first manual switch means and said second relay means, said second relay means being energized when said first manual switch is operated to said second position and said second electrical circuit is made through said second switch means;

said second switch means being also interposed between said first manual switch means and said third relay means;

said third relay means being energized when said first manual switch is operated to said second position and said first electrical circuit is made through said second switch means;

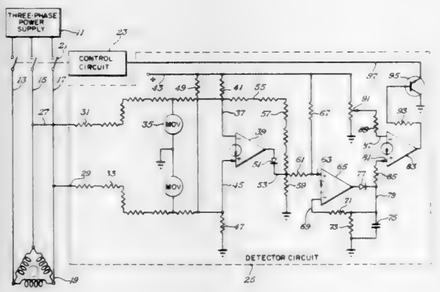
said first relay contact means being interposed between said source of electrical power and said first winding for ener-

gizing said first winding when said first relay contact means are closed;
said second relay contact means being interposed between said source of electrical power and said second winding for energizing said second winding when said second relay contact means are closed;
said third relay contact means being interposed between said second relay contact means and said third winding for energizing said third winding when said second relay contact means and said third relay contact means are closed;
said second winding and said third winding being maintained de-energized after said first manual switch means has been operated to said second position and is then operated to said de-energized position and then to said second position.

4,410,845
BACKSPIN DETECTION CIRCUIT FOR A SUBMERSIBLE PUMP

Kevin W. Lockyear, San Jose, Calif., assignor to Hughes Tool Company, Houston, Tex.

Filed Oct. 1, 1981, Ser. No. 307,558
Int. Cl.³ H02P *3/18*
U.S. Cl. 318—459 **5 Claims**

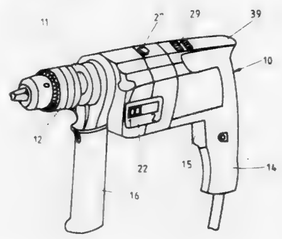


1. Means for preventing restarting of a submersible pump AC electric motor while backspinning, comprising:
a pair of leads, each connected to one of two motor power connectors for sensing AC voltage differential between the power conductors;
amplifying means connected to the leads for amplifying the AC voltage differential sensed and producing direct current voltage pulses;
time constant means for providing each of the pulses with a decay time constant, resulting in a corresponding voltage;
reference means for providing a level DC reference voltage proportional to a voltage produced by the motor while backspinning at a selected maximum amount tolerable when restarting;
comparison means for comparing the amplitude of the corresponding voltage to the reference voltage;
disabling means for restarting when the amplitude of the corresponding voltage exceeds the reference voltage, and enabling restarting when the peak amplitude of the corresponding voltage drops below the reference voltage; and
the time constant being selected so that the amplitude of the corresponding voltage will not decay below the reference voltage during the interval in which the motor pauses between ceasing to forward spin and commencing to backspin.

4,410,846
ELECTRIC TOOL WITH MICROCOMPUTER

Hans Gerber, Luterbach; Claude Wessel, Brugg, and Ivan Hidveghy, Zuchwil, all of Switzerland, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 21, 1980, Ser. No. 170,845
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933355
Int. Cl.³ H02P *7/28*
U.S. Cl. 318—490 **13 Claims**



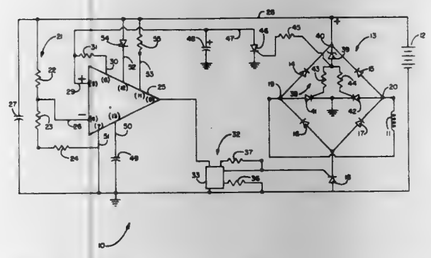
1. Hand-held tool having
a reversible electric motor (**13**) driving a spindle (**11**);
a housing (**10**) for said motor;
a handle (**14, 16**) on said housing extending from a predetermined surface thereof;
a microcomputer (**19**) controlling the speed of said motor located in the housing;
operator controlled speed selector means (**15**) providing a selected speed signal corresponding to a desired motor speed to the microcomputer;
direction selection means (**27**) coupled to said motor and to said microcomputer;
overload sensing means (**24**) connected to the motor and providing an overload signal to the microcomputer;
overload switch means (**25**) connected to and controlled by said microcomputer and further connected to said electric motor for interrupting current to the motor in response to an overload trip signal supplied by said microcomputer when the sensed overload signal exceeds a predetermined limit;
visual display means having a plurality of display fields respectively representative of selected operating parameters or conditions of said tool,
said visual display means being connected to and controlled by the microprocessor and
located adjacent each other on a surface of the tool which, in operation thereof, faces upwardly for furnishing an optical display of then present operating conditions of said tool comprising at least three of the four parameters of:
condition of energization of the motor;
direction of rotation of the motor;
speed of the spindle;
presence or absence of overload.

4,410,847
VOLTAGE REGULATOR

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 20, 1982, Ser. No. 420,555
Int. Cl.³ H02J *7/00*
U.S. Cl. 320—34 **9 Claims**

1. An energy regulating system for maintaining a charge on a battery by an electrical energy generating winding of a generator, said regulating system comprising:
(A) a full wave rectifying circuit electrically connected to a first terminal of said battery and to said winding;
(B) a first main switch means connected to said rectifying circuit for operation between a first condition to supply electrical energy from said winding to said battery and a second condition to operatively interrupt the flow of electrical energy from said winding to said battery;
(C) a charge sensing circuit electrically connected to said battery and operating from a first condition to a second condition to provide a charge signal in response to said battery being charged above a predetermined level;
(D) a high voltage sensor electrically connected to said rectifying circuit and operating to provide a high voltage

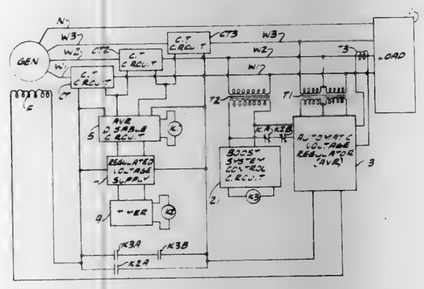


signal in response to a high voltage above a second predetermined level;
(E) a control circuit electrically connected to said charge sensing circuit and high voltage sensors to produce a control signal in response to said charge and high voltage signals; and
(F) a connecting means connected to said control circuit and said first switch means to operate said first switch means in response to said control signal.

4,410,848
SYSTEM FOR MAINTAINING EXCITATION OF AN ALTERNATOR DURING EXCESSIVE OUTPUT CURRENT CONDITIONS

Waldo J. Frierdich, Highland, Ill., assignor to Basler Electric Company, Highland, Ill.

Filed Jun. 8, 1981, Ser. No. 271,657
Int. Cl.³ H02P *9/00;* **H02H** *7/06*
U.S. Cl. 322—25 **32 Claims**

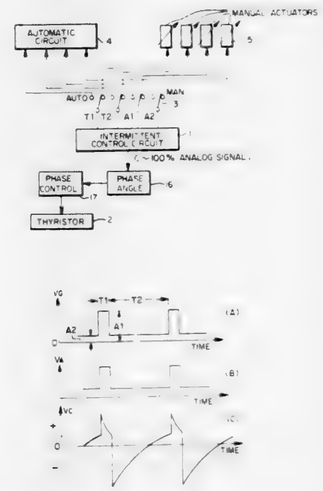


1. A system for supplying power to a field winding to maintain excitation of an alternating current generator during excessive output current conditions, the generator having a plurality of output lines for supplying power to a load and the field winding being supplied during normal operating conditions by a shunt type voltage regulator responsive to the output voltage of the generator, the system comprising:
a current transformer having a primary winding in series with an output line of the generator, a secondary winding, and a tertiary winding shunted by a capacitance;
means for rectifying the voltage supplied by the secondary winding, the output terminals of the rectifying means being connected in series with the regulator output terminals to supply power to the field winding; and
control circuit means, connected to the output of the generator, and responsive to output current conditions to enable the rectifying means output during excessive output current conditions, said rectifying means output being disabled by the control circuit means in the absence of excessive output current conditions, whereby power from the rectifying means is supplied to the field winding only when an excessive output current condition exists.

4,410,849
ELECTRIC DUST COLLECTING APPARATUS HAVING CONTROLLED INTERMITTENT HIGH VOLTAGE SUPPLY

Takashi Ando, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,319
Int. Cl.³ B03C *3/68*
U.S. Cl. 323—237 **3 Claims**



1. An electric dust collecting apparatus having a low voltage power supply driving a high voltage transformer which drives a rectifier circuit which drives dust collecting electrodes and having a thyristor circuit operatively connected between said low voltage power supply and said high voltage transformer, said thyristor circuit being controlled by a thyristor control circuit operatively connected thereto, the improvement comprising:
an intermittent control circuit operatively connected between said thyristor control circuit and said thyristor circuit for transforming a D.C. voltage output from said thyristor control circuit into a periodic pulsed D.C. signal, said signal having a constant pulse width and a constant pulse repetition rate and having a constant maximum and a constant minimum voltage level;
and a means for adjusting at least one of said constant pulse width and pulse repetition rate and said constant minimum and maximum voltage levels of said periodic pulsed D.C. signal so as to prevent back corona from occurring in said dust collecting apparatus by periodically alternately supplying a high voltage and a reduced high voltage to said dust collecting electrodes.

4,410,850

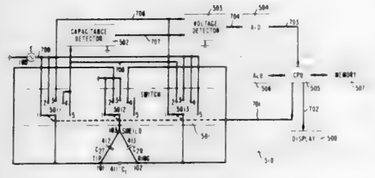
WATER-COMPENSATED OPEN FAULT LOCATOR

William S. Pesto, Alpharetta, and William C. Reed, Lilburn, both of Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 16, 1981, Ser. No. 312,096

Int. Cl.³ G01R *31/08*; H04B *3/46*

U.S. Cl. 324—52 **6 Claims**



1. Apparatus for measuring the distance (M) between a test location and an open in at least one conductor (**101** or **102**) of a pair contained within a multipair, shielded (**103**) cable contaminated with water and for modifying said measured distance to obtain the true distance (T) between said location and said open, said apparatus characterized by

an alternating current source (**100**) having a preselected voltage value (E),

means (**501**) for applying said source between the mate (**102** or **101**) of said at least one wire and said shield at said test location,

means (**503,504**) for detecting the resultant voltage (E_1) at said test location between said at least one wire and said shield in response to said source and the capacitive coupling effects of said pair,

means (**504,510**), coupled to said means for detecting, for determining the percentage (P) length of cable affected by said water from said preselected voltage and said resultant voltage, and

means (**501**), responsive to said means for determining, for estimating said true distance by correcting said measured distance as a function of said percentage.

4,410,851

METHOD FOR THE DETECTION OF INSUFFICIENT DIELECTRIC STRENGTH OF COIL INSULATION

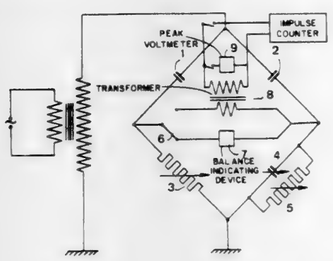
Raoul Goffaux, Mont-sur-Marchienne, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi, Brussels, Belgium

Filed Apr. 21, 1981, Ser. No. 256,127

Claims priority, application European Pat. Off., Apr. 21, 1980, 80 200362.4; Mar. 2, 1981, 81 870015.5

Int. Cl.³ G01R *31/12*

U.S. Cl. 324—54 **13 Claims**



1. Apparatus for detecting a dielectric characteristic of coil insulation of an electric machine comprising:

(a) a bridge network having a diagonal branch and four legs including a measurement leg,

(b) said coils and electric machine mass adjacent said coils being connected in said measurement leg,

(c) means disposed in at least one of said legs for balancing said bridge,

(d) current balance detection means disposed in said diagonal branch for detecting balance of said bridge,

(e) means for applying an AC voltage to said bridge, the frequency of said voltage selected from the range of frequencies appearing on said coils during operation of said machine,

(f) means in said diagonal branch of said bridge for measuring current impulses of predetermined amplitude and within a predetermined frequency band,

(g) means for adjusting the AC voltage magnitude to scan a predetermined range of voltages between a minimum and maximum value, and

(h) said current impulse measuring means operative for effecting measurements as a function of a plurality of AC voltages within said predetermined range

whereby said measuring means measures the current impulses having a frequency corresponding to the mean current, I_q, of local partial discharges inside said coil insulation while said measuring voltages vary within said range between said minimum corresponding to a lower value of the nominal service voltage of said machine and a maximum corresponding to a value equal to or larger than the maximum permissible voltage of said machine.

4,410,852

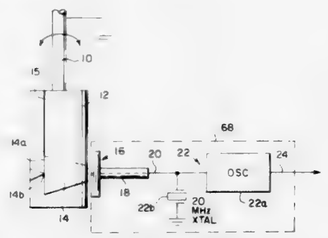
ANGLE-POSITION TRANSDUCER

Harold Guretzky, 95-15 108 St., Richmond Hill, N.Y. 11419

Continuation-in-part of Ser. No. 180,335, Aug. 22, 1980, Pat. No. 4,320,293, which is a continuation of Ser. No. 934,680, Aug. 30, 1978, abandoned. This application Dec. 14, 1981, Ser. No. 330,170

Int. Cl.³ G01R *27/26*; G05B *1/06*

U.S. Cl. 324—61 P **18 Claims**



1. For use with an angle-position sensor wherein the sensor employs a capacitive track which is disposed along the region of angular interest, an elongate capacitive pick-up probe disposed in broadside opposition to said track and closely spaced therefrom, means on said probe establishing a capacitive network thereon the capactance of which is adapted to change in accordance with relative angular displacement between said probe and track whereby as the latter moves angularly relatively to former, the capacitance of said network changes in analog correspondence therewith.

4,410,853

FREQUENCY DETECTOR

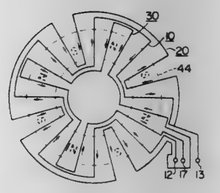
Junichi Ikoma, Yokosuka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1981, Ser. No. 328,622

Claims priority, application Japan, Dec. 13, 1980, 55-178151[U]

Int. Cl.³ G01P *3/48*, *3/54*

U.S. Cl. 324—167 **6 Claims**



1. A frequency detector comprising:

a first conductive pattern including an even number of first straight conductive pieces disposed radially at first predetermined intervals, a plurality of first outer periphery conductive pieces each connecting an outer periphery end of corresponding one of said first straight conductive pieces to an outer periphery end of the first straight conductive piece adjacently disposed at one side of said corresponding one of said first straight conductive pieces, and a plurality of first inner periphery conductive pieces each connecting an inner periphery end of said corresponding one of said first straight conductive pieces to an inner periphery end of the first straight conductive piece adjacently disposed at the other side of said corresponding one of said first straight conductive pieces, said first straight conductive pieces being sequentially connected in series alternately through said first inner periphery conductive pieces and said first outer periphery conductive pieces;

a second conductive pattern including an even number of second straight conductive pieces disposed radially at second predetermined intervals between each pair of said first straight conductive pieces connected by said first inner periphery conductive piece and at the outer periphery side of said first inner periphery conductive piece, said second straight conductive pieces being sequentially connected in series;

a third conductive pattern including an even number of third straight conductive pieces disposed radially at said second predetermined intervals between each pair of said first straight conductive pieces connected by said first outer periphery conductive piece and at the inner periphery side of said first outer periphery conductive piece, said third straight conductive pieces being sequentially connected in series;

first and second terminals connected to both ends of said first conductive pattern, respectively;

means for connecting in series said first, second and third conductive patterns from said second terminal; and

a third terminal connected to one end of a series circuit of said first, second and third conductive patterns of which the other end is connected to said second terminal.

4,410,854

FLAME IONIZATION DETECTOR

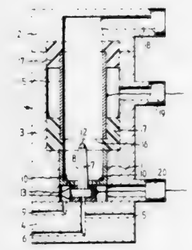
Armin Kroneisen, Frankfurt, and Gerd Zornig, Steinbach, both of Fed. Rep. of Germany, assignors to Hartmann & Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,332

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027863

Int. Cl.³ G01N *27/62*

U.S. Cl. 324—468 **7 Claims**



1. A flame ionization detector, comprising:

a cylindrical case having a bottom part and a hollow interior;

first duct means for supplying fuel gas and a measuring gas, and mixing same;

a nozzle member having a internal duct of from 0.3 mm to 0.5 mm and being connected to the first duct means for receiving therefrom the fuel gas as mixed with the measuring gas, said member being of a cylindrical or conical outer configuration with a cone angle not exceeding 14° and having a platinum metal type tip of a conical configuration with a cone angle not exceeding 90°, but larger than the cone angle of the member itself, the base of that conical member having a diameter not exceeding 1 mm;

a tubular target electrode disposed inside said case in concentric relation to said nozzle member, the nozzle tip being disposed near a lower end of the target electrode at a distance therefrom at less than approximately 15 mm, but penetrating the electrode not deeper than approximately 3 mm;

means for supplying voltage to said target electrode and said nozzle member, the target electrode and the nozzle member being insulated from each other; and

means for supplying combustion air to said case.

4,410,855

ELECTRONIC ANALOG SWITCHING DEVICE

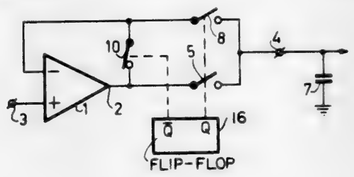
Michael J. Underhill, Horsham, England, and Nicolaas J. M. Molle, Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,666

Claims priority, application United Kingdom, Sep. 5, 1980, 8028731

Int. Cl.³ H03K *17/16*, *17/687*; G11C *27/02*

U.S. Cl. 328—151 **2 Claims**



1. An electronic analog switching device, comprising an input terminal, an output terminal, a differential voltage ampli-

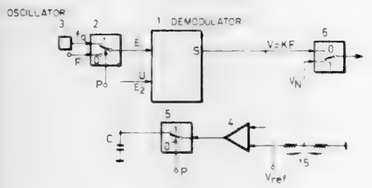
fier having an inverting input, a non-inverting input and an output, a first on-off switch connected between the amplifier output and the output terminal, a feedback circuit from the output of the amplifier to its inverting input, and control means for controlling the "on" and "off" states of the first switch, the input terminal being connected to the non-inverting input of the amplifier; characterized in that the feedback circuit comprises a first feedback path connected directly between the amplifier output and its inverting input and a second feedback path comprising a second on-off switch connected directly between the inverting input and the output terminal, said first feedback path comprising a third on-off switch, in which said second and third switches are controllable by the control means such that all three switches are switched "on" and "off" synchronously, said second switch in phase with the first switch and said third switch in antiphase with said first and second switches, wherein the third switch presents an "off" impedance in the first feedback path which is high relative to the combined "on" impedance of the first and second switches and which third switch presents an "on" impedance which is low relative to the "off" impedance of the first and second switches and also to the input impedance of the inverting input of the amplifier.

4,410,856

FREQUENCY DEMODULATOR HAVING AUTOMATIC GAIN CONTROL

Francois van Zanten, Paris, France, assignor to Thomson - CSF, Paris, France

Filed Dec. 17, 1980, Ser. No. 217,235
Claims priority, application France, Dec. 21, 1979, 79 31485
Int. Cl.³ H03D *3/00*; H04N *9/50*
U.S. Cl. 329—50 **6 Claims**



1. A frequency demodulation device for supplying a voltage proportional to a frequency to be demodulated, comprising

a source (3) of a reference frequency,

a phase comparator (7) having a first input, a second input, and an output,

an oscillator (8) having a first control input for receiving a first voltage, a second control input for receiving a second voltage, and an output connected to the second input of the phase comparator, said oscillator being adapted to supply at its output a frequency proportional to the ratio between said first and second voltages, said second control input being connected to the output of the phase comparator,

a feedback loop between the output of the phase comparator and the first control input of the oscillator, this loop comprising a differential amplifier, a switching means and a storing means; said amplifier having a first input connected to the output of the phase comparator, a second input connected to a reference voltage, and an output supplying an output voltage to said storing means; said storing means being adapted for storing a voltage and for delivering the stored voltage to the first input of the oscillator; said switching means being controllable for opening or closing the feedback loop;

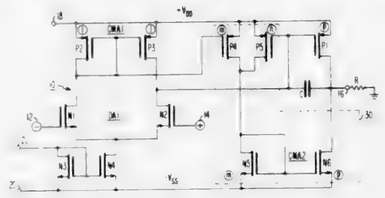
sampling means adapted to connect the reference frequency source to the first input of the phase comparator and to activate the switching means to close the loop, during sampling time intervals, and adapted to apply a frequency to be demodulated to the first input of the phase comparator and to activate said switching means to open the feedback loop outside said sampling time intervals.

4,410,857

OPERATIONAL AMPLIFIER WITH FEED-FORWARD COMPENSATION CIRCUIT

John A. Olmstead, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 28, 1981, Ser. No. 258,406
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—253 **9 Claims**



1. An amplifying circuit including:

differential amplifying means having first and second input terminals for receiving input signals therebetween, and having first and second output connections for supplying respective signals thereat, each of which signals includes a quiescent current portion and a portion responsive to said input signals, said differential amplifying means including

constant current generating means for supplying said quiescent current;

current mirror amplifying means having input and first output connections to which said first and second output connections of said differential amplifying means respectively connect, and having a common connection connected for receiving operating potential;

a first transistor having input and output electrodes, and having a common electrode connected to receive said operating potential;

capacitance means connected between the input and output electrodes of said transistor; and

means for coupling signals at the second output connection of said differential amplifying means to the input electrode of said first transistor; wherein the improvement comprises:

a further output connecton of said current mirror amplifying means, the current supplied by said further output connection being of lesser magnitude than the current supplied by first output connection thereof;

further current mirror amplifying means having an input connection to which the further output connection of said current mirror amplifying means connects, having an output connection connected to the output electrode of said first transistor, and having a common connection connected for receiving a reference potential; and

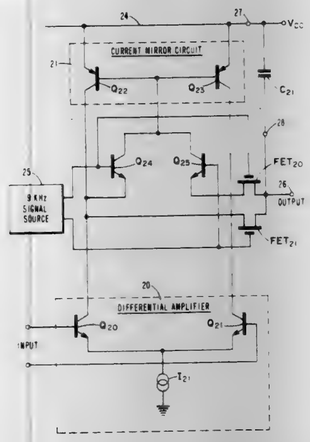
a second transistor of like conductivity type to that of said first transistor, having an input electrode to which signals at the second output connection of said differential amplifying means are coupled, having a common electrode connected to receive said operating potential, and having an output electrode connected to the further output connection of said current mirror amplifying means.

4,410,858

ELECTRONIC CIRCUIT INCLUDING A CURRENT MIRROR CIRCUIT

Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 22, 1981, Ser. No. 276,161
Claims priority, application Japan, Jul. 11, 1980, 55-94714
Int. Cl.³ H03F *3/45, 3/18*
U.S. Cl. 330—257 **2 Claims**



1. An electronic circuit having signal input and output terminals, said electronic circuit comprising:

a differential amplifier having at least one input terminal and a pair of output terminals, the input terminal being coupled to said signal input terminal;

a first transistor having base, emitter and collector electrodes, the collector electrode being coupled to one of said differential amplifier output terminals;

a second transistor having base, emitter and collector electrodes, the collector electrode being coupled to the other of said differential amplifier output terminals, the base electrode being coupled to the base electrode of said first transistor; said emitter electrodes of said first and second transistors being coupled together to a source of potential;

first switching means for connecting the base electrode of said first transistor to the collector electrode of said first transistor during a first time period, and to the collector electrode of said second transistor during a second time period;

second switching means for connecting said signal output terminal to the collector electrode of said second transistor during said first time period; and to the collector electrode of said first transistor during said second time period; and,

control means for cyclically controlling the switching of said first and second switching means.

4,410,859

SIGNAL AMPLIFIER CIRCUIT ARRANGEMENT WITH OUTPUT CURRENT LIMITING FUNCTION

Hisao Kuwahara, Kamakura, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 117,278, Jan. 31, 1980. This application Oct. 30, 1981, Ser. No. 316,633
Claims priority, application Japan, Feb. 5, 1979, 54/12060
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—298 **5 Claims**

1. A signal amplifier circuit arrangement comprising:

an input amplifying circuit having a current mirror load circuit comprised of first and second transistors of a first conductivity type each having an emitter, collector and base, said emitters of said first and second transistors being connected to a power supply terminal, said bases of said first and second transistors connected to each other and said collector of said second transistor being coupled to said base of said second transistor;

output transistor means having first, second and third terminals respectively corresponding to emitter, collector and base of a transistor of the first conductivity type, said third terminal of said output transistor means being connected to said collector of said first transistor and said second terminal of said output transistor means being connected to an output terminal of said signal amplifying circuit to be connected to a load;



a current detection resistance element connected between said first terminal of said output transistor means and said power supply terminal; and

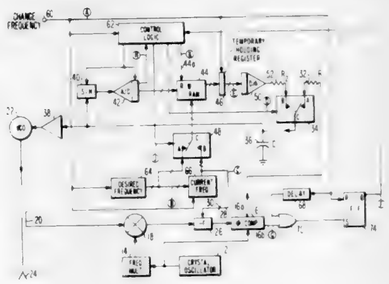
a diode means connected between said collector of said second transistor and said first terminal of said output transistor means, said diode means being rendered conductive when a voltage drop across said current detection resistance element is greater than a sum of emitter-base voltage of said first transistor and cut-in voltage of said diode.

4,410,860

FREQUENCY SYNTHESIZER WITH LEARNING CIRCUIT

Ronald W. Kipp, Croydon, Pa., and Henry C. Johnson, Neshanic, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 31, 1980, Ser. No. 221,576
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—1 A **10 Claims**



1. A frequency synthesizer, comprising:

a phase locked loop including a voltage controlled oscillator (VCO) having a control voltage terminal, a phase comparator, a frequency divider having a control input terminal and coupled at a signal input terminal to an output of said VCO and coupled at a signal output terminal to an input of said phase comparator, a source of a reference oscillation coupled to the other input of said phase comparator, means providing a first path for a first control voltage signal from the output of said phase comparator to the control voltage terminal of said VCO, and a source of an output frequency command signal coupled to said control

input terminal of said frequency divider for providing as a function of time signals indicative of various frequencies to be produced by said VCO including, from time to time, a signal indicative of a given frequency;

said phase comparator including means producing a control signal different than said first control voltage signal when the input signals supplied thereto are in phase;

means responsive to the occurrence of said first control voltage signal when said given frequency is being produced by said VCO for storing a signal indicative of the value of said first control voltage signal;

means providing a second path between said storing means and said control voltage terminal of said VCO for providing from said storing means to said terminal of said VCO a second control voltage signal thereto; and

means responsive to a change of said output frequency command signal to provide a signal indicative of said given frequency following a signal indicative of some other frequency to interrupt said first path and momentarily connect said second path to pass to said VCO terminal said second control voltage signal having the value of said first control voltage signal when said given frequency was previously produced to cause said VCO to again produce said given frequency.

4,410,861

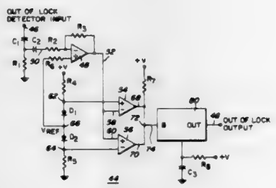
OUT OF LOCK DETECTOR FOR A SAMPLE AND HOLD PHASE LOCK LOOP

Gerald C. Werner, Newport Beach, Calif., assignor to Motorola, Inc., Del.

Continuation of Ser. No. 126,622, Mar. 3, 1980, abandoned. This application Dec. 8, 1982, Ser. No. 447,837

Int. Cl.³ H03L *7/06*

U.S. Cl. 331—25 **5 Claims**



1. An improved out of lock detector for use in a phase lock loop having a sample and hold phase detector which generates a step change in output voltage level in response to a detected phase difference, said out of lock detector comprising:

(a) amplifier means, having an input and an output, for amplifying signals coupled to the input;

(b) coupling means, having an input connected to the phase detector, for coupling to the amplifier means a differentiated signal representative of the rate of change of the output voltage level of the phase detector;

(c) comparator means coupled to the amplifier means output for comparing the signal amplified by the amplifier means to predetermined upper and lower limits and generating an out of lock signal when the amplified signals exceed the predetermined limits.

4,410,862

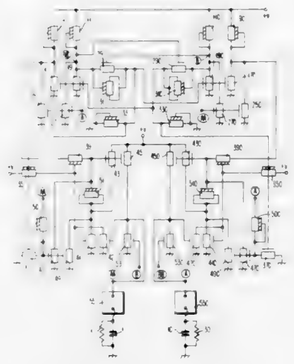
MOSFET MULTIVIBRATOR WITH DUAL TIMING

Paul C. Tien, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1981, Ser. No. 262,728

Int. Cl.³ H03K *3/353*

U.S. Cl. 331—113 R **8 Claims**



1. A cross-coupled multivibrator circuit having two sides and having solid-state active elements and circuit impedance elements fabricated on a substrate wherein the improvement comprises said circuit having a passive timing circuit on said substrate adapted to control connection of a charging potential to a capacitor separate from said substrate for a time sufficient to fully charge said off-substrate capacitor, said on-substrate timing circuit then bringing the control terminal of an active element on said substrate to a status to disconnect said charging potential from said off-substrate capacitor, said off-substrate capacitor being connected to a resistance and to elements in said multivibrator effective when said off-substrate capacitor is discharged through said resistance a predetermined amount to reverse the status of the control terminal of an active element in said cross-coupled multivibrator and thereby switch said multivibrator.

4,410,863

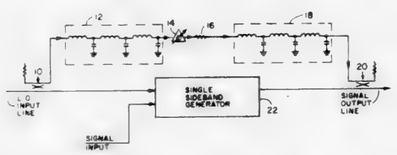
SINGLE SIDEBAND GENERATOR WITH LEAKAGE SIGNAL CANCELLATION

Ninalbo G. DaMocogno, Winchester; Donald A. Siok, Westford; Denis L. Bourassa, Methuen, and William R. Connerney, Needham, all of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1981, Ser. No. 246,499

Int. Cl.³ H03C *1/06*

U.S. Cl. 332—37 R **5 Claims**



1. In a network having a main generator which has two inputs and an output, its output producing an output signal which is indicative of an input signal on one of its inputs mixed with a local oscillator frequency signal input connected to its other input; the improvement comprising a bypass circuit having an input connected to said local oscillator frequency signal input and an output connected to the output of said main generator; said main generator having an undesirable leakage signal due to the local oscillator frequency signal input; said bypass circuit generating a compensating signal output which is equal in magnitude and 180° out of phase with said undesirable leakage signal; said bypass circuit comprises: a first coupler connected to the local oscillator input; a phase adjustment circuit; a length of transmission line connected between said first coupler and said phase adjustment circuit; said line being selected of a length to simulate electrical travel through said main generator; and a second directional coupler connected between said phase adjustment circuit and the output of said main generator whereby said bypass circuit can be empirically set for generating a compensating signal output equal in amplitude and opposite in phase to said undesirable leakage signal.

4,410,864

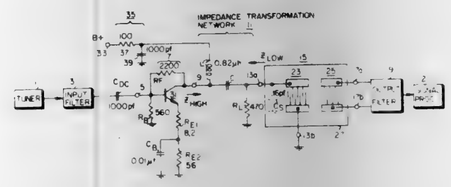
IMPEDANCE TRANSFORMATION NETWORK FOR A SAW FILTER

Max W. Muterspaugh, and Gary A. Whitledge, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 20, 1981, Ser. No. 285,237

Int. Cl.³ H03H *7/38*

U.S. Cl. 333—32 **6 Claims**



1. Apparatus comprising:

an amplifier having an input terminal for receiving an input signal and an output terminal at which an output signal is produced;

a surface wave device having first and second input terminals, said first input terminal being connected for receiving an input signal, said second input terminal being connected to a point of AC ground potential, and an output terminal at which an output signal is produced, said surface wave device providing a predetermined bandpass filter characteristic for filtering said input signal to produce said output signal, said surface wave device exhibiting a capacitance C_S between its input terminals;

impedance transformation means coupled between said output terminal of said amplifier and said first input terminal of said surface wave device including an inductor L connected between said output terminal of said amplifier and said point of AC ground potential; and a capacitor C connected between said first input terminal of said surface wave device and having a value selected so that the effective capacitance C_E of the series combination of said capacitor C and said capacitance C_S is substantially different from said capacitance C_S and

a resistance element directly connected between said first input terminal of said surface wave device and said point of AC ground potential without intervening elements having significant impedance in said passband of said surface wave device;

said effective capacitance C_E and said inductor L forming a parallel resonant circuit between said output terminal of said amplifier and said point of AC ground potential having a resonant frequency within said passband.

4,410,865

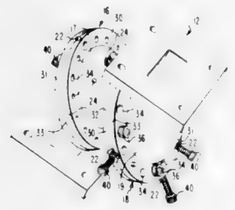
SPHERICAL CAVITY MICROWAVE FILTER

Frederick A. Young, and Edward L. Griffin, both of Huntington Beach, Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 24, 1982, Ser. No. 351,811

Int. Cl.³ H01P *1/208, 7/06*

U.S. Cl. 333—208 **2 Claims**



1. A tri-mode spherical cavity microwave filter for use in a microwave system having electromagnetic energy propagating therethrough, said filter comprising:

two tandemly disposed generally spherical bodies each of which defines a spherical cavity which is adapted to support three identical, mutually orthogonal modes of said electromagnetic energy, said identical modes being three mutually orthogonal orientations of one mode;

one of said spherical cavities having an input aperture adapted to receive said electromagnetic energy, said input aperture being adapted to transfer said electromagnetic energy from a mode residing outside said one cavity into another mode residing within said one cavity;

another of said spherical cavities having an output aperture adapted to transmit said electromagnetic energy, said output aperture being adapted to transfer said electromagnetic energy from a mode residing within said another cavity into another mode residing outside said another cavity;

a cavity coupling aperture connecting said spherical cavities, said aperture being adapted to transfer said electromagnetic energy from a mode residing in said one cavity into another mode residing in said another cavity;

each of said spherical cavities having a plurality of cavity tuning holes and a like plurality of cavity tuners extending into said cavity through said cavity tuning holes, each cavity tuner serving to independently tune a respective one of said mutually orthogonal modes to the filter resonant frequency; and

each of said spherical cavities also having a plurality of coupling tuning holes and a like plurality of coupling tuners extending into said cavity through said coupling tuning holes, each coupling tuner serving to transfer said electromagnetic energy from one mode to another mode both of which residing within the same spherical cavity.

4,410,866

ANTENNA TRANSDUCER FOR A TRANSMISSION-RECEPTION ANTENNA

Nhu Bui-Hai, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jul. 29, 1981, Ser. No. 287,946

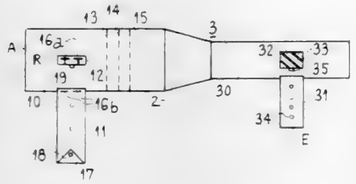
Claims priority, application France, Jul. 31, 1980, 80 16920

Int. Cl.³ H01P *1/213*

U.S. Cl. 333—135 **6 Claims**

1. An antenna transducer comprising, in series, a first polarizing duplexer for working in a first frequency band, a transition element formed from a variable-section guide and a second polarizing duplexer for working in a second frequency band; the first polarizing duplexer comprising: a main waveguide having a first end for coupling to the radiating part of an

antenna, a second end coupled to the transition element and n lateral polarizing openings (n being a whole even number greater than 0 and less than 6), n auxiliary guides terminating respectively at the n lateral openings, dipoles resonating at the mean frequency of the second frequency band, placed in the n



lateral openings and a set of m filters (m being a whole number at least equal to 1), placed in the main guide between lateral openings and the second end, at a distance from the n lateral openings of about (λ/4) (λ being the wavelength in the first frequency band) and forming a short-circuit for the first frequency band.

4,410,867

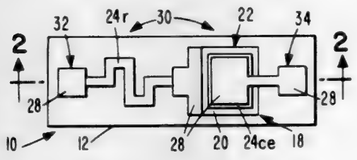
ALPHA TANTALUM THIN FILM CIRCUIT DEVICE

Frank R. Arcidiacono, North Andover, and Gerard J. Koerckel, Andover, both of Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 974,162, Dec. 28, 1978, Pat. No. 4,251,326. This application Oct. 17, 1980, Ser. No. 197,878

Int. Cl.³ H03H *1/02, 7/06*

U.S. Cl. 333—172 **7 Claims**



1. A thin film capacitor, which comprises:

an alpha tantalum base electrode having first and second adjacent portions;

a capacitor dielectric formed on only the first portion of the base electrode such that the second portion of the base electrode can be direct-connected to an electrical conductor; and

a capacitor counterelectrode formed on the capacitor dielectric, the capacitor counterelectrode including a layer of tantalum nitride formed in direct contact with a first portion of the capacitor dielectric, the layer of tantalum nitride extending over the first portion of the capacitor dielectric from adjacent one end of the dielectric toward the second portion of the base electrode in essentially parallel relationship to the first portion of the base electrode and terminating in spaced relationship to the second portion of the base electrode such that the tantalum nitride layer and the second portion of the base electrode are separated by a second portion of the capacitor dielectric.

4,410,868

DIELECTRIC FILTER

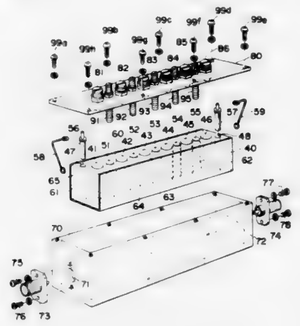
Takeshi Meguro; Yukio Ito, both of Kawasaki, and Bun-ichi Miyamoto, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 1, 1981, Ser. No. 279,461

Claims priority, application Japan, Jul. 7, 1980, 55-92380

Int. Cl.³ H01P *1/205, 1/208, 7/04, 7/06*

U.S. Cl. 333—202 **15 Claims**



1. A dielectric filter comprising a dielectric block having a plurality of holes at predetermined intervals, and a conductor film over the surface of the dielectric block including the interior surfaces of the holes, constituting resonators having resonance frequencies based on the depths of the holes, wherein an air gap for adjusting at least one of the coupling between the resonators and their resonance frequencies is provided in the dielectric block between the holes constituting the resonators, and further comprising an adjusting member mounted for movement in and out of the air gap.

4,410,869

DIELECTRIC IMPREGNATING FLUID AND ITS USE

Alfons Klein, Duesseldorf; Karlfried Wedemeyer, Cologne; Lothar Havenith, and Rolf Kron, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1982, Ser. No. 361,720

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115545

Int. Cl.³ H01B *3/20;* **C07C** *43/205;* **H01G** *4/22*

U.S. Cl. 336—94 **30 Claims**

1. In an apparatus having a dielectric, the improvement wherein said dielectric comprises an isomeric mixture of ditolyl ethers.

4,410,870

SEMICONDUCTOR STRAIN GAUGE

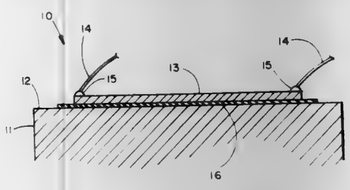
Roger W. Pryor, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 1, 1982, Ser. No. 364,556

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—2 **6 Claims**

1. A semiconductor strain gauge comprising an elastic member having a surface subject to stress; a semiconductor substrate composed of an amorphous semiconducting material secured to said surface; and electrical connection means on



said amorphous material for conducting a signal indicative of strain.

4,410,871

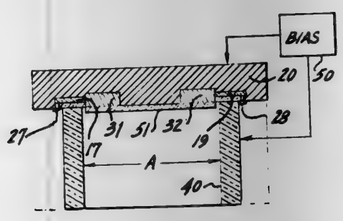
SEMICONDUCTOR TRANSDUCERS EMPLOYING ION IMPLANTATION TERMINAL CONFIGURATIONS

Joseph R. Mallon, Franklin Lakes, and Anthony D. Kurtz, Englewood, both of N.J., assignors to Kulite Semiconductor Products, Ridgefield, N.J.

Filed Aug. 28, 1981, Ser. No. 297,250

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—5 **10 Claims**



1. A semiconductor transducer for responding to the magnitude of an applied force, comprising:

a relatively thin diaphragm of a semiconductor material of a given cross section and having located in an active central area at least one piezoresistive sensor which is fabricated integrally with said diaphragm

terminal areas connected to said piezoresistive sensor and buried within said diaphragm by ion implantation, with said terminal areas extending from said central area towards the periphery of said diaphragm, and with the resistance of said terminal areas being substantially lower than the resistance of said piezoresistive sensor and having a different temperature coefficient, and an annular housing coupled to said diaphragm with the central aperture of said housing surrounding said active area and with the sidewalls of said housing secured to said diaphragm beneath said terminal areas.

4,410,872

ELECTRICAL THICK-FILM, FREE-STANDING, SELF-SUPPORTING STRUCTURE, AND METHOD OF ITS MANUFACTURE, PARTICULARLY FOR SENSORS USED WITH INTERNAL COMBUSTION ENGINES

Günther Stecher, Ludwigsburg, and Herbert Zimmermann, Freiberg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,892

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1980, 3015356

Int. Cl.³ H01C *10/10*

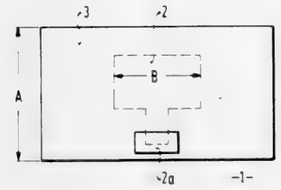
U.S. Cl. 338—114 **6 Claims**

1. Article of manufacture comprising

a substrate (**1**) comprising at least one of the materials of the group consisting of: ceramic; glass; enameled metal;

a self-supporting, free-standing membrane (**3**) comprising at least one of the materials of the group consisting of: glass ceramic; crystallized glass;

said membrane being formed as a solidified free-standing layer applied by thick-film technology over a filler, which has been removed, secured to the substrate and overlying



a portion thereof, leaving, upon removal of the filler, a space (**8**) defining a chamber between the free-standing layer and the substrate,

said free-standing layer being applied over the substrate in areal form and bonded to the substrate, essentially throughout its marginal extent, leaving open a window (**2a**) which is small in relation to the areal extent of the free-standing layer.

4,410,873

ROTARY VARIABLE RESISTOR

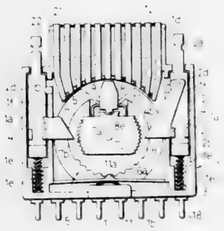
Junichi Kuratani, Miyagi, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Nov. 12, 1981, Ser. No. 320,517

Claims priority, application Japan, Nov. 12, 1980, 55-161649[U]

Int. Cl.³ H01C *10/30*

U.S. Cl. 338—160 **5 Claims**



1. A rotary variable resistor comprising a case; two levers arranged on opposite sides of said case; two cams each having one end pivotally mounted on a respective one of said levers, said cams each being formed with an indent in a position close to the pivotal connection to the respective lever; two cam keepers formed in said case and adapted to engage a respective one of said indents; a slider holder carrying a toothed wheel rotatably arranged in a central part of said case; sliders mounted on said slider holder and adapted to engage arcuate resistors formed on an insulating base plate; said levers being vertically moved to cause the edge portions of the corresponding cam to pivot said toothed wheel and said slider holder and thus cause said sliders to slide on said arcuate resistors, whereby a resistance value of said variable resistor can be varied.

4,410,874

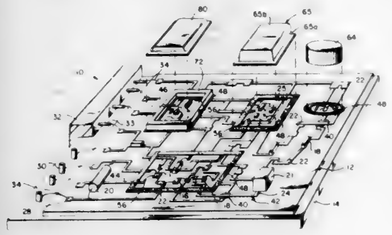
LARGE AREA HYBRID MICROCIRCUIT ASSEMBLY

Robert Y. Scapple, Los Angeles; Frank S. Keister, Culver City; Robert G. Grieger, Marina Del Ray, and Richard P. Himmel, Mission Viego, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Division of Ser. No. 104,471, Dec. 17, 1979, Pat. No. 4,372,037, which is a continuation of Ser. No. 774,298, Mar. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 994,787, Mar. 3, 1975, abandoned. This application Jun. 17, 1982, Ser. No. 389,302

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—307 **2 Claims**



1. A large area hybrid microcircuit assembly for performing an electrical function comprising:

a thermally conductive substrate of electrically insulating material;

a plurality of thick film multilayered electrical leads extending within and across the surface of said substrate for forming an interconnecting electrical circuit;

a plurality of electronic components secured directly to said substrate and electrically coupled to said interconnecting electrical circuit for effecting said electrical function; and

means defining thick film hermetic seals at one or more selected areas directly on said substrate and enclosing selected ones of said electronic components for protecting said selected electronic components from the environment surrounding said selected areas, said hermetic seals means further comprising,

means defining a closed loop of thick film dielectric material placed over input, output and ground leads extending from said interconnecting electrical circuit and terminating within each of said selected areas and electrically coupled to at least one of said selected electronic components,

means defining a closed loop of thick film sealing metal placed over said dielectric material closed loop means and consisting of solderable material which is compatible with said dielectric material,

means defining a solder on said sealing metal closed loop means and consisting of a material sufficiently ductile for militating against fracture and leakage of portions of said hermetic seals, and

means defining an enclosure cover having sides sealed to said sealing metal closed loop means by said solder means, comprising

means defining a closed ring frame sealed to said sealing metal closed loop by said solder means and having a sealing surface extending above said selected electronic components within said selcted area;

means defining a second solder on said closed ring frame means and consisting of a material capable of forming a hermetic seal and of withstanding thermal and mechanical shock and repeated temperature cycles such as from −65° to 150° C., with a melting point lower than that of said ring frame to metal closed loop solder means; and

means defining a cover sealed to said sealing surface of said closed ring frame means by said second solder means.

4,410,875

RELEASING CIRCUIT AND CHECKING CIRCUIT FOR A MOTOR VEHICLE SAFETY DEVICE

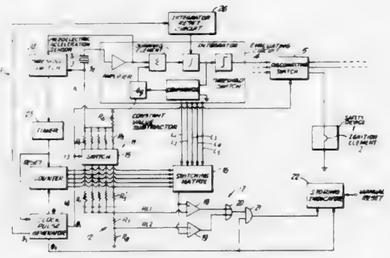
Johann Spies, Schiesstätte 1c, 8068 Pfaffenhofen, and Alfons Wöhrl, Sebastian-Kneipp-Str. 3, 8898 Schrobenhausen, both of Fed. Rep. of Germany

Continuation of Ser. No. 12,369, Feb. 15, 1979. This application Feb. 3, 1982, Ser. No. 345,363

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808872

Int. Cl.³ B60R *21/08*

U.S. Cl. 340—52 H **12 Claims**



1. Releasing circuit for a safety device in motor vehicles, of the type wherein an acceleration sensor provides a signal which corresponds to the deceleration of the motor vehicle when it collides with an obstacle, wherein an evaluating circuit evaluates the output signal of said acceleration sensor, and wherein a switch which, starting from a certain release value of an output signal of said evaluating circuit releases said safety device through an ignition element, and a checking circuit for said releasing circuit with a check pulse generator for providing of check pulses for said evaluating circuit, and an error indicating device connected to said checking circuit, the improvement wherein said checking circuit comprises a reference pulse generator means for providing reference pulses which assume characteristic values corresponding to the check pulses, and a comparator means connected to said error indicating device for comparing the check pulses passing through said evaluating circuit and the reference pulses and wherein means for supplying clock pulses is provided, said check pulse generator comprising a controllable switch operating under control of said clock pulses.

4,410,876

D.C. STABILIZED ANALOG-TO-DIGITAL CONVERTER

Kiyoshi Sawagata, Isehara, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 836,146, Sep. 23, 1977, abandoned. This application Jan. 19, 1979, Ser. No. 4,988

Claims priority, application Japan, Sep. 27, 1976, 51-115569

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 CC **14 Claims**

1. A D.C. stabilized analog-to-digital converter of the parallel-serial type, comprising:

means for supplying an analog signal consisting of a video signal which includes video portions and horizontal blanking intervals and which is to be converted to a corresponding digital signal;

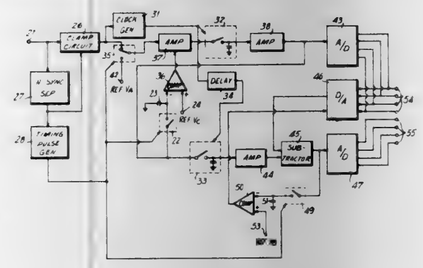
coarse parallel converting means responsive to the supplied analog signal for converting said analog signal to a coarse digital representation thereof;

re-converting means for re-converting said coarse digital signal representation to a coarse analog signal;

means for determining the difference between said coarse analog signal and said supplied analog signal;

fine parallel converting means responsive to the determined difference for converting said difference to a fine digital representation of said supplied analog signal;

means operative periodically during horizontal blanking intervals for supplying a reference signal to said coarse converting means in which said reference signal is converted to a coarse digital signal representation thereof, and said re-converting means reconverts said coarse digital signal representation of said reference signal to a coarse analog reference signal with said difference then being the difference between said coarse analog reference signal and said reference signal;



means for storing said difference produced in response to said reference signal at least during a succeeding one of said video portions;

comparator means for comparing the stored difference with a fixed reference level to produce a fixed D.C. compensating signal as a function of the comparison;

and means for employing said D.C. compensating signal in said re-converting means during each said video portion to compensate for D.C. drift.

4,410,877

METHOD OF CODING DATA BITS ON A RECORDING MEDIUM, ARRANGEMENT FOR PUTTING THE METHOD INTO EFFECT AND RECORDING MEDIUM HAVING AN INFORMATION STRUCTURE

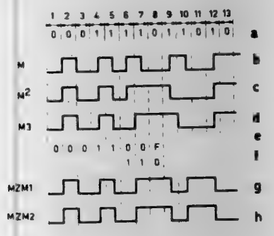
Marino G. Carasso; Wilhelm J. Kleuters, and Johannes J. Mons, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,338

Claims priority, application Netherlands, Jun. 16, 1980, 8003474

Int. Cl.³ H03K *13/02*; G11B *5/09*

U.S. Cl. 340—347 DD **4 Claims**



1. A method of encoding a stream of data bits of a first and second type as level transitions or absence thereof in consecutive bit cells each of which is associated with a respective one of said data bits in said stream, said stream being comprised of consecutive words of a first and second type, said words of said first type being defined by one or more consecutive bits of said second type and said words of said second type being defined by one data bit of said second type followed by one or more consecutive bits of said first type, said method comprising the steps of:

producing a level transition in the middle of an associated bit cell upon occurrence of a data bit of said first type in said stream,

producing a level transition in the beginning of an associated bit cell upon occurrence of a data bit of the second type in said stream unless said second type data bit immediately follows a data bit of said first type in said stream, in which event no transition is produced in the bit cell associated with that second type bit, and

upon occurrence of a word of said second type having an even number of data bits of said first type, producing a transition at the boundary between the two bit cells associated with the last and second last first type data bit of that word while suppressing the production of a transition in the middle of each of said two bit cells so as to remove d.c. components therefrom.

4,410,878

DIGITAL SIGNAL TRANSMISSION

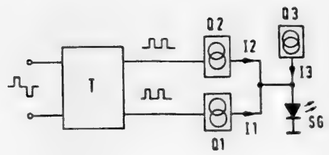
Ralf-Michael Stach, Auenwald, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,266

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944459

Int. Cl.³ H03K *13/24*

U.S. Cl. 340—347 DD **7 Claims**



1. In a method for transmitting digital signals by means of a light signal generator by initially converting a double current pulse train, under control of bit clock pulses and before transmission, into a first unipolar pulse train composed of pulses corresponding to all positive transmission pulses and into a second unipolar pulse train composed of pulses corresponding to all negative transmission pulses, the improvement comprising: employing first and second separately controllable current sources for code converting the first and second pulse trains independently of the duration of the bit clock pulses for producing a first converted current signal having a first amplitude in correspondence with each pulse of the first pulse train and a second converted current signal having a second amplitude in correspondence with each pulse of the second pulse train, the second amplitude differing from the first amplitude, employing a third separately controllable current source for producing a third current signal in correspondence with the absence of any pulse of either pulse train and having a third amplitude greater than zero and less than the first and second amplitudes, and applying the first, second and third signals to a light signal generator for producing a multilevel light output signal corresponding to the sum of the first, second and third signals and in which the first and second amplitudes corresponding, respectively, to the first and second unipolar pulse trains and the third amplitude vary the output signal in the same polarity direction.

4,410,879

HIGH RESOLUTION DIGITAL-TO-ANALOG CONVERTER

Linley F. Gumm, Beaverton, and Steven R. Morton, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 31, 1980, Ser. No. 202,557

Int. Cl.³ H03K *13/02*

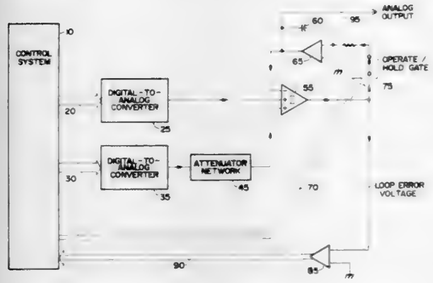
U.S. Cl. 340—347 DA **6 Claims**

1. A high-resolution digital-to-analog converter for convert-

ing a multiple-bit digital signal to its corresponding analog representation, comprising:

a first DAC for converting the higher order bits of said digital signal to a first analog value;

a second DAC for converting the lower order bits of said digital signal to a second analog value, wherein the lower order bits converted by said second DAC and the higher order bits converted by said first DAC overlap by at least one bit;



means for scaling said second analog signal to said first analog value in accordance with the quantization weight of the lower order bits;

means for combining said first analog value with the scaled second analog value to produce said analog representation; and

means for controlling said first and second DAC's and said combining means to permit mathematical carry and borrow operations of said DAC's without causing a change in said analog representation during said mathematical carry and borrow operations.

4,410,880

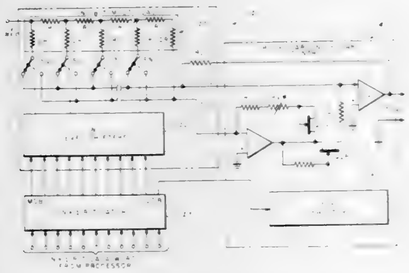
DIGITAL-TO-ANALOG CONVERTER AND ANALOG-TO-DIGITAL CONVERTER WITH CONTROLLABLE BI-POLAR AND UNI-POLAR CAPABILITY

Roy A. Zaborowski, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 25, 1981, Ser. No. 247,448

Int. Cl.³ H03K *13/02*

U.S. Cl. 340—347 DA **1 Claim**



1. A uni-polar/bi-polar digital-to-analog converter comprising

digital-to-analog converter means having first and second current bus outputs,

first and second current-to-voltage converters coupled to said first and second current bus outputs respectively,

switching means coupling the output of said second current-to-voltage converter to the input of said first current-to-voltage converter,

said switching means comprising a field effect transistor switch,

said second current-to-voltage converter comprising an operational amplifier and a feed-back path connecting the output of said operational amplifier to its input,

said feed-back path including a continuously conducting field effect transistor matched in resistance to said field effect transistor switch over the operating temperature range of said uni-polar/bi-polar digital-to-analog converter,

said field effect transistor switch and said field effect transistor comprises a dual integrated FET with matched channel characteristics, and

control means for selecting uni-polar or bi-polar operation, said control means controlling the conductivity of said field effect transistor switch in accordance with the selection of uni-polar or bi-polar operation.

4,410,881

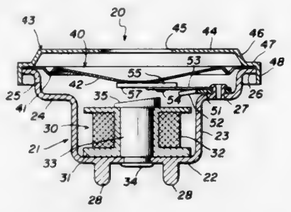
ELECTRIC HORN WITH MEANS FOR CONTROLLING CURVATURE OF THE STRIKER CARRIER

Gerard Seyler, Elgin, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Apr. 20, 1981, Ser. No. 255,869

Int. Cl.³ G08B *3/10*; G10K *9/12*

U.S. Cl. 340—388 **5 Claims**



1. An improved horn for generating an audible signal comprising a housing formed of magnetically permeable material and being open at one end thereof, a diaphragm of relatively flexible material at said one end and attached to said housing, an electromagnet in said housing and attached thereto and spaced from said diaphragm, a control member immovably carried by said housing and projecting inwardly therefrom, a resilient flexible carrier member supported by said housing adjacent to and engageable with said control member, and a striker member of magnetically permeable material mounted on said carrier member between said electromagnet and said diaphragm and operatively associated with said electromagnet for movement away from and strikingly against said diaphragm to generate noise, said carrier member engaging said control member along an increasing area of said carrier member during movement of said carrier member away from said diaphragm for imparting to said carrier member a predetermined curvature for increasing the potential energy thereof.

4,410,882

SYSTEM FOR MONITORING THE IGNITION FUNCTION OF RAPID EXTINGUISHING SYSTEMS

Lennart Claussen, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Continuation-in-part of Ser. No. 156,232, Jun. 3, 1980, abandoned. This application Mar. 15, 1982, Ser. No. 357,545

Claims priority, application Sweden, Jun. 13, 1979, 7905191

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—510 **4 Claims**

1. A fire sprinkler monitoring system comprising at least first and second groups of sprinkler actuators, each group positioned away from the other;

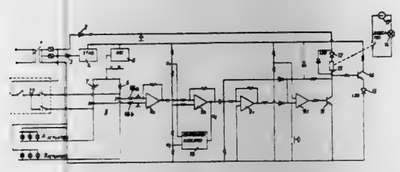
means connecting the first and second groups of actuators as first and second branches of a Wheatstone bridge circuit;

a first resistor connected in the bridge as a third branch;

a second resistor connected in the bridge as a fourth branch and variable for permitting balancing of the bridge;

the first and second group actuators having different effective load resistance in the bridge;

pulsed voltage source means connected as a first diagonal of the bridge for providing low power to the actuators undergoing monitoring;



first amplifying means connected as a second diagonal of the bridge for amplifying the bridge output;

second amplifying means connected at its input to the output of the first amplifying means for amplifying the output therefrom; and

comparator means connected to the output of the second amplifying means for indicating an unbalanced condition of the bridge during

(a) initial balancing of the bridge and

(b) upon occurrence of a fault in one of the actuators.

4,410,883

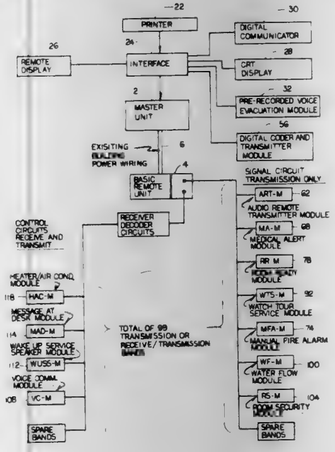
MULTIPLE ANNUNCIATION SYSTEM

Norman J. Swiston, Sr., 718 Delmar Rd., Glen Burnie, Md. 21061

Filed Apr. 9, 1981, Ser. No. 252,343

Int. Cl.³ G08B *1/08*; H04M *11/04*

U.S. Cl. 340—538 **15 Claims**



1. In a communication system for a building including a master unit and a plurality of remote units connected to said master unit by electrical power wiring extending throughout the building, said master unit and said plurality of remote units each being connected to receive or transmit signals over said electrical power wiring, the improvement comprising each of said remote units comprising a remote unit digital signal generating means for generating a respective predetermined remote unit digital coded frequency signal having a digital coded frequency signal value, remote unit signal transmitting means connected to said electrical power wiring for transmitting said respective remote unit digital coded frequency signal to said master unit over said electrical power wiring, a remote unit digital coded frequency signal cut off means including an input signal receiving means for deactuating said digital signal generating means and interrupting transmission of said digital coded frequency signal upon receipt of an alerting input signal by said input signal receiving means, said master unit comprising a signal interrogating means for interrogating and interpreting each of said remote unit digital coded frequency signals, to determine whether any interruption in transmission of one or more digital coded frequency signals has occurred, said signal interrogating means including:

a digital coded frequency signal receiving means connected to said electrical power wiring for receiving said digital coded frequency signals from each of said remote units,

a digital decoder means for converting each of said digital coded frequency signal values into respective remote unit actual binary values, signal comparator means for scanning each of said remote unit actual binary values and correlating same with respective remote unit reference binary values, and

alerting signal generating means for generating an alerting signal in respect of a remote unit when a reference binary value for said remote unit is not correlated with an actual binary value for said remote unit.

4,410,884

ALARM SYSTEM

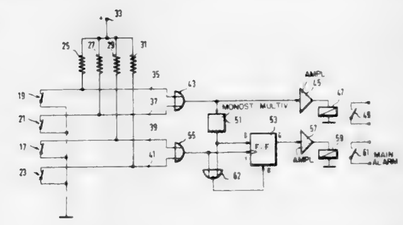
Bernd Heiland, Telgte, Fed. Rep. of Germany, assignor to Firma Aug. Winkhaus, Telgte, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,959

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1977, 2737324; Sep. 2, 1977, 2739636

Int. Cl.³ G08B *13/04, 25/00, 26/00, 29/00*

U.S. Cl. 340—545 **29 Claims**



1. In a building having an interior and an exterior, and at least one passage connecting said interior to said exterior, an alarm system for furnishing an alarm signal in response to unauthorized entry through said passage, comprising: first detector means located in the first predetermined position in said passage for sensing the presence of a person in the operative vicinity of said first detector means and furnishing a first detector output signal in response to a so-sensed presence; second detector means located in a second predetermined position preceding said first predetermined position in the direction from said exterior to said interior of said building for sensing the presence of a person in the operative vicinity of said second detector means and furnishing a second detector output signal in response to a so-sensed presence; and evaluation circuit means connected to said first and second detector means, for furnishing said alarm signal only if said second detector output signal is furnished prior to said first detector output signal, and alarm means for furnishing one alarm within the building in response to said second detector output signal and one alarm outside the building in response to said alarm signal, said alarm means and said evaluation circuit means being arranged to inhibit an alarm outside the building if only the first detector output signal is furnished and if the first

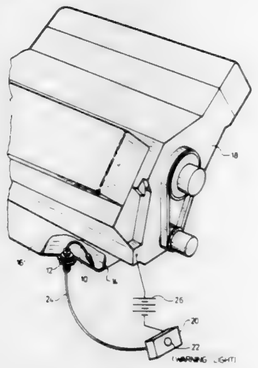
detector output signal is furnished prior to the second detector output signal.

4,410,885

CONDUCTIVE FLUID DETECTING METHOD AND APPARATUS

Stephen M. Stenstrom, P.O. Box 3531, Cambridge, Ontario, Canada

Filed Feb. 3, 1982, Ser. No. 345,245
Claims priority, application Canada, Dec. 23, 1981, 393,061
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—604 **12 Claims**



1. Apparatus for detecting the presence of a conductive fluid at the bottom of a chamber, comprising:

(a) an elongated flexible sensor probe adapted to project through an opening into the chamber, the flexible sensor probe having an outer end portion securely received in the opening and an inner end portion, the sensor probe being sufficiently resiliently flexible that the inner end portion depends against the bottom of the chamber and moves with an irregular motion relative to the bottom of the chamber as a result of movement of the chamber, the sensor probe having a first conductive electrode member extending from an outer end at the opening to an inner end and insulative means preventing contact between the first electrode member and the bottom of the chamber;

(b) monitor means to indicate the presence of the conductive fluid in the chamber; and

(c) connector means to electrically connect the monitor means to the first electrode member of the sensor probe and to a power source, whereby the presence of the condutive fluid at the inner end of the first electrode member activates the monitor means.

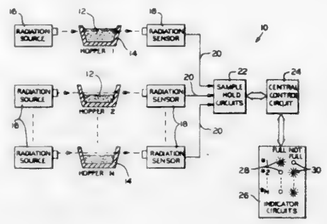
4,410,886

WALL BUILD-UP DETECTOR FOR A MULTI-POINT LEVEL INDICATOR

James V. Motsinger, Austin, Tex., assignor to Ramsey Engineering Company, St. Paul, Minn.

Filed Mar. 27, 1981, Ser. No. 248,072
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—617 **9 Claims**

1. An apparatus for indicating the build-up of material on the sides of a hopper alternately being filled and emptied, comprising: means for generating a material amount signal representing the amount of the material at an associated level in the hopper; a source of a reference signal representing a predetermined amount of material at the associated level, said predetermined amount of material corresponding to at least significant material build-up on the sides of the hopper at the associated level; and means responsive to said material amount signal and said reference signal for generating a first indication when the material amount is above said predetermined material amount



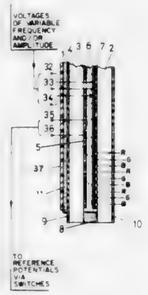
and a second indication when the material amount is below said predetermined material amount.

4,410,887

LARGE ELECTRONICALLY CONTROLLED LIQUID CRYSTAL DISPLAYS OF ONE OR MORE COLORS

Michael Stolov, and Adi Stolov, both of 25 Hapoel St., Hof-Yam, Herzilia, Israel

Filed Dec. 24, 1980, Ser. No. 219,952
Claims priority, application Israel, May 25, 1980, 60156
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—784 **17 Claims**



1. A large liquid crystal display comprising a common support, said common support being electrically and optically passive as to the display and as to the images displayed, said large display being directly viewable and comprising a plurality of independent liquid crystal display units individually mounted on said common support; each of said independent units comprising part of an overall larger predetermined image display, each said independent unit comprising electrode means with power leads corresponding in shape to its respective part of said overall larger display, each said unit being independently defined and separated from all of its companion units on said common support by sealing frame means; and said sealing frame means being sufficiently narrow that said overall larger image display appears to a viewer to be continuous and uninterrupted.

4,410,888

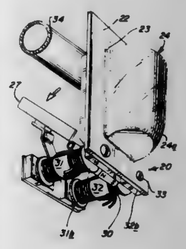
COMPONENT FOR MODULE FOR PRESENTING ALPHA NUMERIC OR LIKE INFORMATION

Guenther Selig, 2138 Rugen Rd., Glenview, Ill. 60025

Filed May 26, 1981, Ser. No. 267,022
Int. Cl.³ G08B *5/28*
U.S. Cl. 340—815.05 **12 Claims**

1. A component for a module adapted to selectively pass light to provide a portion of alpha-numeric information comprising a subframe adapted to be integrated into a module

frame, said subframe having a shutter pivotally mounted on the rear thereof, illuminating means operably associated with said subframe adjacent the rear thereof, means associated with each component for pivoting the shutter thereof to provide a part of a preselected piece of information, said means including an electromagnet, a permanent magnet on each shutter, and actu-



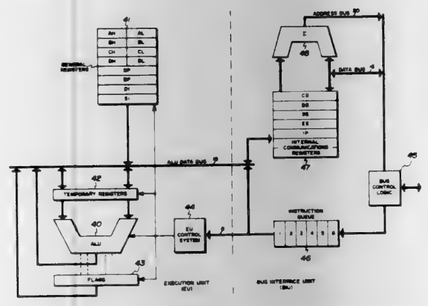
ating means remote from said subframe for actuating said electromagnet, each electromagnet being mounted on the rear of said subframe adjacent said shutter and equipped with pole-pieces arranged in close proximity to the permanent magnet of said shutter to oppose the magnetic field of said permanent magnet and pivot said shutter, each component being equipped with lens means forward of said shutter.

4,410,889

SYSTEM AND METHOD FOR SYNCHRONIZING VARIABLE-LENGTH MESSAGES IN A LOCAL AREA NETWORK DATA COMMUNICATION SYSTEM

David M. Bryant, Cardiff, Calif.; Ryn C. Corbeil, Bridgewater, N.J.; Michael A. Malcolm, Waterloo, Canada, and Donald R. Thompson, San Diego, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 27, 1981, Ser. No. 296,951
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.2 **5 Claims**



1. A station in a communications network including a communications channel for the transmission of packets of information, and a plurality of stations coupled to said channel, said stations being adapted to implement different processes, said a station comprising:

means to send periodically a request-to-send message packet to another station until a clear-to-send message is received from that station;

means to transmit successive data packets to said another station when a clear-to-send message packet has been received therefrom and until the last data packet has been sent;

means to halt said periodical request-to-send message packets when a notice is received that the requested process does not exist;

means to send an inquiry packet to said another station periodically until such time as a reply message packet is received from said another station; and,

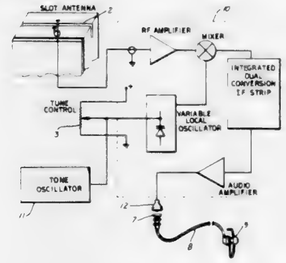
means to create new processes within any station in said communications network.

4,410,890

VHF DIRECTIONAL RECEIVER

Stevan A. Davis, Powder Springs, and Arthur Luedtke, Marietta, both of Ga., assignors to The United States of America as represented by the Field Operations Bureau of the FCC, Washington, D.C.

Filed May 6, 1981, Ser. No. 260,867
Int. Cl.³ G01S *5/02*
U.S. Cl. 343—419 **2 Claims**



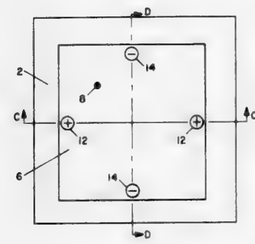
1. A small handheld directional receiver particularly suited for use by operators in public areas for covert location of radiation sources at VHF frequencies consisting of: an integral directional nonresonant slot antenna with very short effective height connected to FM receiving circuitry completely shielded by a metal housing, said receiving circuitry having a selectable modulation means for adding FM Modulation to unmodulated received signals, with audio output being proportional to the strength of a received signal and coupled to said operator's ear through a non-metallic means.

4,410,891

MICROSTRIP ANTENNA WITH POLARIZATION DIVERSITY

Daniel H. Schaubert, and Frederick G. Farrar, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 103,798, Dec. 14, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 292,101
Int. Cl.³ H01Q *1/38*
U.S. Cl. 343—700 MS **10 Claims**



1. A microstrip antenna capable of generating selectively polarized output comprising:

a single active element comprising a dielectric substrate, a conductive layer forming a single conductive patch on one surface of said substrate and a conductive layer forming a single conductive patch on one surface of said sub-

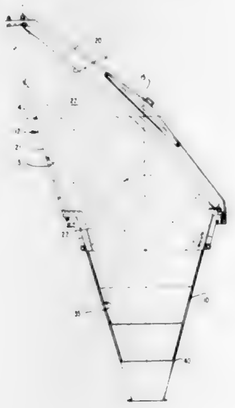
strate and a conductive layer forming a ground plane on an opposed surface of said substrate;
single input means, directly coupled to said single active element, for providing a frequency input to said single active element; and
means for selectively activating said single active element for generating a selectively polarized output, said polarized output being selectable from a plurality of polarizations, including left circular polarization, and right circular polarization wherein said means for selectively activating said single active element comprises multiple shorting means for providing multiple electrically conductive paths between said patch and said ground plane, and control means for selectively completing said electrically conductive paths through selected ones of said multiple shorting means.

4,410,892

REFLECTOR-TYPE MICROWAVE ANTENNAS WITH ABSORBER LINED CONICAL FEED

Charles M. Knop, Lockport; Edward L. Ostertag, New Lenox; Donald W. Matz, Jr., and Yuk-Bun Cheng, both of Lockport, all of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Filed May 26, 1981, Ser. No. 267,267
Int. Cl.³ H01Q *13/00*
U.S. Cl. 343—786 **7 Claims**



1. A conical horn-reflector antenna comprising the combination of:
a paraboloidal reflector forming a paraboloidal reflecting surface for transmitting and receiving microwave energy,
a smooth-walled conical feed horn for guiding microwave energy from the focus of said paraboloidal reflecting surface to said reflector, and
a lining of absorber material on the inside wall of the horn for reducing the width of the RPE in the E plane of the antenna without significantly increasing the width of the RPE in the H plane, said absorber increasing the Eigen value E and the sperical hybridicity factor Rs sufficiently to cause the E plane and H plane RPEs to approach each other.

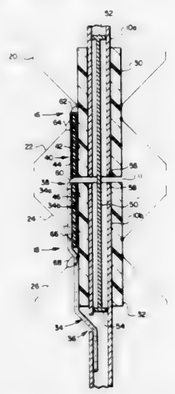
4,410,893

DUAL BAND COLLINEAR DIPOLE ANTENNA

Leslie V. Griffee, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 26, 1981, Ser. No. 314,948
Int. Cl.³ H01Q *9/28*
U.S. Cl. 343—792 **8 Claims**

1. A dual band dipole antenna comprising:
support means with spaced first and second sections;
a pair of dipoles mounted on respective said first and second support means sections;
feed means for energizing said dipoles; and
transmission line means between said first and second support means sections providing a low impedance path for continuity therebetween at a high band frequency f, and providing a high impedance path for discontinuity therebetween at a low band frequency ½ f,



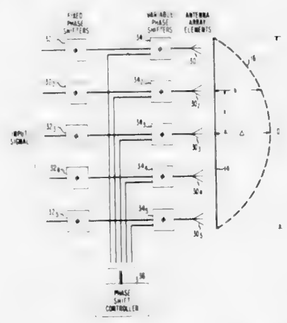
such that at the high band frequency f, said antenna operates as a dual dipole array,
and such that at the low band frequency ½ f, said antenna operates as a single dipole array with each support means section and its respective dipole acting as half of the single dipole array.

4,410,894

ARRAY PHASING TECHNIQUES FOR WIDE AREA COVERAGE IN A FAILURE MODE

Michael J. Gans, Monmouth Beach Twp., Monmouth County, and Arno A. Penzias, Highland Park, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Feb. 17, 1981, Ser. No. 234,682
Int. Cl.³ H01Q *3/36*
U.S. Cl. 343—368 **2 Claims**



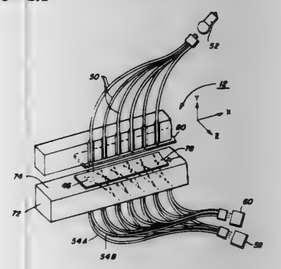
1. A phased array antenna arrangement comprising:
a plurality of feed elements (**30**) disposed to form a phased array;
a plurality of variable phase shifting means (**34**), each variable phase shifting means being coupled to a separate one of the plurality of feed elements and capable of introducing a separate predetermined phase shift to a signal propagating therethrough in response to an input control signal; and
a phase shift controller (**36**) capable of generating separate control signals to each of the plurality of variable phase shifting means for causing each variable phase shifting means to introduce a separate predetermined phase shift in the signal propagating therethrough such that the plurality of feed elements will radiate or receive a predetermined planar directional wavefront at any instant of time characterized in that
the antenna arrangement further comprises:
a plurality of fixed value phase shifting means (**32**), each fixed value phase shifting means being coupled in a path associated with a separate one of the plurality of separately coupled variable phase shifting means and feed elements for causing a predetermined separate fixed phase shift to be continuously applied to a signal propagating therethrough such that, in the absence of a phase shift being introduced by each of the plurality of variable phase shifting means into the signal propagating therethrough, the individual phase shifts introduced by said plurality of fixed value phase shifting means will cause the plurality of feed elements to radiate or receive a predetermined curved wavefront which is associated with a predetermined wide area coverage beam.

4,410,895

INK JET SENSOR METHOD AND APPARATUS

Robert D. Houston, Marion, and Frank J. Liptak, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 26, 1981, Ser. No. 314,634
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **6 Claims**



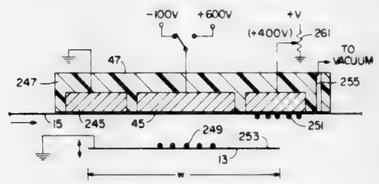
6. In ink jet printers having multiple nozzles for directing a plurality of ink streams toward a recording medium, a method for sensing the presence of individual droplets from said streams as they move toward said medium comprising the steps of:
mounting two light sources for each nozzle across the printer width for sensing droplets as they are deflected away from their initial trajectory;
directing the light from each of the light sources to a sensing site;
collecting the light from the light sources at the sensing site by two optical sensing fibers at each sensing site, the optical sensing fibers having input surfaces locates so that the droplets may pass between an associated light source and said fiber input surfaces;
positioning a masking means having two circular passages therethrough for each light source between said input surfaces and said droplets to define two transmitting regions spaced from each other along the direction of droplet travel to allow light from one of the light sources to pass through said circular passages in the masking means and impinge upon the two sensing fibers for that sensing site, each of the two input surfaces of said sensing fibers abutting a respective one of the circular passages in the masking means, and each circular passage having a smaller area than its associated sensing fiber input surface; and
sensing the movement of the ink droplets which pass said sensing sites by detecting changes in the intensity of light transmitted through said circular passage and said sensing fibers.

4,410,896

APPARATUS FOR PREVENTING REMOVAL OF TONER FROM TRANSFERRED IMAGES

Alfred M. Nelson, Redondo Beach, Calif., and Houshang Rasekhi, Convent Station, N.J., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Apr. 13, 1981, Ser. No. 253,997
Int. Cl.³ G01D *15/12*; G03G *15/16*
U.S. Cl. 346—74.2 **6 Claims**



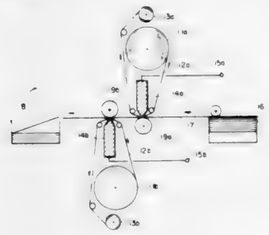
1. In a magnetographic printing system utilizing magnetic tape on which magnetic images are developed with toner particles and then the tape is then momentarily moved into contact with a first surface of a first medium to which said toner particles are transferred in a toner transfer station, the improvement comprising means external to said toner transfer station for retaining at least one previously transferred arrangement of toner particles on said first surface at least during subsequent transfer of another arrangement of toner particles from said magnetic tape to said first surface to prevent disturbance of said previously transferred toner by both said tape recontacting same when said tape again contacts said first medium to transfer said another arrangement of toner particles and by aerodynamic forces caused by said tape repeatedly moving into and out of contact with said first medium.

4,410,897

TWO-SIDED RECORDING DEVICE

Haruhiko Moriguchi; Yoshiki Kikuchi, and Takashi Ohmori, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1981, Ser. No. 312,019
Claims priority, application Japan, Oct. 17, 1980, 55-144428
Int. Cl.³ G01D *15/10*; G03B *27/32*
U.S. Cl. 346—76 PH **7 Claims**



1. A two-sided image recording apparatus, comprising:
means for defining a recording sheet passage through which a recording sheet having first and second surfaces passes;
first and second fixed thermal recording heads disposed on opposite sides of said passage so as to be adjacent said first

and second surfaces, respectively, of said recording sheet as said recording sheet passes through said passage;

ink donor sheet supply means for supplying first and second ink donor sheets having thermally fusible ink thereon so that said first and second ink donor sheets contact against said first and second surfaces, respectively, during a single passage of said recording sheet through said recording sheet passage;

said first thermal recording head being selectively heated, in accordance with image signals applied thereto, to heat said first ink donor sheet contacting said first surface to transfer thermally fusible ink to said first surface to form an image thereon;

said second thermal recording head being selectively heated in accordance with image signals applied thereto, to heat said second ink donor sheet contacting said second surface to transfer thermally fusible ink to said second surface to form an image thereon; and

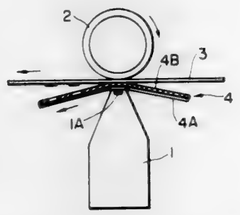
means for applying image signals to said first and second thermal recording heads to record images on both of said first and second surfaces during a single pass of said recording sheet through said recording sheet passage.

4,410,898

MULTICOLOR HEAT-SENSITIVE RECORDING APPARATUS

Tomio Murayama; Fujio Moriguchi; Masami Kurata; Takashi Ohmori, and Haruhiko Moriguchi, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1982, Ser. No. 348,884
Claims priority, application Japan, Feb. 17, 1981, 56-20958
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **9 Claims**



1. A multicolor heat-sensitive recording apparatus having a plurality of recording stations, in each of which an ink donor sheet and a recording sheet placed thereon are run between a heat-sensitive recording head and a pressure roll which is turned while abutting said recording head under pressure, and thermally melting or sublimating ink is thermally transferred onto said recording sheet according to image signals applied to said recording head, comprising;

a main sheet conveying path extending through said recording sections;

bypass sheet conveying paths which selectively allow a recording sheet to bypass any one or more of said recording sections; and

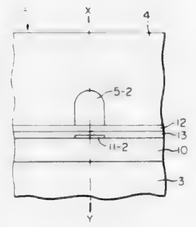
switching means for changing the direction of advance of said recording sheet to cause said recording sheet to advance along said either main sheet conveying path or said bypassing sheet conveying paths, as desired.

4,410,899

METHOD FOR FORMING LIQUID DROPLETS

Masahiro Haruta, Funabashi; Yashuhiro Yano, Naka; Yohji Matsufuji, Tokyo; Tsuyoshi Eida, Chiba, and Tokuya Ohta, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1981, Ser. No. 248,309
Claims priority, application Japan, Apr. 1, 1980, 55-43100
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **5 Claims**



1. A method for forming a liquid droplet, comprising:

forming a bubble in a liquid in a fine conduit; and

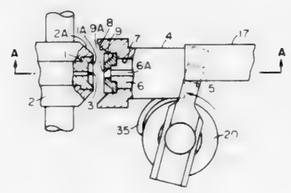
eliminating the bubble and ejecting a droplet of said liquid through an orifice communicating with the fine conduit by the pressure action which simultaneously results by the formation of the bubble, characterized by using as said liquid a liquid having the composition such that the liquid flow in the fine conduit is not intercepted by said bubble even when the bubble reaches its maximum volume.

4,410,900

INK JET RECORDING APPARATUS

Koji Terasawa, Mitaka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 197,594, Oct. 16, 1980, abandoned. This application Sep. 3, 1982, Ser. No. 414,889
Claims priority, application Japan, Oct. 23, 1979, 54-135914; Jan. 21, 1980, 55-5425
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **12 Claims**



1. Ink jet recording apparatus comprising:

a recording means having a tip end for ejecting ink to effect recording on a recording medium;

cam means being movable towards said recording means for sealing the tip end of said recording means, said cap means having a surface portion which tapers outwardly to align said cap means with the tip end when said cap means is in a position to seal the tip end; and

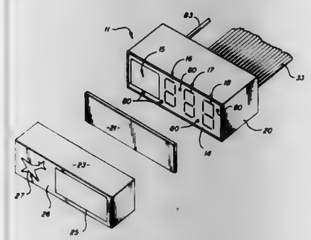
suction means connected to said cap means for producing a negative pressure to suck the tip end of said recording means when said cap means is positioned to seal said recording means.

4,410,901

ELECTROCHEMICAL MARKING

Philip C. Szeliga, Utica, and William D. Kitchen, Ilion, both of N.Y., assignors to Electromark, Div. of Mohawk International, Utica, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,379
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—165 **7 Claims**



4. In an electrochemical marking system for producing a nondestructive permanent mark upon a grounded conductive metal part, apparatus for etching selected characters on the surface of the part that includes

a wetting means for bringing an etch producing electrolyte onto the surface region to be marked,

a marking head arranged to electrically communicate with the wetted surface, said head containing a plurality of electrically isolated electrode segments that are individually connected to a power supply whereby each segment can be fired independently,

each of said electrode segments including a highly conductive body section printed on said head and an outer conductive coating placed over the body section that will not react with the electrolyte to prevent the segment from being etched during the marking process,

switching means for connecting the individual electrode segments to the power supply whereby the segments can be fired in different combinations, and

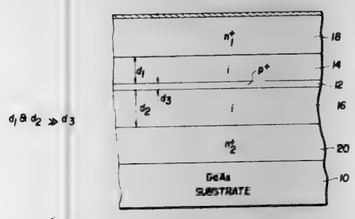
control means operatively connected to the switching means for firing a selected combination of electrode segments to etch a desired character upon the surface of the part.

4,410,902

PLANAR DOPED BARRIER SEMICONDUCTOR DEVICE

Roger J. Malik, Ithaca, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1981, Ser. No. 246,787
Int. Cl.³ H01L *29/06, 29/36, 29/90*
U.S. Cl. 357—13 **14 Claims**



14. A semiconductor rectifying device having a planar doped barrier comprising, in combination:

a relatively thin planar region of semiconductor material doped with a first type dopant material to provide a charged region of a first polarity;

first and second relatively thick planar regions of substantially undoped semiconductor material respectively formed on opposite sides of said thin planar region;

a pair of outer planar regions of semiconductor material doped with a second type dopant material respectively formed on said first and second planar regions to provide a pair of charged regions having a common polarity opposite of said first polarity;

a semiconductor substrate in contact with one of said outer pair of planar regions; and

an ohmic contract region formed on the other of said pair of outer planar regions;

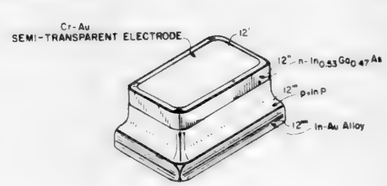
said relatively thin planar region becoming, in absence of a bias potential being applied thereto, substantially depleted in order to establish an equilibrium Fermi level whereupon charge regions are induced in said pair of outer planar regions, said device further being adapted to exhibit thermionic transport with the application of positive and negative bias potentials thereto to provide a desired barrier height and a variable current voltage characteristic.

4,410,903

HETEROJUNCTION-DIODE TRANSISTOR EBS AMPLIFIER

Herman H. Wieder, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,201
Int. Cl.³ H01L *29/90, 29/48, 27/14, 29/161*
U.S. Cl. 357—29 **3 Claims**



1. An apparatus for modulating a current flow comprising:

means for directing a modulating beam of electrons and

an asymmetrical n-p heterojunction-diode having a semitransparent electrode and a second electrode, the semitransparent electrode disposed to receive the modulating electron beam, the diode fabricated from two different semiconducting materials forming a heterojunction therebetween, the materials having identical crystalline lattice structures, different fundamental energy bandgaps and different impurity types of different concentrations, the two different semiconducting materials are p+InP and n-type $In_{0.53}Ga_{0.47}As$, the $In_{0.53}Ga_{0.47}As$ material being in contact with the semitransparent electrode and the InP in contact with the other electrode.

4,410,904

NOTCHED CELL ROM

Donald L. Wollesen, Saratoga, Calif., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 20, 1980, Ser. No. 198,318
Int. Cl.³ H01L *27/10, 27/02, 29/78;* **G11C** *17/00*
U.S. Cl. 357—45 **11 Claims**

1. A serial access MOS ROM comprised of:

a semiconductor substrate of a first conductivity type;

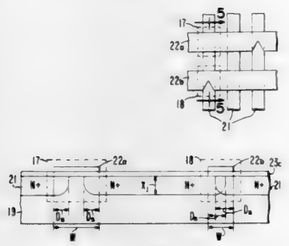
a plurality of buried regions formed in said substrate serving as bit lines of an opposite conductivity type;

a layer of electrical insulating material covering said bit lines;

a plurality of conductive paths serving as word lines lying

substantially perpendicular above said bit lines and separated from said bit lines by said insulating material;

a plurality of semiconductor memory cells formed at each cross-over of said bit lines and said word lines, said plurality of conductive paths having narrowed width portions at selected ones of said cross-overs; and



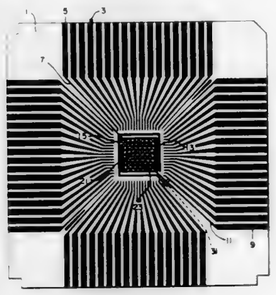
wherein said word lines serve as a mask during the formation of said bit lines and the width of each of said word lines at each cross-over of said word line and said bit line determine the logical state of the cell formed at that cross-over.

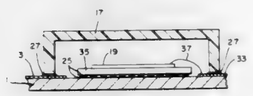
4,410,905

POWER, GROUND AND DECOUPLING STRUCTURE FOR CHIP CARRIERS

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 14, 1981, Ser. No. 293,022
Int. Cl.³ H01L *39/02, 23/48, 29/44*
U.S. Cl. 357—80 **11 Claims**





1. A system for carrying semiconductor chips and the like comprising:

(a) an electrically insulating substrate,

(b) an electrical conductor pattern on said substrate extending to plural locations at the edges of said substrate, and

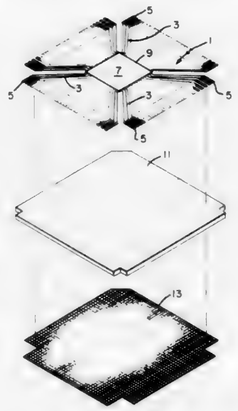
(c) an interdigitated pattern of electrically conductive material formed at a central region of said substrate, said pattern having two unconnected portions, each portion being connected to a different location at the edge of said substrate.

4,410,906

VERY HIGH SPEED LARGE SYSTEM INTEGRATION CHIP PACKAGE AND STRUCTURE

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 14, 1981, Ser. No. 292,988
Int. Cl.³ H01L *39/02, 23/48, 29/44*
U.S. Cl. 357—80 **4 Claims**



1. A substrate system for high speed large system integration comprising:

(a) a substrate of electrically insulating material;

(b) a system of electrically conductive leads secured to a first surface of said substrate, said system having a predetermined coefficient of thermal expansion and a predetermined volume; and

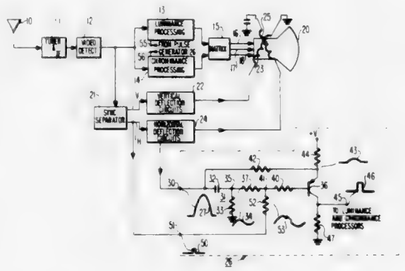
(c) a grid of electrically conductive material secured to a second surface of said substrate, opposite said first surface, said grid having a coefficient of thermal expansion substantially the same as said system of leads and having a weight substantially the same as said system of conductive leads.

4,410,907

BURST GATE KEYING AND BACK PORCH CLAMP PULSE GENERATOR

Sanjay R. Vinekar; James Hettiger, and Karl L. Friedline, all of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 16, 1981, Ser. No. 322,005
Int. Cl.³ H04N *9/44*
U.S. Cl. 358—20 **9 Claims**



1. In a television receiver incorporating a source of horizontal retrace pulses, a source of composite video signals incorporating a back porch interval and a source of horizontal synchronizing pulses, apparatus for generating a keying pulse during said back porch interval of a given horizontal line comprising:

first means, incorporating a control terminal and responsive to the presence at said control terminal of one of said horizontal retrace pulses for being turned on by said retrace pulse, said first means producing said keying pulse when turned on, said first means also responsive to said retrace pulse for being turned off by said retrace pulse after a predetermined interval such that said first means produces said keying pulse in response to said retrace pulse;

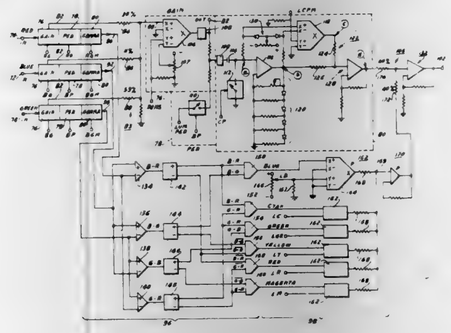
second means, coupled to said source of horizontal synchronizing pulses and to said control terminal of said first means, for delaying the turn on of said first means substantially until the termination of said synchronizing pulse of said given horizontal line such that said synchronizing pulse controls the initiation of said keying pulse when said synchronizing pulse is present.

4,410,908

LUMINANCE SIGNAL GENERATOR FOR COLOR FILM SCANNER

Armand Belmares-Sarabia, Oak Beach, N.Y., and Stanley J. Chayka, Parsippany, N.J., assignors to Corporate Communications Consultants, Holbrook, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,142
Int. Cl.³ H04N *9/52, 9/11*
U.S. Cl. 358—30 **22 Claims**



1. Color compensating luminance control means comprising means for developing primary color component video signals representative of images stored by an image recording medium, difference signals corresponding to the differences between said primary color component signals, and a plurality of color derivative signals comprising selective combinations of said difference signals, means for individually varying each of said color derivative signals independently of further color information signals derived to represent said images, and combining means for combining the individually variable color derivative signals to form a luminance signal.

4,410,909

METHOD FOR AUTOMATICALLY DETERMINING REPRODUCTION PICTURE COLOR CONTROL CONDITIONS

Sadao Ueda, Shiga; Isao Tokura, Uji, and Mitsuhiko Yamada, Kyoto, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Dec. 10, 1980, Ser. No. 214,994
Claims priority, application Japan, Dec. 17, 1979, 54-163805
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **10 Claims**

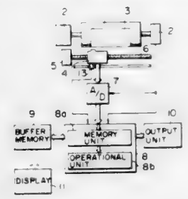
1. A method for automatically determining color control conditions for a picture being reproduced for use in a picture reproducing machine, wherein an original picture is scanned photoelectrically to pick up color separation picture signal data of the primary colors comprising the steps of:

classifying color separation picture signal data into three color separation signals D_R, D_G and D_B of said primary colors so as to obtain a distribution condition based upon density measurements relating to the entire density range of said original picture;

establishing color control conditions according to said distribution condition determined by the density of certain sampling picture elements whose color separation picture signal data is included within the density range of said original picture and with which each of the sampled B, G and R signal values are compared; and

detecting and comparing densities of further sampled picture elements adjacent to said detected circuit sampling picture elements,

thereby determining points which are comparable to portions of said original picture.



4,410,910

MOTION DETECTING METHOD AND APPARATUS

Charles B. Andes, Tempe, Ariz., assignor to Advanced Diagnostic Research Corp., Tempe, Ariz.

Filed Sep. 18, 1980, Ser. No. 188,270
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—105 **10 Claims**



1. A method for detecting motion of an object comprising the steps of:

generating a repetitive video signal representative of the object at successive points in time;

integrating at least a portion of successive repetitions of the video signal;

comparing the successive integrations with each other; and

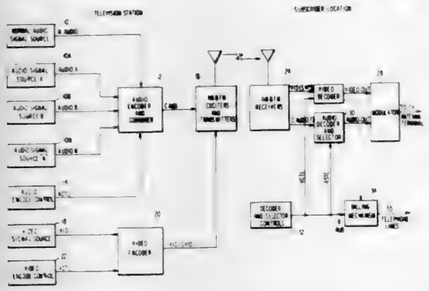
changing the integrated portion of the video signal in order to optimize motion detection for the size and extent of motion of the object.

4,410,911

MULTIPLE SIGNAL TRANSMISSION METHOD AND SYSTEM, PARTICULARLY FOR TELEVISION

Robert W. Field, Fountain Valley; Ronald R. Gerlach, Mission Viejo; Clarence D. Perr, Brea, and Robert S. Block, Marina Del Ray, all of Calif., assignors to Telease, Inc., Los Angeles, Calif.

Filed Jul. 14, 1982, Ser. No. 398,376
Int. Cl.³ H04N 7/16; H04K 1/04
U.S. Cl. 358—121 **20 Claims**



1. A method for secure transmission of plural audio signals, comprising the steps of:

providing at least two different audio signals;

transmitting in a first form within a predetermined frequency band one and then the other of the audio signals in a sequence of time intervals such that parts but not all of each of the two audio signals are transmitted in said frequency band in the first form;

transmitting within said frequency band, in a second form distinguishable from said first form, one and then the other of the audio signals in said sequence of time intervals such that the one of the audio signals is transmitted in a time interval in the second form while the other is being transmitted in a time interval of corresponding length in the first form and vice-versa, parts of the one and the other audio signals not transmitted in the first form thereby being transmitted in the second form so that the two audio signals are transmitted in their entireties in said frequency band but are transmitted in part in the first form and in part in the second form, both of the two audio signals being available in the transmitted signal for selection in their entireties from said first and second forms.

4,410,912

METHOD OF GENERATING A VIDEO APERTURE CORRECTION SIGNAL

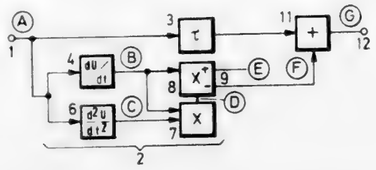
Heinz Hess, Wetterstadt, and Reinhard Kirschenstein, Rossdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,016
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1981, 3103099
Int. Cl.³ H04N 5/14
U.S. Cl. 358—162 **7 Claims**

1. Method of generating an aperture correction video signal for additive correction of a video signal which includes

differentiating the video signal (A) to obtain a first derivative signal (B);

twice differentiating the video signal (A) to obtain a second derivative signal (C) and further comprising the steps of generating said correction signal (F) by multiplying the first derivative signal with itself and further with the second derivative signal (C) to generate a product comprising the



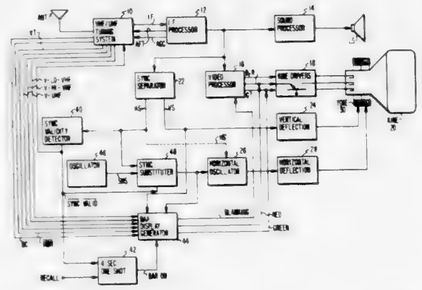
square of the first derivative signal (B) and said second derivative signal.

4,410,913

TUNING DISPLAY FOR A TELEVISION RECEIVER

Danny Chin, Plainsboro, and Robert J. Maturo, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1981, Ser. No. 315,615
Int. Cl.³ H04B 1/16
U.S. Cl. 358—192.1 **13 Claims**



1. In a television (TV) receiver which receives TV signals in at least one frequency band which has a plurality of TV channel signals included in lower- and upper-frequency portions thereof separated by a gap, including

tuning means for developing a tuning signal to select one of said TV channel signals and for developing band signals to indicate the one of said lower- and upper-frequency portions which includes said selected one TV channel signal, wherein said tuning signal varies between first and second magnitudes for ones of said TV channel signals in each of said lower- and upper-frequency portions, and wherein said tuning signal can have similar magnitudes for different ones of said TV channel signals,

processing and display means for displaying a TV picture responsive to said selected one TV channel signal, and

tuning indicator means responsive to a control signal for developing a tuning indication of said selected one TV channel signal;

electronic control apparatus for developing said control signal in response to said tuning signals and to said band signals to have different magnitudes corresponding to different ones of said plurality of TV channel signals, comprising:

divider means for developing a proportioned tuning signal in response to said tuning signal;

offsetting means for developing an offsetting signal in response to said band signals, said offsetting signal having a magnitude corresponding to the one of said lower- and upper-frequency portions which includes said selected one TV channel signal; and

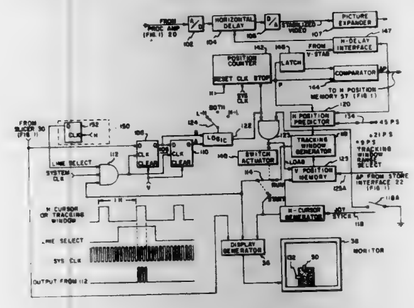
combining means, coupled to said divider means and to said offsetting means, for combining said proportioned tuning signal developed by said dividing means and said offsetting signal developed by said offsetting means to develop said control signal.

4,410,914

TELEVISION PICTURE STABILIZING SYSTEM

John E. Siau, Norwalk, Conn., assignor to CBS Inc., New York, N.Y.

Filed Feb. 1, 1982, Ser. No. 344,342
Int. Cl.³ H04N 5/21
U.S. Cl. 358—222 **5 Claims**



1. An improved system for processing and producing from an input video signal exhibiting unsteadiness due to having been produced by an unsteady television camera, a corrected video signal essentially free from such unsteadiness, comprising means receiving said input video signal and for selecting therefrom a horizontally disposed reference edge and a vertically disposed reference edge within the camera field of view against which to measure up and down and side-to-side motion, respectively; means including first and second generators for respectively producing first and second tracking windows for respectively tracking the horizontally and vertically disposed reference edges for separately measuring motion of said horizontally and vertically disposed reference edges and producing vertical and horizontal correction signals, respectively; and means operative responsively to said correction signals for making the necessary corrections to the overall television picture represented by the said input video signal to reduce picture unsteadiness; the improvement comprising:

first memory means operatively associated with said first generator for storing information representing an initial position of said first tracking window horizontally along said horizontally disposed reference edge and responsively to said horizontal correction signals altering the horizontal position of said first tracking window to follow side-to-side motion of said horizontally disposed reference edge; and

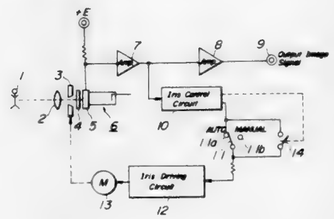
second memory means operatively associated with said second generator for storing information representing an initial position of said second tracking window vertically along said vertically disposed reference edge and responsively to said vertical correction signals altering the vertical position of said second tracking window to follow up and down motion of said vertically disposed reference edge.

4,410,915

APPARATUS FOR PROTECTING AN IMAGE PICKUP TUBE IN A TELEVISION CAMERA

Kazumi Yamamoto, Yokohama, Japan, assignor to Ikegami Tsushinki Co. Ltd., Tokyo, Japan

Filed Mar. 23, 1982, Ser. No. 360,982
Claims priority, application Japan, Jun. 17, 1981, 56-92125
Int. Cl.³ H04N 5/26
U.S. Cl. 358—228 **6 Claims**



1. An apparatus for protecting a pickup tube in a television camera comprising

means for controlling an amount of incident light upon the pickup tube;

first switching means for driving said light controlling means in an automatic control mode and a manual control mode, in the automatic control mode, the light controlling means being so controlled that a video signal supplied from the pickup tube has a given signal level;

second switching means connected in parallel with said first switching means, said second switching means being normally opened;

means for generating a driving signal for closing said second switching means for a given time period in response to a switch-off of a main power supply; and

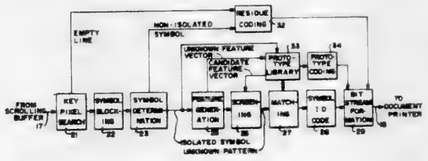
means for generating a controlling signal in response to the switch-off of the main power supply, said controlling signal being supplied through said second switching means to said light controlling means so that the light impinging upon the pickup tube is decreased or shielded.

4,410,916

DUAL MODE FACSIMILE CODING SYSTEM AND METHOD

William K. Pratt, San Jose; Ronald S. Bader, Cupertino; Wen-Hsiung Chen, Sunnyvale; Lyle V. Rennick, Cupertino, and Robert H. Wallis, Portola Valley, all of Calif., assignors to Compression Labs, Inc., Cupertino, Calif.

Continuation of Ser. No. 69,551, Aug. 24, 1979, Pat. No. 4,288,782. This application Jul. 9, 1981, Ser. No. 281,721
Int. Cl.³ H04N 1/40
U.S. Cl. 358—263 **34 Claims**



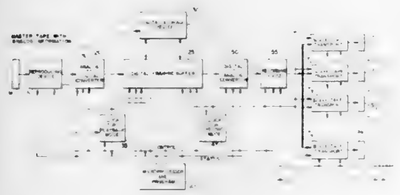
1. In a facsimile coding system, the method comprising the steps of segmenting an uncompressed digital raster data stream having pixels representing symbols and non-symbols on a document into spatially segmented symbols and non-symbols, coding said segmented symbols and non-symbols to form representative digital codes and combining said digital codes into a digital compressed data stream.

4,410,917

METHOD OF AND APPARATUS FOR RECORDING INFORMATION FROM A MASTER MEDIUM ONTO A SLAVE MEDIUM EMPLOYING DIGITAL TECHNIQUES

Ronald M. Newdoll, Woodside, and John E. Phillips, Cupertino, both of Calif., assignors to Accurate Sound Corporation, Menlo Park, Calif.

Filed Sep. 14, 1981, Ser. No. 302,159
Int. Cl.³ G11B *5/86*
U.S. Cl. 360—15 **34 Claims**



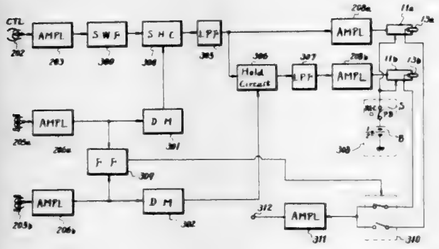
1. A method of recording information on a recording medium that is reproduced from a master medium comprising the steps of:
(a) reproducing information from a master medium at one rate;
(b) storing the information as digital information;
(c) retrieving the stored digital information;
(d) converting the retrieved digital information into analog information; and
(e) recording the analog information at a rate faster than said one rate onto a recording medium.

4,410,918

HELICAL SCAN VTR WITH DEFLECTABLE HEAD

Yoshimi Watanabe, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 845,558, Oct. 26, 1977, Pat. No. 4,203,140, which is a continuation-in-part of Ser. No. 635,139, Nov. 25, 1975, abandoned. This application Aug. 22, 1979, Ser. No. 68,516
Claims priority, application Japan, Nov. 26, 1974, 49-136554
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 **20 Claims**



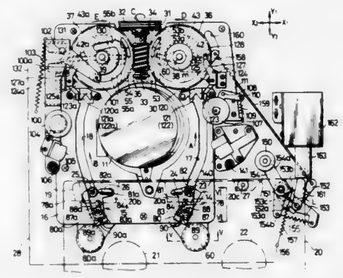
1. Apparatus for reproducing video signals recorded in successive parallel tracks on a moving recording medium, said tracks being skewed relative to a direction of movement of said medium, said apparatus comprising:
signal transducer means repeatedly scanning said recording medium in a scanning path directed generally along said tracks for reproducing the video signals from successive tracks on the recording medium upon said movement of the latter;
controllable support means movably supporting said signal transducer means and being responsive to values of a tracking control signal above and below a predetermined level to displace said transducer means from a neutral position in first and second opposed directions, respectively, extending transversely with respect to said scanning path for maintaining substantial alignment between the transducer means and the successive tracks; and
control signal generating means including means for providing first and second position indicating signals which respectively indicate the position of said recording medium in said direction of movement thereof and the position of said transducer means along said scanning path, and means responsive to the relative timing of said first and second position indicating signals to provide said tracking control signal at said predetermined level when said relative timing corresponds to alignment of said transducer means with one of said tracks and to provide said values of the tracking control signal selectively above and below said predetermined level in response to said relative timing corresponding to displacement of said transducer means to one side and the other, respectively, of said one track.

4,410,919

TAPE LOADING APPARATUS IN A RECORDING AND/OR REPRODUCING APPARATUS

Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 6, 1981, Ser. No. 241,254
Claims priority, application Japan, Mar. 7, 1980, 55-28909; Mar. 7, 1980, 55-28910; Mar. 7, 1980, 55-28911; Mar. 7, 1980, 55-28912; Mar. 7, 1980, 55-28913; Mar. 7, 1980, 55-28914
Int. Cl.³ G11B *15/66*
U.S. Cl. 360—85 **5 Claims**



1. A tape loading apparatus in a recording and/or reproducing apparatus including a guide drum having at least one head for recording or reproducing a signal on or from a tape, said tape loading apparatus comprising:
endless belt-shaped members provided side by side on both sides of said guide drum so that each endless belt-shaped member has one straight portion extending between said guide drum and a cassette;
driving means for driving said endless belt-shaped members so that said endless belt-shaped members travel in a direction towards said guide drum during a loading mode, and travel in a direction towards said cassette during an unloading mode;
a pair of tape guiding means for guiding said tape so that said tape travels along a predetermined path throughout a predetermined range with respect to said guide drum at a predetermined position, by locking said tape and moving in accordance with the travel of each endless belt-shaped member from a position inside said cassette to said predetermined position adjacent said guide drum upon loading mode;
a pair of stopping members fixed at the predetermined position;
guiding path means for guiding said pair of tape guiding means so that said tape guiding means move along a predetermined path;
supporting and holding means for supporting and holding said tape guiding means at the predetermined position by pushing against said stopping members to urge said tape guiding means in a direction identical to the moving direction upon loading mode, after said tape guiding means has reached the predetermined position by moving along said guiding path means; and
height position restricting means comprising arm members rotatable by said driving means, for restricting a height position of said tape guiding means by pushing said tape guiding means against said tape path means by said arm members when said tape guiding means are pushed against said stopping members.

4,410,920

UNITARY MOUNTING MEANS FOR THE TAPE HANDLING COMPONENTS OF A VTR

Tsutomu Kawai, Yokosuka, Japan, assignor to Funai Electric Trading Co. Ltd., Osaka and Efuti Giken Co., Ltd., Yokohama, both of, Japan

Filed Dec. 19, 1980, Ser. No. 218,096
Claims priority, application Japan, Dec. 27, 1979, 54-184823[U]
Int. Cl.³ G11B *15/66, 23/04, 5/52*
U.S. Cl. 360—85 **6 Claims**

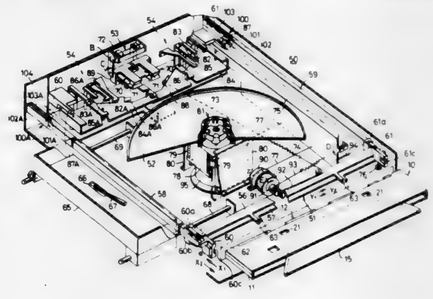
1. In a unitary mounting means for the tape handling components of a video tape recorder of the type wherein magnetic tape is withdrawn from a cassette to be guided during operation by fixedly positioned tape guide means in a path which includes operative engagement with at least one fixed erasing head means and an electromagnetic video transducer means and a return to said cassette, said video transducer means including a cylindrical housing around a portion of the circumference thereof the tape moves in a helical path, the housing also having a lower cylindrical mounting portion to be fixed to a flat chassis member, the combination including:
fixture means closely encircling the lower cylindrical portion of said housing to be attached to said chassis member for positioning said housing with respect to said chassis member;
said fixture means including means for supporting first and second erasing heads in predetermined positions which are offset with respect to the axis of said housing;
means for adjustably supporting a second electromagnetic transducer means on said fixture means adjacent one of said erasing heads;
means to mount a tape guide means for reciprocable rotary movement concentric with said cylindrical housing between a first position adjacent a cassette and a second position to guide a tape into operative engagement with one of the erasing heads.

4,410,921

APPARATUS FOR REPRODUCING INFORMATION SIGNALS FROM A DISC-SHAPED RECORDING MEDIUM AND INCLUDING A MECHANISM FOR PUSHING BACK A CASE FOR ACCOMMODATING THE RECORDING MEDIUM THEREIN

Takashi Yamamura, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 21, 1981, Ser. No. 256,020
Claims priority, application Japan, Apr. 21, 1980, 55-52765
Int. Cl.³ G11B *25/04*
U.S. Cl. 360—97 **3 Claims**



1. Apparatus for reproducing information signals from a disc-shaped recording medium which was accommodated within a case, said case having a jacket including space for accommodating said disc-shaped recording medium therein, an opening through which said disc-shaped recording medium can enter and leave said jacket, and a lid member which is inserted through said opening of said jacket for covering and closing said opening, said reproducing apparatus comprising:
a panel defining an inserting opening through which said case is manually inserted;
holding means for holding at least one of said disc-shaped recording medium and said lid member, said holding means being located at an innermost part of said reproducing apparatus opposite said inserting opening with a turntable interposed between said holding means and said opening; and
push-back means having energy storing members which are urged responsive to an inserting operation in which said case is inserted through said inserting opening and into the innermost part of said reproducing apparatus, said push-back means pushing back said case when the force pushing it during insertion stops acting on said case, said pushing back being responsive to the stored energy forces exerted by said energy storing members, to push back said case in a direction opposite to the direction of the insertion of said case so that a part of said case projects outwardly from said inserting opening;
said push-back means further having push-back members for acting on left and right side edges of a front surface of said jacket which faces toward the direction of the insertion of said case, left and right guide rails respectively positioned at left and right sides of said reproducing apparatus and extending along the direction of the insertion of said case, and left and right sliders freely movable on said guide rails,
said sliders respectively supporting the left and right side edges of the front surface of said jacket which faces toward the direction of the insertion of said case and moving along said guide rails upon a loading and unloading of said disc-shaped recording medium,
said energy storing members being spring members which undergo resilient deformation for applying force against said sliders in a direction opposite to the direction of the

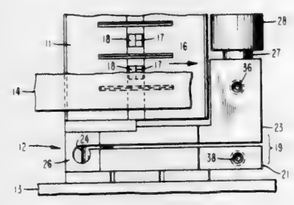
insertion of said case, upon insertion of said case into a final position within said reproducing apparatus.

4,410,922

ADJUSTABLE HEAD MOUNT

David A. Babow, Foster City, and William M. Nedley, Campbell, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Jan. 26, 1981, Ser. No. 228,508
Int. Cl.³ G11B *5/56, 21/24;* **B25G** *3/02;* **F16D** *1/00*
U.S. Cl. 360—109 **8 Claims**



1. A mount for supporting a magnetic transducing head on a transducing machine and for adjusting the orientation of said head in at least one predetermined adjustment plane, comprising:

a base having first and second portions pivotable with respect to one another in said adjustment plane, and adapted for respective attachment to said machine and to said head;

one of said base portions having a male threaded portion of predetermined pitch and the other base portion having a female threaded portion of the same handedness but of different pitch, said two threaded portions constituting a set of threaded portions centered on the same axis and coextensive on the length thereof; and

a shank element having a second set of male and female threaded portions also centered on said axis and coextensive on the length thereof, the male threaded portion of each set engaging and mating with the female threaded portion of the other set, so that rotation of said shank about said axis causes said base portions to pivot with respect to one another to a new orientation of said head with respect to said machine.

4,410,923

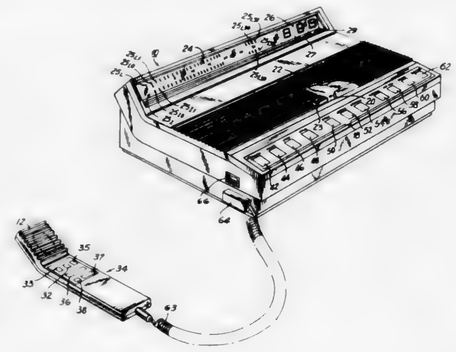
DISPLAY APPARATUS FOR RECORDING AND/OR PLAYBACK DEVICE

Pankaj R. Patel, Norwalk, Conn., assignor to Dictaphone Corporation, Rye, N.Y.

Filed Jan. 9, 1981, Ser. No. 223,718
Int. Cl.³ G11B *17/00, 15/18, 19/02, 21/12*
U.S. Cl. 360—137 **47 Claims**

1. In a signal recording/playback device wherein signal information is recorded on and/or played back from a movable record medium, apparatus for displaying a numerical representation of the relative amount of information which has been recorded, comprising numerical display means for displaying a numerical representation of time; detecting means for detecting the movement of an incremental amount of said record medium either in a first or a second direction and for generating a motion pulse indicative thereof, the rate at which said motion pulses are generated varying as a function of the amount of said record medium which has been moved; linearizing means responsive to said generated motion pulses for producing count pulses representing the movement of substantially equal, predetermined incremental amounts of said record medium; counting means for counting said count pulses in a first counting direction when said record medium is moved in said first direction and for counting said count pulses in a second counting direction when said record medium is moved in said second direction to accumulate a count representing time duration; and means for selectively energizing said numerical display means with said count.

45. In a signal playback device wherein signal information is played back from a movable record medium, display apparatus comprising numerical display means for displaying a numerical representation of time in terms of minutes and fractions of minutes; storage means having a plurality of selectable storage locations for storing counts therein representing the relative



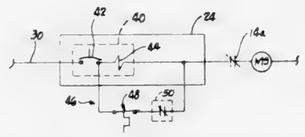
locations along said record medium of recorded cue signals; counting means incremented in synchronism with the movement of said record medium to provide an instantaneous count representing the present position of said record medium; means for selecting the next storage location of said storage means having a count therein which exceeds said instantaneous count; means for calculating the difference between the count stored in said selected storage location and said instantaneous count; and means for energizing said numerical display means to display said difference.

4,410,924

MOTOR PROTECTION CONTROL CIRCUIT

D. Gary Hewitt, Mt. Vernon, and Thomas A. Jones, Lucas, both of Ohio, assignors to The Gorman-Rupp Company, Mansfield, Ohio

Filed Sep. 10, 1981, Ser. No. 301,106
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—25 **3 Claims**



1. For a fluid pump used in waste water treatment processes or the like, having a pump casing and an electric drive motor within the casing, a motor control circuit comprising:

(a) a motor control relay including relay contacts for controlling the communication of a source of electrical power to the pump drive motor, and a relay coil for effecting movement in said relay contacts between closed and open positions;

(b) a motor protection device including manually closed switch means, located and accessible remotely from said fluid pump, said switch means disposed in series with said relay coil such that opening of said switch means deenergizes said relay coil;

(c) said protection device further including a tripping coil operative to open said switch means when energized, said tripping coil disposed in electric series communication with said switch means and said relay coil;

(d) malfunction sensing means located within said pump casing, said sensing means connected in an electrically parallel relationship with said tripping coil such that under normal operating conditions, electrical current is shunted around said tripping coil by said sensing means and said sensing means being operative, in response to a sensed malfunction condition in said drive motor, to interrupt said shunt path thereby energizing said tripping coil to effect opening of said switch means; and

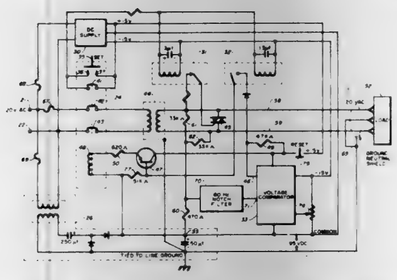
(e) said tripping coil having an electric impedance sufficient enough to reduce current flow to said relay coil to cause said relay coil to deenergize in the event said manually closed switch means fails to open when said tripping coil is energized.

4,410,925

GROUND FAULT DETECTOR AND SHUTDOWN SYSTEM

Leroy W. Tucker, Camarillo, and Floyd E. Nelson, Oxnard, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 22, 1982, Ser. No. 360,524
Int. Cl.³ H02H *3/16*
U.S. Cl. 361—42 **9 Claims**



1. A ground fault detection and power shutoff system for underwater AC power transmission which provides protection to divers from underwater electrical shock hazards, comprising:

a. an insulated pair of electrical power transmission lines which supply AC power from a source to an insulated underwater load;

b. an isolation transformer having a primary and a secondary winding; said secondary winding connected to the input to said insulated pair of power transmission lines;

c. a triac connected across the secondary winding of said isolation transformer operable to function as a low resistance path for discharging any stored energy in the load circuit;

d. circuit breaker means connected between said source of AC power and the primary winding of said isolation transformer; said circuit breaker means being operable to interrupt the flow of AC power through said pair of transmission lines;

e. an insulation resistance monitor circuit including DC supply means for providing a DC output and voltage comparator means; said DC supply means having a positive side of its DC output connected to both of said pair of transmission lines at the secondary winding side of said isolation transformer and to said voltage comparator and a negative side of its DC output connected to ground means; said ground means including any of transmission line ground conductor and shielding, load ground conductor and shielding, and seawater;

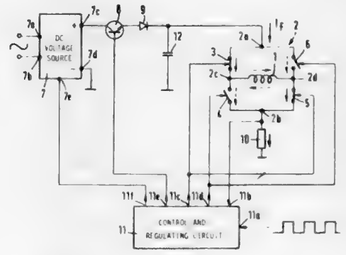
f. said voltage comparator means being connected to said circuit breaker means and being operable to generate a trip signal for quickly shutting off said circuit breaker means to interrupt the flow of AC power through said transmission lines when there is ground fault due to a drop below a predetermined value in the insulation resistance of any insulation in the system which results in a DC current flow in said insulation resistance monitor circuit means exceeding a predetermined level.

4,410,926

ARRANGEMENT FOR GENERATING DC MAGNETIC FIELDS OF ALTERNATING POLARITY FOR THE MAGNETIC-INDUCTIVE FLOW MEASUREMENT

Peter Hafner, Therwil, Switzerland, and Peter Flecken, Lorrach, Fed. Rep. of Germany, assignors to Flowtec AG, Reinach, Switzerland

Continuation-in-part of Ser. No. 254,606, Apr. 16, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 406,061
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037305
Int. Cl.³ H02H *3/00, 7/122*
U.S. Cl. 361—93 **18 Claims**



1. An arrangement for generating DC magnetic fields of alternating polarity for the magnetic-inductive flow measurement by means of a field coil which is connected via alternately controlled switching members to a DC voltage source, wherein during the reversal time following the change-over of the switching members a capacitor is connected to the field coil to form a resonant circuit separate from the DC voltage source and the capacitance C of the capacitor in dependence upon the desired reversal time Δt has substantially the value

$$C = \frac{1}{L \cdot (\pi^2/\Delta t^2 + R^2/4L^2)} \text{ (Farads)}$$

wherein L is the inductance and R the ohmic resistance of the field coil.

4,410,927

CASING FOR AN ELECTRICAL COMPONENT HAVING IMPROVED STRENGTH AND HEAT TRANSFER CHARACTERISTICS

Sheldon H. Butt, Godfrey, Ill., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 341,392, Jan. 21, 1982. This application Jun. 21, 1982, Ser. No. 390,095
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 **10 Claims**

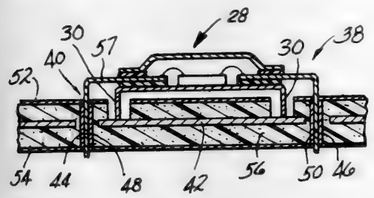
1. In a casing for an electrical component comprising:

a metal base member;

a metal housing member being mounted upon said base member to provide a hollow enclosed casing for receiving said electrical component;

a metal lead frame within said enclosed casing for electrical connection to said electrical component, said lead frame having terminal leads projecting between said base member and said housing member external to said casing, the improvement comprising:

skirt means extending outwardly from at least two opposite edges of said base member and transversely out of the plane of the base member and beyond said hollow enclosed casing for strengthening said base member and providing additional heat transfer from said casing; and



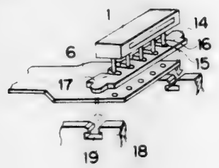
adhesive means sealing and bonding said terminal leads to both said base member and to said housing member whereby said enclosed casing is formed.

4,410,928

CONNECTOR FIXING DEVICE

Mitsuo Aramaki, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed May 1, 1981, Ser. No. 259,730
Claims priority, application Japan, May 7, 1980, 55-61479[U]
Int. Cl.³ H05K *1/18*
U.S. Cl. 361—400 **7 Claims**



1. A connector and a fixing device therefor, comprising:
an electrical connector having a plurality of terminals projecting therefrom;
a printed circuit board having a plurality of apertures for receiving said terminals;
a mounting plate disposed between said connector and said board, said mounting plate being fixed to said board, said mounting plate having a plurality of through slits each aligned with one of said apertures, each of said slits receiving one of said terminals therethrough so that each of said terminals extends into one of said apertures, said terminals being electrically connected to said board, said mounting plate having end portions projecting laterally beyond the lateral edges of said printed circuit board, said end portions having attaching means thereon; and
a base attachable to said end portions of said mounting plate for supporting said mounting plate and thereby supporting said printed circuit board and said connector.

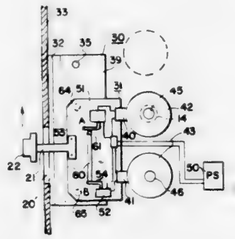
4,410,929

LINEAR MOTION SWITCH ASSEMBLY PARTICULARLY ADAPTED FOR USE WITH FIBER OPTIC LIGHT SOURCES

Richard E. Feinbloom, and Melvin Levine, both of New York, N.Y., assignors to Designs for Vision, Inc., New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,466
Int. Cl.³ F21V *7/04*
U.S. Cl. 362—32 **10 Claims**

1. A switch assembly for selecting one of a first and second lamp assembly, comprising:
(a) a carriage member having a first slot in one sidewall thereof, with said slot directed from the top to the bottom surface of said member, said member having a second slot in an adjacent sidewall with said second slot parallel to said first slot and of a shorter length,
(b) a planar rigid plate member with one edge of said member positioned within said first slot to allow said carriage member to move along said planar member as guided by said edge,
(c) an extending rod secured to said planar plate member and extending through said second slot for defining a linear path of motion for said carriage member,



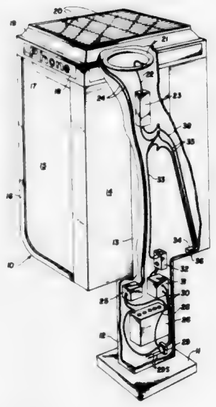
(d) first and second actuatable switching means positioned on said carriage member with said first switching means located near one end of said second slot and said second switching means located near the opposite end of said second slot, with said switching means adapted to be actuated by said rod when said carriage member is moved along said planar member,
(e) first and second lamp assemblies each associated with a separate one of said switches whereby when said carriage is moved along said planar member a separate one of said switching means is actuated to illuminate said associated lamp assembly.

4,410,930

PHOTO VOLTAIC LIGHTING FOR OUTDOOR TELEPHONE BOOTH

Jerry Yachabach, Lakeland, Fla., assignor to Gladwin, Inc., Oakwood, Ga.

Filed Feb. 5, 1982, Ser. No. 346,273
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—145 **24 Claims**



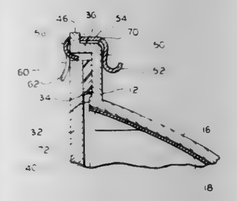
1. A illumination system comprising in combination, a fluorescent lamp illumination means, a photo voltaic direct current voltage generator generating means, an direct current storage battery means, means for controllably connecting said photo voltaic direct current voltage generator to said storage battery means, means for detecting ambient light conditions and control circuit means, including means for converting the DC voltage of said storage battery to AC voltage for operating said fluorescent lamp connected to said means for detecting ambient light for causing said illumination means to be energized from said electrical energy storage means when the ambient light falls below a predetermined level, the improvement wherein said means for detecting ambient light intensity includes means for sensing the voltage levels generated by the photo voltaic energy generating means.

4,410,931

RETENTION DEVICE FOR LIGHTING FIXTURE COVER

Giovanni DeCandia, Germantown, and Edward B. Bilson, Memphis, both of Tenn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 23, 1981, Ser. No. 304,819
Int. Cl.³ F21J *29/00*
U.S. Cl. 362—267 **9 Claims**



1. In a lighting fixture, retention apparatus for holding a translucent rimless refractor lens tightly against a main housing of the fixture, said apparatus comprising an integral ridge on the face of the housing externally of an area abutting an opening inset in the face of the housing to be covered by said lens, said retention apparatus including a resilient clip member mating with said ridge for holding said clip member on said housing with said clip member being slidable along said ridge, an inturned finger on said clip member, said finger biased to engage the outer surface of the lens and hold the lens tightly against the housing in the luminaire operative condition, a stop member on said ridge adapted to stop the slide of said clip member with said finger free of engagement with the outer surface of the lens to enable removal of the lens in an inoperative condition of the luminaire.

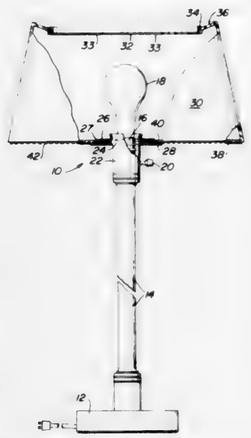
4,410,932

ELECTRIC LAMP

Joseph Oster, Allentown, Pa., assignor to Keystone Lamp Mfg. Corporation, Slatington, Pa.

Filed Jun. 11, 1981, Ser. No. 272,448
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—294 **13 Claims**

1. An electric lamp for use on a floor, wall, ceiling, desk or table comprising an upright lamp support having a socket provided with means for attaching a light bulb to said socket, an annular polymeric plastic shade surrounding said socket, a horizontally disposed reflector at the upper end of said shade reflecting light downwardly, said shade and reflector being discrete and separable, an annular rigid diffuser of polymeric plastic, said diffuser having it outer periphery bonded to the lower edge portion of said shade and having a central opening therein of sufficient size to clear said socket and the attached light bulb to permit vertical removal of said shade and diffuser



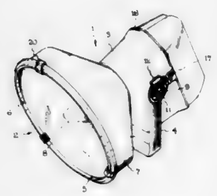
as an integral unit, and means defining air flow passages so that air may flow upwardly in an axial direction through the shade.

4,410,933

LUMINAIRE TRUNNION DEGREE MARKER AND RESET STOP

Walter R. Blake, Hendersonville, and Jerry R. Plemmons, West Asheville, both of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,248
Int. Cl.³ F21P *5/00*
U.S. Cl. 362—371 **4 Claims**



1. In combination:
a luminaire comprising a housing containing means for accommodating an electric lamp and an optical assembly producing a beam of light when the lamp is energized,
a trunnion bracket and trunnion bolts for mounting the luminaire in a pivotable manner on a support structure,
a degree marker and reset stop device to facilitate aiming said luminaire and resetting it to its original aim after it has been tilted for service, comprising a flat plate having a short foot projecting therefrom, the plate having a hole therein, an arcuate slot surrounding the hole, said plate being mounted against the trunnion with one of the trunnion bolts extending through the hole, and a screw extending through the slot for locking the plate to the trunnion bracket independently of the trunnion bolt,
and a stop on the housing for engagement by said foot when a luminaire is aimed and the device is fast against it, loosening of the trunnion bolts thereafter allowing the housing

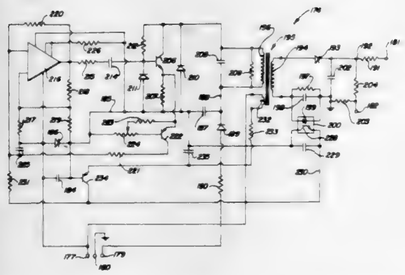
to be tilted for service and then reset to its original aim by bringing the shoulder stop home against said foot.

4,410,934

DC POWER SUPPLY FOR AN AIR FILTER

George H. Fathauer, Mesa, Ariz.; James M. Fowler, Jr., Houston, Tex.; Edward J. Rylicki, Powell, and Edwin E. Mason, Rockbridge, both of Ohio, assignors to Masco Corporation, Taylor, Mich.

Filed Jul. 22, 1981, Ser. No. 285,417
Int. Cl.³ H02M 3/335; B03C 3/68
U.S. Cl. 363—21 6 Claims



1. Air filtering apparatus including a low voltage source, ionization means requiring a high DC operating voltage, a step-up transformer having a primary winding and a secondary winding, driver means for so energizing said primary winding from said low voltage source as to develop a high voltage of alternating polarity in said secondary winding, and rectifier means for rectifying said high voltage to apply a high DC voltage to said ionization means, said driver means including an output transistor connecting said primary winding to said low voltage source, and an oscillator circuit means associated with said output transistor and operable at a high frequency to periodically switch between first and second states and to switch said output transistor between conductive and non-conductive conditions for developing high voltage in said secondary winding, said low voltage source comprising a first supply voltage section including a first capacitor arranged to be charged in one direction for applying a first DC operating voltage through said output transistor to said primary winding and a second supply voltage section including a capacitor arranged to be charged in one direction for supplying a second DC operating voltage to said oscillator circuit means, common low voltage rectifier means for both of said supply voltage sections, and means connecting said first and second capacitors of said first and second supply voltage sections in series with each other and through said low voltage rectifier means to a pair of AC supply lines to simultaneously charge both of said capacitors in said one direction from current flow in one direction through said rectifier means, each of said first and second DC operating voltages thereby being a fraction of the peak voltage developed between said pair of AC supply lines.

4,410,935

CURRENT OVERLOAD PROTECTION FOR INVERTER OF UNINTERRUPTIBLE POWER SUPPLY SYSTEM

Gurcharn S. Dang, Schaumburg, Ill., assignor to General Signal Corporation, Stamford, Conn.

Filed Mar. 23, 1981, Ser. No. 246,510
Int. Cl.³ H02H 7/122
U.S. Cl. 363—37 5 Claims

1. Apparatus for providing a regulated uninterruptible AC output to a critical load comprising:

a bridge rectifier having an AC supply at its input, said bridge rectifier including a diode in each of a first pair of its legs and a silicon controlled rectifier in each of another pair of its legs;

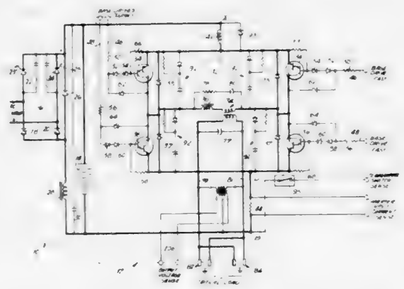
a DC supply connected across the output of said bridge rectifier;

a bridge inverter connected to supply AC power to said critical load, each half of the bridge inverter including at least one transistor of given conductivity-type in an upper leg thereof, and at least one transistor of opposite conductivity-type in a lower leg thereof, said transistors being connected in series with said DC supply;

a current overload protection means including a current-sensing resistor directly connected in series between the emitter of the transistor in the lower leg of each half of said bridge inverter and one terminal of said DC supply;

means for responding to voltage across the sensing resistor to shut down the bridge inverter, including

a shutdown circuit, and means for connecting said current overload protection means to said shutdown circuit, said shutdown circuit including at least three comparators con-



nected to a common input, said comparators having different input thresholds and different time delays at their respective outputs such that when an extreme current overload occurs, said inverter is shut down immediately, whereas it is shutdown after predetermined longer time periods when correspondingly lesser amounts of current overload are present,

said shutdown circuit further comprising means for shutting down the bridge inverter in the event of excess temperature and low battery voltage, said shutdown circuit also including a first NOR circuit for responding to an over temperature signal and a low battery voltage signal, first and second flip-flops for responding to the output condition of said first NOR circuit and for responding to an over current signal, a second NOR circuit connected to respective outputs of said first and second flip-flops, and a feed-back line connected from the output of said second NOR circuit to the input of said first NOR circuit for latching the output condition of said second NOR circuit.

4,410,936

POWER CONVERTER

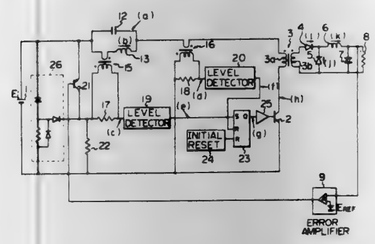
Yoshikazu Suzuki, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 18, 1982, Ser. No. 340,373
Claims priority, application Japan, Jan. 24, 1981, 56-9220
Int. Cl.³ H02P 13/00
U.S. Cl. 363—80 7 Claims

1. A power converter comprising a DC power source (1), a switching element (2), a transformer (3) having a secondary winding (3*b*) and a primary winding (3*a*) coupled with said DC power source (1) and said switching element (2) so that said DC power source (1), the primary winding (3*a*) and the switching element (2) compose a closed circuit, a control circuit (14) for turning ON and OFF said switching element (2), a rectifier circuit with a diode coupled with the secondary winding of said transformer, and an output filter circuit coupled with said rectifier circuit, and the output of said output filter circuit being coupled with an external load,

characterized in that

a parallel circuit with a capacitor (12) and a coil (13) is provided in said closed circuit, and said control circuit (14) controls said switching element (2) so that said



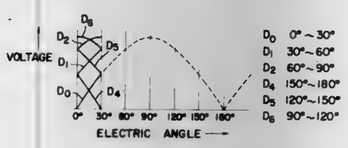
switching element (2) is turned to the ON status when the current in said coil (13) reaches a predetermined value which depends upon an output power of the present power converter, and said switching element (2) is turned to the OFF status after the current in said switching element (2) reaches zero.

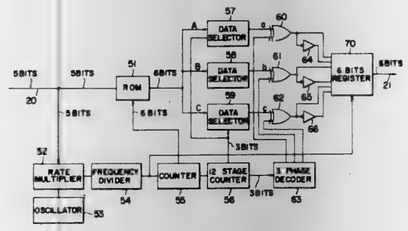
4,410,937

METHOD OF CONTROLLING POLYPHASE INVERTERS AND CONTROL CIRCUITS THEREFOR

Michika Uesugi, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 21, 1981, Ser. No. 295,106
Claims priority, application Japan, Sep. 1, 1980, 55-120820
Int. Cl.³ H02M 1/08
U.S. Cl. 363—132 4 Claims





1. A method of controlling a polyphase inverter comprising the steps of:

dividing ideal polyphase sinusoidal waveforms into a plurality of consecutive sections having specific characteristics and equal width in electric angles;

encoding said sections for different frequencies to form a plurality of encoded data;

storing the encoded data in a ROM:

selectively reading out said encoded data stored in said ROM according to a predetermined conduction pattern of said inverter;

combining in a succession said read out encoded data to form positive half cycle waveforms of said polyphase sinusoidal waveforms;

inverting said read out encoded data and then combining in a succession to form negative half cycle waveforms respectively succeeding said positive half cycle waveforms thereby forming polyphase sinusoidal waveforms; and

applying said polyphase sinusoidal waveforms to said inverter to act as control signals.

3. An inverter control circuit comprising:

a ROM;

a rate multiplier;

means for applying frequency data of a predetermined frequency to said ROM and said rate multiplier;

an oscillator for applying a constant frequency signal to said rate multiplier;

a frequency divider for dividing a frequency of an output of said rate multiplier;

a counter which counts a number of outputs of said frequency divider for storing electric angle data in said ROM;

a multistage counter controlled by an output of the last stage of said first mentioned counter;

a polyphase decoder controlled by an output of said multistage counter for producing polyphase alternating current signals;

a plurality of data selectors respectively controlled by an output of said multistage counter for selectively reading out said electric angle data from said ROM;

a plurality of logic gate circuits respectively inputted with outputs of said data selectors and said polyphase output of said polyphase decoder; and

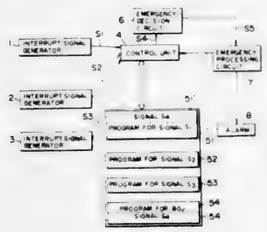
a multibit register supplied with noninverted outputs and inverted outputs of said logic gate circuits, and an output of said frequency divider for forming polyphase sinusoidal waveforms.

4,410,938

COMPUTER MONITORING SYSTEM FOR INDICATING ABNORMALITIES IN EXECUTION OF MAIN OR INTERRUPT PROGRAM SEGMENTS

Kazuhiro Higashiyama, Atsugi, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Apr. 1, 1980, Ser. No. 136,403
Claims priority, application Japan, Apr. 2, 1979, 54-38399
Int. Cl.³ G06F 9/46, 11/32, 9/40, 11/30
U.S. Cl. 364—200 8 Claims



1. A system for monitoring program execution in a digital computer adapted to perform a main routine and at least one interrupt routine in response to an interrupt command signal generated during execution of the main routine in response to the occurrence of a particular event, said system comprising:

(a) first means including said digital computer for providing a decision signal with first and second levels, said digital computer being adapted to provide a transition of the signal to the first level upon termination of the main routine and to provide a transition of the signal to the second level upon beginning of the interrupt routine;

(b) means for developing a predetermined reference time period;

(c) means for measuring a period of time during which said decision signal is held without transition at either the first or second levels; and

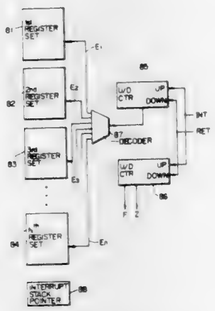
(d) second means for generating a signal indicative of a fault condition in said digital computer in response to the decision signal being held without transitions at either the first level or the second level for a time greater than the reference time period.

4,410,939

SYSTEM FOR PROGRAM INTERRUPT PROCESSING WITH QUASI-STACK OF REGISTER-SETS

Katsura Kawakami, Yokohama, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jul. 16, 1980, Ser. No. 169,475
Claims priority, application Japan, Jul. 17, 1979, 54-90597
Int. Cl.³ G06F *9/06, 9/40, 13/00*
U.S. Cl. 364—200 **2 Claims**



1. A method of processing program interrupts in a computer system having a central processing unit with a plurality of registers, and a main memory with a plurality of addresses, said registers being electrically divided into a plurality of register-sets so as to form a quasi stack of register-sets in which any one of said register sets may be used as the top register-set in said quasi stack, said register-sets in said quasi stack being arranged in a predetermined order to form a loop of register-sets, said main memory storing a program of a main routine and a plurality of programs of interrupt service routines having different priority levels, a first register-set in said quasi stack being normally enabled for the execution of said program of said main routine, said method comprising the steps of:

(a) enabling said first register-set for executing the program of said main routine;

(b) enabling another one of said register-sets as said top register-set in said predetermined order each time a first interrupt request or an interrupt request having a priority level higher than that of the interrupt service routine on execution is acknowledged for executing a corresponding interrupt service routine by the enabled register-set one after another;

(c) enabling another one of said register-sets as said top register-set in an order reverse to said predetermined order each time said corresponding interrupt service routine has been completed for completing suspended interrupt service routine or routines of lower priority levels, if any, one after another; and

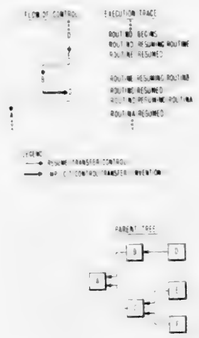
(d) resuming the execution of the program of said main routine by enabling said first register set after all of the interrupt requests are processed.

4,410,940

TRANSFER OF CONTROL METHOD AND MEANS AMONG HIERARCHICAL COOPERATING SEQUENTIAL PROCESSES

Eric D. Carlson, Los Gatos; Henry M. Gladney, Saratoga; Peter Lucas; Daniel L. Weller, both of San Jose, and Stephen N. Zilles, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,268
Int. Cl.³ G06F *9/06*
U.S. Cl. 364—200 **3 Claims**



1. A digital computer implemented method for maintaining synchronous computations among a set of recursively nested cooperating sequential processes, comprising the steps of:

(a) generating and storing in memory an activation record (AR) for each process, each AR including a pointer (PARENT) to the AR of the immediate antecedent process, the set of PARENT pointers defining a tree graph ordering or nesting structure, each subtree of which is itself such a structure with a root process and descendent processes, each AR further including a pointer (PROCESS) to the AR of the most recently activated process within the least inclusive subtree ordering of which it is a member, and information defining the current execution state of the process; and

(b) responsive to execution of an instruction, transferring control to a process within the set of processes:

(i) ascertaining the nearest antecedent of both the transferring and the transferred to processes using the PARENT pointers;

(ii) updating the PROCESS pointers of all the processes between the closest antecedent process and the transferred to process so that they designate the antecedents in sequence to the transferred to process;

(iii) following the PROCESS pointers from the transferred to process to the most recently executing process in the subtree it roots, and resuming the execution of the transferred to process.

4,410,941

COMPUTER HAVING AN INDEXED LOCAL RAM TO STORE PREVIOUSLY TRANSLATED VIRTUAL ADDRESSES

Arthur B. Barrow, Acton, and Horace H. Tsiang, North Andover, both of Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Dec. 29, 1980, Ser. No. 220,902
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **2 Claims**

1. In a multitasking data processing machine supporting virtual memory comprising a plurality of segments, said data processing machine having

a central processor including a latch, a memory address register and a memory data register,

a control store connected to said central processor,

a bus connected to said central processor, comprising address signal lines receiving address signals from said memory address register, and data signal lines receiving data signals from said memory data register and providing data signals to said memory data register,

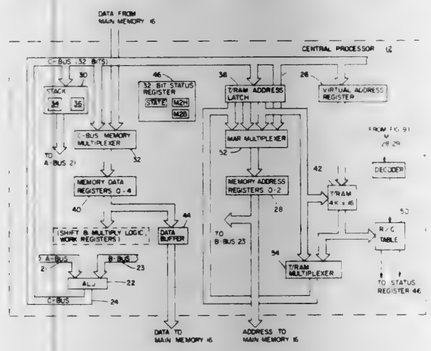
physical memory adapted for storing data signals representative of data and macroinstructions, comprising

relatively slow access secondary memory connected to said bus, and providing a plurality of pages, each page containing a plurality of said data signals, and

relatively fast access main memory connected to said bus for receiving and providing data signals and receiving address signals, said main memory providing a plurality of page frames each adapted to contain the same plurality of data signals contained by a said secondary memory page, and addressable by physical address signals comprising page frame number signals and offset signals,

said central processor, control store and bus together providing means for controlling the copying of a page-sized plurality of the data signals of said secondary memory into addressed said main memory page frames and vice versa,

said data processing machine being adapted to operate responsive to certain of said data signals representative of macroinstructions provided in said physical memory, said central processor and control store together being responsive to signals representative of particular read and write memory access macroinstructions to generate virtual address signals comprising segment number signals, page number signals and offset signals, and to deliver said virtual address signals to said latch,



said central processor and control store being further responsive to said memory access macroinstructions to perform a translation of said virtual address signals to corresponding physical address signals, said translation comprising the application of said segment number and page number signals to said main memory to address particular portions of main memory containing page frame number signals, and the transmission of said page frame number signals from said main memory, together with said offset signals from said latch, to said memory address register,

said central processor and control store being further responsive to said read memory access macroinstructions to apply to said memory data register data signals from said addressed main memory page frames, and to said write memory access macroinstructions to apply to said addressed main memory page frames signals from said memory data register,

that improvement comprising

an indexed random access memory within said central processor, having its indexing means connected to certain of the outputs of said latch,

multiplexer means having its outputs connected to the inputs of said memory address register, and having two sets of inputs, the outputs of said random access memory being connected to the first said set of inputs, the outputs of said latch being connected to the second said set of inputs,

said central processor and control store together being initially responsive to a said memory access macroinstruction to apply signals representative of said virtual address page number from said latch to said random access memory indexing means to provide at its outputs the set of signals stored at the indexed location, including signals representative of said page frame number and a fault signal having one of two states,

said multiplexer means being responsive to a first state of said fault signal to transmit the indexed page frame number signals from said random access memory to said memory address register for addressing main memory, and responsive to a second state of the fault signal to transmit the virtual address signals output from said latch to said memory address register for translation,

said central processor and control store further being responsive to the second state of said fault signal to perform said translation of said virtual address signals and to apply signals representative of said translated page frame number to said indexed location in said random access memory, together with a said fault signal having said first state, said central processor further providing

a status register comprising a plurality of settable status bits for indicating operating status of said data processing machine,

an indexed reference and change table providing a settable reference bit and a settable change bit for each said page frame in said main memory,

said reference and change table being connected to the output of said indexed random access memory for indexing of said table by said page frame number,

said central processor and control store together being responsive to a said memory access macroinstruction to set said indexed reference bit, and to a said write memory access macroinstruction to set said indexed change bit,

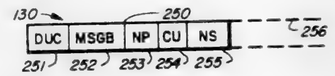
the output of said reference and change table being connected to said status register for setting particular ones of said status bits in response to the state of said indexed reference and change bits.

4,410,942

SYNCHRONIZING BUFFERED PERIPHERAL SUBSYSTEMS TO HOST OPERATIONS

Charles A. Milligan, St. David; Edwin R. Videki, II, and Winston F. Yates, both of Tucson, all of Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,273
Int. Cl.³ G06F *15/00, 3/00*
U.S. Cl. 364—200 **7 Claims**



4. A method of operating a data processing system comprising one or more host processors connected to a peripheral data processing system including at least one control unit and a plurality of peripheral devices, in which the control unit includes a buffer for temporarily storing blocks of data signals from a host processor for the peripheral devices, the method including the steps of transferring blocks of data signals from a host processor to a control unit, temporarily storing transferred blocks of data signals in the buffer of the control unit, scheduling temporarily stored blocks of signals for asynchronous transfer to peripheral devices, transferring temporarily stored blocks of signals to peripheral devices in accordance with the schedule, and sending an adumbrative signal to a host processor that a peripheral device has received a block of

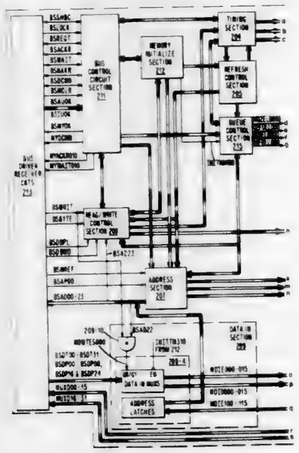
signals, in response to the temporary storage of the block of signals; in response to a synchronizing command received from a host processor for a particular peripheral device, setting forth in the schedule as the next asynchronous transfer the transfer of all said temporarily stored blocks of signals scheduled for that particular device to that device, and resuming after said next transfer the transfer of other stored signal blocks in accordance to the original schedule as would be applied to the other peripheral devices prior to the receipt of said synchronize command in response to the complete transfer of the block of signals to the peripheral device, signalling the host processor that the peripheral device has stored the block of signals, and in response to the synchronizing command received from the host processor, the sending of the adumbrative signal to the host processor is inhibited, if not already sent.

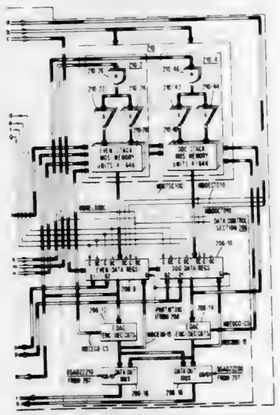
4,410,943

MEMORY DELAY START APPARATUS FOR A QUEUED MEMORY CONTROLLER

George J. Barlow, Tewksbury, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 23, 1981, Ser. No. 246,570
Int. Cl.³ G06F *13/06, 13/00*
U.S. Cl. 364—200 **29 Claims**





1. A memory controller for use in a system including at least one request generating unit coupled to a bus in common with said controller, said controller being coupled to at least one memory module for controlling the operation of said module in response to each of a number of different types of memory requests generated by said unit requiring one or more memory cycles of operation, said module including a plurality of word locations and said controller including control circuits for generating command signals requesting said controller to perform internal operations requiring memory cycles of operation and means for generating control signals when said memory cycles of operation are being performed, said controller further comprising:

at least one queue circuit means, said queue circuit means being coupled in common to said module and to said bus for receiving and storing different ones of said plurality of memory requests;

queue control means coupled to said queue circuit means, said queue control means generating signals for indicating the request availability status of said queue circuit means; and,

memory delay start control means being directly coupled to said queue control means and to said control circuits for receiving said command signals, said memory delay start control means including:

delay circuit means coupled to receive said control signals; and, recycle control means coupled to said delay circuit means, to said queue control means and to said control circuits, said recycle means being operative in response to said signals from said control circuits and each of said means to generate signals on a predetermined priority basis for initiating successive memory cycles of operation within a minimum of time for processing both said internal operations and said memory requests.

4,410,944

APPARATUS AND METHOD FOR MAINTAINING CACHE MEMORY INTEGRITY IN A SHARED MEMORY ENVIRONMENT

Reinhard K. Kronies, Fountain Valley, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 24, 1981, Ser. No. 247,214
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **6 Claims**

1. In a data processing system, the combination comprising:

a shared memory;

a dedicated memory;

a first requestor capable of selectively reading data from an address in either said shared memory or said dedicated memory, said first requestor including a cache having a fast access time and a smaller storage capacity relative to said shared and dedicated memories;

said cache being responsive to the reading of data from either said shared memory or said dedicated memory by said first requestor for storing the data read out from said shared memory in a manner so as to provide for rapid accessing thereof by said first requestor;

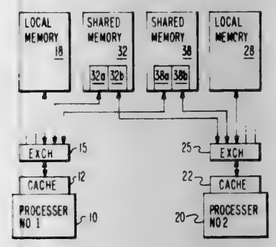
said first requestor being operable to selectably access data from said cache and also to selectively invalidate data in said cache; and

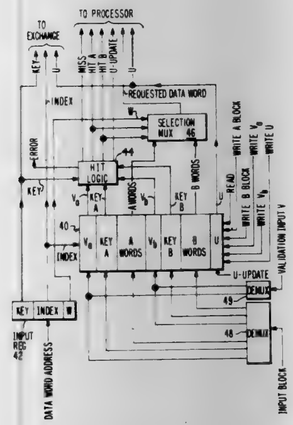
a second requestor capable of writing into a shared memory address which is accessible by said first requestor;

said shared memory including monitoring and control means responsive to a request by said second requestor which writes into a shared memory address which is also currently stored in said cache to signal said first requestor to invalidate the data in said cache corresponding to this shared memory address;

said monitoring and control means including an updatable address table memory for storing a shared memory address in response to the transferring of the data at this shared memory address from said shared memory to said cache;

said monitoring and control means also including means for accessing said address table memory in response to said second requestor writing into a shared memory address so as to determine whether the shared memory address written into by said second requestor is also stored in said cache.



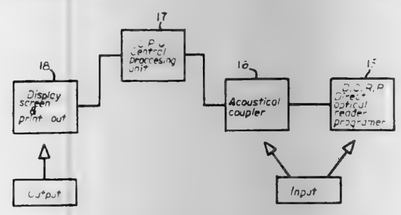


4,410,945

HIGH SPEED PROGRAMMING OF A COMPUTER

James D. Merdan, 1097 VanDyke, Appleton, Wis. 54910

Filed Apr. 27, 1981, Ser. No. 250,099
Int. Cl.³ G06F *3/033, 3/14*
U.S. Cl. 364—200 **3 Claims**



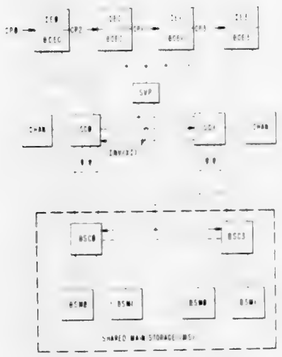
1. In a programming process, the steps of preparing a written program in a special coding form, submitting said program to an optical reader, transmitting said program thru an acoustical coupler, incorporating said program into a central processing unit, and exhibiting said program on a display screen.

4,410,946

CACHE EXTENSION TO PROCESSOR LOCAL STORAGE

Dana R. Spencer, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,823
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **5 Claims**



1. A processor including an instruction (IE) unit for executing any of a programmable set of instructions, a main storage (MS), a high-speed cache connected between the IE and the MS, and cache controls, the invention comprising:

local store (LS) command means connected from the IE to the cache controls to signal a LS store operation in the cache for IE local storage (LS) information,

cache addressing means for addressing a class of one or more entries normally used for storing operand data in a cache directory within the cache controls,

means for assigning one entry in the addressed class to a IE request for a LS store operation,

fetch inhibit means enabled by a LS command from the LS command means for preventing a line fetch request to MS by the cache controls when a cache miss occurs due to a LS command,

whereby LS data may be stored in and fetched from any entry in the cache by the IE after the cache controls are enabled by a LS command,

a processor designated area being provided in MS hardware, the processor designated area having locations addressable in a LS command but not being addressable by any MS address field in commands for programmable instructions,

a LS command from the LS command means for requesting a LS access to a location in the processor designated area,

detecting means in the cache controls for detecting a LS command containing an address to a processor designated MS area,

the cache addressing means in the cache control receiving an address provided with any IE sforage command, including the address to the processor designated MS area provided with a LS command, in order to address a class of entries in a cache directory in the cache controls,

means for actuation the fetch inhibit means in the cache controls in response to the detection means detecting a LS command to prevent any line fetch to MS from occurring in response to the LS command, and

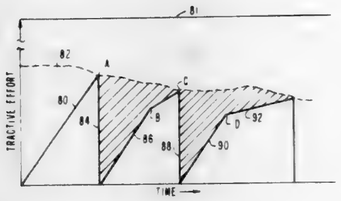
means for transferring LS data from the IE to the cache controls for being stored in the cache location provided by the assigning means.

4,410,947

VEHICLE PROPULSION CONTROL APPARATUS AND METHOD

John D. Strong, Mt. Oliver, and Thomas C. Matty, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 2, 1981, Ser. No. 279,929
Int. Cl.³ G06F *15/20*; H02P *5/00*
U.S. Cl. 364—426 **10 Claims**



1. In propulsion control apparatus for a vehicle controlled by a tractive effort request signal and having at least two support wheel assemblies operative with a track with respective speed signal providing tachometers being coupled with each of the wheel assemblies, the combination of:

means responsive to the tractive effort request signal for applying tractive effort between at least two wheel assemblies of the vehicle and the track;

means for sensing a predetermined speed relationship between said two wheel assemblies of the vehicle resulting from the occurrence of a loss of adhesion between at least one wheel assembly and the track;

means for remembering the level of the applied tractive effort when said loss of adhesion occurred; and

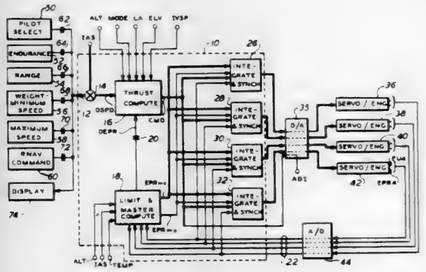
means for reapplying the tractive effort through at least one of said wheel assemblies at a first acceleration rate up to a tractive effort level less than said remembered level and then at a second acceleration rate different, than said first acceleration rate.

4,410,948

MULTI-ENGINE AUTOTHROTTLE PROVIDING AUTOMATIC ENGINE EPR EQUALIZATION

Jerry Doniger, and Albert T. Kirchhein, both of Montvale, N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Feb. 13, 1981, Ser. No. 234,141
Int. Cl.³ G06F *15/46*; F02K *3/00*; G05B *13/02*
U.S. Cl. 364—431.01 **17 Claims**



1. A throttle controller for a vehicle having a plurality of engines, each regulated by a throttle, characterized by:

thrust sensing means responsive to said engines for providing a plurality of thrust signals, each corresponding to the thrust produced by a different corresponding one of said engines;

speed sensing means for providing a speed signal corresponding to the speed of said vehicle; and

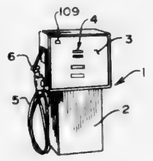
actuation means for adjusting the throttle of each of said engines, said actuation means being connected to said speed and said thrust sensing means and being responsive to said speed and thrust signals to adjust each throttle to balance the thrusts of said engines, said actuation means being responsive to that one of the engines producing the greatest of said thrust signals by adjusting the throttle of each of the other engines in a direction to equalize substantially said thrust signals.

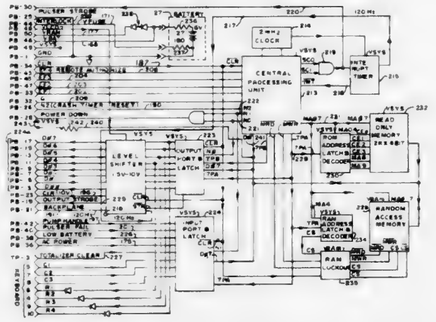
4,410,949

CONTROLLER FOR FUEL DISPENSER

Thomas R. Huellinghorst, Florissant; Benjamin A. Hammond, II, Overland; Robert H. Luedde, Villa Ridge; William C. Mertz, Webster Groves, all of Mo., and Steven H. Goldberg, Santa Clara, Calif., assignors to Unidynamics/St. Louis, Inc., St. Louis, Mo.

Filed Sep. 9, 1980, Ser. No. 185,612
Int. Cl.³ G06F *15/56*; B67D *5/08*
U.S. Cl. 364—465 **42 Claims**





1. A controller for fuel dispenser for use in facilitating and accurately determining the quantity of fuel being dispensed, comprising, a base member, a pulser means supported by said base member, computer means operatively associated with the said pulser means and responsive to signals generated by the pulser means for processing data relative to the dispensing of fuel, said pulser means including an encoder disc mounted for revolving in two directions in response to the flow of fuel being dispensed or monentarily drawn within the dispenser, said disc including rows of detecting means for providing sensing of the quantity and direction of flow of the fuel being dispensed, said rows of detecting means including a series of rows of slots formed through the said encoder disc and useful for effecting sensing of the rates of flow of fuel being dispensed and the direction of fuel flow, said pulser means including sensor means responsive to the turning of the disc and generating electrical signals in response thereto and transferring said signals to the computer means for processing, wherein one row of the slots of the encoder disc cooperating with the sensor means for signaling a detection of the rate of quantity of fuel

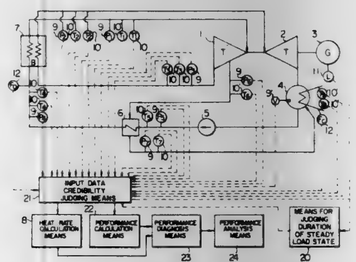
being dispensed to a first limit, and another row of slots of the encoder disc cooperating with the sensor means and provided for signaling and detecting the rates of flow of fuel in excess of the said first limit, and another row of slots of the encoder disc provided for determining the discharging and retracting of dispensing and flowing fuel, and display means operatively associated with the said computer means for displaying the processed data.

4,410,950

METHOD OF AND APPARATUS FOR MONITORING PERFORMANCE OF STEAM POWER PLANT

Keiichi Toyoda, Katsuta, and Tsugutomo Teranishi, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,046
Claims priority, application Japan, Dec. 17, 1979, 54-162788
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—551 **12 Claims**



9. An apparatus for monitoring the performance of a steam power plant of the type having detectors for detecting the feedwater flow rate, steam pressure, steam temperature and load imposed on said plant which represent the states of operation of various parts of said plant comprising plant performance calculating means for calculating said performance of said plant as a function of the data by calculating at least one heat rate function, said calculating means including a first comparator for comparing the rate of fluctuation of the load detected by said detector for detecting loads varying less than a predetermined reference value which is indicative of a steady state condition; a second comparator for comparing the time length within which the rate of fluctuation of the load is less than the reference value with a predetermined reference time length; and means for permitting said data to be delivered to said plant performance calculation means only when the rate of fluctuation of load falls below the predetermined reference fluctuation value for at least the predetermined reference value time length, in accordance with the outputs from said first and second comparators.

4,410,951

POSITIONING APPARATUS

Takuma Nakamura, and Kazumi Sugizaki, both of Kanagawa, Japan, assignors to VLSI Technology Research Association, Kanagawa, Japan

Continuation of Ser. No. 167,080, Jul. 9, 1980, abandoned. This application Aug. 2, 1982, Ser. No. 403,963
Claims priority, application Japan, Jul. 10, 1979, 54-87626
Int. Cl.³ G05B *19/18*
U.S. Cl. 364—559 **4 Claims**

1. A positioning apparatus comprising:

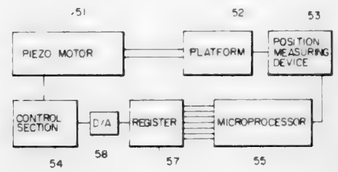
shifting means both having a large stroke and being capable of moving an extremely short distance;

a platform coupled to be moved by said shifting means;

position measuring means for measuring the position of said platform;

calculating means receiving an output of said position measuring means for calculating an integer number of steps of a maximum step size and a fraction of said maximum step size for a single step through which said platform is to be moved to arrive at a desired position; and

control means for subjecting an output of said calculating means to digital-to-analog conversion to generate a pulsive signal the magnitude of which corresponds to said



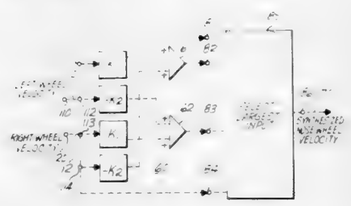
maximum step size for said integer number of steps and to said fraction of said step size for said single step for thereby controlling said shifting means to move said platform to said desired position in said integer number of steps of said maximum step size and a single step of said fraction of said maximum step size.

4,410,952

METHOD AND APPARATUS FOR GENERATING NOSE WHEEL SPEED SIGNALS

Garrett H. DeVlieg, and Andrew M. Valaas, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 141,441, Apr. 18, 1980, Pat. No. 4,322,809. This application Aug. 5, 1981, Ser. No. 290,623
The portion of the term of this patent subsequent to Mar. 30, 1999, has been disclaimed.
Int. Cl.³ B60T *8/02*
U.S. Cl. 364—565 **3 Claims**



2. A converter circuit for generating nose wheel speed signals from main landing wheel speed signals, said converter having:

a first converter input terminal;

a second converter input terminal;

a converter output terminal;

said first converter input terminal responsive to a signal V_L representative of left main gear wheel velocity;

said second converter input terminal responsive to a signal V_R representative of right main gear wheel velocity;

first means for providing a signal representative of K_1V_L-K_2V_R; and,

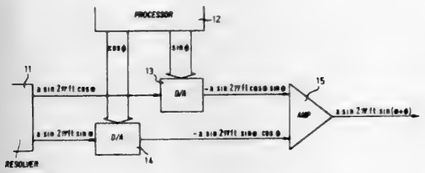
second means for providing a signal representative of K_1V_R-K_2V_L where K_1 and K_2 are fixed constants;

a select largest circuit having an output terminal coupled to said converter output terminal, said select largest circuit selecting the largest of said signals representative of V_L, V_R, K_1V_L-K_2V_R, and K_1V_R-K_2V_L to provide said nose wheel signals.

4,410,953
ANGLE COMPARISON DEVICE

Horace A. Barker, Dorridge, England, assignor to ASR Servotron AG, Petit-Lancy, Switzerland

Continuation of Ser. No. 41,438, May 22, 1979, abandoned. This application Dec. 17, 1980, Ser. No. 217,124
Int. Cl.³ G06J *1/00*; G06G *7/22*
U.S. Cl. 364—603 **5 Claims**



1. Apparatus for providing an analogue output which is a trigonometrical function of the sum of an analogue angle amplitude modulated input represented by a sin 2π ft cos θ and a sin 2π ft sin θ, and a digital angle input ϕ, comprising a digital processor for producing said digital angle input ϕ comprising digital words representing the value of sin ϕ and cos ϕ, said processor having a capability to modify said digital words to compensate for errors in said analogue input, said analogue input containing errors expressed as $(1+\epsilon_1)$ sin $(\theta+\Sigma_1)$ and $(1+\epsilon_2)$ cos $(\theta+\Sigma_2)$, said processor modifying the value represented by said digital words using the following digital input functions:

$$\frac{\sin(\phi - \Sigma_1)}{(1+\epsilon_2)\cos(\Sigma_2 - \Sigma_1)}$$

and

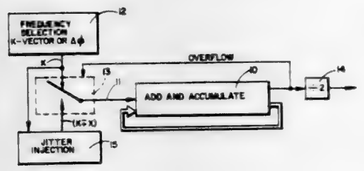
$$\frac{\cos(\phi - \Sigma_2)}{(1+\epsilon_1)\cos(\Sigma_2 - \Sigma_1)},$$

two digital/analogue converters for multiplying sines and cosines of the two angles to produce signals —a sin 2π ft cos θ sin ϕ and —a sin 2π ft sin θ cos ϕ, and means for combining signals produced by said converters whereby a signal a sin 2π ft sin $(\theta+\phi)$ is produced.

4,410,954
DIGITAL FREQUENCY SYNTHESIZER WITH RANDOM JITTERING FOR REDUCING DISCRETE SPECTRAL SPURS

Charles E. Wheatley, III, Chino, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 8, 1980, Ser. No. 195,274
Int. Cl.³ H03K *13/32*
U.S. Cl. 364—701 **17 Claims**

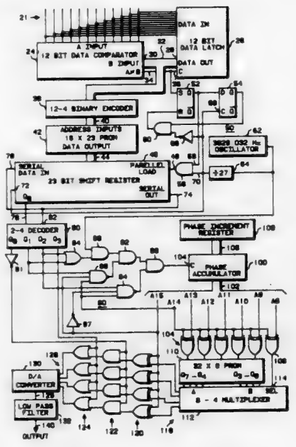


1. In a digital frequency synthesizer for synthesizing a selected frequency of a library of preselected frequencies in which a preselected phase increment K is repetitively supplied to a digital integrator which provides an output signal at said selected frequency, said digital integrator having an adder responsive to said phase increment K and an accumulating register having an overflow output and an input responsive to said adder, with the periodicity of said output signal corresponding to the periodic overflow of said register which has an average frequency corresponding to said selected frequency, the improvement comprising means for reducing discrete spectral spurs in said output signal by combining a random jittering signal with one of the input to and overflow output of the register, so that said output signal responds to said jittering signal and so that the average periodicity of the register overflow for a selected frequency is not affected by said jittering signal.

4,410,955
METHOD AND APPARATUS FOR DIGITAL SHAPING OF A DIGITAL DATA STREAM

Timothy M. Burke, Ft. Worth, Tex.; George W. Meyer, Buffalo Grove, Ill., and John A. Moore, Portland, Oreg., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 30, 1981, Ser. No. 249,571
Int. Cl.³ G06F *1/02*
U.S. Cl. 364—718 **9 Claims**

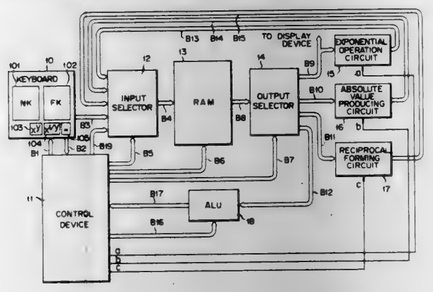


1. Digital waveform shaping apparatus for generating a desired digital data stream composed of a plurality of digital bits comprising:
clock means for generating clock signals;
storage means, coupled to the clock means and having an output, for storing bits of the desired digital data stream and for serially shifting the digital data stream bits to the output;
detecting means, coupled to the storage means, for detecting the bit values and the transitions between adjacent bits of the digital data stream at the output of the storage means;
generating means, responsive to the clock means, for generating a sequence of binary coded digital words corresponding to the magnitude of a sequence of samples of a gradual waveform;
control means, coupled to the clock means, detecting means, and generating means, for controlling the generating means such that said sequence of binary coded digital words corresponding to a predetermined rising portion of said gradual waveform are generated in response to a rising transition in the digital data stream, said sequence of binary coded digital words corresponding to a predetermined falling portion of said gradual waveform are generated in response to a falling transition, a digital word corresponding to a constant high level is generated after said predetermined rising portion until the beginning of the generation of a falling portion, and a digital word corresponding to a constant low level is generated after said predetermined falling portion until the beginning of the generation of a rising portion;
clock control means, coupled to the clock and the generating means, and the detecting means, for passing the clock signal to the generating means during generation of the predetermined rising or falling waveform portions, and for blocking the clock signal from the generating means during the generation of constant high or low levels
converter means, coupled to the generating means, for converting the sequence of digital words to an analog waveform representative of the digital data stream; and,
filter means, coupled to the converter means, for smoothing the analog waveform.

4,410,956
EXPONENTIAL OPERATION DEVICE

Junichi Yoshida, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 249,187
Claims priority, application Japan, Apr. 15, 1980, 55-50091
Int. Cl.³ G06F *7/552*
U.S. Cl. 364—752 **11 Claims**



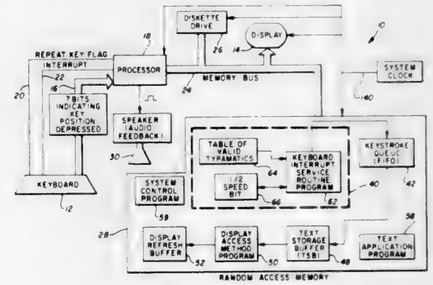
1. An exponential operation device comprising:
operation means for effecting a calculation on an exponential function represented by data items x and y;
memory means for temporarily storing a radix data x and exponent data y on which an exponential calculation is to be performed, said memory means being coupled to said operation means for supplying the data x, y to said operation means:
first judging means coupled to said memory means for judging whether said radix data x stored in said memory means is negative or not and for issuing a corresponding judgement signal;
second judging means coupled to said memory means for judging whether said exponent data y stored in said memory means is an integer or not and for issuing a corresponding judgement signal; and
control means coupled to said first judging means, to said second judging means and to said operation means for designating the execution of an exponential calculation, x^y, with respect to said operation means on the basis of judgement signals from said first and second judging means.

4,410,957
KEYSTROKE QUEUEING SYSTEM

William C. Cason, Austin, and Jan W. Snyder, Elgin; both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,623
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—900 **20 Claims**

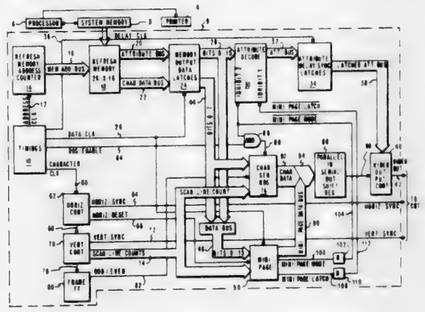
1. A keyboard access system for processing keystroke information from a keyboard to a keystroke queue, said keyboard including typamatic function keys which generate an initial nontypamatic keystroke prior to generating typamatic keystrokes, comprising:
test means for identifying the actuation of the typamatic function of a typamatic function key;
test means for identifying whether said keystroke queue is empty;
test means for identifying whether said keystroke queue is full;
a nontypamatic control means for enqueueing the keystroke information in the keystroke queue when said typamatic function has not been actuated and said keystroke queue is not full; and
typamatic control means for enqueueing the keystroke information in the keystroke queue when said typamatic function has been actuated and said keystroke queue is empty, said typamatic control means discarding the keystroke information when said typamatic function has been actuated and said keystroke queue is not empty, whereby sequential keystrokes representing a key cannot be concurrently stored in said keystroke queue when the latter keystroke is typamatic.



4,410,958
DISPLAYING A PROPORTIONALLY OUTLINED MINIATURE PAGE

Kent R. Demke, and Joanne L. Mumola, both of Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,683
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **10 Claims**



1. In a word processing system including appropriately interconnected display means, means for producing hard copy output on different size media, and means for displaying on said display means a miniature representation of a full page of text, the improvement comprising:
means for displaying an outline around said miniature full page representation on said display means, said outline

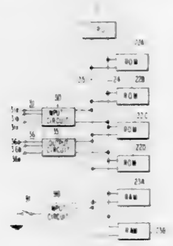
being directly proportional to the size of said hard copy output media.

4,410,959

COMPUTER CONTROL SYSTEM FOR SELECTING A DESIRED CONTROL PROGRAM FROM A PLURALITY OF CONTROL PROGRAMS

Shinobu Tajima; Yasukazu Umeda, and Toshiyuki Kamohara, all of Inazawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Aichi, Japan

Filed Jan. 12, 1981, Ser. No. 224,236
Claims priority, application Japan, Jan. 14, 1980, 55-2703
Int. Cl.³ G06F *9/22, 13/06;* B66B *1/18*
U.S. Cl. 364—900 **4 Claims**



1. In a control device for an elevator system comprising a central processing unit, a first read-only memory for storing a first set of program instructions for computing output control signals for controlling means for positioning an elevator cage of said elevator system in response to input instructing signals to said central processing unit, an output circuit for communicating said output control signals to said positioning means, a first random access memory for storing output control signals produced as a result of execution of said first set of program instructions immediately prior to said output control signals being communicated to said positioning means by said output circuit, and address and data buses for communicating said first read-only memory, said input circuit, said output circuit, and said first random access memory with said central processing means, the improvement comprising: a second read-only memory and a second random access memory, said second read-only memory and said second random access memory being communicated to said central processing means by said address and data buses, said second read-only memory containing a second set of program instructions for modifying said output control signals produced as a result of said first set of program instructions.

4,410,960

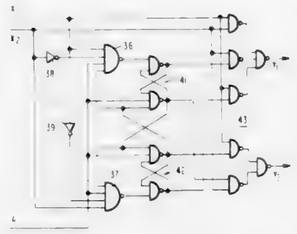
SORTING CIRCUIT FOR THREE OR MORE INPUTS

Yoshihiro Kasuya, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1981, Ser. No. 232,052
Claims priority, application Japan, Feb. 5, 1980, 55-12746; Feb. 5, 1980, 55-12747; Feb. 5, 1980, 55-12749
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—900 **8 Claims**

4. A sorting circuit for sorting n circuit input values into first through n-th ascendingly ordered circuit output values where n represents a predetermined natural number, said input values being represented by n input sequences, respectively, said first through said n-th output values being represented by first through n-th output sequences, respectively, each of said input and said output sequences being a time sequence of a prescribed number of binary bits arranged from the most significant bit to the least significant bit, each binary bit having either of a logic "0" and a logic "1" level at a time, said sorting circuit comprising:

an array of a plurality of first-kind sorting units and a plurality of second-kind sorting units, said first-kind and said second-kind sorting units being connected to one another according to a predetermined rule, each first-kind sorting unit having two input leads and a smaller and a greater value output lead and being responsive to two unit input values supplied to the respective input leads for supplying the smaller and the greater value output leads with the smaller and the greater of the two unit input values in a period related to said prescribed number, each second-kind sorting unit having three input leads and a minimum, a medium, and a maximum output lead and being responsive to three unit input values supplied to the three input



leads, respectively for supplying the minimum, the maximum, and the medium output leads in said period with the minimum and the maximum of the three unit input values and a remaining one of the three unit input values, respectively;

first means for supplying the respective input sequences bit by bit to prescribed ones of said second-kind sorting units; and

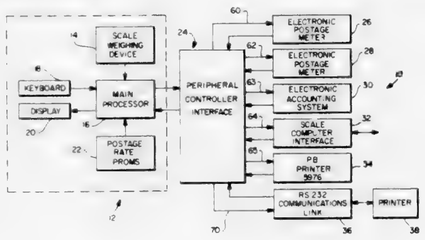
second means connected to prescribed ones of the smaller and the greater value output leads of said first-kind sorting units and to prescribed ones of the minimum, the medium, and the maximum output leads of said second-kind sorting units for producing bit by bit n output sequences.

4,410,961

INTERFACE BETWEEN A PROCESSOR SYSTEM AND PERIPHERAL DEVICES USED IN A MAILING SYSTEM

Daniel F. Dlugos, Huntington; Flavio M. Manduley, Woodbury, and Arthur Rubinstein, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,241
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—900 **8 Claims**



1. In a mailing system including a stand alone postage scale comprising a mailing system processing means operatively connected to a scale means for determining the weight of an item to be mailed; an interface between the mailing system processing means and a plurality of mailing system peripheral devices, the interface comprising a controller and multiplexing means, the mailing system processing means including means for transmitting signals to the controller, the interface further

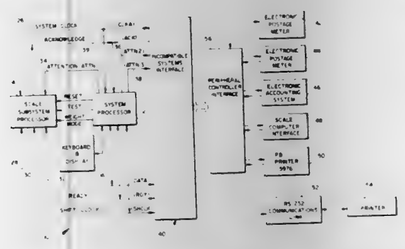
including means operatively interconnecting the controller and the multiplexing means, means operatively interconnecting the multiplexing means and a selected peripheral device, the controller further including means for storing a communications subroutine, buffer means for storing data for subsequent transmission to the selected peripheral device, the controller receiving a first command signal from the processing means and in response thereto entering data received from the processing means into the buffer means, the controller receiving a second command signal and in response thereto transmitting a select signal indicative of the selected peripheral device to the multiplexing means and transmitting the data entered in the buffer means to the multiplexing means, the multiplexing means receiving the select signal and the data and in response thereto transmitting the data to the selected peripheral device, the controller transmitting the data entered in the buffer means in accordance with the stored communications subroutine, and the interface further comprising a self-contained circuit board which may be selectively interconnected to or disconnected from the processing means.

4,410,962

MAILING SYSTEM INTERFACE INTERCONNECTING INCOMPATIBLE COMMUNICATION SYSTEMS

Edward P. Daniels, Bridgeport; Daniel F. Dlugos; Earl B. Holtz, both of Huntington, and Flavio M. Manduley, Woodbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,281
Int. Cl.³ G06F *15/20;* G01G *23/42*
U.S. Cl. 364—900 **10 Claims**



1. A systems interface between a mailing system processor which communicates in a specific format along a serial communications bus and controller means which established communications links with selected mailing system peripheral devices, the controller means receiving data and commands along parallel lines in accordance with a different format, the specific format and the different format being incompatible, the interface operatively interconnecting the serial communications bus and the controller means, the interface comprising means for receiving data signals from the serial communications bus, the data signal receiving means including register means for storing and grouping serially transmitted data signals, said register means comprising a shift register, processing means, means interconnecting the register means and the processing means for transmitting the grouped data signals to the processing means, the processing means including means for transmitting the grouped data signals to the controller means.

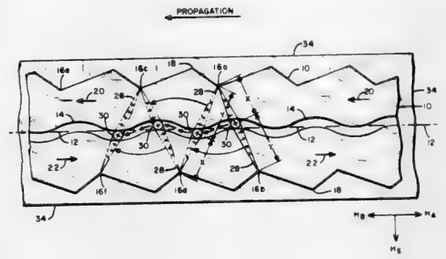
4,410,963

CROSS-TIE PROPAGATION USING OFFSET SERRATION AND CROSS-TIE ROCKING ACTION

David S. Lo, Burnsville; Maynard C. Paul, Bloomington, and Lawrence G. Zierhut, Eagan, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,296
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—87 **3 Claims**

2. In a magnetic memory system in which binary data are stored as the presence or absence of a cross-tie, which cross-tie is generated in and is serially propagated downstream along a cross-tie wall in a magentizable layer by appropriate drive fields, said magnetizable layer being configured into a data track forming strip whose two apposing edges are formed into mirror-imaged patterns of asymmetrically shaped edges which patterns are formed of successive narrow portions, or necks,



for structuring each of said cross-ties along said cross-tie wall and across apposing pairs of said narrow portions, the improving comprising:

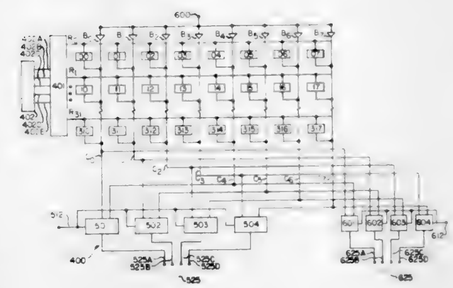
propagating the cross-tie along the data track by rocking each of alternate ends of the cross-tie from its then associated neck to the next adjacent downstream neck.

4,410,964

MEMORY DEVICE HAVING A PLURALITY OF OUTPUT PORTS

Karl I. Nordling, 9280 119th Ave., North, Largo, Fla. 33543, and Scott Nance, 662 Lambeth Ct., Sunnyvale, Calif. 94087

Filed Dec. 8, 1980, Ser. No. 214,167
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—189 **13 Claims**



1. A memory device comprised of:

a plurality of N rows, each said row comprising a conductive path;

a plurality of M columns, each said column comprising a conductive path;

a plurality of memory cells, each said cell being uniquely connected to one said row and one said column, thereby forming an array of NxM memory cells, each said memory cell capable of storing a single bit of binary data;

a plurality of r words contained on each said row, each said word comprising p bits, whereby each said row contains p.r bits;

means for selecting a single desired row of said plurality of rows while maintaining all other said rows of said plurality of rows deselected;

means for simultaneously selecting a plurality of desired

words from said plurality of r words contained on said single desired row; and

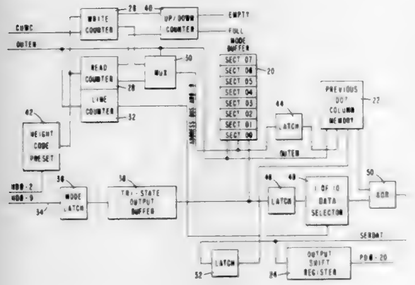
means including a discrete decoder means for each of said plurality of desired words for applying each said selected word simultaneously to one of a plurality of output ports.

4,410,965

DATA DECOMPRESSION APPARATUS AND METHOD

Robert S. Moore, Menlo Park, Calif., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 18, 1981, Ser. No. 303,676
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—230 **11 Claims**



1. Data buffering and decoding apparatus comprising:

data storage means;

decoding memory means;

write address means for writing data into a selected address of said data storage means;

read address means for causing the reading of data from corresponding selected addresses of said data storage means and said decoding memory means;

comparison means for comparing data read from the corresponding addresses of said data storage means for said decoding memory means and for producing decoded data from said comparison; and

means for writing said decoded data into said decoding memory means at said selected address.

4,410,966

METHOD AND APPARATUS FOR DETECTION OF INSOLUBLE SINKING POLLUTANTS

Raymond A. Meyer, Thousand Oaks, Calif.; Larry F. Marx, Bellevue, Wash., and John E. Brugger, Hightstown, N.J., assignors to The United States of America as represented by the Administrator of Environmental Protection Agency, Washington, D.C.

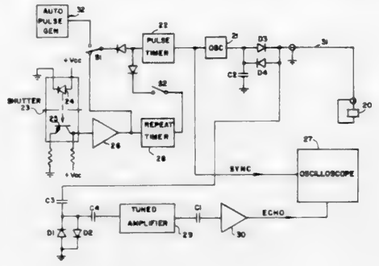
Filed May 8, 1981, Ser. No. 261,764
Int. Cl.³ G01S *15/02, 7/52*
U.S. Cl. 367—87 **14 Claims**

1. A method for locating and mapping a pool of a pollutant in a body of water comprising the steps of

scanning the bottom of said body of water with ultrasonic energy using a transducer periodically pulsed to project pulse envelopes of acoustic energy downwardly to the bottom of said body of water,

receiving echo signals reflected upwardly from said bottom, and receiving precursor echo signals reflected upwardly from a reflective interface between the water and the surface of a pool of pollutant, if present,

detecting the presence of an echo signal from said interface between the water and a pool of pollutant as a precursor to a bottom echo signal for determining the presence of



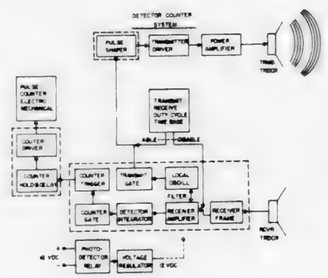
said pool of pollutant at the navigational position of the transducer as the process of scanning continues, and marking said navigational position.

4,410,967

METHOD FOR SAMPLING FLYING INSECT POPULATIONS USING LOW-FREQUENCY SOUND DETECTING AND RANGING IN CONJUNCTION WITH A BIOLOGICALLY ACTIVE CHEMICAL/PHEROMONE

Donovan E. Hendricks, Brownsville, Tex., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 6, 1981, Ser. No. 290,540
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—87 **1 Claim**



1. A method for sampling flying insect populations using low-frequency sound detecting and ranging in conjunction with a biologically active chemical/pheromone comprising:

(1) baiting an agricultural area with a pheromone sex attractant specific to a flying insect species;

(2) luring said flying insect into range of a sound detecting transceiver by means of said pheromone sex attractant;

(3) transmitting a low-frequency sound wave into contact with said flying insects;

(4) receiving said sound wave back into a detector, thus producing a detection of said insect;

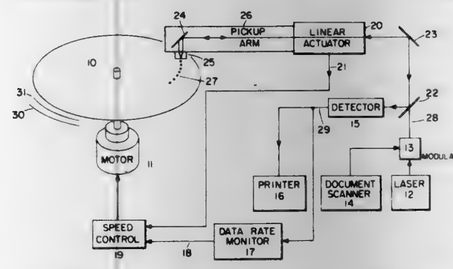
(5) recording said detections of said insects over a period of time to produce a count of said flying insects and thus a sampling of flying insect populations.

4,410,968

METHOD AND APPARATUS FOR RECORDING ON A DISK SUPPORTED DEFORMABLE METALLIC FILM

Hugh F. Frohbach, Sunnyvale; Robert E. Myers, Menlo Park; Norman A. Peppers, Belmont, all of Calif.; Thomas L. Siwecki, 410 Civic Dr., Walnut Creek, Calif. 94596, and Louis F. Schaefer, Palo Alto, Calif., assignors to Thomas Lee Siwecki, Concord, Calif.

Continuation of Ser. No. 948,906, Oct. 5, 1978, abandoned, which is a continuation of Ser. No. 781,056, Mar. 24, 1977, abandoned. This application Sep. 16, 1980, Ser. No. 187,779
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—44 **31 Claims**



1. Apparatus for recording information as variations in reflectance comprising: a substrate,

a deformable metallic tellurium film deposited on said substrate in a disc format;

a modulated light beam representing the information to be recorded, means for focusing the beam onto the metallic deformable film, said beam having an intensity which is sufficient to liquefy but not vaporize the material of the metallic deformable film resulting in a redistribution of the material of the metallic deformable film which changes the reflectance of a readout light beam; andd

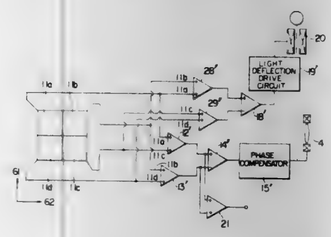
means for rotating the disc with respect to the modulated light beam and radially translating the modulated light beam to produce a pattern of recorded reflectivity information.

4,410,969

OPTICAL INFORMATION PLAYBACK APPARATUS

Takeshi Maeda, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 16, 1980, Ser. No. 217,024
Claims priority, application Japan, Dec. 19, 1979, 54-164044
Int. Cl.³ G11B *7/12*
U.S. Cl. 369—46 **7 Claims**



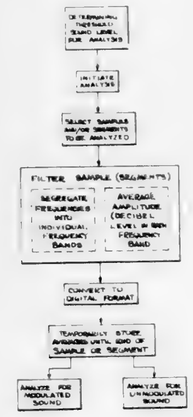
1. An optical information playback apparatus comprising a laser beam source, an information record medium having tracks of information stored therein, first optical means for directing a laser beam from said laser beam source onto a track of said information record medium; light detection means for detecting a laser beam derived from said information track, second optical means for directing the laser beam derived from said information track to said light detecting means through an optical element having a unidirectional lens function, and first and second control means responsive to an output of said light detecting means for controlling the position of said first optical means such that said laser beam is focused onto said record medium and said laser beam tracks said information track, said optical element being arranged such that an optical axis thereof makes an angle of approximately 45 degrees with the direction of said information track, said light receiving sections arranged symmetrically to axes transverse to each other, one of said axes being in parallel to the direction of said information track, means for providing a differential signal between sum signals of outputs from the light receiving sections on opposite sides of the axis traverse to the direction of said information track, said second control means receiving said differential signal for effecting control in accordance therewith.

4,410,970

METHOD AND APPARATUS FOR MEASURING AND ANALYZING SOUND CHARACTERISTICS OF RECORD DISCS

Kenneth S. K. Law, Granada Hills, Calif., assignor to Keysor-Century Corporation, Saugus, Calif.

Filed Jun. 19, 1981, Ser. No. 275,592
Int. Cl.³ G11B *3/00*
U.S. Cl. 369—58 **66 Claims**



5. A method for quantitatively measuring and analyzing a sound spectrum from a sound producing copy of a phonographic type record disc which was produced from a master, and where a means on the disc to produce discrete portions of the sound in the spectrum are not readily discernable by visual observation, said method comprising:

(a) generating electrical signals representative of sound from a copy of a phonographic type record disc,

(b) processing said electrical signals and generating a plurality of individual signal components with each representing decibel level as function of frequency for discrete increments of time,

(c) temporarily storing the individual signal components until the electrical signals thus generated have been processed,

(d) plotting the signal components representing decibel level as a function of frequency for each such discrete increment of time, and

(e) determining from the plotted signal components the existence of unwanted noise in the second spectrum of said copy of the record disc and thereby determining from the copy of the record disc if said unwanted noise occurred in or was derived from the master of the record disc used to produce said copy.

4,410,971

FRONT LOADING RECORD PLAYER

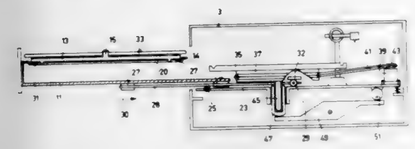
Kurt Eisemann, Berlin, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,926

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 3019928

Int. Cl.³ G11B *1/00, 25/04*

U.S. Cl. 369—75 **4 Claims**



1. A front loading type record player, comprising:

a housing;

means, accommodated within said housing, for driving a record about an axis of rotation;

a turntable, associated with said housing, for supporting a record placed thereon, said turntable being movable in a direction substantially transverse of said axis, between a loading position located outside of said housing and a lowered position located inside of said housing;

means, slidably provided on said housing, for supporting said turntable for movement between said loading and said lowered positions;

means, associated with said housing, for moving said turntable between said lowered position and an operating position at which said turntable is rotated by said driving means;

characterized in that said driving means and said moving means include a coupling device rotatable about said axis of rotation and movable axially along said rotation axis from an initial position situated below said lowered position, through an intermediate position at which said device engages with said turntable, whereby said device and said turntable are movable axially along said axis, to a drive position at which said turntable is located at said operating position.

4,410,972

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS HAVING A JACKET OPENING ENLARGING DEVICE

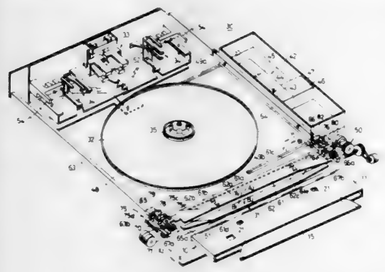
Takashi Saito, Ayase, and Takashi Kumaki, Sagamihara, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 18, 1981, Ser. No. 293,836

Claims priority, application Japan, Aug. 18, 1980, 55-113307

Int. Cl.³ G11B *1/00*

U.S. Cl. 369—77.2 **8 Claims**



1. A rotary recording medium reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case having a jacket with a space for accommodating said rotary recording medium and an opening through which said rotary recording medium can enter and leave said jacket, and a lid member inserted through said opening of said jacket for closing said opening, said reproducing apparatus comprising:

a front side of said apparatus having a laterally elongated inserting opening through which said case may be inserted;

holding means at a rear part of said reproducing apparatus, for holding said rotary recording medium within said reproducing apparatus when an operation is performed in which said case is inserted into said reproducing apparatus and then said jacket is pulled from said reproducing apparatus for loading said recording medium in said reproducing apparatus;

turntable means for rotating said rotary recording medium loaded within said rotary recording medium reproducing apparatus; and

jacket opening enlarging means coupling with the jacket and movable over said turntable means between a vicinity of said inserting opening and the rear part of said reproducing apparatus, said enlarging means coordinating with the insertion and extraction of said case having the jacket,

said jacket opening enlarging means comprising upper and lower enlarging members aligned horizontally with said inserting opening in said vicinity of said opening and being pivotally coupled together to enable them to swing up and down to open and close, respectively, and said upper and lower enlarging members respectively having finger means projecting toward said inserting opening, said finger means together with said enlarging members being close to each other when said jacket opening enlarging means is in the vicinity of said inserting opening; rotating means for swingably opening said upper and lower enlarging members so that said finger means respectively separate from each other as said jacket opening enlarging means moves away from the vicinity of said inserting opening to the rear part of said reproducing apparatus, so that said finger means enlarge said opening as said upper and lower enlarging members swing upwardly and downwardly; and

an enlarging member locking mechanism interlocking said upper and lower enlarging members for keeping the enlarging members closed together to close said inserting opening when said jacket opening enlarging means is positioned in the vicinity of said inserting opening, and release the interlock upon insertion of said case.

4,410,973

ROTARY RECORDING MEDIUM REPRODUCING APPARATUS HAVING A SWITCH MECHANISM FOR DETECTING RETURN OF A JACKET OPENING ENLARGING MECHANISM

Takashi Saito, Ayase; Takashi Kumaki, Sagamihara, and Toru Kishi, Zama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 20, 1981, Ser. No. 294,801

Claims priority, application Japan, Aug. 20, 1980, 55-117735[U]

Int. Cl.³ G11B *1/00*

U.S. Cl. 369—77.2 **4 Claims**

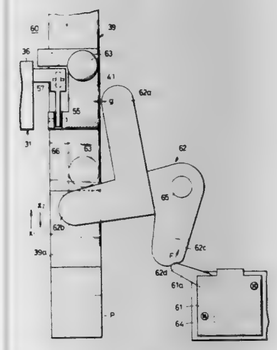
1. A reproducing apparatus for reproducing a rotary recording medium accommodated within a case, said case comprising a jacket having a space for accommodating said rotary recording medium and having an opening for enabling said rotary recording medium to go in and out of said jacket, and a lid member for closing said opening of said jacket, said rotary recording medium reproducing apparatus comprising:

a front member having an inserting opening through which said case or said jacket is inserted;

holding means positioned at a rear part of said reproducing apparatus and opposite said inserting opening, for holding said rotary recording medium when said case is inserted into said reproducing apparatus and then said jacket is pulled from said reproducing apparatus to leave said rotary recording medium inside said reproducing apparatus;

turntable means positioned between said inserting opening and said rear part for rotating said rotary recording medium after it is left within said reproducing apparatus;

a jacket opening enlarging mechanism for enlarging said opening of said inserted jacket by coupling with said jacket and moving from the vicinity of said inserting opening, over said turntable, and toward said rear part of said reproducing apparatus, responsive to the insertion of said jacket and for returning responsive to an extraction of said case or said jacket; and



a switch mechanism for detecting a movement of said jacket opening enlarging mechanism from and to the vicinity of said inserting opening,

said switch mechanism comprising a microswitch fixed opposite said jacket opening enlarging mechanism positioned at the vicinity of said inserting opening, and a maintaining mechanism which is pushed and operated by said jacket opening enlarging mechanism for pushing an operating member of said microswitch to operate and hold said microswitch in an activated state when said jacket opening enlarging mechanism moves away from the vicinity of said inserting opening, and for releasing said microswitch when said jacket opening enlarging mechanism moves back to the vicinity of said inserting opening so that said jacket opening enlarging mechanism completes a movement toward said inserting opening after releasing said microswitch in the activated state.

4,410,974

CAPACITANCE DETECTION TYPE RECORD STYLUS AND METHOD FOR MAKING THE STYLUS

Keiji Segawa, Yamato; Masaki Murakami, Sagamihara, and Keiichiro Doi, Yokohama, all of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 8, 1981, Ser. No. 300,451

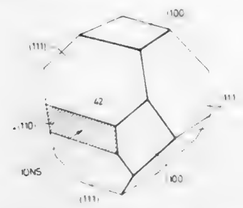
Claims priority, application Japan, Sep. 9, 1980, 55-125134

Int. Cl.³ G11B *3/44*

U.S. Cl. 369—126 **5 Claims**

1. A capacitance detection type record stylus for detecting signals recorded as geometric variations along a track on a recording medium, comprising:

a body of diamond having a crystal plane {110} formed between adjoining planes of an identical crystallographic structure; and



an electrode formed on said crystal plane {110} for detecting said signals.

4,410,975

STEREOPHONIC PICK-UP CARTRIDGE

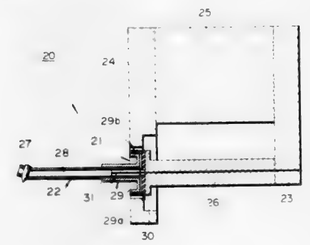
Yoshihisa Mori, and Mitsuru Takashima, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,556

Claims priority, application Japan, Jun. 5, 1980, 55-75950

Int. Cl.³ G11B *3/44*

U.S. Cl. 369—170 **7 Claims**



1. An armature supporting mechanism for a stereophonic pick-up cartridge comprising, a cantilever having a stylus on a free end thereof and an armature having a transverse surface at the rear end thereof, a fixed support, a damper having a first plane surface abutting on said fixed support and a second plane surface abutting on said transverse surface of said armature, and grooves formed in said second plane surface of said damper and extending generally radially from adjacent the central axis of said damper to the periphery of the damper, to reduce crosstalk between the two channels.

4,410,976

SIGNAL PICKUP DEVICE IN A ROTARY RECORDING MEDIUM REPRODUCING APPARATUS

Masayoshi Uchida, Yokohama, and Osamu Tajima, Ayase, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Aug. 7, 1981, Ser. No. 291,047

Claims priority, application Japan, Aug. 11, 1980, 55-113518[U]; Aug. 11, 1980, 55-113519[U]

Int. Cl.³ G11B *9/06*

U.S. Cl. 369—170 **7 Claims**

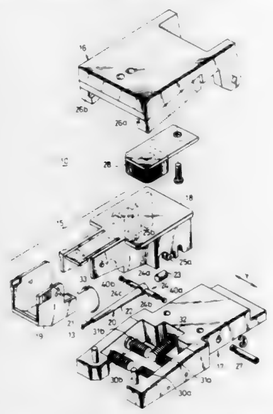
1. A signal pickup device in a rotary recording medium reproducing apparatus, said signal pickup device comprising:

a cantilever having a reproducing element for picking up and reproducing a signal from a rotary recording medium, said pickup element being located at the tip end of said cantilever;

a support member having a support part for supporting the rear end of said cantilever, and arms which unitarily extend from opposite sides of said support part; and

a frame having parts for engaging with and mounting the arms of said support member;

said arms of said support member respectively having mounting parts having a non-circular cross-section in the vicinity of the end part thereof, for engaging the engaging parts of said frame, and constricted parts formed with first



flange portions between said mounting parts and said constricted parts;

said mounting parts and said engaging parts being shaped so that said support member is at an angular position together with said cantilever where said reproducing element is at a raised position, when said mounting parts are mounted onto said engaging parts.

4,410,977

TURNTABLE FOR RECORD PLAYERS

Heinrich Zimmermann, Joh.-Seb.-Bach-Str. 14, and Sepp-Dieter Bierleutgeb, Kinzigstr. 24, both of 7742 St. Georgen, Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 276,287

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114715

Int. Cl.³ G11B *17/02, 25/00*

U.S. Cl. 369—264 **6 Claims**



1. A turntable for a record player comprising

a turntable body,

an additional weight of heavy material, the density of which exceeds that of said turntable body, said additional weight arranged in a region of the periphery of the turntable body, whereby the moment of inertia of the turntable body is increased about any axis through the center of the turntable body,

means comprising a solid elastic material arranged to attach said additional weight to the turntable body and forming therewith an energy absorbing structure, which structure damps oscillations in the turntable periphery.

4,410,978

OPTICALLY READABLE INFORMATION DISK

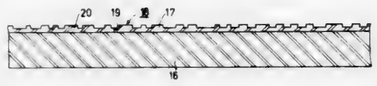
Arnoldus J. M. vanden Broek; Petrus E. J. Legierse, and Henricus D. M. Ribberink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,684

Claims priority, application Netherlands, Oct. 15, 1980, 8005674

Int. Cl.³ B32B *3/02*

U.S. Cl. 369—275 **5 Claims**



1. An optically readable information disk which comprises a substrate plate having on at least one side a radiation-cured lacquer layer in which an information track of information regions situated at a higher and a lower level is provided and is covered with a reflective layer, characterized in that the cured lacquer layer has a minimum indentation hardness which corresponds to a maximum depth of penetration of 5 um of a needle which is placed on the lacquer layer and which has a ball-shaped tip manufactured from a hard material and having a diameter of 18±1 um and presses on the layer with a weight of 2.5±0.1 g and is manufactured from a radiation-curable lacquer comprising at least 50% by weight of a diacrylate, triacrylate or a mixture thereof.

4,410,979

MULTIPLEXED SIGNAL RECEIVER

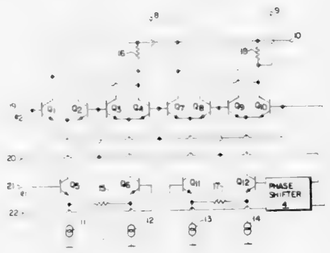
Kenzo Tanabe, Katano, and Yasuhiro Okada, Hino, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,683

Claims priority, application Japan, Mar. 13, 1980, 55-32281

Int. Cl.³ H04J *9/00;* **H04H** *5/00*

U.S. Cl. 370—11 **3 Claims**



1. A multiplexed signal receiver having two independent signals which are multiplexed on a single carrier by amplitude and frequency modulation or amplitude and phase modulation, said receiver comprising a balanced type amplitude limiter which is coupled to two double balanced type product detectors for amplitude and frequency demodulation or amplitude and phase demodulation, said balanced amplitude limiter being directly coupled with respect to DC to said two double balanced type product detectors.

4,410,980

TIME DIVISION MULTIPLEXING SYSTEM

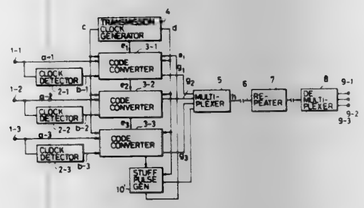
Yoshitaka Takasaki, Tokorozawa, and Mitsuo Tanaka, Ohme, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 289,106

Claims priority, application Japan, Aug. 1, 1980, 55-104988

Int. Cl.³ H04J *3/18*

U.S. Cl. 370—109 **10 Claims**



1. A time division multiplexing system comprising: a plurality of digital signal sources for providing a plurality of channels of digital data at mutually independent selected bit rates; time compression means including a plurality of converter circuits for compressing in time the digital signals of each channel for a given frame period to produce respective compressed data channels; time division multiplexing means for adding a frame synchronizing signal to the output of one of said converter circuits and a channel synchronizing signal to the outputs of the other ones of said converter circuits and for conducting time division multiplexing of the compressed data channels, including means for adding a stuff pulse to one of the multiplexed data channels so that the total duration time of said compressed data from all channels, said frame and channel synchronizing signals and the stuff pulse coincides with a transmission frame period; said converter circuits each including coding means for coding the output of said time compression means to convert said input digital signals into coded signals in which a mark and a space are designated by different pulse intervals; a transmission line for transmitting the output of said multiplexing means; and decoding means for decoding the time division multiplexed signal transmitted by said transmission line.

4,410,981

SIMPLIFIED TRANSMISSION SYSTEM FOR SEQUENTIAL TIME-COMPRESSION OF TWO SIGNALS

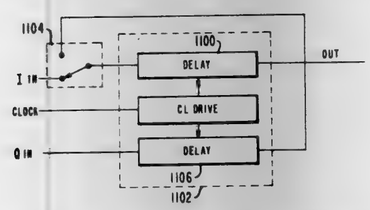
Robert E. Flory, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 13, 1981, Ser. No. 292,574

Claims priority, application United Kingdom, Jan. 28, 1981, 8102595

Int. Cl.³ H04B *1/66*

U.S. Cl. 370—109 **2 Claims**



1. A signal processor for transforming between relatively time-expanded simultaneous and time-compressed sequential first and second signals said processor comprising:

first and second processor terminals at which the simultaneously-occurring relatively time-expanded signals appear;

a third processor terminal at which the time-sequential relatively time-compressed signals appear;

first and second signal delay means each having first and second terminals;

switch means for simultaneously coupling a first terminal of each of said first and second delay means to said first and second processor terminals for coupling signals therebetween during a first mode of operation, and for decoupling said first and second delay means from said first and second processor terminals and coupling said third processor terminal with said first and second delay means during a second mode of operation in which said third terminal is coupled with said delay means for transfer of time-sequential signals therebetween;

delay control means coupled to said first and second delay means for controlling the delay, the delay being relatively long in said first mode of operation and relatively short in said second mode of operation,

wherein the improvement lies in that

said delay control means controls both said first and second delay means to have the same delay; and

said switch means couples said second terminal of said second delay means with said first terminal of said first delay means during said second mode of operation whereby said second terminal of said second delay means is coupled with said third processor terminal through said first delay means.

4,410,982

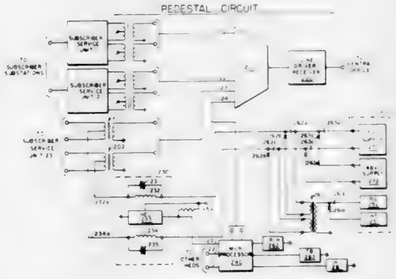
ARRANGEMENT FOR EXTENDING DIGITAL SIGNALING TO TELEPHONE SUBSCRIBERS' SUBSTATIONS

Gerald H. Fleischfresser, Wheaton, and Alex W. Kobylar, Chicago, both of Ill., assignors to GTE Automatic Electric Labs. Inc., Northlake, Ill.

Filed May 7, 1981, Ser. No. 261,405

Int. Cl.³ H04J *3/12*

U.S. Cl. 370—110.1 **7 Claims**



1. An arrangement for extending digital signaling to telephone subscribers' substations including a digital switching system operated to generate a plurality of line alerting commands, a line signaling generator operated to generate line alerting signals, talking battery operated to generate a bias signal and a plurality of subscriber substations each operable to generate analog communication signals, said arrangement comprising;

a plurality of subscriber service circuits operated in response to connection to an associated one of said subscriber substations to generate an off-hook signal;

line supervision means connected to said subscriber service circuits operated in response to each of said off-hook signals to generate a digital off-hook detected signal, and further operated to connect said talking battery to each of said subscriber service circuits that generated an off-hook signal;

each of said subscriber service circuits operated in response to said talking battery and generation of said analog com-

munication signals to generate digital communication signals; and

a digital multiplexer connected between said switching system and said subscriber service circuits, operated to transmit said digital off-hook detected signals and said digital communication signals to said switching system;

said digital multiplexer further connected to said line supervision means, and further operated to transmit said line alerting commands to said line supervision means;

said line supervision means operated in response to each of said line alerting commands to connect said line signaling generator to an associated subscriber service circuit;

said subscriber service circuits operated to transmit said line alerting signal to said associated subscriber substation;

said subscriber service circuits comprising pulse code modulation means operated to convert said analog communication signals to said digital communication signals; and shunting means connected across said pulse code modulation means, operated to shunt said alerting signal from said pulse code modulation means.

4,410,983

DISTRIBUTED INDUSTRIAL CONTROL SYSTEM WITH REMOTE STATIONS TAKING TURNS SUPERVISING COMMUNICATIONS LINK BETWEEN THE REMOTE STATIONS

Michael E. Cope, Richardson, Tex., assignor to Fornex Engineering Company, Addison, Tex.

Continuation of Ser. No. 115,161, Jan. 24, 1980, Pat. No. 4,304,001. This application Jun. 26, 1981, Ser. No. 277,646

The portion of the term of this patent subsequent to Dec. 1, 1998, has been disclaimed.

Int. Cl.³ G06F *11/16*

U.S. Cl. 371—8 **5 Claims**



1. A system for controlling an industrial process comprising a plurality of process controlling remotes and a communications link interconnecting said remotes, each of said remotes being assigned a unique position in a predetermined succession order, each of said remotes comprising communication means to receive information transmitted via said communications link and to exercise exclusive supervisory control over said communications link in response to receiving a control-transfer block via said communications link containing a predetermined address, said communication means being operable when exercising supervisory control to transmit information over said communications link and to transmit a control-transfer block over said communications link containing an address selected to transfer exclusive supervisory control over said communications link to another one of said remotes in accordance with said predetermined sequence, each of said remotes including variable time-out means to set a variable time-out interval each time exclusive supervisory control over said communications link is transferred to another one of said remotes in said sequence, said time-out interval being of a length corresponding to how far removed the corresponding remote is from the remote to which supervisory control is transferred in said predetermined sequence, said variable time-out means of each remote causing the communication means of such remote to exercise supervisory control over said communications link when the time-out interval of such time-out means expires.

4,410,984

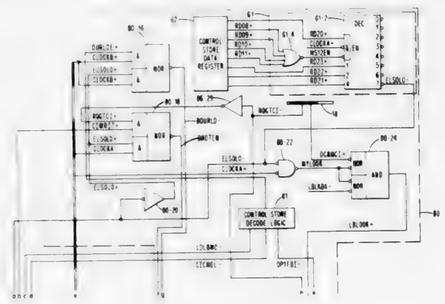
DIAGNOSTIC TESTING OF THE DATA PATH IN A MICROPROGRAMMED DATA PROCESSOR

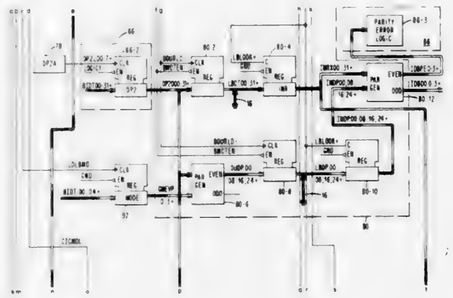
Virendra S. Negi, Pepperell, and Steven A. Tague, Billerica, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

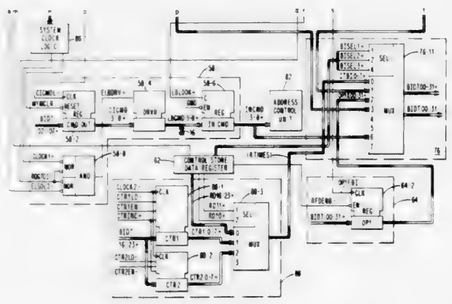
Filed Apr. 3, 1981, Ser. No. 250,820

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—16 **19 Claims**







1. A data processing system includes a memory subsystem for storing a plurality of instructions and operands and a commercial instruction processor (CIP) coupled in common with said memory subsystem to a common bus, said CIP including

apparatus for verifying the data interface between said CIP and said common bus, said apparatus comprising:

third register means coupled to said common bus for receiving and storing signals, indicative of said plurality of instructions; control store means including an instruction register coupled to said third register means for storing said signals, said control store means including storing means for storing a plurality of diagnostic microprograms, said control store means including addressing means coupled to said instruction register responsive to said signals for addressing said storing means for reading out a plurality of diagnostic microword signals, said control store means including decoding means responsive to a first plurality of diagnostic microword signals for generating a diagnostic signal;

counter means for generating a sequence of data byte signals in response to second diagnostic microword signals of said diagnostic microprogram received from said control store means;

first register means coupled to said counter means for storing each of said sequence of said data byte signals in a predetermined number of byte positions in response to third diagnostic microword signals of said diagnostic microprogram received from said control store means and generating first signals representative of said predetermined number of data bytes;

second register means responsive to said diagnostic signal for storing said first signals and generating second signals representative of said predetermined number of data bytes;

said common bus coupled to said second register means for transmitting said signals;

said third register means coupled to said common bus and responsive to said diagnostic signal for storing said second signals and generating third signals representative of said predetermined number of data bytes;

fourth register means responsive to fourth diagnostic microword signals received from said control store means for storing said third signals and generating fourth signals representative of said predetermined number of data bytes; and

comparing means for comparing said first signals and said fourth signals for equals in response to fifth diagnostic microword signals of said diagnostic microprogram received from said control store means thereby verifying the data interface between said CIP and said common bus.

4,410,985

DATA TRANSMISSION SYSTEM AND METHOD

Seiichi Yasumoto; Hitoshi Fushimi; Jushi Ide, and Masakazu Okada, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 25, 1981, Ser. No. 247,267

Int. Cl.³ H04Q *9/00*; **G06F** *11/00*

U.S. Cl. 371—22 **14 Claims**

1. A data transmission system wherein a plurality of stations, including a central station and a plurality of transmission stations, are connected in series by a serial data transmission line so as to form a loop, and data is transmitted from one of the stations to another station, comprising:

(1) said central station including;

(A) means for sending out on said transmission line a normal polling signal which allows the transmission stations to send out data signals, and

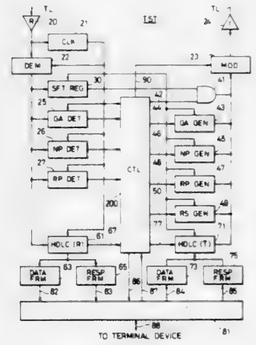
(B) means for monitoring the time interval from the time of the sending-out of said normal polling signal to the time of reception thereof, and for sending out, when said normal polling signal has not been received within a predetermined time interval since said time of said sending-out, a retry polling signal by which only the transmission station which has sent out the data signal in response to said normal polling signal is allowed to send out said data signal again; and

(2) said transmission stations each including;

(A) means for sending out on said transmission line said normal polling signal to the next station upon receiving said normal polling signal, when the particular transmission station has no data to be sent out,

(B) means for inhibitiing the sending-out of said normal polling signal and for sending out the data signal in a predetermined format upon receiving said normal polling signal, when said particular transmission station has data to be sent out, said data signal including said data to be sent out and address data appointing the station to receive the former data,

(C) means for sending out on said transmission line said retry polling signal to said next station upon receiving said retry polling signal, when said particular transmission station is not performing the data signal sending-



out operation corresponding to the reception of said normal polling signal,

(D) means for sending out on said transmission line said data signal corresponding to said reception of said normal polling signal again upon receiving said retry polling signal, when said particular transmission station is performing said data signal sending-out operation corresponding to said reception of said normal polling signal,

(E) means for receiving said data signal upon detecting that said address data of the receiving station designates said particular transmission station, and

(F) means for transferring the received data signal to said next station when said particular transmission station is not concerned with the transmission and reception of said data signal.

4,410,986

ERROR AND STATUS DETECTION CIRCUIT FOR A DIGITAL REGENERATOR USING QUANTIZED FEEDBACK

Walter L. Corwin, Long Valley, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1981, Ser. No. 254,915

Int. Cl.³ H04B *3/46*

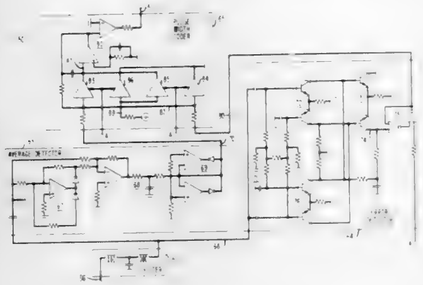
U.S. Cl. 371—22 **3 Claims**

1. An error detection circuit (**64**) responsive to a filtered composite output signal (**101**) from a low-pass filtered output from a digital regenerator (**30**) using quantized feedback, the filtered composite signal including a stressing signal and a quantized feedback error burst; the error detection circuit (**64**) being characterized by

a high-pass filter (**71**) responsive to the filtered composite signal for removing the stressing signal and for passing the quantized feedback error burst;

first and second threshold comparators (**72** and **76**) responsive to the quantized feedback error burst, the first thresh-

old comparator (72) producing a first error burst signal if the amplitude of the quantized feedback error burst crosses a predetermined first threshold (V_{R1}) and the second threshold comparator (76) producing a second



error burst signal if the amplitude of the quantized feedback error burst crosses a predetermined second threshold (V_{R2}); and

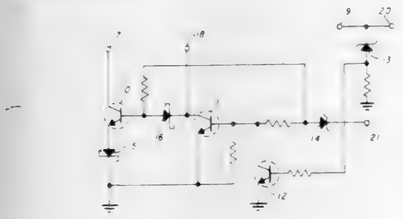
means (73, 75) responsive to the first or second error burst signal for determining a burst signal.

4,410,987

PRELOAD TEST CIRCUIT FOR PROGRAMMABLE LOGIC ARRAYS

James F. Ptasinski, and Glenn Wheeler, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 13, 1981, Ser. No. 282,790
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—25 **4 Claims**



1. A preload circuit providing an enhanced testability for programmable logic array devices comprising a signal input connection, a preload circuit enable connection, and at least one connection for input to a feedback circuit of a programmable logic device, wherein said preload circuit operates to set a data bit signal selected by a test program into said feedback circuit.

4,410,988

OUT OF CYCLE ERROR CORRECTION APPARATUS

Robert E. Suelflow, Scottsdale, and Edward M. Drobny, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Continuation of Ser. No. 121,770, Feb. 15, 1980, abandoned, which is a continuation of Ser. No. 930,965, Aug. 4, 1978, abandoned. This application Sep. 21, 1981, Ser. No. 303,817
Int. Cl.³ G06F *11/08*
U.S. Cl. 371—38 **8 Claims**

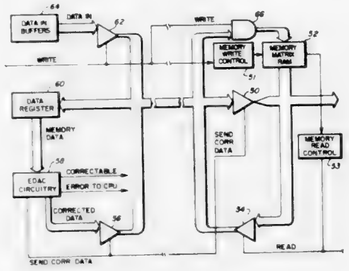
1. In an execution control store unit of a data processing system, apparatus for providing an accurate data group to an instruction buffer, said apparatus comprising:

memory means for storing data groups to be provided to said instruction buffer;

register means for storing a data group;

coupling means for applying a selected data group from said memory means during a first timing period of said data processing system to instruction buffer and to said register means;

error correction and detection means coupled to said register means and said coupling means; said error correction and detection means detecting during said first timing period at least one correctable error in said selected data group; said error correction and detection means correcting said selected data group when said correctable error is



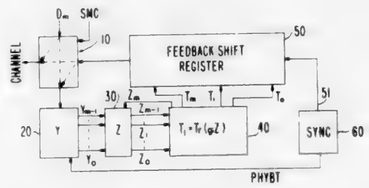
detected, said error correction and detection means generating a correctable error signal when said correctable error is detected, wherein said coupling means applies said corrected selected data group to said instruction buffer during a next timing cycle when said correctable error signal is generated, said correctable error signal causing said corrected selected data group to replace said selected data group in said instruction buffer, said coupling means applying a next selected data group to said instruction buffer when said correctable error signal is not generated.

4,410,989

BIT SERIAL ENCODER

Elwyn R. Berlekamp, Berkeley, Calif., assignor to Cyclotomics, Inc., Berkeley, Calif.

Filed Dec. 11, 1980, Ser. No. 215,361
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—40 **17 Claims**



1. Encoding apparatus for accepting a message block comprising message symbols comprising groups of bits, creating from said message symbols codewords and check bits derived from said message symbols in accord with a cyclic code for output to an information channel, said apparatus comprising

(a) first codeword shift register for assembling bits of of an input message symbol received from a data source, said message symbol represented in a first representation in the form of an ordered set of coefficients of corresponding powers of an element of the finite field $GF(2^m)$,

(b) second shift register for receiving said assembled message symbol by parallel transfer from said first codeword shift register,

(c) binary matrix network means for generating from the content of the respective bits of said second shift register, the traces of the respective matrix products of the content of said second shift register and the bits of a selected

generator polynomial, said matrix representing a coefficient of a product of said generator polynomial and the content of said second shift register in the dual representation of said first representation,

(d) feedback shift register means for processing each said product of a coefficient, comprising an initial memory element, a final memory element and a plurality of sequences of memory elements, each said sequence separated by summing junctions, each said summing junction comprising means for performing the binary addition of the content of one adjacent memory element with the respective said trace of said matrix product and transferring the resulting sum to the next adjacent memory element, the initial memory element receiving the trace of the lowest order of said matrix products, the final memory element of said shift register communicating with said binary network means during the acceptance of said message block and thereafter emitting check bits for transmission to said information channel as part of said codeword,

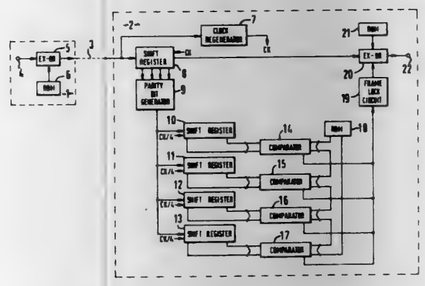
(e) synchronization means for controlling the assembly of a message character in said first shift register, strobing the content of said first shift register in parallel to said second shift register and to control the propagation of information through said feedback shift register.

4,410,990

PROCESSING BINARY DATA

James H. Wilkinson, Tadley, Near Basingstoke, England, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 250,928
Claims priority, application United Kingdom, Apr. 29, 1980, 8014119
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—47 **22 Claims**



8. Apparatus for recovering frame information from a stream of binary data transmitted at a known clock rate, the apparatus comprising:

means for deriving a block of m×n information bits comprising m groups of n bits;

first parity bit forming means for forming m parity bits, one for each said groups of n bits;

means for forming an m-bit parity scrambling code;

means for scrambling said parity bits formed by said first parity bit means by performing a logic operation on each m parity bit with a respective bit of said m-bit parity scrambling code, said block of information bits together with the scrambled parity bits forming a frame for transmission over a transmission link;

second parity bit forming means at the remote end of said transmission link for forming new parity bits at the known clock rate from the transmitted stream of binary data by forming a new parity bit from each successive moving group of n+1 bits;

n+1 m-bit shift registers to which said new parity bits are cyclically distributed at a preselected fraction of said known clock rate; and

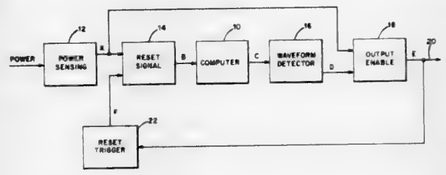
means for generating a framing signal when one of said n+1 m-bit shift registers holds m bits substantially corresponding to said m-bit parity scrambling code.

4,410,991

SUPERVISORY CONTROL APPARATUS

Joseph M. Lenart, Arlington, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jun. 3, 1981, Ser. No. 270,044
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—66 **4 Claims**



1. Apparatus for controlling the operation of a program-controlled computer system, said computer system producing a predetermined signal at an output connection during proper operation of the computer system and said computer system being held in a reset condition during a reset signal applied to said computer system, said apparatus comprising

power sensing means, said power sensing means being operable to produce a first output signal when power supply conditions applied to the computer system are within predetermined limits, and said power sensing means being operable to produce a second output signal when power supply conditions applied to the computer system are outside of said predetermined limits;

reset signal means for producing a reset signal to said computer system; said reset signal means having one input coupled to the power sensing means, another input, and an output coupled to the computer system;

detection means coupled to the said output connection of the computer system, said detection means being operable to produce a first signal condition when said predetermined signal is being produced by the computer system, and said detection means being operable to produce a second signal condition when said predetermined signal is not being produced by the computer system;

output enable means having one input coupled to said power sensing means, another input coupled to said detection means, and an output connection; said output enable means being operable to produce a first output signal at its output connection only when said power sensing means is producing said first output signal and said detection means is producing said first signal condition; said output enable means being operable to produce a second output signal at its output connection when said power sensing means is producing said second output signal; and said output enable means being operable to produce said second output signal at its output connection when said detection means is producing said second signal condition;

reset trigger means coupled to the output connection of the output enable means and to said another input of the reset signal means; said reset trigger means being operable to produce an output signal at said another input of the reset signal means in response to a transition from the first to the second output signal from said output enable means;

said reset signal means being operable to produce a reset signal at the output thereof in response to a second output signal from said power sensing means, and said reset signal means being operable to produce a reset signal at the output thereof in response to said output signal from said reset trigger means;

said reset signal means being operable to produce said reset signal for a predetermined period of time subsequent to termination of said second output signal from the power

sensing means at the one input of said reset signal means, and said reset signal means being operable to produce said reset signal for said predetermined period of time subsequent to said output signal from the reset trigger means at the other input of said reset signal means;

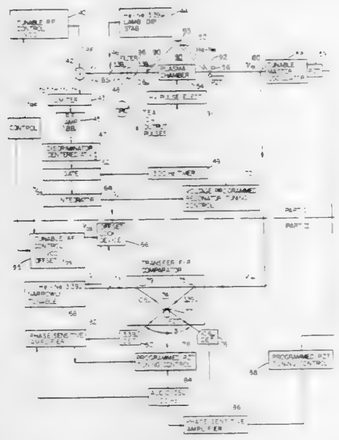
whereby a reset signal is applied to said computer system and a second output signal is produced at the output connection of the output enable means while the power supply conditions applied to the computer system are outside of said predetermined limits and for a predetermined period of time subsequent to the power supply conditions being restored to within said predetermined limits, and whereby a reset signal is applied to said computer system for said predetermined period of time and a second output signal is continuously produced at the output connection of the ouput enable means when the computer system is not operating properly as indicated by the absence of said predetermined signal at said output connection of the computer system.

4,410,992

GENERATION OF PULSED LASER RADIATION AT A FINELY CONTROLLED FREQUENCY BY TRANSIENT REGERATIVE AMPLIFICATION

Ali Javan, Cambridge, Mass., assignor to Laser Science, Inc., Cambridge, Mass.

Filed Mar. 26, 1980, Ser. No. 134,227
Int. Cl.³ H01S 3/13
U.S. Cl. 372—32 **32 Claims**



1. A pulsed laser system capable of producing pulses of radiation at relatively high peak power at a single resonator mode, said system comprising

a master laser oscillator capable of producing a beam of radiation at a desired frequency to be introduced to a power laser,

a radiation-responsive pulsed power laser oscillator including an optical resonator formed by a set of reflectors, said power laser adapted to receive periodic application of a voltage pulse, said optical resonator arranged to receive said introduced beam at least during the periodic application of said voltage pulse to said power laser whereby the frequency of radiation emitted by said power laser can be determined by the frequency of said introduced beam,

monitoring means acting between pulses of said power laser to optically monitor the resonator cavity of said power laser to determine the frequency of the resonator mode of said power laser and produce a signal dependent upon said frequency,

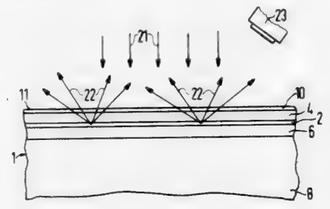
and stabilizing means responsive to said signal of said monitoring means to maintain the center frequency of the mode of said power laser in close coincidence with the frequency of said master oscillator.

4,410,993

LASER DIODE

Karl-Heinz Zschauer, Grafing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,329
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016778
Int. Cl.³ H01S 3/19
U.S. Cl. 372—44 **6 Claims**



1. In a laser diode comprised of a multi-layer structure having a cover layer (4) for total reflection of radiation generated in a laser-active layer (2), said cover layer (4) being composed of a material which is transparent to said generated radiation, said laser-active layer (2) being positioned below and in contact with said cover layer (4), and an additional layer (10) positioned on top of said cover layer (4) and supporting a contact (12) on an exterior surface (11) thereof, the improvement comprising wherein:

said additional layer (10) is composed of a semiconductor material having a band gap which is greater by at least 2 kT relative to that of the material forming said laser-active layer (2); and

said additional layer (10) having an exterior surface (11) which is substantially specularly smooth for radiation generated in said laser-active layer (2).

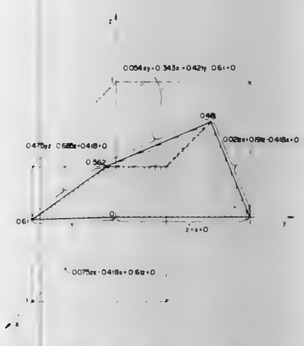
4,410,994

SEMICONDUCTOR LASER

Chuichi Ota, Fuchu; Yasuharu Suematsu, Kawasaki, and Yoshio Itaya, Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 10,965, Feb. 9, 1979, abandoned. This application Sep. 16, 1981, Ser. No. 302,705
Claims priority, application Japan, Feb. 28, 1978, 53-21466
Int. Cl.³ H01S 3/19
U.S. Cl. 372—45 **3 Claims**

1. In a semiconductor laser comprising: a multi-layer film inclusive of an active layer and formed on an InP substrate, a metallic electrode means provided at the outside of the multi-layer film for flowing a lasing current in the multi-layer film, one of the electrode means being provided on said InP substrate, and optical cavity means provided in connection with the active layer, the improvement comprising at least one layer adjacent to the active layer and formed of a material which is a composition having a larger band gap than InP and whose component ratio is selected as to match with the lattice constant of InP, the material being selected from the group consisting of AlAsInPSb and GaInPAlSb, thereby to ensure that minority carriers injected into the active layer efficiently contribute to laser operation.

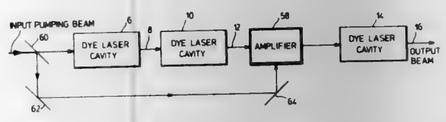


4,410,995

CASCADED DYE LASER CAVITIES

Pay H. Chiu, London, Canada, assignor to Photochemical Research Associates Inc., London, Canada

Filed Sep. 16, 1981, Ser. No. 302,506
Int. Cl.³ H01S 3/10
U.S. Cl. 372—69 **15 Claims**



1. A dye laser arrangement for producing stable and reproducible ultra-short lasing radiation pulses by reducing in stages the duration of incoming pumping pulses for said dye laser arrangement to produce said ultra-short pulses, comprising a series of at least two cascaded dye laser cavities, the photon cavity lifetime of each dye laser cavity of said series being sufficient for a given duration of said incoming pumping pulses to produce said ultra-short pulses emerging from a final dye laser cavity of said series, a maximum photon cavity lifetime of each dye laser cavity of said series being selected to thereby reduce in stages duration of said incoming pumping pulses to yield said ultra-short pulses from the final dye laser cavity of said series.

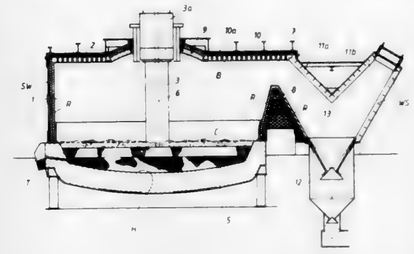
4,410,996

MELT REDUCTION ARC FURNACE

Rune Svensson, Surahammar, Sweden, assignor to ASEA AB, Vasteras, Sweden

Filed May 29, 1981, Ser. No. 268,176
Claims priority, application Sweden, May 29, 1980, 8003992; May 29, 1980, 8003993
Int. Cl.³ F27D 7/00
U.S. Cl. 373—9 **6 Claims**

1. A melt reduction arc furnace having a hearth, a side wall extending upwardly from the hearth's periphery, a roof gas-tightly closing the top of the side wall, at least one arcing electrode extending gas-tightly downwardly through the roof, feeding means for feeding particles to be reduced directly to the tip of the electrode, and exhaust means for exhausting gas continuously fromed by melt reduction at said tip from the space under the roof within the side wall; said roof having a substantially horizontal flat bottom surface facing the hearth so as to limit upward flow of said gas and an electrically insulated central opening through which said electrode extends in a substantially gas-tight manner, and said exhaust means being formed by said side wall having a horizontally elongated opening starting at and extending downwardly from said bottom surface of the roof and having a threshold extending upwardly from the hearth to a level above the arcing electrode's said tip so as to limit horizontal flow of said gas below said opening.

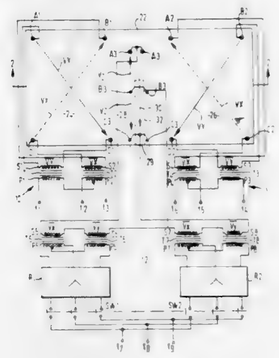


4,410,997

FURNACES FOR THE MELTING OF GLASS

Philip A. M. Gell, Stourbridge, and Douglas G. Hann, Shifnal, both of England, assignors to TECO/Elemelt Ltd., Kingwinford, England

Filed May 27, 1981, Ser. No. 267,564
Int. Cl.³ C03B 5/027, 5/26
U.S. Cl. 373—35 **8 Claims**



1. A furnace for the melting of glass, comprising a furnace chamber, groups of primary electrode means in the chamber defining respective heating zones situated in horizontally spaced regions of the chamber, an intervening zone in lateral communication with and situated between the heating zones, and withdrawal means defining a withdrawal flow path including a channel in the bottom of the furnace chamber and extending generally along the lower part of the intervening zone towards an outlet situated in the lower part of one of the peripheral walls of the chamber at one end of said channel, a power supply circuit connected to the primary electrode groups to supply current thereto to heat the glass in the heating zones, and auxiliary electrode means above said channel operable electrically to heat the body of molten glass in and along substantially the entire length of the intervening zone above said withdrawal flow path extending rearwardly from the outlet, and means to vary the heat thus supplied at different positions along said distance.

4,410,998

CURRENT SUPPLY DEVICE FOR ELECTRICALLY HEATING A MOLTEN MEDIUM

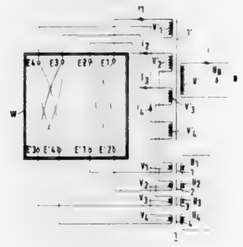
Fritz Germann, deceased, late of Rüthen, Fed. Rep. of Germany by Ingeborg Germann, heiress; Eduard Kuntz, Arnsberg, Fed. Rep. of Germany; Reinhold Müller, Büren, Fed. Rep. of Germany, and Horst Scholz, Warstein, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,574

Claims priority, application Fed. Rep. of Germany, May 20, 1980, 3019133

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—40 **5 Claims**



1. A system for electrically heating a molten medium in a melting trough by in-phase alternating current components which are fed into the medium and flow in the medium between electrodes and counterelectrodes immersed in the medium to effect resistance heating, said system comprising: a supply voltage source; means defining at least one input transformer having a primary winding connected to said source and a plurality of secondary windings; and additional transformer means presenting a plurality of primary windings and a plurality of secondary windings, with said primary windings of said additional transformer means being connected together in series and in a closed loop, and each said secondary winding of said input transformer being connected in series with at least one of said secondary windings of said addtional transformer means between a respective electrode and counterelectrode to provide a respective alternating current component, and each said winding of said additional transformer means having a number of turns corresponding to the desired relative amplitudes of the current components.

4,410,999

METHOD AND APPARATUS FOR COOLING A WALL REGION OF A METALLURGICAL FURNACE, IN PARTICULAR AN ELECTRIC ARC FURNACE

Ernst Wabersich, Rheinberg, and Gerhard Sanders, Baden, both of Fed. Rep. of Germany, assignors to Korf and Fuchs Systemtechnik, Fed. Rep. of Germany

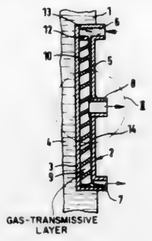
Filed Jul. 2, 1981, Ser. No. 280,122

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027464

Int. Cl.³ F27D *1/12*

U.S. Cl. 373—76 **17 Claims**

1. A cooling box to be fitted into a wall region of a metallurgical furnace or to form said wall region, the cooling box comprising a heat exchange plate, a rear wall disposed opposite the heat exchange plate, a supply conduit and a discharge conduit for cooling liquid, a vapour discharge means, a vapour-transmissive layer between the rear wall and the heat exchange plate having a plurality of liquid guide means for supplying liquid to the heat exchange plate, and means for defining an area of a layer of liquid on the inside surface of the rear wall, said liquid guide means being in communication with the heat exchange plate at a plurality of positions distributed over the inside surface thereof and with said area of the layer



of liquid on the inside surface of the rear wall when feeding a limited amount of liquid into said supply conduit.

4,411,000

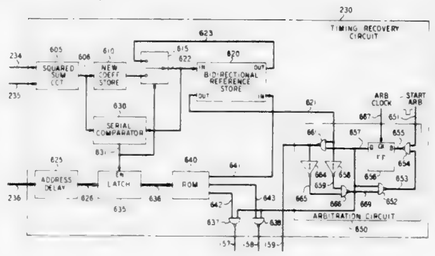
TIMING RECOVERY TECHNIQUE

George J. Kustka, Ocean, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1980, Ser. No. 185,017

Int. Cl.³ H04B *3/04*

U.S. Cl. 375—11 **42 Claims**



1. Apparatus comprising means (**120, 125, 135**) for forming samples of a received signal which represents a succession of data symbols,

means (**155, 160, 165, 222, 226, 233**) for forming a decision as to the value of each one of said symbols as a function of the sum of the products of ones of an ordered plurality of coefficients with respective ones of said samples, and

means (**160, 165, 170, 222, 226, 233**) for updating the values of said coefficients,

characterized by timing recovery means (**230**) for adjusting the phase of said sample forming means by an amount having a magnitude which is a function of the distance in said ordered plurality between the location of one of said coefficients in said ordered plurality and a predetermined second location.

4,411,001

DIFFERENTIAL PULSE CODE MODULATION TRANSMISSION SYSTEM

Marinus C. W. Van Buul, Breda, and Theodoor M. M. Kremers, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,815

Claims priority, application Netherlands, Oct. 30, 1980, 8005950

Int. Cl.³ H04B *12/04*

U.S. Cl. 375—30 **5 Claims**

1. A transmission system comprising:

A. a transmitter including:

(1) a DPCM coding arrangement for converting an information signal x(n) into a DPCM signal d(n) and including a first difference producer, to a first input of which the information signal x(n) is applied and to a second input of which an estimated version y(n) of this information signal is applied, for generating a first difference signal e(n),

(2) a first error reduction circuit for generating a first error reduction signal y(n) which reduces transmission errors and includes a first quantizing device having an input for receiving one of the signals applied to the two inputs of the first difference producer;

(3) means coupled to the first quantizing device for producing a first quantization error signal q(n);

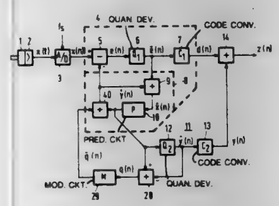
(4) means for modifying the first quantization error signal q(n) for generating a modified first quantization error signal q(n);

(5) adder means for generating the transmitter output signal z(n);

(6) means for applying the DPCM signal d(n), the first error reduction signal y(n) and the modified first quantization error signal q(n) to the adder means;

B. a receiver including:

(1) a receiver input for receiving the transmitter output signal z'(n);



(2) a second difference producer, a first input of which is coupled to the receiver input and to which a second error reduction signal y'(n) is applied via a second input, for generating a second difference signal d'(n);

(3) a DPCM decoding arrangement to which the second difference signal d'(n) is applied and which has a DPCM decoding arrangement output;

(4) a second error reduction circuit for generating the second error reduction y'(n) signal and including a second quantizing device, the input of which is coupled to the DPCM decoding arrangement output;

(5) means coupled to the second quantizing device for generating a second quantization error signal q'(n);

(6) means for modifying the second quantization error signal q'(n) for generating a modified second quantization error signal q'(n); and

(7) means which are coupled, in cascade with the second difference producer, between the receiver input and the DPCM decoding arrangement output and to which the modified second quantization error signal q'(n) is applied for eliminating the modified first quantization error signal q(n) present in the received transmitter output signal z'(n).

4,411,002

METHOD AND APPARATUS FOR A CONTINUOUSLY VARIABLE SLOPE DELTA RANGE EXTENDER

Robert L. Auger, Chalfont, Pa., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Filed Sep. 29, 1981, Ser. No. 306,668

Int. Cl.³ H03K *13/22*

U.S. Cl. 375—30 **9 Claims**

1. A continuously variable slope delta modulator range extender apparatus comprising:

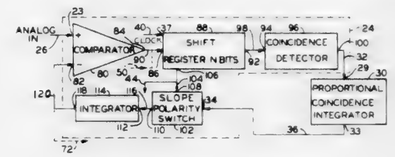
first means for comparison of an input analog signal and a reconstructed negative feedback analog signal and having an output and providing digital bits at said output corresponding to said comparison;

second means comprising a register having N positions and coupled to the output of said first means for storing in said register the most recent N number of said digital bits and having an output at which the value of the bit in one of said N positions is present;

third means coupled to said second means for detecting coincidence of said N number of bits stored at any one time and having an output at which is a signal corresponding to the state of coincidence;

fourth means coupled to said third means output for integrating and amplifying said third means output signal and providing an output signal corresponding to said integration and amplification;

fifth means coupled to said second means output for sensing the value of the bit in said one position and being coupled to said fourth means for receiving said fourth means output signal; said fifth means coupled to said first means for applying a polarity sign to said fourth means output signal corresponding to the value of said sensed one bit to provide said reconstructed negative feedback analog signal to said first means;



said fourth means comprising a switch; an amplifier having an input and output; a resistance capacitance integrating circuit; said switch being coupled between said amplifier output and said resistance capacitance circuit; said amplifier input being coupled to said capacitance whereby when said switch is closed said amplifier is started thereby charging said integrating circuit, said capacitance charge being amplified by said amplifier to increase the amplifier output signal to said integrating circuit; said switch being coupled to said third means output and being closed on each sensed coincidence by said third means, the gain of said amplifier being adjusted to obtain at least one of desired signal to noise ratios, distortion levels, and gain linearities.

4,411,003

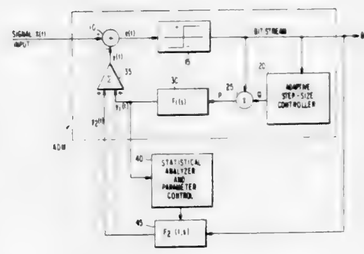
MULTIPLE-LOOP ADAPTIVE DELTA MODULATOR

James C. Su, Bethesda, Md., assignor to Communication Satellite Corporation, Washington, D.C.

Filed Jul. 20, 1981, Ser. No. 285,244

Int. Cl.³ H04B *12/04*

U.S. Cl. 375—33 **4 Claims**



1. An adaptive delta modulator for producing a delta-modulated bit stream in response to an input signal, comprising:

subtracting means, said input signal being applied to a first input of said subtracting means;

quantizing means receiving an output of said substracting means, said delta-modulated bit stream being produced at an output of said quantizing means;

first feedback means comprising an adaptive step size controller for producing in response to a plurality of sequential bits of said delta-modulated bit stream output from said quantizer a signal representing a step size, multiplier means for multiplying said delta-modulated bit stream output by said signal representing said step size, and first filter means having an input coupled to a product output of said multiplying means; and

second feedback means comprising means for detecting a bandwidth of a predetermined one of an output of said first filter means and said input signal, and second filter means having an input coupled to said delta-modulated bit stream output and having a bandwidth determined in accordance with an output of said bandwidth detecting means; and

signal summing means receiving inputs from said output of said first filter means and an output of said second filter means, an output of said signal summing means being applied to a second input of said subtracting means.

4,411,004

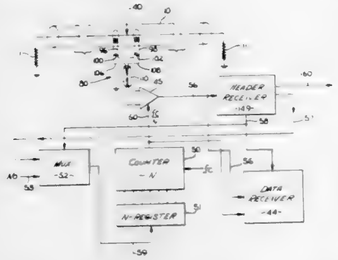
INDUCTIVELY COUPLED SENSING CIRCUIT AND PRIORITY SYSTEM

Martin H. Graham, Berkeley, Calif., assignor to Rolm Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 163,573, Jun. 27, 1980, Pat. No. 4,320,520. This application Oct. 13, 1981, Ser. No. 311,050

Int. Cl.³ H04B *3/00*

U.S. Cl. 375—36 **14 Claims**



1. In a receiver of the type used on a common cable data communication system, an improvement comprising:

sensing means inductively coupled to said cable for detecting signals traveling along said cable;

polarity detection means inductively coupled to said cable for determining the polarity of said signals detected by said sensing means;

precedence control means coupled to said polarity detection means for determining the direction of said signals based on said polarity;

whereby the presence and direction of signals traveling along a common cable is determined by said receiver.

4,411,005

DATA CIRCUIT FOR FREQUENCY MODULATING AN OSCILLATOR

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Dec. 21, 1981, Ser. No. 332,816

Int. Cl.³ H04B *15/06*

U.S. Cl. 375—65 **11 Claims**

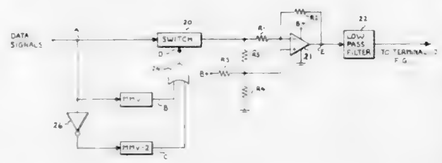
1. An improved circuit for modifying data signals which vary between two voltage levels for application to an oscillator modulation circuit comprising:

a. a data input for said data signals;

b. first means coupled to said data input for producing a first time signal in response to transitions of said data signals in a first direction;

c. second means coupled to said data input for producing a second time signal in response to transitions of said data signals in a second direction opposite said first direction;

d. switching means having an input coupled to said data input, having an output, and having a control input for selectively applying signals present at said data input to



said output in response to signals applied to said control input;

e. third means coupling said control input to said first and second means for blocking data signals from said output in response to the absence of both of said first and second time signals and for passing data signals to said output in response to the presence of either of said first and second time signals;

f. and fourth means coupled to said output of said switching means for producing a predetermined reference voltage in the absence of data signals and for producing substantially equal and opposite deviations from said reference voltage in response to said two voltage levels respectively.

4,411,006

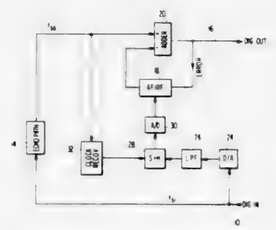
DIGITAL BIT RATE SYNCHRONIZER FOR DIGITAL ECHO CANCELLERS AND SIMILAR SIGNAL PROCESSING DEVICES

Otakar A. Horna, Bethesda, Md., assignor to Communication Satellite Corporation, Washington, D.C.

Filed Sep. 9, 1981, Ser. No. 300,701

Int. Cl.³ H04B *7/015*

U.S. Cl. 375—102 **20 Claims**



1. A digital signal processing device for receiving and processing first and second digital input signals at first and second device inputs, respectively, said second digital signal comprising at least first and second consecutive samples representing first and second values, respectively, said device comprising:

a signal processor (e.g. 18, 20) having first and second signal processor inputs and for processing signals received at said first and second processor inputs, said first signal processor input comprising said first device input; and

coupling means, including interpolation and synchronization means, for receiving said at least first and second consecutive samples of said second digital input signal and for providing a signal to said second signal processor input which is derived from said second digital input signal, is synchronized in time with said first digital input signal and represents a value between said first and second values.

4,411,007

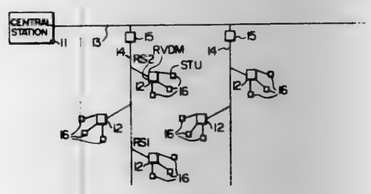
DISTRIBUTED NETWORK SYNCHRONIZATION SYSTEM

William Rodman, Montreal, and Peter Boland, Nepean, both of Canada, assignors to The Manitoba Telephone System, Winnipeg, Canada

Filed Apr. 29, 1981, Ser. No. 258,561

Int. Cl.³ H04J *3/06*

U.S. Cl. 375—107 **26 Claims**



1. A digital transmission system comprising a central station and a plurality of remote stations, each station including means for transmitting and receiving digital data in a sequence of frames, transmission means arranged between said central station and each of said remote stations and causing a variable inherent delay therebetween dependent upon the location of the respective remote station, the central station including means for transmitting a first signal to each of said remote stations chosen in turn and for receiving a signal therefrom dependent on the first signal and means for producing from said first signal and said received signal a delay signal representative of the inherent delay relative to the chosen remote station and for transmitting said delay signal to said remote station, and each remote station including means for receiving and storing said delay signal and means for changing the time of transmission of the transmission means of said remote station in dependence upon said stored delay.

4,411,008

METHOD AND APPARATUS FOR CONTROLLING TAPE TRANSPORT APPARATUS IN SEARCH SEQUENCE

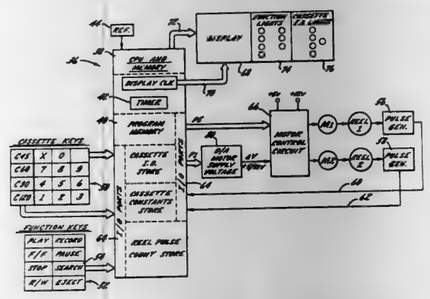
Stephane M. d'Alayer de Costemore d'Arc, and David J. Lockey, both of Brussels, Belgium, assignors to Staar S. A., Belgium

Division of Ser. No. 953,211, Oct. 20, 1978, Pat. No. 4,366,371. This application Feb. 6, 1981, Ser. No. 232,199

Claims priority, application France, Dec. 9, 1977, 77 37210

Int. Cl.³ G11B *27/14;* **B65H** *59/38*

U.S. Cl. 377—18 **10 Claims**



1. A method of monitoring tape movement in tape transport apparatus for tape/reel assemblies having two reels, said apparatus having drive means for moving the tape from reel to reel, and means generating reel pulses responsive to rotation of each reel as tape is moved by said drive means, comprising:

providing dedicated memory means storing signals correlating number of reel pulses and tape positions from one end of the tape to the other,

deriving from said memory means signals representing pulse count based on known tape positions to tape positions based on known pulse counts, and

controlling said apparatus to monitor tape movement in accordance with pulse count or tape position derived from said memory means.

4,411,009

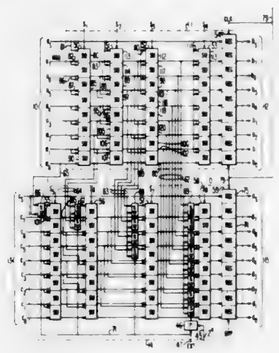
DIGITAL DUAL HALF WORD OR SINGLE WORD POSITION SCALER

Lloyd W. Martinson, Haddonfield, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 5, 1980, Ser. No. 213,393

Int. Cl.³ G06F *7/38;* **G06G** *7/00*

U.S. Cl. 377—47 **5 Claims**



1. An expandable scaler for scaling digital words comprising:

first N bit position scaler means having N input terminals a_0–a_{n-1} for receiving a first N bit input word, and N output terminals b_o–b_{N-1}, and comprising:

(x+1) control signal sources for generating (X+1) control signals;

(x+1) first switching means S_1–$S_{(x+1)}$ each responsive to one of said control signals for shifting each bit of said N bit input word in any combination of 2^*, 2^m,–2^x=m bit positions at said output terminals b_0–b_{N-1} to cause the bit supplied to an input terminal a_n of terminals a_0–a_{N-1} to appear at output terminal b_{n-m} of output terminals b_0–b_{N-1}, and where $\log_2 N = x$;

second N bit position scaler means having N input terminals c_0–C_{N-1} for receiving a second N bit input word and N output terminals d_0–d_{N-1} and comprising (x+1) second switching means S_{x+2}–$S_{2(x+1)}$ each responsive to one of said control signals and corresponding in bit shifting capability respectively to said switches S_1–S_{x+1} for shifting each bit of said second N bit input word any combination of 2^*, 2^1–2^x=k bit positions at the said output terminals d_0–d_{N-1} to shift the bit supplied to input terminal c_n of terminals c_0–C_{N-1} to output terminal d_{n-k} of output terminals d_0–d_{N-1};

each of said switching means S_1,–S_{x+1} and S_{x+2}–$S_{2(x+1)}$ comprising a plurality of individual switches each responsive to an energizing signal to shift a bit supplied thereto a selected one of 2^*, 2^1,–2^x bit positions respectively; and

third switching means responsive to an enabling signal to transfer the input signals otherwise supplied to the R least significant bit input terminals of the individual

switches of said first switching means to the R most significant bit input terminals of individual switches of the second switching means having the same bit shifting capability, where R equals the sum of the bit position shifts produced in response to the energization of corresponding switching means of said first and second switching means.

4,411,010

DIVIDE-BY-TWO CHARGE DIVIDER

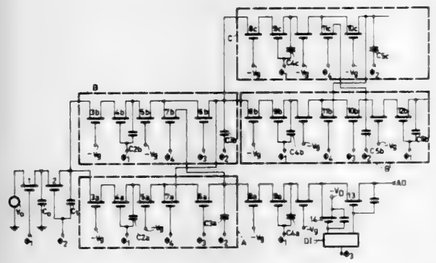
Frederik L. J. Sangster, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,476

Claims priority, application Netherlands, Mar. 25, 1980, 8001730

Int. Cl.³ H03K *13/02, 21/00*

U.S. Cl. 377—61 **1 Claim**



1. A device for the repeated division of electric charges into equal halves for use in analog-to-digital or digital-to-analog converters, employing clock pulse controlled charge transfer devices, wherein an input charge is applied to a first and to a second branch, which branches are parallel and which branches each include a first charge transfer device and a first storage capacitance, to which first storage capacitance half the input charge can be fed by means of said charge transfer device with an inaccuracy which is determined by the inequality of the storage capacitance and/or of the charge transfer devices, said first charge transfer devices being controlled by first clock pulses characterized in that:

each of said branches has a second and a third alternately operative charge transfer device coupled to said storage capacitance;

said second transfer device transferring the charge stored in the storage capacitance in a given branch to a collecting capacitance situated in the other branch and said third transfer device transferring the charge stored in the storage capacitance in a given branch to a collecting capacitance situated in the same branch;

said second and said third transfer devices are controlled respectively by second and third clock pulses, said second and third clock pulses having a rate half of the rate of said first clock pulses and being interlaced with said first clock pulses;

said first clock pulses further controlling a transfer gate connected to a collecting capacitance of a first branch for transferring charges of said collecting capacitance to a second storage capacitance for summing the charges transferred to said collecting capacitance by each pair of successive second and third clock pulses.

4,411,011

RADIOGRAPHY

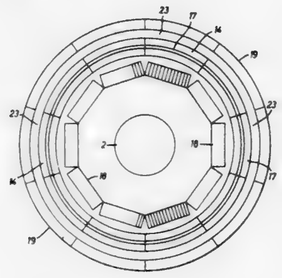
Christopher Archibald G. LeMay, Osterley, England, assignor to EMI Limited, Hayes, England

Continuation of Ser. No. 781,345, Mar. 25, 1977, abandoned, which is a continuation of Ser. No. 668,518, Mar. 19, 1976, Pat. No. 4,031,395. This application Sep. 28, 1978, Ser. No. 946,644

Claims priority, application United Kingdom, Mar. 20, 1975, 7366/75; Mar. 20, 1975, 11553/75; Jun. 21, 1975, 26485/75

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—10 **7 Claims**



1. A method of examining a body by means of X-radiation including the steps of: deriving a fan-shaped distribution of X-radiation from an origin at one of a plurality of elongated X-ray tube anodes distributed along a curved path around the body and projecting the radiation through a slice of the body to be incident on at least some of a plurality of detectors also distributed around the body; scanning the origin of the X-radiation along one of said anodes and then successively along others of said anodes to project the radiation through the slice from a plurality of different locations distributed around the body; deriving output signals from the detectors representing the intensity of the radiation after transmission through the body from said different locations; and processing the output signals to derive a representation of the distribution of absorption of the radiation in said slice.

4,411,012

DIAGNOSTIC RADIOLOGY INSTALLATION

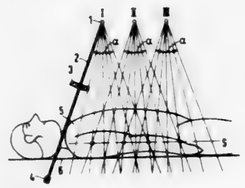
Manfred Pfeiler, Erlangen, and Edgar Tschunt, Rathsberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,412

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1980, 3010780

Int. Cl.³ G03B *41/16*

U.S. Cl. 378—17 **2 Claims**



1. A diagnostic radiology installation comprising a patient support extended in a longitudinal direction, a radiation measuring arrangement comprised of a radiation source, which generates at least one fan-shaped radiation beam penetrating the radiography subject and disposed transversely to the patient support, and of a radiation receiver which has an array of detectors which are connected to a signal processing circuit,

means for effecting a relative movement between the patient support and the radiation measuring arrangment in the longitudinal direction of the support for generating a shadow image from the detector output signals by means of signal processing, means (16, 17, 18, 19) for generating several radiation directions are present, so that a plurality of intersection points of the radiation paths within an image exposure region result, and a signal processing circuit (20) coupled with said detectors for determining the radiation transparency in the patient (5) for every intersection point of a plane (S) parallel to the patient support (6), the radiation source (13) being rigidly connected with the radiation receiver (4) and being pivotal about the focus (1) of said radiation source.

4,411,013

SYSTEM FOR TRANSFERRING A FINE PATTERN ONTO A TARGET

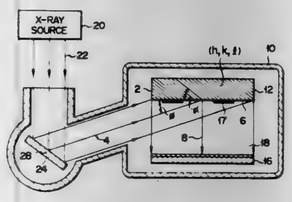
Shinichiro Takasu, Tokyo, and Toshiaki Shinozaki, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 18, 1981, Ser. No. 332,203

Claims priority, application Japan, Dec. 23, 1980, 55-182348

Int. Cl.³ G21K *5/00*

U.S. Cl. 378—34 **5 Claims**



1. A system for transferring a fine pattern onto a target, comprising:

means for emitting X-rays; and

a mask on which are incident the X-rays at a predetermined angle and which emits diffraction X-rays, the mask including a single crystal having lattice planes of a predetermined orientation and a layer of a predetermined pattern which absorbs incident X-rays and diffraction X-rays, so that the diffraction X-rays which are not absorbed by the absorber layer are projected to the target and the pattern defined by the X-ray absorbing layer is transferred to the target.

4,411,014

TOOL FOR INSPECTING THE UPPER END OF A STRING OF CASING SET IN THE BOTTOM OF A BODY OF WATER

Mark Y. Berman, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Jun. 26, 1981, Ser. No. 277,580

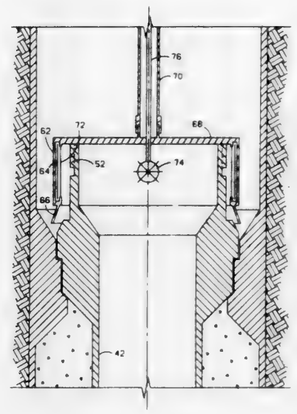
Int. Cl.³ G01N *23/18*

U.S. Cl. 378—59 **3 Claims**

1. A method of inspecting the connector on the upper end of a string of casing set in the floor of a body of water which comprises:

attaching an inspection tool to the lower end of a string of drill pipe, said inspection tool having a cylindrical housing, a radiographic film carried by said housing, and a radiographic source,

lowering said inspection tool so that said cylindrical housing surrounds said connector,



activating said radiographic source, and

retrieving said inspection tool.

4,411,015

METHOD AND APPARATUS FOR AUTOMATIC RECOGNITION OF IMAGE AND TEXT/GRAPHICS AREAS ON A MASTER

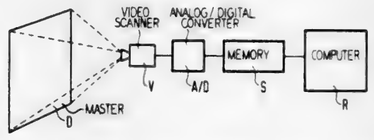
Wolfgang Scherl, Munich; Ludwig Abele, Poecking; Friedrich Wahl, and Hermann Fuchsberger, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 19, 1981, Ser. No. 265,107

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019836

Int. Cl.³ G06K *9/36*

U.S. Cl. 382—51 **3 Claims**



1. A method for automatic recognition of image and text/graphics areas on a master comprising the steps of:

opto-electronically scanning said master for generating analog signals corresponding to printed matter on said master;

converting said analog signals into corresponding digital information;

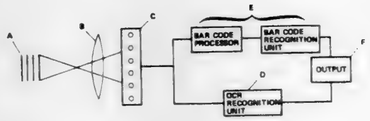
storing said digital information in a data field in a memory which is subdivided into a plurality of partially overlapping windows forming a grid co-extensive with said data field, said windows having edge lengths selected to be greater than the known spacing between two successive lines of text on said master;

generating a grayscale value histogram for each window;

evaluating the maximum occurring brightness value of the entire master; defining a lower brightness limit by a certain percentage of the maximum occurring brightness value in determining the percentage of samples within each grayscale value histogram which have a brightness between said maximum occurring brightness value and said lower brightness limit;

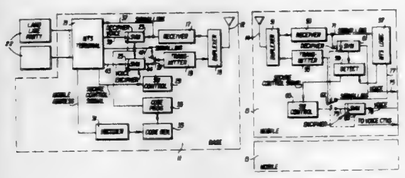
comparing said percentage of samples for each window to a selected decision threshold value;
classifying a window as an image area if said percentage of samples is less than said decision threshold value; and
classifying said window as a test/graphics area if said percentage of samples is equal to or greater than said decision threshold value.

4,411,016
BARCODE WIDTH MEASUREMENT SYSTEM
Charles A. Wakeland, Midlothian, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.
Filed Jun. 1, 1981, Ser. No. 269,130
Int. Cl.³ G06K *9/28*
U.S. Cl. 382—62 **9 Claims**



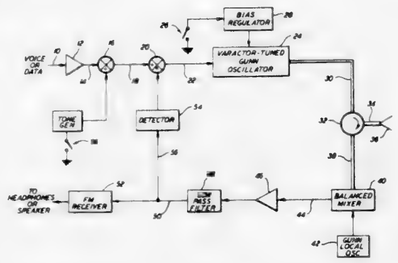
1. An optical reader including a single columnar array of photo sensitive elements for producing video signals to be read by both bar code and alphanumeric readers, comprising; a first optical character processor for reading alphanumeric data, and a second processor for reading bar code data, said processor utilizing video signals from said array for reading alphanumeric data when the alphanumeric data is scanned perpendicular to the length of the array, and bar codes are scanned with the array parallel to the direction of scan.

4,411,017
SECURE MOBILE TELEPHONE SYSTEM
Robert D. Talbot, Pittsford, N.Y., assignor to Harris Corporation, Melbourne, Fla.
Filed Mar. 14, 1980, Ser. No. 130,345
Int. Cl.³ H04K *1/00*
U.S. Cl. 455—26 **6 Claims**



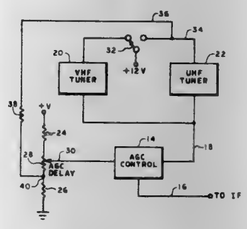
6. In a radio frequency mobile telephone communication system including a base station and a plurality of mobile stations in which unenciphered communication between a mobile station and the base station may be received and understood by each of the other mobile stations, the improvement:
(a) wherein each of said plurality of mobile stations includes:
(i) means of sending to the base station an unenciphered request for secure communication;
(ii) means responsive to receipt of an encoded communication from the base station to encode subsequent transmissions to the base station in a code unique to the mobile station, and
(iii) means responsive to receipt of an encoded communication signal for decoding subsequently received transmissions from the base station encoded in said unique code; and
(b) wherein said base station includes:
(i) means for receiving an unenciphered request for secure communications from a mobile station,
(ii) means for identifying from the request the particular mobile station and for determining the code unique thereto,
(iii) means for transmitting a communication signal to the mobile station in said unique code,
(iv) means for decoding subsequently received transmissions from the mobile station in said unique code, said decoding means including:
(a) a plurality of programmable encode/decode units,
(b) means for selecting one of said encode/decode units not in current use, and
(c) means responsive to said code determining means for programming said selected encode/decode unit with the code unique to the mobile station from which the request for secure communication has been received, and
(v) means for encoding subsequent transmissions to said mobile station in said unique code,
whereby the base station and one of the plurality of mobile stations may communicate using a code unique to that mobile station in response to an unenciphered request by the mobile station for secure communications.

4,411,018
RAPIDLY STABILIZED GUNN OSCILLATOR TRANSCEIVER
Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 18, 1983, Ser. No. 313,104
Int. Cl.³ H04B *1/40*
U.S. Cl. 455—75 **4 Claims**



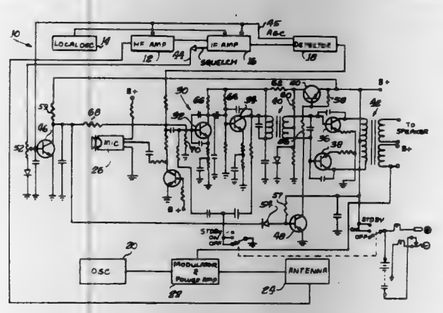
1. A single-channel transceiver having a transmitter portion that is enabled in a push-to-talk mode and a receiver portion that normally operates in an on state, comprising:
a first microwave oscillator means, in said transmitter portion, having an input thereto that proportionally changes the frequency of oscillation, for creating a transmit frequency in the millimeter band;
antenna means for transmitting and receiving microwave energy;
circulator means connecting said antenna to both said transmitter portion and said receiver portion;
mixer means having a second microwave oscillator means that is normally in the on state, said mixer means being connected to said circulator means for demodulating a received microwave signal; and
a feedback loop connected between said receiver portion and said transmitter portion which includes a slope discriminator means and a frequency discriminator means to provide a voltage level which varies proportionally to the frequency difference between leakage signals from said first microwave oscillator means and said second oscillator means to provide an error signal which is fed back to the input of said transmitter oscillator means.

4,411,019
AGC SYSTEM FOR TELEVISION RECEIVERS
Jouke N. Rypkema, Lombard, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.
Filed Jan. 25, 1982, Ser. No. 342,277
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—180 **5 Claims**



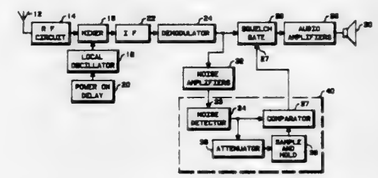
1. In a television receiver having gain controllable UHF and VHF tuners for respective tuning of channels in the UHF and VHF television bands and a gain controllable IF amplifier, an AGC system therefor, comprising:
an AGC control for developing a first gain control signal for the IF amplifier and a second gain control signal for the tuners;
means for coupling the first gain control signal to the IF amplifier;
means for coupling the second gain control signal to the tuners; and
AGC delay means coupled to the AGC control for establishing at least three different AGC delay points at which the second gain control signal becomes effective to reduce the gain of the UHF and VHF tuners in response to the respective selection of the UHF tuner, the VHF tuner and a selected channel within one of the UHF or VHF television bands.

4,411,020
POWER EFFICIENT RADIO RECEIVER APPARATUS
Kazuyoshi Imazeki, and Nakano Masao, both of Tokyo, Japan, assignors to General Research of Electronics, Inc., Tokyo, Japan
Filed Mar. 13, 1981, Ser. No. 243,440
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—219 **13 Claims**



7. In a radio receiver having a power supply, a squelch circuit, an AGC circuit and audio amplifier circuit means, the improvement comprising: a switching circuit interposed between said power supply and said audio amplifier circuit means and including a control input, said switching circuit being responsive to said control input for substantially cutting off said power supply from said audio amplifier circuit means when said control input receives a signal at a predetermined level, circuit means intermediate said control input and said squelch circuit for producing said signal of predetermined level in response to said squelch circuit when said squelch circuit is responding to a predetermined noise level present in the signal received by said radio receiver, and wherein said control input is further coupled to said AGC circuit and said switching means is responsive to said AGC circuit for cutting off said power supply from said audio amplifier means when said AGC circuit is responding to a predetermined low level audio signal present in a radio wave received by said receiver.

4,411,021
AUTOMATIC THRESHOLD SQUELCH
John H. Yoakum, Hurst, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 27, 1981, Ser. No. 287,335
Int. Cl.³ H04B *1/10*
U.S. Cl. 455—222 **13 Claims**



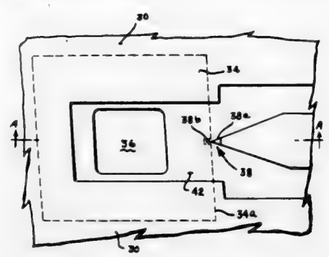
1. An automatic threshold squelch circuit, for radio receiver having a demodulator responsive to noise signals from the receiver demodulator for generating a mute signal when no transmission is being received by the receiver, said squelch circuit comprising:
noise detector means for producing a unidirectional signal level as a function of the noise signal from the demodulator;
memory means, coupled to the noise detector means, for sampling and storing the unidirectional signal level when no transmissions are being received by the receiver;
comparator means, coupled to the detector means and the memory means, for comparing the unidirectional signal level from the noise detector means to the stored signal level, and generating an unmute signal when the uni-directional signal level is less than the store signal level.

4,411,022
INTEGRATED CIRCUIT MIXER APPARATUS
Brian J. Clifton, Sudbury, Mass.; Gary D. Alley, Londonderry, N.H., and Ralph A. Murphy, Hudson, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jan. 27, 1982, Ser. No. 343,034
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—327 **7 Claims**

1. An integrated circuit mixer apparatus comprising in combination:
a dielectric substrate having a top and bottom surface, said dielectric substrate including a ground plane on said top surface,
a slot coupler means formed on the top surface of said dielectric substrate,
a coplanar transmission line means disposed on said top surface of said dielectric substrate, said coplanar transmission line means being electrically connected to said slot coupler means,
a Schottky-barrier diode located on said top surface of said dielectric substrate, said Schottky-barrier diode having an anode and a cathode, said anode of said Schottky-barrier diode being connected by said coplanar transmission line to said slot coupler means,
a bypass capacitor located on said top surface of said dielec-

tric substrate, one plate of said bypass capacitor being electrically connected to the cathode of said Schottky-barrier diode, the other plate of said bypass capacitor being electrically connected to a portion of said ground plane, and,

a bonding pad attached to said first capacitor plate to provide an IF signal output terminal, an RD signal and a local oscillator signal being applied to said dielectric substrate, said RF signal and said local oscillator signal propagating through said dielelectric substrate to said slot coupler means and by means of said coplanar transmission line means to said Schottky-barrier diode, an IF signal appearing in response to said RF and local oscillator signal at said If signal output terminal.



DESIGN PATENTS

GRANTED OCT. 18, 1983

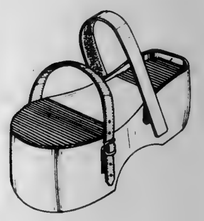
ERRATA

For CLASS	See PATENT NO.
D32–023	271,021
D24–036	271,051
D24–045	271,052
D24–046	271,053
D25–053	271,054
D25–074	271,055
D26–011	271,056
D26–037	271,057
D26–042	271,058

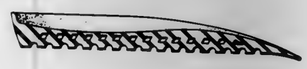
DESIGNS

OCTOBER 18, 1983

270,964
OVERSHOE
Rae H. Archibald, 1 Nellie St., Clayfield, Queensland, 4011, Australia
Filed Apr. 22, 1981, Ser. No. 256,318
Claims priority, application Australia, Nov. 5, 1980, 82530
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—264



270,965
HEEL STABILIZER
Donald S. Pritt, 4542 Emerson Ave., Parkersburg, W. Va. 26101
Filed Jun. 18, 1981, Ser. No. 274,993
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314

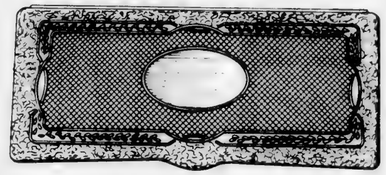


270,966
ADJUSTABLE THIMBLE
Evelyn A. Lynn, 24161 Delphi St., Mission Viejo, Calif. 92691
Filed May 27, 1981, Ser. No. 268,073
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—29





270,967
EYEGLASS CASE
Joseph Matt, 343 NW. 170 St., Miami, Fla. 33169
Filed Jul. 11, 1980, Ser. No. 167,682
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—34



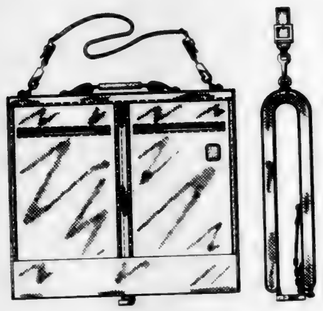
270,968
HOLDER FOR PROTECTIVE SPRAY AND KEYS
John R. Boal, 9014 E. Lazywood Pl., Carefree, Ariz. 85331
Filed Mar. 25, 1981, Ser. No. 247,224
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—62



270,969
LUGGAGE
Ted Stark, Montclair, N.J., assignor to M&M Luggage Co, Inc., Jersey City, N.J.
Filed Oct. 17, 1980, Ser. No. 197,780
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



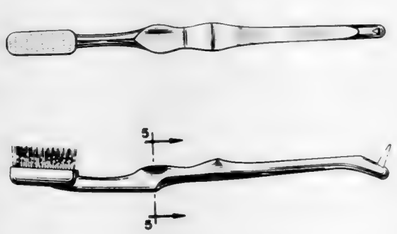
270,970
LUGGAGE
Ira R. Katz, Nashville, and Robert P. Davis, Lebanon, both of Tenn., assignors to Hartmann Luggage Company, Lebanon, Tenn.
Filed Feb. 12, 1982, Ser. No. 348,488
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



270,971
APPLICATOR BRUSH AND SPREADER
Robert G. Stevens, 673 Maverick Rd., Woodstock, N.Y. 12498; J. Joseph Kelly, III, 8 Bay Path Dr., Boylston, Mass. 01505, and William E. Arnold, P.O. Box 154, Bearsville, N.Y. 12409
Filed Sep. 18, 1980, Ser. No. 188,187
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—06



270,972
HANDLE FOR TOOTH BRUSH OR SIMILAR ARTICLE
Paul M. Rosofsky, Willingboro, N.J., assignor to Oral Ease Inc., Willingboro, N.J.
Filed Jul. 23, 1981, Ser. No. 286,203
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



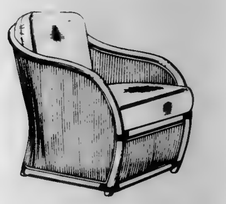
270,973
COMBINED DRESSING TABLE AND PLURAL SHELF UNIT FOR AN INFANT
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Feb. 25, 1981, Ser. No. 238,244
Term of patent 14 years
Int. Cl. D6—*05*
U.S. Cl. D6—5



270,974
DISPLAY STAND
Hanns Persch, Bodenheim, Fed. Rep. of Germany, assignor to Kuemmerling GmbH, Bodenheim, Fed. Rep. of Germany
Filed Aug. 3, 1981, Ser. No. 289,020
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—24



270,975
ARMCHAIR
Henry Olko, Chicken Valley Rd., Locust Valley, N.Y. 11650
Filed Oct. 23, 1980, Ser. No. 198,856
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57



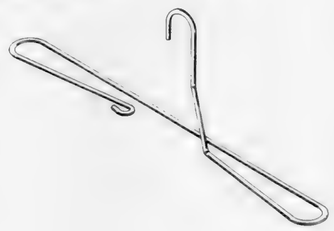
270,976
COMPACTLY STACKABLE ARMCHAIR
David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021
Filed Jun. 10, 1981, Ser. No. 272,982
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



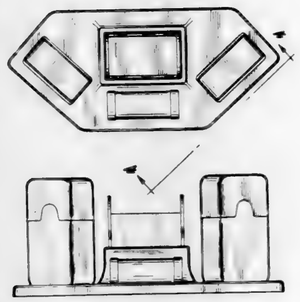
270,977
SHELVING UNIT
Edward H. Kneale, III, 335 Pleasant Pines Ave., Centerville, Mass. 02632, assignor to Edward H. Kneale, III, Centerville, Mass.
Filed Jan. 19, 1981, Ser. No. 226,480
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113



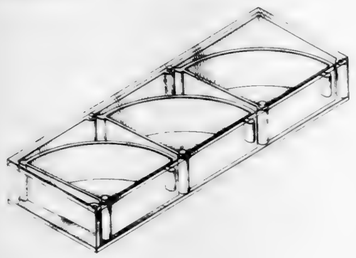
270,978
DRAPERY HANGER
Gerald E. Guebert, 3039 Eric La., Dallas, Tex. 75234, and Raymond R. Belknap, 125 Star, Austin, Tex. 78776
Filed Jun. 8, 1981, Ser. No. 271,537
Term of patent 14 years
Int. Cl. D6—*04, 08*
U.S. Cl. D6—113



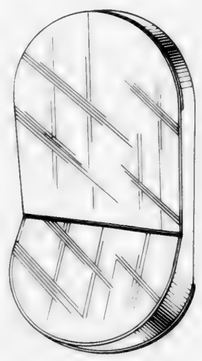
270,979
COMBINED CLEANING COMPONENT HOLDERS AND TRAY THEREFOR
Raymond J. Cuminale, New York, N.Y., assignor to General Mills Products Corp., Minneapolis, Minn.
Filed Nov. 5, 1979, Ser. No. 91,620
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—146



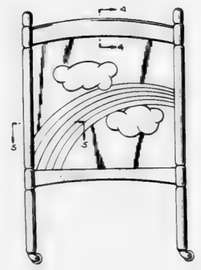
270,980
STORAGE CABINET
Harold Haigh, 1402 N. Boston Pl., Russelville, Ark. 72801
Filed Mar. 26, 1981, Ser. No. 248,003
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—172



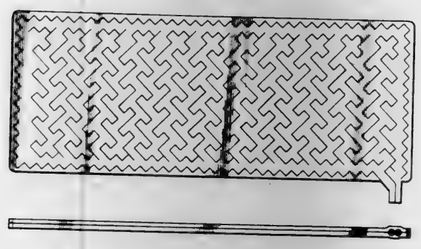
270,981
COMBINED PHOTO AND JEWELRY DISPLAY UNIT
Raymond J. Cuminale, New York, N.Y., assignor to Trifari Krussman & Fishel, Inc., New York, N.Y.
Filed Jun. 8, 1981, Ser. No. 271,700
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—173



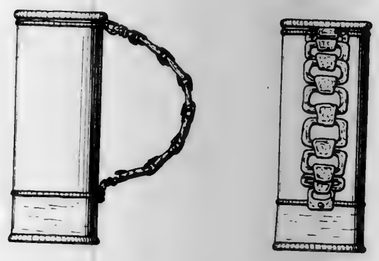
270,982
CRIB FOOTBOARD
Merlin A. Brunner, New London; Harvey J. Draheim, Weyauwega, and Michael J. Schaffer, New London, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Mar. 23, 1981, Ser. No. 246,357
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—198



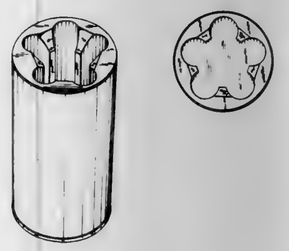
270,983
INFLATABLE MATTRESS FOR TREATING A PATIENT
Clifford E. Gammons, Indianapolis, Ind., and Francis C. Moore, Cape Coral, Fla., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Jul. 22, 1980, Ser. No. 171,061
Term of patent 14 years
Int. Cl. D6—*09*; D24—*01*
U.S. Cl. D6—204



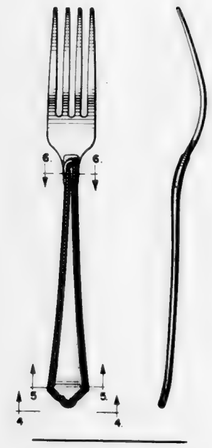
270,984
DRINKING MUG
David B. Neily, 10162 Helen Pl., Sunland, Calif. 91040
Filed Nov. 3, 1980, Ser. No. 203,334
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—9



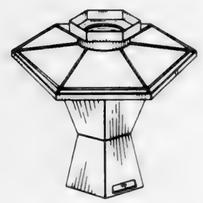
270,985
COOLER FOR HOLDING A PLURALITY OF BEVERAGE CANS
Michael W. Hill, 1116 W. Main St., Marshalltown, Iowa 50158
Filed Aug. 19, 1981, Ser. No. 294,194
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—77



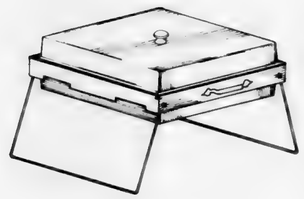
270,986
FORK OR SIMILAR ARTICLE
Oleg L. Cassini, New York, N.Y., assignor to American Home Products Corporation, New York, N.Y.
Filed Sep. 25, 1981, Ser. No. 305,595
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—137



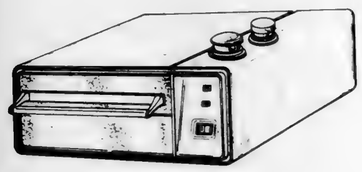
270,987
BARBECUE
John H. Scheufler, 3940 Gresham #315, San Diego, Calif. 92109
Filed Mar. 9, 1981, Ser. No. 241,705
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—335



270,988
PORTABLE BARBECUE GRILL
Byron D. Anderson, 4103 S. Pittsburg, Spokane, Wash. 99203
Filed Sep. 21, 1981, Ser. No. 304,514
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—337

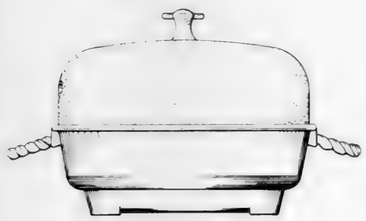


270,989
FOOD STEAMER
Ronald E. Bratton, Fort Wayne, Ind.; Joseph R. Mango, Midlothian, and Donald G. Wolfe, Lake Barrington, both of Ill., assignors to Lincoln Manufacturing Company, Inc., Fort Wayne, Ind.
Filed Mar. 9, 1981, Ser. No. 241,716
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—350

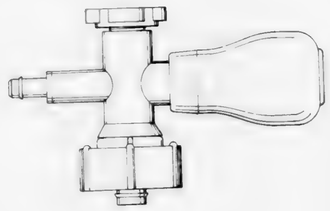


270,990
MICROWAVE STEAMING UTENSIL OR THE LIKE
Robert F. Bowen, Burlington, Mass., and Walter B. Herbst, Evanston, Ill., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 3, 1981, Ser. No. 270,031
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—360





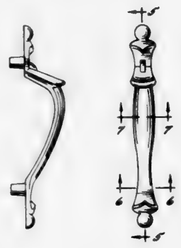
270,991
FLUID DISPENSING PUMP
Eldon D. Thiessen, 888 SW. River Dr., Dallas, Oreg. 97338
Filed Jun. 22, 1981, Ser. No. 275,769
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—398



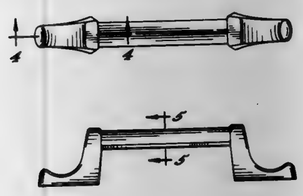
270,992
CABLE CORING TOOL
James J. Matthews, East Haddam, Conn., assignor to The Ripley Company, Cromwell, Conn.
Filed May 1, 1981, Ser. No. 259,510
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—98



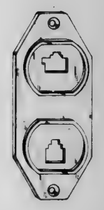
270,993
PULL
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Dec. 16, 1980, Ser. No. 217,169
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—302



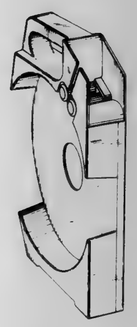
270,994
PULL
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Jun. 4, 1981, Ser. No. 270,496
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—316



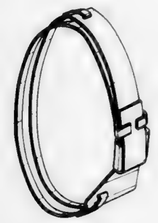
270,995
COMMUNICATIONS OUTLET ESCUTCHEON FOR MOUNTING ON FLOOR DUCT BOXES
Daniel Meyer, Rochester, Minn., assignor to Communications Systems, Inc., Hector, Minn.
Filed Nov. 28, 1980, Ser. No. 211,269
Term of patent 14 years
Int. Cl. D8—*09*; D13—*03*; D14—*99*
U.S. Cl. D8—350



270,996
HOSE CASSETTE FRAME
John R. Houghton, Skjetten, Norway, assignor to Heger Plastics A/S, Oslo, Norway
Filed Apr. 3, 1981, Ser. No. 250,671
Claims priority, application Norway, Oct. 8, 1980, 61402
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—359



270,997
HOSE CLAMP
Shiro Kanao, 18 9 4-chome, Nanpeidai, Takatsukishi,Osaka, Japan
Filed Sep. 30, 1980, Ser. No. 192,611
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—396



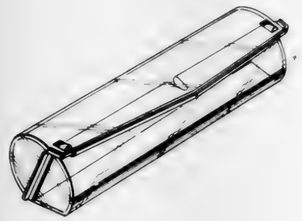
270,998
PACKAGING CONTAINER
Sven O. S. Stark, Rydsgard, Sweden, assignor to Tetra Pak International AB, Lund, Sweden
Division of Ser. No. 28,995, Apr. 11, 1979. This application Mar. 1, 1982, Ser. No. 353,244
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—375



270,999
JUG OR SIMILAR ARTICLE
Anthony M. Cook, Berwyn, Pa., assignor to Decon Laboratories, Inc., Malvern, Pa.
Filed May 14, 1981, Ser. No. 263,413
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—376



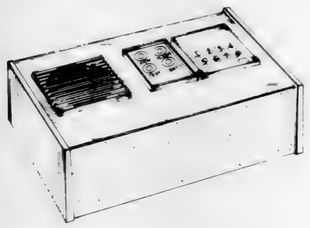
271,000
CONTAINER FOR PLASTIC BAGS
Alf Rimer, Herlev, Denmark, assignor to Perstorp AB, Perstorp, Sweden
Filed Jun. 16, 1981, Ser. No. 274,072
Claims priority, application Sweden, Dec. 16, 1980, 2538/80
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—420



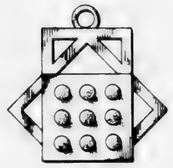
271,001
CLOSURE ASSEMBLY FOR CONTAINERS
Joseph D. Montoya, P.O. Box 5834, South Lake Tahoe, Calif. 95729
Filed Feb. 20, 1981, Ser. No. 236,321
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—454

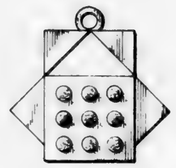


271,002
CASE FOR AN ALARM SYSTEM CENTRAL CONTROLLER
Darrell D. Fish, Timonium, Md., assignor to Universal Security Instruments, Inc., Owings Mills, Md.
Filed Dec. 3, 1980, Ser. No. 212,400
Term of patent 14 years
Int. Cl. D10—*05*; D13—*02*
U.S. Cl. D10—121

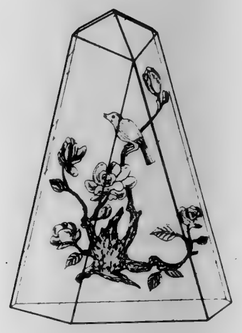


271,003
PENDANT OR CHARM
Anthony Brinkley, 3625 N. Keystone, Indianapolis, Ind. 46218
Filed Mar. 9, 1981, Ser. No. 242,069
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79





271,004
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,606
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—127



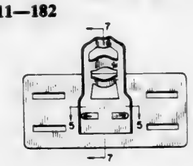


271,005
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,605
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—128



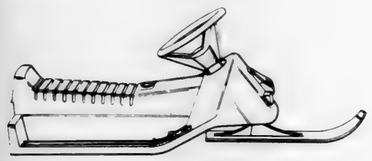


271,006
FLAG STAFF SUPPORT BRACKET
Anthony P. Bernatek, Sr., 1774 Riverbank, Lincoln Park, Mich. 48146
Filed Jul. 15, 1982, Ser. No. 398,616
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—182

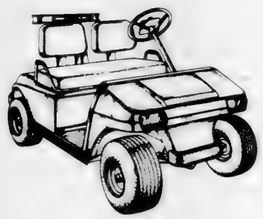




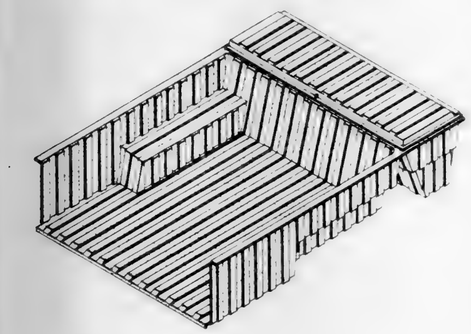
271,007
SLED
Hans Skillius, Halmstad, Sweden, assignor to Stiga AB, Tranas, Sweden
Filed Jun. 26, 1980, Ser. No. 163,028
Claims priority, application Sweden, Jan. 7, 1980, 80-0027
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—10



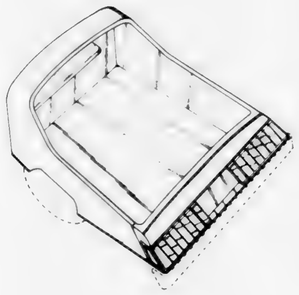
271,008
GOLF CAR
Dominic Saporito, Fanwood, N.J., assignor to Club Car, Inc., Augusta, Ga.
Filed Mar. 16, 1981, Ser. No. 243,693
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—16



271,009
COMBINED TRUCK BED LINER AND TOOL CHEST
Avery J. Fishler, Flint, Mich., assignor to Jeffrey Alan Fishler, Flushing, Mich.
Filed Apr. 3, 1981, Ser. No. 250,828
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—98



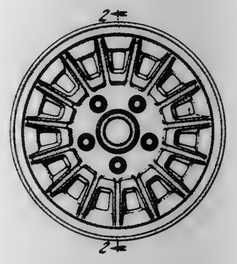
271,010
COMBINED PICKUP TRUCK CARGO BOX, BED AND TAILGATE
James D. Stephenson, Sylmar, Calif., assignor to Coach Products Corporation, Gardena, Calif.
Filed Aug. 10, 1981, Ser. No. 291,234
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—98



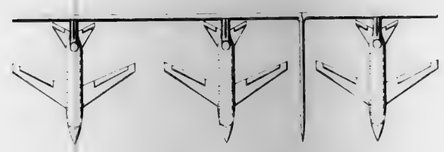
271,011
LICENSE PLATE HOLDER
John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 38236
Filed Feb. 17, 1981, Ser. No. 235,092
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—193



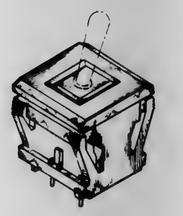
271,012
VEHICLE WHEEL
Jerry P. Palmer, Birmingham, and Randolph J. Wittine, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 25, 1980, Ser. No. 181,208
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—211



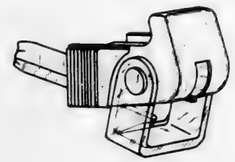
271,013
COMBINED AIRPLANE ASSEMBLY SUPPORT MEMBER AND CONTROL NEEDLE
Iluminda Velez, 1411 SE. 8th Ave., Deerfield Beach, Fla. 33441
Filed Feb. 13, 1981, Ser. No. 234,398
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—335



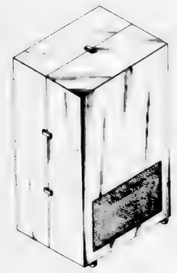
271,014
SWITCH FRAME
Shigeo Ohashi, c/o Nihon Kaiheiki Kogyo Kabushiki Kaisha, 5-14 Minamimagome 1-chome, Ohta-ku, Tokyo, Japan
Filed May 14, 1981, Ser. No. 263,618
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—32



271,015
NEEDLE UNIT FOR PICK-UP CARTRIDGE
Josef F. G. Geraets, Bree, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 4, 1981, Ser. No. 231,534
Claims priority, application Belgium, Aug. 6, 1980, 54901-02
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—29



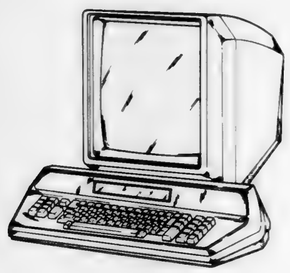
271,016
TELEPHONE EQUIPMENT CABINET CHASSIS
David W. Meline, Westminster, Colo., assignor to Western Electric Company, Inc., New York, N.Y.
Filed Nov. 30, 1981, Ser. No. 326,101
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—52



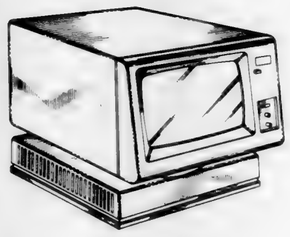
271,017
DEMOUNTABLE ANTENNA
Helmut Spycher, Dammstrasse 22, 8156 Oberhasli, ZH, Switzerland
Filed Sep. 24, 1980, Ser. No. 190,554
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86



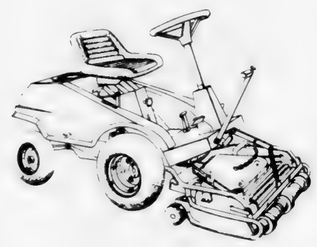
271,018
WORD PROCESSING SYSTEM HAVING KEYBOARD WITH ONE LINE DISPLAY AND CRT DISPLAY
Farouk Arjani, Los Altos Hills; Thomas J. Kramer, San Jose, and Ralph M. Swan, Sunnyvale, all of Calif., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Aug. 12, 1980, Ser. No. 177,533
Term of patent 15 years
Int. Cl. D14—*02*
U.S. Cl. D14—106



271,019
COMPUTER DISPLAY CONSOLE
John W. Goodin, Long Beach, and David A. Sharbaugh, Irvine, both of Calif., assignors to USAC Electronics Industry Co., Ltd., Ishikawa, Japan
Filed May 18, 1981, Ser. No. 264,434
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—113



271,020
RIDING LAWN MOVER
Gunnar A. Malmberg, Tranas; Roger S. I. Andersson, Grisna, and Kjell A. Pettersson, Tranas, all of Sweden, assignors to Stiga AB, Tranas, Sweden
Filed Dec. 19, 1979, Ser. No. 105,471
Claims priority, application Sweden, Jun. 29, 1979, 79-1578
Term of patent 14 years
Int. Cl. 15—*03*
U.S. Cl. D15—15



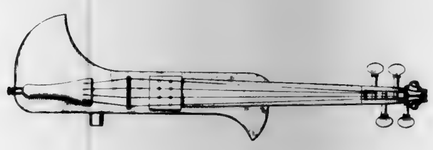
271,021
CARPET SOIL EXTRACTOR OR THE LIKE
Gilbert G. Cyphert, Glendale, Ariz., assignor to The Hoover Company, North Canton, Ohio
Filed Aug. 7, 1980, Ser. No. 175,948
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—23



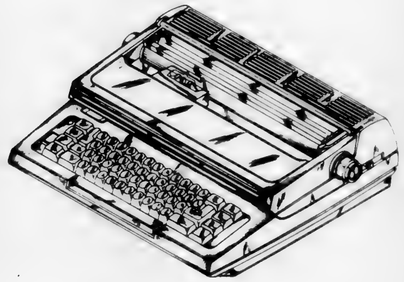
271,022
HAND-CUTTER
Bengt E. Legerius, Nyköping, and Hans W. Siebert, Oxelösund, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden
Filed Oct. 17, 1980, Ser. No. 198,202
Claims priority, application Sweden, May 5, 1980, 80-0910
Term of patent 14 years
Int. Cl. 15—*09*
U.S. Cl. D15—139



271,023
ELECTRIC VIOLIN
Richard B. Saidat, St. Charles, Ill., assignor to Fischer Industries, Inc., Geneva, Ill.
Filed Mar. 27, 1981, Ser. No. 248,293
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—17



271,024
TYPEWRITER
John E. Jolliffe, Manlius, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Jun. 7, 1982, Ser. No. 385,425
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1



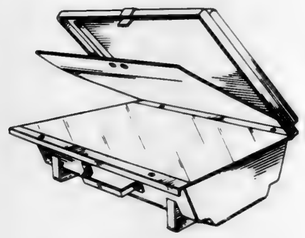
271,025
COMBINED RULER AND ELECTRONIC CALCULATOR
Robert S. K. Li, Central, Hong Kong, assignor to RJP Electronics Limited, Hong Kong, Hong Kong
Filed Dec. 29, 1982, Ser. No. 454,486
Claims priority, application United Kingdom, Jul. 19, 1982, 1007807
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—2



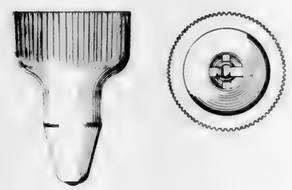
271,026
PROTECTIVE POCKET FOR THE DIALING KNOBS OF THE PRINTHEAD OF A LABELLING APPARATUS
Werner Becker, Hirschhorn, and Wolfgang Reinke, Rotheaberg, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.
Filed Dec. 19, 1980, Ser. No. 218,409
Claims priority, application Switzerland, Jul. 4, 1980, 111/292
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D18—19



271,027
PORTABLE LIGHT TABLE
Walter C. Tripp, 400 Sunshine La., Reno, Nev. 89502
Filed Aug. 27, 1981, Ser. No. 296,968
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—52



271,028
PAINT SPREADING TIP FOR A COLLAPSIBLE TUBE
Patrick J. Adams, Ste. 200, 1900 Broad River Rd., Columbia, S.C. 29210
Filed Mar. 5, 1981, Ser. No. 240,616
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55



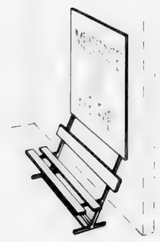
271,029
QUIZZER TOY
Dietmar Nagel, Chester, N.J.; Andrew Lowinger, Brooklyn, N.Y., and Peter Roegner, Far Hills, N.J., assignors to North American Foreign Trading Corporation, New York, N.Y.
Filed Jan. 13, 1981, Ser. No. 224,751
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



271,030
PREPROGRAMMED TOY SOUND GENERATOR
Dietmar Nagel, Chester, N.J.; Andrew Lowinger, Brooklyn, N.Y., and Peter Roegner, Far Hills, N.J., assignors to North American Foreign Trading Corporation, New York, N.Y.
Filed Jan. 13, 1981, Ser. No. 224,752
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



271,031
ADVERTISING DISPLAY UNIT
Ian J. Dickson, 40 Woodland Trail, Newnan, Ga. 30263
Filed Jul. 11, 1980, Ser. No. 167,669
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—19

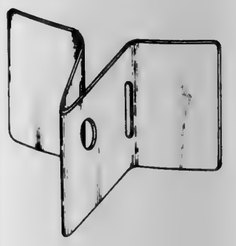


271,032
KALEIDOSCOPE
Carolyn L. Bennett, Media, Pa., assignor to C. Bennett Scopes, Inc., Media, Pa.
Filed Oct. 28, 1981, Ser. No. 315,913
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—60

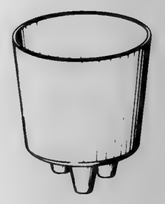


271,033
Patent Not Issued For This Number

271,034
WAIST CLIP FOR PHYSICAL EXERCISER
Cressie E. Holcombe, Jr., 1613 Blackwood Dr., Knoxville, Tenn. 37919
Filed Dec. 15, 1980, Ser. No. 216,568
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191



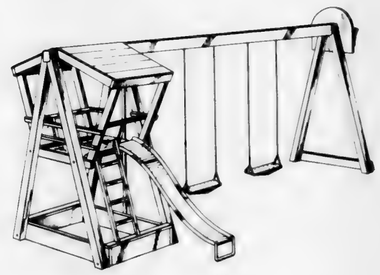
271,035
KICKING TEE
William R. Pomerenke, 1391 W. Arrow Hwy., Upland, Calif. 91786
Filed Jul. 13, 1981, Ser. No. 282,941
Term of patent 14 years
Int. Cl. D21—*02;* D11—*02*
U.S. Cl. D21—209



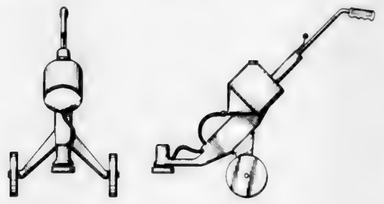
271,036
SKATE
Roger B. Baikie, Ville St. Laurent, Canada, assignor to Canpro Sport Inc., Montreal, Canada
Division of Ser. No. 165,769, Jul. 3, 1980, Pat. No. Des. 268,125.
This application Jun. 8, 1982, Ser. No. 386,471
Claims priority, application Canada, Jan. 18, 1980, 16-01-80-4
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—225



271,037
OUTDOOR CHILD'S PLAY UNIT
Richard F. Gordon, 4278 Park Ter., Salt Lake City, Utah 84117
Filed Oct. 19, 1981, Ser. No. 312,226
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—244



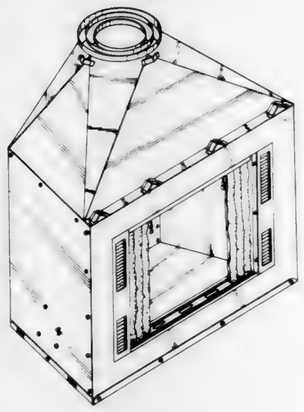
271,038
LIQUID SPRAYER
Donald R. Anderson; Iven R. Norstrud, and John H. Threlkeld, all of Britt, Iowa, assignors to Britt Tech Corporation, Britt, Iowa
Filed Jan. 15, 1981, Ser. No. 225,195
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18



271,039
SNOW MAKING SPRAY UNIT
Philip L. Tropeano, Lexington, Mass., assignor to Larchmont Engineering and Irrigation, Inc., Lexington, Mass.
Filed Apr. 1, 1981, Ser. No. 249,945
Term of patent 14 years
Int. Cl. D23—*35*
U.S. Cl. D23—35



271,040
FIREPLACE OR SIMILAR ARTICLE
George K. MacAleese, Huntington, and Terry G. Schoeff, Andrews, both of Ind., assignors to American Standard Inc., New York, N.Y.
Filed Oct. 20, 1980, Ser. No. 198,734
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



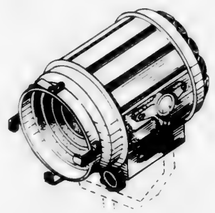
271,041
FACIAL VAPORIZER
Serge Brun, Lyons, France, assignor to Calor S.A., Lyons, France
Filed Dec. 9, 1980, Ser. No. 214,684
Claims priority, application France, Jun. 13, 1980, 352
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—148



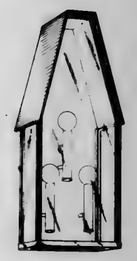
271,042
COMBINATION PORTABLE NIGHT LIGHT AND AIR FRESHENER
Mario F. Giannola, 911 Norwood, Melrose Park, Ill. 60160
Filed Feb. 6, 1981, Ser. No. 231,929
Term of patent 14 years
Int. Cl. D26—*05*; D23—*04*
U.S. Cl. D26—51



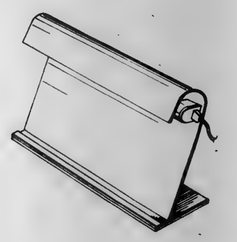
271,043
COMBINED FLOOD AND SPOT LIGHT
Lawrence M. Parker, North Hollywood, Calif., assignor to Mole-Richardson Co., Hollywood, Calif.
Filed Mar. 23, 1981, Ser. No. 246,245
Term of patent 14 years
Int. Cl. D26—*3*
U.S. Cl. D26—63



271,044
LIGHTING FIXTURE
Henry Muller, Rego Park, N.Y., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Jul. 17, 1981, Ser. No. 284,182
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—85



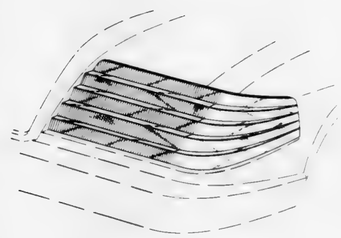
271,045
LAMP
Bernard T. Tamblyn, Agincourt, Canada, assignor to Resource Interface Inc., Willowdale, Canada
Filed Mar. 11, 1981, Ser. No. 242,733
Claims priority, application Canada, Feb. 6, 1981, 06-02-81-5
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—93



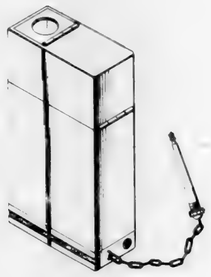
271,046
OIL LAMP
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Magnolia, Mass.
Filed Mar. 17, 1981, Ser. No. 244,770
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—104



271,047
LENS FOR A COMBINED VEHICLE HEADLIGHT AND SIGNAL LIGHT
Werner Heinz, Tiefenbronn; Arno Jambor, Vaihingen, and Adolf Schmidt, Sindelfingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany
Filed Aug. 13, 1980, Ser. No. 177,712
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 5118
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—122



271,048
COMBINED CIGARETTE CASE AND LIGHTER
Ely M. Caguco, 639 N. Coronado St., No. 4, Los Angeles, Calif. 90026
Filed Sep. 2, 1980, Ser. No. 182,992
Term of patent 14 years
Int. Cl. D27—*05, 06*
U.S. Cl. D27—37



271,049
APPLICATOR CONTAINER
Doris Du Cret, New York, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
Filed Jul. 7, 1981, Ser. No. 280,972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



271,050
COMBINED MIRROR AND COSMETIC CASE
Samuel Berkman, 13 Knapp Ave., Florham Park, N.J. 07932
Filed Jul. 3, 1980, Ser. No. 165,655
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—77



271,051
EXERCISE-MASSAGING DEVICE
Kenneth H. McCoy, Santa Monica, Calif., and John Romain, 1629 Veteran Ave., Los Angeles, Calif. 90074, assignors to John Romain, Los Angeles, Calif.
Filed Jun. 29, 1981, Ser. No. 278,698
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



271,052
PACIFIER
Robert L. Qually, 2238 Central St., Evanston, Ill. 60201
Filed Dec. 18, 1980, Ser. No. 217,958
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—45

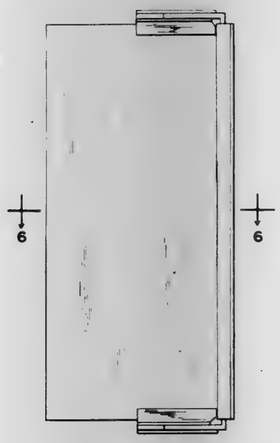




271,053
NIPPLE FOR A SCREW CAP TYPE BOTTLE
Anthony Chrones, Warwick, R.I., assignor to Reliance Products Corporation, Woonsocket, R.I.
Filed Dec. 12, 1980, Ser. No. 215,744
The portion of the term of this patent subsequent to May 11, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. 24—*04*
U.S. Cl. D24—46



271,054
WINDOW VENT
Rodney W. Smith, 1348 W. 18th St., Hastings, Minn. 55033
Filed Mar. 9, 1981, Ser. No. 241,763
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—53



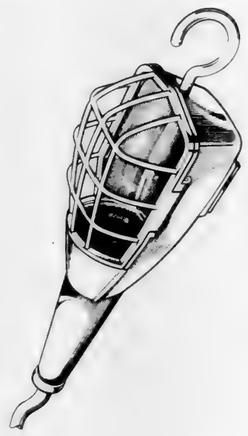
271,055
STRUCTURAL FRAME MEMBER
Ernesto Cascone, 279 Cocksfield Ave., Downsview, Ontario, Canada (M3H 3T8), and Vincent Cascone, 36 Mayvern Crescent, Richmond Hill, Ontario, Canada L4C 5J4
Filed Apr. 7, 1981, Ser. No. 251,993
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



271,056
CANDLE HOLDER
David R. Perkins, Manchester, Mass., assignor to Glass Dimensions, Inc., Magnolia, Mass.
Filed Mar. 17, 1981, Ser. No. 244,769
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—11



271,057
DROP CORD LIGHT
Peter Tirpik, 225 Carmelo La., South San Francisco, Calif. 94080
Filed Nov. 24, 1980, Ser. No. 209,899
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—37



271,058
COMBINED FLUORESCENT LAMP AND FLASHING BEACON WITH AUTOMOBILE PLUG
Yuen Se-Kit, Kowloon, Hong Kong, assignor to Parly Tools Manufacturing Limited, Hong Kong
Filed Jan. 16, 1981, Ser. No. 225,669
Claims priority, application United Kingdom, Jul. 18, 1980, 995 783
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., 4,410,337., Cl. 55-21.000.

AB Tudor: *See*—
Quist, Kaj, 4,410,610., Cl. 429-181.000.

Abbuhl, Duane L.: *See*—
Adduci, Robert L.; and Abbuhl, Duane L., 4,410,226., Cl. 339-44.00R.

Abcor, Inc.: *See*—
Roos, Martin, 4,409,849., Cl. 73-863.820.

Abe, Fumitaka: *See*—
Mikami, Tomohisa; Abe, Fumitaka; Sakurai, Fumio; and Matsuda, Tadashi, 4,410,234., Cl. 350-6.800.

Abe, Masaharu: *See*—
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,410,388., Cl. 156-307.300.

Abe, Masanori: *See*—
Iijima, Yoshitaka; and Abe, Masanori, 4,410,201., Cl. 280-688.000.

Abe, Masao: *See*—
Iwama, Akio; Kihara, Yasuo; Abe, Masao; and Kazuse, Yoshitaka, 4,410,568., Cl. 427-244.000.

Abele, Ludwig: *See*—
Scherl, Wolfgang; Abele, Ludwig; Wahl, Friedrich; and Fuchsberger, Hermann, 4,411,015., Cl. 382-51.000.

Abex Corporation: *See*—
Frank, Earl E., 4,409,902., Cl. 104-17.00R.

Accurate Sound Corporation: *See*—
Newdoll, Ronald M.; and Phillips, John E., 4,410,917., Cl. 360-15.000.

Acker, Rolf-Dieter; and Hamprecht, Gerhard, to BASF Aktiengesellschaft. Preparation of butadiene dinitriles. 4,410,465., Cl. 260-465.50R.

Acs, Tibor: *See*—
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Adams, Darwin P.: *See*—
Plesset, Kiven; and Adams, Darwin P., 4,409,982., Cl. 128-660.000.

Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., to Singer Company, The. Buttonhole presser device for sewing machines. 4,409,913., Cl. 112-158.00B.

Adduci, Robert L.; and Abbuhl, Duane L., to General Motors Corporation. Junction box and connector arrangement. 4,410,226., Cl. 339-44.00R.

Adelman, Robert W.: *See*—
Blevins, Daniel; and Adelman, Robert W., 4,410,021., Cl. 141-95.000.

Aders, Wolf-Karlo: *See*—
Mangold, Dietrich; Wahl, Josef; and Aders, Wolf-Karlo, 4,410,733., Cl. 568-603.000.

Adkins, John S. Variable speed rotary power transmission. 4,409,862., Cl. 74-689.000.

Advanced Diagnostic Research Corp.: *See*—
Andes, Charles B., 4,410,910., Cl. 358-105.000.

Agency of Industrial Science & Technology: *See*—
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.

Agustin, Hermenegildo C. Bicycle with improved safety. 4,410,195., Cl. 280-264.000.

Ahlman, Rolf: *See*—
Buring, Klas; Eghamn, Lars; Sigurdsson, Jannes; and Ahlman, Rolf, 4,409,689., Cl. 2-22.000.

Ahrweiler, Karl-Heinz; and Kusters, Eduard, to Kusters, Eduard. Method for the continuous manufacture of sheets of material especially wood chip board. 4,410,380., Cl. 156-62.200.

Ahrweiler, Karl-Heinz, to Kusters, Eduard. Method and apparatus for the continuous manufacture of extruded materials. 4,410,474., Cl. 264-109.000.

Aichi Tokei Denki Co., Ltd.: *See*—
Ueno, Kazuo, 4,409,846., Cl. 73-861.170.

Aiken, John E.; Didycz, William J.; and Glassman, Donald, to United States Steel Corporation. Waste gas purification reactor and method. 4,410,499., Cl. 423-210.000.

Airsco Hydraulics, Inc.: *See*—
Ingram, Thomas L., 4,410,205., Cl. 285-47.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Kobayashi, Kensaku, 4,410,171., Cl. 271-227.000.

Akademie der Wissenschaften der DDR: *See*—
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

Akashi, Naoko: *See*—
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.

Akiyama, Tsunekazu; Kihara, Tetsuaki; Komizo, Kazunaga; and Kameo, Hiroshi, to Ryo-nichi Company Ltd. Process for producing 1,2-dichloroethane. 4,410,747., Cl. 570-247.000.

Aktiebolaget Bofors: *See*—
Blix, Jan-Olov; Bratt, Sven-Erik; and Nygards, Olof, 4,409,898., Cl. 102-202.500.
Claussen, Lennart, 4,410,882., Cl. 340-510.000.

Akzo N.V.: *See*—
de Wied, David; and Greven, Hendrik M., 4,410,511., Cl. 424-177.000.

Akzona Incorporated: *See*—
Johnston, James J., 4,409,713., Cl. 29-33.00M.

Albany International Corp.: *See*—
Bouley, Robert W.; and Kovar, Robert F., 4,410,639., Cl. 521-54.000.

Albert, David E. Pulse measuring device. 4,409,983., Cl. 128-690.000.

Albrass Enterprises, Inc.: *See*—
Alperin, Marvin; and Brassner, Joseph L., 4,410,160., Cl. 248-674.000.

Album Graphics, Inc.: *See*—
Kosterka, Donald W., 4,410,560., Cl. 427-44.000.

Alcoa Deutschland GmbH, Firma: *See*—
Dubs, Hans-Dieter; Spatz, Gunter; and Brandes, Carlos-Enrique, 4,410,098., Cl. 215-220.000.

Alefeld, Georg; Maier-Laxhuber, Peter; and Rothmeyer, Markus, to Alefeld, Georg. Process and installation for storing heat and for upgrading its temperature. 4,410,028., Cl. 165-1.000.

Alekhin, Stanislav A.: *See*—
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Born, Raisa I., 4,410,052., Cl. 175-50.000.

Alekna, Paull A.: *See*—
Sandford, Geoffrey P.; and Alekna, Paull A., 4,409,946., Cl. 123-557.000.

Alemanni, James C., to Integrated Machine Development. Means and method for processing integrated circuit element. 4,409,733., Cl. 29-827.000.

Alfa Laval AB: *See*—
Bjork, Johan E. G.; Lindfors, Kaj; and Stroucken, Klaus H. D., 4,410,318., Cl. 494-10.000.

Alinat, Jean: *See*—
Leger, Guy; Roux, Jacques; Alinat, Jean; and Constans, Jacques, 4,410,282., Cl. 374-156.000.

Allegheny Ludlum Steel Corporation: *See*—
Bishop, Harry L., Jr., 4,410,359., Cl. 75-49.000.

Allen, Joseph C., to Heavy Oil Process, Inc. Method for recovering high viscosity oils. 4,410,216., Cl. 299-2.000.

Alley, Gary D.: *See*—
Clifton, Brian J.; Alley, Gary D.; and Murphy, Ralph A., 4,411,022., Cl. 455-327.000.

Allied Corporation: *See*—
Denkewalter, Robert G.; Kolc, Jaroslav F.; and Lukasavage, William J., 4,410,688., Cl. 528-328.000.
Fisher, William B.; and Van Peppen, Jan F., 4,410,755., Cl. 585-800.000.
Hathaway, Robert E., 4,410,119., Cl. 225-4.000.
Masilamani, Divakaran; and Manahan, Edward H., 4,410,705., Cl. 548-216.000.
Oxenrider, Bryce C.; and Price, Alson K., 4,410,717., Cl. 560-87.000.
Plenzler, James D., 4,410,844., Cl. 318-280.000.
Van Peppen, Jan F., 4,410,741., Cl. 568-835.000.

Allis-Chalmers Corporation: *See*—
Polinski, Donald J., 4,410,143., Cl. 241-209.000.

Alneng, Carl-Goran. Clamping device for joining boards. 4,409,906., Cl. 108-64.000.

Alperin, Marvin; and Brassner, Joseph L., to Albrass Enterprises, Inc. Means and method for attaching fan and fixture units or the like substantially flush with a ceiling. 4,410,160., Cl. 248-674.000.

Alps Electric Co., Ltd.: *See*—
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,410,289., Cl. 400-185.000.
Kuratani, Junichi, 4,410,873., Cl. 338-160.000.

Aluminum Company of America: *See—*
Grubbs, Donald K.; and Kochanowski, Andrew T., 4,410,472., Cl. 264-29.300.
Jacobs, Stanley C.; Wiltzius, Raymond D.; Minick, John R.; and Foster, Perry A., Jr., 4,410,403., Cl. 204-67.000.

Alza Corporation: *See—*
Theeuwes, Felix, 4,410,328., Cl. 604-892.000.

American Cyanamid Company: *See—*
Ling, Chi-Fei, 4,410,588., Cl. 428-248.000.
Murdock, Keith C., 4,410,524., Cl. 424-248.510.
Rothenberg, Alan S.; Panzer, Hans P.; Schmitt, Joseph L.; and Card, Roger J., 4,410,706., Cl. 548-335.000.

American Manufacturing Company, Inc.: *See—*
Houpt, Grover K.; and Updegrove, George F., 4,410,774., Cl. 200-14.000.

American Microsystems, Inc.: *See—*
Wollesen, Donald L., 4,410,904., Cl. 357-45.000.

American Seating Company: *See—*
Raymond, David W., 4,409,762., Cl. 52-9.000.

Ammermann, Eberhard: *See—*
Hamprecht, Gerhard; Ammermann, Eberhard; Pommer, Ernst-Heinrich; and Plath, Peter, 4,410,538., Cl. 424-270.000.

Amoroso, Salvatore, Jr., to United Technologies Corporation. Rapidly stabilized Gunn oscillator transceiver. 4,411,018., Cl. 455-75.000.

AMP Incorporated: *See—*
Baraglia, Nathan A.; Eitzinger, Robert; and Vought, Kimber T., 4,409,734., Cl. 29-861.000.
Grabbe, Dimitry G., 4,410,905., Cl. 357-80.000.
Grabbe, Dimitry G., 4,410,906., Cl. 357-80.000.
Stephenson, Brian D., 4,410,228., Cl. 339-95.00D.
Stephenson, Brian D., 4,410,229., Cl. 339-98.000.

Ampex Corporation: *See—*
Babow, David A.; and Nedley, William M., 4,410,922., Cl. 360-109.000.

Anchor/Darling Valve Company: *See—*
Karpenko, Anatole N., 4,410,007., Cl. 137-516.290.

Anders, Dietmar; and Voigt, Jurgen, to Hermann Berstorff Maschinenbau GmbH. Apparatus for granulating plastics material or plastic compositions. 4,410,306., Cl. 425-71.000.

Anderson, George L. Crab trap and methods for making and using. 4,409,752., Cl. 43-102.000.

Anderson, Jeffrey J. Arrowhead having modular removable blades. 4,410,184., Cl. 273-422.000.

Anderson, John J. Combined tab-top can opener. 4,409,863., Cl. 81-3.10R.

Anderson, John M.; and Johnson, Peter D., to General Electric Company. Use of amalgams in solenoidal electric field lamps. 4,410,829., Cl. 313-490.000.

Andes, Charles B., to Advanced Diagnostic Research Corp. Motion detecting method and apparatus. 4,410,910., Cl. 358-105.000.

Ando, Kenji: *See—*
Kato, Suehiro; and Ando, Kenji, 4,410,408., Cl. 204-192.0SP.

Ando, Takashi, to Mitsubishi Jukogyo Kabushiki Kaisha. Electric dust collecting apparatus having controlled intermittent high voltage supply. 4,410,849., Cl. 323-237.000.

Andra, Klaus; Hutschenreuter, Elfriede; and Porrmann, Herbert, to Hoechst Aktiengesellschaft. Tubular casing with glued seam and its manufacture and use for curved or ring-shaped sausages. 4,410,011., Cl. 138-118.100.

Andreas Stihl: *See—*
Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, 4,409,874., Cl. 83-833.000.

Andress, Harry J., Jr.; Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Metal salts of phosphosulfurized polyhydroxyesters and lubricants containing same. 4,410,434., Cl. 252-32.70R.

Andrew Corporation: *See—*
Knop, Charles M.; Ostertag, Edward L.; Matz, Donald W., Jr.; and Cheng, Yuk-Bun, 4,410,892., Cl. 343-786.000.

Angus Chemical Company: *See—*
Eckler, Paul E., 4,410,746., Cl. 568-943.000.

Anselme, Olivier R.: *See—*
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.

Anselrode, Lodewijk, to Stork Screens B.V. Method for manufacturing a die. 4,410,401., Cl. 204-11.000.

Aoki, Harumi; Kawasaki, Masahiro; and Suzuki, Koji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focus detecting device for camera. 4,410,258., Cl. 354-25.000.

Apanel, George J., to Lummus Company, The. Production of epoxy compounds from olefinic compounds. 4,410,714., Cl. 549-521.000.

Aparicio, Thomas, Jr.: *See—*
Nagel, Dave D.; and Aparicio, Thomas, Jr., 4,410,054., Cl. 175-107.000.

Apple, Howard P.; and Dauchot, Paul J., to University Patents, Inc. Esophageal cardiac pulse monitoring apparatus and method. 4,409,986., Cl. 128-715.000.

Aramaki, Mitsuo, to Clarion Co., Ltd. Connector fixing device. 4,410,928., Cl. 361-400.000.

Archer, Michel, to Societe Anonyme: Stas Societe Technique d'Accessories Specialises. Fatigue damage indicators. 4,409,841., Cl. 73-762.000.

Archibald, G. Kent, to AVI, Inc. Nonpulsating TV pump and disposable pump chamber. 4,410,322., Cl. 604-153.000.

Archibald, William E.: *See—*
Brody, Aaron L.; and Archibald, William E., 4,409,775., Cl. 53-167.000.

Arcidiacono, Frank R.; and Koerckel, Gerard J., to Western Electric Company, Inc. Alpha tantalum thin film circuit device. 4,410,867., Cl. 333-172.000.

Arco Industries Ltd.: *See—*
D'Andrade, Bruce M.; and Mak, Fun S., 4,409,753., Cl. 46-93.000.

Ariyama, Kenzo; Hirose, Akira; and Itoh, Tadashi, to Ricoh Company, Ltd. Sheet transportation and separation apparatus. 4,410,262., Cl. 355-3.0SH.

Armstrong, Lee B., to Eastman Technology, Inc. Transport apparatus for use with a linear tape recorder. 4,410,149., Cl. 242-200.000.

Arnold Industries, Inc.: *See—*
Blackstone, George H., 4,409,781., Cl. 56-295.000.

Arnold, Loren G.; Parker, Paul D.; and Sullivan, James F., to Deere & Company. Tractor-drawn plow with hitch and furrow wheel hydraulic motors connected in series. 4,410,047., Cl. 172-328.000.

Arons, Richard M.; and Dusek, Joseph T. Porous electrode preparation method. 4,410,607., Cl. 429-40.000.

Aronson, Carl: *See—*
Boggs, Daniel R.; and Aronson, Carl, 4,410,026., Cl. 383-60.000.

Arvanitakis, Kostas S. Vertical filter system. 4,410,433., Cl. 210-778.000.

Asahi-Dow Limited: *See—*
Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, 4,410,502., Cl. 423-345.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Matsumoto, Koichi; Katayama, Yoshihiko; and Sakurai, Hisaya, 4,410,595., Cl. 428-412.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Aoki, Harumi; Kawasaki, Masahiro; and Suzuki, Koji, 4,410,258., Cl. 354-25.000.
Shindow, Osamu; Okamoto, Ikuzo; Machida, Takeshi; and Koyama, Hiroshi, 4,410,267., Cl. 356-124.000.

Asano, Masaharu, to Nissan Motor Company, Ltd. Spark timing control device for an internal combustion engine. 4,409,937., Cl. 123-425.000.

Asano, Noriyuki: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.

Asano, Toshimitsu: *See—*
Yamamori, Kazuyoshi; Nishikawa, Reiji; Fujiwara, Tatsuo; and Asano, Toshimitsu, 4,410,603., Cl. 428-611.000.

ASEA AB: *See—*
Svensson, Rune, 4,410,996., Cl. 373-9.000.

Ashland Oil, Inc.: *See—*
Daniel, Chelliah, 4,410,723., Cl. 560-214.000.
Daniel, Chelliah, 4,410,728., Cl. 562-599.000.
Daniel, Chelliah, 4,410,729., Cl. 562-599.000.
Ruszala, Ferdinand A., 4,410,727., Cl. 562-599.000.
Throckmorton, Peter E., 4,410,461., Cl. 260-410.000.

Aso, Akira: *See—*
Enomoto, Masahiro; Awano, Yoshiyuki; Yamada, Yuji; and Aso, Akira, 4,410,222., Cl. 339-17.00F.

Asphahani, Aziz I.; Silence, William L.; and Manning, Paul E., to Cabot Corporation. High chromium nickel base alloys. 4,410,489., Cl. 420-453.000.

ASR Servotron AG: *See—*
Barker, Horace A., 4,410,953., Cl. 364-603.000.

Asta, Ltd.: *See—*
Gotman, Alexander, 4,410,168., Cl. 269-21.000.

Ateliers de Constructions Electriques de Charleroi: *See—*
Goffaux, Raoul, 4,410,851., Cl. 324-54.000.

Atherton, Linda; and Kulik, Conrad J., to Electric Power Research Institute. Process for nitrogen removal from hydrocarbonaceous materials. 4,410,421., Cl. 208-254.00R.

Atlantic Building Systmes Inc.: *See—*
Boozer, David W., 4,409,717., Cl. 29-402.190.

Atlas Copco Aktiebolag: *See—*
Molin, Alexis, 4,410,049., Cl. 173-2.000.

Atsumi, Toshio; Sanjiki, Tetsutaro; and Kiyohara, Takao, to Sumitomo Chemical Company, Limited. Antitumor and immunosuppressive 4-carbamoylimidazolium-5-olate derivatives. 4,410,696., Cl. 542-427.000.

AuClair, Christopher J.: *See—*
Lu, Chin H.; and AuClair, Christopher J., 4,410,617., Cl. 430-106.000.

Audenino, Carlo; and Barbero, Mario, to Fiat Auto S.p.A. Structure for supporting and guiding window panes of vehicle bodies. 4,409,756., Cl. 49-440.000.

Aug. Winkhaus, Firma: *See—*
Heiland, Bernd, 4,410,884., Cl. 340-545.000.

Auger, Robert L., to Magnavox Government and Industrial Electronics Company. Method and apparatus for a continuously variable slope delta range extender. 4,411,002., Cl. 375-30.000.

Aulich, Hubert; and Eisenrith, Karl-Heinz, to Siemens Aktiengesellschaft. Method for manufacturing distributor and mixer elements for optical communication technology. 4,410,346., Cl. 65-4.200.

Automatic Energy Control Corporation: *See—*
Hirschfeld, Kurt A.; and Bowman-Jones, Gordon H., 4,410,838., Cl. 315-320.000.

Automation Development Corporation: *See—*
Neumann, David H., 4,409,871., Cl. 83-104.000.

Avery International Corporation: *See—*
Lare, Donald W., 4,410,325., Cl. 604-389.000.

AVI, Inc.: *See—*
Archibald, G. Kent, 4,410,322., Cl. 604-153.000.

Awano, Yoshiyuki: *See—*
Enomoto, Masahiro; Awano, Yoshiyuki; Yamada, Yuji; and Aso, Akira, 4,410,222., Cl. 339-17.00F.

Axen, Udo F., to Upjohn Company, The. 2-Decarboxy-2-tetrazolyl-6-keto-PG compounds. 4,410,695., Cl. 542-426.000.

Azegami, Hitoshi: *See—*
Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, 4,410,590., Cl. 428-336.000.

B. F. Goodrich Company, The: *See—*
Farrell, Robert E., 4,410,390., Cl. 156-461.000.
Kroenke, William J., 4,410,462., Cl. 260-429.00R.
Kroenke, William J., 4,410,463., Cl. 260-429.00R.
Lane, Parley C., Jr.; Tenney, Linwood P.; and Wootton, Gerald V., 4,410,691., Cl. 528-495.000.
Tenney, Linwood P.; and Wootton, Gerald V., 4,410,692., Cl. 528-495.000.

B-Line Systems, Inc.: *See—*
Kowalski, Joseph W., 4,410,298., Cl. 411-112.000.

Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, to Sumitomo Light Metal Industries, Ltd. Aircraft stringer material and method for producing the same. 4,410,370., Cl. 148-11.50A.

Babow, David A.; and Nedley, William M., to Ampex Corporation. Adjustable head mount. 4,410,922., Cl. 360-109.000.

Bachhofer, Bruno; and Locher, Anton. Apparatus for washing air in air-conditioning systems. 4,410,339., Cl. 55-228.000.

Bachot, Jean; and Grosbois, Jean, to Chloe Chimie. Diaphragm for electrolysis and process for the preparation thereof by polymerizing in fluorinated milroporous membrane. 4,410,638., Cl. 521-27.000.

Bachschmid, Reiner: *See—*
Henn, Werner; Bachachmid, Reiner; and Zeilinger, Karl, 4,409,935., Cl. 123-90.530.

Baczek, Stanley K.: *See—*
Warburton, Craig S.; and Baczek, Stanley K., 4,410,404., Cl. 204-98.000.

Bader, Ronald S.: *See—*
Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., 4,410,916., Cl. 358-263.000.

Badyaev, Valery G.: *See—*
Toropov, Gennady A.; Shamenko, Stepan P.; and Badyaev, Valery G., 4,409,698., Cl. 10-152.00T.

Baggaley, Norman E., to Laboratories (South Africa)(Proprietary) Ltd. Diaper. 4,410,327., Cl. 604-391.000.

Bahrton, Per S. Oscillating vane flowmeter. 4,409,851., Cl. 73-861.210.

Baker, Donald B., to Pro-Mark Companies, The. Preparation of a low calorie, low fat fruit-containing yogurt. 4,410,549., Cl. 426-43.000.

Baker, Franklin E., Jr.: *See—*
Wyslotsky, Ihor; and Baker, Franklin E., Jr., 4,409,818., Cl. 73-49.300.

Baker International Corporation: *See—*
Longacre, Kenneth E.; and Kruschke, Marvin R., Sr., 4,410,040., Cl. 166-118.000.

Baker, Paul A., to Bell Telephone Laboratories, Incorporated. Module mounting assembly. 4,410,223., Cl. 339-17.0CF.

Bakhir, Vitold M.: *See—*
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Born, Raisa I., 4,410,052., Cl. 175-50.000.

Bakker, Johannes P. Apparatus for carrying a person in sitting condition. 4,409,696., Cl. 5-81.00B.

Ballato, Arthur; and Vig, John R., to United States of America, Army. Method of fabricating acceleration resistant crystal resonators. 4,409,711., Cl. 29-25.350.

Ballschuh, Detlef: *See—*
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

Balzer, Eric. Louver solar panel. 4,409,960., Cl. 126-428.000.

Bando, Kenichiro: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Bar, Alfredo, to NECCHI Societa per Azioni. Motor-compressor unit for refrigerators. 4,410,303., Cl. 417-312.000.

Baraglia, Nathan A.; Eitzinger, Robert; and Vought, Kimber T., to AMP Incorporated. Harness making apparatus and method. 4,409,734., Cl. 29-861.000.

Barbero, Mario: *See—*
Audenino, Carlo; and Barbero, Mario, 4,409,756., Cl. 49-440.000.

Barger, Lloyd D. Storage container for particulate material. 4,410,111., Cl. 222-509.000.

Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, to Regie Nationale des Usines Renault. Ionic pickup for the transit time between an emission area and a receiving area. 4,409,822., Cl. 73-118.000.

Barker, Charles E.; and Smith, Michael D., to Motorola, Inc. High speed CMOS comparator circuit. 4,410,813., Cl. 307-362.000.

Barker, Horace A., to ASR Servotron AG. Angle comparison device. 4,410,953., Cl. 364-603.000.

Barlow, George J., to Honeywell Information Systems Inc. Memory delay start apparatus for a queued memory controller. 4,410,943., Cl. 364-200.000.

Barnes, S. Thomas: *See—*
Berlik, Lee J.; and Barnes, S. Thomas, 4,409,954., Cl. 126-39.00M.

Barnett, Stockton G. Thermostat for stoves. 4,409,956., Cl. 126-290.000.

Barre, Guy: *See—*
Kortbeek, Andras G. T. G.; Neel, Emmanuel E. A.; and Barre, Guy, 4,410,637., Cl. 518-714.000.

Barrett, John P., Sr.; and Schulz, Daniel R., to Barrett, John P., Sr. Electronic control device for liquids. 4,409,694., Cl. 4-545.000.

Barrow, Arthur B.; and Tsiang, Horace H., to Wang Laboratories, Inc. Computer having an indexed local ram to store previously translated virtual addresses. 4,410,941., Cl. 364-200.000.

Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., to Upjohn Company, The. Preparation of polyurethane from bis(cyclic urea) and polymeric polyol. 4,410,689., Cl. 528-367.000.

Barthel, Walter: *See—*
Muller, Karl-Hans; Barthel, Walter; and Oelmuller, Rolf, 4,410,589., Cl. 428-331.000.

Bartos, Josef A., to Portable Air Supply Systems, Corp. Portable, self-contained breathing apparatus. 4,409,978., Cl. 128-205.120.

BASF Aktiengesellschaft: *See—*
Acker, Rolf-Dieter; and Hamprecht, Gerhard, 4,410,465., Cl. 260-465.50R.
Brandstetter, Franz; Muenstedt, Helmut; and Priebe, Edmund, 4,410,654., Cl. 524-487.000.
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, 4,410,719., Cl. 560-112.000.
Hamprecht, Gerhard; Ammermann, Eberhard; Pommer, Ernst-Heinrich; and Plath, Peter, 4,410,538., Cl. 424-270.000.
Loch, Werner, 4,410,657., Cl. 524-548.000.
Mangold, Dietrich; Wahl, Josef; and Aders, Wolf-Karlo, 4,410,733., Cl. 568-603.000.
Martin, Christoph; Himmele, Walter; and Siegel, Hardo, 4,410,734., Cl. 568-715.000.
Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,410,529., Cl. 424-250.000.

BASF Wyandotte Corporation: *See—*
Narayan, Thirumurti; Stolz, Theodore O.; and Patton, John T., Jr., 4,410,641., Cl. 521-167.000.

Basler Electric Company: *See—*
Frierdich, Waldo J., 4,410,848., Cl. 322-25.000.

Bassler, Peter; and Kogelschatz, Ulrich, to BBC Brown, Boveri & Company, Limited. Ozonizer with sleeve electrodes. 4,410,495., Cl. 422-186.180.

Battenfeld Maschinenfabriken GmbH: *See—*
Cyriax, Wilhelm, 4,410,479., Cl. 264-255.000.

Battles, James W.; and Mathes, H. Bernard, to United States of America, Navy. Solid propellant measurement system. 4,409,821., Cl. 73-116.000.

Battochio, George, to Xexex Industries, Inc. Printed circuit boards and methods for making same. 4,410,574., Cl. 428-43.000.

Bauck, Russell B.: *See—*
Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., 4,409,780., Cl. 56-228.000.

Bauer, Rudolf. Hairstyling appliance. 4,409,998., Cl. 132-9.000.

Baumann, Peter. Bubble bath device. 4,409,693., Cl. 4-543.000.

Baur, Gunter; Scheuble, Bernd; and Weber, Georg, to Merck Patent Gesellschaft mit Beschrankter Haftung. Liquid-crystalline dielectric having a steep characteristic curve. 4,410,445., Cl. 252-299.500.

Baxendale, Lily: *See—*
Pope, Derek J.; and Baxendale, Lily, 4,410,531., Cl. 424-94.000.

Baxter, Andrew J. G.; and Myers, Malcolm, to Reckitt & Colman Products Limited. Propanolamine derivatives. 4,410,548., Cl. 424-330.000.

Baxter Travenol Laboratories, Inc.: *See—*
Boggs, Daniel R.; and Aronson, Carl, 4,410,026., Cl. 383-60.000.
Kamen, Dean L., 4,410,164., Cl. 251-9.000.
Pearson, Stephen; and Lyons, Steffen A., 4,410,321., Cl. 604-56.000.

Bayer Aktiengesellschaft: *See—*
Hohlein, Peter; and Schoeps, Jochen, 4,410,663., Cl. 525-162.000.
Klein, Alfons; Wedemeyer, Karlfried; Havenith, Lothar; and Kron, Rolf, 4,410,869., Cl. 336-94.000.
Wilms, Klaus G.; Waldmann, Helmut; and Grolig, Johann, 4,410,743., Cl. 568-860.000.

BBC Aktiengesellschaft Brown, Boveri & Cie: *See—*
Gessinger, Gernot; Mercier, Oliver; and Riegger, Helmut, 4,410,488., Cl. 419-48.000.

BBC Brown, Boveri & Company, Limited: *See—*
Bassler, Peter; and Kogelschatz, Ulrich, 4,410,495., Cl. 422-186.180.
Kurt, Thoma, 4,410,821., Cl. 310-277.000.

Beauvineau, Jacky; and Semo, Jack. Optical spectroscope for scanning electron microscope. 4,410,272., Cl. 356-311.000.

Bechtel, Thomas J. Roof construction system holding roof membranes in place by suction forces. 4,409,761., Cl. 52-1.000.

Beck, Jeffrey L., to Conoco Inc. Vortex injection dredging apparatus and method. 4,409,746., Cl. 37-58.000.

Beckman Instruments, Inc.: *See—*
Bowers, Cyril Y., 4,410,512., Cl. 424-177.000.
Harman, John N., III, 4,410,409., Cl. 204-415.000.
McIntyre, Robert A., 4,409,987., Cl. 128-731.000.
Momany, Frank A., 4,410,513., Cl. 424-177.000.

Becton Dickinson and Company: *See—*
Eldridge, William N., 4,409,991., Cl. 128-766.000.

Beecham Group Limited: *See—*
Watts, Eric A., 4,410,535., Cl. 424-265.000.

Beecham Group p.l.c.: *See—*
Ponsford, Roger J.; Brown, Pamela; and Coulton, Steven, 4,410,533., Cl. 424-251.000.

Beecham, Stewart M.: *See—*
Blackshaw, Anthony C.; Beecham, Stewart M.; and Holland, Andre S., 4,409,882., Cl. 89-163.000.

Beeteson, John S.; Holloway, Brian L.; and Jarzebowski, Krzystof T., to International Business Machines Corporation. Color cathode ray tube display apparatus with compensation for errors due to interfering magnetic fields. 4,410,840., Cl. 315-368.000.

Beirne, Patrick R., to Mitel Corporation. Power saving line circuit. 4,410,766., Cl. 179-16.00F.

Bell Telephone Laboratories, Incorporated: *See—*
Baker, Paul A., 4,410,223., Cl. 339-17.0CF.
Corwin, Walter L., 4,410,986., Cl. 371-22.000.
Gans, Michael J.; and Penzias, Arno A., 4,410,894., Cl. 343-368.000.
Hart, Arthur C., Jr., 4,410,561., Cl. 427-54.100.
Kaplan, Alexander E.; Bjorkholm, John E.; Smith, Peter W.; and Tomlinson, Walter J., III, 4,410,239., Cl. 350-354.000.
Kustka, George J., 4,411,000., Cl. 375-11.000.
Pesto, William S.; and Reed, William C., 4,410,850., Cl. 324-52.000.

Belmares-Sarabia, Armand; and Chayka, Stanley J., to Corporate Communications Consultants. Luminance signal generator for color film scanner. 4,410,908., Cl. 358-30.000.

Beloit Corporation: *See—*
Frye, Kenneth G.; and Gangemi, Donald, 4,410,122., Cl. 226-199.000.
Frye, Kenneth G., 4,410,315., Cl. 493-342.000.

Ben Venue Laboratories, Inc.: *See—*
Kaye, Saul, 4,410,492., Cl. 422-27.000.

Bendix Corporation, The: *See—*
Doniger, Jerry; and Kirchhein, Albert T., 4,410,948., Cl. 364-431.010.
Schreiner, Peter J.; Limberg, John F.; and Cybulski, Mark J., 4,410,068., Cl. 188-73.380.
Schreiner, Peter J.; Gumkowski, Bert A.; and Limberg, John F., 4,410,069., Cl. 188-73.360.
Steinberg, Ronald F., 4,410,824., Cl. 310-313.00R.

Beneziat, Alain; and Silaire, Andre, to Manufacture Lyonnaise de Bouchage. Drinking goblet enabling two doses of constituents to be mixed just before consumption. 4,410,085., Cl. 206-217.000.

Bennett, Gerald W.: *See—*
Lambrecht, Richard M.; Bennett, Gerald W.; Duncan, Charles C.; and Ducote, Louis W., 4,409,966., Cl. 128-1.100.

Bent, F. Eugene; and White, Irvin M., to Outboard Marine Corporation. Lawn mower with combined clutch and self biasing brake. 4,409,779., Cl. 56-11.300.

Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., to Kansas State University Research Foundation. Folding header assembly. 4,409,780., Cl. 56-228.000.

Berendt, Hans U.: *See—*
Wurmli, Albert; and Berendt, Hans U., 4,410,331., Cl. 8-589.000.

Berg, Jan; Verbeek, Francois; and Bluten, Eric J., to Nederlandse Centrale Organisatie voor Toegespastnatuurwetenschappeliukonderzoek. Platinum-diamine complexes, a method for the preparation of a medicine using such a platinum-diamine complex for the treatment of malignant tumor in mice. 4,410,544., Cl. 424-287.000.

Berg, Peter G.; and Strobel, Stephen J., to Texas Instruments Incorporated. Heated automobile mirror. 4,410,790., Cl. 219-219.000.

Berger, Herbert: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,410,532., Cl. 424-251.000.

Bergh, Ralph A.: *See—*
Shaw, Herbert J.; Lefevre, Herve C.; and Bergh, Ralph A., 4,410,275., Cl. 356-350.000.

Bergloff, Raymond A.; Hollis, James T.; and Walkes, Oswald A., to HR Textron Inc. Free piston pump. 4,410,304., Cl. 417-346.000.

Bergman, Charles T.; and Zwieg, Robert L., to Brandt, Inc. Coin wrapping machine. 4,409,773., Cl. 53-54.000.

Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Silica sol process. 4,410,405., Cl. 204-180.00P.

Bergner, Hans L.: *See—*
Jespersen, Knud; Buller-Colthurst, Guy E.; and Bergner, Hans L., 4,409,743., Cl. 34-191.000.

Bergstedt, Lowell C.: *See—*
Dalton, Philip A., Jr.; and Bergstedt, Lowell C., 4,409,727., Cl. 29-571.000.

Bergwerksverband GmbH: *See—*
Romey, Ingo; and El-Roy, Menachem, 4,410,646., Cl. 524-65.000.

Berkowitz, William F.; Choudhry, Satish C.; and Hrabie, Joseph A., to Research Foundation of the City University of New York. Conversion of iridoids to prostaglandins. 4,410,710., Cl. 549-312.000.

Berlekamp, Elwyn R., to Cyclotomics, Inc. Bit serial encoder. 4,410,989., Cl. 371-40.000.

Berley, Lawrence F. Radiometer generator. 4,410,805., Cl. 290-1.00R.

Berlik, Lee J.; and Barnes, S. Thomas, to Raytheon Company. Modular gas cartridge. 4,409,954., Cl. 126-39.00M.

Berly, Marcel, to H. Ernault-Somua. Horizontal-spindle lathe. 4,409,869., Cl. 82-2.00R.

Berman, Mark Y., to Standard Oil Company. Tool for inspecting the upper end of a string of casing set in the bottom of a body of water. 4,411,014., Cl. 378-59.000.

Bernhardt, Rainer; and Kremer, Walter, to Jobo-Labortechnik GmbH & Co. K.G. Tempering arrangement for containers. 4,410,034., Cl. 165-80.00E.

Bertoldo, Giorgio, to Societa' Pneumatici Pirelli S.p.A. Apparatus for feeding reinforcing layers in tire manufacture. 4,409,872., Cl. 83-155.000.

Bicker, Uwe: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,410,532., Cl. 424-251.000.

Bierleutgeb, Sepp-Dieter: *See—*
Zimmermann, Heinrich; and Bierleutgeb, Sepp-Dieter, 4,410,977., Cl. 369-264.000.

Billard, Jean: *See—*
Dubois, Jean-Claude; Billard, Jean; and Zann, Annie, 4,410,283., Cl. 374-162.000.

Bilson, Edward B.: *See—*
DeCandia, Giovanni; and Bilson, Edward B., 4,410,931., Cl. 362-267.000.

Biolchini, Robert J.: *See—*
Wang, Kuei-Hsiung; Biolchini, Robert J.; and Legatski, L. Karl, 4,410,500., Cl. 423-242.000.

Biomass Energy Systems, Incorporated: *See—*
Hamrick, Joseph T.; and Rose, Leslie C., 4,409,786., Cl. 60-39.464.

Biorex Laboratories Limited: *See—*
Pope, Derek J.; and Baxendale, Lily, 4,410,531., Cl. 424-94.000.

Birbara, Philip J.: *See—*
Galasso, Francis S.; Veltri, Richard D.; and Birbara, Philip J., 4,410,504., Cl. 423-453.000.

Birchall, James D.; Howard, Anthony J.; Kendall, Kevin; and Raistrick, James H., to Imperial Chemical Industries PLC. Cement composition and product. 4,410,366., Cl. 106-90.000.

Biro, Attila, to Kohaszati Gyarepito Vallalat. Recuperator. 4,410,037., Cl. 165-142.000.

Bisera, Jose; and Weil, Max H., to Institute of Critical Care Medicine. High frequency ventillator. 4,409,977., Cl. 128-205.150.

Bishop, Harry L., Jr., to Allegheny Ludlum Steel Corporation. Process for production of stainless steel. 4,410,359., Cl. 75-49.000.

Bjork, Johan E. G.; Lindfors, Kaj; and Stroucken, Klaus H. D., to Alfa Laval AB. Method and arrangement to watch over separated sediment, which is thrown out through nozzles of a centrifugal separator. 4,410,318., Cl. 494-10.000.

Bjorkholm, John E.: *See—*
Kaplan, Alexander E.; Bjorkholm, John E.; Smith, Peter W.; and Tomlinson, Walter J., III, 4,410,239., Cl. 350-354.000.

Black Clawson Company, The: *See—*
Chupka, David E.; and Seifert, Peter, 4,410,424., Cl. 209-273.000.

Blackmore, Phillip W., to Fiberglas Canada Inc. Thermal insulation structure. 4,409,766., Cl. 52-169.110.

Blackshaw, Anthony C.; Beecham, Stewart M.; and Holland, Andre S., to Blackshaw, Anthony C.; and Beecham, Stewart M. Hand gun. 4,409,882., Cl. 89-163.000.

Blackstone, George H., to Arnold Industries, Inc. Thatching tool for rotary lawn mower. 4,409,781., Cl. 56-295.000.

Blake, Walter R.; and Plemmons, Jerry R., to General Electric Company. Luminaire trunnion degree marker and reset stop. 4,410,933., Cl. 362-371.000.

Blaskowski, Henry J., to Combustion Engineering, Inc. Production of pipeline gas from coal. 4,410,336., Cl. 48-210.000.

Blava In-line, Inc.: *See—*
Rynik, Milan; and Nickel, John, 4,409,870., Cl. 83-100.000.

Blevins, Daniel; and Adelman, Robert W., to Crowell Corporation, The. Tire inflation. 4,410,021., Cl. 141-95.000.

Blevins, Theodore J.; Roberts, Gerald L.; Hollenbeck, Robert K.; and Rickard, Jimmy R., to General Electric Company. Washing machine with oversuds detection and correction capability. 4,410,329., Cl. 8-158.000.

Blix, Jan-Olov; Bratt, Sven-Erik; and Nygards, Olof, to Aktiebolaget Bofors. Electric igniter. 4,409,898., Cl. 102-202.500.

Block, Robert S.: *See—*
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,410,911., Cl. 358-121.000.

Blum, John M., to Sigmaform Corporation. Recoverable sleeve assembly. 4,410,009., Cl. 138-109.000.

Blum, Patricia R.; and Milberger, Ernest C., to Standard Oil Company, The. Process for the oxydehydrogenation of ethane to ethylene. 4,410,752., Cl. 585-658.000.

Bluten, Eric J.: *See—*
Berg, Jan; Verbeek, Francois; and Bluten, Eric J., 4,410,544., Cl. 424-287.000.

BOA A.G. Luzern: *See—*
Mattmann, Beat; Dreyer, Marco; and Marti, Wilhelm, 4,410,000., Cl. 137-116.000.

Board of Trustees operating Michigan State University: *See—*
Dilley, David R.; Lee, Julian J. L.; and Saltveit, Mikal E., Jr., 4,410,632., Cl. 436-20.000.

Bockhorst, Rhea W.: *See—*
Salama, Mamdouh M.; Joosten, Michael W.; Zimmerman, Wiley E.; and Bockhorst, Rhea W., 4,409,824., Cl. 73-151.000.

Boden, Joseph. Prefabricated wall panel. 4,409,768., Cl. 52-309.400.

Bodewig, Manfred, to U.S. Philips Corporation. Method of soldering pins to printed circuit boards, and soldering bath for this method. 4,410,127., Cl. 228-180.00A.

Boehringer Mannheim GmbH: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,410,532., Cl. 424-251.000.

Boehringer, Wilfred E., to McDonnell Douglas Corporation. Synchronization cylinder. 4,409,884., Cl. 91-17.000.

Boeing Company, The: *See—*
DeVlieg, Garrett H.; and Valaas, Andrew M., 4,410,952., Cl. 364-565.000.
Fetterly, Robert F., 4,409,880., Cl. 89-1.804.
Robinson, Curtiss W., 4,410,220., Cl. 384-109.000.
Romero, Ervin G., 4,410,153., Cl. 244-111.000.

Boggs, Daniel R.; and Aronson, Carl, to Baxter Travenol Laboratories, Inc. Port block assembly for interconnecting a fluid container with a fluid conduit. 4,410,026., Cl. 383-60.000.

Bohme, Karl, to Heinr. Wilhelm Huss & Co. Counterbalanced roundabout having plural drives. 4,410,173., Cl. 272-38.000.

Bohme, Peter: *See—*
Tronich, Wolfgang; Rieper, Wolfgang; and Bohme, Peter, 4,410,707., Cl. 548-360.000.

Bohner & Koehle GmbH & Co.: *See—*
Bosch, Walter, 4,409,811., Cl. 72-82.000.

Boland, Peter: *See—*
Rodman, William; and Boland, Peter, 4,411,007., Cl. 375-107.000.

Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,410,351., Cl. 71-90.000.

Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,410,352., Cl. 71-90.000.

Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, to Troponwerke GmbH & Co. K.G. 7,8,9,10-Tetrahydrothieno[3,2-e]pyrido[4,3-b]indole compounds and their anti-depressant use. 4,410,536., Cl. 424-267.000.

Bonomi, Antonio, to De La Rue Giori S.A. Conveyor device for transferring freshly printed sheets. 4,409,741., Cl. 34-162.000.

Bony, Ernest M.: *See—*
Chipman, Arthur H. T.; and Bony, Ernest M., 4,410,398., Cl. 201-1.000.

Booty, Robert A., to Brunswick Corporation. Mounting apparatus for outboard trolling motors. 4,410,161., Cl. 248-642.000.

Boozer, David W., to Atlantic Building Systmes Inc. Swedging tool structure and use. 4,409,717., Cl. 29-402.190.

Borbely, Gyorgy: *See—*
Radtke, Wolfgang; and Borbely, Gyorgy, 4,410,131., Cl. 236-10.000.

Borden, Inc.: *See—*
Williams, James H., 4,410,685., Cl. 528-259.000.

Borg-Warner Chemicals, Inc.: *See—*
Lewis, Elyse M.; and Valdiserri, Leo L., 4,410,650., Cl. 524-119.000.

Born, Raisa I.: *See—*
Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Born, Raisa I., 4,410,052., Cl. 175-50.000.

Bortolani, Ermanno, to W. R. Grace & Co., Cryovac Division. Flexible package, and method and apparatus for manufacturing same. 4,410,089., Cl. 206-633.000.

Bosch, Walter, to Bohner & Koehle GmbH & Co. Process and a spinning lathe for producing wheel rims. 4,409,811., Cl. 72-82.000.

Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, to Boehringer Mannheim GmbH. N-Substituted aziridine-2-carboxylic acid derivatives and their immuno-stimulation compositions and methods. 4,410,532., Cl. 424-251.000.

Boudreau, Joseph E. Dual function, single stroke pressing device. 4,409,720., Cl. 29-432.100.

Bouley, Robert W.; and Kovar, Robert F., to Albany International Corp. Curing polyepoxide resin binders in high density syntactic foam forming compositions. 4,410,639., Cl. 521-54.000.

Bourassa, Denis L.: *See—*
DaMocogno, Ninalbo G.; Siok, Donald A.; Bourassa, Denis L.; and Connerney, William R., 4,410,863., Cl. 332-37.00R.

Bourassa, Hugh: *See—*
Cole, Leon J.; Mallory, Edwin E.; and Bourassa, Hugh, 4,410,389., Cl. 156-398.000.

Bouse, Vaclav: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,410,598., Cl. 428-427.000.

Boussac Saint Freres B.S.F.: *See—*
Dussaud, Jacques; and De Jonckheere, Raphael, 4,410,326., Cl. 604-390.000.

Bouvet, Jean-Marie: *See—*
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,409,822., Cl. 73-118.000.

Bouwens, Dirk M. Beehive rack. 4,409,697., Cl. 6-6.000.

Bouwhuis, Gijsbertus: *See—*
de Lang, Hendrik; and Bouwhuis, Gijsbertus, 4,410,241., Cl. 350-409.000.

Bowater-Scott Limited: *See—*
Vallis, Paul J.; and Hall, William H., 4,410,221., Cl. 312-39.000.

Bowers, Cyril Y., to Beckman Instruments, Inc. Combinations having synergistic pituitary growth hormone releasing activity. 4,410,512., Cl. 424-177.000.

Bowman-Jones, Gordon H.: *See—*
Hirschfeld, Kurt A.; and Bowman-Jones, Gordon H., 4,410,838., Cl. 315-320.000.

Boyack, John D. Method of lining concrete in-ground swimming pool. 4,409,772., Cl. 52-746.000.

Bradshaw, John: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.

Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.

Brain, Alfred E.: *See—*
Kremers, Jan H.; and Brain, Alfred E., 4,410,787., Cl. 219-124.340.

Brand, Peter G. A.: *See—*
Hixenbaugh, Dennis L.; Brand, Peter G. A.; and Straka, Edward J., 4,410,166., Cl. 266-158.000.

Brandes, Carlos-Enrique: *See—*
Dubs, Hans-Dieter; Spatz, Gunter; and Brandes, Carlos-Enrique, 4,410,098., Cl. 215-220.000.

Brandstetter, Franz; Muenstedt, Helmut; and Priebe, Edmund, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,410,654., Cl. 524-487.000.

Brandt, Inc.: *See—*
Bergman, Charles T.; and Zwieg, Robert L., 4,409,773., Cl. 53-54.000.

Brassner, Joseph L.: *See—*
Alperin, Marvin; and Brassner, Joseph L., 4,410,160., Cl. 248-674.000.

Bratt, Sven-Erik: *See—*
Blix, Jan-Olov; Bratt, Sven-Erik; and Nygards, Olof, 4,409,898., Cl. 102-202.500.

Bredehorn, Herbert D.: *See—*
Niemuth, Howard A.; and Bredehorn, Herbert D., 4,410,254., Cl. 354-203.000.

Brell Mar Products, Inc.: *See—*
Norton, Don S., 4,409,907., Cl. 108-152.000.

Brennan, John J.; and Prewo, Karl M., to United Technologies Corporation. Discontinuous silicon carbide fiber reinforced ceramic composites. 4,410,635., Cl. 501-88.000.

Breslow, Donald H., to Itek Corporation. Incremental optical encoder system with addressable index. 4,410,798., Cl. 250-231.0SE.

Bridgestone Tire Company Limited: *See—*
Suzuki, Isao; and Serikawa, Haruyuki, 4,409,852., Cl. 73-862.390.

Briley, Patrick B., to Hybrid Energy Systems, Inc. Method for hydroconversion of solid carbonaceous materials. 4,410,414., Cl. 208-8.0LE.

British Nuclear Fuels Limited: *See—*
Howden, Michael; and Griffiths, Terence L., 4,410,279., Cl. 366-262.000.

Brodrene Gram A/S: *See—*
Gram, Hans, 4,410,080., Cl. 198-715.000.

Brody, Aaron L.; and Archibald, William E., to Mead Corporation, The. Apparatus for the aseptic packing of high acid food. 4,409,775., Cl. 53-167.000.

Brooklyn Union Gas Company: *See—*
Thomas, William R.; and Sykora, George S., 4,410,391., Cl. 156-574.000.

Brooks, Ulysses A.: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,410,785., Cl. 219-121.0LK.

Broukal, Josef: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,410,598., Cl. 428-427.000.

Brown, Alan P.: *See—*
Loutfy, Raouf O.; Brown, Alan P.; and Yao, Neng-Ping, 4,410,606., Cl. 429-17.000.

Brown Boveri Electric Inc.: *See—*
Weston, Donald E., 4,410,778., Cl. 200-148.00A.

Brown Group Recreational Products, Inc.: *See—*
Cunard, Joel C., 4,410,060., Cl. 180-205.000.

Brown, Harry A., Jr.; and Durgin, Robert F., to United States of America, Army. Novel aqueous foam formulation and method. 4,410,508., Cl. 424-81.000.

Brown, Pamela: *See—*
Ponsford, Roger J.; Brown, Pamela; and Coulton, Steven, 4,410,533., Cl. 424-251.000.

Brown, Robert S., to Milliken Research Corporation. Universal brush plate assembly. 4,409,702., Cl. 15-180.000.

Brownscombe, Thomas F.; and Hart, William W. C., to Shell Oil Company. Two-phase, heat-curable polyepoxide-unsaturated monomer compositions. 4,410,680., Cl. 528-88.000.

Bruenner, Rolf S.; and Oberth, Adolf E., to United States of America, Air Force. Bonding agent for polyurethanes. 4,410,376., Cl. 149-19.400.

Bruenner, Ursula: *See—*
Yu, Cheng-Der; and Bruenner, Ursula, 4,410,545., Cl. 424-305.000.

Brugger, John E.: *See—*
Meyer, Raymond A.; Marx, Larry F.; and Brugger, John E., 4,410,966., Cl. 367-87.000.

Brulle, Robert V. Control system for a vertical axis windmill. 4,410,806., Cl. 290-44.000.

Brundrett, Ewart; and Carter, Franklin T., to Thermaster Inc. Absorbent material. 4,409,925., Cl. 119-1.000.

Brunelle, Daniel J., to General Electric Company. Method for removing polyhalogenated hydrocarbons from nonpolar organic solvent solutions. 4,410,422., Cl. 208-262.000.

Brunswick Corporation: *See—*
Booty, Robert A., 4,410,161., Cl. 248-642.000.
Staerzl, Richard E., 4,410,847., Cl. 320-34.000.

Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; and Thompson, Donald R., to Burroughs Corporation. System and method for synchronizing variable-length messages in a local area network data communication system. 4,410,889., Cl. 340-825.200.

BSC Industries Corp.: *See—*
Seider, Seymour, 4,410,266., Cl. 356-45.000.
Buchanan, John A. F., to Superform Metals Ltd. Dual motion press. 4,409,809., Cl. 72-60.000.
Buchholz, Bernard, to Pennwalt Corporation. Process for the manufacture of methyl mercaptan from carbon oxides. 4,410,731., Cl. 568-70.000.
Budelman, Gerald A., to CBS, Inc. Electronic tone generating system. 4,409,877., Cl. 84-1.230.
Buderus Aktiengesellschaft: *See—*
Heimbach, Paul; Goebel, Peter; and Gruber, Franz, 4,410,134., Cl. 237-2.00B.
Buechel, Franz, to Hilti Aktiengesellschaft. Method of manufacturing a firing electrode. 4,410,124., Cl. 227-9.000.
Bueler, Richard C., to Echlin Inc. Control valve for tractor rear axles. 4,410,218., Cl. 303-6.00C.
Buffington, James F., to Kay Industries, Inc. Regulating device for polyphase electrical circuits. 4,410,807., Cl. 307-68.000.
Bui-Hai, Nhu, to Thomson-CSF. Antenna transducer for a transmission-reception antenna. 4,410,866., Cl. 333-135.000.
Buller-Colthurst, Guy E.: *See—*
Jespersen, Knud; Buller-Colthurst, Guy E.; and Bergner, Hans L., 4,409,743., Cl. 34-191.000.
Bunyan, James L., to Cajon Company. Flowable anaerobic sealant composition. 4,410,644., Cl. 523-176.000.
Burdette, George W., to United States of America, Navy. Liquid hydrocarbon air breather fuel. 4,410,749., Cl. 585-14.000.
Buring, Klas; Eghamn, Lars; Sigurdsson, Jannes; and Ahlman, Rolf. Pivot means for a leg guard. 4,409,689., Cl. 2-22.000.
Burk, Gerhard: *See—*
Sturtz, Gunter; Holtze, Herbert; Rothacker, Dietrich; and Burk, Gerhard, 4,410,212., Cl. 296-189.000.
Burke, Inc.: *See—*
Johnston, Bruce L.; and Raines, Bill D., 4,409,695., Cl. 5-68.000.
Burke, Timothy M.; Meyer, George W.; and Moore, John A., to Motorola, Inc. Method and apparatus for digital shaping of a digital data stream. 4,410,955., Cl. 364-718.000.
Burkel, Rainer; Peter, Cornelius; and Muller, Klaus, to Robert Bosch GmbH. Combustion process sensor arrangement. 4,409,815., Cl. 73-35.000.
Burleson, Maurice L. Modular clean room. 4,409,889., Cl. 98-33.00A.
Burmeister, Allen D.: *See—*
Loesch, Stanley B.; St. John, James C.; Mints, Danny K.; and Burmeister, Allen D., 4,409,927., Cl. 122-26.000.
Burroughs Corporation: *See—*
Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; and Thompson, Donald R., 4,410,889., Cl. 340-825.200.
Kronies, Reinhard K., 4,410,944., Cl. 364-200.000.
Burroughs Wellcome Co.: *See—*
Kneen, Geoffrey, 4,410,537., Cl. 424-269.000.
Bury, Cecil T.; and Holmes, Andrew J., to David Brown Tractors Ltd. Venting a liquid supply system. 4,409,930., Cl. 123-514.000.
Busch, David A.: *See—*
Wetterhorn, Richard H.; and Busch, David A., 4,410,155., Cl. 248-27.100.
Butt, Sheldon H., to Olin Corporation. Casing for an electrical component having improved strength and heat transfer characteristics. 4,410,927., Cl. 361-386.000.
Buttiker, Urs, to Georg Fischer Aktiengesellschaft. Method and apparatus for producing a cast wheel body. 4,409,716., Cl. 29-159.00R.
Cabot Corporation: *See—*
Asphahani, Aziz I.; Silence, William L.; and Manning, Paul E., 4,410,489., Cl. 420-453.000.
Cadmus, Martin C., to United States of America, Agriculture. Salt-tolerant microbial xanthanase and method of producing same. 4,410,625., Cl. 435-42.000.
Cajon Company: *See—*
Bunyan, James L., 4,410,644., Cl. 523-176.000.
Calderon, Michael: *See—*
Lisa, Barry; Calderon, Michael; and Rakow, Marvin S., 4,410,420., Cl. 208-127.000.
California Institute of Technology: *See—*
Hagler, Ray, Jr., 4,410,430., Cl. 210-446.000.
Campbell, Carol J.; and Hinshaw, Jerald C., to Thiokol Corporation. Making 1,2,4-butanetriol by hydroformylation of glycidol. 4,410,744., Cl. 568-864.000.
Campbell, Ira J., to Westinghouse Electric Corp. Fixture for removing and replacing shrunk-on sleeves on a shaft. 4,409,731., Cl. 29-800.000.
Cannella, Vincent D.: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,410,558., Cl. 427-39.000.
Canon Kabushiki Kaisha: *See—*
Haruta, Masahiro; Yano, Yasuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, 4,410,899., Cl. 346-140.00R.
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,410,247., Cl. 352-91.00S.
Hirohata, Michio; and Ikari, Hideo, 4,410,249., Cl. 354-30.000.
Hirohata, Michio, 4,410,255., Cl. 354-230.000.
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.
Terasawa, Koji, 4,410,900., Cl. 346-140.00R.
Tsuboi, Takayuki, 4,410,253., Cl. 354-195.000.
Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,410,252., Cl. 354-153.000.
Canup, Robert E., to Texaco Inc. Engine timed ignition system with improvement. 4,409,952., Cl. 123-620.000.
Capshew, Charles E.: *See—*
Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., 4,410,671., Cl. 526-119.000.
Carasso, Marino G.; Kleuters, Wilhelm J.; and Mons, Johannes J., to U.S. Philips Corporation. Method of coding data bits on a recording medium, arrangement for putting the method into effect and recording medium having an information structure. 4,410,877., Cl. 340-347.0DD.
Caray, Andre; and Despres, Dominique, to Valeo SA. Torsional dampers. 4,410,075., Cl. 192-106.200.
Card-O-Matic Pty. Ltd.: *See—*
Stanley, Louis, 4,410,820., Cl. 310-216.000.
Card, Roger J.: *See—*
Rothenberg, Alan S.; Panzer, Hans P.; Schmitt, Joseph L.; and Card, Roger J., 4,410,706., Cl. 548-335.000.
Cardoso, John B.: *See—*
Elias, Jack D.; and Cardoso, John B., 4,410,293., Cl. 403-24.000.
Carey, Linda: *See—*
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.
Carl Cloos Schweisstechnik GmbH: *See—*
Cloos, Erwin, 4,410,786., Cl. 219-124.220.
Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co.: *See—*
Eichinger, Johann; Parzl, Franz; and Schulz, Wolfgang, 4,409,904., Cl. 105-131.000.
Carl Zeiss-Stiftung: *See—*
Muller, Ortwin; Schulz, Kurt; and Stopar, Viktor, 4,410,242., Cl. 351-211.000.
Carlson, Carl-Goran H., to PLM AB. Method and apparatus for composting waste. 4,410,142., Cl. 241-18.000.
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., to International Business Machines Corporation. Transfer of control method and means among hierarchical cooperating sequential processes. 4,410,940., Cl. 364-200.000.
Carmer, Richard V.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,410,592., Cl. 428-383.000.
Carnaud Emballage: *See—*
Riviere, Maurice, 4,410,781., Cl. 219-64.000.
Carrara, Paolo: *See—*
Konjedic, Oscar; Carrara, Paolo; and Fabris, Enzo, 4,409,832., Cl. 73-292.000.
Carrel, Edson D. Apparatus and method for treatment of comminuted Colles' fracture. 4,409,970., Cl. 128-84.00C.
Carrier Corporation: *See—*
Wawro, Thaddeus J.; and Wright, Timothy A., 4,410,033., Cl. 165-78.000.
Carroll, Felix A., to Davidson College, Trustees of. Synthetic fly attractants. 4,410,509., Cl. 424-84.000.
Carroll, James P.; Cary, Paul S.; and McCay, Johnny A., to Champion International Corporation. Floating inspection platform. 4,409,921., Cl. 114-264.000.
Carswell, William; and Friedman, Evelyn. Vending machine. 4,410,104., Cl. 221-241.000.
Carter Bros. Iron Works, Inc.: *See—*
Muhammad, Clifton C., 4,409,957., Cl. 126-343.50R.
Carter, Franklin T.: *See—*
Brundrett, Ewart; and Carter, Franklin T., 4,409,925., Cl. 119-1.000.
Carter, Malcolm: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., to Warner-Lambert Company. Safety razor. 4,409,735., Cl. 30-47.000.
Cary, Paul S.: *See—*
Carroll, James P.; Cary, Paul S.; and McCay, Johnny A., 4,409,921., Cl. 114-264.000.
Casio Computer Co., Ltd.: *See—*
Yoshida, Junichi, 4,410,956., Cl. 364-752.000.
Cason, William C.; and Snyder, Jan W., to International Business Machines Corporation. Keystroke queueing system. 4,410,957., Cl. 364-900.000.
Castanho, Elio D., Jr. System and mechanism of feeding, traction, shuttering and film adjustment in programmable audiovisual apparatus, with rapid frame change. 4,410,246., Cl. 352-169.000.
CBS, Inc.: *See—*
Budelman, Gerald A., 4,409,877., Cl. 84-1.230.
Siau, John E., 4,410,914., Cl. 358-222.000.
Cenefels, Joaquin F., to Raivi S.A. Manufacturing process for heat emitting plates. 4,410,564., Cl. 427-123.000.
Central Soya Company, Inc.: *See—*
Sailer, Donald E., 4,410,554., Cl. 426-302.000.
Chakrabarti, Paritosh M.: *See—*
Parthasarathy, R.; Hort, Eugene V.; and Chakrabarti, Paritosh M., 4,410,726., Cl. 548-543.000.
Champion International Corporation: *See—*
Carroll, James P.; Cary, Paul S.; and McCay, Johnny A., 4,409,921., Cl. 114-264.000.

Chang, Wen-Hsuan: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,668., Cl. 525-440.000.
Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,667., Cl. 525-440.000.
Chapman, Dudley M.: *See—*
Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., 4,410,273., Cl. 356-319.000.
Chapman, Gilbert B., II, to Ford Motor Company. Methods and apparatus for testing the quality of an ultrasonic weld in thermoplastic material. 4,410,381., Cl. 156-64.000.
Charles Stark Draper Laboratory, Inc., The: *See—*
Seltzer, Donald S., 4,409,736., Cl. 33-169.00C.
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon L., to Johnson Matthey Public Limited Company. Preparation of metallic article. 4,410,475., Cl. 264-122.000.
Chase, Richard R.; and Rhoad, Franklin N., to Union Camp Corporation. Pulp sampling system. 4,409,853., Cl. 73-863.000.
Chateigner, Serge: *See—*
Minjolle, Louis; and Chateigner, Serge, 4,410,636., Cl. 501-98.000.
Chayka, Stanley J.: *See—*
Belmares-Sarabia, Armand; and Chayka, Stanley J., 4,410,908., Cl. 358-30.000.
Chemplex Industries, Inc.: *See—*
Solazzi, Michael C., 4,409,854., Cl. 73-864.910.
Chen, Chin H.: *See—*
Vanmeter, James P.; and Chen, Chin H., 4,410,618., Cl. 430-219.000.
Chen, Wen-Hsiung: *See—*
Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., 4,410,916., Cl. 358-263.000.
Cheng, William J.; and Guthrie, David B., to Petrolite Corporation. Zinc oxide dispersions by decomposition of zinc acetate. 4,410,446., Cl. 252-309.000.
Cheng, Yuk-Bun: *See—*
Knop, Charles M.; Ostertag, Edward L.; Matz, Donald W., Jr.; and Cheng, Yuk-Bun, 4,410,892., Cl. 343-786.000.
Chernousov, Jury I.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.
Chevron Research Company: *See—*
Erdman, Timothy R., 4,410,437., Cl. 252-47.500.
Ferm, Richard L., 4,410,419., Cl. 208-48.0AA.
Sigworth, Harry W., Jr., 4,409,959., Cl. 126-422.000.
Chi, Chao S.; and Craig, John W., to Sperry Corporation. Precision time duration detector. 4,410,817., Cl. 307-514.000.
Chia, Han-Lie; and Woltmann, Siegfried, to Solco Basel AG. Process for the preparation of physiologically degradable, colloidal radioisotope carriers and their use. 4,410,507., Cl. 424-1.100.
Chiariello, Dan; and Chiariello, Ned, to Keystone Ferrule & Nut Corporation. Device for organizing papers and files. 4,410,093., Cl. 211-11.000.
Chiariello, Ned: *See—*
Chiariello, Dan; and Chiariello, Ned, 4,410,093., Cl. 211-11.000.
Chiba, Yasutsune; Nozawa, Katsumi; and Igarashi, Kenji. Automatic air venting device for electromagnetic plunger pump. 4,410,302., Cl. 417-299.000.
Chichester, Willard L.: *See—*
Hansen, Howard C.; and Chichester, Willard L., 4,409,789., Cl. 60-384.000.
Childs, Michael E., to UOP Inc. Multifunctional gasoline additives. 4,410,335., Cl. 44-72.000.
Chin, Danny; and Maturo, Robert J., to RCA Corporation. Tuning display for a television receiver. 4,410,913., Cl. 358-192.100.
Chipman, Arthur H. T.; and Bony, Ernest M., to Shell Oil Company. Method and apparatus for monitoring the cutting of coke in a petroleum process. 4,410,398., Cl. 201-1.000.
Chiu, Pay H., to Photochemical Research Associates Inc. Cascaded dye laser cavities. 4,410,995., Cl. 372-69.000.
Chloe Chimie: *See—*
Bachot, Jean; and Grosbois, Jean, 4,410,638., Cl. 521-27.000.
Choudhry, Satish C.: *See—*
Berkowitz, William F.; Choudhry, Satish C.; and Hrabie, Joseph A., 4,410,710., Cl. 549-312.000.
Christe, Karl O.; and Wilson, William W., to United States of America, Army. NF_3-F_2 Gas generator compositions. 4,410,377., Cl. 149-109.400.
Christen, Roland W., to Gould Inc. High speed transistor switching circuit. 4,410,810., Cl. 307-300.000.
Christian, J. Vernon. Solid fuel warm air furnace. 4,409,955., Cl. 126-103.000.
Chrysler Corporation: *See—*
Mulso, Frank A., Jr.; and Smith, Juan J., 4,410,208., Cl. 293-132.000.
Chu, Pochen; Dwyer, Francis G.; and Huss, Albin, to Mobil Oil Corporation. Method of preparation of composite zeolite catalysts. 4,410,452., Cl. 502-60.000.
Chuiko, Vladimir A.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.
Chupka, David E.; and Seifert, Peter, to Black Clawson Company, The. Screening apparatus for paper making stock. 4,410,424., Cl. 209-273.000.
Ciba-Geigy AG: *See—*
Postle, Stephen R.; and Thomas, Patrick D. P., 4,410,702., Cl. 546-322.000.
Ciba-Geigy Corporation: *See—*
Demmer, Christopher G., 4,410,675., Cl. 525-533.000.
Drabek, Jozef, 4,410,543., Cl. 424-278.000.
Frei, Jorg; Jaeggi, Knut A.; Ostsewrmayer, Franz; and Schroter, Herbert, 4,410,530., Cl. 424-251.000.
Herrmann, Manfred; Jenny, Rico; and Motter, Manfred, 4,410,332., Cl. 8-644.000.
Watthey, Jeffrey W. H., 4,410,520., Cl. 424-244.000.
Wurmli, Albert; and Berendt, Hans U., 4,410,331., Cl. 8-589.000.
Cieloszyk, Gary S., to Union Carbide Corporation. Ethylene polymer compositions having improved transparency. 4,410,649., Cl. 524-108.000.
Claflin, Warren E.: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,410,785., Cl. 219-121.0LK.
Clarion Co., Ltd.: *See—*
Aramaki, Mitsuo, 4,410,928., Cl. 361-400.000.
Clark Equipment Company: *See—*
Hansen, Howard C.; and Chichester, Willard L., 4,409,789., Cl. 60-384.000.
Johnson, Kenneth C., 4,410,057., Cl. 180-133.000.
Clark, Melford D. Puzzle. 4,410,180., Cl. 273-156.000.
Claude, Marcel S., to Treficable Pirelli. Extrusion process and apparatus using changeable fine filters. 4,410,477., Cl. 264-174.000.
Claussen, Lennart, to Aktiebolaget Bofors. System for monitoring the ignition function of rapid extinguishing systems. 4,410,882., Cl. 340-510.000.
Clayton, Thomas S.: *See—*
Nash, Dudley O.; and Clayton, Thomas S., 4,409,788., Cl. 60-226.300.
Clendinen, Charles D. Stud and eyelet fastener. 4,409,706., Cl. 24-208.00A.
Clifton, Brian J.; Alley, Gary D.; and Murphy, Ralph A., to United States of America, Air Force. Integrated circuit mixer apparatus. 4,411,022., Cl. 455-327.000.
Clitherow, John W.: *See—*
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.
Cloos, Erwin, to Carl Cloos Schweisstechnik GmbH. Method of aligning a welding torch with a seam to be welded and of welding such seam. 4,410,786., Cl. 219-124.220.
Cloutier, Charles C. Beach cleaning method and apparatus therefor. 4,410,426., Cl. 210-199.000.
Cobb, Lawrence L., Jr. Explosive actuated valves. 4,409,879., Cl. 89-1.00B.
Cole, David B., to GTE Products Corporation. Means for supporting a bus bar in switchboard housing apparatus. 4,410,760., Cl. 174-171.000.
Cole, Leon J.; Mallory, Edwin E.; and Bourassa, Hugh, to National-Standard Company. Bead and filler assembly machine. 4,410,389., Cl. 156-398.000.
Coleman, Robert L.: *See—*
Huddle, David R.; and Coleman, Robert L., 4,409,868., Cl. 82-1.00C.
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, to Glaxo Group Limited. Aminocyclopentane esters and pharmaceutical formulations. 4,410,521., Cl. 424-244.000.
Collins, Edward J.; and Suster, Mary E., to General Electric Company. Conductive ink for flash lamp array circuit. 4,410,307., Cl. 431-359.000.
Combustion Engineering, Inc.: *See—*
Blaskowski, Henry J., 4,410,336., Cl. 48-210.000.
Comer, Daniel K., to Ralston Purina Company. Gravy forming intermediate moisture pet food. 4,410,551., Cl. 426-99.000.
Commins, Alfred D.: *See—*
Gilb, Tyrell T.; and Commins, Alfred D., 4,410,294., Cl. 403-27.000.
Communication Satellite Corporation: *See—*
Horna, Otakar A., 4,411,006., Cl. 375-102.000.
Su, James C., 4,411,003., Cl. 375-33.000.
Compagnie Francais des Petroles: *See—*
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.
Compression Labs, Inc.: *See—*
Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., 4,410,916., Cl. 358-263.000.
Comroe, Richard A.; Kotzin, Michael D.; and van den Heuvel, Anthony P., to Motorola, Inc. Apparatus and method for detecting the cessation of motion of a body. 4,409,836., Cl. 73-504.000.
Concept Engineering, Inc.: *See—*
Geschwender, Robert C., 4,410,214., Cl. 297-118.000.
Connerney, William R.: *See—*
DaMocogno, Ninalbo G.; Siok, Donald A.; Bourassa, Denis L.; and Connerney, William R., 4,410,863., Cl. 332-37.00R.
Conoco Inc.: *See—*
Beck, Jeffrey L., 4,409,746., Cl. 37-58.000.

Martin, William L.; and Whitt, S. Randall, 4,409,825., Cl. 73-155.000.
Salama, Mamdouh M.; Joosten, Michael W.; Zimmerman, Wiley E.; and Bockhorst, Rhea W., 4,409,824., Cl. 73-151.000.

Consortium fur Elektrochemische Industrie GmbH: *See*—
Kreuzer, Franz-Heinrich; and Gawhary, Magdi E., 4,410,570., Cl. 427-374.100.

Constans, Jacques: *See*—
Leger, Guy; Roux, Jacques; Alinat, Jean; and Constans, Jacques, 4,410,282., Cl. 374-156.000.

Continental Group, Inc., The: *See*—
Shields, Winston E.; and Lantz, Robert F., II, 4,410,078., Cl. 198-358.000.

Continental-Wirt Electronics Corp.: *See*—
Murray, Phillip J., 4,410,232., Cl. 339-220.00R.

Contraves AG: *See*—
Lorenz, Adrian, 4,410,020., Cl. 141-65.000.

Conwed Corporation: *See*—
Fair, Timothy K.; and Mudge, Richard C., 4,410,587., Cl. 428-247.000.

Cooper, Christopher: *See*—
Wheeler, Donald J.; Cooper, Christopher; and Krejsa, Charles R., 4,410,121., Cl. 226-118.000.

Cooper, Harold R.; and O'Beirne, Andrew, to Dynasciences Corporation. Method of passively adsorbing immuno-reactive haptens to solid phases. 4,410,634., Cl. 436-500.000.

Cooper Industries, Inc.: *See*—
O'Rourke, Harold T., 4,410,126., Cl. 228-180.00R.

Cooper, Roydon B., to Pall Corporation. Duplex cam-operated pressure-balanced sleeve valve. 4,410,428., Cl. 210-340.000.

Cope, Michael E., to Fornex Engineering Company. Distributed industrial control system with remote stations taking turns supervising communications link between the remote stations. 4,410,983., Cl. 371-8.000.

Copes, John C. Slurry pump double mechanical split face seal. 4,410,188., Cl. 277-65.000.

Coran, Aubert Y.; Rader, Charles P.; and Trivette, Chester D., Jr., to Monsanto Company. Method for rubber treatment. 4,410,656., Cl. 524-529.000.

Corbeil, Ryn C.: *See*—
Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; and Thompson, Donald R., 4,410,889., Cl. 340-825.200.

Cordier, Georges, to Rhone-Poulenc Industries. Preparation of metachlorophenols by selective hydrodechlorination of polychlorophenols. 4,410,737., Cl. 568-774.000.

Cordier, Georges, to Rhone-Poulenc Industries. Preparation of metachlorophenols by selective hydrodechlorination of polychlorophenols. 4,410,738., Cl. 568-774.000.

Cordier, Georges, to Rhone-Poulenc Industries. Preparation of metachlorophenols by selective hydrodechlorination of polychlorophenols. 4,410,739., Cl. 568-774.000.

Cormier, Alan D.: *See*—
Czaban, John D.; and Cormier, Alan D., 4,410,631., Cl. 436-8.000.

Corning Glass Works: *See*—
Hertl, William; Ward, Frank B.; and Weetall, Howard H., 4,410,633., Cl. 436-500.000.

Corporate Communications Consultants: *See*—
Belmares-Sarabia, Armand; and Chayka, Stanley J., 4,410,908., Cl. 358-30.000.

Corsette, Douglas F. Liquid dispensing pump. 4,410,107., Cl. 222-321.000.

Corwin, Walter L., to Bell Telephone Laboratories, Incorporated. Error and status detection circuit for a digital regenerator using quantized feedback. 4,410,986., Cl. 371-22.000.

Coulter Systems Corporation: *See*—
Kuehnle, Manfred R., 4,410,260., Cl. 355-10.000.

Coulton, Steven: *See*—
Ponsford, Roger J.; Brown, Pamela; and Coulton, Steven, 4,410,533., Cl. 424-251.000.

Councell Nurseries, Inc.: *See*—
Councell, William S., Jr.; and Turner, Garland L., 4,410,050., Cl. 173-112.000.

Councell, William S., Jr.; and Turner, Garland L., to Councell Nurseries, Inc. Machine for inserting rigid members in the soil. 4,410,050., Cl. 173-112.000.

Couture, Paul A.: *See*—
Jentoft, Arthur P.; and Couture, Paul A., 4,409,767., Cl. 52-200.000.

Cowlin, Robert M.; and Helsby, Nigel C., to Lockwood Graders (UK) Limited. Article sorting apparatus and method. 4,410,091., Cl. 209-546.000.

Craig, John W.: *See*—
Chi, Chao S.; and Craig, John W., 4,410,817., Cl. 307-514.000.

Craiglow, Robert L.: *See*—
Werth, Willard F.; and Craiglow, Robert L., 4,410,764., Cl. 364-513.500.

Crawford, John; and Crawford, Wayne. Combination bumper and spare tire carrier. 4,410,117., Cl. 224-42.060.

Crawford, Wayne: *See*—
Crawford, John; and Crawford, Wayne, 4,410,117., Cl. 224-42.060.

Crookes, LeRoy W., to Ralph B. Carter Company. Mixing method and apparatus utilizing pipe elbows. 4,410,281., Cl. 366-341.000.

Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., to Pfizer Inc. Heterocyclic thromboxane synthetase inhibitors and pharmaceutical compositions containing them. 4,410,539., Cl. 424-273.00R.

Crowell Corporation, The: *See*—
Blevins, Daniel; and Adelman, Robert W., 4,410,021., Cl. 141-95.000.

Crozier, Ronald D. G. Collector compositions for froth flotation and process for making same. 4,410,439., Cl. 252-61.000.

Cullis, Herbert M.: *See*—
Stamminger, Reinhard; and Cullis, Herbert M., 4,410,757., Cl. 136-248.000.

Cummins Engine Company, Inc.: *See*—
Perr, Julius P., 4,410,137., Cl. 239-95.000.
Peters, Lester L.; and Warlick, Timothy A., 4,410,138., Cl. 239-95.000.

Cunard, Joel C., to Brown Group Recreational Products, Inc. Power-assisted velocipede. 4,410,060., Cl. 180-205.000.

Cunningham, Eldon R., to General Electric Company. Methods of assembling a wick and bearing. 4,409,714., Cl. 29-148.40L.

Currah, Ian E. Cable-driven rotor-piston dispensing apparatus and method of operating the same. 4,410,105., Cl. 222-1.000.

Curran, Kenneth J., to Vivitar Corporation. Flash adapater and system. 4,410,250., Cl. 354-33.000.

Currie, Richard W., to United States of America, Army. Flyby warhead triggering. 4,409,900., Cl. 102-213.000.

Curtis, Charles H.: *See*—
Day, Jack R.; and Curtis, Charles H., 4,409,813., Cl. 72-190.000.

Cybulski, Mark J.: *See*—
Schreiner, Peter J.; Limberg, John F.; and Cybulski, Mark J., 4,410,068., Cl. 188-73.380.

Cyclotomics, Inc.: *See*—
Berlekamp, Elwyn R., 4,410,989., Cl. 371-40.000.

Cyriax, Wilhelm, to Battenfeld Maschinenfabriken GmbH. Method of making a molded-joint assembly. 4,410,479., Cl. 264-255.000.

Czaban, John D.; and Cormier, Alan D., to Instrumentation Laboratory Inc. Compensated reference liquid. 4,410,631., Cl. 436-8.000.

Dage, Richard C.: *See*—
Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, 4,410,540., Cl. 424-273.00R.

Daicel Chemical Industries, Ltd.: *See*—
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Daimler-Benz AG: *See*—
Henn, Werner; Bachschmid, Reiner; and Zeilinger, Karl, 4,409,935., Cl. 123-90.530.

Daimler-Benz Aktiengesellschaft: *See*—
Sturtz, Gunter; Holtze, Herbert; Rothacker, Dietrich; and Burk, Gerhard, 4,410,212., Cl. 296-189.000.

Dainichi-Nippon Cables, Ltd.: *See*—
Kato, Hiroshi; and Momose, Chiaki, 4,410,648., Cl. 524-101.000.

Dainippon Ink and Chemicals, Inc.: *See*—
Nemoto, Yuhei; and Takahashi, Shiro, 4,410,562., Cl. 427-54.100.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,410,909., Cl. 358-75.000.

Daishin Sangyo Kabushiki Kaisha: *See*—
Fujimoto, Shigenobu, 4,410,333., Cl. 44-51.000.

Dalal, Hormazdyzr D.; Patnaik, Bisweswar; and Sarkary, Homi G., to International Business Machines Corporation. Forming interconnections for multilevel interconnection metallurgy systems. 4,410,622., Cl. 430-312.000.

d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., to Staar S. A. Method and apparatus for controlling tape transport apparatus in search sequence. 4,411,008., Cl. 377-18.000.

Dalton, Philip A., Jr.; and Bergstedt, Lowell C., to NCR Corporation. Methods of making narrow channel field effect transistors. 4,409,727., Cl. 29-571.000.

DaMocogno, Ninalbo G.; Siok, Donald A.; Bourassa, Denis L.; and Connerney, William R., to United States of America, Army. Single sideband generator with leakage signal cancellation. 4,410,863., Cl. 332-37.00R.

Dana Corporation: *See*—
Yarnell, James A., 4,409,859., Cl. 74-477.000.

Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, to Richter Gedeon Vegyeszeti Gyar Rt. Process for preparation of cytostatic compounds. 4,410,459., Cl. 260-244.400.

D'Andrade, Bruce M.; and Mak, Fun S., to Arco Industries Ltd. Powered toy boat. 4,409,753., Cl. 46-93.000.

Dang, Gurcharn S., to General Signal Corporation. Current overload protection for inverter of uninterruptible power supply system. 4,410,935., Cl. 363-37.000.

Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process. 4,410,723., Cl. 560-214.000.

Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process. 4,410,728., Cl. 562-599.000.

Daniel, Chelliah, to Ashland Oil, Inc. Oxydehydrogenation process for preparing methacrylic acid and its lower alkyl esters. 4,410,729., Cl. 562-599.000.

Daniel Industries, Inc.: *See*—
Drapp, Donald J., 4,410,038., Cl. 166-53.000.

Daniel, Roger P.; and Yost, Carl D., to Ford Motor Company. Dummy chest load distribution transducer. 4,409,835., Cl. 73-432.00R.

Daniel, Wilbur L.; Linyaev, Eugene J.; Walkow, Arnold M.; and Wilkinson, Gregory J., to Dresser Industries, Inc. System and apparatus for orienting a well casing perforating gun. 4,410,051., Cl. 175-4.510.

Danieli & C. Officine Meccaniche S.p.A.: *See*—
Fasano, Fulvio; and Turco, Giorgio, 4,410,112., Cl. 222-602.000.

Daniels, Edward P.; Dlugos, Daniel F.; Holtz, Earl B.; and Manduley, Flavio M., to Pitney Bowes Inc. Mailing system interface interconnecting incompatible communication systems. 4,410,962., Cl. 364-900.000.

Daroczi, Ivan: *See*—
Torok, Sandor; Voroshazy, Lajos; Galambos, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, 4,410,697., Cl. 544-165.000.

Das, Balbhadra; and Moore, L. Dow, to PPG Industries, Inc. Aqueous sizing composition and sized glass fibers and method. 4,410,645., Cl. 523-206.000.

Data General Corporation: *See*—
Jeffery, Edwin A., 4,410,269., Cl. 356-138.000.

Datta, Pabitra; and Poliniak, Eugene S., to RCA Corporation. High density information disc lubricants. 4,410,748., Cl. 585-4.000.

Dauchot, Paul J.: *See*—
Apple, Howard P.; and Dauchot, Paul J., 4,409,986., Cl. 128-715.000.

Daugherty, John. Security latch assembly. 4,409,757., Cl. 49-449.000.

Davi, Michael A.; Davis, Lewis B., Jr.; and Hopkins, Edward P., to General Electric Company. Acoustically tuned combustor. 4,409,787., Cl. 60-39.770.

David Brown Tractors Ltd.: *See*—
Bury, Cecil T.; and Holmes, Andrew J., 4,409,930., Cl. 123-514.000.

Davidson College, Trustees of: *See*—
Carroll, Felix A., 4,410,509., Cl. 424-84.000.

Davies, David R.; and Richardson, Edwin A., to Shell Oil Company. Process for gas-lifting liquid from a well by injecting liquid into the well. 4,410,041., Cl. 166-250.000.

Davies, James F.; and Tune, John B., to Lever Brothers Company. Product for treating fabrics in a washing machine. 4,410,441., Cl. 206-0.500.

Davis, Larry: *See*—
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,410,699., Cl. 546-141.000.

Davis, Lewis B., Jr.: *See*—
Davi, Michael A.; Davis, Lewis B., Jr.; and Hopkins, Edward P., 4,409,787., Cl. 60-39.770.

Davis, Stevan A.; and Luedtke, Arthur, to United States of America, FCC. VHF Directional receiver. 4,410,890., Cl. 343-419.000.

Day, Jack R.; and Curtis, Charles H. Method and apparatus for corrugating strips. 4,409,813., Cl. 72-190.000.

Dayco Corporation: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

De La Rue Giori S.A.: *See*—
Bonomi, Antonio, 4,409,741., Cl. 34-162.000.

Deborski, Gary A., to Dow Chemical Company, The. Internally supported electrode. 4,410,410., Cl. 204-277.000.

DeCandia, Giovanni; and Bilson, Edward B., to International Telephone and Telegraph Corporation. Retention device for lighting fixture cover. 4,410,931., Cl. 362-267.000.

Decker, Harry J.; and Thorsteinson, Erlind M., to Union Carbide Corporation. Process for preparing unsaturated acids with Mo, V, Ta-containing catalyst. 4,410,725., Cl. 562-534.000.

Decker, Quintin W.; Marcus, Erich; and Morlino, Robert J., to Union Carbide Corporation. Low-foaming nonionic surfactants. 4,410,447., Cl. 252-351.000.

Deere & Company: *See*—
Arnold, Loren G.; Parker, Paul D.; and Sullivan, James F., 4,410,047., Cl. 172-328.000.
Steilen, Ronald M., 4,410,194., Cl. 280-86.000.
Westimayer, David A., 4,409,748., Cl. 37-261.000.

Degussa Aktiengesellschaft: *See*—
Knippschild, Gerd; Klebe, Hans; and Schuster, Hubert, 4,410,444., Cl. 252-186.210.
Muller, Karl-Hans; Barthel, Walter; and Oelmuller, Rolf, 4,410,589., Cl. 428-331.000.
Panster, Peter; and Kleinschmit, Peter, 4,410,669., Cl. 525-474.000.
Wolfgang, Bohm; Wolmer, Roger; and Malikowski, Willi, 4,410,491., Cl. 420-501.000.

De Jonckheere, Raphael: *See*—
Dussaud, Jacques; and De Jonckheere, Raphael, 4,410,326., Cl. 604-390.000.

de Jong, Joannes M. M.; Earle, Richard L.; and Somes, Richard K., to Sperry Corporation. Wave velocity detecting schemes for traveling wave flow meter. 4,409,830., Cl. 73-269.000.

de Kat, Ewout C., to IHC Holland N.V. Split vessel or similar vessel. 4,409,916., Cl. 114-29.000.

de Lang, Hendrik; and Bouwhuis, Gijsbertus, to U.S. Philips Corporation. Device for processing optical information and method of manufacturing a coma correction plate used in such a device. 4,410,241., Cl. 350-409.000.

deLarosiere, Pierre J., to International Container Systems, Inc. Case for multipacks of bottles. 4,410,099., Cl. 220-21.000.

Del Bon, Franco: *See*—
Del Bon, Luigi; and Del Bon, Franco, 4,410,110., Cl. 222-402.240.

Del Bon, Luigi; and Del Bon, Franco. Valve-and-lid assembly for a container. 4,410,110., Cl. 222-402.240.

Dell, Hans-Dieter: *See*—
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.

Dellacoletta, Brent A.; and Verbicky, John W., to General Electric Company. Method for making bisphenoxide salts. 4,410,735., Cl. 568-722.000.

Del Soldato, Piero: *See*—
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

De Luca, Paul V.; and Rawlings, David, to Porsa Systems Corp. Multipole data switch. 4,410,773., Cl. 200-11.00K.

Dembicks, Andrew E., to Southern Case, Inc. Interlocking modular article supporting system and component units therefor. 4,410,095., Cl. 211-60.00T.

Demianczuk, Dionisyj W.: *See*—
Waid, George M.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,410,369., Cl. 148-2.000.

Demke, Kent R.; and Mumola, Joanne L., to International Business Machines Corporation. Displaying a proportionally outlined miniature page. 4,410,958., Cl. 364-900.000.

Demmer, Christopher G., to Ciba-Geigy Corporation. Resinous salts, their preparations, and their use in coatings. 4,410,675., Cl. 525-533.000.

Dempster Systems Inc.: *See*—
Scharf, Heino W., 4,410,207., Cl. 293-118.000.

Denkewalter, Robert G.; Kolc, Jaroslav F.; and Lukasavage, William J., to Allied Corporation. Macromolecular highly branched homogeneous compound. 4,410,688., Cl. 528-328.000.

Dennison Manufacturing Company: *See*—
Lothrop, George A., 4,410,203., Cl. 283-81.000.

Designs for Vision, Inc.: *See*—
Feinbloom, Richard E.; and Levine, Melvin, 4,410,929., Cl. 362-32.000.

de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, to Compagnie Francais des Petroles. Retaining grippers. 4,410,210., Cl. 294-99.00R.

Despres, Dominique: *See*—
Caray, Andre; and Despres, Dominique, 4,410,075., Cl. 192-106.200.

Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V: *See*—
Lindner, Friedrich; and Scheunemann, Kurt, 4,410,031., Cl. 165-10.000.

DeVlieg, Garrett H.; and Valaas, Andrew M., to Boeing Company, The. Method and apparatus for generating nose wheel speed signals. 4,410,952., Cl. 364-565.000.

DeVries, Adrian: *See*—
Miller, Robert L.; and DeVries, Adrian, 4,410,823., Cl. 310-313.00D.

DeWald, Jack J. Unitized well testing apparatus for use in hostile environments. 4,410,039., Cl. 166-57.000.

de Weaver, Fred, III. Propulsion system. 4,409,856., Cl. 74-84.00R.

de Wied, David; and Greven, Hendrik M., to Akzo N.V. Biologically active peptides. 4,410,511., Cl. 424-177.000.

Dezseri, Eszter: *See*—
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Diamond Shamrock Corporation: *See*—
Fenn, Robert W., III; Pless, Emory J.; Harris, Richard L.; and O'Leary, Kevin J., 4,410,411., Cl. 204-283.000.
Warburton, Craig S.; and Baczek, Stanley K., 4,410,404., Cl. 204-98.000.

Diasonics, Inc.: *See*—
Waxman, Albert S.; and Havlice, James F., 4,410,826., Cl. 310-336.000.

Dibble, Eugene J.: *See*—
Richter, Herbert P.; and Dibble, Eugene J., 4,410,563., Cl. 422-108.000.

Dick, Joseph B., to General Electric Company. FM-Digital converter. 4,409,984., Cl. 128-696.000.

Dickerson, Albert; Szlag, John; and Reyle, John, to Plaskolite, Inc. Perimeter strip for magnetically attractable extruded plastic window system. 4,409,758., Cl. 49-463.000.

Dickie, Ray A.: *See*—
Holubka, Joseph W.; and Dickie, Ray A., 4,410,678., Cl. 528-45.000.
Holubka, Joseph W.; and Dickie, Ray A., 4,410,679., Cl. 528-45.000.

Dickinson, Robert J.; and Wetherill, Todd M., to Westinghouse Electric Corp. Gravity controlled anti-reverse rotation device. 4,410,072., Cl. 192-8.00R.

Dickinson, Roger P.: *See*—
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,410,539., Cl. 424-273.00R.

Dictaphone Corporation: *See*—
Patel, Pankaj R., 4,410,923., Cl. 360-137.000.

Didycz, William J.: *See*—
Aiken, John E.; Didycz, William J.; and Glassman, Donald, 4,410,499., Cl. 423-210.000.

Diessel, Karl-Heinz; Modic, Rudolf; and Struss, Friedrich, to Dynamit Nobel Aktiengesellschaft. Recovery and reuse of heavy-metal oxidation catalyst from the Witten DMT process. 4,410,449., Cl. 502-24.000.

Dietrich, Herbert, to Pfaff Industriemaschinen GmbH. Apparatus for the parting of hide hair. 4,409,803., Cl. 69-27.000.

Dietz, Richard E.; and Welch, Melvin B., to Phillips Petroleum Company. Catalyst and process. 4,410,451., Cl. 502-110.000.

Dietz, Richard E.: *See—*
Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., 4,410,671., Cl. 526-119.000.

Dietzsch, Gunter: *See—*
Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, 4,409,874., Cl. 83-833.000.

Diffracto, Ltd.: *See—*
Pryor, Timothy R., 4,409,718., Cl. 29-407.000.

Dilley, David R.; Lee, Julian J. L.; and Saltveit, Mikal E., Jr., to Board of Trustees operating Michigan State University. Gas sensing apparatus and method. 4,410,632., Cl. 436-20.000.

Director-General of Agency of Industrial Science & Technology: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Dlugos, Daniel F.; Manduley, Flavio M.; and Rubinstein, Arthur, to Pitney Bowes Inc. Interface between a processor system and peripheral devices used in a mailing system. 4,410,961., Cl. 364-900.000.

Dlugos, Daniel F.: *See—*
Daniels, Edward P.; Dlugos, Daniel F.; Holtz, Earl B.; and Manduley, Flavio M., 4,410,962., Cl. 364-900.000.

Dobkin, Robert C., to Hybrinetics, Inc. Apparatus for controlling power consumption in lighting loads and the like. 4,410,839., Cl. 315-320.000.

Dockerty, Robert C.; and Garbarino, Paul L., to International Business Machines Corporation. Borderless diffusion contact process and structure. 4,409,722., Cl. 29-571.000.

Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See—*
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

Doi, Keiichiro: *See—*
Segawa, Keiji; Murakami, Masaki; and Doi, Keiichiro, 4,410,974., Cl. 369-126.000.

Dolata, Hans: *See—*
Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, 4,409,874., Cl. 83-833.000.

Domahidy, George, to Stone & Webster Engineering Corp. Process for removing hydrogen sulfide from fluids. 4,410,432., Cl. 210-750.000.

DoMinh, Thap; and Stern, Max H., to Eastman Kodak Company. Phthalaldehyde adduct and imaging compositions, elements and methods incorporating same. 4,410,623., Cl. 430-341.000.

Donaldson Company, Inc.: *See—*
Wydeven, Robert M., 4,410,427., Cl. 210-317.000.

Donaubauer, John R.: *See—*
McMorris, Trevor C.; and Donaubauer, John R., 4,410,711., Cl. 549-313.000.

Doniger, Jerry; and Kirchhein, Albert T., to Bendix Corporation, The. Multi-engine autothrottle providing automatic engine EPR equalization. 4,410,948., Cl. 364-431.010.

Donuma, Kenichi: *See—*
Katagiri, Shuhei; Donuma, Kenichi; and Ohashi, Makoto, 4,410,469., Cl. 264-1.500.

Doorakian, George A.: *See—*
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,410,596., Cl. 428-413.000.

Doring, Carl, to Telectronics Pty., Ltd. Lap joint molding member for a pacemaker electrode lead. 4,409,994., Cl. 128-785.000.

Douwes, Adolphe M.: *See—*
van Nassau, Petrus J. M.; and Douwes, Adolphe M., 4,410,503., Cl. 423-359.000.

Dow Chemical Company, The: *See—*
Deborski, Gary A., 4,410,410., Cl. 204-277.000.
Gibson, Clark W.; and Strange, Carl P., 4,410,693., Cl. 536-56.000.
Hefner, Robert E., Jr.; and Uroda, James C., 4,410,686., Cl. 528-288.000.
Krauss, Richard C., 4,410,701., Cl. 546-302.000.
Prindle, Hershel B., 4,410,681., Cl. 528-98.000.
Renga, James M.; and Wang, Pen-Chung, 4,410,718., Cl. 560-103.000.
Skach, Edward J., Jr., 4,410,356., Cl. 75-0.50B.
Strom, Robert M., 4,410,736., Cl. 568-730.000.
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,410,596., Cl. 428-413.000.

Dowbenko, Rostyslaw: *See—*
Schimmel, Karl F.; Traficante, Michael A.; and Dowbenko, Rostyslaw, 4,410,687., Cl. 528-295.500.

Downey, David P.: *See—*
McKean, Eric J.; and Downey, David P., 4,410,215., Cl. 297-429.000.

Dozono, Kichikiko, to Nissan Motor Company, Limited. Split type internal combustion engine. 4,409,936., Cl. 123-198.00F.

Drabek, Jozef, to Ciba-Geigy Corporation. Carboxylated oxime-carbamates and their use in controlling pests. 4,410,543., Cl. 424-278.000.

Drapp, Donald J., to Daniel Industries, Inc. Intermittent well controller. 4,410,038., Cl. 166-53.000.

Dravo Corporation: *See—*
Sousek, Dennis D., 4,409,740., Cl. 34-11.000.

Dresser Industries, Inc.: *See—*
Daniel, Wilbur L.; Linyaev, Eugene J.; Walkow, Arnold M.; and Wilkinson, Gregory J., 4,410,051., Cl. 175-4.510.
Wetterborn, Richard H.; and Busch, David A., 4,410,155., Cl. 248-27.100.

Dreyer, Marco: *See—*
Mattmann, Beat; Dreyer, Marco; and Marti, Wilhelm, 4,410,000., Cl. 137-116.000.

Dril-Quip, Inc.: *See—*
Reimert, Larry E., 4,410,204., Cl. 285-24.000.

Drobny, Edward M.: *See—*
Suelflow, Robert E.; and Drobny, Edward M., 4,410,988., Cl. 371-38.000.

Drummond, Denis S. Method and apparatus for engaging a hook assembly to a spinal column. 4,409,968., Cl. 128-69.000.

Duberg, John E.: *See—*
Fisher, Ralph H., 4,409,796., Cl. 62-160.000.

Dubois, Jean-Claude; Billard, Jean; and Zann, Annie, to Thomson-CSF. Cholesteric liquid crystal of the reentrant type and a temperature-detecting device entailing the use of a liquid crystal of this type. 4,410,283., Cl. 374-162.000.

DuBois, Richard, Jr., to Edison International Inc. Vacuum fluorescent display device with substrate including a metal plate. 4,410,830., Cl. 313-497.000.

Dubs, Hans-Dieter; Spatz, Gunter; and Brandes, Carlos-Enrique, to Alcoa Deutschland GmbH, Firma. Childproof locking cap. 4,410,098., Cl. 215-220.000.

Dubuske, Stanley: *See—*
Smith, Bernard; and Dubuske, Stanley, 4,410,832., Cl. 315-3.000.

Ducote, Louis W.: *See—*
Lambrecht, Richard M.; Bennett, Gerald W.; Duncan, Charles C.; and Ducote, Louis W., 4,409,966., Cl. 128-1.100.

Duijkers, Peter A., to U.S. Philips Corporation. Signal buffer circuit in an integrated circuit for applying an output signal to a connecting terminal thereof. 4,410,814., Cl. 307-475.000.

Duncan, Charles C.: *See—*
Lambrecht, Richard M.; Bennett, Gerald W.; Duncan, Charles C.; and Ducote, Louis W., 4,409,966., Cl. 128-1.100.

Dunlap, Robert E., to Storage Technology Corporation. Feedback control circuit for photosensors in magnetic tape drives. 4,410,148., Cl. 242-188.000.

Dunlevey, Francis M.: *See—*
Mehta, Jitesh R.; and Dunlevey, Francis M., 4,410,361., Cl. 75-63.000.

Dunn, Ronald R.: *See—*
Hatch, William R.; and Dunn, Ronald R., 4,410,498., Cl. 423-150.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bergna, Horacio E., 4,410,405., Cl. 204-180.00P.
Epstein, Bennett N.; and Pagilagan, Rolando U., 4,410,661., Cl. 525-66.000.
Gale, David M., 4,410,683., Cl. 528-125.000.
Garnett, Donald I., 4,410,713., Cl. 549-505.000.
Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, 4,410,612., Cl. 430-18.000.
Johns, Martha M., 4,410,579., Cl. 428-131.000.
Kohan, Melvin I., 4,410,653., Cl. 524-371.000.
Subramanian, Pallatheri M., 4,410,482., Cl. 264-515.000.

Durenec, Peter, to United States of America, Army. Dual pneumatic volume for cryogenic cooler. 4,409,793., Cl. 62-6.000.

Durgin, Robert F.: *See—*
Brown, Harry A., Jr.; and Durgin, Robert F., 4,410,508., Cl. 424-81.000.

Dusard, Christopher R.; and Spilsbury, Thomas W., to Sperry Corporation. Roping and moire reduction in patterned screen cathode ray tube displays. 4,410,841., Cl. 315-382.000.

Dusek, Joseph T.: *See—*
Arons, Richard M.; and Dusek, Joseph T., 4,410,607., Cl. 429-40.000.

Dussaud, Jacques; and De Jonckheere, Raphael, to Boussac Saint Freres B.S.F. Adhesive-type securing device for disposable diapers, and disposable diaper comprising such a securing device. 4,410,326., Cl. 604-390.000.

Dwyer, Francis G.: *See—*
Chu, Pochen; Dwyer, Francis G.; and Huss, Albin, 4,410,452., Cl. 502-60.000.

Dyckerhoff & Widmann Aktiengesellschaft: *See—*
Wlodkowski, Johann; Nutzel, Oswald; and Jungwirth, Dieter, 4,410,162., Cl. 249-215.000.

Dykstra, Edward G.; and Wilton, Frank P., to Ethox Corp. Weighted enteric feeding tube. 4,410,320., Cl. 604-27.000.

Dymond, Richard W., to TRW Inc. Vehicle steering apparatus. 4,410,058., Cl. 180-143.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Diessel, Karl-Heinz; Modic, Rudolf; and Struss, Friedrich, 4,410,449., Cl. 502-24.000.

Dynasciences Corporation: *See—*
Cooper, Harold R.; and O'Beirne, Andrew, 4,410,634., Cl. 436-500.000.

Earle, Richard L.: *See—*
de Jong, Joannes M. M.; Earle, Richard L.; and Somes, Richard K., 4,409,830., Cl. 73-269.000.

Eastep, Calvin W., to Kowah, Inc. Electric instant water heater. 4,410,791., Cl. 219-307.000.

Eastman Kodak Company: *See—*
DoMinh, Thap; and Stern, Max H., 4,410,623., Cl. 430-341.000.
Gustafson, Gary B.; and Fritz, Garold F., 4,410,263., Cl. 355-3.0TR.
Holzhauser, Ronald C.; and McGlen, James A., 4,410,264., Cl. 355-3.0TR.
Lee, James K., 4,410,251., Cl. 354-25.000.
Lelental, Mark; and Pearson, James M., 4,410,614., Cl. 430-45.000.
Vanmeter, James P.; and Chen, Chin H., 4,410,618., Cl. 430-219.000.

Eastman Technology, Inc.: *See—*
Armstrong, Lee B., 4,410,149., Cl. 242-200.000.

Ebara Corporation: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,410,348., Cl. 71-9.000.

Eberlein, Wolfgang: *See—*
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

Eberly, Harry C.: *See—*
VanGinhoven, Robert M.; Seymour, Shaun A.; and Eberly, Harry C., 4,409,784., Cl. 56-341.000.

Echlin Inc.: *See—*
Bueler, Richard C., 4,410,218., Cl. 303-6.00C.

Eckhardt, Sandor: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Eckler, Paul E., to Angus Chemical Company. Preparation of nitro-olefins. 4,410,746., Cl. 568-943.000.

Ecklund, Lawrence M., to Motorola, Inc. Dual mode tone detector circuit. 4,410,762., Cl. 381-15.000.

Edison International Inc.: *See—*
DuBois, Richard, Jr., 4,410,830., Cl. 313-497.000.

Edwards, David, Jr. Vacuum leak detector and method. 4,409,817., Cl. 73-40.700.

Edwards, Thomas C.: *See—*
Shank, Wayne C.; and Edwards, Thomas C., 4,410,305., Cl. 418-150.000.

Edwards, William J.; and Stricklin, John D., to Magnetic Peripherals Inc. Fluid filter cartridge. 4,410,341., Cl. 55-482.000.

Effland, Richard C.; Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. Substituted 1,2,3,4-tetrahydro-4-isoquinolinols. 4,410,699., Cl. 546-141.000.

Efuti Giken Co., Ltd.: *See—*
Kawai, Tsutomu, 4,410,920., Cl. 360-85.000.

Egami, Tsuneyuki: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,409,828., Cl. 73-204.000.

Eghamn, Lars: *See—*
Buring, Klas; Eghamn, Lars; Sigurdsson, Jannes; and Ahlman, Rolf, 4,409,689., Cl. 2-22.000.

Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, to Janome Sewing Machine Co., Ltd. Switch control method of an electronic sewing machine. 4,409,915., Cl. 112-266.100.

Eheim, Franz; Hofer, Gerald; and Laufer, Helmut, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,409,939., Cl. 123-357.000.

Eheim, Franz, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,409,942., Cl. 123-387.000.

Ehrlinger, Friedrich, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Axle drive mechanism. 4,410,073., Cl. 192-18.00A.

Eichinger, Johann; Parzl, Franz; and Schulz, Wolfgang, to Carl Hurth Maschinen- und Zahnradfabrik GmbH & Co. Double-axle drive for railway trucks of railraod vehicles. 4,409,904., Cl. 105-131.000.

Eida, Tsuyoshi: *See—*
Haruta, Masahiro; Yano, Yashuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, 4,410,899., Cl. 346-140.00R.

Eiki, Hideo: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Eisemann, Kurt, to U.S. Philips Corporation. Front loading record player. 4,410,971., Cl. 369-75.000.

Eisenberg, Joel H. Cross-country ski boot binding. 4,410,199., Cl. 280-615.000.

Eisenkramer, Arthur: *See—*
Monti, Carmel S.; Eisenkramer, Arthur; and Yurdin, Carl, 4,410,157., Cl. 248-125.000.

Eisenrith, Karl-Heinz: *See—*
Aulich, Hubert; and Eisenrith, Karl-Heinz, 4,410,346., Cl. 65-4.200.

Eitzinger, Robert: *See—*
Baraglia, Nathan A.; Eitzinger, Robert; and Vought, Kimber T., 4,409,734., Cl. 29-861.000.

Eldridge, William N., to Becton Dickinson and Company. Fluid flow control device for use with an evacuated blood collection container. 4,409,991., Cl. 128-766.000.

Electric Power Research Institute: *See—*
Atherton, Linda; and Kulik, Conrad J., 4;410,421., Cl. 208-254.00R.

Electro-Voice, Incorporated: *See—*
Hagey, Lee, 4,410,770., Cl. 179-121.00D.

Electromark, Div. of Mohawk International: *See—*
Szeliga, Philip C.; and Kitchen, William D., 4,410,901., Cl. 346-165.000.

Eli Lilly and Company: *See—*
Koch, Kay F.; and Kastner, Ralph E., 4,410,628., Cl. 435-127.000.

Elias, Jack D.; and Cardoso, John B., to United States of America, Air Force. Mechanical preload nut assembly. 4,410,293., Cl. 403-24.000.

Ellis, Howard F.; and Kresge, James S., to General Electric Company. Method of making a stable high voltage DC varistor. 4,409,728., Cl. 29-613.000.

Elmar Industries, Inc.: *See—*
Minard, Everett S., 4,410,108., Cl. 222-380.000.

El-Roy, Menachem: *See—*
Romey, Ingo; and El-Roy, Menachem, 4,410,646., Cl. 524-65.000.

Emerson, Robert T.: *See—*
Newman, Douglas A.; and Emerson, Robert T., 4,409,893., Cl. 101-129.000.

EMI Limited: *See—*
LeMay, Christopher Archibald G., 4,411,011., Cl. 378-10.000.

Emmett, James S.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,409,735., Cl. 30-47.000.

Endo, Hiroshi: *See—*
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.

Energy Conversion Devices, Inc.: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,410,558., Cl. 427-39.000.
Ovshinsky, Herbert C., 4,410,265., Cl. 355-51.000.

Eng, Richard S.: *See—*
Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., 4,410,273., Cl. 356-319.000.

Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Substituted thienobenzodiazepinones and salts thereof. 4,410,527., Cl. 424-250.000.

Enomoto, Masahiro; Awano, Yoshiyuki; Yamada, Yuji; and Aso, Akira, to Molex Incorporated. Electrical connector for a ribbon cable. 4,410,222., Cl. 339-17.00F.

Enzo, Seragnoli, to G.D. Societa per Azioni. Device for fitting filters to cigarettes. 4,409,996., Cl. 131-94.000.

Epstein, Bennett N.; and Pagilagan, Rolando U., to Du Pont de Nemours, E. I., and Company. Toughened polyamide blends. 4,410,661., Cl. 525-66.000.

Erdman, Timothy R., to Chevron Research Company. Amine substituted hydrocarbon polymer dispersant lubricating oil additives. 4,410,437., Cl. 252-47.500.

Ernest, Paul W., to General Electric Company. Jacketed lamp having transverse arc tube. 4,410,828., Cl. 313-25.000.

Ersoy, Metin; and Kramer, Hermann J., to Lemforder Metallwaren AG Lemforde. Universal joint construction. 4,410,295., Cl. 403-122.000.

Esmil BV: *See—*
Klaren, Dick G., 4,410,029., Cl. 165-1.000.

Esselte Pendaflex Corp.: *See—*
Holland-Letz, Gunter, 4,409,892., Cl. 101-93.180.

Essex Group, Inc.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,410,592., Cl. 428-383.000.

Etablissements Nativelle S.A.: *See—*
Jarreau, Francois X.; and Koenig, Jean-Jacques, 4,410,525., Cl. 424-248.570.

Ethox Corp.: *See—*
Dykstra, Edward G.; and Wilton, Frank P., 4,410,320., Cl. 604-27.000.

European Atomic Energy Community: *See—*
Leger, Guy; Roux, Jacques; Alinat, Jean; and Constans, Jacques, 4,410,282., Cl. 374-156.000.

Everman, Carl G. Split hub wheel apparatus and use of same for shale oil retorting. 4,410,416., Cl. 208-11.0LE.

Exxon Production Research Co.: *See—*
Mifsud, Joseph F., 4,410,062., Cl. 181-121.000.

Exxon Research and Engineering Co.: *See—*
Langer, Arthur W., Jr., 4,410,750., Cl. 585-521.000.
McMullen, Charles H.; Fehskens, Eugene E.; and Plotkin, Jeffrey S., 4,410,715., Cl. 549-531.000.

Fabrique Nationale Herstal: *See—*
van der Wielen, Pierre, 4,409,881., Cl. 89-16.000.

Fabris, Enzo: *See—*
Konjedic, Oscar; Carrara, Paolo; and Fabris, Enzo, 4,409,832., Cl. 73-292.000.

Fair, Timothy K.; and Mudge, Richard C., to Conwed Corporation. Co-extruded fusible net. 4,410,587., Cl. 428-247.000.

Fairchild Camera & Instrument Corporation: *See—*
Weaver, Charles H.; and Kaltenekker, Bela L., 4,410,395., Cl. 156-662.000.

Falconbridge Nickel Mines Limited: *See—*
Hatch, William R.; and Dunn, Ronald R., 4,410,498., Cl. 423-150.000.

Fankhauser, Franz: *See—*
Roussel, Philippe; Fankhauser, Franz; and van der Zypen, Eugen, 4,409,979., Cl. 128-303.100.

Farrar, Frederick G.: *See—*
Schaubert, Daniel H.; and Farrar, Frederick G., 4,410,891., Cl. 343-700.0MS.

Farrell, Robert E., to B. F. Goodrich Company, The. Belt folding apparatus. 4,410,390., Cl. 156-461.000.

Fasano, Fulvio; and Turco, Giorgio, to Danieli & C. Officine Meccaniche S.p.A. Device for regulating a tundish stopper. 4,410,112., Cl. 222-602.000.

Faschingbauer, Gerald L., to UOP Inc. Noble metal and rare earth metal catalyst. 4,410,454., Cl. 502-306.000.

Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., to Masco Corporation. DC Power supply for an air filter. 4,410,934., Cl. 363-21.000.

Fedotov, Jury M.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.

Fehskens, Eugene E.: *See—*
McMullen, Charles H.; Fehskens, Eugene E.; and Plotkin, Jeffrey S., 4,410,715., Cl. 549-531.000.

Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, to Voest-Alpine Aktiengesellschaft. Process for controlling a pelletizing plant for fine-grained ores. 4,410,355., Cl. 75-5.000.

Feigl, Franz: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.

Feinbloom, Richard E.; and Levine, Melvin, to Designs for Vision, Inc. Linear motion switch assembly particularly adapted for use with fiber optic light sources. 4,410,929., Cl. 362-32.000.

Fekete, Gyorgy: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Fenn, Robert W., III; Pless, Emory J.; Harris, Richard L.; and O'Leary, Kevin J., to Diamond Shamrock Corporation. Dimensionally stable asbestos diaphragms. 4,410,411., Cl. 204-283.000.

Ferm, Richard L., to Chevron Research Company. Heat exchanger antifoulant. 4,410,419., Cl. 208-48.0AA.

Fernandez, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., to Versatron Research Corporation. Human powered vehicle. 4,410,198., Cl. 280-281.0LP.

Festag, Werner; and Muller, Hans-Ueli, to Swiss Aluminium Ltd. Process for the production of blisters. 4,409,808., Cl. 72-60.000.

Fetterly, Robert F., to Boeing Company, The. Missile stowage and launcher system. 4,409,880., Cl. 89-1.804.

Fiat Auto S.p.A.: *See—*
Audenino, Carlo; and Barbero, Mario, 4,409,756., Cl. 49-440.000.
Konjedic, Oscar; Carrara, Paolo; and Fabris, Enzo, 4,409,832., Cl. 73-292.000.

Fiberglas Canada Inc.: *See—*
Blackmore, Phillip W., 4,409,766., Cl. 52-169.110.

Fiegl, George, to Siltec Corporation. Apparatus for controlling flow of molten material between crystal growth furnaces and a replenishment crucible. 4,410,494., Cl. 422-106.000.

Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., to Telease, Inc. Multiple signal transmission method and system, particularly for television. 4,410,911., Cl. 358-121.000.

Fields, Ellis K.: *See—*
Nimry, Tayseer S.; and Fields, Ellis K., 4,410,658., Cl. 524-600.000.

Filler, Raymond L., to United States of America, Army. Acceleration-resistant crystal resonator. 4,410,822., Cl. 310-311.000.

Fillios, Jean-Pierre R. Water heating method and apparatus. 4,409,958., Cl. 126-362.000.

Finike Italiana Marposs S.p.A.: *See—*
Golinelli, Guido, 4,409,737., Cl. 33-172.00E.

Fink, Lothar: *See—*
Lindenmayer, Bernhard; and Fink, Lothar, 4,410,478., Cl. 264-248.000.

Finlayson, Claude M.; and Mardis, Wilbur S., to NL Industries, Inc. Printing ink compositions. 4,410,364., Cl. 106-20.000.

Fire Pro, Inc.: *See—*
Whitman, Richard W., 4,410,045., Cl. 169-24.000.

First National Bank of Akron, The: *See—*
McGinnis, Hebert E., 4,410,082., Cl. 198-818.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary offset sheet selective prime, verso or multicolor printing machine and method. 4,409,894., Cl. 101-211.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Expansible rotary offset printing machine. 4,409,895., Cl. 101-248.000.

Fischer, Karl; Knauss, Hermann; and Schreder, Felix, to Fischer, Karl. Electric hotplate. 4,410,793., Cl. 219-460.000.

Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, to BASF Aktiengesellschaft. Preparation of 2-alkyl-4,4-diacyloxybut-2-enals. 4,410,719., Cl. 560-112.000.

Fisher, Ralph H., to Lake, Rutherford C., Jr.; Hayters Enterprises, Inc.; and Duberg, John E. Reversible cycle heating and cooling system. 4,409,796., Cl. 62-160.000.

Fisher, William B.; and Van Peppen, Jan F., to Allied Corporation. Method to purify alpha-methyl styrene prior to catalytic hydrogenation. 4,410,755., Cl. 585-800.000.

Flecken, Peter: *See—*
Hafner, Peter; and Flecken, Peter, 4,410,926., Cl. 361-93.000.

Fleischfresser, Gerald H.; and Kobylar, Alex W., to GTE Automatic Electric Labs. Inc. Arrangement for extending digital signaling to telephone subscribers' substations. 4,410,982., Cl. 370-110.100.

Flory, Robert E., to RCA Corporation. Simplified transmission system for sequential time-compression of two signals. 4,410,981., Cl. 370-109.000.

Flowtec AG: *See—*
Hafner, Peter; and Flecken, Peter, 4,410,926., Cl. 361-93.000.

Fluid-Air Components, Inc.: *See—*
Nowak, Andrew, 4,409,792., Cl. 60-414.000.

FMC Corporation: *See—*
Wang, Kuei-Hsiung; Biolchini, Robert J.; and Legatski, L. Karl, 4,410,500., Cl. 423-242.000.

Foley, Mark P.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

Folse, Wofford M., Sr. Apparatus and method of assembling barge fenders. 4,410,024., Cl. 144-353.000.

Ford Motor Company: *See—*
Chapman, Gilbert B., II, 4,410,381., Cl. 156-64.000.
Daniel, Roger P.; and Yost, Carl D., 4,409,835., Cl. 73-432.00R.
Holubka, Joseph W.; and Dickie, Ray A., 4,410,678., Cl. 528-45.000.
Holubka, Joseph W.; and Dickie, Ray A., 4,410,679., Cl. 528-45.000.
Kloppe, Herbert; Rest, Heinz; and Spiegel, Erwin, 4,410,211., Cl. 296-213.000.
Rachedi, Shane H., 4,409,945., Cl. 123-568.000.

Fornex Engineering Company: *See—*
Cope, Michael E., 4,410,983., Cl. 371-8.000.

Foster-Miller Associates: *See—*
Harvey, Andrew C.; and Harding, John C., 4,410,429., Cl. 210-416.100.

Foster, Perry A., Jr.: *See—*
Jacobs, Stanley C.; Wiltzius, Raymond D.; Minick, John R.; and Foster, Perry A., Jr., 4,410,403., Cl. 204-67.000.

Fournier, Alain: *See—*
Kennedy, John F.; and Fournier, Alain, 4,410,152., Cl. 244-110.00B.

Fowler, James M., Jr.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,410,934., Cl. 363-21.000.

Framatome: *See—*
Marini, Jean; Gravelle, Alain; and Weilbacher, Jean-Claude, 4,410,484., Cl. 376-252.000.

France, Paul W.; and Newns, George R., to Post Office. Optical fibres and coatings therefor. 4,410,567., Cl. 427-163.000.

Francis, David D. Arithmetic dice gameboard. 4,410,182., Cl. 273-268.000.

Franck-Neumann, Michel; and Miesch, Michel, to Roussel Uclaf. Process for the preparation of cyclopropene intermediates. 4,410,721., Cl. 560-124.000.

Franckx, Joris R. I., to N.V. Raychem S.A. Method of making a branch-off system. 4,410,379., Cl. 156-54.000.

Frank, Earl E., to Abex Corporation. Spike drivers. 4,409,902., Cl. 104-17.00R.

Franklin, Joseph E.: *See—*
Waid, George M.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,410,369., Cl. 148-2.000.

Fratelli Musci: *See—*
Musci, Nicola, 4,409,745., Cl. 36-24.500.

Free, David F. Photographic mounting process and composition. 4,410,386., Cl. 156-235.000.

Freedland, Jeffrey A. Bone-fixating surgical implant device. 4,409,974., Cl. 128-92.00B.

Frei, Jorg; Jaeggi, Knut A.; Ostsewrmayer, Franz; and Schroter, Herbert, to Ciba-Geigy Corporation. 2-(3-Amino-2-hydroxy-propoxy)-mono-and diazines. 4,410,530., Cl. 424-251.000.

Friedline, Karl L.: *See—*
Vinekar, Sanjay R.; Hettiger, James; and Friedline, Karl L., 4,410,907., Cl. 358-20.000.

Friedman, Evelyn: *See—*
Carswell, William; and Friedman, Evelyn, 4,410,104., Cl. 221-241.000.

Friedmann, Oswald: *See—*
Maucher, Paul; and Friedmann, Oswald, 4,410,074., Cl. 192-48.700.

Frierdich, Waldo J., to Basler Electric Company. System for maintaining excitation of an alternator during excessive output current conditions. 4,410,848., Cl. 322-25.000.

Fritz, Garold F.: *See—*
Gustafson, Gary B.; and Fritz, Garold F., 4,410,263., Cl. 355-3.0TR.

Fritz Heinzmann GmbH & Co.: *See—*
Gaus, Harry, 4,409,940., Cl. 123-361.000.

Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., to Siwecki, Thomas Lee. Method and apparatus for recording on a disk supported deformable metallic film. 4,410,968., Cl. 369-44.000.

Frye, Kenneth G.; and Gangemi, Donald, to Beloit Corporation. Device for widthwise control of web material and method. 4,410,122., Cl. 226-199.000.

Frye, Kenneth G., to Beloit Corporation. Low velocity trim removal means and method. 4,410,315., Cl. 493-342.000.

Fuchsberger, Hermann: *See—*
Scherl, Wolfgang; Abele, Ludwig; Wahl, Friedrich; and Fuchsberger, Hermann, 4,411,015., Cl. 382-51.000.

Fuhrmeister, Ralph, to Furma Manufacturing Co. Pty. Ltd. Sequential unit feeding apparatus. 4,410,103., Cl. 221-25.000.

Fuji Photo Film Co., Ltd.: *See—*
Kitamoto, Tatsuji; Shirahata, Ryuji; and Tamai, Yasuo, 4,410,565., Cl. 427-130.000.
Okamoto, Yoshihiko, 4,410,799., Cl. 250-327.200.

Fuji Xerox Co., Ltd.: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,410,897., Cl. 346-76.0PH.
Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, 4,410,898., Cl. 346-76.0PH.
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Fujimoto, Hiroaki; and Ohkita, Ryozo, to Yamaha Hatsudoki Kabushiki Kaisha. Ignition system for a two-cycle engine. 4,409,938., Cl. 123-335.000.

Fujimoto, Shigenobu, to Daishin Sangyo Kabushiki Kaisha. Stable and homogeneous fuel composition for internal combustion engine and process for preparing the same. 4,410,333., Cl. 44-51.000.

Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, to Sumitomo Chemical Co., Ltd.; and Sumitomo Metal Mining Company, Ltd. Conductive paste. 4,410,457., Cl. 252-508.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, 4,410,458., Cl. 260-239.100.

Fujitsu Limited: *See—*
Kanai, Yasunori, 4,410,816., Cl. 307-455.000.
Meguro, Takeshi; Ito, Yukio; and Miyamoto, Bun-ichi, 4,410,868., Cl. 333-202.000.
Sakurai, Junji; and Mori, Haruhisa, 4,410,801., Cl. 250-492.200.

Fujitus, Satoru: *See—*
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, 4,410,722., Cl. 560-204.000.

Fujiwara, Tatsuo: *See—*
Yamamori, Kazuyoshi; Nishikawa, Reiji; Fujiwara, Tatsuo; and Asano, Toshimitsu, 4,410,603., Cl. 428-611.000.

Fukatsu, Yoshiaki: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,410,378., Cl. 149-109.600.

Fukino, Masato: *See—*
Nakayama, Masafumi; Yanai, Tokiyoshi; and Fukino, Masato, 4,410,059., Cl. 180-143.000.

Fukuda, Minoru: *See—*
Wada, Minoru; and Fukuda, Minoru, 4,410,621., Cl. 430-281.000.

Fukuda, Tadanori: *See—*
Nishino, Masaki; Yasuhara, Yutaka; Fukuda, Tadanori; and Sakamoto, Sadayuki, 4,410,597., Cl. 428-423.100.

Fukuto, Tetsuo R.; and Ohta, Hiroki, to University of California, Regents of the. N-Phosphinoaminosulfinylcarbamate esters and their use as insecticides. 4,410,518., Cl. 424-202.000.

Fukuyama, Takeo: *See—*
Tsunashima, Kenji; Yoshii, Toshiya; and Fukuyama, Takeo, 4,410,582., Cl. 428-212.000.

Fumitsu Limited: *See—*
Mikami, Tomohisa; Abe, Fumitaka; Sakurai, Fumio; and Matsuda, Tadashi, 4,410,234., Cl. 350-6.800.

Funai Electric Trading Co. Ltd.: *See—*
Kawai, Tsutomu, 4,410,920., Cl. 360-85.000.

Funakoshi, Katsumi; Itoi, Hideyuki; and Konishi, Toshifumi, to Mitsui Petrochemical Industries, Ltd. Aqueous dispersion of ethylene/α,β-unsaturated carboxylic acid copolymer blend. 4,410,655., Cl 524-522.000.

Furihata, Hiroyuki, to Olympus Optical Co., Ltd. Endoscope apparatus. 4,409,993., Cl. 128-784.000.

Furma Manufacturing Co. Pty. Ltd.: *See—*
Fuhrmeister, Ralph, 4,410,103., Cl. 221-25.000.

Furste, Dietmar. Arrangement for test image rotation in refractometers. 4,410,243., Cl. 351-211.000.

Furuichi, Shuhei; Suzuki, Masakazu; and Ikeda, Toshiaki, to Kabushiki Kaisha Morita Seisakusho. Static induction transistor gate driving circuit. 4,410,809., Cl. 307-255.000.

Furukawa Aluminum Co., Ltd.: *See—*
Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, 4,410,036., Cl. 165-134.00R.

Furukubo, Tatsumi, to Toyota Jidosha Kabushiki Kaisha. Two way fluid switchover valve with crossover protection. 4,410,133., Cl. 236-34.500.

Furuno, Yoshikuni: *See—*
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,410,372., Cl. 148-12.00C.

Fushiki, Yasuo: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,410,388., Cl. 156-307.300.

Fushimi, Hitoshi: *See—*
Yasumoto, Seiichi; Fushimi, Hitoshi; Ide, Jushi; and Okada, Masakazu, 4,410,985., Cl. 371-22.000.

G.D. Societa per Azioni: *See—*
Enzo, Seragnoli, 4,409,996., Cl. 131-94.000.

G. L. Rexroth GmbH: *See—*
Schulte, Heinz, 4,410,046., Cl. 172-7.000.

G. Rau GmbH & Co.: *See—*
Stockel, Dieter; and Schneider, Friedrich, 4,410,309., Cl. 445-7.000.

GA Technologies Inc.: *See—*
O'Keefe, Dennis R.; and Norman, John H., 4,410,505., Cl. 423-648.00R.

Gaeddert, Melvin V., to Hesston Corporation. Rotary baler with improved roller mounts for endless belt replacement. 4,409,783., Cl. 56-341.000.

GAF Corporation: *See—*
Parthasarathy, R.; Hort, Eugene V.; and Chakrabarti, Paritosh M., 4,410,726., Cl. 548-543.000.

Gaffney, Bernard J.; and Richardson, Terence W., to Godiva Chocolatier, Inc. Composite confection. 4,410,552., Cl. 426-103.000.

Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, to Mitsubishi Gas Chemical Company, Inc. Colloidal solutions, processes for producing the same and uses thereof. 4,410,601., Cl. 428-290.000.

Galambos, Peter: *See—*
Torok, Sandor; Voroshazy, Lajos; Galambos, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, 4,410,697., Cl. 544-165.000.

Galasso, Francis S.; Veltri, Richard D.; and Birbara, Philip J., to United Technologies Corporation. Method of producing high density carbon. 4,410,504., Cl. 423-453.000.

Gale, David M., to Du Pont de Nemours, E. I., and Company. Aromatic, melt-processible (co)polyesters. 4,410,683., Cl. 528-125.000.

Ganev, Tsviatko S.; and Jansson, Mats A. H., to Telefonaktiebolaget L M Ericsson. Method of purifying indium. 4,410,357., Cl. 75-10.00V.

Gangemi, Donald: *See—*
Frye, Kenneth G.; and Gangemi, Donald, 4,410,122., Cl. 226-199.000.

Ganguly, Achintya K.; and Webb, Denis C., to United States of America, Navy. Solid state magnetron. 4,410,833., Cl. 315-39.510.

Gans, Michael J.; and Penzias, Arno A., to Bell Telephone Laboratories, Incorporated. Array phasing techniques for wide area coverage in a failure mode. 4,410,894., Cl. 343-368.000.

Garbarino, Paul L.: *See—*
Dockerty, Robert C.; and Garbarino, Paul L., 4,409,722., Cl. 29-571.000.

Gardes, Robert A. Flow line filter apparatus. 4,410,425., Cl. 210-167.000.

Garnett, Donald I., to Du Pont de Nemours, E. I., and Company. Preparation of furan compounds. 4,410,713., Cl. 549-505.000.

Garrett Corporation, The: *See—*
Pohlman, Matthew J.; and Kindlimann, Lynn E., 4,410,604., Cl. 428-681.000.

Gaskill, Paul C. Apparatus and method for making a beverage. 4,410,550., Cl. 426-80.000.

Gaskins, Thomas. Bottle opener. 4,409,864., Cl. 81-3.46R.

Gaus, Harry, to Fritz Heinzmann GmbH & Co. Speed governor for internal combustion engines. 4,409,940., Cl. 123-361.000.

Gawhary, Magdi E.: *See—*
Kreuzer, Franz-Heinrich; and Gawhary, Magdi E., 4,410,570., Cl. 427-374.100.

Gell, Philip A. M.; and Hann, Douglas G., to TECO/Elemelt Ltd. Furnaces for the melting of glass. 4,410,997., Cl. 373-35.000.

Geneis, Kristina: *See—*
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

General Electric Company: *See—*
Anderson, John M.; and Johnson, Peter D., 4,410,829., Cl. 313-490.000.
Blake, Walter R.; and Plemmons, Jerry R., 4,410,933., Cl. 362-371.000.
Blevins, Theodore J.; Roberts, Gerald L.; Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,410,329., Cl. 8-158.000.
Brunelle, Daniel J., 4,410,422., Cl. 208-262.000.
Collins, Edward J.; and Suster, Mary E., 4,410,307., Cl. 431-359.000.
Cunningham, Eldon R., 4,409,714., Cl. 29-148.40L.
Davi, Michael A.; Davis, Lewis B., Jr.; and Hopkins, Edward P., 4,409,787., Cl. 60-39.770.
Dellacoletta, Brent A.; and Verbicky, John W., 4,410,735., Cl. 568-722.000.
Dick, Joseph B., 4,409,984., Cl. 128-696.000.
Ellis, Howard F.; and Kresge, James S., 4,409,728., Cl. 29-613.000.
Ernest, Paul W., 4,410,828., Cl. 313-25.000.
Haaf, William R.; Lee, Gim F., Jr.; and Ting, Sai P., 4,410,651., Cl. 524-127.000.
Hallgren, John E., 4,410,464., Cl. 260-463.000.
Kuwata, Masayoshi; and Staub, Fred W., 4,409,739., Cl. 34-10.000.
Lahti, Daniel J., 4,410,150., Cl. 244-53.00R.
Lampe, Warren R., 4,410,677., Cl. 528-17.000.
LeGrand, Donald G., 4,410,367., Cl. 106-308.00N.
Leslie, Samuel A., 4,411,005., Cl. 375-65.000.
McLoughlin, Joseph R., 4,410,585., Cl. 428-215.000.
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,410,385., Cl. 156-181.000.
Nash, Dudley O.; and Clayton, Thomas S., 4,409,788., Cl. 60-226.300.
Nelson, John K., 4,410,456., Cl. 252-571.000.
Olson, Daniel R., 4,410,594., Cl. 428-412.000.
Stoll, Donald H., 4,410,776., Cl. 200-83.00P.

General Motors Corporation: *See—*
Adduci, Robert L.; and Abbuhl, Duane L., 4,410,226., Cl. 339-44.00R.
MacIver, Bernard A., 4,410,611., Cl. 430-5.000.

General Research of Electronics, Inc.: *See—*
Imazeki, Kazuyoshi; and Masao, Nakano, 4,411,020., Cl. 455-219.000.

General Signal Corporation: *See—*
Dang, Gurcharn S., 4,410,935., Cl. 363-37.000.

General Steel Industries, Inc.: *See—*
Imperi, Aldo P., 4,410,144., Cl. 241-236.000.

Georg Fischer Aktiengesellschaft: *See—*
Buttiker, Urs, 4,409,716., Cl. 29-159.00R.

Gerber, Hans; Wessel, Claude; and Hidveghy, Ivan, to Robert Bosch GmbH. Electric tool with microcomputer. 4,410,846., Cl. 318-490.000.

Gerhardt, Leslie H.; and Mitrano, Richard P., to Honeywell Inc. Unequal four-bar linkage scan mirror assembly. 4,410,233., Cl. 350-6.600.

Gerlach, Ronald R.: *See—*
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,410,911., Cl. 358-121.000.

Germanas, Dalia: *See—*
Qualeatti, Gail M.; and Germanas, Dalia, 4,410,460., Cl. 260-409.000.

Germann, Fritz, deceased (by Germann, Ingeborg, heiress); Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, to Licentia Patent-Verwaltungs-GmbH. Current supply device for electrically heating a molten medium. 4,410,998., Cl. 373-40.000.

Germann, Ingeborg, heiress: *See—*
Germann, Fritz, deceased; Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, 4,410,998., Cl. 373-40.000.

Geschwender, Robert C., to Concept Engineering, Inc. Leisure chair. 4,410,214., Cl. 297-118.000.

Gess, Lowell A. Intraocular lenses. 4,409,690., Cl. 3-13.000.

Gessinger, Gernot; Mercier, Oliver; and Riegger, Helmut, to BBC Aktiengesellschaft Brown, Boveri & Cie. Powder metallurgical process for producing a copper-based shape-memory alloy. 4,410,488., Cl. 419-48.000.

Gewartowski, Steve A., to UOP Inc. Butylene isomerization process. 4,410,754., Cl. 585-671.000.

Gibson, Clark W.; and Strange, Carl P., to Dow Chemical Company, The. Process for preparing cellulose derivatives. 4,410,693., Cl. 536-56.000.

Gilb, Tyrell T.; and Commins, Alfred D., to Simpson Strong-Tie Company, Inc. Variable pitch connector. 4,410,294., Cl. 403-27.000.

Gilis, Ionas A.: *See—*
Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V., 4,409,908., Cl. 110-346.000.

Gill, Peter A., to Scoron Corporation. Method and apparatus for powering engine with exhaust generated steam. 4,409,932., Cl. 123-25.00D.

Gist, Adolphus V.: *See—*
Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., 4,410,596., Cl. 428-413.000.

Giulie, Joe D., to Ico Rally Corporation. Interconnection device for multiple conductor cables. 4,410,224., Cl. 339-18.00R.

Gladney, Henry M.: *See—*
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., 4,410,940., Cl. 364-200.000.

Gladwin, Inc.: *See—*
Yachabach, Jerry, 4,410,930., Cl. 362-145.000.

Glassman, Donald: *See—*
Aiken, John E.; Didycz, William J.; and Glassman, Donald, 4,410,499., Cl. 423-210.000.

Glaxo Group Limited: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.

Glukhovsky, Viktor D.; Krivenko, Pavel V.; Rostovskaya, Galina S.; Timkovich, Vasily J.; and Pankratov, Vitaly L. Binder. 4,410,365., Cl. 106-84.000.

GNB Batteries Inc.: *See—*
Mehta, Jitesh R.; and Dunlevey, Francis M., 4,410,361., Cl. 75-63.000.

Goda, Raymond N.: *See—*
Goda, Richard M.; and Goda, Raymond N., 4,409,751., Cl. 42-94.000.

Goda, Richard M.; and Goda, Raymond N. Firearm support. 4,409,751., Cl. 42-94.000.

Godiva Chocolatier, Inc.: *See—*
Gaffney, Bernard J.; and Richardson, Terence W., 4,410,552., Cl. 426-103.000.
Richardson, Terence W., 4,410,555., Cl. 426-572.000.

Goebel, Franz, to GTE Products Corporation. Method for fabricating multi-element anode structures for electrochemical cells. 4,409,730., Cl. 29-623.500.

Goebel, Franz; and Kealey, Kathleen M., to GTE Products Corporation. Electrochemical cell. 4,410,608., Cl. 429-101.000.

Goebel, Peter: *See—*
Heimbach, Paul; Goebel, Peter; and Gruber, Franz, 4,410,134., Cl. 237-2.00B.

Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, to Du Pont de Nemours, E. I., and Company. Electrical device formed from polymeric heat resistant photopolymerizable composition. 4,410,612., Cl. 430-18.000.

Goffaux, Raoul, to Ateliers de Constructions Electriques de Charleroi. Method for the detection of insufficient dielectric strength of coil insulation. 4,410,851., Cl. 324-54.000.

Goguen, Robert P. Anti-siphon selector valve. 4,410,001., Cl. 137-217.000.

Goldberg, Nathan. Fuel saver and pollution control device. 4,409,950., Cl. 123-573.000.

Goldberg, Steven H.: *See—*
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., 4,410,949., Cl. 364-465.000.

Golinelli, Guido, to Finike Italiana Marposs S.p.A. Gauging head for checking linear dimensions of mechanical pieces. 4,409,737., Cl. 33-172.00E.

Gomibuchi, Reizo: *See—*
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,410,593., Cl. 428-389.000.

Gorman-Rupp Company, The: *See—*
Hewitt, D. Gary; and Jones, Thomas A., 4,410,924., Cl. 361-25.000.

Gorog, Sandor: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Gotman, Alexander, to Asta, Ltd. Apparatus for manipulating a stretched resilient diaphragm. 4,410,168., Cl. 269-21.000.

Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Layered electrophotographic photosensitive element having hydrazone charge transport layer. 4,410,615., Cl. 430-59.000.

Goto, Takao: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Gottling, Helmut; and Moller, Rudolf, to WABCO Steuerungstechnik GmbH. Operating equipment for gate valves (passage valves). 4,410,008., Cl. 137-627.500.

Gould Inc.: *See—*
Christen, Roland W., 4,410,810., Cl. 307-300.000.

Grabbe, Dimitry G., to AMP Incorporated. Power, ground and decoupling structure for chip carriers. 4,410,905., Cl. 357-80.000.

Grabbe, Dimitry G., to AMP Incorporated. Very high speed large system integration chip package and structure. 4,410,906., Cl. 357-80.000.

Grafe, Alfred: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,410,532., Cl. 424-251.000.

Graham, Edward F., to Olin Corporation. Liquid level indicator apparatus. 4,409,831., Cl. 73-290.00R.

Graham, Martin H., to Rolm Corporation. Inductively coupled sensing circuit and priority system. 4,411,004., Cl. 375-36.000.

Gram, Hans, to Brodrene Gram A/S. Delivery device for a freezing plant. 4,410,080., Cl. 198-715.000.

Grant, John: *See—*
Poff, Gary D., 4,409,732., Cl. 29-825.000.

Gravelle, Alain: *See—*
Marini, Jean; Gravelle, Alain; and Weilbacher, Jean-Claude, 4,410,484., Cl. 376-252.000.

Gravity Guidance, Inc.: *See—*
Miller, Jack V., 4,410,176., Cl. 272-145.000.

Green, David T.: *See—*
Noiles, Douglas G.; and Green, David T., 4,410,125., Cl. 227-19.000.

Greenspan, Donald J., to Greenspan, Donald J. Apparatus for collecting cultures. 4,409,988., Cl. 128-759.000.

Gressin, Jean-Claude, to Map SA. Apparatus for measuring and recording deflections. 4,409,823., Cl. 73-146.000.

Greven, Hendrik M.: *See—*
de Wied, David; and Greven, Hendrik M., 4,410,511., Cl. 424-177.000.

Grieger, Robert G.: *See—*
Scapple, Robert Y.; Keister, Frank S.; Grieger, Robert G.; and Himmel, Richard P., 4,410,874., Cl. 338-307.000.

Gries, Josef: *See—*
Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,410,529., Cl. 424-250.000.

Griffee, Leslie V., to Rockwell International Corporation. Dual band collinear dipole antenna. 4,410,893., Cl. 343-792.000.

Griffin, Edward L.: *See—*
Young, Frederick A.; and Griffin, Edward L., 4,410,865., Cl. 333-208.000.

Griffin, Ken: *See—*
James, Tom P., 4,410,191., Cl. 279-35.000.

Griffiths, Clifford H.; and Melnyk, Andrew R., to Xerox Corporation. Multi-layered ambipolar photoresponsive devices for electrophotography. 4,410,616., Cl. 430-59.000.

Griffiths, Terence L.: *See—*
Howden, Michael; and Griffiths, Terence L., 4,410,279., Cl. 366-262.000.

Grisar, J. Martin: *See—*
Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, 4,410,540., Cl. 424-273.00R.

Grolig, Johann: *See—*
Wilms, Klaus G.; Waldmann, Helmut; and Grolig, Johann, 4,410,743., Cl. 568-860.000.

Grolitzer, Arthur J., to Solar Voltaic, Inc. Photovoltaic products and processes. 4,410,758., Cl. 136-254.000.

Grosbois, Jean: *See—*
Bachot, Jean; and Grosbois, Jean, 4,410,638., Cl. 521-27.000.

Grove Valve and Regulator Company: *See—*
Van Scoy, Davis A., 4,410,010., Cl. 138-44.000.

Grubbs, Donald K.; and Kochanowski, Andrew T., to Aluminum Company of America. Method for making spherical binderless pellets. 4,410,472., Cl. 264-29.300.

Gruber, Franz: *See—*
Heimbach, Paul; Goebel, Peter; and Gruber, Franz, 4,410,134., Cl. 237-2.00B.

GTE Automatic Electric Labs. Inc.: *See—*
Fleischfresser, Gerald H.; and Kobylar, Alex W., 4,410,982., Cl. 370-110.100.

GTE Laboratories Incorporated: *See—*
Lenart, Joseph M., 4,410,991., Cl. 371-66.000.

GTE Products Corporation: *See—*
Cole, David B., 4,410,760., Cl. 174-171.000.
Goebel, Franz, 4,409,730., Cl. 29-623.500.
Goebel, Franz; and Kealey, Kathleen M., 4,410,608., Cl. 429-101.000.
Roche, William J., 4,410,836., Cl. 315-96.000.

Gueret, Jean-Louis H., to L'Oreal. Manual massage instrument. 4,409,967., Cl. 128-62.00R.

Guerriero, Frederico D. Circulo-segmental spanning and holding apparatus. 4,409,971., Cl. 128-84.00C.

Guild International Inc.: *See—*
Wheeler, Donald J.; Cooper, Christopher; and Krejsa, Charles R., 4,410,121., Cl. 226-118.000.

Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., to A. Ahlstrom Osakeyhtio. Method and an apparatus for separating a gas from a fibre suspension. 4,410,337., Cl. 55-21.000.

Gumkowski, Bert A.: *See—*
Schreiner, Peter J.; Gumkowski, Bert A.; and Limberg, John F., 4,410,069., Cl. 188-73.360.

Gumm, Linley F.; and Morton, Steven R., to Tektronix, Inc. High resolution digital-to-analog converter. 4,410,879., Cl. 340-347.0DA.

Guretzky, Harold. Angle-position transducer. 4,410,852., Cl. 324-61.00P.

Gurtler, Richard W.; and Lesk, I. Arnold, to Motorola, Inc. Ribbon-to-ribbon conversion with shaped molten zone. 4,410,471., Cl. 264-25.000.

Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, to Yamanouchi Pharmaceutical Co. Ltd. Process for the production of 7α-methoxycephalosporin derivatives. 4,410,626., Cl. 435-48.000.

Gustafson, Gary B.; and Fritz, Garold F., to Eastman Kodak Company. Sheet handling device for image transfer in an electrographic copier. 4,410,263., Cl. 355-3.0TR.

Guthrie, David B.: *See—*
Cheng, William J.; and Guthrie, David B., 4,410,446., Cl. 252-309.000.

Gutschmit, Alan; and York, Paul W., to Monarch Knitting Machinery Corp.; and Monatex S.A. Method of and apparatus for knitting cut-pile fabric. 4,409,800., Cl. 66-9.00R.

Guzman, Angel: *See—*
Muchowski, Joseph M.; and Guzman, Angel, 4,410,526., Cl. 424-250.000.

H. Ernault-Somua: *See—*
Berly, Marcel, 4,409,869., Cl. 82-2.00R.

Haaf, William R.; Lee, Gim F., Jr.; and Ting, Sai P., to General Electric Company. Impact resistant polyphenylene ether resin compositions. 4,410,651., Cl. 524-127.000.

Hachiya, Terumi: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Hafner, Peter; and Flecken, Peter, to Flowtec AG. Arrangement for generating DC magnetic fields of alternating polarity for the magnetic-inductive flow measurement. 4,410,926., Cl. 361-93.000.

Hagemann, Casper W.: *See—*
Kunka, Bernard P.; and Hagemann, Casper W., 4,410,123., Cl. 227-8.000.

Hagey, Lee, to Electro-Voice, Incorporated. Directional microphone. 4,410,770., Cl. 179-121.00D.

Hagiwara, Yutaka; and Yamazaki, Tetu, to Nissan Motor Co., Ltd. Disc brake. 4,410,070., Cl. 188-73.360.

Hagler, Ray, Jr., to California Institute of Technology. Stacked-disc structure for fluid filter or valve silencer. 4,410,430., Cl. 210-446.000.

Halbrook, Jack C., to RCA Corporation. Degassing a CRT with modified RF heating of the mount assembly thereof. 4,410,310., Cl. 445-57.000.

Halkerston, Russell J.; and Meili, Jay E., to Molded Dimensions Inc. Ball sealers and method of preparation. 4,410,387., Cl. 156-245.000.

Hall, Arthur C.; and Lunsford, Franklin R., to Mobil Oil Corporation. Method for inhibition of carbonate dissolution in the recovery of oil utilizing CO_2. 4,410,043., Cl. 166-273.000.

Hall, Dale E., to MPD Technology Corporation. Cathode for electrolytic production of hydrogen. 4,410,413., Cl. 204-290.00R.

Hall, John B.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,410,740., Cl. 568-817.000.

Hall, William H.: *See—*
Vallis, Paul J.; and Hall, William H., 4,410,221., Cl. 312-39.000.

Hallett, Peter: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.

Hallgren, John E., to General Electric Company. Diaryl carbonate process. 4,410,464., Cl. 260-463.000.

Halliburton Company: *See—*
Kierbow, Gerald C.; and Horinek, Herbert J., 4,410,106., Cl. 222-135.000.
Loesch, Stanley B.; St. John, James C.; Minta, Danny K.; and Burmeister, Allen D., 4,409,927., Cl. 122-26.000.

Hamada, Sadao. Exercise horse. 4,410,174., Cl. 272-64.000.

Hamada, Toshimitsu: *See—*
Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, 4,410,278., Cl. 356-445.000.

Hamakawa, Yoshihiro; and Tawada, Yoshihisa. Method of forming amorphous silicon films. 4,410,559., Cl. 427-39.000.

Hamer, Spencer D.: *See—*
Stufflebam, Charles J.; and Hamer, Spencer D., 4,409,845., Cl. 73-861.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Ink roller. 4,409,896., Cl. 101-367.000.

Hammelmann, Paul. Apparatus for treating ship hulls. 4,409,920., Cl. 114-222.000.

Hammer, Rudolf: *See—*
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

Hammond, Benjamin A., II: *See—*
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., 4,410,949., Cl. 364-465.000.

Hamprecht, Gerhard; Ammermann, Eberhard; Pommer, Ernst-Heinrich; and Plath, Peter, to BASF Aktiengesellschaft. N-Disubstituted aniline derivatives, their preparation, their use as microbicides and agents for such use. 4,410,538., Cl. 424-270.000.

Hamprecht, Gerhard: *See—*
Acker, Rolf-Dieter; and Hamprecht, Gerhard, 4,410,465., Cl. 260-465.50R.

Hamrick, Joseph T.; and Rose, Leslie C., to Biomass Energy Systems, Incorporated. Wood burning system and method. 4,409,786., Cl. 60-39.464.

Hamu, Kaino J. Stretch frame. 4,409,749., Cl. 38-102.300.

Hanaoka, Naohiro, to Olympus Optical Co., Ltd. Ferromagnetic recording medium. 4,410,583., Cl. 428-213.000.

Hann, Douglas G.: *See—*
Gell, Philip A. M.; and Hann, Douglas G., 4,410,997., Cl. 373-35.000.

Hannen, Rainer, to MSK Verpackungs-Systeme GmbH. Equipment for covering a stack of goods with a shrink-wrap. 4,409,774., Cl. 53-77.000.

Hansen, Harry O.: *See—*
Hestad, Alfred M.; and Hansen, Harry O., 4,410,765., Cl. 179-7.10R.

Hansen, Howard C.; and Chichester, Willard L., to Clark Equipment Company. Power steering system. 4,409,789., Cl. 60-384.000.

Hanson, Eric G., to Hewlett-Packard Company. Optical switch attenuator. 4,410,238., Cl. 350-347.00E.

Hanyu, Susumu: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,409,915., Cl. 112-266.100.

Harada, Tatsuo: *See—*
Moriyama, Shigeo; Ito, Masaaki; and Harada, Tatsuo, 4,409,860., Cl. 74-479.000.

Haraguchi, Satoru: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Haraguchi, Shosuke: *See—*
Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,410,252., Cl. 354-153.000.

Harari, Eliyahou. Method of forming non-volatile EPROM and EEPROM with increased efficiency. 4,409,723., Cl. 29-571.000.

Harding, John C.: *See—*
Harvey, Andrew C.; and Harding, John C., 4,410,429., Cl. 210-416.100.

Hark, William B., to Pandrol Limited. Apparatus for performing operations on a railway track. 4,409,901., Cl. 104-7.00B.

Harkonen, Esko J.: *See—*
Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., 4,410,337., Cl. 55-21.000.

Harman, John N., III, to Beckman Instruments, Inc. Amperometric gas sensor, cathode assembly therefor and method of making said cathode assembly. 4,410,409., Cl. 204-415.000.

Harris Corporation: *See—*
Talbot, Robert D., 4,411,017., Cl. 455-26.000.

Harris, Jesse R.: *See—*
Kukes, Semyon; Harris, Jesse R.; Porter, Randall A.; and Reed, Larry E., 4,410,418., Cl. 208-48.00R.

Harris, Richard L.: *See—*
Fenn, Robert W., III; Pless, Emory J.; Harris, Richard L.; and O'Leary, Kevin J., 4,410,411., Cl. 204-283.000.

Harshaw Chemical Company, The: *See—*
Packer, Herbert, 4,410,468., Cl. 264-1.200.

Hart, Arthur C., Jr., to Bell Telephone Laboratories, Incorporated. Method of forming coated optical fiber. 4,410,561., Cl. 427-54.100.

Hart, William W. C.: *See—*
Brownscombe, Thomas F.; and Hart, William W. C., 4,410,680., Cl. 528-88.000.

Hartmann & Braun Aktiengesellschaft: *See—*
Kronejsen, Armin; and Zornig, Gerd, 4,410,854., Cl. 324-468.000.

Haruta, Masahiro; Yano, Yashuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, to Canon Kabushiki Kaisha. Method for forming liquid droplets. 4,410,899., Cl. 346-140.00R.

Harvey, Andrew C.; and Harding, John C., to Foster-Miller Associates. Linear pocket energy exchange device. 4,410,429., Cl. 210-416.100.

Harvey, John D., to Rolls-Royce Limited. Multi-layer acoustic linings. 4,410,065., Cl. 181-224.000.

Hasegawa, Shumpei; Yamato, Akihiro; and Otobe, Yutaka, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust gas recirculation control system having a function of automatically correcting detected zero opening value of exhaust gas recirculation valve. 4,409,948., Cl. 123-571.000.

Hasegawa, Toshifumi: *See—*
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,409,721., Cl. 29-568.000.

Hasegawa, Yoshiharu: *See—*
Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, 4,410,036., Cl. 165-134.00R.

Haskett, Philip R.: *See—*
Smyres, Gary A.; and Haskett, Philip R., 4,410,496., Cl. 423-1.000.

Haslmayr, Johann: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.

Hatch, William R.; and Dunn, Ronald R., to Falconbridge Nickel Mines Limited. Acid leaching of nickel from serpentinic laterite ores. 4,410,498., Cl. 423-150.000.

Hathaway, Robert E., to Allied Corporation. Device for producing shard from metal ribbon. 4,410,119., Cl. 225-4.000.

Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, to Nippon Oil and Fats Co. Ltd. Method of producing water-in-oil emulsion explosive. 4,410,378., Cl. 149-109.600.

Hattori, Tadashi: *See—*
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,409,816., Cl. 73-35.000.

Hatzold, Otfried. Calculation table for family planning. 4,410,797., Cl. 235-69.000.

Haubenhofer, Max. Control system for internal combustion engines. 4,409,941., Cl. 123-373.000.

Hauck Manufacturing Company: *See—*
Nowak, Leonard G., 4,410,140., Cl. 239-419.300.

Hauffe, William L., to Mueller Co. Pipe clamp with improved retaining lugs. 4,409,708., Cl. 24-279.000.

Hauptmann, Robert O.: *See—*
Redding, John J.; and Hauptmann, Robert O., 4,410,012., Cl. 138-121.000.
Redding, John J.; and Hauptmann, Robert O., 4,410,476., Cl. 264-173.000.

Havenith, Lothar: *See—*
Klein, Alfons; Wedemeyer, Karlfried; Havenith, Lothar; and Kron, Rolf, 4,410,869., Cl. 336-94.000.

Havlice, James F.: *See—*
Waxman, Albert S.; and Havlice, James F., 4,410,826., Cl. 310-336.000.

Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, to Toa Eiyo Kagaku Kogyo Co. Ltd. Dibenzo[a,d]cycloheptene derivatives and process for production thereof. 4,410,716., Cl. 560-51.000.

Hayes, Norman F.: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.

Hayes, Roger: *See—*
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.

Hayters Enterprises, Inc.: *See—*
Fisher, Ralph H., 4,409,796., Cl. 62-160.000.

Heavy Oil Process, Inc.: *See—*
Allen, Joseph C., 4,410,216., Cl. 299-2.000.

Hefner, Robert E., Jr.; and Uroda, James C., to Dow Chemical Company, The. Norbornyl modified polyesteramides and process for preparing same. 4,410,686., Cl. 528-288.000.

Hegner, Gunter: *See—*
Stoewe, Anneliese; and Hegner, Gunter, 4,410,225., Cl. 339-31.00R.

Heiland, Bernd, to Aug. Winkhaus, Firma. Alarm system. 4,410,884., Cl. 340-545.000.

Heimbach, Paul; Goebel, Peter; and Gruber, Franz, to Buderus Aktiengesellschaft. Method of and apparatus for operating a monovalent alternative absorption heating installation. 4,410,134., Cl. 237-2.00B.

Hein, Leopold A.: *See—*
Myers, William N.; and Hein, Leopold A., 4,410,189., Cl. 277-117.000.

Heinr. Wilhelm Huss & Co.: *See—*
Bohme, Karl, 4,410,173., Cl. 272-38.000.

Helsby, Nigel C.: *See—*
Cowlin, Robert M.; and Helsby, Nigel C., 4,410,091., Cl. 209-546.000.

Henderson, Norman L.: *See—*
Urban, Joseph J.; and Henderson, Norman L., 4,409,843., Cl. 73-851.000.

Hendricks, Donovan E., to United States of America, Agriculture. Method for sampling flying insect populations using low-frequency sound detecting and ranging in conjunction with a biologically active chemical/pheromone. 4,410,967., Cl. 367-87.000.

Hendriks, Jan J. M.: *See—*
Somers, Gerardus A.; and Hendriks, Jan J. M., 4,410,396., Cl. 156-664.000.

Hengartner, Urs; Muller, Jean-Claude; and Ramuz, Henri, to Hoffmann-La Roche Inc. Oxadiazolopyrimidine derivatives. 4,410,698., Cl. 544-255.000.

Henk, Keith L., to Pako Corporation. Gears for web transport. 4,410,120., Cl. 226-109.000.

Henn, Werner; Bachschmid, Reiner; and Zeilinger, Karl, to Daimler-Benz AG. Mechanical valve clearance compensator for internal combustion engines. 4,409,935., Cl. 123-90.530.

Hennessy, Charles P., to Lovejoy, Inc. Self-cooling universal joint. 4,410,311., Cl. 464-17.000.

Henze, Bernhard, to Seil Textilmaschinenzubehor GmbH. Thread-monitoring device for textile machines. 4,410,803., Cl. 250-561.000.

Hepta Corporation: *See—*
Sullivan, Raymond F., 4,409,700., Cl. 15-121.000.

Herman Miller, Inc.: *See—*
Propst, Robert L., 4,409,806., Cl. 70-276.000.

Hermann Berstorff Maschinenbau GmbH: *See—*
Anders, Dietmar; and Voigt, Jurgen, 4,410,306., Cl. 425-71.000.

Herner, Ray H., to Mosier Industries, Inc. Self-returning cylinder. 4,409,886., Cl. 91-397.000.

Herrick, G. Richard, to Smith International, Inc. Composite floating element thrust bearing. 4,410,284., Cl. 384-93.000.

Herrington, Fox J., to Mobil Oil Corporation. Protective strip for Z-fold bag closure. 4,410,130., Cl. 383-62.000.

Herrmann, Manfred; Jenny, Rico; and Motter, Manfred, to Ciba-Geigy Corporation. Process for the level di- and trichromatic dyeing of polyacrylonitrile materials with migrating and non-migrating cationic dyes. 4,410,332., Cl. 8-644.000.

Herrmann Wangner GmbH & Co KG: *See—*
Koller, Rudolf; and Runkel, Walter, 4,410,015., Cl. 139-383.00A.

Hertl, William; Ward, Frank B.; and Weetall, Howard H., to Corning Glass Works. Method for the measurement of free thyroxine or 3,5,3'-triiodothyronine in a liquid sample. 4,410,633., Cl. 436-500.000.

Heshmatpour, Bahman, to Thermo Electron Corporation. Plasma recovery of tin from smelter dust. 4,410,358., Cl. 75-10.00R.

Hess, Heinz; and Kirschenstein, Reinhard, to Robert Bosch GmbH. Method of generating a video aperture correction signal. 4,410,912., Cl. 358-162.000.

Hesston Corporation: *See—*
Gaeddert, Melvin V., 4,409,783., Cl. 56-341.000.

Hestad, Alfred M.; and Hansen, Harry O., to United Networks, Inc. Telephone call routing and charging system. 4,410,765., Cl. 179-7.10R.

Hettiger, James: *See—*
Vinekar, Sanjay R.; Hettiger, James; and Friedline, Karl L., 4,410,907., Cl. 358-20.000.

Hewitt, D. Gary; and Jones, Thomas A., to Gorman-Rupp Company, The. Motor protection control circuit. 4,410,924., Cl. 361-25.000.

Hewlett-Packard Company: *See—*
Hanson, Eric G., 4,410,238., Cl. 350-347.00E.

Hidveghy, Ivan: *See—*
Gerber, Hans; Wessel, Claude; and Hidveghy, Ivan, 4,410,846., Cl. 318-490.000.

Higashiyama, Kazuhiro, to Nissan Motor Company, Limited. Computer monitoring system for indicating abnormalities in execution of main or interrupt program segments. 4,410,938., Cl. 364-200.000.

Hilti Aktiengesellschaft: *See—*
Buechel, Franz, 4,410,124., Cl. 227-9.000.
Kessler, Jurgen, 4,410,055., Cl. 175-173.000.

Himmel, Richard P.: *See—*
Scapple, Robert Y.; Keister, Frank S.; Grieger, Robert G.; and Himmel, Richard P., 4,410,874., Cl. 338-307.000.

Himmele, Walter: *See—*
Martin, Christoph; Himmele, Walter; and Siegel, Hardo, 4,410,734., Cl. 568-715.000.

Hindi, Ivan: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Hinshaw, Jerald C.: *See—*
Campbell, Carol J.; and Hinshaw, Jerald C., 4,410,744., Cl. 568-864.000.

Hirai, Masana: *See—*
Yamamoto, Minoru; Hirai, Masana; and Sakata, Jiro, 4,410,338., Cl. 55-158.000.

Hirano, Hideo: *See—*
Nakane, Katsumi; and Hirano, Hideo, 4,409,785., Cl. 57-78.000.

Hirano, Munehiko: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Hiraoka & Co., Ltd.: *See—*
Obayashi, Tsutomu; and Hiraoka, Hideyuki, 4,410,575., Cl. 428-57.000.

Hiraoka, Hideyuki: *See—*
Obayashi, Tsutomu; and Hiraoka, Hideyuki, 4,410,575., Cl. 428-57.000.

Hirata, Noritsugu; and Takimoto, Hiroyuki, to Canon Kabushiki Kaisha. Motion picture camera. 4,410,247., Cl. 352-91.00S.

Hirayama, Yoshio: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,410,348., Cl. 71-9.000.

Hirohata, Michio; and Ikari, Hideo, to Canon Kabushiki Kaisha. Camera with electromagnetically operated shutter. 4,410,249., Cl. 354-30.000.

Hirohata, Michio, to Canon Kabushiki Kaisha. Electromagnetic drive device for electro-magnetically operated shutter. 4,410,255., Cl. 354-230.000.

Hirose, Akira: *See—*
Ariyama, Kenzo; Hirose, Akira; and Itoh, Tadashi, 4,410,262., Cl. 355-3.0SH.

Hirota, Kazuya: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.

Hirsch, Stephen P.: *See—*
Schaefer, George H.; and Hirsch, Stephen P., 4,410,248., Cl. 353-27.00R.

Hirschfeld, Kurt A.; and Bowman-Jones, Gordon H., to Automatic Energy Control Corporation. Apparatus for controlling power consumption in lighting loads and the like. 4,410,838., Cl. 315-320.000.

Hisamitsu Pharmaceutical Co., Inc.: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Hitachi, Ltd.: *See—*
Ikoma, Junichi, 4,410,853., Cl. 324-167.000.
Maeda, Takeshi, 4,410,969., Cl. 369-46.000.
Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, 4,410,278., Cl. 356-445.000.
Moriyama, Shigeo; Ito, Masaaki; and Harada, Tatsuo, 4,409,860., Cl. 74-479.000.
Takasaki, Yoshitaka; and Tanaka, Mitsuo, 4,410,980., Cl. 370-109.000.
Toyoda, Keiichi; and Teranishi, Tsugutomo, 4,410,950., Cl. 364-551.000.
Yamamoto, Manabu; and Ojima, Masahiro, 4,410,277., Cl. 356-366.000.
Yasumoto, Seiichi; Fushimi, Hitoshi; Ide, Jushi; and Okada, Masakazu, 4,410,985., Cl. 371-22.000.

Hixenbaugh, Dennis L.; Brand, Peter G. A.; and Straka, Edward J., to Pennsylvania Engineering Corporation. Gas collector for metallurgical vessels. 4,410,166., Cl. 266-158.000.

Hodosh, Milton; and Lipsky, Milton H. Predosed disposable syringe. 4,410,323., Cl. 604-212.000.

Hoechst Aktiengesellschaft: *See—*
Andra, Klaus; Hutschenreuter, Elfriede; and Porrmann, Herbert, 4,410,011., Cl. 138-118.100.
Schimmel, Gunther R.; and Klose, Werner, 4,410,466., Cl. 260-990.000.
Tronich, Wolfgang; Rieper, Wolfgang; and Bohme, Peter, 4,410,707., Cl. 548-360.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,410,699., Cl. 546-141.000.
Urban, Joseph J.; and Henderson, Norman L., 4,409,843., Cl. 73-851.000.

Hofer, Gerald: *See—*
Eheim, Franz; Hofer, Gerald; and Laufer, Helmut, 4,409,939., Cl. 123-357.000.

Hoffmann-La Roche Inc.: *See—*
Hengartner, Urs; Muller, Jean-Claude; and Ramuz, Henri, 4,410,698., Cl. 544-255.000.
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,410,720., Cl. 560-121.000.
Liu, Chao-min; Tresner, Homer D.; and Westley, John, 4,410,712., Cl. 549-414.000.

Hohlein, Peter; and Schoeps, Jochen, to Bayer Aktiengesellschaft. Storable, saponification-resistant aqueous lacquer binders. 4,410,663., Cl. 525-162.000.

Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, to Owens-Corning Fiberglas Corporation. Apparatus for predrying pelletized material. 4,409,742., Cl. 34-168.000.

Hoislbauer, Friedrich: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.

Hokkaido Sugar Co., Ltd.: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.

Holick, Michael F.: *See—*
Holick, Sally A.; and Holick, Michael F., 4,410,515., Cl. 424-180.000.

Holick, Sally A.; and Holick, Michael F., to Massachusetts General Hospital. Vitamin D glycosides and a method of use. 4,410,515., Cl. 424-180.000.

Holland, Andre S.: *See—*
Blackshaw, Anthony C.; Beecham, Stewart M.; and Holland, Andre S., 4,409,882., Cl. 89-163.000.

Holland, George W.; Jernow, Jane L.; and Rosen, Perry, to Hoffmann-La Roche Inc. 11-Substituted prostaglandins. 4,410,720., Cl. 560-121.000.

Holland-Letz, Gunter, to Esselte Pendaflex Corp. Hand labelling apparatus. 4,409,892., Cl. 101-93.180.

Hollaway, Gerald C.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

Hollenbeck, Robert K.: *See—*
Blevins, Theodore J.; Roberts, Gerald L.; Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,410,329., Cl. 8-158.000.

Holliday, David H., to Johnson, Carl; and Secrest, T. W., part interest to each. Feeding mechanism for a collator. 4,410,172., Cl. 271-288.000.

Hollis, James T.: *See—*
Bergloff, Raymond A.; Hollis, James T.; and Walkes, Oswald A., 4,410,304., Cl. 417-346.000.

Holloway, Brian L.: *See—*
Beeteson, John S.; Holloway, Brian L.; and Jarzebowski, Krzystof T., 4,410,840., Cl. 315-368.000.

Holmberg Electronics Corporation: *See—*
SanMiguel, Alfonso J., 4,410,230., Cl. 339-176.00M.

Holmes, Andrew J.: *See—*
Bury, Cecil T.; and Holmes, Andrew J., 4,409,930., Cl. 123-514.000.

Holmes, Lawrence, Jr. Vertical replacement daisy wheel element. 4,410,288., Cl. 400-144.200.

Holstedt, Richard A.; and Jessup, Peter, to Union Oil Company of California. Lubricating oil containing a boron compound and corrosion inhibitors. 4,410,436., Cl. 252-46.400.

Holstein und Kappert GmbH: *See—*
Sindermann, Siegmar, 4,410,090., Cl. 209-525.000.

Holtgraver, Edward G.: *See—*
Scobie, William B.; and Holtgraver, Edward G., 4,410,163., Cl. 251-306.000.

Holtz, Earl B.: *See—*
Daniels, Edward P.; Dlugos, Daniel F.; Holtz, Earl B.; and Manduley, Flavio M., 4,410,962., Cl. 364-900.000.

Holtze, Herbert: *See—*
Sturtz, Gunter; Holtze, Herbert; Rothacker, Dietrich; and Burk, Gerhard, 4,410,212., Cl. 296-189.000.

Holubka, Joseph W.; and Dickie, Ray A., to Ford Motor Company. Coating composition comprising chain-extendable crosslinkable polyol and diblocked diisocyanate diurea oligomer. 4,410,678., Cl. 528-45.000.

Holubka, Joseph W.; and Dickie, Ray A., to Ford Motor Company. Coating composition comprising chain-extendable crosslinkable polyol and diblocked diisocyanate diurethane oligomer. 4,410,679., Cl. 528-45.000.

Holz, Wilhelm; and Lukaszewicz, Helmut, to Ruhrkohle Aktiengesellschaft. Self-sealing door assembly for a coke oven. 4,410,399., Cl. 202-248.000.

Holzhauser, Ronald C.; and McGlen, James A., to Eastman Kodak Company. Receiver sheet transport with a guiding member and aligning mechanism. 4,410,264., Cl. 355-3.0TR.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Shumpei; Yamato, Akihiro; and Otobe, Yutaka, 4,409,948., Cl. 123-571.000.
Konno, Mitsuo; Niikawa, Ryo; and Sato, Kenzo, 4,410,782., Cl. 219-89.000.
Ribi, Valentino, 4,410,196., Cl. 280-276.000.

Honeywell Inc.: *See—*
Gerhardt, Leslie H.; and Mitrano, Richard P., 4,410,233., Cl. 350-6.600.
Stauffer, Norman L., 4,410,804., Cl. 250-578.000.

Honeywell Information Systems Inc.: *See—*
Barlow, George J., 4,410,943., Cl. 364-200.000.
Negi, Virendra S.; and Tague, Steven A., 4,410,984., Cl. 371-16.000.
Suelflow, Robert E.; and Drobny, Edward M., 4,410,988., Cl. 371-38.000.

Honeywell Information Systems Italia: *See—*
Speraggi, Marcello, 4,410,291., Cl. 400-689.000.

Honig, Gunter; Jeenicke, Edmund; Krauter, Immanuel; and Schenk, Manfred, to Robert Bosch GmbH. Voltage-frequency converter. 4,410,812., Cl. 307-350.000.

Honty, Katalin: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Hopkins, Edward P.: *See—*
Davi, Michael A.; Davis, Lewis B., Jr.; and Hopkins, Edward P., 4,409,787., Cl. 60-39.770.

Hoppner, Heinz-Jochen; Kramer, Ulrich; Sgarz, Hugo; and Sadowski, Herbert, to Vereinigte Flugtechnische Werke-Fokker GmbH. Unmanned craft. 4,410,151., Cl. 244-63.000.

Horigome, Eiji: *See—*
Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, 4,410,590., Cl. 428-336.000.

Horinek, Herbert J.: *See—*
Kierbow, Gerald C.; and Horinek, Herbert J., 4,410,106., Cl. 222-135.000.

Horisawa, Kazuyuki: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Horiuchi, Shoichi: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Horna, Otakar A., to Communication Satellite Corporation. Digital bit rate synchronizer for digital echo cancellers and similar signal processing devices. 4,411,006., Cl. 375-102.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Borated epoxides and lubricants containing same. 4,410,438., Cl. 252-49.600.
Horodysky, Andrew G.: *See—*
Andress, Harry J., Jr.; Horodysky, Andrew G.; and Kaminski, Joan M., 4,410,434., Cl. 252-32.70R.
Hort, Eugene V.: *See—*
Parthasarathy, R.; Hort, Eugene V.; and Chakrabarti, Paritosh M., 4,410,726., Cl. 548-543.000.
Horton, John L., to United States Riley Corporation. Method and apparatus for separating a liquid product from a hydrocarbon-containing gas. 4,410,342., Cl. 62-23.000.
Horwath, Robert O.: *See—*
Lloyd, Norman E.; and Horwath, Robert O., 4,410,627., Cl. 435-94.000.
Hosoe, Kazuya: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.
Hotta, Tadahiko; and Nonaka, Terumoto, to Nippon Gakki Seizo Kabushiki Kaisha. Method of making semiconductor integrated circuit. 4,409,725., Cl. 29-571.000.
Houpt, Grover K.; and Updegrove, George F., to American Manufacturing Company, Inc. Single knob variable range timer. 4,410,774., Cl. 200-14.000.
Houston, Robert D.; and Liptak, Frank J., to Xerox Corporation. Ink jet sensor method and apparatus. 4,410,895., Cl. 346-1.100.
Howard, Anthony J.: *See—*
Birchall, James D.; Howard, Anthony J.; Kendall, Kevin; and Raistrick, James H., 4,410,366., Cl. 106-90.000.
Howard, Durrell U. Remotely adjustable compensator for centering steering systems. 4,410,193., Cl. 280-90.000.
Howard, Durrell U. Snap-action battery cable switch. 4,410,775., Cl. 200-52.00R.
Howden, Michael; and Griffiths, Terence L., to British Nuclear Fuels Limited. Apparatus for agitating the contents of storage tanks. 4,410,279., Cl. 366-262.000.
Howell, Randolph F.: *See—*
Summers, John E.; and Howell, Randolph F., 4,410,788., Cl. 219-130.100.
Hoyle, Burton J.; and Lee, Timothy B. K., to University of California, The Regents of The. Method and apparatus for planting seeds while conditioning soil. 4,409,910., Cl. 111-1.000.
HR Textron Inc.: *See—*
Bergloff, Raymond A.; Hollis, James T.; and Walkes, Oswald A., 4,410,304., Cl. 417-346.000.
Hrabie, Joseph A.: *See—*
Berkowitz, William F.; Choudhry, Satish C.; and Hrabie, Joseph A., 4,410,710., Cl. 549-312.000.
HRI, Inc.: *See—*
Liss, Barry; Calderon, Michael; and Rakow, Marvin S., 4,410,420., Cl. 208-127.000.
Huddle, David R.; and Coleman, Robert L., to Valeron Corporation, The. Threading tool and method. 4,409,868., Cl. 82-1.00C.
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., to Unidynamics/St. Louis, Inc. Controller for fuel dispenser. 4,410,949., Cl. 364-465.000.
Hughes Aircraft Company: *See—*
Scapple, Robert Y.; Keister, Frank S.; Grieger, Robert G.; and Himmel, Richard P., 4,410,874., Cl. 338-307.000.
Young, Frederick A.; and Griffin, Edward L., 4,410,865., Cl. 333-208.000.
Hughes Tool Company: *See—*
Lockyear, Kevin W., 4,410,845., Cl. 318-459.000.
Husa, Albin: *See—*
Chu, Pochen; Dwyer, Francis G.; and Husa, Albin, 4,410,452., Cl. 502-60.000.
Hutschenreuter, Elfriede: *See—*
Andra, Klaus; Hutschenreuter, Elfriede; and Porrmann, Herbert, 4,410,011., Cl. 138-118.100.
Hybrid Energy Systems, Inc.: *See—*
Briley, Patrick B., 4,410,414., Cl. 208-8.0LE.
Hybrinetics, Inc.: *See—*
Dobkin, Robert C., 4,410,839., Cl. 315-320.000.
IBAG-Vertrieb GmbH: *See—*
Koch, Manfred, 4,410,145., Cl. 241-264.000.
Ico Rally Corporation: *See—*
Giulie, Joe D., 4,410,224., Cl. 339-18.00R.
Ide, Hiroyuki: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.
Ide, Jushi: *See—*
Yasumoto, Seiichi; Fushimi, Hitoshi; Ide, Jushi; and Okada, Masakazu, 4,410,985., Cl. 371-22.000.
Ideal Toy Corporation: *See—*
Silbermintz, Marvin A., 4,409,750., Cl. 40-107.000.
Igaki, Tetsuo: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.
Igarashi, Kenji: *See—*
Chiba, Yasutsune; Nozawa, Katsumi; and Igarashi, Kenji, 4,410,302., Cl. 417-299.000.
Ignatenko, Vladimir G.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.
IHC Holland N.V.: *See—*
de Kat, Ewout C., 4,409,916., Cl. 114-29.000.
Iijima, Yoshitaka; and Abe, Masanori, to Nissan Motor Co., Ltd. Rigid axle rear suspension for an automotive vehicle or the like. 4,410,201., Cl. 280-688.000.
Iizuka, Gorou: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,410,348., Cl. 71-9.000.
Ikari, Hideo: *See—*
Hirohata, Michio; and Ikari, Hideo, 4,410,249., Cl. 354-30.000.
Ikeda, Sakuji: *See—*
Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, 4,410,640., Cl. 521-63.000.
Ikeda, Toshiaki: *See—*
Furuichi, Shuhei; Suzuki, Masakazu; and Ikeda, Toshiaki, 4,410,809., Cl. 307-255.000.
Ikegami Tsushinki Co. Ltd.: *See—*
Yamamoto, Kazumi, 4,410,915., Cl. 358-228.000.
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, to Mitsubishi Gas Chemical Company, Inc. Curable resin composition. 4,410,666., Cl. 525-417.000.
Ikeguchi, Nobuyuki: *See—*
Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,410,601., Cl. 428-290.000.
Ikoma, Junichi, to Hitachi, Ltd. Frequency detector. 4,410,853., Cl. 324-167.000.
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, to Shin-Etsu Chemical Co., Ltd. Method for modifying surface properties of a disc-like shaped article of a vinyl chloride-based resin. 4,410,784., Cl. 219-121.0PY.
Imazeki, Kazuyoshi; and Masao, Nakano, to General Research of Electronics, Inc. Power efficient radio receiver apparatus. 4,411,020., Cl. 455-219.000.
Imperi, Aldo P., to General Steel Industries, Inc. Synchronously coordinated counterrotated crusher roll teeth system. 4,410,144., Cl. 241-236.000.
Imperial Chemical Industries, Ltd.: *See—*
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, 4,409,897., Cl. 102-200.000.
Imperial Chemical Industries PLC: *See—*
Birchall, James D.; Howard, Anthony J.; Kendall, Kevin; and Raistrick, James H., 4,410,366., Cl. 106-90.000.
Koronka, Amy M. E.; and Koronka, Paul, 4,409,912., Cl. 111-7.000.
Lambert, Peter J., 4,410,455., Cl. 502-327.000.
McGrail, Patrick T., 4,410,600., Cl. 428-483.000.
Inamine, Shigeo: *See—*
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,410,547., Cl. 424-317.000.
Inamori, Mikio: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,409,915., Cl. 112-266.100.
Inazawa, Shintaro, to Showa Denko Kabushiki Kaisha. Polymerization catalysts and process for the production of ethylenic polymers by use thereof. 4,410,672., Cl. 526-124.000.
Infra Pak (Dallas), Inc.: *See—*
White, Kenneth D.; and Watson, William R., Jr., 4,409,777., Cl. 53-587.000.
Ingram, Thomas L., to Airsco Hydraulics, Inc. Blow out preventer hose coupling. 4,410,205., Cl. 285-47.000.
Inotek-Westmoreland Venture: *See—*
Westmoreland, Julius C., 4,410,301., Cl. 417-264.000.
Inoue, Hiroshi, to Nissan Motor Company, Limited. Engine compartment cooling apparatus. 4,409,933., Cl. 123-41.120.
Inouye, Henry: *See—*
Liu, Chain T.; Inouye, Henry; and Schaffhauser, Anthony C., 4,410,371., Cl. 148-11.50R.
Institute of Critical Care Medicine: *See—*
Bisera, Jose; and Weil, Max H., 4,409,977., Cl. 128-205.150.
Institute of Gas Technology: *See—*
Victor, John G., 4,410,745., Cl. 568-916.000.
Instrumentation Laboratory Inc.: *See—*
Czaban, John D.; and Cormier, Alan D., 4,410,631., Cl. 436-8.000.
Integrated Machine Development: *See—*
Alemanni, James C., 4,409,733., Cl. 29-827.000.
Interlake, Inc.: *See—*
Kunka, Bernard P.; and Hagemann, Casper W., 4,410,123., Cl. 227-8.000.
International Business Machines Corporation: *See—*
Beeteson, John S.; Holloway, Brian L.; and Jarzebowski, Krzystof T., 4,410,840., Cl. 315-368.000.
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., 4,410,940., Cl. 364-200.000.
Cason, William C.; and Snyder, Jan W., 4,410,957., Cl. 364-900.000.
Dalal, Hormazdyzr D.; Patnaik, Bisweswar; and Sarkary, Homi G., 4,410,622., Cl. 430-312.000.
Demke, Kent R.; and Mumola, Joanne L., 4,410,958., Cl. 364-900.000.
Dockerty, Robert C.; and Garbarino, Paul L., 4,409,722., Cl. 29-571.000.
Ko, Elizabeth Y.; and Pascoe, Robert A., 4,410,286., Cl. 400-22.000.
Ko, Ming, 4,410,440., Cl. 252-62.540.

Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,410,942., Cl. 364-200.000.
Newman, Douglas A.; and Emerson, Robert T., 4,409,893., Cl. 101-129.000.
Spencer, Dana R., 4,410,946., Cl. 364-200.000.
Susko, John R.; and Wheater, Robin A., 4,410,647., Cl. 524-88.000.
Tien, Paul C., 4,410,862., Cl. 331-113.00R.
International Container Systems, Inc.: *See—*
deLarosiere, Pierre J., 4,410,099., Cl. 220-21.000.
International Flavors & Fragrances Inc.: *See—*
Sprecker, Mark A.; and Hall, John B., 4,410,740., Cl. 568-817.000.
International Paper Company: *See—*
Kempf, Arthur W., 4,410,397., Cl. 162-78.000.
International Telephone and Telegraph Corporation: *See—*
DeCandia, Giovanni; and Bilson, Edward B., 4,410,931., Cl. 362-267.000.
Iohara, Kohichi; and Matsui, Michikage, to Teijin Limited. Process for manufacturing a polyester multifilament yarn. 4,410,473., Cl. 264-103.000.
IPOS Gesellschaft fur Integrierte Prothesen-Entwicklung und Orthopadietechnischen Service mbH & Co. KG, Firma: *See—*
Prahl, Jan, 4,409,972., Cl. 128-91.00R.
Ishidoshiro, Hiroshi: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,409,709., Cl. 28-155.000.
Ishihara, Masatomo: *See—*
Komoda, Hirohisa; and Ishihara, Masatomo, 4,410,602., Cl. 428-516.000.
Ishikawa, Hidetake: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Saito, Chikara; and Wakimoto, Hirofumi, 4,410,360., Cl. 75-60.000.
Ishikawa, Kazunori: *See—*
Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, 4,410,036., Cl. 165-134.00R.
Ishikawa, Tadashi: *See—*
Kamimae, Hiroshi; and Ishikawa, Tadashi, 4,410,541., Cl. 424-273.00R.
Ishinaga, Yuji: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.
Iso, Tadashi: *See—*
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,410,542., Cl. 424-274.000.
Itaya, Yoshio: *See—*
Ota, Chuichi; Suematsu, Yasuharu; and Itaya, Yoshio, 4,410,994., Cl. 372-45.000.
Itek Corporation: *See—*
Breslow, Donald H., 4,410,798., Cl. 250-231.0SE.
Ito, Akio; and Yamauchi, Osami, to Pilot Ink Co., Ltd. Composite pen tip. 4,410,290., Cl. 401-198.000.
Ito, Akio; and Ito, Masao, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Method for producing capillary nibs for inscribing instruments. 4,410,384., Cl. 156-167.000.
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, to Ebara Corporation. Method for composting. 4,410,348., Cl. 71-9.000.
Ito, Masaaki: *See—*
Moriyama, Shigeo; Ito, Masaaki; and Harada, Tatsuo, 4,409,860., Cl. 74-479.000.
Ito, Masao: *See—*
Ito, Akio; and Ito, Masao, 4,410,384., Cl. 156-167.000.
Ito, Yukio: *See—*
Meguro, Takeshi; Ito, Yukio; and Miyamoto, Bun-ichi, 4,410,868., Cl. 333-202.000.
Itoh, Masanori: *See—*
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.
Itoh, Tadashi: *See—*
Ariyama, Kenzo; Hirose, Akira; and Itoh, Tadashi, 4,410,262., Cl. 355-3.0SH.
Itoi, Hideyuki: *See—*
Funakoshi, Katsumi; Itoi, Hideyuki; and Konishi, Toshifumi, 4,410,655., Cl. 524-522.000.
ITT Industries, Inc.: *See—*
Reinartz, Hans-Dieter; and Thiel, Rudolf, 4,409,885., Cl. 91-376.00R.
Seip, Hermann, 4,409,790., Cl. 60-547.100.
Ivani, Edward J. Silicone-vinyl acetate composition for contact lenses. 4,410,674., Cl. 526-279.000.
Iwai, Hiroshi: *See—*
Sawada, Shizuo; Iwai, Hiroshi; and Maeda, Satoshi, 4,410,375., Cl. 148-187.000.
Iwaki, Takashi: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.
Iwama, Akio; Kihara, Yasuo; Abe, Masao; and Kazuse, Yoshitaka, to Nitto Electric Industrial Co., Ltd. Process for preparing selective permeable membrane. 4,410,568., Cl. 427-244.000.
Iwami, Isamu: *See—*
Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, 4,410,502., Cl. 423-345.000.
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, to Santen Pharmaceutical Co., Ltd. Disulfide compounds. 4,410,542., Cl. 424-274.000.
Iwasaki Tsushinki Kabushiki Kaisha: *See—*
Sekiguchi, Kouichi, 4,410,767., Cl. 179-99.00R.
Iyengar, Rama, to Western Electric Company, Inc. Optical waveguide fiber draw guiding and coating method and apparatus. 4,410,344., Cl. 65-3.110.
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Continuous amorphous solar cell production system. 4,410,558., Cl. 427-39.000.
Izumi, Chikashi: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.
J. H. Fenner & Co. Ltd.: *See—*
Potter, Charles W., 4,410,190., Cl. 277-153.000.
J & S Tool Company, Inc.: *See—*
Swenson, Kurt F., 4,410,169., Cl. 269-32.000.
Jacobi, Haireddin: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.
Jacobs, Stanley C.; Wiltzius, Raymond D.; Minick, John R.; and Foster, Perry A., Jr., to Aluminum Company of America. Electrolysis method. 4,410,403., Cl. 204-67.000.
Jaeggi, Knut A.: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostsewrmayer, Franz; and Schroter, Herbert, 4,410,530., Cl. 424-251.000.
James, Tom P., to Griffin, Ken. Self-energizing automatic lathe chuck. 4,410,191., Cl. 279-35.000.
Janome Sewing Machine Co., Ltd.: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,409,915., Cl. 112-266.100.
Jansson, Mats A. H.: *See—*
Ganev, Tsviatko S.; and Jansson, Mats A. H., 4,410,357., Cl. 75-10.00V.
Japan Nuclear Fuel Co., Ltd.: *See—*
Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, 4,410,278., Cl. 356-445.000.
Jaquemar, Christian: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.
Jarreau, Francois X.; and Koenig, Jean-Jacques, to Etablissements Nativelle S.A. Alkoxy pyrazole derivatives and compositions. 4,410,525., Cl. 424-248.570.
Jarzebowski, Krzystof T.: *See—*
Beeteson, John S.; Holloway, Brian L.; and Jarzebowski, Krzystof T., 4,410,840., Cl. 315-368.000.
Javan, Ali, to Laser Science, Inc. Generation of pulsed laser radiation at a finely controlled frequency by transient regerative amplification. 4,410,992., Cl. 372-32.000.
Jeenicke, Edmund: *See—*
Honig, Gunter; Jeenicke, Edmund; Krauter, Immanuel; and Schenk, Manfred, 4,410,812., Cl. 307-350.000.
Jeffery, Edwin A., to Data General Corporation. Apparatus and method for testing a rotating polygon mirror. 4,410,269., Cl. 356-138.000.
Jegousse, Meichel J.: *See—*
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.
Jendrewski, Alfons: *See—*
Witte, Dieter; Jendrewski, Alfons; and Nadler, Gerhard, 4,410,834., Cl. 315-58.000.
Jenny, Rico: *See—*
Herrmann, Manfred; Jenny, Rico; and Motter, Manfred, 4,410,332., Cl. 8-644.000.
Jensen, James R.: *See—*
Pound, Virgil E.; Jensen, James R.; and Zwicky, Albert C., 4,410,056., Cl. 180-89.150.
Jentoft, Arthur P.; and Couture, Paul A., to Wasco Products, Inc. Skylight construction. 4,409,767., Cl. 52-200.000.
Jernow, Jane L.: *See—*
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,410,720., Cl. 560-121.000.
Jespersen, Knud; Buller-Colthurst, Guy E.; and Bergner, Hans L. Perforated walls and duct system. 4,409,743., Cl. 34-191.000.
Jessup, Peter: *See—*
Holstedt, Richard A.; and Jessup, Peter, 4,410,436., Cl. 252-46.400.
Jobo-Labortechnik GmbH & Co. K.G.: *See—*
Bernhardt, Rainer; and Kremer, Walter, 4,410,034., Cl. 165-80.00E.
Johns, Martha M., to Du Pont de Nemours, E. I., and Company. Nonwoven fabric of ribbon-shaped polyester fibers. 4,410,579., Cl. 428-131.000.
Johnson, Carl: *See—*
Holliday, David H., 4,410,172., Cl. 271-288.000.
Johnson, Henry C.: *See—*
Kipp, Ronald W.; and Johnson, Henry C., 4,410,860., Cl. 331-1.00A.
Johnson & Johnson: *See—*
Korpman, Ralf, 4,410,571., Cl. 427-385.500.
Johnson, Kenneth C., to Clark Equipment Company. Emergency hydraulic system. 4,410,057., Cl. 180-133.000.

Johnson Matthey Public Limited Company: *See—*
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon L., 4,410,475., Cl. 264-122.000.

Johnson, Peter D.: *See—*
Anderson, John M.; and Johnson, Peter D., 4,410,829., Cl. 313-490.000.

Johnston, Bruce L.; and Raines, Bill D., to Burke, Inc. Adjustable bed for morbidly obese patients. 4,409,695., Cl. 5-68.000.

Johnston, James J., to Akzona Incorporated. Electrical connector application tool. 4,409,713., Cl. 29-33.00M.

Jones, Jackie D.: *See—*
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,410,385., Cl. 156-181.000.

Jones, Thomas A.: *See—*
Hewitt, D. Gary; and Jones, Thomas A., 4,410,924., Cl. 361-25.000.

Joosten, Michael W.: *See—*
Salama, Mamdouh M.; Joosten, Michael W.; Zimmerman, Wiley E.; and Bockhorst, Rhea W., 4,409,824., Cl. 73-151.000.

Jordan Implemenet Co.: *See—*
Stiff, Alonzo B., 4,409,911., Cl. 111-52.000.

Josien, Daniel: *See—*
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.

Joslyn, Larry J., to Sybron Corporation. Indicator device for use in steam sterilization. 4,410,493., Cl. 422-58.000.

Jourdain, Gerard E. A.; and Soligny, Marcel R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.L.M.A.". Injection device for the combustion chamber of turbine engines. 4,409,791., Cl. 60-740.000.

JSJ Corporation: *See—*
Lutz, Paul D., 4,409,848., Cl. 73-861.280.

Judd, George G., to Martin Marietta Corporation. Production of pellets and pellet-containing fertilizer composition. 4,410,350., Cl. 71-63.000.

Jungwirth, Dieter: *See—*
Wlodkowski, Johann; Nutzel, Oswald; and Jungwirth, Dieter, 4,410,162., Cl. 249-215.000.

Junkers, John K.: *See—*
Krautter, Wilhelm F.; and Junkers, John K., 4,409,865., Cl. 81-57.390.

Kabushiki Kaisha Kitagawa Tekkosho: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsuei, 4,410,192., Cl. 279-121.000.

Kabushiki Kaisha Meidensha: *See—*
Sakuma, Shinzo; Warabi, Junichi; and Kobari, Yukio, 4,410,777., Cl. 200-144.00B.

Kabushiki Kaisha Morita Seisakusho: *See—*
Furuichi, Shuhei; Suzuki, Masakazu; and Ikeda, Toshiaki, 4,410,809., Cl. 307-255.000.

Kabushiki Kaisha Okawara Seisakusho: *See—*
Tomizawa, Takekazu; Ueda, Susumu; Sakyo, Toyoji; and Kawai, Sumio, 4,409,909., Cl. 110-346.000.

Kabushiki Kaisha Sankosha: *See—*
Shigemori, Daizo; and Muramatsu, Yuji, 4,410,831., Cl. 313-325.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kogure, Shigeru, 4,410,827., Cl. 310-370.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Nakane, Katsumi; and Hirano, Hideo, 4,409,785., Cl. 57-78.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Yamamoto, Minoru; Hirai, Masana; and Sakata, Jiro, 4,410,338., Cl. 55-158.000.

Kabushiki Kaisha Vend Seiyako Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,410,547., Cl. 424-317.000.

Kaindl, Wolfgang. Inlet supply manifold for combustion engine with 4- to 6-cylinders in line. 4,409,934., Cl. 123-52.00M.

Kakino, Shigeru: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,410,378., Cl. 149-109.600.

Kaldenbach, Willem P., to Panama Overseas Shipping Corporation Inc. Digging apparatus. 4,409,747., Cl. 37-69.000.

Kali, Inc.: *See—*
Peck, Robert L., 4,410,605., Cl. 429-11.000.

Kalinin, Mikhail T.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.

Kaltenekker, Bela L.: *See—*
Weaver, Charles H.; and Kaltenekker, Bela L., 4,410,395., Cl. 156-662.000.

Kamen, Dean L., to Baxter Travenol Laboratories, Inc. Modular flow control system. 4,410,164., Cl. 251-9.000.

Kameo, Hiroshi: *See—*
Akiyama, Tsunekazu; Kihara, Tetsuaki; Komizo, Kazunaga; and Kameo, Hiroshi, 4,410,747., Cl. 570-247.000.

Kamimae, Hiroshi; and Ishikawa, Tadashi, to Nihon Nosan Kogyo K.K. Composite for improving lipid metabolism. 4,410,541., Cl. 424-273.00R.

Kaminski, Joan M.: *See—*
Andreas, Harry J., Jr.; Horodysky, Andrew G.; and Kaminski, Joan M., 4,410,434., Cl. 252-32.70R.

Kamio, Kunimasa: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Kamiya, Kazuo: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.

Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, to Fujisawa Pharmaceutical Co., Ltd. Process for providing an oxidized penam. 4,410,458., Cl. 260-239.100.

Kamohara, Toshiyuki: *See—*
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,410,959., Cl. 364-900.000.

Kampe, Wolfgang: *See—*
Bosies, Elmar; Berger, Herbert; Kampe, Wolfgang; Bicker, Uwe; and Grafe, Alfred, 4,410,532., Cl. 424-251.000.

Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, to Nippondenso Co., Ltd.; and Furukawa Aluminum Co., Ltd. Heat exchanger made of aluminum alloys and tube material for the heat exchanger. 4,410,036., Cl. 165-134.00R.

Kanai, Yasunori, to Fujitsu Limited. ECL Integrated circuit. 4,410,816., Cl. 307-455.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, 4,410,388., Cl. 156-307.300.

Kansas State University Research Foundation: *See—*
Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., 4,409,780., Cl. 56-228.000.

Kao Soap Co., Ltd.: *See—*
Nakayama, Mutsuo; Yamaguchi, Hiromi; and Yamasaki, Harumasa, 4,410,694., Cl. 536-98.000.

Kaplan, Alexander E.; Bjorkholm, John E.; Smith, Peter W.; and Tomlinson, Walter J., III, to Bell Telephone Laboratories, Incorporated. Nonlinear optical device using self-trapping of light. 4,410,239., Cl. 350-354.000.

Karpenko, Anatole N., to Anchor/Darling Valve Company. Soft seal installation for feed water check valve. 4,410,007., Cl. 137-516.290.

Kashiwagi, Akio: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Kastner, Ralph E.: *See—*
Koch, Kay F.; and Kastner, Ralph E., 4,410,628., Cl. 435-127.000.

Kasuya, Yoshihiro, to Nippon Electric Co., Ltd. Sorting circuit for three or more inputs. 4,410,960., Cl. 364-900.000.

Kasuya, Yutaka: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,410,528., Cl. 424-251.000.

Katagiri, Shuhei; Donuma, Kenichi; and Ohashi, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for manufacturing a module for a fiber optic link. 4,410,469., Cl. 264-1.500.

Katalco Corporation: *See—*
Pessimisis, George N., 4,410,443., Cl. 252-182.000.

Katayama, Hiroyuki; Ishikawa, Hidetake; Saito, Chikara; and Wakimoto, Hirofumi, to Nippon Steel Corporation. Process for producing high chromium steel. 4,410,360., Cl. 75-60.000.

Katayama, Yoshihiko: *See—*
Matsumoto, Koichi; Katayama, Yoshihiko; and Sakurai, Hisaya, 4,410,595., Cl. 428-412.000.

Kato, Hiroshi; and Momose, Chiaki, to Dainichi-Nippon Cables, Ltd. Flame retarding organic high polymer composition. 4,410,648., Cl. 524-101.000.

Kato, Masahisa: *See—*
Kobayashi, Takanori; Kato, Masahisa; and Kumatani, Hiroshi, 4,410,819., Cl. 310-105.000.

Kato, Suehiro; and Ando, Kenji, to Murata Manufacturing Company, Ltd. Method of preparing zinc oxide film. 4,410,408., Cl. 204-192.0SP.

Kato, Toshiji: *See—*
Yasue, Akira; Kato, Toshiji; and Takahashi, Yozo, 4,410,063., Cl. 181-147.000.

Katoh, Mitsumi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument forming tone waveforms. 4,409,876., Cl. 84-1.010.

Katto, Atsuyuki: *See—*
Shimada, Mitsuhiro; and Katto, Atsuyuki, 4,409,964., Cl. 126-443.000.

Katumata, Saichi: *See—*
Omata, Hiroshi; and Katumata, Saichi, 4,410,818., Cl. 310-41.000.

Kawaguchi, Genbee; and Nagai, Kiyoshi. Vacuum insulation spacer. 4,409,770., Cl. 52-666.000.

Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,410,590., Cl. 428-336.000.

Kawai, Hisasi: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,409,828., Cl. 73-204.000.

Kawai, Sumio: *See—*
Tomizawa, Takekazu; Ueda, Susumu; Sakyo, Toyoji; and Kawai, Sumio, 4,409,909., Cl. 110-346.000.

Kawai, Tsutomu, to Funai Electric Trading Co. Ltd.; and Efuti Giken Co., Ltd. Unitary mounting means for the tape handling components of a VTR. 4,410,920., Cl. 360-85.000.

Kawakami, Katsura, to Matsushita Electric Industrial Co. Ltd. System for program interrupt processing with quasi-stack of register-sets. 4,410,939., Cl. 364-200.000.

Kawamura, Kichinari: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, to Sanshin Kagaku Kogyo Co., Ltd. N-Substituted benzothiazole-2-sulfonamides; method of their preparation; method of preventing scorching of rubber. 4,410,704., Cl. 548-766.000.

Kawasaki Jukogyo K.K.: *See—*
Murakami, Keikichi, 4,410,167., Cl. 266-281.000.

Kawasaki, Masahiro: *See—*
Aoki, Harumi; Kawasaki, Masahiro; and Suzuki, Koji, 4,410,258., Cl. 354-25.000.

Kawase, Hiroshi: *See—*
Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, 4,410,036., Cl. 165-134.00R.

Kawneer Company, Inc.: *See—*
Redman, Ronald E., 4,409,769., Cl. 52-475.000.

Kay Industries, Inc.: *See—*
Buffington, James F., 4,410,807., Cl. 307-68.000.

Kaye, Saul, to Ben Venue Laboratories, Inc. Sterilizing method incorporating recirculation of chamber atmosphere. 4,410,492., Cl. 422-27.000.

Kazuse, Yoshitaka: *See—*
Iwama, Akio; Kihara, Yasuo; Abe, Masao; and Kazuse, Yoshitaka, 4,410,568., Cl. 427-244.000.

Kealey, Kathleen M.: *See—*
Goebel, Franz; and Kealey, Kathleen M., 4,410,608., Cl. 429-101.000.

Keister, Frank S.: *See—*
Scapple, Robert Y.; Keister, Frank S.; Grieger, Robert G.; and Himmel, Richard P., 4,410,874., Cl. 338-307.000.

Keller, Teddy M., to United States of America, Navy. Phenolic-cured phthalonitrile resins. 4,410,676., Cl. 528-9.000.

Kemp, Willard E. Process for heat treatment of a metal workpiece. 4,410,373., Cl. 148-16.000.

Kempf, Arthur W., to International Paper Company. Delignification and bleaching process and solution for lignocellulosic pulp with peroxide in the presence of metal additives. 4,410,397., Cl. 162-78.000.

Kendall, Kevin: *See—*
Birchall, James D.; Howard, Anthony J.; Kendall, Kevin; and Raistrick, James H., 4,410,366., Cl. 106-90.000.

Kennedy, John F.; and Fournier, Alain, to Society De Construction Des Avions. Thrust reverser for a jet engine, more especially for equipping an aircraft. 4,410,152., Cl. 244-110.00B.

Kennedy, Melvin R.; and Nagel, Dietmar, to Nagel, Kennedy, Arad & Associates. Spring type ball pitching machine. 4,409,953., Cl. 124-7.000.

Kerpel-Fronius, Sandor: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Kessler, Bayard F. Electronics package. 4,410,759., Cl. 174-52.00R.

Kessler, Jurgen, to Hilti Aktiengesellschaft. Drilling tool. 4,410,055., Cl. 175-173.000.

Kethley, Lancelot I. Evapopsychrometer. 4,409,834., Cl. 73-336.000.

Keve, Tibor: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Keysor-Century Corporation: *See—*
Law, Kenneth S. K., 4,410,970., Cl. 369-58.000.

Keystone Ferrule & Nut Corporation: *See—*
Chiariello, Dan; and Chiariello, Ned, 4,410,093., Cl. 211-11.000.

Keystone International, Inc.: *See—*
Scobie, William B.; and Holtgraver, Edward G., 4,410,163., Cl. 251-306.000.

Keystone Lamp Mfg. Corporation: *See—*
Oster, Joseph, 4,410,932., Cl. 362-294.000.

Kierbow, Gerald C.; and Horinek, Herbert J., to Halliburton Company. Additive material metering system with pneumatic discharge. 4,410,106., Cl. 222-135.000.

Kifer, David E.; and McGuire, Robert H., to Oatey Co. Laundry outlet box. 4,410,004., Cl. 137-360.000.

Kihara, Tetsuaki: *See—*
Akiyama, Tsunekazu; Kihara, Tetsuaki; Komizo, Kazunaga; and Kameo, Hiroshi, 4,410,747., Cl. 570-247.000.

Kihara, Yasuo: *See—*
Iwama, Akio; Kihara, Yasuo; Abe, Masao; and Kazuse, Yoshitaka, 4,410,568., Cl. 427-244.000.

Kikuchi, Yoshiki: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,410,897., Cl. 346-76.0PH.

Kimbara, Hidenori: *See—*
Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,410,601., Cl. 428-290.000.
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,410,666., Cl. 525-417.000.

Kindlimann, Lynn E.: *See—*
Pohlman, Matthew J.; and Kindlimann, Lynn E., 4,410,604., Cl. 428-681.000.

King, Donald D.; and Rudd, John E., to Thermo King Corporation. Condenser coil and fan mount for a transport refrigeration unit. 4,409,797., Cl. 62-239.000.

Kinoshita, Akira: *See—*
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.

Kiovsky, Joseph R.; Young, George W.; and Saleh, Ramzi Y., to Norton Co. Ethylene oxide catalyst. 4,410,453., Cl. 502-253.000.

Kipp, Ronald W.; and Johnson, Henry C., to RCA Corporation. Frequency synthesizer with learning circuit. 4,410,860., Cl. 331-1.00A.

Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, to Imperial Chemical Industries, Ltd. Apparatus & method for selectively activating plural electrical loads at predetermined relative times. 4,409,897., Cl. 102-200.000.

Kirchhein, Albert T.: *See—*
Doniger, Jerry; and Kirchhein, Albert T., 4,410,948., Cl. 364-431.010.

Kirschenstein, Reinhard: *See—*
Hess, Heinz; and Kirschenstein, Reinhard, 4,410,912., Cl. 358-162.000.

Kis France: *See—*
Thebault, Claude, 4,410,257., Cl. 354-308.000.

Kishi, Toru: *See—*
Saito, Takashi; Kumaki, Takashi; and Kishi, Toru, 4,410,973., Cl. 369-77.200.

Kissling, Bruno: *See—*
Robinson, Tibor; Knobel, Walter; and Kissling, Bruno, 4,410,652., Cl. 524-195.000.

Kitahama, Yoshiharu: *See—*
Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, 4,410,502., Cl. 423-345.000.

Kitamoto, Tatsuji; Shirahata, Ryuji; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Methods of making a magnetic recording medium. 4,410,565., Cl. 427-130.000.

Kitani, Masanobu. Apparatus for adjusting trace water content of rice-koji, wheat-koji, wheat bran-koji, steamed rice, steeped rice and the like. 4,409,794., Cl. 62-98.000.

Kitchen, William D.: *See—*
Szeliga, Philip C.; and Kitchen, William D., 4,410,901., Cl. 346-165.000.

Kiyohara, Takao: *See—*
Atsumi, Toshio; Sanjiki, Tetsutaro; and Kiyohara, Takao, 4,410,696., Cl. 542-427.000.

Kiyozumi, Yoshimichi: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Klaren, Dick G., to Esmil BV. Method of operating heat exchanger apparatus comprising a plurality of heat exchanger units connected in series, and apparatus adapted for operation by the method. 4,410,029., Cl. 165-1.000.

Klebe, Hans: *See—*
Knippschild, Gerd; Klebe, Hans; and Schuster, Hubert, 4,410,444., Cl. 252-186.210.

Klein, Alfons; Wedemeyer, Karlfried; Havenith, Lothar; and Kron, Rolf, to Bayer Aktiengesellschaft. Dielectric impregnating fluid and its use. 4,410,869., Cl. 336-94.000.

Klein, Joseph T.: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,410,699., Cl. 546-141.000.

Kleinschmit, Peter: *See—*
Panster, Peter; and Kleinschmit, Peter, 4,410,669., Cl. 525-474.000.

Klement, Ekkehard; and Schiffner, Gerhard, to Siemens Aktiengesellschaft. Device for producing a moving light beam. 4,410,235., Cl. 350-96.180.

Kleuters, Wilhelm J.: *See—*
Carasso, Marino G.; Kleuters, Wilhelm J.; and Mons, Johannes J., 4,410,877., Cl. 340-347.0DD.

Klockner-Werke A.G.: *See—*
Lindenmayer, Bernhard; and Fink, Lothar, 4,410,478., Cl. 264-248.000.

Kloppe, Herbert; Rest, Heinz; and Spiegel, Erwin, to Ford Motor Company. Motor vehicle body with concealed drip rail. 4,410,211., Cl. 296-213.000.

Klose, Werner: *See—*
Schimmel, Gunther R.; and Klose, Werner, 4,410,466., Cl. 260-990.000.

Kluge, Arthur F.: *See—*
Muchowski, Joseph M.; and Kluge, Arthur F., 4,410,534., Cl. 424-263.000.

Knauss, Hermann: *See—*
Fischer, Karl; Knauss, Hermann; and Schreder, Felix, 4,410,793., Cl. 219-460.000.

Kneen, Geoffrey, to Burroughts Wellcome Co. Pharmaceutical ethers. 4,410,537., Cl. 424-269.000.

Knippschild, Gerd; Klebe, Hans; and Schuster, Hubert, to Degussa Aktiengesellschaft. Process for the production of a stable per salt. 4,410,444., Cl. 252-186.210.

Knobel, Walter: *See*—
Robinson, Tibor; Knobel, Walter; and Kissling, Bruno, 4,410,652., Cl. 524-195.000.

Knop, Charles M.; Ostertag, Edward L.; Matz, Donald W., Jr.; and Cheng, Yuk-Bun, to Andrew Corporation. Reflector-type microwave antennas with absorber lined conical feed. 4,410,892., Cl. 343-786.000.

Ko, Elizabeth Y.; and Pascoe, Robert A., to International Business Machines Corporation. Printing complex characters. 4,410,286., Cl. 400-22.000.

Ko, Ming, to International Business Machines Corporation. Polyurethane magnetic disk coatings. 4,410,440., Cl. 252-62.540.

Kobari, Yukio: *See*—
Sakuma, Shinzo; Warabi, Junichi; and Kobari, Yukio, 4,410,777., Cl. 200-144.00B.

Kobayashi, Kensaku, to Aisin Seiki Kabushiki Kaisha. Apparatus for automatically aligning a workpiece along the line of feed. 4,410,171., Cl. 271-227.000.

Kobayashi, Shigeo: *See*—
Onuma, Hideo; and Kobayashi, Shigeo, 4,409,814., Cl. 73-19.000.

Kobayashi, Takanori; Kato, Masahisa; and Kumatani, Hiroshi. Electromagnetic coupling device. 4,410,819., Cl. 310-105.000.

Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, to Showa Denko K.K. Process for producing a gel-like composition of a high polymer of acetylene, and process for molding said composition. 4,410,640., Cl. 521-63.000.

Kobylar, Alex W.: *See*—
Fleischfresser, Gerald H.; and Kobylar, Alex W., 4,410,982., Cl. 370-110.100.

Koch, Kay F.; and Kastner, Ralph E., to Eli Lilly and Company. A-39183 Antibiotics and process for production thereof. 4,410,628., Cl. 435-127.000.

Koch, Manfred, to IBAG-Vertrieb GmbH. Stone crusher. 4,410,145., Cl. 241-264.000.

Koch, Rudolf, to Siemens Aktiengesellschaft. Method for the operation of a CID sensor matrix. 4,410,811., Cl. 307-311.000.

Koch, Ulrich H.; and Williams, Peter C., to Whitey Co. Ball valve and seat assembly. 4,410,165., Cl. 251-174.000.

Kochanowski, Andrew T.: *See*—
Grubbs, Donald K.; and Kochanowski, Andrew T., 4,410,472., Cl. 264-29.300.

Koda, Akihide: *See*—
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Kodaira, Masanori: *See*—
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,410,348., Cl. 71-9.000.

Kodama, Yutaka: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Koenig, Horst: *See*—
Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,410,529., Cl. 424-250.000.

Koenig, Jean-Jacques: *See*—
Jarreau, Francois X.; and Koenig, Jean-Jacques, 4,410,525., Cl. 424-248.570.

Koerckel, Gerard J.: *See*—
Arcidiacono, Frank R.; and Koerckel, Gerard J., 4,410,867., Cl. 333-172.000.

Koester, Charles J. Image stabilization method, and apparatus. 4,410,245., Cl. 351-219.000.

Kofler, Wilhelm, to Maschinenfabrik Benninger AG. Apparatus for clamping and unclamping a warp beam in a beam warping machine. 4,409,710., Cl. 28-196.000.

Kogelschatz, Ulrich: *See*—
Bassler, Peter; and Kogelschatz, Ulrich, 4,410,495., Cl. 422-186.180.

Kogure, Shigeru, to Kabushiki Kaisha Suwa Seikosha. Mode coupled notched tuning fork type quartz crystal resonator. 4,410,827., Cl. 310-370.000.

Kohama. Tokio; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, to Nippon Soken, Inc. Gas flow measuring device. 4,409,828., Cl. 73-204.000.

Kohan, Melvin I., to Du Pont de Nemours, E. I., and Company. Flame-retardant polyamide blends. 4,410,653., Cl. 524-371.000.

Kohaszati Gyarepito Vallalat: *See*—
Biro, Attila, 4,410,037., Cl. 165-142.000.

Kohmoto, Osamu; and Yamamoto, Takahiro, to TDK Electronics Co., Ltd. Process for preparing magnetic recording medium. 4,410,406., Cl. 204-192.00M.

Kohtoku, Yasuhiko: *See*—
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, to Alps Electric Co., Ltd. Serial printer. 4,410,289., Cl. 400-185.000.

Koizumi, Hideki: *See*—
Naka, Michiharu; Yatabe, Takayuki; and Koizumi, Hideki, 4,410,435., Cl. 252-42.100.

Kokus, Martin. Motion to rotary motion. 4,409,855., Cl. 74-55.000.

Kokussi Denshin Denwa Kabushiki Kaisha: *See*—
Ota, Chuichi; Suematsu, Yasuharu; and Itaya, Yoshio, 4,410,994., Cl. 372-45.000.

Kolc, Jaroslav F.: *See*—
Denkewalter, Robert G.; Kolc, Jaroslav F.; and Lukasavage, William J., 4,410,688., Cl. 528-328.000.

Koller, Rudolf; and Runkel, Walter, to Herrmann Wangner GmbH & Co KG. Method and apparatus for producing an interwoven seam interconnecting two woven web portions. 4,410,015., Cl. 139-383.00A.

Kollmeyer, Willy D.: *See*—
Sundelin, Kurt G. R.; Powell, James E.; and Kollmeyer, Willy D., 4,410,354., Cl. 71-94.000.

Komatsu, Miwako: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Komizo, Kazunaga: *See*—
Akiyama, Tsunekazu; Kihara, Tetsuaki; Komizo, Kazunaga; and Kameo, Hiroshi, 4,410,747., Cl. 570-247.000.

Komoda, Hirohisa; and Ishihara, Masatomo, to Toyo Seikan Kaisha Ltd.; and Tokan Kogyo Co. Ltd. Multi-layer laminated resin film. 4,410,602., Cl. 428-516.000.

Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Glow discharge heating apparatus. 4,410,792., Cl. 219-383.000.

Komurasaki, Satoshi; Ueda, Atsushi; and Yamane, Tsuneo, to Mitsubishi Denki Kabushiki Kaisha. Ignition timing correcting system for internal combustion engine. 4,409,943., Cl. 123-418.000.

Kondo, Shinichi: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,410,516., Cl. 424-180.000.

Konishi, Toshifumi: *See*—
Funakoshi, Katsumi; Itoi, Hideyuki; and Konishi, Toshifumi, 4,410,655., Cl. 524-522.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.

Konjedic, Oscar; Carrara, Paolo; and Fabris, Enzo, to Fiat Auto S.p.A. Device for automatically indicating an insufficient level of automatic fluid. 4,409,832., Cl. 73-292.000.

Konno, Mitsuo; Niikawa, Ryo; and Sato, Kenzo, to Honda Giken Kogyo Kabushiki Kaisha. Spot welding apparatus. 4,410,782., Cl. 219-89.000.

Konsumex Kulkereskedelmi Vallalat: *See*—
Rubik, Erno, 4,410,179., Cl. 273-153.00S.

Kordes, Art W.: *See*—
Prunella, Wallace R.; and Kordes, Art W., 4,410,227., Cl. 339-75.00M.

Korf and Fuchs Systemtechnik: *See*—
Wabersich, Ernst; and Sanders, Gerhard, 4,410,999., Cl. 373-76.000.

Koronka, Amy M. E.; and Koronka, Paul, to Imperial Chemical Industries PLC. Agronomic implement. 4,409,912., Cl. 111-7.000.

Koronka, Paul: *See*—
Koronka, Amy M. E.; and Koronka, Paul, 4,409,912., Cl. 111-7.000.

Korpman, Ralf, to Johnson & Johnson. Absorbent products, process and compositions for immobilization of particulate absorbents. 4,410,571., Cl. 427-385.500.

Kortbeek, Andras G. T. G.; Neel, Emmanuel E. A.; and Barre, Guy, to Shell Oil Company. Process for the preparation of a hydrocarbon mixture from H_2/CO mixtures. 4,410,637., Cl. 518-714.000.

Kosterka, Donald W., to Album Graphics, Inc. Continuous web printing apparatus, process and product thereof. 4,410,560., Cl. 427-44.000.

Kosugi, Isao: *See*—
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,409,887., Cl. 91-446.000.

Kotaka, Masaharu: *See*—
Suzuki, Shunichi; and Kotaka, Masaharu, 4,410,837., Cl. 315-289.000.

Kotzin, Michael D.: *See*—
Comroe, Richard A.; Kotzin, Michael D.; and van den Heuvel, Anthony P., 4,409,836., Cl. 73-504.000.

Kovar, Robert F.: *See*—
Bouley, Robert W.; and Kovar, Robert F., 4,410,639., Cl. 521-54.000.

Kowah, Inc.: *See*—
Eastep, Calvin W., 4,410,791., Cl. 219-307.000.

Kowalski, Joseph W., to B-Line Systems, Inc. Fastener. 4,410,298., Cl. 411-112.000.

Koyama, Hiroshi: *See*—
Shindow, Osamu; Okamoto, Ikuzo; Machida, Takeshi; and Koyama, Hiroshi, 4,410,267., Cl. 356-124.000.

Koyama, Shigeo: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,410,259., Cl. 355-3.0DD.

Kozuka, Nobuhiko: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,410,259., Cl. 355-3.0DD.

Kracht Pumpen-und Motorenfabrik GmbH & Co. KG: *See*—
Weber, Werner, 4,409,829., Cl. 73-261.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Lippert, Hans-Joachim, 4,410,485., Cl. 376-260.000.
Schick, Edgar; and Wisniewski, Peter, 4,410,486., Cl. 376-306.000.
Tautz, Jurgen; Werres, Lothar; and Reimer, Gerd, 4,410,487., Cl. 376-399.000.

Kramer Da Luz, Olavo. Rotating pontoon. 4,409,917., Cl. 114-38.000.

Kramer, Hermann J.: *See*—
Ersoy, Metin; and Kramer, Hermann J., 4,410,295., Cl. 403-122.000.

Kramer, Ulrich: *See*—
Hoppner, Heinz-Jochen; Kramer, Ulrich; Sgarz, Hugo; and Sadowski, Herbert, 4,410,151., Cl. 244-63.000.

Krauss, Richard C., to Dow Chemical Company, The. Process for making pyridyloxyphenol compounds. 4,410,701., Cl. 546-302.000.

Krauter, Immanuel: *See*—
Honig, Gunter; Jeenicke, Edmund; Krauter, Immanuel; and Schenk, Manfred, 4,410,812., Cl. 307-350.000.

Krautter, Wilhelm F.; and Junkers, John K., to Unex Corporation. Continuous ratchet drive. 4,409,865., Cl. 81-57.390.

Krejsa, Charles R.: *See*—
Wheeler, Donald J.; Cooper, Christopher; and Krejsa, Charles R., 4,410,121., Cl. 226-118.000.

Kremer, Walter: *See*—
Bernhardt, Rainer; and Kremer, Walter, 4,410,034., Cl. 165-80.00E.

Kremers, Jan H.; and Brain, Alfred E., to SRI International. Image acquisition apparatus and process. 4,410,787., Cl. 219-124.340.

Kremers, Theodoor M. M.: *See*—
Van Buul, Marinus C. W.; and Kremers, Theodoor M. M., 4,411,001., Cl. 375-30.000.

Kresge, James S.: *See*—
Ellis, Howard F.; and Kresge, James S., 4,409,728., Cl. 29-613.000.

Kretzschmar, Gunter: *See*—
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

Kreuzer, Franz-Heinrich; and Gawhary, Magdi E., to Consortium fur Elektrochemische Industrie GmbH. Compositions containing liquid-crystalline phases. 4,410,570., Cl. 427-374.100.

Krivenko, Pavel V.: *See*—
Glukhovsky, Viktor D.; Krivenko, Pavel V.; Rostovskaya, Galina S.; Timkovich, Vasily J.; and Pankratov, Vitaly L., 4,410,365., Cl. 106-84.000.

Kroenke, William J., to B. F. Goodrich Company, The. Didodecyldimethylammonium molybdates. 4,410,462., Cl. 260-429.00R.

Kroenke, William J., to B. F. Goodrich Company, The. Tetrapentylammonium molybdates. 4,410,463., Cl. 260-429.00R.

Kroha, Walter: *See*—
Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, 4,410,624., Cl. 430-377.000.

Kron, Rolf: *See*—
Klein, Alfons; Wedemeyer, Karlfried; Havenith, Lothar; and Kron, Rolf, 4,410,869., Cl. 336-94.000.

Krone GmbH: *See*—
Stoewe, Anneliese; and Hegner, Gunter, 4,410,225., Cl. 339-31.00R.

Kroneisen, Armin; and Zornig, Gerd, to Hartmann & Braun Aktiengesellschaft. Flame ionization detector. 4,410,854., Cl. 324-468.000.

Kronies, Reinhard K., to Burroughs Corporation. Apparatus and method for maintaining cache memory integrity in a shared memory environment. 4,410,944., Cl. 364-200.000.

Krueger, Henry R., to Russell Coil Company. Demand defrost system. 4,409,795., Cl. 62-140.000.

Krumwiede, John F., to PPG Industries, Inc. Glass melting method using cullet as particulate collection medium. 4,410,347., Cl. 65-27.000.

Krupp-Koppers GmbH: *See*—
Preusser, Gerhard; and Schulze, Martin, 4,410,400., Cl. 203-3.000.

Kruschke, Marvin R., Sr.: *See*—
Longacre, Kenneth E.; and Kruschke, Marvin R., Sr., 4,410,040., Cl. 166-118.000.

Kubbota, Massashi; and Noda, Touru, to Mitsubishi Paper Mills, Ltd. Photographic material. 4,410,619., Cl. 430-234.000.

Kubo, Kazuhiro: *See*—
Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,410,528., Cl. 424-251.000.

Kubota Ltd.: *See*—
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,410,362., Cl. 420-584.000.

Kuehnle, Manfred R., to Coulter Systems Corporation. Toning apparatus and method. 4,410,260., Cl. 355-10.000.

Kugenbuch, Bernd: *See*—
Strasser, Franz; Steinhauser, Ludwig; and Kugenbuch, Bernd, 4,410,285., Cl. 384-278.000.

Kugler, Tibor, to Swiss Aluminium Ltd. Cathode for an electrolytic cell for producing aluminum via the fused salt electrolytic process. 4,410,412., Cl. 204-286.000.

Kuhnert, Lothar: *See*—
Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, 4,410,624., Cl. 430-377.000.

Kujala, Jaakko P.: *See*—
Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., 4,410,337., Cl. 55-21.000.

Kukes, Semyon; Harris, Jesse R.; Porter, Randall A.; and Reed, Larry E., to Phillips Petroleum Company. Method for reducing carbon formation in a thermal cracking process. 4,410,418., Cl. 208-48.00R.

Kulik, Conrad J.: *See*—
Atherton, Linda; and Kulik, Conrad J., 4,410,421., Cl. 208-254.00R.

Kulite Semiconductor Products: *See*—
Mallon, Joseph R.; and Kurtz, Anthony D., 4,410,871., Cl. 338-5.000.

Kumaki, Takashi: *See*—
Saito, Takashi; and Kumaki, Takashi, 4,410,972., Cl. 369-77.200.
Saito, Takashi; Kumaki, Takashi; and Kishi, Toru, 4,410,973., Cl. 369-77.200.

Kumatani, Hiroshi: *See*—
Kobayashi, Takanori; Kato, Masahisa; and Kumatani, Hiroshi, 4,410,819., Cl. 310-105.000.

Kundikoff, Peter. Modular straight edge. 4,409,873., Cl. 83-745.000.

Kunka, Bernard P.; and Hagemann, Casper W., to Interlake, Inc. Wire stitching machine head. 4,410,123., Cl. 227-8.000.

Kuntz, Eduard: *See*—
Germann, Fritz, deceased; Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, 4,410,998., Cl. 373-40.000.

Kuraray Company, Limited: *See*—
Yano, Makoto; Shimada, Kiyoo; and Shibatani, Kyoichiro, 4,409,980., Cl. 128-635.000.

Kurata, Masami: *See*—
Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, 4,410,898., Cl. 346-76.0PH.

Kuratani, Junichi, to Alps Electric Co., Ltd. Rotary variable resistor. 4,410,873., Cl. 338-160.000.

Kurland, Marvin: *See*—
Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., 4,409,913., Cl. 112-158.00B.

Kuroda, Nobuyuki: *See*—
Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,410,670., Cl. 526-114.000.

Kuroda, Seietsu: *See*—
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Kurosaki, Shiro: *See*—
Usui, Yuichi; Murai, Shigeo; Kurosaki, Shiro; and Watanabe, Minoru, 4,410,345., Cl. 65-3.150.

Kurt, Thoma, to BBC Brown, Boveri & Company, Limited. Slip-ring arrangement for electrical machines. 4,410,821., Cl. 310-277.000.

Kurtz, Anthony D.: *See*—
Mallon, Joseph R.; and Kurtz, Anthony D., 4,410,871., Cl. 338-5.000.

Kusakabe, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic circuit including a current mirror circuit. 4,410,858., Cl. 330-257.000.

Kusters, Eduard: *See*—
Ahrweiler, Karl-Heinz; and Kusters, Eduard, 4,410,380., Cl. 156-62.200.
Ahrweiler, Karl-Heinz, 4,410,474., Cl. 264-109.000.

Kustka, George J., to Bell Telephone Laboratories, Incorporated. Timing recovery technique. 4,411,000., Cl. 375-11.000.

Kusz, Maximillian, to Owens-Illinois, Inc. Child resistant package. 4,410,097., Cl. 215-214.000.

Kuwahara, Hisao, to Tokyo Shibaura Denki Kabushiki Kaisha. Signal amplifier circuit arrangement with output current limiting function. 4,410,859., Cl. 330-298.000.

Kuwata, Masayoshi; and Staub, Fred W., to General Electric Company. Erosion resistant gas distributor and a method for minimizing erosion. 4,409,739., Cl. 34-10.000.

Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, to Universita Karlova. Process for preparation of insulating coatings upon steel. 4,410,598., Cl. 428-427.000.

Kyowa Hakko Kogyo Co., Ltd.: *See*—
Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,410,528., Cl. 424-251.000.

Laboratories (South Africa)(Proprietary) Ltd.: *See*—
Baggaley, Norman E., 4,410,327., Cl. 604-391.000.

Ladizesky, Noe H.; Ward, Ian M.; and Phillips, Leslie N., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, The. Polymers in matrix reinforcement. 4,410,586., Cl. 428-245.000.

Ladner, Charles R. Water ski rope storage compartment. 4,410,084., Cl. 206-53.000.

Ladney, Michael, Jr.: *See*—
Loren, Norman, 4,410,217., Cl. 301-37.0A T.

Lahti, Daniel J., to General Electric Company. Drag-reducing nacelle. 4,410,150., Cl. 244-53.00R.

Lake, Rutherford C., Jr.: *See*—
Fisher, Ralph H., 4,409,796., Cl. 62-160.000.

Lam, Hon W.: *See*—
Tasch, Aloysious F., Jr.; Penz, Perry A.; Pankratz, John M.; and Lam, Hon W., 4,409,724., Cl. 29-571.000.

Lambert, Peter J., to Imperial Chemical Industries PLC. Process for producing a hydrogenation catalyst. 4,410,455., Cl. 502-327.000.

Lambrecht, Richard M.; Bennett, Gerald W.; Duncan, Charles C.; and Ducote, Louis W. Method and apparatus for injecting a substance into the bloodstream of a subject. 4,409,966., Cl. 128-1.100.

Lampe, Warren R., to General Electric Company. Low modulus room temperature vulcanizable silicone rubber compositions. 4,410,677., Cl. 528-17.000.

Lane, Parley C., Jr.; Tenney, Linwood P.; and Wootton, Gerald V., to B. F. Goodrich Company, The. Precipitation of polycycloolefins. 4,410,691., Cl. 528-495.000.

Langer, Arthur W., Jr., to Exxon Research and Engineering Co. Preparation of linear olefin products. 4,410,750., Cl. 585-521.000.

Lantz, Robert F., II: *See*—
Shields, Winston E.; and Lantz, Robert F., II, 4,410,078., Cl. 198-358.000.

Lapp, Douglas E.; and Tran, Luan G., to Mattel, Inc. Electronic board game. 4,410,181., Cl. 273-238.000.

Lare, Donald W., to Avery International Corporation. Diaper tab separable and rejoinable at an adhesive interface. 4,410,325., Cl. 604-389.000.

Larribas, Daniel. Urine specimen cup. 4,409,989., Cl. 128-760.000.

Lasag AG: *See*—
Roussel, Philippe; Fankhauser, Franz; and van der Zypen, Eugen, 4,409,979., Cl. 128-303.100.

Laser Analytics, Inc.: *See*—
Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., 4,410,273., Cl. 356-319.000.

Laser Science, Inc.: *See*—
Javan, Ali, 4,410,992., Cl. 372-32.000.

Lasoen, Jean J., to Massey-Ferguson Services N.V. Transmissions. 4,409,857., Cl. 74-337.500.

Lasoen, Jean J., to Massey-Ferguson Services N.V. Transmissions. 4,409,858., Cl. 74-337.500.

Laufer, Helmut: *See*—
Eheim, Franz; Hofer, Gerald; and Laufer, Helmut, 4,409,939., Cl. 123-357.000.

Laurenson, John G., Jr. Compost air injection and evacuation system. 4,410,349., Cl. 71-9.000.

Laverty, Gerald C.; and Seyffert, Michael, to National Semiconductor Corporation. Self-adjusting plating mask. 4,409,924., Cl. 118-406.000.

Law, Kenneth S. K., to Keysor-Century Corporation. Method and apparatus for measuring and analyzing sound characteristics of record discs. 4,410,970., Cl. 369-58.000.

Layton, John M., to Scott Bader Company Limited. Coating compositions. 4,410,642., Cl. 523-122.000.

Lecomte, Jackie: *See*—
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,409,822., Cl. 73-118.000.

Lee, Chung J., to Plastics Engineering Company. Polyimide-epoxy thermoset resins. 4,410,664., Cl. 525-180.000.

Lee, Gim F., Jr.: *See*—
Haaf, William R.; Lee, Gim F., Jr.; and Ting, Sai P., 4,410,651., Cl. 524-127.000.

Lee, Hing-Fai: *See*—
Strawczynski, Leo; and Lee, Hing-Fai, 4,410,763., Cl. 364-513.500.

Lee, James K., to Eastman Kodak Company. Integrated electromechanical camera control mechanism. 4,410,251., Cl. 354-25.000.

Lee, Julian J. L.: *See*—
Dilley, David R.; Lee, Julian J. L.; and Saltveit, Mikal E., Jr., 4,410,632., Cl. 436-20.000.

Lee, Kyu-Wang: *See*—
Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,668., Cl. 525-440.000.
Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,667., Cl. 525-440.000.

Lee, Robert W.; and Miloscia, William J., to Standard Oil Company, The. Manufacture of rubber modified copolymers in an extruder type reactor. 4,410,659., Cl. 525-53.000.

Lee, Timothy B. K.: *See*—
Hoyle, Burton J.; and Lee, Timothy B. K., 4,409,910., Cl. 111-1.000.

Lefevre, Herve C.: *See*—
Shaw, Herbert J.; Lefevre, Herve C.; and Bergh, Ralph A., 4,410,275., Cl. 356-350.000.

Legatski, L. Karl: *See*—
Wang, Kuei-Hsiung; Biolchini, Robert J.; and Legatski, L. Karl, 4,410,500., Cl. 423-242.000.

Leger, Guy; Roux, Jacques; Alinat, Jean; and Constans, Jacques, to European Atomic Energy Community. Apparatus for continuous and direct measurement of the sea surface temperature. 4,410,282., Cl. 374-156.000.

Legierse, Petrus E. J.: *See*—
vanden Broek, Arnoldus J. M.; Legierse, Petrus E. J.; and Ribberink, Henricus D. M., 4,410,978., Cl. 369-275.000.

Legoy, Auguste; and Legoy, Claude. Sealing device for rotary hydraulic fluid machine. 4,410,187., Cl. 277-25.000.

Legoy, Claude: *See*—
Legoy, Auguste; and Legoy, Claude, 4,410,187., Cl. 277-25.000.

LeGrand, Donald G., to General Electric Co. Method for treating aggregate and products obtained therefrom. 4,410,367., Cl. 106-308.00N.

Le Hir, Yves R.: *See*—
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.

Lehman, James A. Hinged cigarette extinguisher and saver. 4,409,997., Cl. 131-235.0ST.

Lehmann, Hans D.: *See*—
Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,410,529., Cl. 424-250.000.

Leiner, Robert L.; and Salmon, John K., to Otis Elevator Company. Elevator door operator. 4,410,067., Cl. 187-52.0LC.

Leland Stanford Junior University, The Board of Trustees of the: *See*—
Shaw, Herbert J.; Lefevre, Herve C.; and Bergh, Ralph A., 4,410,275., Cl. 356-350.000.

Lelental, Mark; and Pearson, James M., to Eastman Kodak Company. Polymeric electrically active conductive layer (EAC) for electrically activatable recording element and process. 4,410,614., Cl. 430-45.000.

LeMay, Christopher Archibald G., to EMI Limited. Radiography. 4,411,011., Cl. 378-10.000.

Lemforder Metallwaren AG Lemforde: *See*—
Ersoy, Metin; and Kramer, Hermann J., 4,410,295., Cl. 403-122.000.

Lenart, Joseph M., to GTE Laboratories Incorporated. Supervisory control apparatus. 4,410,991., Cl. 371-66.000.

Lenke, Dieter: *See*—
Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, 4,410,529., Cl. 424-250.000.

Lesk, I. Arnold: *See*—
Gurtler, Richard W.; and Lesk, I. Arnold, 4,410,471., Cl. 264-25.000.

Leslie, Samuel A., to General Electric Company. Data circuit for frequency modulating an oscillator. 4,411,005., Cl. 375-65.000.

Lever Brothers Company: *See*—
Davies, James F.; and Tune, John B., 4,410,441., Cl. 206-0.500.

Levine, Melvin: *See*—
Feinbloom, Richard E.; and Levine, Melvin, 4,410,929., Cl. 362-32.000.

Levine, Michael R. Thermostat with dead zone seeking servo action. 4,410,132., Cl. 236-11.000.

Levy, Chauncey F. Focussable intraocular lens. 4,409,691., Cl. 3-13.000.

Lewis, Elyse M.; and Valdiserri, Leo L., to Borg-Warner Chemicals, Inc. Light-stable polyolefins. 4,410,650., Cl. 524-119.000.

Lewis, James A.: *See*—
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

Licentia Patent-Verwaltungs-GmbH: *See*—
Germann, Fritz, deceased; Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, 4,410,998., Cl. 373-40.000.
Stach, Ralf-Michael, 4,410,878., Cl. 340-347.0DD.

Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, to Philip Morris Incorporated. Method and apparatus for perforation of sheet material by laser. 4,410,785., Cl. 219-121.0LK.

Limberg, John F.: *See*—
Schreiner, Peter J.; Limberg, John F.; and Cybulski, Mark J., 4,410,068., Cl. 188-73.380.
Schreiner, Peter J.; Gumkowski, Bert A.; and Limberg, John F., 4,410,069., Cl. 188-73.360.

Lin, Chung-Yuan: *See*—
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,410,689., Cl. 528-367.000.

Lindberg, John E., to Owen, Wickersham & Erickson. Combustion and pollution control system. 4,409,931., Cl. 123-25.00R.

Lindenmayer, Bernhard; and Fink, Lothar, to Klockner-Werke A.G. Method for making two moldings and combining them to make a composite product. 4,410,478., Cl. 264-248.000.

Lindfors, Kaj: *See*—
Bjork, Johan E. G.; Lindfors, Kaj; and Stroucken, Klaus H. D., 4,410,318., Cl. 494-10.000.

Lindner, Friedrich; and Scheunemann, Kurt, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Latent heat accumulator. 4,410,031., Cl. 165-10.000.

Ling, Chi-Fei, to American Cyanamid Company. Process for sizing textile yarns. 4,410,588., Cl. 428-248.000.

Linka, Adolf. Method and apparatus for pneumatic insertion of a weft thread in the shuttle of a multi-feed weaving loom. 4,410,017., Cl. 139-436.000.

Linyaev, Eugene J.: *See*—
Daniel, Wilbur L.; Linyaev, Eugene J.; Walkow, Arnold M.; and Wilkinson, Gregory J., 4,410,051., Cl. 175-4.510.

Lipari, Charles P., to Rai Research Corporation. Method for the manufacture of thermoplastic tubular members. 4,410,383., Cl. 156-73.100.

Lippert, Hans-Joachim, to Kraftwerk Union Aktiengesellschaft. Assembly fixture for cross-shaped control rods of boiling water nuclear reactors. 4,410,485., Cl. 376-260.000.

Lippert, Tony K.: *See*—
Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., 4,409,780., Cl. 56-228.000.

Lipschutz, Paul, to Sodex-Magister Societe d'Exploitation des Brevets Neiman. Master-key piston lock. 4,409,807., Cl. 70-340.000.

Lipsky, Milton H.: *See*—
Hodosh, Milton; and Lipsky, Milton H., 4,410,323., Cl. 604-212.000.

Liptak, Frank J.: *See*—
Houston, Robert D.; and Liptak, Frank J., 4,410,895., Cl. 346-1.100.

Liss, Barry; Calderon, Michael; and Rakow, Marvin S., to HRI, Inc. Multi-zone conversion process and reactor assembly for heavy hydrocarbon feedstocks. 4,410,420., Cl. 208-127.000.

Littelfuse, Inc.: *See*—
Shah, Nitin, 4,409,729., Cl. 29-623.000.

Litton Systems, Inc.: *See*—
Zuckerman, Leonard, 4,410,270., Cl. 356-152.000.

Liu, Chain T.; Inouye, Henry; and Schaffhauser, Anthony C. Long range ordered alloys modified by group IV-B metals. 4,410,371., Cl. 148-11.50R.

Liu, Chao-min; Tresner, Homer D.; and Westley, John, to Hoffmann-La Roche Inc. Antibiotics X-14873 A, G and H. 4,410,712., Cl. 549-414.000.

Livingston-Wheeler, Virginia; and Majnarich, John J., to Livingston-Wheeler, Virginia. Method for preparing a purified extraction residue fraction and its use in stimulating the immune response. 4,410,510., Cl. 424-92.000.

Ljung, Bo H. G., to Singer Company, The. Ring laser gyroscope with doppler mirrors and offset actuators. 4,410,274., Cl. 356-350.000.

Ljung, Bo H. G.; and Stiles, John C., to Singer Company, The. Ring laser gyroscope with doppler mirrors. 4,410,276., Cl. 356-350.000.

Lloyd, Norman E.; and Horwath, Robert O., to Nabisco Brands, Inc. Glucose isomerase process. 4,410,627., Cl. 435-94.000.

Lo, David S.; Paul, Maynard C.; and Zierhut, Lawrence G., to Sperry Corporation. Cross-tie propagation using offset serration and cross-tie rocking action. 4,410,963., Cl. 365-87.000.

Lobastov, George S. Piezoelectric pressure transducer with threaded damper bar. 4,410,825., Cl. 310-327.000.

Loch, Werner, to BASF Aktiengesellschaft. Pigment pastes and their use. 4,410,657., Cl. 524-548.000.

Locher, Anton: *See*—
Bachhofer, Bruno; and Locher, Anton, 4,410,339., Cl. 55-228.000.

Lockey, David J.: *See*—
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,411,008., Cl. 377-18.000.

Lockwood Graders (UK) Limited: *See*—
Cowlin, Robert M.; and Helsby, Nigel C., 4,410,091., Cl. 209-546.000.

Lockyear, Kevin W., to Hughes Tool Company. Backspin detection circuit for a submersible pump. 4,410,845., Cl. 318-459.000.

Loesch, Stanley B.; St. John, James C.; Minta, Danny K.; and Burmeister, Allen D., to Halliburton Company. Flameless nitrogen skid unit with transmission retarder. 4,409,927., Cl. 122-26.000.

Longacre, Kenneth E.; and Kruschke, Marvin R., Sr., to Baker International Corporation. Corrosive environment tension packer. 4,410,040., Cl. 166-118.000.

Longworth, Archibald L. Fume cupboard. 4,409,890., Cl. 98-115.0LH.

L'Oreal: *See*—
Gueret, Jean-Louis H., 4,409,967., Cl. 128-62.00R.

Loren, Norman, to Ladney, Michael, Jr. Anti-theft wheel cover. 4,410,217., Cl. 301-37.0AT.

Lorenz, Adrian, to Contraves AG. Sensor syringe. 4,410,020., Cl. 141-65.000.

Lothrop, George A., to Dennison Manufacturing Company. Multi-purpose labelling. 4,410,203., Cl. 283-81.000.

Loutfy, Raouf O.; Brown, Alan P.; and Yao, Neng-Ping. Low temperature thermally regenerative electrochemical system. 4,410,606., Cl. 429-17.000.

Lovejoy, Inc.: *See*—
Hennessy, Charles P., 4,410,311., Cl. 464-17.000.

Lowe, Colin F. Sheet metal beam. 4,409,771., Cl. 52-729.000.

Lu, Chin H.; and AuClair, Christopher J., to Xerox Corporation. Colored toner and developer composition. 4,410,617., Cl. 430-106.000.

Lucas, Donald S.; Mustacich, Robert V.; and Stone, Roger L., to Procter & Gamble Company, The. Disinfecting solutions for hydrophilic contact lenses. 4,410,442., Cl. 252-107.000.

Lucas Industries Limited: *See*—
Owen, Richard A., 4,410,842., Cl. 318-139.000.
Williams, David C., 4,410,794., Cl. 219-486.000.
Woodhouse, Richard G., 4,410,808., Cl. 307-254.000.

Lucas, Peter: *See*—
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., 4,410,940., Cl. 364-200.000.

Lucous, Robert W. Retainer strip assembly for flexible sheet material. 4,410,027., Cl. 160-380.000.

Luedde, Robert H.: *See*—
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., 4,410,949., Cl. 364-465.000.

Luedtke, Arthur: *See*—
Davis, Stevan A.; and Luedtke, Arthur, 4,410,890., Cl. 343-419.000.

Luk Lamellen und Kupplungsbau GmbH: *See*—
Maucher, Paul; and Friedmann, Oswald, 4,410,074., Cl. 192-48.700.

Lukasavage, William J.: *See*—
Denkewalter, Robert G.; Kolc, Jaroslav F.; and Lukasavage, William J., 4,410,688., Cl. 528-328.000.

Lukaszewicz, Helmut: *See*—
Holz, Wilhelm; and Lukaszewicz, Helmut, 4,410,399., Cl. 202-248.000.

Lummus Company, The: *See*—
Apanel, George J., 4,410,714., Cl. 549-521.000.

Lundberg, Chris A., to Minnesota Mining and Manufacturing Company. Medical electrode. 4,409,981., Cl. 128-640.000.

Lunder, Tito-Livio; and Nielsen, Corine-Madeleine, to Societe d'Assistance Technique Pour Produits Nestle S.A. Powdered tea extract. 4,410,556., Cl. 426-597.000.

Lundstrom, Sten M.: *See*—
Wilhelmsson, Tore C.; and Lundstrom, Sten M., 4,409,903., Cl. 104-162.000.

Lunsford, Franklin R.: *See*—
Hall, Arthur C.; and Lunsford, Franklin R., 4,410,043., Cl. 166-273.000.

Lutz, Paul D., to JSJ Corporation. Meter readout with DC motor impulse generator. 4,409,848., Cl. 73-861.280.

Lutzker, Robert S. Can sealer. 4,410,102., Cl. 220-323.000.

Lyden, Frank J. Adjustable constant level oiler and tool for making oiler adjustments. 4,409,867., Cl. 81-436.000.

Lynch, Robert P. Marine continuous pipe laying system. 4,410,297., Cl. 405-164.000.

Lyons, Steffen A.: *See*—
Pearson, Stephen; and Lyons, Steffen A., 4,410,321., Cl. 604-56.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, 4,409,894., Cl. 101-211.000.
Fischer, Hermann, 4,409,895., Cl. 101-248.000.

M. E. Cunningham Company: *See*—
Speicher, Edwin W., 4,410,287., Cl. 400-134.000.

Macaulay, Alexander, to Raytheon Company. Sputtering apparatus and methods. 4,410,407., Cl. 204-192.0EC.

Machida, Takeshi: *See*—
Shindow, Osamu; Okamoto, Ikuzo; Machida, Takeshi; and Koyama, Hiroshi, 4,410,267., Cl. 356-124.000.

MacIver, Bernard A., to General Motors Corporation. Hard and adherent layers from organic resin coatings. 4,410,611., Cl. 430-5.000.

Mackinnon, John W. M.: *See*—
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.

MacPherson, David B. Marine anchor. 4,409,923., Cl. 114-304.000.

Maddock, Mitchell E. Hand held liquid herbicide applicator. 4,409,755., Cl. 47-1.500.

Maeda, Satoshi: *See*—
Sawada, Shizuo; Iwai, Hiroshi; and Maeda, Satoshi, 4,410,375., Cl. 148-187.000.

Maeda, Takeshi, to Hitachi, Ltd. Optical information playback apparatus. 4,410,969., Cl. 369-46.000.

Maffei, Eugene R. Over-bed television support frame. 4,410,158., Cl. 248-214.000.

Magnavox Government and Industrial Electronics Company: *See*—
Auger, Robert L., 4,411,002., Cl. 375-30.000.

Magnetic Peripherals Inc.: *See*—
Edwards, William J.; and Stricklin, John D., 4,410,341., Cl. 55-482.000.

Magori, Valentin, to Siemens Aktiengesellschaft. Ultrasonic measuring arrangement for differential flow measurement, particularly for measurement of fuel consumption in motor vehicles with a fuel return line. 4,409,847., Cl. 73-861.280.

Maier-Laxhuber, Peter: *See*—
Alefeld, Georg; Maier-Laxhuber, Peter; and Rothmeyer, Markus, 4,410,028., Cl. 165-1.000.

Majnarich, John J.: *See*—
Livingston-Wheeler, Virginia; and Majnarich, John J., 4,410,510., Cl. 424-92.000.

Mak, Fun S.: *See*—
D'Andrade, Bruce M.; and Mak, Fun S., 4,409,753., Cl. 46-93.000.

Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, to Hitachi, Ltd.; and Japan Nuclear Fuel Co., Ltd. Method and apparatus for appearance inspection. 4,410,278., Cl. 356-445.000.

Malcolm, Michael A.: *See*—
Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; and Thompson, Donald R., 4,410,889., Cl. 340-825.200.

Malik, Roger J., to United States of America, Army. Planar doped barrier semiconductor device. 4,410,902., Cl. 357-13.000.

Malikowski, Willi: *See*—
Wolfgang, Bohm; Wolmer, Roger; and Malikowski, Willi, 4,410,491., Cl. 420-501.000.

Mallon, Joseph R.; and Kurtz, Anthony D., to Kulite Semiconductor Products. Semiconductor transducers employing ion implantation terminal configurations. 4,410,871., Cl. 338-5.000.

Mallory, Edwin E.: *See*—
Cole, Leon J.; Mallory, Edwin E.; and Bourassa, Hugh, 4,410,389., Cl. 156-398.000.

Mamadzhanov, Ulmas D.; Bakhir, Vitold M.; Alekhin, Stanislav A.; and Born, Raisa I. Method of drilling a productive bed. 4,410,052., Cl. 175-50.000.

Mambretti, Riccardo. V-Shaped bottom for speedy motorboats having improved planing supporting skids. 4,409,922., Cl. 114-283.000.

Manahan, Edward H.: *See*—
Masilamani, Divakaran; and Manahan, Edward H., 4,410,705., Cl. 548-216.000.

Manders, Petrus G. J., to Ruti Machinery Works Ltd. Air supply system for a pneumatic loom. 4,410,016., Cl. 139-435.000.

Manduley, Flavio M.: *See*—
Daniels, Edward P.; Dlugos, Daniel F.; Holtz, Earl B.; and Manduley, Flavio M., 4,410,962., Cl. 364-900.000.
Dlugos, Daniel F.; Manduley, Flavio M.; and Rubinstein, Arthur, 4,410,961., Cl. 364-900.000.

Mangold, Dietrich; Wahl, Josef; and Aders, Wolf-Karlo, to BASF Aktiengesellschaft. Preparation of acetals of malonaldehyde. 4,410,733., Cl. 568-603.000.

Manitoba Telephone System, The: *See*—
Rodman, William; and Boland, Peter, 4,411,007., Cl. 375-107.000.

Mannesmann Aktiengesellschaft: *See*—
Pischzik, Bruno; and Schneiderat, Johann, 4,410,156., Cl. 248-58.000.

Manning, Paul E.: *See*—
Asphahani, Aziz I.; Silence, William L.; and Manning, Paul E., 4,410,489., Cl. 420-453.000.

Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., to Laser Analytics, Inc. Scanning laser spectrometer. 4,410,273., Cl. 356-319.000.

Manufacture Lyonnaise de Bouchage: *See*—
Beneziat, Alain; and Silaire, Andre, 4,410,085., Cl. 206-217.000.

Manziek, Larry, to Rohm and Haas Company. Borane reducing resins. 4,410,665., Cl. 525-328.400.

Map SA: *See*—
Gressin, Jean-Claude, 4,409,823., Cl. 73-146.000.

Marcellus, Leland D. Creosote cutter. 4,409,703., Cl. 15-249.000.

March, Bruno J.: *See*—
McClain, John D., Jr.; and March, Bruno J., 4,410,115., Cl. 224-39.000.

Marcus, Erich: *See*—
Decker, Quintin W.; Marcus, Erich; and Morlino, Robert J., 4,410,447., Cl. 252-351.000.
Mardis, Wilbur S.: *See*—
Finlayson, Claude M.; and Mardis, Wilbur S., 4,410,364., Cl. 106-20.000.
Margolin, Arkady D.: *See*—
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Sklema, Mikhail V.; and Margolin, Arkady D., 4,409,992., Cl. 128-782.000.
Marini, Jean; Gravelle, Alain; and Weilbacher, Jean-Claude, to Framatome. Process and apparatus for acoustic and ultrasonic detection of defective nuclear reactor fuel assemblies. 4,410,484., Cl. 376-252.000.
Marko Materials, Inc.: *See*—
Ray, Ranjan; and Panchanathan, Viswanathan, 4,410,490., Cl. 420-454.000.
Marti, Wilhelm: *See*—
Mattmann, Beat; Dreyer, Marco; and Marti, Wilhelm, 4,410,000., Cl. 137-116.000.
Martin, Christoph; Himmele, Walter; and Siegel, Hardo, to BASF Aktiengesellschaft. Optically active phenylpropane derivatives, their preparation and their use for the preparation of fungicides. 4,410,734., Cl. 568-715.000.
Martin Marietta Corporation: *See*—
Judd, George G., 4,410,350., Cl. 71-63.000.
Martin, Peter: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,410,785., Cl. 219-121.0LK.
Martin, William L.; and Whitt, S. Randall, to Conoco Inc. Down hole steam quality measurement. 4,409,825., Cl. 73-155.000.
Martinson, Lloyd W., to RCA Corporation. Digital dual half word or single word position scaler. 4,411,009., Cl. 377-47.000.
Marx, Larry F.: *See*—
Meyer, Raymond A.; Marx, Larry F.; and Brugger, John E., 4,410,966., Cl. 367-87.000.
Masao, Nakano: *See*—
Imazeki, Kazuyoshi; and Masao, Nakano, 4,411,020., Cl. 455-219.000.
Maschinenfabrik Benninger AG: *See*—
Kofler, Wilhelm, 4,409,710., Cl. 28-196.000.
Masco Corporation: *See*—
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,410,934., Cl. 363-21.000.
Masilamani, Divakaran; and Manahan, Edward H., to Allied Corporation. Novel spiro oxazoline compounds and methods for their preparation and use. 4,410,705., Cl. 548-216.000.
Mason, Edwin E.: *See*—
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,410,934., Cl. 363-21.000.
Massachusetts General Hospital: *See*—
Holick, Sally A.; and Holick, Michael F., 4,410,515., Cl. 424-180.000.
Massachusetts Institute of Technology: *See*—
Veldkamp, Wilfrid B., 4,410,237., Cl. 350-320.000.
Masse, Lucien: *See*—
Medlin, William L.; and Masse, Lucien, 4,409,837., Cl. 73-579.000.
Masse, Roger F. Apparatus for drilling hard material. 4,410,053., Cl. 175-53.000.
Massey-Ferguson Services N.V.: *See*—
Lasoen, Jean J., 4,409,857., Cl. 74-337.500.
Lasoen, Jean J., 4,409,858., Cl. 74-337.500.
McNaught, James B., 4,409,778., Cl. 56-10.200.
Masunaga, Katsuro: *See*—
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, 4,410,722., Cl. 560-204.000.
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, to Canon Kabushiki Kaisha. Range finding device. 4,410,261., Cl. 356-1.000.
Mathes, H. Bernard: *See*—
Battles, James W.; and Mathes, H. Bernard, 4,409,821., Cl. 73-116.000.
Matix Industries: *See*—
Mutti, Marcel A., 4,410,780., Cl. 219-53.000.
Matsuda, Tadashi: *See*—
Mikami, Tomohisa; Abe, Fumitaka; Sakurai, Fumio; and Matsuda, Tadashi, 4,410,234., Cl. 350-6.800.
Matsuda, Toshio: *See*—
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,410,547., Cl. 424-317.000.
Matsuda, Yoshio, to Yoshida Kogyo K.K. Warp-knit stringer tape for slide fasteners. 4,409,802., Cl. 66-193.000.
Matsufuji, Yohji: *See*—
Haruta, Masahiro; Yano, Yashuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, 4,410,899., Cl. 346-140.00R.
Matsui, Michikage: *See*—
Iohara, Kohichi; and Matsui, Michikage, 4,410,473., Cl. 264-103.000.
Matsumoto, Koichi; Katayama, Yoshihiko; and Sakurai, Hisaya, to Asahi Kasei Kogyo Kabushiki Kaisha. Laminate of thermoplastic resinous composition. 4,410,595., Cl. 428-412.000.
Matsushita Electric Industrial Co. Ltd.: *See*—
Kawakami, Katsura, 4,410,939., Cl. 364-200.000.
Tanabe, Kenzo; and Okada, Yasuhiro, 4,410,979., Cl. 370-11.000.
Ueda, Shigeki, 4,410,795., Cl. 219-492.000.
Yamauchi, Terukazu; and Nakakura, Hirofumi, 4,410,280., Cl. 366-314.000.
Matsuura, Kazuo: *See*—
Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,410,670., Cl. 526-114.000.
Mattei, Joseph. Adjustable-drop package carrier rack for two-wheel vehicles such as bicycles. 4,410,116., Cl. 224-40.000.
Mattel, Inc.: *See*—
Lapp, Douglas E.; and Tran, Luan G., 4,410,181., Cl. 273-238.000.
Matthews, Thomas G. Multiple-reflection optical gas cell. 4,410,271., Cl. 356-301.000.
Mattmann, Beat; Dreyer, Marco; and Marti, Wilhelm, to BOA A.G. Luzern. Pressure control apparatus for at least two pressure vessels. 4,410,000., Cl. 137-116.000.
Matty, Thomas C., to Westinghouse Electric Corp. Transit vehicle brake control apparatus and method. 4,410,154., Cl. 246-182.00B.
Matty, Thomas C.: *See*—
Strong, John D.; and Matty, Thomas C., 4,410,947., Cl. 364-426.000.
Maturo, Robert J.: *See*—
Chin, Danny; and Maturo, Robert J., 4,410,913., Cl. 358-192.100.
Matz, Donald W., Jr.: *See*—
Knop, Charles M.; Ostertag, Edward L.; Matz, Donald W., Jr.; and Cheng, Yuk-Bun, 4,410,892., Cl. 343-786.000.
Maucher, Paul; and Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Friction clutch assembly. 4,410,074., Cl. 192-48.700.
Maurer Engineering Inc.: *See*—
Nagel, Dave D.; and Aparicio, Thomas, Jr., 4,410,054., Cl. 175-107.000.
Mayerhoffer, Herbert, to Osterreichische Hiag-Werke Aktiengesellschaft. Insulating plate and process for the preparation thereof. 4,410,481., Cl. 264-45.300.
McBride, Joan. Tool handle with contoured through passageway and spring biased trigger. 4,409,866., Cl. 81-177.00A.
McCay, Johnny A.: *See*—
Carroll, James P.; Cary, Paul S.; and McCay, Johnny A., 4,409,921., Cl. 114-264.000.
McClain, John D., Jr.; and March, Bruno J. Toy carrier device. 4,410,115., Cl. 224-39.000.
McClenning, Gerald E. Cartridge primer seating tool. 4,409,878., Cl. 86-36.000.
McDonnell Douglas Corporation: *See*—
Boehringer, Wilfred E., 4,409,884., Cl. 91-17.000.
Palmer, Raymond J.; and Micheaux, Dominique, 4,410,577., Cl. 428-85.000.
McElroy, James G. Combustion furnace and burner. 4,410,308., Cl. 432-149.000.
McGinnis, Hebert E., to First National Bank of Akron, The. Stretchable load-retaining conveyor belt. 4,410,082., Cl. 198-818.000.
McGinty, James. Method and apparatus for cooking particulate foodstuffs. 4,410,553., Cl. 426-243.000.
McGlen, James A.: *See*—
Holzhauser, Ronald C.; and McGlen, James A., 4,410,264., Cl. 355-3.0TR.
McGrail, Patrick T., to Imperial Chemical Industries PLC. Coated polyester film and polyester/polyolefin laminates produced therefrom. 4,410,600., Cl. 428-483.000.
McGuire, Robert H.: *See*—
Kifer, David E.; and McGuire, Robert H., 4,410,004., Cl. 137-360.000.
McIntyre, Robert A., to Beckman Instruments, Inc. Electroencephalograph. 4,409,987., Cl. 128-731.000.
McKean, Eric J.; and Downey, David P., to Qantas Airways Limited. Retractable leg rest for a chair. 4,410,215., Cl. 297-429.000.
McLoughlin, Joseph R., to General Electric Company. Layer insulation for use in high-voltage electrical equipment. 4,410,585., Cl. 428-215.000.
McMorris, Trevor C.; and Donaubauer, John R., to Reagents of the University of California, The. Method for the synthesis of lepiochlorin, an antibiotic. 4,410,711., Cl. 549-313.000.
McMullen, Charles H.; Fehskens, Eugene E.; and Plotkin, Jeffrey S., to Exxon Research & Engineering Co. Process for the epoxidation of olefins using a group V metal co-catalyst I and a phenolic hydrocarbon co-catalyst II. 4,410,715., Cl. 549-531.000.
McNaught, James B., to Massey-Ferguson Services N.V. Crop collecting apparatus. 4,409,778., Cl. 56-10.200.
McVicker, Harry J.; Olson, Norman; Saurer, Richard F.; and Schulte, John C., to Sperry Corporation. Adjustable support for a video display terminal. 4,410,159., Cl. 248-349.000.
Mead Corporation, The: *See*—
Brody, Aaron L.; and Archibald, William E., 4,409,775., Cl. 53-167.000.
Mead, Richard: *See*—
Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., 4,409,913., Cl. 112-158.00B.
Medernach, John W., to Motorola, Inc. Mounting structure for electro-optic character elements. 4,410,240., Cl. 350-356.000.
Medlin, William L.; and Masse, Lucien, to Mobil Oil Corporation. Method for measuring the resonance of rock material. 4,409,837., Cl. 73-579.000.
Meguro, Takeshi; Ito, Yukio; and Miyamoto, Bun-ichi, to Fujitsu Limited. Dielectric filter. 4,410,868., Cl. 333-202.000.
Mehta, Jitesh R.; and Dunlevey, Francis M., to GNB Batteries Inc. Method for desilverizing and removal of other metal values from lead bullion. 4,410,361., Cl. 75-63.000.

Meili, Jay E.: *See*—
Halkerston, Russell J.; and Meili, Jay E., 4,410,387., Cl. 156-245.000.
Melnyk, Andrew R.: *See*—
Griffiths, Clifford H.; and Melnyk, Andrew R., 4,410,616., Cl. 430-59.000.
Mercier, Oliver: *See*—
Gessinger, Gernot; Mercier, Oliver; and Riegger, Helmut, 4,410,488., Cl. 419-48.000.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See*—
Baur, Gunter; Scheuble, Bernd; and Weber, Georg, 4,410,445., Cl. 252-299.500.
Merdan, James D. High speed programming of a computer. 4,410,945., Cl. 364-200.000.
Merrell Dow Pharmaceuticals Inc.: *See*—
Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, 4,410,540., Cl. 424-273.00R.
Mertz, William C.: *See*—
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., 4,410,949., Cl. 364-465.000.
Metcalf Construction Company: *See*—
West, Joe B.; and Van Camp, Donald G., 4,410,076., Cl. 193-32.000.
Meyer, George W.: *See*—
Burke, Timothy M.; Meyer, George W.; and Moore, John A., 4,410,955., Cl. 364-718.000.
Meyer, Raymond A.; Marx, Larry F.; and Brugger, John E., to United States of America, Environmental Protection Agency. Method and apparatus for detection of insoluble sinking pollutants. 4,410,966., Cl. 367-87.000.
Mez, Georg, to Mez-Technik A.G. Flange connection for rectangular air-conditioning ducts. 4,410,206., Cl. 285-405.000.
Mez-Technik A.G.: *See*—
Mez, Georg, 4,410,206., Cl. 285-405.000.
Michael, Arthur E.: *See*—
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,409,735., Cl. 30-47.000.
Micheaux, Dominique: *See*—
Palmer, Raymond J.; and Micheaux, Dominique, 4,410,577., Cl. 428-85.000.
Miesch, Michel: *See*—
Franck-Neumann, Michel; and Miesch, Michel, 4,410,721., Cl. 560-124.000.
Mifsud, Joseph F., to Exxon Production Research Co. Tuned vibrator with a compliant connection to the base plate. 4,410,062., Cl. 181-121.000.
Mikami, Tomohisa; Abe, Fumitaka; Sakurai, Fumio; and Matsuda, Tadashi, to Fumitsu Limited. Timing pulse generator for scanning apparatus. 4,410,234., Cl. 350-6.800.
Milberger, Ernest C.: *See*—
Blum, Patricia R.; and Milberger, Ernest C., 4,410,752., Cl. 585-658.000.
Mileikowsky, Gil N. Fluid sampling needle assembly and method of use thereof. 4,409,990., Cl. 128-763.000.
Miller, Alan H. Receptacle for moisture exuding food products. 4,410,578., Cl. 428-117.000.
Miller, Donald E., to SCM Corporation. Rearranged triglycerides and process for making same. 4,410,557., Cl. 426-607.000.
Miller, Jack V., to Gravity Guidance, Inc. Full body weight fraction device. 4,410,176., Cl. 272-145.000.
Miller, Jack V. Prestressed arrow shaft. 4,410,183., Cl. 273-416.000.
Miller, Jan D.; and Misra, Manoranjan, to University of Utah Research Foundation. Process for separating high viscosity bitumen from tar sands. 4,410,417., Cl. 208-11.0LE.
Miller, Robert L.; and DeVries, Adrian, to Zenith Radio Corporation. Surface acoustic wave device employing reflectors. 4,410,823., Cl. 310-313.00D.
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., to International Business Machines Corporation. Synchronizing buffered peripheral subsystems to host operations. 4,410,942., Cl. 364-200.000.
Milliken Research Corporation: *See*—
Brown, Robert S., 4,409,702., Cl. 15-180.000.
Millington, Thomas R.: *See*—
Turni, Thomas P.; and Millington, Thomas R., 4,409,928., Cl. 122-406.00S.
Mills, Brian W. Method and apparatus for the removal of mildew and other stains from paper or parchment. 4,410,566., Cl. 427-161.000.
Miloscia, William J.: *See*—
Lee, Robert W.; and Miloscia, William J., 4,410,659., Cl. 525-53.000.
Minakata, Matsuo: *See*—
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,409,709., Cl. 28-155.000.
Minard, Everett S., to Elmar Industries, Inc. Pressure-actuated valve for use with positive displacement filling machine. 4,410,108., Cl. 222-380.000.
Minick, John R.: *See*—
Jacobs, Stanley C.; Wiltzius, Raymond D.; Minick, John R.; and Foster, Perry A., Jr., 4,410,403., Cl. 204-67.000.
Ministry of International Trade & Industry: *See*—
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.
Minjolle, Louis; and Chateigner, Serge, to Societe Anonyme Dite: Ceraver. Method of manufacturing a sintered material based on silicon nitride, and material obtained by the method. 4,410,636., Cl. 501-98.000.
Minnesota Mining and Manufacturing Company: *See*—
Lundberg, Chris A., 4,409,981., Cl. 128-640.000.
Siedle, Allen R., 4,410,569., Cl. 427-304.000.
Mints, Danny K.: *See*—
Loeach, Stanley B.; St. John, James C.; Mints, Danny K.; and Burmeister, Allen D., 4,409,927., Cl. 122-26.000.
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., to Dayco Corporation. Endless power transmission V-belt construction and method of making the same. 4,410,314., Cl. 474-251.000.
Misra, Manoranjan: *See*—
Miller, Jan D.; and Misra, Manoranjan, 4,410,417., Cl. 208-11.0LE.
Mita Industrial Co., Ltd.: *See*—
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,410,259., Cl. 355-3.0DD.
Mitchell, Michael I.: *See*—
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, 4,409,897., Cl. 102-200.000.
Mitel Corporation: *See*—
Beirne, Patrick R., 4,410,766., Cl. 179-16.00F.
Mitrano, Richard P.: *See*—
Gerhardt, Leslie H.; and Mitrano, Richard P., 4,410,233., Cl. 350-6.600.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,410,792., Cl. 219-383.000.
Komurasaki, Satoshi; Ueda, Atsushi; and Yamane, Tsuneo, 4,409,943., Cl. 123-418.000.
Sasaki, Takeo; and Morimoto, Yoshinobu, 4,409,929., Cl. 123-479.000.
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,410,959., Cl. 364-900.000.
Tomoda, Toshimasa, 4,410,483., Cl. 376-154.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Gaku, Morio; Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,410,601., Cl. 428-290.000.
Ikeguchi, Nobuyuki; and Kimbara, Hidenori, 4,410,666., Cl. 525-417.000.
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, 4,410,690., Cl. 528-486.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Ando, Takashi, 4,410,849., Cl. 323-237.000.
Mitsubishi Mallory Metallurgical Co., Ltd.: *See*—
Omata, Hiroshi; and Katumata, Saichi, 4,410,818., Cl. 310-41.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Kubbota, Massashi; and Noda, Touru, 4,410,619., Cl. 430-234.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Funakoshi, Katsumi; Itoi, Hideyuki; and Konishi, Toshifumi, 4,410,655., Cl. 524-522.000.
Mitsui, Sadao: *See*—
Nishikawa, Kyoichi; and Mitsui, Sadao, 4,410,139., Cl. 239-102.000.
Mitui, Yoshimasa: *See*—
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, 4,410,690., Cl. 528-486.000.
Miura, Yosinari: *See*—
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.
Miyajima, Mikio: *See*—
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,410,289., Cl. 400-185.000.
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, to Mitsubishi Gas Chemical Co., Inc. Process for preparation of modified aromatic hydrocarbon resin. 4,410,690., Cl. 528-486.000.
Miyamoto, Bun-ichi: *See*—
Meguro, Takeshi; Ito, Yukio; and Miyamoto, Bun-ichi, 4,410,868., Cl. 333-202.000.
Miyamoto, Kazuaki: *See*—
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.
Miyamoto, Minoru: *See*—
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, to Ube Industries, Ltd. Process for preparing oxalic acid diesters using platinum group metals supported on alumina. 4,410,722., Cl. 560-204.000.
Miyoshi, Mituji: *See*—
Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,410,670., Cl. 526-114.000.
Mobay Chemical Corporation: *See*—
Witman, Mark W.; and Reinert, Gerard E., 4,410,662., Cl. 525-148.000.
Mobil Oil Corporation: *See*—
Andress, Harry J., Jr.; Horodysky, Andrew G.; and Kaminski, Joan M., 4,410,434., Cl. 252-32.70R.
Chu, Pochen; Dwyer, Francis G.; and Huss, Albin, 4,410,452., Cl. 502-60.000.
Hall, Arthur C.; and Lunsford, Franklin R., 4,410,043., Cl. 166-273.000.

Herrington, Fox J., 4,410,130., Cl. 383-62.000.
Horodysky, Andrew G., 4,410,438., Cl. 252-49.600.
Medlin, William L.; and Masse, Lucien, 4,409,837., Cl. 73-579.000.
Okorodudu, Abraham O. M., 4,410,703., Cl. 548-142.000.
Otto, John B., Jr., 4,410,497., Cl. 423-16.000.
Shu, Winston R., 4,410,042., Cl. 166-261.000.

Modic, Rudolf: *See—*
Diessel, Karl-Heinz; Modic, Rudolf; and Struss, Friedrich, 4,410,449., Cl. 502-24.000.

Molded Dimensions Inc.: *See—*
Halkerston, Russell J.; and Meili, Jay E., 4,410,387., Cl. 156-245.000.

Molex Incorporated: *See—*
Enomoto, Masahiro; Awano, Yoshiyuki; Yamada, Yuji; and Aso, Akira, 4,410,222., Cl. 339-17.00F.

Molin, Alexis, to Atlas Copco Aktiebolag. Directional valve means for positioning machine units. 4,410,049., Cl. 173-2.000.

Molle, Nicolaas J. M.: *See—*
Underhill, Michael J.; and Molle, Nicolaas J. M., 4,410,855., Cl. 328-151.000.

Moller, Rudolf: *See—*
Gottling, Helmut; and Moller, Rudolf, 4,410,008., Cl. 137-627.500.

Momany, Frank A., to Beckman Instruments, Inc. Synthetic peptides having pituitary growth hormone releasing activity. 4,410,513., Cl. 424-177.000.

Momonoi, Kaishu: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Momose, Chiaki: *See—*
Kato, Hiroshi; and Momose, Chiaki, 4,410,648., Cl. 524-101.000.

Monarch Knitting Machinery Corp.: *See—*
Gutschmit, Alan; and York, Paul W., 4,409,800., Cl. 66-9.00R.

Monarch Marking Systems, Inc.: *See—*
Hamisch, Paul H., Jr., 4,409,896., Cl. 101-367.000.

Monatex S.A.: *See—*
Gutschmit, Alan; and York, Paul W., 4,409,800., Cl. 66-9.00R.

Monegon, Ltd.: *See—*
Stamminger, Reinhard; and Cullis, Herbert M., 4,410,757., Cl. 136-248.000.

Mons, Johannes J.: *See—*
Carasso, Marino G.; Kleuters, Wilhelm J.; and Mons, Johannes J., 4,410,877., Cl. 340-347.0DD.

Monsanto Company: *See—*
Bollinger, Frederic G., 4,410,351., Cl. 71-90.000.
Bollinger, Frederic G., 4,410,352., Cl. 71-90.000.
Coran, Aubert Y.; Rader, Charles P.; and Trivette, Chester D., Jr., 4,410,656., Cl. 524-529.000.

Montefiore Medical Center: *See—*
Straus, Eugene W., 4,410,660., Cl. 525-54.100.

Monti, Carmel S.; Eisenkramer, Arthur; and Yurdin, Carl. Photography stand system. 4,410,157., Cl. 248-125.000.

Moore, John A.: *See—*
Burke, Timothy M.; Meyer, George W.; and Moore, John A., 4,410,955., Cl. 364-718.000.

Moore, John P., to Vosper Thornycroft Limited. Horizontal sheel boiler. 4,409,926., Cl. 122-4.00D.

Moore, L. Dow: *See—*
Das, Balbhadra; and Moore, L. Dow, 4,410,645., Cl. 523-206.000.

Moore, Robert S., to NCR Corporation. Data decompression apparatus and method. 4,410,965., Cl. 365-230.000.

Moorhouse, Arnold E. Power tool waste collector. 4,409,699., Cl. 15-415.00R.

Moreau, Claude R. M. Soft doll head with sleeping eyes. 4,409,754., Cl. 46-169.00A.

Mori, Atsuhi: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.

Mori, Haruhisa: *See—*
Sakurai, Junji; and Mori, Haruhisa, 4,410,801., Cl. 250-492.200.

Mori, Kei. Solar optical energy collector. 4,409,963., Cl. 126-440.000.

Mori, Kunio: *See—*
Sasaki, Yutaka; Mori, Kunio; and Moriya, Kiyoshi, 4,410,450., Cl. 502-22.000.

Mori, Shinya, to Nissan Motor Company, Limited. Radiator grille structure. 4,410,032., Cl. 165-44.000.

Mori, Yoshihisa; and Takashima, Mitsuru, to Sony Corporation. Stereophonic pick-up cartridge. 4,410,975., Cl. 369-170.000.

Moriguchi, Fujio: *See—*
Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, 4,410,898., Cl. 346-76.0PH.

Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, to Fuji Xerox Co., Ltd. Two-sided recording device. 4,410,897., Cl. 346-76.0PH.

Moriguchi, Haruhiko: *See—*
Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, 4,410,898., Cl. 346-76.0PH.

Morimoto, Yoshinobu: *See—*
Sasaki, Takeo; and Morimoto, Yoshinobu, 4,409,929., Cl. 123-479.000.

Morita, Masakazu: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.

Moriya, Kiyoshi: *See—*
Sasaki, Yutaka; Mori, Kunio; and Moriya, Kiyoshi, 4,410,450., Cl. 502-22.000.

Moriyama, Hideo: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,410,378., Cl. 149-109.600.

Moriyama, Shigeo; Ito, Masaaki; and Harada, Tatsuo, to Hitachi, Ltd. Apparatus for precisely moving a table. 4,409,860., Cl. 74-479.000.

Morlino, Robert J.: *See—*
Decker, Quintin W.; Marcus, Erich; and Morlino, Robert J., 4,410,447., Cl. 252-351.000.

Morton, Lou: *See—*
Westergaard, Rod; Morton, Lou; and Zeiders, Ken, 4,409,782., Cl. 56-328.0TS.

Morton, Steven R.: *See—*
Gumm, Linley F.; and Morton, Steven R., 4,410,879., Cl. 340-347.0DA.

Mosier Industries, Inc.: *See—*
Herner, Ray H., 4,409,886., Cl. 91-397.000.

Motorola, Inc.: *See—*
Barker, Charles E.; and Smith, Michael D., 4,410,813., Cl. 307-362.000.
Burke, Timothy M.; Meyer, George W.; and Moore, John A., 4,410,955., Cl. 364-718.000.
Comroe, Richard A.; Kotzin, Michael D.; and van den Heuvel, Anthony P., 4,409,836., Cl. 73-504.000.
Ecklund, Lawrence M., 4,410,762., Cl. 381-15.000.
Gurtler, Richard W.; and Lesk, I. Arnold, 4,410,471., Cl. 264-25.000.
Medernach, John W., 4,410,240., Cl. 350-356.000.
Werner, Gerald C., 4,410,861., Cl. 331-25.000.
Yoakum, John H., 4,411,021., Cl. 455-222.000.

Motsinger, James V., to Ramsey Engineering Company. Wall build-up detector for a multi-point level indicator. 4,410,886., Cl. 340-617.000.

Motter, Manfred: *See—*
Herrmann, Manfred; Jenny, Rico; and Motter, Manfred, 4,410,332., Cl. 8-644.000.

Moulton, Alexander E., to Moulton Developments Limited. Damper valve. 4,410,006., Cl. 137-493.800.

Moulton Developments Limited: *See—*
Moulton, Alexander E., 4,410,006., Cl. 137-493.800.

MPD Technology Corporation: *See—*
Hall, Dale E., 4,410,413., Cl. 204-290.00R.

MSK Verpackungs-Systeme GmbH: *See—*
Hannen, Rainer, 4,409,774., Cl. 53-77.000.

MTU Motoren Und Turbinen Union Munchen GmbH: *See—*
Strasser, Franz; Steinhauser, Ludwig; and Kugenbuch, Bernd, 4,410,285., Cl. 384-278.000.

Muchowski, Joseph M.; and Guzman, Angel, to Syntex (U.S.A.) Inc. Oxazolidin-2-one prostaglandin compounds. 4,410,526., Cl. 424-250.000.

Muchowski, Joseph M.; and Kluge, Arthur F., to Syntex (U.S.A.) Inc. 3-Substituted-5,6,7,8-tetrahydropyrrolo[1,2-a]-pyridine-and 6,7,8,9-tetrahydro-5H-pyrrolo[1,2-a]-azepine carboxylic acid derivatives useful as blood platelet aggregation inhibitors. 4,410,534., Cl. 424-263.000.

Mudge, Richard C.: *See—*
Fair, Timothy K.; and Mudge, Richard C., 4,410,587., Cl. 428-247.000.

Mueller Co.: *See—*
Hauffe, William L., 4,409,708., Cl. 24-279.000.

Mueller, Karl H., to Schering AG; and Schroeer, Ulrich. Organomagnesium alkoxides and method for making the same. 4,410,742., Cl. 568-851.000.

Muenstedt, Helmut: *See—*
Brandstetter, Franz; Muenstedt, Helmut; and Priebe, Edmund, 4,410,654., Cl. 524-487.000.

Muhammad, Clifton C., to Carter Bros. Iron Works, Inc. Snow melter. 4,409,957., Cl. 126-343.50R.

Muller, Frank A., to Scripto, Inc. Method of making and the composition for an initially erasable ink for a ball point writing instrument. 4,410,643., Cl. 523-161.000.

Muller, Hans-Ueli: *See—*
Festag, Werner; and Muller, Hans-Ueli, 4,409,808., Cl. 72-60.000.

Muller, Jean-Claude: *See—*
Hengartner, Urs; Muller, Jean-Claude; and Ramuz, Henri, 4,410,698., Cl. 544-255.000.

Muller, Karl-Hans; Barthel, Walter; and Oelmuller, Rolf, to Degussa Aktiengesellschaft. Process for improving the mineral asphalt coatings for streets and paths and products. 4,410,589., Cl. 428-331.000.

Muller, Klaus: *See—*
Burkel, Rainer; Peter, Cornelius; and Muller, Klaus, 4,409,815., Cl. 73-35.000.

Muller, Ortwin; Schulz, Kurt; and Stopar, Viktor, to Carl Zeiss-Stiftung. High-precision ophthalmometer which is independent of distance. 4,410,242., Cl. 351-211.000.

Muller, Reinhold: *See—*
Germann, Fritz, deceased; Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, 4,410,998., Cl. 373-40.000.

Muller, Rudolf R. M., to Multifastener Corporation. Method of piercing and riveting fastener to a panel. 4,409,719., Cl. 29-432.000.

Mulso, Frank A., Jr.; and Smith, Juan J., to Chrysler Corporation. Vehicle impact energy absorbing bumper mount. 4,410,208., Cl. 293-132.000.

Multifastener Corporation: *See—*
Muller, Rudolf R. M., 4,409,719., Cl. 29-432.000.

Mumola, Joanne L.: *See—*
Demke, Kent R.; and Mumola, Joanne L., 4,410,958., Cl. 364-900.00R.

Munekata, Kenichi: *See—*
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,409,721., Cl. 29-568.000.

Murai, Shigeo: *See—*
Usui, Yuichi; Murai, Shigeo; Kurosaki, Shiro; and Watanabe, Minoru, 4,410,345., Cl. 65-3.150.

Muraishi, Masakazu; and Sawazaki, Kimio, to Nissan Motor Co., Ltd. Retainer. 4,409,707., Cl. 24-214.000.

Murakami, Keikichi, to Kawasaki Jukogyo K.K. Method of applying a refractory lining to a rotary steel converter. 4,410,167., Cl. 266-281.000.

Murakami, Masaki: *See—*
Segawa, Keiji; Murakami, Masaki; and Doi, Keiichiro, 4,410,974., Cl. 369-126.000.

Muramatsu, Yuji: *See—*
Shigemori, Daizo; and Muramatsu, Yuji, 4,410,831., Cl. 313-325.000.

Murata Manufacturing Company, Ltd.: *See—*
Kato, Suehiro; and Ando, Kenji, 4,410,408., Cl. 204-192.0SP.

Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Multicolor heat-sensitive recording apparatus. 4,410,898., Cl. 346-76.0PH.

Murdock, Keith C., to American Cyanamid Company. Novel 1,4-bis(-substituted-amino)-5,8-dihydroxyanthraquinones and leuco bases thereof. 4,410,524., Cl. 424-248.510.

Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., to General Electric Company. Method of making a composite article. 4,410,385., Cl. 156-181.000.

Murphy, Ralph A.: *See—*
Clifton, Brian J.; Alley, Gary D.; and Murphy, Ralph A., 4,411,022., Cl. 455-327.000.

Murray, Phillip J., to Continental-Wirt Electronics Corp. Terminal staking article and process. 4,410,232., Cl. 339-220.00R.

Murrell, Howard J., Sr.: *See—*
Murrell, Robert L., Jr.; and Murrell, Howard J., Sr., 4,410,109., Cl. 222-52.000.

Murrell, Robert L., Jr.; and Murrell, Howard J., Sr., to Quality Engineering Co., Inc. Leak detection system and check valve for use therein. 4,410,109., Cl. 222-52.000.

Musci, Nicola, to Fratelli Musci. Insole system for shoe with removably-mounted heel. 4,409,745., Cl. 36-24.500.

Mustacich, Robert V.: *See—*
Lucas, Donald S.; Mustacich, Robert V.; and Stone, Roger L., 4,410,442., Cl. 252-107.000.

Muterspaugh, Max W.; and Whitledge, Gary A., to RCA Corporation. Impedance transformation network for a SAW filter. 4,410,864., Cl. 333-32.000.

Mutti, Marcel A., to Matix Industries. Machines for welding rails or similar articles. 4,410,780., Cl. 219-53.000.

Myers, Malcolm: *See—*
Baxter, Andrew J. G.; and Myers, Malcolm, 4,410,548., Cl. 424-330.000.

Myers, Robert E.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., 4,410,968., Cl. 369-44.000.

Myers, William N.; and Hein, Leopold A., to United States of America, National Aeronautics and Space Administration. Resilient seal ring assembly with spring means applying force to wedge member. 4,410,189., Cl. 277-117.000.

Naaktgeboren, Adrianus, to Sperry Corporation. Baler feeder mechanism with adjustment feature. 4,409,891., Cl. 100-189.000.

Nabisco Brands, Inc.: *See—*
Lloyd, Norman E.; and Horwath, Robert O., 4,410,627., Cl. 435-94.000.

Nadler, Gerhard: *See—*
Witte, Dieter; Jendrewski, Alfons; and Nadler, Gerhard, 4,410,834., Cl. 315-58.000.

Naffziger, Larry C. Method for orienting well casing and other tubular work objects and device therefor. 4,410,044., Cl. 166-379.000.

Nagai, Kiyoshi: *See—*
Kawaguchi, Genbee; and Nagai, Kiyoshi, 4,409,770., Cl. 52-666.000.

Nagaura, Yoshiaki. Method for the manufacture of lens-like articles and the like. 4,409,760., Cl. 51-284.00R.

Nagel, Dave D.; and Aparicio, Thomas, Jr., to Maurer Engineering Inc. Well drilling tool with diamond radial/thrust bearings. 4,410,054., Cl. 175-107.000.

Nagel, Dietmar: *See—*
Kennedy, Melvin R.; and Nagel, Dietmar, 4,409,953., Cl. 124-7.000.

Nagel, Kennedy, Arad & Associates: *See—*
Kennedy, Melvin R.; and Nagel, Dietmar, 4,409,953., Cl. 124-7.000.

Naka, Michiharu; Yatabe, Takayuki; and Koizumi, Hideki, to Nippon Seiko Kabushiki Kaisha. Lithium complex grease and its producing method. 4,410,435., Cl. 252-42.100.

Nakagawa, Akira: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Nakagawa, Yasuo: *See—*
Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, 4,410,278., Cl. 356-445.000.

Nakaguti, Osamu: *See—*
Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, 4,410,458., Cl. 260-239.100.

Nakajima, Sadahiro; and Tanaka, Katsunobu. Apparatus for manufacturing an integral wooden angle bar. 4,409,875., Cl. 83-877.000.

Nakajima, Yasuyuki: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; and Tsugeno, Makoto, 4,410,732., Cl. 568-337.000.

Nakakura, Hirofumi: *See—*
Yamauchi, Terukazu; and Nakakura, Hirofumi, 4,410,280., Cl. 366-314.000.

Nakamizo, Nobuhiro: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,410,528., Cl. 424-251.000.

Nakamura, Akira; and Nakaya, Takao, to Nippon Gakki Seizo Kabushiki Kaisha. Electro-acoustic transducer. 4,410,768., Cl. 179-115.50R.

Nakamura, Tadahiro: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.

Nakamura, Takuma; and Sugizaki, Kazumi, to VLSI Technology Research Association. Positioning apparatus. 4,410,951., Cl. 364-559.000.

Nakane, Katsumi; and Hirano, Hideo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of starting a flyer frame. 4,409,785., Cl. 57-78.000.

Nakano, Keita: *See—*
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Nakano, Yoshiyuki: *See—*
Sato, Akihiko; and Nakano, Yoshiyuki, 4,410,256., Cl. 354-234.000.

Nakao, Nobuhiko: *See—*
Sasama, Shigeru; Nakao, Nobuhiko; and Ohara, Osamu, 4,410,572., Cl. 427-407.100.

Nakashima, Yoichi: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Nakata, Yasushi: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.

Nakaya, Takao: *See—*
Nakamura, Akira; and Nakaya, Takao, 4,410,768., Cl. 179-115.50R.

Nakayama, Masafumi; Yanai, Tokiyoshi; and Fukino, Masato, to Nissan Motor Company, Limited. Fluid-operated control apparatus for power-assisted steering system of automotive vehicle. 4,410,059., Cl. 180-143.000.

Nakayama, Mutsuo; Yamaguchi, Hiromi; and Yamasaki, Harumasa, to Kao Soap Co., Ltd. Process for producing fibrous carboxymethyl cellulose. 4,410,694., Cl. 536-98.000.

Nakazima, Toshiyuki: *See—*
Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, 4,410,502., Cl. 423-345.000.

Nalco Chemical Company: *See—*
Roe, William J., 4,410,431., Cl. 210-728.000.
Roe, William J.; and Perisho, Jacqueline L., 4,410,599., Cl. 428-469.000.

Nam, Billie, to Omex. Laser recording medium. 4,410,581., Cl. 428-195.000.

Nance, Scott: *See—*
Nordling, Karl I.; and Nance, Scott, 4,410,964., Cl. 365-189.000.

Napflin, Hans. Ski binding with step frame and retraction installation. 4,410,200., Cl. 280-618.000.

Narayan, Thirumurti; Stolz, Theodore O.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Polyisocyanurate-polyurethane foams. 4,410,641., Cl. 521-167.000.

Narita, Sen-ichi: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M. Board made of fibrous material. 4,410,573., Cl. 428-2.000.

Nash, Dudley O.; and Clayton, Thomas S., to General Electric Company. Actuation system for use on a gas turbine engine. 4,409,788., Cl. 60-226.300.

Nash, Irwin. Apparatus and method for use in quantitative analysis of a fluid suspension. 4,409,820., Cl. 73-61.400.

Nash, Stanley G., to Sun Wise, Inc. Solar energy conversion apparatus. 4,409,965., Cl. 126-450.000.

National Research Development Corporation: *See—*
Roberts, Griffith T., 4,409,840., Cl. 73-704.000.

National Semiconductor Corporation: *See—*
Laverty, Gerald C.; and Seyffert, Michael, 4,409,924., Cl. 118-406.000.

National-Standard Company: *See—*
Cole, Leon J.; Mallory, Edwin E.; and Bourassa, Hugh, 4,410,389., Cl. 156-398.000.
NCR Corporation: *See—*
Dalton, Philip A., Jr.; and Bergstedt, Lowell C., 4,409,727., Cl. 29-571.000.
Moore, Robert S., 4,410,965., Cl. 365-230.000.
NECCHI Societa per Azioni: *See—*
Bar, Alfredo, 4,410,303., Cl. 417-312.000.
Nederlandse Centrale Organisatie voor Toegespastnatuurwetenschappeliukonderzoek: *See—*
Berg, Jan; Verbeek, Francois; and Bluten, Eric J., 4,410,544., Cl. 424-287.000.
Nedley, William M.: *See—*
Babow, David A.; and Nedley, William M., 4,410,922., Cl. 360-109.000.
Neel, Emmanuel E. A.: *See—*
Kortbeek, Andras G. T. G.; Neel, Emmanuel E. A.; and Barre, Guy, 4,410,637., Cl. 518-714.000.
Negi, Virendra S.; and Tague, Steven A., to Honeywell Information Systems Inc. Diagnostic testing of the data path in a microprogrammed data processor. 4,410,984., Cl. 371-16.000.
Nelb, Robert G., II; and Onder, Kemal, to Upjohn Company, The. Aromatic copolyamides containing ether linkages. 4,410,684., Cl. 528-185.000.
Nelson, Alfred M.; and Rasekhi, Houshang, to Wang Laboratories, Inc. Apparatus for preventing removal of toner from transferred images. 4,410,896., Cl. 346-74.200.
Nelson, Floyd E.: *See—*
Tucker, Leroy W.; and Nelson, Floyd E., 4,410,925., Cl. 361-42.000.
Nelson, John K., to General Electric Company. Additives for enhancing corona stabilization in electronegative gases. 4,410,456., Cl. 252-571.000.
Nemoto, Yuhei; and Takahashi, Shiro, to Dainippon Ink and Chemicals, Inc. Method for forming a cured resin coating having a desired pattern on the surface of a substrate. 4,410,562., Cl. 427-54.100.
Ness, Virginia V. Scraper-protector for use with garbage disposal unit. 4,409,692., Cl. 4-286.000.
Neufeld, John A. Method and apparatus for corrective osteotomy. 4,409,973., Cl. 128-92.00E.
Neumann, David H., to Automation Development Corporation. Shear for bar stock. 4,409,871., Cl. 83-104.000.
Newdoll, Ronald M.; and Phillips, John E., to Accurate Sound Corporation. Method of and apparatus for recording information from a master medium onto a slave medium employing digital techniques. 4,410,917., Cl. 360-15.000.
Newman, Douglas A.; and Emerson, Robert T., to International Business Machines Corporation. Process for printing porous image. 4,409,893., Cl. 101-129.000.
Newns, George R.: *See—*
France, Paul W.; and Newns, George R., 4,410,567., Cl. 427-163.000.
Nichols, Walter A., to Philip Morris, Inc. Method for applying particulate matter to tobacco. 4,409,995., Cl. 131-84.00R.
Nickel, John: *See—*
Rynik, Milan; and Nickel, John, 4,409,870., Cl. 83-100.000.
Niederer, Lee H.; and Niederer, Steven D., to Otto Niederer Sons, Inc. Egg conveyor turning apparatus. 4,410,079., Cl. 198-424.000.
Niederer, Steven D.: *See—*
Niederer, Lee H.; and Niederer, Steven D., 4,410,079., Cl. 198-424.000.
Nielsen, Corine-Madeleine: *See—*
Lunder, Tito-Livio; and Nielsen, Corine-Madeleine, 4,410,556., Cl. 426-597.000.
Niemuth, Howard A.; and Bredehorn, Herbert D., to Uniquip Manufacturing, Inc. Pin registration back for film strip camera. 4,410,254., Cl. 354-203.000.
Nihon Nosan Kogyo K.K.: *See—*
Kamimae, Hiroshi; and Ishikawa, Tadashi, 4,410,541., Cl. 424-273.00R.
Nihon Sanmo Dyeing Co., Ltd.: *See—*
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,410,593., Cl. 428-389.000.
Niikawa, Ryo: *See—*
Konno, Mitsuo; Niikawa, Ryo; and Sato, Kenzo, 4,410,782., Cl. 219-89.000.
Nikitin, Yakov V.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.
Nikitin, Yaroslav G.: *See—*
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Yakubovich, Vladimir M.; and Nikitin, Yaroslav G., 4,409,985., Cl. 128-702.000.
Nill, Kenneth W.: *See—*
Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., 4,410,273., Cl. 356-319.000.
Nimry, Tayseer S.; and Fields, Ellis K., to Standard Oil Company (Indiana). Polyimides-amides and copolyimides-polyamides from tetramethylcyclobutane-1,2,3,4-tetracarboxylic dianhydride, dicarboxylic acids and a mixture of diamines. 4,410,658., Cl. 524-600.000.
Nippon Electric Co., Ltd.: *See—*
Kasuya, Yoshihiro, 4,410,960., Cl. 364-900.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Hotta, Tadahiko; and Nonaka, Terumoto, 4,409,725., Cl. 29-571.000.
Katoh, Mitsumi, 4,409,876., Cl. 84-1.010.
Nakamura, Akira; and Nakaya, Takao, 4,410,768., Cl. 179-115.50R.
Nippon Kogaku K.K.: *See—*
Sato, Akihiko; and Nakano, Yoshiyuki, 4,410,256., Cl. 354-234.000.
Nippon Kokan Kabushiki Kaisha: *See—*
Urabe, Namio, 4,410,374., Cl. 148-143.000.
Nippon Oil Company, Limited: *See—*
Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,410,670., Cl. 526-114.000.
Nippon Oil and Fats Co. Ltd.: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,410,378., Cl. 149-109.600.
Nippon Seiko Kabushiki Kaisha: *See—*
Naka, Michiharu; Yatabe, Takayuki; and Koizumi, Hideki, 4,410,435., Cl. 252-42.100.
Nippon Soken, Inc.: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,409,828., Cl. 73-204.000.
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,409,816., Cl. 73-35.000.
Nippon Steel Corporation: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Saito, Chikara; and Wakimoto, Hirofumi, 4,410,360., Cl. 75-60.000.
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,410,372., Cl. 148-12.00C.
Nippondenso Co., Ltd.: *See—*
Kanada, Kenso; Hasegawa, Yoshiharu; Kawase, Hiroshi; and Ishikawa, Kazunori, 4,410,036., Cl. 165-134.00R.
Nishiguchi, Masahiko: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.
Nishihama, Hitoshi: *See—*
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,410,259., Cl. 355-3.0DD.
Nishijima, Victor Y. Telephone handset receptacle for off-hook placement. 4,410,771., Cl. 179-146.00R.
Nishikawa, Kyoichi; and Mitsui, Sadao, to TDK Electronics Co., Ltd. Liquid nebulizer. 4,410,139., Cl. 239-102.000.
Nishikawa, Reiji: *See—*
Yamamori, Kazuyoshi; Nishikawa, Reiji; Fujiwara, Tatsuo; and Asano, Toshimitsu, 4,410,603., Cl. 428-611.000.
Nishimoto, Satoru K.: *See—*
Price, Paul A.; and Nishimoto, Satoru K., 4,410,506., Cl. 436-542.000.
Nishimura, Toshiaki: *See—*
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, 4,410,690., Cl. 528-486.000.
Nishina, Yasuhide: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, 4,410,784., Cl. 219-121.0PY.
Nishino, Masaki; Yasuhara, Yutaka; Fukuda, Tadanori; and Sakamoto, Sadayuki, to Toray Industries, Inc. Polyurethane resins and polyurethane resin coating compositions. 4,410,597., Cl. 428-423.100.
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Heat pump device. 4,409,799., Cl. 62-467.00R.
Niskanen, Toivo J.: *See—*
Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., 4,410,337., Cl. 55-21.000.
Nissan Chemical Industries Ltd.: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; and Tsugeno, Makoto, 4,410,732., Cl. 568-337.000.
Nissan Motor Company, Ltd.: *See—*
Asano, Masaharu, 4,409,937., Cl. 123-425.000.
Dozono, Kichikiko, 4,409,936., Cl. 123-198.00F.
Hagiwara, Yutaka; and Yamazaki, Tetu, 4,410,070., Cl. 188-73.360.
Higashiyama, Kazuhiro, 4,410,938., Cl. 364-200.000.
Iijima, Yoshitaka; and Abe, Masanori, 4,410,201., Cl. 280-688.000.
Inoue, Hiroshi, 4,409,933., Cl. 123-41.120.
Mori, Shinya, 4,410,032., Cl. 165-44.000.
Muraishi, Masakazu; and Sawazaki, Kimio, 4,409,707., Cl. 24-214.000.
Nakayama, Masafumi; Yanai, Tokiyoshi; and Fukino, Masato, 4,410,059., Cl. 180-143.000.
Sakurai, Yukio, 4,409,861., Cl. 74-501.00R.
Nitschmann, Karl; Dolata, Hans; and Dietzsch, Gunter, to Andreas Stihl. Saw chain for chain saws, particularly power chain saws. 4,409,874., Cl. 83-833.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Sasaki, Yutaka; Mori, Kunio; and Moriya, Kiyoshi, 4,410,450., Cl. 502-22.000.
Nitto Electric Industrial Co., Ltd.: *See—*
Iwama, Akio; Kihara, Yasuo; Abe, Masao; and Kazuse, Yoshitaka, 4,410,568., Cl. 427-244.000.

Niwa, Yukichi: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.
NL Industries, Inc.: *See—*
Finlayson, Claude M.; and Mardis, Wilbur S., 4,410,364., Cl. 106-20.000.
Nobukawa, Akira; and Sawaguchi, Tatsuei, to Kabushiki Kaisha Kitagawa Tekkosho. Wedge-operated jaw chuck for holding work on a machine tool. 4,410,192., Cl. 279-121.000.
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, to Hisamitsu Pharmaceutical Co., Inc. Antiallergic compositions. 4,410,546., Cl. 424-317.000.
Noda, Touru: *See—*
Kubbota, Massashi; and Noda, Touru, 4,410,619., Cl. 430-234.000.
Noiles, Douglas G.; and Green, David T., to United States Surgical Corporation. Surgical stapler apparatus with curved staple pusher. 4,410,125., Cl. 227-19.000.
Noll, Bernd: *See—*
Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, 4,410,624., Cl. 430-377.000.
Nomori, Hiroyuki: *See—*
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.
Nomura, Hirokazu: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, 4,410,784., Cl. 219-121.0PY.
Nonaka, Terumoto: *See—*
Hotta, Tadahiko; and Nonaka, Terumoto, 4,409,725., Cl. 29-571.000.
Nordling, Karl I.; and Nance, Scott. Memory device having a plurality of output ports. 4,410,964., Cl. 365-189.000.
Norman, John H.: *See—*
O'Keefe, Dennis R.; and Norman, John H., 4,410,505., Cl. 423-648.00R.
Northern Telecom Limited: *See—*
Strawczynski, Leo; and Lee, Hing-Fai, 4,410,763., Cl. 364-513.500.
Norton Co.: *See—*
Kiovsky, Joseph R.; Young, George W.; and Saleh, Ramzi Y., 4,410,453., Cl. 502-253.000.
Norton, Don S., to Brell Mar Products, Inc. Portable tree table. 4,409,907., Cl. 108-152.000.
Notari, Bruno: *See—*
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, 4,410,501., Cl. 423-326.000.
Nouel, Jean-Marie. Offset plates in steel, using surfaces containing chromium oxide. 4,410,620., Cl. 430-276.000.
Nowak, Andrew, to Fluid-Air Components, Inc. Hydraulic positioning system for high-impact applications. 4,409,792., Cl. 60-414.000.
Nowak, Leonard G., to Hauck Manufacturing Company. Atomizer and method. 4,410,140., Cl. 239-419.300.
Nozawa, Katsumi: *See—*
Chiba, Yasutsune; Nozawa, Katsumi; and Igarashi, Kenji, 4,410,302., Cl. 417-299.000.
Nuova Agudio S.p.A.: *See—*
Zerbi, Pier C., 4,409,905., Cl. 105-329.00S.
Nutzel, Oswald: *See—*
Wlodkowski, Johann; Nutzel, Oswald; and Jungwirth, Dieter, 4,410,162., Cl. 249-215.000.
N.V. Raychem S.A.: *See—*
Franckx, Joris R. I., 4,410,379., Cl. 156-54.000.
Nygards, Olof: *See—*
Blix, Jan-Olov; Bratt, Sven-Erik; and Nygards, Olof, 4,409,898., Cl. 102-202.500.
Nypro Inc.: *See—*
Paradis, Joseph R., 4,410,096., Cl. 215-32.000.
Nyst, Edouard. Gas operated firearm. 4,409,883., Cl. 89-192.000.
Oatey Co.: *See—*
Kifer, David E.; and McGuire, Robert H., 4,410,004., Cl. 137-360.000.
Obase, Hiroyuki: *See—*
Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, 4,410,528., Cl. 424-251.000.
Obayashi, Hideki: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; and Egami, Tsuneyuki, 4,409,828., Cl. 73-204.000.
Obayashi, Tsutomu; and Hiraoka, Hideyuki, to Hiraoka & Co., Ltd. Lap welding method for textile fabrics. 4,410,575., Cl. 428-57.000.
O'Beirne, Andrew: *See—*
Cooper, Harold R.; and O'Beirne, Andrew, 4,410,634., Cl. 436-500.000.
Oberth, Adolf E.: *See—*
Bruenner, Rolf S.; and Oberth, Adolf E., 4,410,376., Cl. 149-19.400.
Occidental Chemical Corporation: *See—*
Somers, Gerardus A.; and Hendriks, Jan J. M., 4,410,396., Cl. 156-664.000.
Oda, Hideo: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.
O'Dwyer, James B.: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,668., Cl. 525-440.000.
Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,667., Cl. 525-440.000.
Oelmuller, Rolf: *See—*
Muller, Karl-Hans; Barthel, Walter; and Oelmuller, Rolf, 4,410,589., Cl. 428-331.000.
Ofotert Optikai Finommechanikai es Fotocikkeket Ertekesito Vallalat: *See—*
Soskuthy, Miklos, 4,410,613., Cl. 430-30.000.
Ogawa, Kiyoshi: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.
Ogura Glutch Co., Ltd.: *See—*
Shimoyama, Konoshuke, 4,410,299., Cl. 417-440.000.
Ohara, Osamu: *See—*
Sasama, Shigeru; Nakao, Nobuhiko; and Ohara, Osamu, 4,410,572., Cl. 427-407.100.
O'Hare, Louis R. Solar water pump. 4,409,961., Cl. 126-433.000.
Ohashi, Makoto: *See—*
Katagiri, Shuhei; Donuma, Kenichi; and Ohashi, Makoto, 4,410,469., Cl. 264-1.500.
Ohasi, Koiti: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.
Ohkita, Ryozo: *See—*
Fujimoto, Hiroaki; and Ohkita, Ryozo, 4,409,938., Cl. 123-335.000.
Ohkoshi, Fumihiko: *See—*
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,409,721., Cl. 29-568.000.
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, to Akademie der Wissenschaften der DDR. Sulfobetaines. 4,410,709., Cl. 548-570.000.
Ohmori, Takashi: *See—*
Moriguchi, Haruhiko; Kikuchi, Yoshiki; and Ohmori, Takashi, 4,410,897., Cl. 346-76.0PH.
Murayama, Tomio; Moriguchi, Fujio; Kurata, Masami; Ohmori, Takashi; and Moriguchi, Haruhiko, 4,410,898., Cl. 346-76.0PH.
Ohta, Hiroki: *See—*
Fukuto, Tetsuo R.; and Ohta, Hiroki, 4,410,518., Cl. 424-202.000.
Ohta, Tokuya: *See—*
Haruta, Masahiro; Yano, Yashuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, 4,410,899., Cl. 346-140.00R.
Ohwada, Mitsutoshi: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.
Oizumi, Masayuki; Abe, Masaharu; and Fushiki, Yasuo, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Production of metal clad laminates. 4,410,388., Cl. 156-307.300.
Ojima, Masahiro: *See—*
Yamamoto, Manabu; and Ojima, Masahiro, 4,410,277., Cl. 356-366.000.
Oka, Yoshihiko: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.
Okada, Masakazu: *See—*
Yasumoto, Seiichi; Fushimi, Hitoshi; Ide, Jushi; and Okada, Masakazu, 4,410,985., Cl. 371-22.000.
Okada, Yasuhiro: *See—*
Tanabe, Kenzo; and Okada, Yasuhiro, 4,410,979., Cl. 370-11.000.
Okamoto, Ikuzo: *See—*
Shindow, Osamu; Okamoto, Ikuzo; Machida, Takeshi; and Koyama, Hiroshi, 4,410,267., Cl. 356-124.000.
Okamoto, Shigetomi; and Tonomura, Yoshio, to Unitika Ltd. Fishing nets of polyamide resins. 4,410,591., Cl. 428-255.000.
Okamoto, Yoshihiko, to Fuji Photo Film Co., Ltd. Device for controlling radiation image information read out gain. 4,410,799., Cl. 250-327.200.
O'Keefe, Dennis R.; and Norman, John H., to GA Technologies Inc. Hydrogen iodide decomposition. 4,410,505., Cl. 423-648.00R.
Oki Electric Industry Co., Ltd.: *See—*
Suzuki, Yoshikazu, 4,410,936., Cl. 363-80.000.
Oko, Teruo: *See—*
Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, 4,410,458., Cl. 260-239.100.
Okolischan, Anton, to UMC Industries, Inc. Coin handling apparatus with coin retardation feature. 4,410,077., Cl. 194-1.00K.
Okorodudu, Abraham O. M., to Mobil Oil Corporation. Substituted dimercapto thiadiazoles and lubricant compositions containing same. 4,410,703., Cl. 548-142.000.
Okuno, Koichi: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.
Okutani, Kazuyoshi: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Okutsu, Kinnosuke, to Tokyo Shibaura Electric Co., Ltd. Semiconductor wafer. 4,410,580., Cl. 428-156.000.

O'Leary, Kevin J.: *See—*
Fenn, Robert W., III; Pless, Emory J.; Harris, Richard L.; and O'Leary, Kevin J., 4,410,411., Cl. 204-283.000.

Olin Corporation: *See—*
Butt, Sheldon H., 4,410,927., Cl. 361-386.000.
Graham, Edward F., 4,409,831., Cl. 73-290.00R.
Winter, Joseph, 4,410,392., Cl. 156-603.000.

Oliva, Ferdinand P.: *See—*
Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., 4,409,913., Cl. 112-158.00B.

Oliver, C. F., Jr. Furnace economizer-humidifier. 4,410,136., Cl. 237-55.000.

Oliver, Larry R.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., to Glaxo Group Limited. Heterocyclic derivatives. 4,410,523., Cl. 424-246.000.

Olmstead, John A., to RCA Corporation. Operational amplifier with feed-forward compensation circuit. 4,410,857., Cl. 330-253.000.

Olson, Daniel R., to General Electric Company. Ultraviolet radiation stabilized coated polycarbonate article. 4,410,594., Cl. 428-412.000.

Olson, Kenneth R.: *See—*
Reid, Alexander J.; and Olson, Kenneth R., 4,410,753., Cl. 585-671.000.

Olson, Norman: *See—*
McVicker, Harry J.; Olson, Norman; Saurer, Richard F.; and Schulte, John C., 4,410,159., Cl. 248-349.000.

Olympus Optical Co., Ltd.: *See—*
Furihata, Hiroyuki, 4,409,993., Cl. 128-784.000.
Hanaoka, Naohiro, 4,410,583., Cl. 428-213.000.
Sato, Masanobu, 4,410,772., Cl. 179-157.000.
Shirako, Hideo, 4,410,087., Cl. 206-387.000.

Omark Industries, Inc.: *See—*
Pease, Charles C.; and Schaeffer, Eugene P., 4,410,783., Cl. 219-98.000.

Omata, Hiroshi; and Katumata, Saichi, to Mitsubishi Mallory Metallurgical Co., Ltd. Synchronous motor. 4,410,818., Cl. 310-41.000.

Omex: *See—*
Nam, Billie, 4,410,581., Cl. 428-195.000.

Onder, Kemal: *See—*
Nelb, Robert G., II; and Onder, Kemal, 4,410,684., Cl. 528-185.000.

Onkyo Kabushiki Kaisha: *See—*
Yasue, Akira; Kato, Toshiji; and Takahashi, Yozo, 4,410,063., Cl. 181-147.000.

Onuma, Hideo; and Kobayashi, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Gas extracting device. 4,409,814., Cl. 73-19.000.

Ootsuka, Yoshinori: *See—*
Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, 4,409,816., Cl. 73-35.000.

Ormenyi, Zoltan: *See—*
Torok, Sandor; Voroshazy, Lajos; Galambos, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, 4,410,697., Cl. 544-165.000.

O'Rourke, Harold T., to Cooper Industries, Inc. Mass soldering system. 4,410,126., Cl. 228-180.00R.

Osono, Takashi: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Oster, Joseph, to Keystone Lamp Mfg. Corporation. Electric lamp. 4,410,932., Cl. 362-294.000.

Osterman, Daniel R. Vehicle transmission. 4,410,071., Cl. 192-2.000.

Osterreichische Hiag-Werke Aktiengesellschaft: *See—*
Mayerhoffer, Herbert, 4,410,481., Cl. 264-45.300.

Ostertag, Edward L.: *See—*
Knop, Charles M.; Ostertag, Edward L.; Matz, Donald W., Jr.; and Cheng, Yuk-Bun, 4,410,892., Cl. 343-786.000.

Ostsewrmayer, Franz: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostsewrmayer, Franz; and Schroter, Herbert, 4,410,530., Cl. 424-251.000.

Ota, Chuichi; Suematsu, Yasuharu; and Itaya, Yoshio, to Kokusai Denshin Denwa Kabushiki Kaisha. Semiconductor laser. 4,410,994., Cl. 372-45.000.

Otis Elevator Company: *See—*
Leiner, Robert L.; and Salmon, John K., 4,410,067., Cl. 187-52.0LC.

Otobe, Yutaka: *See—*
Hasegawa, Shumpei; Yamato, Akihiro; and Otobe, Yutaka, 4,409,948., Cl. 123-571.000.

Otto, John B., Jr., to Mobil Oil Corporation. Separation of uranium from carbonate containing solutions thereof by direct precipitation. 4,410,497., Cl. 423-16.000.

Otto Niederer Sons, Inc.: *See—*
Niederer, Lee H.; and Niederer, Steven D., 4,410,079., Cl. 198-424.000.

Outboard Marine Corporation: *See—*
Bent, F. Eugene; and White, Irvin M., 4,409,779., Cl. 56-11.300.

Overs, Ronald R. Combined marine instrument and display therefor. 4,409,827., Cl. 73-181.000.

Ovshinsky, Herbert C., to Energy Conversion Devices, Inc. Cassette and drive system for microfiche recording system with traveling film head. 4,410,265., Cl. 355-51.000.

Ovshinsky, Stanford R.: *See—*
Izu, Masatsugu; Cannella, Vincent D.; and Ovshinsky, Stanford R., 4,410,558., Cl. 427-39.000.

Owen, Richard A., to Lucas Industries Limited. Battery-powered electric vehicle d.c. motor control. 4,410,842., Cl. 318-139.000.

Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., to United States of America, Air Force. Acoustic amplitude-doppler target ranging system. 4,409,899., Cl. 102-211.000.

Owen, Wickersham & Erickson: *See—*
Lindberg, John E., 4,409,931., Cl. 123-25.00R.

Owens-Corning Fiberglas Corporation: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,742., Cl. 34-168.000.
Smith, Clifford D., 4,410,014., Cl. 138-149.000.

Owens-Illinois, Inc.: *See—*
Kusz, Maximillian, 4,410,097., Cl. 215-214.000.

Oxenrider, Bryce C.; and Price, Alson K., to Allied Corporation. Hydrocarbon esters of benzene polycarboxylic acids. 4,410,717., Cl. 560-87.000.

Oya, Masayuki: *See—*
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,410,542., Cl. 424-274.000.

Ozawa, Kiyomi; Nakajima, Yasuyuki; and Tsugeno, Makoto, to Nissan Chemical Industries Ltd. Phenyl ketone derivatives. 4,410,732., Cl. 568-337.000.

PACCAR Inc.: *See—*
Pound, Virgil E.; Jensen, James R.; and Zwicky, Albert C., 4,410,056., Cl. 180-89.150.

Packer, Herbert, to Harshaw Chemical Company, The. Hot press-forging of an optical body with dynamic constraint by crystal powder. 4,410,468., Cl. 264-1.200.

Page, Bill: *See—*
Simmons, James E.; and Page, Bill, 4,410,100., Cl. 220-85.00R.

Page, Donald C.: *See—*
Wilnau, John A., 4,409,764., Cl. 52-127.300.

Pagilagan, Rolando U.: *See—*
Epstein, Bennett N.; and Pagilagan, Rolando U., 4,410,661., Cl. 525-66.000.

Pako Corporation: *See—*
Henk, Keith L., 4,410,120., Cl. 226-109.000.

Pall, Avtar S. Earth-quake proof building construction. 4,409,765., Cl. 52-167.000.

Pall Corporation: *See—*
Cooper, Roydon B., 4,410,428., Cl. 210-340.000.

Palmer, Raymond J.; and Micheaux, Dominique, to McDonnell Douglas Corporation. Woven layered cloth reinforcement for structural components. 4,410,577., Cl. 428-85.000.

Palombo, Robert. Bow forming apparatus. 4,410,113., Cl. 223-46.000.

Panama Overseas Shipping Corporation Inc.: *See—*
Kaldenbach, Willem P., 4,409,747., Cl. 37-69.000.

Panchanathan, Viswanathan: *See—*
Ray, Ranjan; and Panchanathan, Viswanathan, 4,410,490., Cl. 420-454.000.

Pandrol Limited: *See—*
Hark, William B., 4,409,901., Cl. 104-7.00B.

Pankratov, Vitaly L.: *See—*
Glukhovšky, Viktor D.; Krivenko, Pavel V.; Rostovskaya, Galina S.; Timkovich, Vasily J.; and Pankratov, Vitaly L., 4,410,365., Cl. 106-84.000.

Pankratz, John M.: *See—*
Tasch, Aloysious F., Jr.; Penz, Perry A.; Pankratz, John M.; and Lam, Hon W., 4,409,724., Cl. 29-571.000.

Panster, Peter; and Kleinschmit, Peter, to Degussa Aktiengesellschaft. Polymeric ammonium compounds with a silica-type backbone, processes for their preparation and use. 4,410,669., Cl. 525-474.000.

Panzer, Hans P.: *See—*
Rothenberg, Alan S.; Panzer, Hans P.; Schmitt, Joseph L.; and Card, Roger J., 4,410,706., Cl. 548-335.000.

Paradis, Joseph R., to Nypro Inc. Integral cap and container. 4,410,096., Cl. 215-32.000.

Parker, Paul D.: *See—*
Arnold, Loren G.; Parker, Paul D.; and Sullivan, James F., 4,410,047., Cl. 172-328.000.

Parkinson, Harold B. Hydrocarbon fuel composition. 4,410,334., Cl. 44-56.000.

Parthasarathy, R.; Hort, Eugene V.; and Chakrabarti, Paritosh M., to GAF Corporation. Vinylation reaction. 4,410,726., Cl. 548-543.000.

Partridge, David, to Starpoint Electrics Limited. Gaming machines. 4,410,178., Cl. 273-143.00R.

Parzl, Franz: *See—*
Eichinger, Johann; Parzl, Franz; and Schulz, Wolfgang, 4,409,904., Cl. 105-131.000.

Pascoe, Robert A.: *See—*
Ko, Elizabeth Y.; and Pascoe, Robert A., 4,410,286., Cl. 400-22.000.

Patel, Pankaj R., to Dictaphone Corporation. Display apparatus for recording and/or playback device. 4,410,923., Cl. 360-137.000.

Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH: *See—*
Witte, Dieter; Jendrewski, Alfons; and Nadler, Gerhard, 4,410,834., Cl. 315-58.000.

Patnaik, Bisweswar: *See—*
Dalal, Hormazdyzr D.; Patnaik, Bisweswar; and Sarkary, Homi G., 4,410,622., Cl. 430-312.000.

Patton, John T., Jr.: *See—*
Narayan, Thirumurti; Stolz, Theodore O.; and Patton, John T., Jr., 4,410,641., Cl. 521-167.000.

Paul, Maynard C.: *See—*
Lo, David S.; Paul, Maynard C.; and Zierhut, Lawrence G., 4,410,963., Cl. 365-87.000.

Paul Sicotte & Fils Ltee: *See—*
Sicotte, Jacques, 4,410,025., Cl. 144-365.000.

Paust, Joachim: *See—*
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, 4,410,719., Cl. 560-112.000.

Payette, Lionel J.: *See—*
Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., 4,410,592., Cl. 428-383.000.

Pearson, James M.: *See—*
Lelental, Mark; and Pearson, James M., 4,410,614., Cl. 430-45.000.

Pearson, Rune S.: *See—*
Wertheimer, Bruce; and Pearson, Rune S., 4,410,170., Cl. 270-37.000.

Pearson, Stephen; and Lyons, Steffen A., to Baxter Travenol Laboratories, Inc. Closed drug delivery system. 4,410,321., Cl. 604-56.000.

Pease, Charles C.; and Schaeffer, Eugene P., to Omark Industries, Inc. Boiler tube wearbar, stud welder and arc shield. 4,410,783., Cl. 219-98.000.

Peck, Robert L., to Kali, Inc. Thermal galvanic cells. 4,410,605., Cl. 429-11.000.

Pedziwiatr, Edward A. Automatic ultrasonic cleaning apparatus. 4,409,999., Cl. 134-95.000.

Peleckis, Anthony J.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,409,735., Cl. 30-47.000.

Peled, Emanuel; and Yamin, Hertzel. Electrochemical cell. 4,410,609., Cl. 429-105.000.

Pence, Artie L. Ankle support. 4,409,976., Cl. 128-166.000.

Pennsylvania Engineering Corporation: *See—*
Hixenbaugh, Dennis L.; Brand, Peter G. A.; and Straka, Edward J., 4,410,166., Cl. 266-158.000.

Pennwalt Corporation: *See—*
Buchholz, Bernard, 4,410,731., Cl. 568-70.000.

Penz, Perry A.: *See—*
Tasch, Aloysious F., Jr.; Penz, Perry A.; Pankratz, John M.; and Lam, Hon W., 4,409,724., Cl. 29-571.000.

Penzias, Arno A.: *See—*
Gans, Michael J.; and Penzias, Arno A., 4,410,894., Cl. 343-368.000.

Peppers, Norman A.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., 4,410,968., Cl. 369-44.000.

Perches, Robert. Toothbrush. 4,409,701., Cl. 15-167.00R.

Perego, Giovanni: *See—*
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, 4,410,501., Cl. 423-326.000.

Perisho, Jacqueline L.: *See—*
Roe, William J.; and Perisho, Jacqueline L., 4,410,599., Cl. 428-469.000.

Perr, Clarence D.: *See—*
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,410,911., Cl. 358-121.000.

Perr, Julius P., to Cummins Engine Company, Inc. Miniaturized unit fuel injector employing hydraulically controlled timing. 4,410,137., Cl. 239-95.000.

Pessimisis, George N., to Katalco Corporation. Method of dissolving iron oxide-chrome oxide spent shift catalysts to prepare a nitrate solution suitable for use in preparing a new catalyst. 4,410,443., Cl. 252-182.000.

Pesto, William S.; and Reed, William C., to Bell Telephone Laboratories, Incorporated. Water-compensated open fault locator. 4,410,850., Cl. 324-52.000.

Peter, Cornelius: *See—*
Burkel, Rainer; Peter, Cornelius; and Muller, Klaus, 4,409,815., Cl. 73-35.000.

Peters, Lester L.; and Warlick, Timothy A., to Cummins Engine Company, Inc. Unit injector cooled by timing control fluid. 4,410,138., Cl. 239-95.000.

Peters, Wendell R.: *See—*
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,409,899., Cl. 102-211.000.

Peterson, Laurence A. Router harness. 4,410,022., Cl. 144-1.00F.

Petroleum Designers, Inc.: *See—*
Pierce, Elwood K., Jr., 4,410,186., Cl. 277-2.000.

Petrolite Corporation: *See—*
Cheng, William J.; and Guthrie, David B., 4,410,446., Cl. 252-309.000.

Petrometer Corporation: *See—*
Thomson, Roger; and Weik, Edward, 4,409,833., Cl. 73-302.000.

Pfaff Industriemaschinen GmbH: *See—*
Dietrich, Herbert, 4,409,803., Cl. 69-27.000.

Pfeiler, Manfred; and Tschunt, Edgar, to Siemens Aktiengesellschaft. Diagnostic radiology installation. 4,411,012., Cl. 378-17.000.

Pfizer Inc.: *See—*
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,410,539., Cl. 424-273.00R.

Philip Morris Incorporated: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,410,785., Cl. 219-121.0LK.
Nichols, Walter A., 4,409,995., Cl. 131-84.00R.

Phillips, John E.: *See—*
Newdoll, Ronald M.; and Phillips, John E., 4,410,917., Cl. 360-15.000.

Phillips, Leslie N.: *See—*
Ladizesky, Noe H.; Ward, Ian M.; and Phillips, Leslie N., 4,410,586., Cl. 428-245.000.

Phillips Petroleum Company: *See—*
Dietz, Richard E.; and Welch, Melvin B., 4,410,451., Cl. 502-110.000.
Kukes, Semyon; Harris, Jesse R.; Porter, Randall A.; and Reed, Larry E., 4,410,418., Cl. 208-48.00R.
Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., 4,410,671., Cl. 526-119.000.

Photochemical Research Associates Inc.: *See—*
Chiu, Pay H., 4,410,995., Cl. 372-69.000.

Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, to PPG Industries, Inc. Elastomeric coating compositions. 4,410,668., Cl. 525-440.000.

Piccirilli, Robert M.: *See—*
Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,667., Cl. 525-440.000.

Picker Corporation: *See—*
Plesset, Kiven; and Adams, Darwin P., 4,409,982., Cl. 128-660.000.

Pierburg GmbH & Co. KG: *See—*
Schmidt, Karl, 4,409,944., Cl. 123-445.000.

Pierce, Elwood K., Jr., to Petroleum Designers, Inc. Sealing system for pressurized flanged joints. 4,410,186., Cl. 277-2.000.

Pilot Ink Co., Ltd.: *See—*
Ito, Akio; and Yamauchi, Osami, 4,410,290., Cl. 401-198.000.

Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Ito, Akio; and Ito, Masao, 4,410,384., Cl. 156-167.000.

Pipoli, Joaquim A.: *See—*
Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., 4,409,780., Cl. 56-228.000.

Pischzik, Bruno; and Schneiderat, Johann, to Mannesmann Aktiengesellschaft. Suspension of pipes or tubes undergoing thermal expansion. 4,410,156., Cl. 248-58.000.

Pitney Bowes Inc.: *See—*
Daniels, Edward P.; Dlugos, Daniel F.; Holtz, Earl B.; and Manduley, Flavio M., 4,410,962., Cl. 364-900.000.
Dlugos, Daniel F.; Manduley, Flavio M.; and Rubinstein, Arthur, 4,410,961., Cl. 364-900.000.
Pryor, Roger W., 4,410,870., Cl. 338-2.000.

Pittway Corporation: *See—*
Seyler, Gerard, 4,410,881., Cl. 340-388.000.

Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, to VEB Filmfabrik Wolfen. Method of dispersing oil soluble photographic additives. 4,410,624., Cl. 430-377.000.

Plaskolite, Inc.: *See—*
Dickerson, Albert; Szlag, John; and Reyle, John, 4,409,758., Cl. 49-463.000.

Plastics Engineering Company: *See—*
Lee, Chung J., 4,410,664., Cl. 525-180.000.

Plath, Peter: *See—*
Hamprecht, Gerhard; Ammermann, Eberhard; Pommer, Ernst-Heinrich; and Plath, Peter, 4,410,538., Cl. 424-270.000.

Plemmons, Jerry R.: *See—*
Blake, Walter R.; and Plemmons, Jerry R., 4,410,933., Cl. 362-371.000.

Plenzler, James D., to Allied Corporation. Sliding door actuating mechanism. 4,410,844., Cl. 318-280.000.

Pless, Emory J.: *See—*
Fenn, Robert W., III; Pless, Emory J.; Harris, Richard L.; and O'Leary, Kevin J., 4,410,411., Cl. 204-283.000.

Plesset, Kiven; and Adams, Darwin P., to Picker Corporation. Ultrasonic step scanning utilizing curvilinear transducer array. 4,409,982., Cl. 128-660.000.

PLM AB: *See—*
Carlson, Carl-Goran H., 4,410,142., Cl. 241-18.000.

Plotkin, Jeffrey S.: *See—*
McMullen, Charles H.; Fehskens, Eugene E.; and Plotkin, Jeffrey S., 4,410,715., Cl. 549-531.000.

Pneumo Corporation: *See—*
Schwagerman, William H., 4,410,756., Cl. 136-221.000.

Poerink, Jannes J. Wire-netting conveyor belt, and method of making such wire-netting conveyor belt. 4,410,083., Cl. 198-853.000.

Poff, Gary D., to Grant, John; and Trulin, Darryl J. Circuit isolator. 4,409,732., Cl. 29-825.000.

Pohlman, Matthew J.; and Kindlimann, Lynn E., to Garrett Corporation, The. Iron-based brazing alloy compositions and brazed assemblies with iron based brazing alloys. 4,410,604., Cl. 428-681.000.

Poliniak, Eugene S.: *See—*
Datta, Pabitra; and Poliniak, Eugene S., 4,410,748., Cl. 585-4.000.

Polinski, Donald J., to Allis-Chalmers Corporation. Main shaft assembly for a gyratory crusher. 4,410,143., Cl. 241-209.000.

Pommer, Ernst-Heinrich: *See—*
Hamprecht, Gerhard; Ammermann, Eberhard; Pommer, Ernst-Heinrich; and Plath, Peter, 4,410,538., Cl. 424-270.000.

Ponsford, Roger J.; Brown, Pamela; and Coulton, Steven, to Beecham Group p.l.c. β-Lactam antibiotics, their preparation and use. 4,410,533., Cl. 424-251.000.

Pope, Derek J.; and Baxendale, Lily, to Biorex Laboratories Limited. Enzyme derived from hyaluronidase. 4,410,531., Cl. 424-94.000.

Porrmann, Herbert: *See—*
Andra, Klaus; Hutschenreuter, Elfriede; and Porrmann, Herbert, 4,410,011., Cl. 138-118.100.

Porsa Systems Corp.: *See—*
De Luca, Paul V.; and Rawlings, David, 4,410,773., Cl. 200-11.00K.

Portable Air Supply Systems, Corp.: *See—*
Bartos, Josef A., 4,409,978., Cl. 128-205.120.

Porter, Randall A.: *See—*
Kukes, Semyon; Harris, Jesse R.; Porter, Randall A.; and Reed, Larry E., 4,410,418., Cl. 208-48.00R.

Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, to PPG Industries, Inc. Elastomeric coating compositions. 4,410,667., Cl. 525-440.000.

Porter, Samuel, Jr.: *See—*
Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,668., Cl. 525-440.000.

Post Office: *See—*
France, Paul W.; and Newns, George R., 4,410,567., Cl. 427-163.000.

Postle, Stephen R.; and Thomas, Patrick D. P., to Ciba-Geigy AG. Hydroquinone derivatives of pyridinecarboxylic acids. 4,410,702., Cl. 546-322.000.

Potter, Charles W., to J. H. Fenner & Co. Ltd. Fluid seal pumping effect lip seal for rotary shaft. 4,410,190., Cl. 277-153.000.

Pound, Virgil E.; Jensen, James R.; and Zwicky, Albert C., to PACCAR Inc. Hydraulic cab tilting system having full locking with controlled free-fall. 4,410,056., Cl. 180-89.150.

Powell, James E.: *See—*
Sundelin, Kurt G. R.; Powell, James E.; and Kollmeyer, Willy D., 4,410,354., Cl. 71-94.000.

PPG Industries, Inc.: *See—*
Das, Balbhadra; and Moore, L. Dow, 4,410,645., Cl. 523-206.000.
Krumwiede, John F., 4,410,347., Cl. 65-27.000.
Piccirilli, Robert M.; Chang, Wen-Hsuan; Porter, Samuel, Jr.; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,668., Cl. 525-440.000.
Porter, Samuel, Jr.; Piccirilli, Robert M.; Chang, Wen-Hsuan; O'Dwyer, James B.; and Lee, Kyu-Wang, 4,410,667., Cl. 525-440.000.
Schimmel, Karl F.; Traficante, Michael A.; and Dowbenko, Rostyslaw, 4,410,687., Cl. 528-295.500.

Prahl, Jan, to IPOS Gesellschaft fur Integrierte Prothesen-Entwicklung und Orthopadietechnischen Service mbH & Co. KG, Firma. Moulding part for making relieving and supporting plaster bandages, more particularly in the upper zone of the human thigh, and plaster bandage made using such moulding part. 4,409,972., Cl. 128-91.00R.

Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., to Compression Labs, Inc. Dual mode facsimile coding system and method. 4,410,916., Cl. 358-263.000.

Preusser, Gerhard; and Schulze, Martin, to Krupp-Koppers GmbH. Extractive distilling with reworking of residue. 4,410,400., Cl. 203-3.000.

Prewo, Karl M.: *See—*
Brennan, John J.; and Prewo, Karl M., 4,410,635., Cl. 501-88.000.
Stalcup, Robert K.; and Prewo, Karl M., 4,410,394., Cl. 156-630.000.

Price, Alson K.: *See—*
Oxenrider, Bryce C.; and Price, Alson K., 4,410,717., Cl. 560-87.000.

Price, Barry J.: *See—*
Ollis, William D.; Price, Barry J.; Carey, Linda; Hayes, Roger; Clitherow, John W.; Bradshaw, John; and Mackinnon, John W. M., 4,410,523., Cl. 424-246.000.

Price, Paul A.; and Nishimoto, Satoru K., to University of California, The Regents of the. Immunoassay for vitamin K-dependent bone protein. 4,410,506., Cl. 436-542.000.

Priebe, Edmund: *See—*
Brandstetter, Franz; Muenstedt, Helmut; and Priebe, Edmund, 4,410,654., Cl. 524-487.000.

Prindle, Hershel B., to Dow Chemical Company, The. Epoxy resins cured with salicyloyl hydrocarbylamines. 4,410,681., Cl. 528-98.000.

Pro-Mark Companies, The: *See—*
Baker, Donald B., 4,410,549., Cl. 426-43.000.

Procter & Gamble Company, The: *See—*
Lucas, Donald S.; Mustacich, Robert V.; and Stone, Roger L., 4,410,442., Cl. 252-107.000.

Proctor, Donald C.: *See—*
Wilnau, John A., 4,409,764., Cl. 52-127.300.

Proctor, Ennis H.: *See—*
Wilnau, John A., 4,409,764., Cl. 52-127.300.

Proctor & Schwartz, Inc.: *See—*
Sturgeon, Lloyd F.; and Smith, Paul E., 4,409,744., Cl. 34-207.000.

Propst, Robert L., to Herman Miller, Inc. Locking system using codable magnetic cards. 4,409,806., Cl. 70-276.000.

Propster, Mark A.: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,742., Cl. 34-168.000.

Proskow, Stephen: *See—*
Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, 4,410,612., Cl. 430-18.000.

Prunella, Wallace R.; and Kordes, Art W., to Trigon Industries, Inc. Tri-state contactor assembly for electronic device package test handler. 4,410,227., Cl. 339-75.00M.

Pryor, Roger W., to Pitney Bowes Inc. Semiconductor strain gauge. 4,410,870., Cl. 338-2.000.

Pryor, Timothy R., to Diffracto, Ltd. Electro-optical and robotic casting quality assurance. 4,409,718., Cl. 29-407.000.

Ptasinski, James F.; and Wheeler, Glenn, to Texas Instruments Incorporated. Preload test circuit for programmable logic arrays. 4,410,987., Cl. 371-25.000.

Publicker Industries, Inc.: *See—*
Reid, Alexander J.; and Olson, Kenneth R., 4,410,753., Cl. 585-671.000.

Publicover, Robert L. Pre-inked tape. 4,410,576., Cl. 428-79.000.

Qantas Airways Limited: *See—*
McKean, Eric J.; and Downey, David P., 4,410,215., Cl. 297-429.000.

Qualeatti, Gail M.; and Germanas, Dalia, to UOP Inc. Process for the reduction of unsaturated carboxylic acids. 4,410,460., Cl. 260-409.000.

Quality Engineering Co., Inc.: *See—*
Murrell, Robert L., Jr.; and Murrell, Howard J., Sr., 4,410,109., Cl. 222-52.000.

Quist, Kaj, to AB Tudor. Pole bushing for batteries. 4,410,610., Cl. 429-181.000.

Rachedi, Shane H., to Ford Motor Company. Exhaust gas recirculation system. 4,409,945., Cl. 123-568.000.

Radakovich, Thomas: *See—*
Supcoe, Robert F.; Radakovich, Thomas; and Rodgers, Stephen D., 4,410,363., Cl. 106-18.290.

Rader, Charles P.: *See—*
Coran, Aubert Y.; Rader, Charles P.; and Trivette, Chester D., Jr., 4,410,656., Cl. 524-529.000.

Radtke, Wolfgang; and Borbely, Gyorgy, to Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG. Heating and air conditioning system. 4,410,131., Cl. 236-10.000.

Rai Research Corporation: *See—*
Lipari, Charles P., 4,410,383., Cl. 156-73.100.

Raines, Bill D.: *See—*
Johnston, Bruce L.; and Raines, Bill D., 4,409,695., Cl. 5-68.000.

Raistrick, James H.: *See—*
Birchall, James D.; Howard, Anthony J.; Kendall, Kevin; and Raistrick, James H., 4,410,366., Cl. 106-90.000.

Raivi S.A.: *See—*
Cenefels, Joaquin F., 4,410,564., Cl. 427-123.000.

Rakow, Marvin S.: *See—*
Liss, Barry; Calderon, Michael; and Rakow, Marvin S., 4,410,420., Cl. 208-127.000.

Ralph B. Carter Company: *See—*
Crookes, LeRoy W., 4,410,281., Cl. 366-341.000.

Ralston Purina Company: *See—*
Comer, Daniel K., 4,410,551., Cl. 426-99.000.

Ramsey Engineering Company: *See—*
Motsinger, James V., 4,410,886., Cl. 340-617.000.

Ramuz, Henri: *See—*
Hengartner, Urs; Muller, Jean-Claude; and Ramuz, Henri, 4,410,698., Cl. 544-255.000.

Randwal Instrument Co., Inc.: *See—*
Remijan, Paul W., 4,410,244., Cl. 351-211.000.

Ransom, Stephen A.; Stickel, Tedd K.; and Tomei, Joseph B., to Sperry Corporation. Gallium arsenide to emitter coupled logic level converter. 4,410,815., Cl. 307-475.000.

Rappold, Friedrich: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.

Rasekhi, Houshang: *See—*
Nelson, Alfred M.; and Rasekhi, Houshang, 4,410,896., Cl. 346-74.200.

Rausing, Hans A., to Tetra Pak International AB. Packing container provided with tear-up opening arrangement. 4,410,128., Cl. 229-17.00R.

Rawlings, David: *See—*
De Luca, Paul V.; and Rawlings, David, 4,410,773., Cl. 200-11.00K.

Ray, Ranjan; and Panchanathan, Viswanathan, to Marko Materials, Inc. Nickel and cobalt alloys which contain tungsten aand carbon and have been processed by rapid solidification process and method. 4,410,490., Cl. 420-454.000.

Raymond, David W., to American Seating Company. Row structure for telescoping seating systems and method of assembling same. 4,409,762., Cl. 52-9.000.

Raytheon Company: *See—*
Berlik, Lee J.; and Barnes, S. Thomas, 4,409,954., Cl. 126-39.00M.
Macaulay, Alexander, 4,410,407., Cl. 204-192.0EC.
Weiss, Bernard J., 4,410,779., Cl. 219-10.55F.

RCA Corporation: *See—*
Chin, Danny; and Maturo, Robert J., 4,410,913., Cl. 358-192.100.
Datta, Pabitra; and Poliniak, Eugene S., 4,410,748., Cl. 585-4.000.
Flory, Robert E., 4,410,981., Cl. 370-109.000.
Halbrook, Jack C., 4,410,310., Cl. 445-57.000.
Kipp, Ronald W.; and Johnson, Henry C., 4,410,860., Cl. 331-1.00A.
Martinson, Lloyd W., 4,411,009., Cl. 377-47.000.
Muterspaugh, Max W.; and Whitledge, Gary A., 4,410,864., Cl. 333-32.000.
Olmstead, John A., 4,410,857., Cl. 330-253.000.
Vinekar, Sanjay R.; Hettiger, James; and Friedline, Karl L., 4,410,907., Cl. 358-20.000.

Reagents of the University of California, The: *See—*
McMorris, Trevor C.; and Donaubauer, John R., 4,410,711., Cl. 549-313.000.

Realist, Inc.: *See—*
Schaefer, George H.; and Hirsch, Stephen P., 4,410,248., Cl. 353-27.00R.

Reanal Finomvegyszergyar: *See—*
Torok, Sandor; Voroshazy, Lajos; Galamboa, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, 4,410,697., Cl. 544-165.000.

Reckitt & Colman Products Limited: *See—*
Baxter, Andrew J. G.; and Myers, Malcolm, 4,410,548., Cl. 424-330.000.

Recognition Equipment Incorporated: *See—*
Wakeland, Charles A., 4,411,016., Cl. 382-62.000.

Redding, John J.; and Hauptmann, Robert O., to United States of America, Navy. Radially compliant acoustic line array hose. 4,410,012., Cl. 138-121.000.

Redding, John J.; and Hauptmann, Robert O., to United States of America, Navy. Method for making radially compliant line array hose. 4,410,476., Cl. 264-173.000.

Redman, Ronald E., to Kawneer Company, Inc. Heat insulated entrance. 4,409,769., Cl. 52-475.000.

Reed, Larry E.: *See—*
Kukes, Semyon; Harris, Jesse R.; Porter, Randall A.; and Reed, Larry E., 4,410,418., Cl. 208-48.00R.

Reed, William C.: *See—*
Pesto, William S.; and Reed, William C., 4,410,850., Cl. 324-52.000.

Regie Nationale des Usines Renault: *See—*
Bariol, Roger; Lecomte, Jackie; and Bouvet, Jean-Marie, 4,409,822., Cl. 73-118.000.

Reid, Alexander J.; and Olson, Kenneth R., to Publicker Industries, Inc. Process and catalyst for skeletal isomerization of olefins. 4,410,753., Cl. 585-671.000.

Reimer, Gerd: *See—*
Tautz, Jurgen; Werres, Lothar; and Reimer, Gerd, 4,410,487., Cl. 376-399.000.

Reimert, Larry E., to Dril-Quip, Inc. Connector. 4,410,204., Cl. 285-24.000.

Reinartz, Hans-Dieter; and Thiel, Rudolf, to ITT Industries, Inc. Brake booster. 4,409,885., Cl. 91-376.00R.

Reinert, Gerard E.: *See—*
Witman, Mark W.; and Reinert, Gerard E., 4,410,662., Cl. 525-148.000.

Reip, Raymond G., to Vapor Corporation. Pilot operated relief valve. 4,410,005., Cl. 137-488.000.

Relle nee Somfai, Zsuzsanna: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Remijan, Paul W., to Randwal Instrument Co., Inc. Retinal acuity testing device. 4,410,244., Cl. 351-211.000.

Renander, Ake C.; and Samuelsson, Rune P. S., to Telefonaktiebolaget L M Ericsson. Arrangement for adjustably mounting an optical direction indicator. 4,409,738., Cl. 33-281.000.

Renga, James M.; and Wang, Pen-Chung, to Dow Chemical Company, The. Process for forming esters (I). 4,410,718., Cl. 560-103.000.

Rennick, Lyle V.: *See—*
Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., 4,410,916., Cl. 358-263.000.

Reponen, Voitto O. A.: *See—*
Gullichsen, Johan; Kujala, Jaakko P.; Niskanen, Toivo J.; Reponen, Voitto O. A.; and Harkonen, Esko J., 4,410,337., Cl. 55-21.000.

Republic Steel Corporation: *See—*
Waid, George M.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., 4,410,369., Cl. 148-2.000.

Research Foundation of the City University of New York: *See—*
Berkowitz, William F.; Choudhry, Satish C.; and Hrabie, Joseph A., 4,410,710., Cl. 549-312.000.

Rest, Heinz: *See—*
Kloppe, Herbert; Rest, Heinz; and Spiegel, Erwin, 4,410,211., Cl. 296-213.000.

Reyle, John: *See—*
Dickerson, Albert; Szlag, John; and Reyle, John, 4,409,758., Cl. 49-463.000.

Reynolds Metals Company: *See—*
Walsh, William E., 4,410,423., Cl. 209-4.000.

Rhoad, Franklin N.: *See—*
Chase, Richard R.; and Rhoad, Franklin N., 4,409,853., Cl. 73-863.000.

Rhoades, Thomas S.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,409,842., Cl. 73-800.000.

Rhone-Poulenc Agrochimie: *See—*
Theissen, Robert J., 4,410,353., Cl. 71-91.000.

Rhone-Poulenc Industries: *See—*
Cordier, Georges, 4,410,737., Cl. 568-774.000.
Cordier, Georges, 4,410,738., Cl. 568-774.000.
Cordier, Georges, 4,410,739., Cl. 568-774.000.

Ribberink, Henricus D. M.: *See—*
Ribvanden Broek, Arnoldus J. M.; Legierse, Petrus E. J.; and Ribberink, Henricus D. M., 4,410,978., Cl. 369-275.000.

Ribi, Valentino, to Honda Giken Kogyo Kabushiki Kaisha. Suspension system for a motorvehicle wheel, particularly for a motorcycle wheel. 4,410,196., Cl. 280-276.000.

Rice, Kenner C., to United States of America, Health and Human Services. Preparation of chiral 1-benzyl-1,2,3,4-tetrahydroisoquinolines by optical resolution. 4,410,700., Cl. 546-149.000.

Richardson, Cleonard. Bowling pin orientation device for orienting falling bowling pins in a bowling pin conveyor system. 4,410,177., Cl. 273-43.00D.

Richardson, Edwin A.: *See—*
Davies, David R.; and Richardson, Edwin A., 4,410,041., Cl. 166-250.000.

Richardson, Terence W., to Godiva Chocolatier, Inc. Expanded food products. 4,410,555., Cl. 426-572.000.

Richardson, Terence W.: *See—*
Gaffney, Bernard J.; and Richardson, Terence W., 4,410,552., Cl. 426-103.000.

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Richter, Herbert P.; and Dibble, Eugene J., to United States of America, Navy. Repellent coatings for optical surfaces. 4,410,563., Cl. 422-108.000.

Rickard, Jimmy R.: *See—*
Blevins, Theodore J.; Roberts, Gerald L.; Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,410,329., Cl. 8-158.000.

Ricoh Company, Ltd.: *See—*
Ariyama, Kenzo; Hirose, Akira; and Itoh, Tadashi, 4,410,262., Cl. 355-3.0SH.

Riegger, Helmut: *See—*
Gessinger, Gernot; Mercier, Oliver; and Riegger, Helmut, 4,410,488., Cl. 419-48.000.

Rieper, Wolfgang: *See—*
Tronich, Wolfgang; Rieper, Wolfgang; and Bohme, Peter, 4,410,707., Cl. 548-360.000.

Rieter Machine Works Limited: *See—*
Wurmli, Arthur, 4,410,340., Cl. 55-290.000.

Riley, Harry J., to S.W. Hart & Co. Pty. Ltd. Water storage tank. 4,409,962., Cl. 126-437.000.

Rivier, Jean E. F.: *See—*
Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,410,514., Cl. 424-177.000.

Riviere, Maurice, to Carnaud Emballage. Lap-seaming electrical resistance welding machine for can bodies. 4,410,781., Cl. 219-64.000.

Robert Bosch GmbH: *See—*
Burkel, Rainer; Peter, Cornelius; and Muller, Klaus, 4,409,815., Cl. 73-35.000.
Eheim, Franz; Hofer, Gerald; and Laufer, Helmut, 4,409,939., Cl. 123-357.000.
Eheim, Franz, 4,409,942., Cl. 123-387.000.
Gerber, Hans; Wessel, Claude; and Hidveghy, Ivan, 4,410,846., Cl. 318-490.000.
Hess, Heinz; and Kirschenstein, Reinhard, 4,410,912., Cl. 358-162.000.
Honig, Gunter; Jeenicke, Edmund; Krauter, Immanuel; and Schenk, Manfred, 4,410,812., Cl. 307-350.000.
Seifert, Kurt, 4,410,141., Cl. 239-453.000.
Stecher, Gunther; and Zimmermann, Herbert, 4,410,872., Cl. 338-114.000.

Roberts, Gerald L.: *See—*
Blevins, Theodore J.; Roberts, Gerald L.; Hollenbeck, Robert K.; and Rickard, Jimmy R., 4,410,329., Cl. 8-158.000.

Roberts, Griffith T., to National Research Development Corporation. Vibrating vane pressure gauge. 4,409,840., Cl. 73-704.000.

Roberts, Julian L., Jr.: *See—*
Sawyer, Donald T.; and Roberts, Julian L., Jr., 4,410,402., Cl. 204-59.00R.

Robinson, Curtiss W., to Boeing Company, The. Gas lubricated ball bearing. 4,410,220., Cl. 384-109.000.

Robinson, Tibor; Knobel, Walter; and Kissling, Bruno, to Sandoz Ltd. Reaction products useful for improving the wetfastness of direct and reactive dyes on cellulosic substrates. 4,410,652., Cl. 524-195.000.

Roche, William J., to GTE Products Corporation. Voltage limited ballast for gsaeous discharge devices. 4,410,836., Cl. 315-96.000.

Rock-Tenn Company: *See—*
Wischusen, Henry, III, 4,410,129., Cl. 229-41.00B.

Rockwell International Corporation: *See—*
Griffee, Leslie V., 4,410,893., Cl. 343-792.000.
Werth, Willard F.; and Craiglow, Robert L., 4,410,764., Cl. 364-513.500.
Wheatley, Charles E., III, 4,410,954., Cl. 364-701.000.

Rodgers, Stephen D.: *See—*
Supcoe, Robert F.; Radakovich, Thomas; and Rodgers, Stephen D., 4,410,363., Cl. 106-18.290.

Rodioov, Boris A.: *See—*
Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V., 4,409,908., Cl. 110-346.000.

Rodman, William; and Boland, Peter, to Manitoba Telephone System, The. Distributed network synchronization system. 4,411,007., Cl. 375-107.000.

Roe, William J., to Nalco Chemical Company. Composition for altering the water function characteristics of mineral slurries. 4,410,431., Cl. 210-728.000.

Roe, William J.; and Perisho, Jacqueline L., to Nalco Chemical Company. Compositions for reducing the freeze-adherence of particulate minerals to the walls of transport bins and the like. 4,410,599., Cl. 428-469.000.

Rohloff, Joachim L. Holders for photographic slides. 4,410,088., Cl. 206-455.000.

Rohm and Haas Company: *See—*
Manziek, Larry, 4,410,665., Cl. 525-328.400.

Rolls-Royce Limited: *See—*
Harvey, John D., 4,410,065., Cl. 181-224.000.

Rolm Corporation: *See—*
Graham, Martin H., 4,411,004., Cl. 375-36.000.

Romero, Ervin G., to Boeing Company, The. Brake control system for providing brake release signals. 4,410,153., Cl. 244-111.000.

Romey, Ingo; and El-Roy, Menachem, to Bergwerksverband GmbH. Form masses from thermoplastic synthetic materials and residues of coal hydrogenation. 4,410,646., Cl. 524-65.000.

Roos, Martin, to Abcor, Inc. Probe for collecting test permeate from a multiple-membrane module. 4,409,849., Cl. 73-863.820.

Rose, Leslie C.: *See—*
Hamrick, Joseph T.; and Rose, Leslie C., 4,409,786., Cl. 60-39.464.

Rosen, Perry: *See—*
Holland, George W.; Jernow, Jane L.; and Rosen, Perry, 4,410,720., Cl. 560-121.000.

Rosser, Robert W.; and Taylor, Mark S., to United States of America, National Aeronautics and Space Administration. Fluoroether modified epoxy composites. 4,410,682., Cl. 528-110.000.

Rostovskaya, Galina S.: *See—*
Glukhovsky, Viktor D.; Krivenko, Pavel V.; Rostovskaya, Galina S.; Timkovich, Vasily J.; and Pankratov, Vitaly L., 4,410,365., Cl. 106-84.000.

Rosty, Roberta: *See—*
Russell, William J.; and Rosty, Roberta, 4,410,393., Cl. 156-629.000.

Roth, Christoph: *See—*
Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, 4,410,624., Cl. 430-377.000.

Rothacker, Dietrich: *See—*
Sturtz, Gunter; Holtze, Herbert; Rothacker, Dietrich; and Burk, Gerhard, 4,410,212., Cl. 296-189.000.

Rothenberg, Alan S.; Panzer, Hans P.; Schmitt, Joseph L.; and Card, Roger J., to American Cyanamid Company. Preparation of 2-vinylimidazoles by dehydrogenation of 2-ethylimidazoles and 2-ethylimidazolines. 4,410,706., Cl. 548-335.000.

Rothmeyer, Markus: *See—*
Alefeld, Georg; Maier-Laxhuber, Peter; and Rothmeyer, Markus, 4,410,028., Cl. 165-1.000.

Roussel, Philippe; Fankhauser, Franz; and van der Zypen, Eugen, to Lasag AG. Device for observing and treating the eye using a laser. 4,409,979., Cl. 128-303.100.

Roussel Uclaf: *See—*
Franck-Neumann, Michel; and Miesch, Michel, 4,410,721., Cl. 560-124.000.

Roux, Jacques: *See—*
Leger, Guy; Roux, Jacques; Alinat, Jean; and Constans, Jacques, 4,410,282., Cl. 374-156.000.

Rovac Corporation: *See—*
Shank, Wayne C.; and Edwards, Thomas C., 4,410,305., Cl. 418-150.000.

Rubik, Erno, to Konsumex Kulkereskedelmi Vallalat. Shiftable element puzzle. 4,410,179., Cl. 273-153.00S.

Rubinstein, Arthur: *See—*
Dlugos, Daniel F.; Manduley, Flavio M.; and Rubinstein, Arthur, 4,410,961., Cl. 364-900.000.

Rudd, John E.: *See—*
King, Donald D.; and Rudd, John E., 4,409,797., Cl. 62-239.000.

Ruhrkohle Aktiengesellschaft: *See—*
Holz, Wilhelm; and Lukaszewicz, Helmut, 4,410,399., Cl. 202-248.000.

Runkel, Walter: *See—*
Koller, Rudolf; and Runkel, Walter, 4,410,015., Cl. 139-383.00A.

Rusche, Jochen: *See—*
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

Rushforth, Roy W. E.: *See—*
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon L., 4,410,475., Cl. 264-122.000.

Russell Coil Company: *See—*
Krueger, Henry R., 4,409,795., Cl. 62-140.000.

Russell, William J.; and Rosty, Roberta, to United States of America, Army. Preparation of steel surfaces for adhesive bonding by etching with H_3PO_4-polyhydric alcohol mixture. 4,410,393., Cl. 156-629.000.

Ruszala, Ferdinand A., to Ashland Oil, Inc. Oxydehydrogenation of isobutyric acid and its lower alkyl esters. 4,410,727., Cl. 562-599.000.

Ruther, Hubert. Device for retaining and holding a plate or panel in an article of furniture or the like. 4,410,292., Cl. 403-24.000.

Ruti Machinery Works Ltd.: *See—*
Manders, Petrus G. J., 4,410,016., Cl. 139-435.000.

Ruti-te Strake B.V.: *See—*
Van Hest, Cornelis A. J. H., 4,410,146., Cl. 242-47.010.

Rydeen, Robert J. Post and beam building. 4,409,763., Cl. 52-93.000.

Rylicki, Edward J.: *See—*
Fathauer, George H.; Fowler, James M., Jr.; Rylicki, Edward J.; and Mason, Edwin E., 4,410,934., Cl. 363-21.000.

Rynik, Milan; and Nickel, John, to Blava In-line, Inc. Apparatus for continuously cutting and removing thin trim strips from a printed web. 4,409,870., Cl. 83-100.000.

Ryo-nichi Company Ltd.: *See—*
Akiyama, Tsunekazu; Kihara, Tetsuaki; Komizo, Kazunaga; and Kameo, Hiroshi, 4,410,747., Cl. 570-247.000.

Rypkema, Jouke N., to Zenith Radio Corporation. AGC System for television receivers. 4,411,019., Cl. 455-180.000.

S. C. Johnson & Son, Inc.: *See—*
Schulz, Gerald O.; and Wilson, Dennis M., 4,410,673., Cl. 526-202.000.

S.W. Hart & Co. Pty. Ltd.: *See—*
Riley, Harry J., 4,409,962., Cl. 126-437.000.

Sabee, Reinhardt N. Form fit diaper with inside seal and thickened crotch and method of making the same. 4,410,324., Cl. 604-368.000.

Sadowski, Herbert: *See—*
Hoppner, Heinz-Jochen; Kramer, Ulrich; Sgarz, Hugo; and Sadowski, Herbert, 4,410,151., Cl. 244-63.000.

Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, to Toyama Chemical Co., Ltd. Cephalosporins. 4,410,522., Cl. 424-246.000.

Sailer, Donald E., to Central Soya Company, Inc. Soy protein product and process. 4,410,554., Cl. 426-302.000.

Saint-Gobain Vitrage: *See—*
Sauer, Gerd; and Unbehaun, Dieter, 4,410,843., Cl. 318-317.000.

St. Hillaire, Raymond P. Shaft assembly for extending the height of the stem of a bicycle fork. 4,410,197., Cl. 280-279.000.

St. John, James C.: *See—*
Loesch, Stanley B.; St. John, James C.; Mints, Danny K.; and Burmeister, Allen D., 4,409,927., Cl. 122-26.000.

Saito, Chikara: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Saito, Chikara; and Wakimoto, Hirofumi, 4,410,360., Cl. 75-60.000.

Saito, Kuniro: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Saito, Suita: *See—*
Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, 4,410,458., Cl. 260-239.100.

Saito, Takashi; and Kumaki, Takashi, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus having a jacket opening enlarging device. 4,410,972., Cl. 369-77.200.

Saito, Takashi; Kumaki, Takashi; and Kishi, Toru, to Victor Company of Japan, Ltd. Rotary recording medium reproducing apparatus having a switch mechanism for detecting return of a jacket opening enlarging mechanism. 4,410,973., Cl. 369-77.200.

Saito, Takeshi: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Saito, Teruo: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Sakai, Kazutada: *See—*
Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, 4,410,259., Cl. 355-3.0DD.

Sakakibara, Hidekazu: *See—*
Hattori, Katsuhide; Fukatsu, Yoshiaki; Kakino, Shigeru; Moriyama, Hideo; and Sakakibara, Hidekazu, 4,410,378., Cl. 149-109.600.

Sakamoto, Sadayuki: *See—*
Nishino, Masaki; Yasuhara, Yutaka; Fukuda, Tadanori; and Sakamoto, Sadayuki, 4,410,597., Cl. 428-423.100.

Sakata, Jiro: *See—*
Yamamoto, Minoru; Hirai, Masana; and Sakata, Jiro, 4,410,338., Cl. 55-158.000.

Sakharnov, Alexandr V.: *See—*
Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V., 4,409,908., Cl. 110-346.000.

Sakuma, Shinzo; Warabi, Junichi; and Kobari, Yukio, to Kabushiki Kaisha Meidensha. Vacuum circuit interrupter. 4,410,777., Cl. 200-144.00B.

Sakurai, Fumio: *See—*
Mikami, Tomohisa; Abe, Fumitaka; Sakurai, Fumio; and Matsuda, Tadashi, 4,410,234., Cl. 350-6.800.

Sakurai, Hisaya: *See—*
Matsumoto, Koichi; Katayama, Yoshihiko; and Sakurai, Hisaya, 4,410,595., Cl. 428-412.000.

Sakurai, Junji; and Mori, Haruhisa, to Fujitsu Limited. Ion implantation equipment. 4,410,801., Cl. 250-492.200.

Sakurai, Yukio, to Nissan Motor Co., Ltd. Dial type wire control device. 4,409,861., Cl. 74-501.00R.

Sakyo, Toyoji: *See—*
Tomizawa, Takekazu; Ueda, Susumu; Sakyo, Toyoji; and Kawai, Sumio, 4,409,909., Cl. 110-346.000.

Salama, Mamdouh M.; Joosten, Michael W.; Zimmerman, Wiley E.; and Bockhorst, Rhea W., to Conoco Inc. Fatigue gauge for drill pipe string. 4,409,824., Cl. 73-151.000.

Saleh, Ramzi Y.: *See—*
Kiovsky, Joseph R.; Young, George W.; and Saleh, Ramzi Y., 4,410,453., Cl. 502-253.000.

Salemme, Charles T.: *See—*
Murphy, Guy C.; Jones, Jackie D.; and Salemme, Charles T., 4,410,385., Cl. 156-181.000.

Salk Institute for Biological Studies, The: *See—*
Vale, Wylie W., Jr.; and Rivier, Jean E. F., 4,410,514., Cl. 424-177.000.

Salmon, John K.: *See—*
Leiner, Robert L.; and Salmon, John K., 4,410,067., Cl. 187-52.0LC.

Saltveit, Mikal E., Jr.: *See—*
Dilley, David R.; Lee, Julian J. L.; and Saltveit, Mikal E., Jr., 4,410,632., Cl. 436-20.000.

Samson, Ilan. Convertible chair. 4,410,213., Cl. 297-84.000.

Samuelsson, Rune P. S.: *See—*
Renander, Ake C.; and Samuelsson, Rune P. S., 4,409,738., Cl. 33-281.000.

Sanders, Gerhard: *See—*
Wabersich, Ernst; and Sanders, Gerhard, 4,410,999., Cl. 373-76.000.

Sandford, Geoffrey P.; and Alekna, Paull A., to Vaporpak Pty. Limited. Internal combustion engines. 4,409,946., Cl. 123-557.000.

Sandling, Michael J., to Xomox Corporation. Rotary plug valve. 4,410,003., Cl. 137-312.000.

Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, 4,409,709., Cl. 28-155.000.

Sando, Yoshikazu; Ishidoshiro, Hiroshi; and Minakata, Matsuo, to Sando Iron Works Co., Ltd. Apparatus for continuous untwisting and crimping of a cloth. 4,409,709., Cl. 28-155.000.

Sandoz Ltd.: *See—*
Robinson, Tibor; Knobel, Walter; and Kissling, Bruno, 4,410,652., Cl. 524-195.000.
Seiler, Max P.; and Stoll, Andre, 4,410,519., Cl. 424-226.000.
Stakelbeck, Hans-Peter; and Sommerhalder, Rudolf, 4,410,330., Cl. 8-455.000.

Sangster, Frederik L. J., to U.S. Philips Corporation. Divide-by-two charge divider. 4,411,010., Cl. 377-61.000.

Sanjiki, Tetsutaro: *See—*
Atsumi, Toshio; Sanjiki, Tetsutaro; and Kiyohara, Takao, 4,410,696., Cl. 542-427.000.

Sankyo Company Limited: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,410,629., Cl. 435-146.000.

SanMiguel, Alfonso J., to Holmberg Electronics Corporation. Connector block. 4,410,230., Cl. 339-176.00M.

Sanshin Kagaku Kogyo Co., Ltd.: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.

Sansone, Eugene A., to Singer Company, The. Multi-stage presser lifter device. 4,409,914., Cl. 112-237.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Iwao, Jun-ichi; Oya, Masayuki; and Iso, Tadashi, 4,410,542., Cl. 424-274.000.

Sarkary, Homi G.: *See—*
Dalal, Hormazdyzr D.; Patnaik, Bisweswar; and Sarkary, Homi G., 4,410,622., Cl. 430-312.000.

Sasaki, Takeo; and Morimoto, Yoshinobu, to Mitsubishi Denki Kabushiki Kaisha. Fuel control apparatus for internal combustion engine. 4,409,929., Cl. 123-479.000.

Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, to Nippon Steel Corporation. Composite dual tubing. 4,410,013., Cl. 138-149.000.

Sasaki, Toshio: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Sasaki, Yutaka; Mori, Kunio; and Moriya, Kiyoshi, to Nitto Chemical Industry Co., Ltd. Process for producing fluid catalyst having good activity from coarse catalyst. 4,410,450., Cl. 502-22.000.

Sasama, Shigeru; Nakao, Nobuhiko; and Ohara, Osamu, to Teijin Chemicals, Ltd. Process for producing aromatic polycarbonate article having heat-cured surface layer. 4,410,572., Cl. 427-407.100.

Satake Engineering Co., Ltd.: *See—*
Satake, Toshihiko, 4,410,092., Cl. 209-557.000.

Satake, Toshihiko, to Satake Engineering Co., Ltd. Automatic control device for a boundary plate of a grain separator. 4,410,092., Cl. 209-557.000.

Sato, Akihiko; and Nakano, Yoshiyuki, to Nippon Kogaku K.K. Electric shutter device having a reciprocating shutter charging member. 4,410,256., Cl. 354-234.000.

Sato, Katsuo: *See—*
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, 4,410,690., Cl. 528-486.000.

Sato, Kenzo: *See—*
Konno, Mitsuo; Niikawa, Ryo; and Sato, Kenzo, 4,410,782., Cl. 219-89.000.

Sato, Masanobu, to Olympus Optical Company Limited. Superminiature microphone device. 4,410,772., Cl. 179-157.000.

Satogosei Co., Ltd.: *See—*
Suzuki, Tadashi, 4,410,019., Cl. 140-123.600.

Sauer, Gerd; and Unbehaun, Dieter, to Saint-Gobain Vitrage. Electrically controlled sliding window and proximity detector. 4,410,843., Cl. 318-317.000.

Saunders, Hollis S.; Carmer, Richard V.; and Payette, Lionel J., to Essex Group, Inc. Power insertable nylon coated magnet wire. 4,410,592., Cl. 428-383.000.

Saurer, Richard F.: *See—*
McVicker, Harry J.; Olson, Norman; Saurer, Richard F.; and Schulte, John C., 4,410,159., Cl. 248-349.000.

Sawada, Shizuo; Iwai, Hiroshi; and Maeda, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for fabricating a semiconductor device. 4,410,375., Cl. 148-187.000.

Sawagata, Kiyoshi, to Sony Corporation. D.C. Stabilized analog-to-digital converter. 4,410,876., Cl. 340-347.0CC.

Sawaguchi, Tatsuei: *See—*
Nobukawa, Akira; and Sawaguchi, Tatsuei, 4,410,192., Cl. 279-121.000.

Sawazaki, Kimio: *See—*
Muraishi, Masakazu; and Sawazaki, Kimio, 4,409,707., Cl. 24-214.000.

Sawyer, Donald T.; and Roberts, Julian L., Jr., to University of California, Regents of the. Degradation of halogenated carbon compounds. 4,410,402., Cl. 204-59.00R.

Sayles, David C., to United States of America, Army. Increasing burning rate of solid propellants by electric field effects. 4,410,470., Cl. 264-3.00R.

Scapple, Robert Y.; Keister, Frank S.; Grieger, Robert G.; and Himmel, Richard P., to Hughes Aircraft Company. Large area hybrid microcircuit assembly. 4,410,874., Cl. 338-307.000.

Schaefer, George H.; and Hirsch, Stephen P., to Realist, Inc. Optical and focusing arrangement for microfiche reader. 4,410,248., Cl. 353-27.00R.

Schaefer, Louis F.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., 4,410,968., Cl. 369-44.000.

Schaeffer, Eugene P.: *See—*
Pease, Charles C.; and Schaeffer, Eugene P., 4,410,783., Cl. 219-98.000.

Schaffhauser, Anthony C.: *See—*
Liu, Chain T.; Inouye, Henry; and Schaffhauser, Anthony C., 4,410,371., Cl. 148-11.50R.

Scharf, Heino W., to Dempster Systems Inc. Bumper structure for vehicle having tiltable load carrier member. 4,410,207., Cl. 293-118.000.

Schaubert, Daniel H.; and Farrar, Frederick G., to United States of America, Army. Microstrip antenna with polarization diversity. 4,410,891., Cl. 343-700.0MS.

Schenk, Manfred: *See—*
Honig, Gunter; Jeenicke, Edmund; Krauter, Immanuel; and Schenk, Manfred, 4,410,812., Cl. 307-350.000.

Schering AG: *See—*
Mueller, Karl H., 4,410,742., Cl. 568-851.000.

Scherl, Wolfgang; Abele, Ludwig; Wahl, Friedrich; and Fuchsberger, Hermann, to Siemens Aktiengesellschaft. Method and apparatus for automatic recognition of image and text/graphics areas on a master. 4,411,015., Cl. 382-51.000.

Scheuble, Bernd: *See—*
Baur, Gunter; Scheuble, Bernd; and Weber, Georg, 4,410,445., Cl. 252-299.500.

Scheunemann, Kurt: *See—*
Lindner, Friedrich; and Scheunemann, Kurt, 4,410,031., Cl. 165-10.000.

Schick, Edgar; and Wisniewski, Peter, to Kraftwerk Union Aktiengesellschaft. Nuclear reactor with a liquid coolant. 4,410,486., Cl. 376-306.000.

Schickedanz, Willi. Stereo loudspeaker system for a picture reproducing screen. 4,410,761., Cl. 358-335.000.

Schiffner, Gerhard, to Siemens Aktiengesellschaft. Optical directional coupler and method of manufacture. 4,410,236., Cl. 350-96.330.

Schiffner, Gerhard: *See—*
Klement, Ekkehard; and Schiffner, Gerhard, 4,410,235., Cl. 350-96.180.

Schimmel, Gunther R.; and Klose, Werner, to Hoechst Aktiengesellschaft. Process for extractively separating a mixture containing phosphoric acid monoalkylesters into its components. 4,410,466., Cl. 260-990.000.

Schimmel, Karl F.; Traficante, Michael A.; and Dowbenko, Rostyslaw, to PPG Industries, Inc. Polyester dispersants for coating compositions. 4,410,687., Cl. 528-295.500.

Schmidt, Gunther: *See—*
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

Schmidt, Karl, to Pierburg GmbH & Co. KG. Fuel supply system. 4,409,944., Cl. 123-445.000.

Schmidt Reuter Ingenieurgesellschaft mbH & Co. KG: *See—*
Radtke, Wolfgang; and Borbely, Gyorgy, 4,410,131., Cl. 236-10.000.

Schmitt, Joseph L.: *See—*
Rothenberg, Alan S.; Panzer, Hans P.; Schmitt, Joseph L.; and Card, Roger J., 4,410,706., Cl. 548-335.000.

Schneider, Friedrich: *See—*
Stockel, Dieter; and Schneider, Friedrich, 4,410,309., Cl. 445-7.000.

Schneiderat, Johann: *See—*
Pischzik, Bruno; and Schneiderat, Johann, 4,410,156., Cl. 248-58.000.

Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, to Merrell Dow Pharmaceuticals Inc. Cardiotonic 4-aroylimidazolidin-2-ones. 4,410,540., Cl. 424-273.00R.

Schoeps, Jochen: *See—*
Hohlein, Peter; and Schoeps, Jochen, 4,410,663., Cl. 525-162.000.

Schollnhammer, Gunter: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.

Scholz, Horst: *See—*
Germann, Fritz, deceased; Kuntz, Eduard; Muller, Reinhold; and Scholz, Horst, 4,410,998., Cl. 373-40.000.

Schomberg, Hermann, to U.S. Philips Corporation. Ultrasonic diagnostic device. 4,409,838., Cl. 73-602.000.

Schreder, Felix: *See—*
Fischer, Karl; Knauss, Hermann; and Schreder, Felix, 4,410,793., Cl. 219-460.000.

Schreiner, Peter J.; Limberg, John F.; and Cybulski, Mark J., to Bendix Corporation, The. Disc brake and anti-rattle spring therefor. 4,410,068., Cl. 188-73.380.

Schreiner, Peter J.; Gumkowski, Bert A.; and Limberg, John F., to Bendix Corporation, The. Disc brake. 4,410,069., Cl. 188-73.360.

Schroeer, Ulrich: *See—*
Mueller, Karl H., 4,410,742., Cl. 568-851.000.

Schroter, Herbert: *See—*
Frei, Jorg; Jaeggi, Knut A.; Ostsewrmayer, Franz; and Schroter, Herbert, 4,410,530., Cl. 424-251.000.

Schulte, Heinz, to G. L. Rexroth GmbH. Device for regulating the tractive force in lower linkages of tractor lifting gear. 4,410,046., Cl. 172-7.000.

Schulte, John C.: *See—*
McVicker, Harry J.; Olson, Norman; Saurer, Richard F.; and Schulte, John C., 4,410,159., Cl. 248-349.000.

Schulz, Daniel R.: *See—*
Barrett, John P., Sr.; and Schulz, Daniel R., 4,409,694., Cl. 4-545.000.

Schulz, Gerald O.; and Wilson, Dennis M., to S. C. Johnson & Son, Inc. Suspension polymerization with cosolvent partitioning. 4,410,673., Cl. 526-202.000.

Schulz, Kurt: *See—*
Muller, Ortwin; Schulz, Kurt; and Stopar, Viktor, 4,410,242., Cl. 351-211.000.

Schulz, Wolfgang: *See—*
Eichinger, Johann; Parzl, Franz; and Schulz, Wolfgang, 4,409,904., Cl. 105-131.000.

Schulze, Martin: *See—*
Preusser, Gerhard; and Schulze, Martin, 4,410,400., Cl. 203-3.000.

Schuster, Hubert: *See—*
Knippschild, Gerd; Klebe, Hans; and Schuster, Hubert, 4,410,444., Cl. 252-186.210.

Schuurman, Pieter J., to Shell Oil Company. Valve provided with a thermally-actuated mechanism for pressing valve seats against a valve gate body. 4,410,002., Cl. 137-238.000.

Schwagerman, William H., to Pneumo Corporation. Flexible type multipoint thermocouple assembly. 4,410,756., Cl. 136-221.000.

Schwarz, Helmut H.: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.

Schweiso, Robert J. Flow rate measuring device. 4,409,844., Cl. 73-861.000.

SCM Corporation: *See—*
Miller, Donald E., 4,410,557., Cl. 426-607.000.

Scobie, William B.; and Holtgraver, Edward G., to Keystone International, Inc. Valve seat. 4,410,163., Cl. 251-306.000.

Scoron Corporation: *See—*
Gill, Peter A., 4,409,932., Cl. 123-25.00D.

Scott Bader Company Limited: *See—*
Layton, John M., 4,410,642., Cl. 523-122.000.

Scott, David R.; and Rhoades, Thomas S., to Scott Science & Technology, Inc. Structural information detector. 4,409,842., Cl. 73-800.000.

Scott Science & Technology, Inc.: *See—*
Scott, David R.; and Rhoades, Thomas S., 4,409,842., Cl. 73-800.000.

Scripto, Inc.: *See—*
Muller, Frank A., 4,410,643., Cl. 523-161.000.

Secrest, T. W.: *See—*
Holliday, David H., 4,410,172., Cl. 271-288.000.

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britian and Northern Ireland, The: *See—*
Ladizesky, Noe H.; Ward, Ian M.; and Phillips, Leslie N., 4,410,586., Cl. 428-245.000.

Segawa, Keiji; Murakami, Masaki; and Doi, Keiichiro, to Victor Company of Japan, Limited. Capacitance detection type record stylus and method for making the stylus. 4,410,974., Cl. 369-126.000.

Seibert, Gerhard. Winding machine for winding strand-shaped winding material on a spool. 4,410,147., Cl. 242-158.00R.

Seibt, Horst: *See—*
Ohme, Roland; Ballschuh, Detlef; Rusche, Jochen; Seibt, Horst; Geneis, Kristina; and Kretzschmar, Gunter, 4,410,709., Cl. 548-570.000.

Seidel, Peter-Rudolf: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.

Seider, Seymour, to BSC Industries Corp. Method and apparatus for combustion control and improved optical pyrometer related thereto. 4,410,266., Cl. 356-45.000.

Seifert, Kurt, to Robert Bosch GmbH. Fuel injection nozzle for internal combustion engines. 4,410,141., Cl. 239-453.000.

Seifert, Peter: *See—*
Chupka, David E.; and Seifert, Peter, 4,410,424., Cl. 209-273.000.

Seiffhart, John B. Process for treating meat. 4,409,704., Cl. 17-45.000.

Seil Textilmaschinenzubehor GmbH: *See—*
Henze, Bernhard, 4,410,803., Cl. 250-561.000.

Seiler, Max P.; and Stoll, Andre, to Sandoz Ltd. Tetraline derivatives, their production and pharmaceutical compositions containing them. 4,410,519., Cl. 424-226.000.

Seip, Hermann, to ITT Industries, Inc. Mechanically controlled brake booster. 4,409,790., Cl. 60-547.100.

Seitzer, Walter H., to Sunoco Energy Development Co. Reduction in pour point of shale oil. 4,410,415., Cl. 208-11.0LE.

Sekiguchi, Kouichi, to Iwasaki Tsushinki Kabushiki Kaisha. Key telephone system. 4,410,767., Cl. 179-99.00R.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.

Sekiya, Shigeru: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Selig, Guenther. Component for module for presenting alpha numeric or like information. 4,410,888., Cl. 340-815.050.

Selman, Gordon L.: *See—*
Chase, Barry J.; Rushforth, Roy W. E.; and Selman, Gordon L., 4,410,475., Cl. 264-122.000.

Seltzer, Donald S., to Charles Stark Draper Laboratory, Inc., The. Null seeking system for remote center compliance device. 4,409,736., Cl. 33-169.00C.

Semo, Jack: *See—*
Beauvineau, Jacky; and Semo, Jack, 4,410,272., Cl. 356-311.000.

Seng, Stephen: *See—*
Hohman, Charles M.; Propster, Mark A.; and Seng, Stephen, 4,409,742., Cl. 34-168.000.

Senor, Ronald E., to Texas Instruments Incorporated. Integrated circuit mounting socket. 4,410,231., Cl. 339-218.00M.

Serikawa, Haruyuki: *See—*
Suzuki, Isao; and Serikawa, Haruyuki, 4,409,852., Cl. 73-862.390.

Seyffert, Michael: *See—*
Laverty, Gerald C.; and Seyffert, Michael, 4,409,924., Cl. 118-406.000.

Seyler, Gerard, to Pittway Corporation. Electric horn with means for controlling curvature of the striker carrier. 4,410,881., Cl. 340-388.000.

Seymour, Shaun A.: *See—*
VanGinhoven, Robert M.; Seymour, Shaun A.; and Eberly, Harry C., 4,409,784., Cl. 56-341.000.

Sgarz, Hugo: *See—*
Hoppner, Heinz-Jochen; Kramer, Ulrich; Sgarz, Hugo; and Sadowski, Herbert, 4,410,151., Cl. 244-63.000.

Shafer, Gale E., Jr. Method of embedding one article with another. 4,410,480., Cl. 264-262.000.

Shah, Nitin, to Littelfuse, Inc. Method of making spiral wound fuse bodies. 4,409,729., Cl. 29-623.000.

Shamenko, Stepan P.: *See—*
Toropov, Gennady A.; Shamenko, Stepan P.; and Badyaev, Valery G., 4,409,698., Cl. 10-152.00T.

Shamp, Ellis W. Safety suspension unit and harness for developing jumps in figure skating. 4,410,175., Cl. 272-70.000.

Shank, Wayne C.; and Edwards, Thomas C., to Rovac Corporation. Vane type compressor having elliptical stator with doubly-offset rotor. 4,410,305., Cl. 418-150.000.

Sharp Kabushiki Kaisha: *See—*
Shimada, Mitsuhiro; and Katto, Atsuyuki, 4,409,964., Cl. 126-443.000.

Shaw, Herbert J.; Lefevre, Herve C.; and Bergh, Ralph A., to Leland Stanford Junior University, The Board of Trustees of the. Fiber optic rotation sensor. 4,410,275., Cl. 356-350.000.

Shaw, Wilfrid G.; and Woodbury, David R., to Standard Oil Company, The. Method for controlling the change in the crush strength of a catalyst particle during finishing calcination. 4,410,448., Cl. 502-159.000.

Shell Oil Company: *See—*
Brownscombe, Thomas F.; and Hart, William W. C., 4,410,680., Cl. 528-88.000.
Chipman, Arthur H. T.; and Bony, Ernest M., 4,410,398., Cl. 201-1.000.
Davies, David R.; and Richardson, Edwin A., 4,410,041., Cl. 166-250.000.
Kortbeek, Andras G. T. G.; Neel, Emmanuel E. A.; and Barre, Guy, 4,410,637., Cl. 518-714.000.
Schuurman, Pieter J., 4,410,002., Cl. 137-238.000.
Sundelin, Kurt G. R.; Powell, James E.; and Kollmeyer, Willy D., 4,410,354., Cl. 71-94.000.

Shibata, Masaaki: *See—*
Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, 4,410,372., Cl. 148-12.00C.

Shibatani, Kyoichiro: *See—*
Yano, Makoto; Shimada, Kiyoo; and Shibatani, Kyoichiro, 4,409,980., Cl. 128-635.000.

Shields, Winston E.; and Lantz, Robert F., II, to Continental Group, Inc., The. Article density sensing. 4,410,078., Cl. 198-358.000.

Shiff, Donald F.: *See—*
Wyslotsky, Ihor; and Baker, Franklin E., Jr., 4,409,818., Cl. 73-49.300.

Shigemori, Daizo; and Muramatsu, Yuji, to Kabushiki Kaisha Sankosha. Overvoltage protecting element. 4,410,831., Cl. 313-325.000.

Shigeta, Yoshihiro: *See—*
Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,410,252., Cl. 354-153.000.

Shima Idea Center Co., Inc.: *See—*
Shima, Masahiro, 4,409,801., Cl. 66-75.100.

Shima, Masahiro, to Shima Idea Center Co., Inc. Needle selecting method and apparatus in flat knitting machine. 4,409,801., Cl. 66-75.100.

Shimada, Kiyoo: *See—*
Yano, Makoto; Shimada, Kiyoo; and Shibatani, Kyoichiro, 4,409,980., Cl. 128-635.000.

Shimada, Mitsuhiro; and Katto, Atsuyuki, to Sharp Kabushiki Kaisha. Solar heat collector assembly. 4,409,964., Cl. 126-443.000.

Shimano Industrial Company Limited: *See—*
Shimano, Keizo, 4,410,313., Cl. 474-82.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Rear derailleur for a bicycle. 4,410,313., Cl. 474-82.000.

Shimazaki, Yuzi: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Shimoyama, Konoshuke, to Ogura Glutch Co., Ltd. Compressor having functions of discharge interruption and discharge control of pressurized gas. 4,410,299., Cl. 417-440.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, 4,410,784., Cl. 219-121.0PY.

Shin Nisso Kako Co., Ltd.: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bandō, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, to Director-General of Agency of Industrial Science & Technology. Production of olefins from a lower alcohol or dimethyl ether. 4,410,751., Cl. 585-640.000.

Shindow, Osamu; Okamoto, Ikuzo; Machida, Takeshi; and Koyama, Hiroshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Hand-held lens meter. 4,410,267., Cl. 356-124.000.

Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, to Tokyo Shibaura Denki Kabushiki Kaisha. Hydraulic apparatus. 4,409,887., Cl. 91-446.000.

Shinozaki, Toshiaki: *See—*
Takasu, Shinichiro; and Shinozaki, Toshiaki, 4,411,013., Cl. 378-34.000.

Shinwa Kagaku Kogyo Kabushiki Kaisha: *See—*
Usui, Akira, 4,409,776., Cl. 53-399.000.

Shiomi, Yasushi: *See—*
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, 4,410,722., Cl. 560-204.000.

Shionogi & Co., Ltd.: *See—*
Sugasawa, Tsutomu, 4,410,730., Cl. 564-327.000.

Shiota, Philip. Method of making well regions for CMOS devices. 4,409,726., Cl. 29-571.000.

Shirahata, Ryuji: *See—*
Kitamoto, Tatsuji; Shirahata, Ryuji; and Tamai, Yasuo, 4,410,565., Cl. 427-130.000.

Shiraishi, Masahiko: *See—*
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.

Shirakawa, Hideki: *See—*
Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, 4,410,640., Cl. 521-63.000.

Shirako, Hideo, to Olympus Optical Co., Ltd. Tape cassette storage box. 4,410,087., Cl. 206-387.000.

Shoji, Mituhiro: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Showa Denko K.K.: *See—*
Kobayashi, Yukio; Shirakawa, Hideki; and Ikeda, Sakuji, 4,410,640., Cl. 521-63.000.

Showa Denko Kabushiki Kaisha: *See—*
Inazawa, Shintaro, 4,410,672., Cl. 526-124.000.

Shu, Winston R., to Mobil Oil Corporation. In-situ combustion method for recovery of heavy oil utilizing oxygen and carbon dioxide as initial oxidant. 4,410,042., Cl. 166-261.000.

Siau, John E., to CBS Inc. Television picture stabilizing system. 4,410,914., Cl. 358-222.000.

Sicotte, Jacques, to Paul Sicotte & Fils Ltee. Method and apparatus for making wooden chair seats. 4,410,025., Cl. 144-365.000.

Sidorenko, Georgy I.; Stankevich, Vladimir I.; Yakubovich, Vladimir M.; and Nikitin, Yaroslav G. Electronic ergometer for cardiac arrhythmia patients. 4,409,985., Cl. 128-702.000.

Sidorenko, Georgy I.; Stankevich, Vladimir I.; Sklema, Mikhail V.; and Margolin, Arkady D. Electronic ergometer. 4,409,992., Cl. 128-782.000.

Siedle, Allen R., to Minnesota Mining and Manufacturing Company. Palladium (II) bis(hexafluoroacetylacetonate), adducts derived therefrom and uses thereof. 4,410,569., Cl. 427-304.000.

Siegel, Hardo: *See—*
Martin, Christoph; Himmele, Walter; and Siegel, Hardo, 4,410,734., Cl. 568-715.000.

Siemens AG: *See—*
Taenzer, Jon C., 4,409,839., Cl. 73-625.000.

Siemens Aktiengesellschaft: *See—*
Aulich, Hubert; and Eisenrith, Karl-Heinz, 4,410,346., Cl. 65-4.200.
Klement, Ekkehard; and Schiffner, Gerhard, 4,410,235., Cl. 350-96.180.
Koch, Rudolf, 4,410,811., Cl. 307-311.000.
Magori, Valentin, 4,409,847., Cl. 73-861.280.
Pfeiler, Manfred; and Tschunt, Edgar, 4,411,012., Cl. 378-17.000.
Scherl, Wolfgang; Abele, Ludwig; Wahl, Friedrich; and Fuchsberger, Hermann, 4,411,015., Cl. 382-51.000.
Schiffner, Gerhard, 4,410,236., Cl. 350-96.330.
Zschauer, Karl-Heinz, 4,410,993., Cl. 372-44.000.

Sigmaform Corporation: *See—*
Blum, John M., 4,410,009., Cl. 138-109.000.

Sigurdsson, Jannes: *See—*
Buring, Klas; Eghamn, Lars; Sigurdsson, Jannes; and Ahlman, Rolf, 4,409,689., Cl. 2-22.000.

Sigworth, Harry W., Jr., to Chevron Research Company. Solar energy water preheat system. 4,409,959., Cl. 126-422.000.

Silaire, Andre: *See—*
Beneziat, Alain; and Silaire, Andre, 4,410,085., Cl. 206-217.000.

Silbermintz, Marvin A., to Ideal Toy Corporation. Calender formed from a cube puzzle. 4,409,750., Cl. 40-107.000.

Silence, William L.: *See—*
Asphahani, Aziz I.; Silence, William L.; and Manning, Paul E., 4,410,489., Cl. 420-453.000.

Siltec Corporation: *See—*
Fiegl, George, 4,410,494., Cl. 422-106.000.

Simhoni, Orit. Negative heel protector cushion. 4,409,975., Cl. 128-153.000.

Simmons, James E.; and Page, Bill. Breather separator for fluid power system reservoir. 4,410,100., Cl. 220-85.00R.

Simpson, James L. Medical appliance disposal container. 4,410,086., Cl. 206-366.000.

Simpson Strong-Tie Company, Inc.: *See—*
Gilb, Tyrell T.; and Commins, Alfred D., 4,410,294., Cl. 403-27.000.

Simson, Dionizy, to Sulzer Brothers Limited. Nozzle structure for a weaving machine. 4,410,018., Cl. 139-450.000.

Sindermann, Siegmar, to Holstein und Kappert GmbH. Device for testing and sorting bottles. 4,410,090., Cl. 209-525.000.

Singer Company, The: *See—*
Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., 4,409,913., Cl. 112-158.00B.
Ljung, Bo H. G., 4,410,274., Cl. 356-350.000.
Ljung, Bo H. G.; and Stiles, John C., 4,410,276., Cl. 356-350.000.
Sansone, Eugene A., 4,409,914., Cl. 112-237.000.

Siok, Donald A.: *See—*
DaMocogno, Ninalbo G.; Siok, Donald A.; Bourassa, Denis L.; and Connerney, William R., 4,410,863., Cl. 332-37.00R.

Siwecki, Thomas L.: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., 4,410,968., Cl. 369-44.000.

Siwecki, Thomas Lee: *See—*
Frohbach, Hugh F.; Myers, Robert E.; Peppers, Norman A.; Siwecki, Thomas L.; and Schaefer, Louis F., 4,410,968., Cl. 369-44.000.

Skach, Edward J., Jr., to Dow Chemical Company, The. Process for producing salt-coated magnesium granules. 4,410,356., Cl. 75-0.50B.

Skala, Stephen F. Pressure cooker with regulated vapor pressure. 4,410,030., Cl. 165-2.000.

SKF Industrial Trading & Development, B.V.: *See—*
Timmer, Hendrikus J. M., 4,409,715., Cl. 29-148.40A.

Sklema, Mikhail V.: *See—*
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Sklema, Mikhail V.; and Margolin, Arkady D., 4,409,992., Cl. 128-782.000.

Skornyakov, Vladimir V.: *See—*
Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V., 4,409,908., Cl. 110-346.000.

Skyinskus, Robert L. Controller for a room heating system. 4,410,135., Cl. 237-8.00R.

Smith, Bernard; and Dubuske, Stanley, to United States of America, Army. EBS Device with cold-cathode. 4,410,832., Cl. 315-3.000.

Smith, Clifford D., to Owens-Corning Fiberglas Corporation. Flexible insulated air duct. 4,410,014., Cl. 138-149.000.

Smith International, Inc.: *See—*
Herrick, G. Richard, 4,410,284., Cl. 384-93.000.

Smith, Juan J.: *See—*
Mulso, Frank A., Jr.; and Smith, Juan J., 4,410,208., Cl. 293-132.000.

Smith, Michael D.: *See—*
Barker, Charles E.; and Smith, Michael D., 4,410,813., Cl. 307-362.000.

Smith, Paul E.: *See—*
Sturgeon, Lloyd F.; and Smith, Paul E., 4,409,744., Cl. 34-207.000.

Smith, Peter W.: *See—*
Kaplan, Alexander E.; Bjorkholm, John E.; Smith, Peter W.; and Tomlinson, Walter J., III, 4,410,239., Cl. 350-354.000.

Smolin, William, to Texaco Inc. Method of determining, as a property an adsorbent, the selectivity for one component of a liquid charge

composition with respect to a reference component of said charge composition. 4,409,819., Cl. 73-61.10R.

Smyres, Gary A.; and Haskett, Philip R., to United States of America, Interior. Recovery of metal values from complex sulfides. 4,410,496., Cl. 423-1.000.

Snamprogetti S.p.A.: *See—*
Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, 4,410,501., Cl. 423-326.000.

Snyder, Jan W.: *See—*
Cason, William C.; and Snyder, Jan W., 4,410,957., Cl. 364-900.000.

Societa' Pneumatici Pirelli S.p.A.: *See—*
Bertoldo, Giorgio, 4,409,872., Cl. 83-155.000.

Societe Anonyme Dite: Ceraver: *See—*
Minjolle, Louis; and Chateigner, Serge, 4,410,636., Cl. 501-98.000.

Societe Anonyme: Stas Societe Technique d'Accessories Specialises: *See—*
Archer, Michel, 4,409,841., Cl. 73-762.000.

Societe d'Assistance Technique Pour Produits Nestle S.A.: *See—*
Lunder, Tito-Livio; and Nielsen, Corine-Madeleine, 4,410,556., Cl. 426-597.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.L.M.A.": *See—*
Jourdain, Gerard E. A.; and Soligny, Marcel R., 4,409,791., Cl. 60-740.000.

Society De Construction Des Avions: *See—*
Kennedy, John F.; and Fournier, Alain, 4,410,152., Cl. 244-110.00B.

Sodex-Magister Societe d'Exploitation des Brevets Neiman: *See—*
Lipschutz, Paul, 4,409,807., Cl. 70-340.000.

Solar Voltaic, Inc.: *See—*
Grolitzer, Arthur J., 4,410,758., Cl. 136-254.000.

Solazzi, Michael C., to Chemplex Industries, Inc. Sample cup with venting means for use in X-ray spectroscopy. 4,409,854., Cl. 73-864.910.

Solco Basel AG: *See—*
Chia, Han-Lie; and Woltmann, Siegfried, 4,410,507., Cl. 424-1.100.

Soligny, Marcel R.: *See—*
Jourdain, Gerard E. A.; and Soligny, Marcel R., 4,409,791., Cl. 60-740.000.

Somers, Gerardus A.; and Hendriks, Jan J. M., to Occidental Chemical Corporation. Metal stripping composition and process. 4,410,396., Cl. 156-664.000.

Somes, Richard K.: *See—*
de Jong, Joannes M. M.; Earle, Richard L.; and Somes, Richard K., 4,409,830., Cl. 73-269.000.

Sommerhalder, Rudolf: *See—*
Stakelbeck, Hans-Peter; and Sommerhalder, Rudolf, 4,410,330., Cl. 8-455.000.

Sony Corporation: *See—*
Mori, Yoshihisa; and Takashima, Mitsuru, 4,410,975., Cl. 369-170.000.
Sawagata, Kiyoshi, 4,410,876., Cl. 340-347.0CC.
Watanabe, Yoshimi, 4,410,918., Cl. 360-77.000.
Wilkinson, James H., 4,410,990., Cl. 371-47.000.

Sork, Mark P. Vehicle anti-theft locking device. 4,409,804., Cl. 70-14.000.

Soskuthy, Miklos, to Ofotert Optikai Finommechanikai es Fotocikkeket Ertekesito Vallalat. Process and equipment for enlargement of color-balanced prints in additive system. 4,410,613., Cl. 430-30.000.

Sousek, Dennis D., to Dravo Corporation. Yellowcake (U_3O_8) dust, water and heat recovery process and apparatus. 4,409,740., Cl. 34-11.000.

Southern Case, Inc.: *See—*
Dembicks, Andrew E., 4,410,095., Cl. 211-60.00T.

Spatz, Gunter: *See—*
Dubs, Hans-Dieter; Spatz, Gunter; and Brandes, Carlos-Enrique, 4,410,098., Cl. 215-220.000.

Speicher, Edwin W., to M. E. Cunningham Company. Single wheel billet marker. 4,410,287., Cl. 400-134.000.

Speicher, John M.: *See—*
Fernandez, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., 4,410,198., Cl. 280-281.0LP.

Spencer, Dana R., to International Business Machines Corporation. Cache extension to processor local storage. 4,410,946., Cl. 364-200.000.

Speraggi, Marcello, to Honeywell Information Systems Italia. Antinoise device for impact serial printers. 4,410,291., Cl. 400-689.000.

Sperry Corporation: *See—*
Chi, Chao S.; and Craig, John W., 4,410,817., Cl. 307-514.000.
de Jong, Joannes M. M.; Earle, Richard L.; and Somes, Richard K., 4,409,830., Cl. 73-269.000.
Dusard, Christopher R.; and Spilsbury, Thomas W., 4,410,841., Cl. 315-382.000.
Lo, David S.; Paul, Maynard C.; and Zierhut, Lawrence G., 4,410,963., Cl. 365-87.000.
McVicker, Harry J.; Olson, Norman; Saurer, Richard F.; and Schulte, John C., 4,410,159., Cl. 248-349.000.
Naaktgeboren, Adrianus, 4,409,891., Cl. 100-189.000.
Ransom, Stephen A.; Stickel, Tedd K.; and Tomei, Joseph B., 4,410,815., Cl. 307-475.000.
VanGinhoven, Robert M.; Seymour, Shaun A.; and Eberly, Harry C., 4,409,784., Cl. 56-341.000.
Zaborowski, Roy A., 4,410,880., Cl. 340-347.0DA.

Spiegel, Erwin: *See—*
Kloppe, Herbert; Rest, Heinz; and Spiegel, Erwin, 4,410,211., Cl. 296-213.000.

Spies, Johann; and Wohrl, Alfons. Releasing circuit and checking circuit for a motor vehicle safety device. 4,410,875., Cl. 340-52.00H.

Spilsbury, Thomas W.: *See—*
Dusard, Christopher R.; and Spilsbury, Thomas W., 4,410,841., Cl. 315-382.000.

Sporre, Sten. Method for sealing a space between two sealing surfaces and a sealing device for carrying the method into effect. 4,410,185., Cl. 277-1.000.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,410,740., Cl. 568-817.000.

SRI International: *See—*
Kremers, Jan H.; and Brain, Alfred E., 4,410,787., Cl. 219-124.340.

Staar S. A.: *See—*
d'Alayer de Costemore d'Arc, Stephane M.; and Lockey, David J., 4,411,008., Cl. 377-18.000.

Stach, Ralf-Michael, to Licentia Patent-Verwaltungs-G.m.b.H. Digital signal transmission. 4,410,878., Cl. 340-347.0DD.

Staerzl, Richard E., to Brunswick Corporation. Voltage regulator. 4,410,847., Cl. 320-34.000.

Stakelbeck, Hans-Peter; and Sommerhalder, Rudolf, to Sandoz, Ltd. Method of producing multi-colored dyeings. 4,410,330., Cl. 8-455.000.

Stalcup, Robert K.; and Prewo, Karl M., to United Technologies Corporation. Methods of making cooled, thermally stable composite mirrors. 4,410,394., Cl. 156-630.000.

Stamminger, Reinhard; and Cullis, Herbert M., to Monegon, Ltd. Adjustable collection members for solar energy systems. 4,410,757., Cl. 136-248.000.

Standard Oil Company: *See—*
Berman, Mark Y., 4,411,014., Cl. 378-59.000.
Blum, Patricia R.; and Milberger, Ernest C., 4,410,752., Cl. 585-658.000.
Lee, Robert W.; and Miloscia, William J., 4,410,659., Cl. 525-53.000.
Shaw, Wilfrid G.; and Woodbury, David R., 4,410,448., Cl. 502-159.000.

Standard Oil Company (Indiana): *See—*
Nimry, Tayseer S.; and Fields, Ellis K., 4,410,658., Cl. 524-600.000.

Standley, Paul M.: *See—*
Miranti, Joseph P., Jr.; Foley, Mark P.; Hollaway, Gerald C.; Oliver, Larry R.; Standley, Paul M.; and Lewis, James A., 4,410,314., Cl. 474-251.000.

Stankevich, Vladimir I.: *See—*
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Yakubovich, Vladimir M.; and Nikitin, Yaroslav G., 4,409,985., Cl. 128-702.000.
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Sklema, Mikhail V.; and Margolin, Arkady D., 4,409,992., Cl. 128-782.000.

Stanley, Louis, to Card-O-Matic Pty. Ltd. Axial flux electric machine. 4,410,820., Cl. 310-216.000.

Starpoint Electrics Limited: *See—*
Partridge, David, 4,410,178., Cl. 273-143.00R.

Staub, Fred W.: *See—*
Kuwata, Masayoshi; and Staub, Fred W., 4,409,739., Cl. 34-10.000.

Stauffer, Norman L., to Honeywell Inc. Two dimensional image panel with range measurement capability. 4,410,804., Cl. 250-578.000.

Stecher, Gunther; and Zimmermann, Herbert, to Robert Bosch GmbH. Electrical thick-film, free-standing, self-supporting structure, and method of its manufacture, particularly for sensors used with internal combustion engines. 4,410,872., Cl. 338-114.000.

Steilen, Ronald M., to Deere & Company. Caster wheel brake. 4,410,194., Cl. 280-86.000.

Steinberg, Ronald F., to Bendix Corporation, The. Means for preventing cracks in the gap region of a surface acoustic wave device. 4,410,824., Cl. 310-313.00R.

Steinhauser, Ludwig: *See—*
Strasser, Franz; Steinhauser, Ludwig; and Kugenbuch, Bernd, 4,410,285., Cl. 384-278.000.

Stenstrom, Stephen M. Conductive fluid detecting method and apparatus. 4,410,885., Cl. 340-604.000.

Stephenson, Brian D., to AMP Incorporated. Spring-loaded terminal assembly. 4,410,228., Cl. 339-95.00D.

Stephenson, Brian D., to AMP Incorporated. Latching means in multi-contact connector and contact terminal for flat cable. 4,410,229., Cl. 339-98.000.

Stern, Max H.: *See—*
DoMinh, Thap; and Stern, Max H., 4,410,623., Cl. 430-341.000.

Stickel, Tedd K.: *See—*
Ransom, Stephen A.; Stickel, Tedd K.; and Tomei, Joseph B., 4,410,815., Cl. 307-475.000.

Stiff, Alonzo B., to Jordan Implemenet Co. Listing and bed shaping apparatus with planter attachment and method. 4,409,911., Cl. 111-52.000.

Stiles, John C.: *See—*
Ljung, Bo H. G.; and Stiles, John C., 4,410,276., Cl. 356-350.000.

Stillman, Theodore. Vitamin E (tocopherol) compositions which resemble petrolatum. 4,410,517., Cl. 424-195.000.

Stockel, Dieter; and Schneider, Friedrich, to G. Rau GmbH & Co. Method of making a spark-plug center electrode. 4,410,309., Cl. 445-7.000.

Stoewe, Anneliese; and Hegner, Gunter, to Krone GmbH. Universal connector kit. 4,410,225., Cl. 339-31.00R.

Stoll, Andre: *See—*
Seiler, Max P.; and Stoll, Andre, 4,410,519., Cl. 424-226.000.

Stoll, Donald H., to General Electric Company. Control device. 4,410,776., Cl. 200-83.00P.

Stolov, Adi: *See—*
Stolov, Michael; and Stolov, Adi, 4,410,887., Cl. 340-784.000.

Stolov, Michael; and Stolov, Adi. Large electronically controlled liquid crystal displays of one or more colors. 4,410,887., Cl. 340-784.000.

Stolz, Theodore O.: *See—*
Narayan, Thirumurti; Stolz, Theodore O.; and Patton, John T., Jr., 4,410,641., Cl. 521-167.000.

Stone, Roger L.: *See—*
Lucas, Donald S.; Mustacich, Robert V.; and Stone, Roger L., 4,410,442., Cl. 252-107.000.

Stone & Webster Engineering Corp.: *See—*
Domahidy, George, 4,410,432., Cl. 210-750.000.

Stopar, Viktor: *See—*
Muller, Ortwin; Schulz, Kurt; and Stopar, Viktor, 4,410,242., Cl. 351-211.000.

Storage Technology Corporation: *See—*
Dunlap, Robert E., 4,410,148., Cl. 242-188.000.

Stork Screens B.V.: *See—*
Anselrode, Lodewijk, 4,410,401., Cl. 204-11.000.

Story, Alan R. Remote control for welding machine amperage. 4,410,789., Cl. 219-132.000.

Strain, Patrick J. Ship's double bottom and bag segregated ballast system. 4,409,919., Cl. 114-74.00R.

Straka, Edward J.: *See—*
Hixenbaugh, Dennis L.; Brand, Peter G. A.; and Straka, Edward J., 4,410,166., Cl. 266-158.000.

Strange, Carl P.: *See—*
Gibson, Clark W.; and Strange, Carl P., 4,410,693., Cl. 536-56.000.

Strasser, Franz; Steinhauser, Ludwig; and Kugenbuch, Bernd, to MTU Motoren Und Turbinen Union Munchen GmbH. Ceramic and metal article and method of making it. 4,410,285., Cl. 384-278.000.

Stratton, Andrew: *See—*
Kirby, Ian J.; Mitchell, Michael I.; and Stratton, Andrew, 4,409,897., Cl. 102-200.000.

Straus, Eugene W., to Montefiore Medical Center. Binding assay for the detection of mycobacteria. 4,410,660., Cl. 525-54.100.

Strawczynski, Leo; and Lee, Hing-Fai, to Northern Telecom Limited. Speech detector. 4,410,763., Cl. 364-513.500.

Stricklin, John D.: *See—*
Edwards, William J.; and Stricklin, John D., 4,410,341., Cl. 55-482.000.

Strobel, Stephen J.: *See—*
Berg, Peter G.; and Strobel, Stephen J., 4,410,790., Cl. 219-219.000.

Strom, Robert M., to Dow Chemical Company, The. Coupling of phenols with diphenoquinones. 4,410,736., Cl. 568-730.000.

Strong, John D.; and Matty, Thomas C., to Westinghouse Electric Corp. Vehicle propulsion control apparatus and method. 4,410,947., Cl. 364-426.000.

Stroucken, Klaus H. D.: *See—*
Bjork, Johan E. G.; Lindfors, Kaj; and Stroucken, Klaus H. D., 4,410,318., Cl. 494-10.000.

Struss, Friedrich: *See—*
Diessel, Karl-Heinz; Modic, Rudolf; and Struss, Friedrich, 4,410,449., Cl. 502-24.000.

Stuber, Fred A.: *See—*
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,410,689., Cl. 528-367.000.

Stufflebam, Charles J.; and Hamer, Spencer D. Calibrating bag for use on dispenser nozzles. 4,409,845., Cl. 73-861.000.

Stultz, Edward B.: *See—*
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Stultz, Edward B.; Brooks, Ulysses A.; and Martin, Peter, 4,410,785., Cl. 219-121.0LK.

Sturgeon, Lloyd F.; and Smith, Paul E., to Proctor & Schwartz. Inc. Propeller fan drive. 4,409,744., Cl. 34-207.000.

Sturtz, Gunter; Holtze, Herbert; Rothacker, Dietrich; and Burk, Gerhard, to Daimler-Benz Aktiengesellschaft. Motor vehicle. 4,410,212., Cl. 296-189.000.

Su, James C., to Communication Satellite Corporation. Multiple-loop adaptive delta modulator. 4,411,003., Cl. 375-33.000.

Subramanian, Pallatheri M., to Du Pont de Nemours, E. I., and Company. Process for making laminar articles of polyolefin and a condensation polymer. 4,410,482., Cl. 264-515.000.

Sudreau, Bernard G.: *See—*
de Sivry, Bruno J. M.; Anselme, Olivier R.; Sudreau, Bernard G.; Jegousse, Meichel J.; Le Hir, Yves R.; and Josien, Daniel, 4,410,210., Cl. 294-99.00R.

Suelflow, Robert E.; and Drobny, Edward M., to Honeywell Information Systems Inc. Out of cycle error correction apparatus. 4,410,988., Cl. 371-38.000.

Suematsu, Yasuharu: *See—*
Ota, Chuichi; Suematsu, Yasuharu; and Itaya, Yoshio, 4,410,994., Cl. 372-45.000.

Sugar, Janos: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Sugasawa, Tsutomu, to Shionogi & Co., Ltd. Process for the production of o-(N-monosubstituted amino)benzyl alcohols. 4,410,730., Cl. 564-327.000.

Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, to Kubota Ltd. Heat resistant cast iron-nickel-chromium alloy. 4,410,362., Cl. 420-584.000.

Sugizaki, Kazumi: *See—*
Nakamura, Takuma; and Sugizaki, Kazumi, 4,410,951., Cl. 364-559.000.

Suhler, Sidney A.: *See—*
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,409,899., Cl. 102-211.000.

Sullivan, James F.: *See—*
Arnold, Loren G.; Parker, Paul D.; and Sullivan, James F., 4,410,047., Cl. 172-328.000.

Sullivan, Raymond F., to Hepta Corporation. Surface cleaning device. 4,409,700., Cl. 15-121.000.

Sulzer Brothers Limited: *See—*
Simson, Dionizy, 4,410,018., Cl. 139-450.000.

Sumitomo Chemical Company, Limited: *See—*
Atsumi, Toshio; Sanjiki, Tetsutaro; and Kiyohara, Takao, 4,410,696., Cl. 542-427.000.
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Sumitomo Electric Industries, Ltd.: *See—*
Usui, Yuichi; Murai, Shigeo; Kurosaki, Shiro; and Watanabe, Minoru, 4,410,345., Cl. 65-3.150.

Sumitomo Kinzoku Kogyo Kabushiki Kaisha: *See—*
Yamada, Tateo, 4,409,810., Cl. 72-68.000.

Sumitomo Light Metal Industries, Ltd.: *See—*
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,410,370., Cl. 148-11.50A.

Sumitomo Metal Mining Company, Ltd.: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Summers, John E.; and Howell, Randolph F. Power and fluid supply source with multi-function cutting and welding capabilities. 4,410,788., Cl. 219-130.100.

Sun Wise, Inc.: *See—*
Nash, Stanley G., 4,409,965., Cl. 126-450.000.

Sundelin, Kurt G. R.; Powell, James E.; and Kollmeyer, Willy D., to Shell Oil Company. Spiro ether herbicides. 4,410,354., Cl. 71-94.000.

Sunoco Energy Development Co.: *See—*
Seitzer, Walter H., 4,410,415., Cl. 208-11.0LE.

Supcoe, Robert F.; Radakovich, Thomas; and Rodgers, Stephen D., to United States of America, Navy. Underwater applicable antifoulant paint composition. 4,410,363., Cl. 106-18.290.

Superform Metals Ltd.: *See—*
Buchanan, John A. F., 4,409,809., Cl. 72-60.000.

Susko, John R.; and Wheater, Robin A., to International Business Machines Corporation. Epoxy composition and sealing of integrated circuit modules therewith. 4,410,647., Cl. 524-88.000.

Suster, Mary E.: *See—*
Collins, Edward J.; and Suster, Mary E., 4,410,307., Cl. 431-359.000.

Suzuki, Isao; and Serikawa, Haruyuki, to Bridgestone Tire Company Limited. Method of measuring stretch of conveyor belt. 4,409,852., Cl. 73-862.390.

Suzuki, Koji: *See—*
Aoki, Harumi; Kawasaki, Masahiro; and Suzuki, Koji, 4,410,258., Cl. 354-25.000.

Suzuki, Kunio: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Suzuki, Masakazu: *See—*
Furuichi, Shuhei; Suzuki, Masakazu; and Ikeda, Toshiaki, 4,410,809., Cl. 307-255.000.

Suzuki, Shunichi; and Kotaka, Masaharu, to Ushio Denki Kabushiki Kaisha. Discharge lamp lighting device. 4,410,837., Cl. 315-289.000.

Suzuki, Tadashi, to Satogosei Co., Ltd. Binding tool. 4,410,019., Cl. 140-123.600.

Suzuki, Teruo: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Suzuki, Yoshikazu, to Oki Electric Industry Co., Ltd. Power converter. 4,410,936., Cl. 363-80.000.

Svensson, Rune, to ASEA AB. Melt reduction arc furnace. 4,410,996., Cl. 373-9.000.

Swenson, Kurt F., to J & S Tool Company, Inc. Work-holding clamp with double-acting hydraulically actuated jaw. 4,410,169., Cl. 269-32.000.

Swett, George W. Tree stand apparatus. 4,410,066., Cl. 182-135.000.

Swiss Aluminium Ltd.: *See—*
Festag, Werner; and Muller, Hans-Ueli, 4,409,808., Cl. 72-60.000.
Kugler, Tibor, 4,410,412., Cl. 204-286.000.

Swiston, Norman J., Sr. Multiple annunciation system. 4,410,883., Cl. 340-538.000.

Sybron Corporation: *See—*
Joslyn, Larry J., 4,410,493., Cl. 422-58.000.

Sykora, George S.: *See—*
Thomas, William R.; and Sykora, George S., 4,410,391., Cl. 156-574.000.

Symes, Ernest M.: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,409,735., Cl. 30-47.000.

Syntex (U.S.A.) Inc.: *See—*
Muchowski, Joseph M.; and Guzman, Angel, 4,410,526., Cl. 424-250.000.
Muchowski, Joseph M.; and Kluge, Arthur F., 4,410,534., Cl. 424-263.000.
Yu, Cheng-Der; and Bruenner, Ursula, 4,410,545., Cl. 424-305.000.

Szabo, Lajos: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Szantay, Csaba: *See—*
Dancsi, Lajos; Keve, Tibor; Szabo, Lajos; Honty, Katalin; Eckhardt, Sandor; Hindi, Ivan; Kerpel-Fronius, Sandor; Fekete, Gyorgy; Dezseri, Eszter; Gorog, Sandor; Acs, Tibor; Szantay, Csaba; Relle nee Somfai, Zsuzsanna; and Sugar, Janos, 4,410,459., Cl. 260-244.400.

Szeliga, Philip C.; and Kitchen, William D., to Electromark, Div. of Mohawk International. Electrochemical marking. 4,410,901., Cl. 346-165.000.

Szlag, John: *See—*
Dickerson, Albert; Szlag, John; and Reyle, John, 4,409,758., Cl. 49-463.000.

Szulinski, Milton J. Storage depot for radioactive material. 4,410,802., Cl. 250-515.100.

Tabara, Yoshitaka: *See—*
Tanaka, Hideki; Tabara, Yoshitaka; and Taniguchi, Masaaki, 4,409,949., Cl. 123-571.000.

Tabata, Youichiro: *See—*
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,410,792., Cl. 219-383.000.

Taddeo, Anthony R. Bass response speaker housing and method of tuning same. 4,410,064., Cl. 181-152.000.

Taenzer, Jon C., to Siemens AG. Ultrasound camera. 4,409,839., Cl. 73-625.000.

Tague, Steven A.: *See—*
Negi, Virendra S.; and Tague, Steven A., 4,410,984., Cl. 371-16.000.

Tajima, Osamu: *See—*
Uchida, Masayoshi; and Tajima, Osamu, 4,410,976., Cl. 369-170.000.

Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Computer control system for selecting a desired control program from a plurality of control programs. 4,410,959., Cl. 364-900.000.

Tajima, Yoshio; Matsuura, Kazuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,410,670., Cl. 526-114.000.

Tajitsu, Yoshiro: *See—*
Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, 4,410,502., Cl. 423-345.000.

Takada, Juichiro. Passive vehicle occupant restraint belt system. 4,410,202., Cl. 280-804.000.

Takahara, Yoshimasa: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.

Takahashi, Atsushi: *See—*
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,409,887., Cl. 91-446.000.

Takahashi, Kiyofumi: *See—*
Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, 4,410,593., Cl. 428-389.000.

Takahashi, Makoto: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,410,362., Cl. 420-584.000.

Takahashi, Nobuyuki; Shibata, Masaaki; and Furuno, Yoshikuni, to Nippon Steel Corporation. Process for producing deep-drawing, non-ageing, cold rolled steel strips having excellent paint bake-hardenability by continuous annealing. 4,410,372., Cl. 148-12.00C.

Takahashi, Shiro: *See—*
Nemoto, Yuhei; and Takahashi, Shiro, 4,410,562., Cl. 427-54.100.

Takahashi, Yozo: *See—*
Yasue, Akira; Kato, Toshiji; and Takahashi, Yozo, 4,410,063., Cl. 181-147.000.

Takami, Yasuo: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Takano, Shuntaro: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Takasaki, Yoshitaka; and Tanaka, Mitsuo, to Hitachi, Ltd. Time division multiplexing system. 4,410,980., Cl. 370-109.000.

Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, to Agency of Industrial Science & Technology; Ministry of International Trade & Industry; and Hokkaido Sugar Co., Ltd. Process for liquefaction of starch. 4,410,368., Cl. 127-38.000.

Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, to Zenyaku Kogyo Kabushiki Kaisha. Process for production of o-(2,6-dichloroanilino)-phenylacetic acid. 4,410,724., Cl. 562-456.000.

Takashima, Mitsuru: *See—*
Mori, Yoshihisa; and Takashima, Mitsuru, 4,410,975., Cl. 369-170.000.

Takashima, Okuta: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Takasu, Shinichiro; and Shinozaki, Toshiaki, to Tokyo Shibaura Denki Kabushiki Kaisha. System for transferring a fine pattern onto a target. 4,411,013., Cl. 378-34.000.

Takaya, Haruo: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Takehara, Hideaki, to Victor Company of Japan, Limited. Method for making a stylus having a graphite electrode. 4,409,712., Cl. 29-25.420.

Takei, Yoshiaki: *See—*
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.

Takenoya, Hideaki: *See—*
Eguchi, Yasukata; Hanyu, Susumu; Takenoya, Hideaki; and Inamori, Mikio, 4,409,915., Cl. 112-266.100.

Takeuchi, Ryoichi: *See—*
Ito, Kanichi; Hirayama, Yoshio; Takeuchi, Ryoichi; Kodaira, Masanori; and Iizuka, Gorou, 4,410,348., Cl. 71-9.000.

Takeuchi, Shuhei: *See—*
Koike, Hiroshi; Takeuchi, Shuhei; and Miyajima, Mikio, 4,410,289., Cl. 400-185.000.

Takezawa, Toshiyuki: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.

Takimoto, Hiroyuki: *See—*
Hirata, Noritsugu; and Takimoto, Hiroyuki, 4,410,247., Cl. 352-91.00S.

Talbot, Robert D., to Harris Corporation. Secure mobile telephone system. 4,411,017., Cl. 455-26.000.

Tamai, Yasuo: *See—*
Kitamoto, Tatsuji; Shirahata, Ryuji; and Tamai, Yasuo, 4,410,565., Cl. 427-130.000.

Tamaki, Hiroshi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Apparatus for automatically measuring the characteristics of an optical system. 4,410,268., Cl. 356-124.000.

Tanabe, Kenzo; and Okada, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Multiplexed signal receiver. 4,410,979., Cl. 370-11.000.

Tanaka, Hideki; Tabara, Yoshitaka; and Taniguchi, Masaaki, to Toyo Kogyo Co., Ltd. Exhaust gas recirculation control means for multiple cylinder engine having means for controlling air-fuel ratio in accordance with a signal from an exhaust gas sensor. 4,409,949., Cl. 123-571.000.

Tanaka, Katsunobu: *See—*
Nakajima, Sadahiro; and Tanaka, Katsunobu, 4,409,875., Cl. 83-877.000.

Tanaka, Minoru: *See—*
Terahara, Akira; and Tanaka, Minoru, 4,410,629., Cl. 435-146.000.

Tanaka, Mitsuo: *See—*
Takasaki, Yoshitaka; and Tanaka, Mitsuo, 4,410,980., Cl. 370-109.000.

Taniguchi, Masaaki: *See—*
Tanaka, Hideki; Tabara, Yoshitaka; and Taniguchi, Masaaki, 4,409,949., Cl. 123-571.000.

Taramasso, Marco; Perego, Giovanni; and Notari, Bruno, to Snamprogetti S.p.A. Preparation of porous crystalline synthetic material comprised of silicon and titanium oxides. 4,410,501., Cl. 423-326.000.

Tasch, Aloysious F., Jr.; Penz, Perry A.; Pankratz, John M.; and Lam, Hon W., to Texas Instruments Incorporated. Method of fabricating display with semiconductor circuits on monolithic structure and flat panel display produced thereby. 4,409,724., Cl. 29-571.000.

Taurisano, Michael P. Universal holster assembly. 4,410,118., Cl. 224-222.000.

Tautz, Jurgen; Werres, Lothar; and Reimer, Gerd, to Kraftwerk Union Aktiengesellschaft. Core baffle or enclosure and method of fabricating the same. 4,410,487., Cl. 376-399.000.

Tawada, Yoshihisa: *See—*
Hamakawa, Yoshihiro; and Tawada, Yoshihisa, 4,410,559., Cl. 427-39.000.

Taylor, Mark S.: *See—*
Rosser, Robert W.; and Taylor, Mark S., 4,410,682., Cl. 528-110.000.

TDK Electronics Co., Ltd.: *See—*
Kawahara, Hiroshi; Azegami, Hitoshi; and Horigome, Eiji, 4,410,590., Cl. 428-336.000.
Kohmoto, Osamu; and Yamamoto, Takahiro, 4,410,406., Cl. 204-192.00M.
Nishikawa, Kyoichi; and Mitsui, Sadao, 4,410,139., Cl. 239-102.000.

TECO/Elemelt Ltd.: *See—*
Gell, Philip A. M.; and Hann, Douglas G., 4,410,997., Cl. 373-35.000.

Teijin Chemicals, Ltd.: *See—*
Sasama, Shigeru; Nakao, Nobuhiko; and Ohara, Osamu, 4,410,572., Cl. 427-407.100.

Teijin Limited: *See—*
Iohara, Kohichi; and Matsui, Michikage, 4,410,473., Cl. 264-103.000.

Tektronix, Inc.: *See—*
Gumm, Linley F.; and Morton, Steven R., 4,410,879., Cl. 340-347.0DA.

Telease, Inc.: *See—*
Field, Robert W.; Gerlach, Ronald R.; Perr, Clarence D.; and Block, Robert S., 4,410,911., Cl. 358-121.000.

Telectronics Pty., Ltd.: *See—*
Doring, Carl, 4,409,994., Cl. 128-785.000.

Telefonaktiebolaget L M Ericsson: *See—*
Ganev, Tzvintko S.; and Jansson, Mats A. H., 4,410,357., Cl. 75-10.00V.
Renander, Ake C.; and Samuelsson, Rune P. S., 4,409,738., Cl. 33-281.000.

Tenneco West: *See—*
Westergaard, Rod; Morton, Lou; and Zeiders, Ken, 4,409,782., Cl. 56-328.0TS.

Tenney, Linwood P.; and Wootton, Gerald V., to B. F. Goodrich Company, The. Precipitation of polymeric cycloolefins. 4,410,692., Cl. 528-495.000.

Tenney, Linwood P.: *See—*
Lane, Parley C., Jr.; Tenney, Linwood P.; and Wootton, Gerald V., 4,410,691., Cl. 528-495.000.

Terabayashi, Gosaku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,410,061., Cl. 180-268.000.

Terahara, Akira; and Tanaka, Minoru, to Sankyo Company Limited. ML-236B Derivatives and their preparation. 4,410,629., Cl. 435-146.000.

Teraji, Tsutomu: *See—*
Kamiya, Takashi; Saito, Suita; Teraji, Tsutomu; Nakaguti, Osamu; and Oko, Teruo, 4,410,458., Cl. 260-239.100.

Teranishi, Masayuki; Obase, Hiroyuki; Nakamizo, Nobuhiro; Kubo, Kazuhiro; and Kasuya, Yutaka, to Kyowa Hakko Kogyo Co., Ltd. Hypotensive piperidine derivatives. 4,410,528., Cl. 424-251.000.

Teranishi, Tsugutomo: *See—*
Toyoda, Keiichi; and Teranishi, Tsugutomo, 4,410,950., Cl. 364-551.000.

Terasawa, Koji, to Canon Kabushiki Kaisha. Ink jet recording apparatus. 4,410,900., Cl. 346-140.00R.

Tetra Pak International AB: *See—*
Rausing, Hans A., 4,410,128., Cl. 229-17.00R.

Texaco Inc.: *See—*
Canup, Robert E., 4,409,952., Cl. 123-620.000.
Smolin, William, 4,409,819., Cl. 73-61.10R.

Texas Instruments Incorporated: *See—*
Berg, Peter G.; and Strobel, Stephen J., 4,410,790., Cl. 219-219.000.
Ptasinski, James F.; and Wheeler, Glenn, 4,410,987., Cl. 371-25.000.
Senor, Ronald E., 4,410,231., Cl. 339-218.00M.
Tasch, Aloysious F., Jr.; Penz, Perry A.; Pankratz, John M.; and Lam, Hon W., 4,409,724., Cl. 29-571.000.

Thebault, Claude, to Kis France. Apparatus for developing films having a pivotable arm. 4,410,257., Cl. 354-308.000.

Theeuwes, Felix, to Alza Corporation. Dispensing device with internal drive. 4,410,328., Cl. 604-892.000.

Theissen, Robert J., to Rhone-Poulenc Agrochimie. Herbicidal N-sulfonyl 5-[substituted phenoxy]-2-substituted benzamides. 4,410,353., Cl. 71-91.000.

Thermaster Inc.: *See—*
Brundrett, Ewart; and Carter, Franklin T., 4,409,925., Cl. 119-1.000.

Thermo Electron Corporation: *See—*
Heshmatpour, Bahman, 4,410,358., Cl. 75-10.00R.

Thermo King Corporation: *See—*
King, Donald D.; and Rudd, John E., 4,409,797., Cl. 62-239.000.

Thiel, Rudolf: *See—*
Reinartz, Hans-Dieter; and Thiel, Rudolf, 4,409,885., Cl. 91-376.00R.

Thiokol Corporation: *See—*
Campbell, Carol J.; and Hinshaw, Jerald C., 4,410,744., Cl. 568-864.000.

Thirion de Briel, Jacques. Speed change device. 4,410,312., Cl. 474-13.000.

Thomas, Geoffrey N.: *See—*
Cross, Peter E.; Dickinson, Roger P.; and Thomas, Geoffrey N., 4,410,539., Cl. 424-273.00R.

Thomas, Patrick D. P.: *See—*
Postle, Stephen R.; and Thomas, Patrick D. P., 4,410,702., Cl. 546-322.000.

Thomas, William R.; and Sykora, George S., to UMAC, Inc.; and Brooklyn Union Gas Company, a part interest. Apparatus for relining an underground gas line or the like without excavation. 4,410,391., Cl. 156-574.000.

Thompson, Donald R.: *See—*
Bryant, David M.; Corbeil, Ryn C.; Malcolm, Michael A.; and Thompson, Donald R., 4,410,889., Cl. 340-825.200.

Thomson-CSF: *See—*
Bui-Hai, Nhu, 4,410,866., Cl. 333-135.000.
Dubois, Jean-Claude; Billard, Jean; and Zann, Annie, 4,410,283., Cl. 374-162.000.
van Zanten, Francois, 4,410,856., Cl. 329-50.000.

Thomson, Roger; and Weik, Edward, to Petrometer Corporation. Diaphragm manometer. 4,409,833., Cl. 73-302.000.

Thorsteinson, Erlind M.: *See—*
Decker, Harry J.; and Thorsteinson, Erlind M., 4,410,725., Cl. 562-534.000.

Throckmorton, Peter E., to Ashland Oil, Inc. Production of benzylic esters. 4,410,461., Cl. 260-410.000.

Thyes, Marco; Koenig, Horst; Lenke, Dieter; Lehmann, Hans D.; and Gries, Josef, to BASF Aktiengesellschaft. Novel dihydropyridazinones, their preparation and therapeutic agents containing these compounds. 4,410,529., Cl. 424-250.000.

Tibbetts, George C., to Tibbetts Industries, Inc. Transducer with adjustable armature yoke and method of adjustment. 4,410,769., Cl. 179-119.00A.

Tibbetts Industries, Inc.: *See—*
Tibbetts, George C., 4,410,769., Cl. 179-119.00A.

Tien, Paul C., to International Business Machines Corporation. MOSFET Multivibrator with dual timing. 4,410,862., Cl. 331-113.00R.

Timkovich, Vasily J.: *See—*
Glukhovsky, Viktor D.; Krivenko, Pavel V.; Rostovskaya, Galina S.; Timkovich, Vasily J.; and Pankratov, Vitaly L., 4,410,365., Cl. 106-84.000.

Timmer, Hendrikus J. M., to SKF Industrial Trading & Development, B.V. Method for making a castor assembly. 4,409,715., Cl. 29-148.40A.

Ting, Sai P.: *See—*
Haaf, William R.; Lee, Gim F., Jr.; and Ting, Sai P., 4,410,651., Cl. 524-127.000.

Toa Eiyo Kagaku Kogyo Co. Ltd.: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, to Daicel Chemical Industries, Ltd.; and Fuji Xerox Co., Ltd. Electrostatic recording member. 4,410,584., Cl. 428-215.000.

Todd, Hidemasa: *See—*
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Tokan Kogyo Co. Ltd.: *See—*
Komoda, Hirohisa; and Ishihara, Masatomo, 4,410,602., Cl. 428-516.000.

Tokoro, Noriyuki: *See—*
Yanagihara, Hiromichi; and Tokoro, Noriyuki, 4,409,947., Cl. 123-569.000.

Tokura, Isao: *See—*
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,410,909., Cl. 358-75.000.

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Tamaki, Hiroshi, 4,410,268., Cl. 356-124.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Katagiri, Shuhei; Donuma, Kenichi; and Ohashi, Makoto, 4,410,469., Cl. 264-1.500.
Kusakabe, Hiromi, 4,410,858., Cl. 330-257.000.
Kuwahara, Hisao, 4,410,859., Cl. 330-298.000.
Onuma, Hideo; and Kobayashi, Shigeo, 4,409,814., Cl. 73-19.000.
Sawada, Shizuo; Iwai, Hiroshi; and Maeda, Satoshi, 4,410,375., Cl. 148-187.000.
Shingu, Shitta; Takahashi, Atsushi; and Kosugi, Isao, 4,409,887., Cl. 91-446.000.
Takasu, Shinichiro; and Shinozaki, Toshiaki, 4,411,013., Cl. 378-34.000.
Uesugi, Michika, 4,410,937., Cl. 363-132.000.
Yamamori, Kazuyoshi; Nishikawa, Reiji; Fujiwara, Tatsuo; and Asano, Toshimitsu, 4,410,603., Cl. 428-611.000.
Yoshikawa, Ryoichi, 4,410,800., Cl. 250-442.100.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Okutsu, Kinnosuke, 4,410,580., Cl. 428-156.000.

Tomei, Joseph B.: *See—*
Ransom, Stephen A.; Stickel, Tedd K.; and Tomei, Joseph B., 4,410,815., Cl. 307-475.000.

Tomibe, Shinji; Gomibuchi, Reizo; and Takahashi, Kiyofumi, to Nihon Sanmo Dyeing Co., Ltd. Electrically conducting fiber and method of making same. 4,410,593., Cl. 428-389.000.

Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, to Toyoda Koki Kabushiki Kaisha. Machine tool with automatic tool change function. 4,409,721., Cl. 29-568.000.

Tomizawa, Takekazu; Ueda, Susumu; Sakyo, Toyoji; and Kawai, Sumio, to Kabushiki Kaisha Okawara Seisakusho. Process of combustion in a fluidized-bed incinerator. 4,409,909., Cl. 110-346.000.

Tomlinson, Walter J., III: *See—*
Kaplan, Alexander E.; Bjorkholm, John E.; Smith, Peter W.; and Tomlinson, Walter J., III, 4,410,239., Cl. 350-354.000.

Tomoda, Toshimasa, to Mitsubishi Denki Kabushiki Kaisha. Neutron detector for use within nuclear reactor. 4,410,483., Cl. 376-154.000.

Tonomura, Yoshio: *See—*
Okamoto, Shigetomi; and Tonomura, Yoshio, 4,410,591., Cl. 428-255.000.

Toray Industries, Inc.: *See—*
Nishino, Masaki; Yasuhara, Yutaka; Fukuda, Tadanori; and Sakamoto, Sadayuki, 4,410,597., Cl. 428-423.100.

Tsunashima, Kenji; Yoshii, Toshiya; and Fukuyama, Takeo, 4,410,582., Cl. 428-212.000.

Torok, Sandor; Voroshazy, Lajos; Galambos, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, to Reanal Finomvegyszergyar. Process for the preparation of N-aryl-N'-(mono- or di substituted)-urea derivatives. 4,410,697., Cl. 544-165.000.

Toropov, Gennady A.; Shamenko, Stepan P.; and Badyaev, Valery G. Tap for pressing elastic thread profiles. 4,409,698., Cl. 10-152.00T.

Toropova, Tatyana K.: *See—*
Narymskaya, Regina A.; Nikitin, Yakov V.; Toropova, Tatyana K.; Ignatenko, Vladimir G.; Chernousov, Jury I.; Chuiko, Vladimir A.; Kalinin, Mikhail T.; and Fedotov, Jury M., 4,410,573., Cl. 428-2.000.

Tosaka, Yoichi: *See—*
Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,410,252., Cl. 354-153.000.

Toyama Chemical Co., Ltd.: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Toyama, Takahumi: *See—*
Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, 4,410,708., Cl. 548-407.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Wada, Minoru; and Fukuda, Minoru, 4,410,621., Cl. 430-281.000.

Toyo Kogyo Co., Ltd.: *See—*
Tanaka, Hideki; Tabara, Yoshitaka; and Taniguchi, Masaaki, 4,409,949., Cl. 123-571.000.

Toyo Seikan Kaisha Ltd.: *See—*
Komoda, Hirohisa; and Ishihara, Masatomo, 4,410,602., Cl. 428-516.000.

Toyoda, Keiichi; and Teranishi, Tsugutomo, to Hitachi, Ltd. Method of and apparatus for monitoring performance of steam power plant. 4,410,950., Cl. 364-551.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Tomita, Tamaki; Munekata, Kenichi; Ohkoshi, Fumihiko; and Hasegawa, Toshifumi, 4,409,721., Cl. 29-568.000.

Toyoshima, Toshihiko: *See—*
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Furukubo, Tatsumi, 4,410,133., Cl. 236-34.500.
Yanagihara, Hiromichi; and Tokoro, Noriyuki, 4,409,947., Cl. 123-569.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Terabayashi, Gosaku, 4,410,061., Cl. 180-268.000.

Traficante, Michael A.: *See—*
Schimmel, Karl F.; Traficante, Michael A.; and Dowbenko, Rostyslaw, 4,410,687., Cl. 528-295.500.

Tran, Luan G.: *See—*
Lapp, Douglas E.; and Tran, Luan G., 4,410,181., Cl. 273-238.000.

Trapani, Silvio P. Wafer-handling tool. 4,410,209., Cl. 294-34.000.

Treficable Pirelli: *See—*
Claude, Marcel S., 4,410,477., Cl. 264-174.000.

Tresner, Homer D.: *See—*
Liu, Chao-min; Tresner, Homer D.; and Westley, John, 4,410,712., Cl. 549-414.000.

Trigon Industries, Inc.: *See—*
Prunella, Wallace R.; and Kordes, Art W., 4,410,227., Cl. 339-75.00M.

Trivette, Chester D., Jr.: *See—*
Coran, Aubert Y.; Rader, Charles P.; and Trivette, Chester D., Jr., 4,410,656., Cl. 524-529.000.

Tronich, Wolfgang; Rieper, Wolfgang; and Bohme, Peter, to Hoechst Aktiengesellschaft. Process for the manufacture of 3-amino-1-phenylpyrazol-5-one. 4,410,707., Cl. 548-360.000.

Troponwerke GmbH & Co. K.G.: *See—*
Boltze, Karl-Heinz; Seidel, Peter-Rudolf; Jacobi, Haireddin; Schwarz, Helmut H.; Schollnhammer, Gunter; and Dell, Hans-Dieter, 4,410,536., Cl. 424-267.000.

Trulin, Darryl J.: *See—*
Poff, Gary D., 4,409,732., Cl. 29-825.000.

Trummlitz, Gunter: *See—*
Engel, Wolfhard; Schmidt, Gunther; Eberlein, Wolfgang; Trummlitz, Gunter; Hammer, Rudolf; and Del Soldato, Piero, 4,410,527., Cl. 424-250.000.

TRW Inc.: *See—*
Dymond, Richard W., 4,410,058., Cl. 180-143.000.

Tschunt, Edgar: *See—*
Pfeiler, Manfred; and Tschunt, Edgar, 4,411,012., Cl. 378-17.000.

Tsiang, Horace H.: *See—*
Barrow, Arthur B.; and Tsiang, Horace H., 4,410,941., Cl. 364-200.000.

Tsuboi, Takayuki, to Canon Kabushiki Kaisha. Camera having lens protection cover. 4,410,253., Cl. 354-195.000.

Tsugeno, Makoto: *See—*
Ozawa, Kiyomi; Nakajima, Yasuyuki; and Tsugeno, Makoto, 4,410,732., Cl. 568-337.000.

Tsunashima, Kenji; Yoshii, Toshiya; and Fukuyama, Takeo, to Toray Industries, Inc. Multi-layered polyolefin laminated film. 4,410,582., Cl. 428-212.000.

Tsunekawa, Tokuichi: *See—*
Masunaga, Makoto; Hosoe, Kazuya; Tsunekawa, Tokuichi; Niwa, Yukichi; Ohwada, Mitsutoshi; and Asano, Noriyuki, 4,410,261., Cl. 356-1.000.

Tucker, Leroy W.; and Nelson, Floyd E., to United States of America, Navy. Ground fault detector and shutdown system. 4,410,925., Cl. 361-42.000.

Tulen, Jack A.; and Tulen, James L. Replacement spoons and fixtures for rotary hoe. 4,410,048., Cl. 172-540.000.

Tulen, James L.: *See—*
Tulen, Jack A.; and Tulen, James L., 4,410,048., Cl. 172-540.000.

Tune, John B.: *See—*
Davies, James F.; and Tune, John B., 4,410,441., Cl. 206-0.500.

Turco, Giorgio: *See—*
Fasano, Fulvio; and Turco, Giorgio, 4,410,112., Cl. 222-602.000.

Turner, Garland L.: *See—*
Councell, William S., Jr.; and Turner, Garland L., 4,410,050., Cl. 173-112.000.

Tursi, Thomas P.; and Millington, Thomas R., to United States of America, Navy. Standardized compact modular boiler. 4,409,928., Cl. 122-406.00S.

Ube Industries, Ltd.: *See—*
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, 4,410,722., Cl. 560-204.000.

Uchida, Masayoshi; and Tajima, Osamu, to Victor Company of Japan, Ltd. Signal pickup device in a rotary recording medium reproducing apparatus. 4,410,976., Cl. 369-170.000.

Uchidoi, Masanori: *See—*
Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, 4,410,252., Cl. 354-153.000.

Udaka, Makoto: *See—*
Makihira, Hiroshi; Nakagawa, Yasuo; Hamada, Toshimitsu; and Udaka, Makoto, 4,410,278., Cl. 356-445.000.

Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V. Method for thermal decontamination of waste waters. 4,409,908., Cl. 110-346.000.

Ueda, Atsushi: *See—*
Komurasaki, Satoshi; Ueda, Atsushi; and Yamane, Tsuneo, 4,409,943., Cl. 123-418.000.

Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method for automatically determining reproduction picture color control conditions. 4,410,909., Cl. 358-75.000.

Ueda, Shigeki, to Matsushita Electric Industrial Co., Ltd. Heating apparatus with programmable timer. 4,410,795., Cl. 219-492.000.

Ueda, Susumu: *See—*
Tomizawa, Takekazu; Ueda, Susumu; Sakyo, Toyoji; and Kawai, Sumio, 4,409,909., Cl. 110-346.000.

Ueguri, Shigeo: *See—*
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,410,792., Cl. 219-383.000.

Ueno, Kazuo, to Aichi Tokei Denki Co., Ltd. Electromagnetic flow meter. 4,409,846., Cl. 73-861.170.

Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, to Kabushiki Kaisha Vend Seiyako Oyo Kenkyujo. Sorbic acid-containing powder or granules. 4,410,547., Cl. 424-317.000.

Ueno, Susumu: *See—*
Imada, Kiyoshi; Ueno, Susumu; Nishina, Yasuhide; and Nomura, Hirokazu, 4,410,784., Cl. 219-121.0PY.

Uesugi, Michika, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of controlling polyphase inverters and control circuits therefor. 4,410,937., Cl. 363-132.000.

Ultra Carbon Corporation: *See—*
Wilsey, Harvey J., 4,410,796., Cl. 219-553.000.

UMAC, Inc.: *See—*
Thomas, William R.; and Sykora, George S., 4,410,391., Cl. 156-574.000.

UMC Industries, Inc.: *See—*
Okolischan, Anton, 4,410,077., Cl. 194-1.00K.

Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Tape loading apparatus in a recording and/or reproducing apparatus. 4,410,919., Cl. 360-85.000.

Umeda, Yasukazu: *See—*
Tajima, Shinobu; Umeda, Yasukazu; and Kamohara, Toshiyuki, 4,410,959., Cl. 364-900.000.

Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. 1-N(αHydroxy-ω-aminoalkanoyl) derivatives of 5,3',4'-trideoxy- or 5,3', 4'-trideoxy-6'-N- methyl- or 5, 3', 4',6''-tetradeoxykannamyci B and production thereof. 4,410,516., Cl. 424-180.000.

Unbehaun, Dieter: *See—*
Sauer, Gerd; and Unbehaun, Dieter, 4,410,843., Cl. 318-317.000.

Underhill, Michael J.; and Molle, Nicolaas J. M., to U.S. Philips Corporation. Electronic analog switching device. 4,410,855., Cl. 328-151.000.

Unex Corporation: *See—*
Krautter, Wilhelm F.; and Junkers, John K., 4,409,865., Cl. 81-57.390.

Unidynamics/St. Louis, Inc.: *See—*
Huellinghorst, Thomas R.; Hammond, Benjamin A., II; Luedde, Robert H.; Mertz, William C.; and Goldberg, Steven H., 4,410,949., Cl. 364-465.000.

Unie Van Kunst-Mestfabrieken: *See—*
van Nassau, Petrus J. M.; and Douwes, Adolphe M., 4,410,503., Cl. 423-359.000.

Union Camp Corporation: *See—*
Chase, Richard R.; and Rhoad, Franklin N., 4,409,853., Cl. 73-863.000.

Union Carbide Corporation: *See—*
Cieloszyk, Gary S., 4,410,649., Cl. 524-108.000.
Decker, Harry J.; and Thorsteinson, Erlind M., 4,410,725., Cl. 562-534.000.
Decker, Quintin W.; Marcus, Erich; and Morlino, Robert J., 4,410,447., Cl. 252-351.000.
Ziemer, John H., 4,410,343., Cl. 62-29.000.

Union Oil Company of California: *See—*
Holstedt, Richard A.; and Jessup, Peter, 4,410,436., Cl. 252-46.400.

Uniquip Manufacturing, Inc.: *See—*
Niemuth, Howard A.; and Bredehorn, Herbert D., 4,410,254., Cl. 354-203.000.

United Networks, Inc.: *See—*
Hestad, Alfred M.; and Hansen, Harry O., 4,410,765., Cl. 179-7.10R.

United States of America
Agriculture: *See—*
Cadmus, Martin C., 4,410,625., Cl. 435-42.000.
Hendricks, Donovan E., 4,410,967., Cl. 367-87.000.
Air Force: *See—*
Bruenner, Rolf S.; and Oberth, Adolf E., 4,410,376., Cl. 149-19.400.
Clifton, Brian J.; Alley, Gary D.; and Murphy, Ralph A., 4,411,022., Cl. 455-327.000.
Elias, Jack D.; and Cardoso, John B., 4,410,293., Cl. 403-24.000.
Owen, Thomas E.; Suhler, Sidney A.; and Peters, Wendell R., 4,409,899., Cl. 102-211.000.
Army: *See—*
Ballato, Arthur; and Vig, John R., 4,409,711., Cl. 29-25.350.
Brown, Harry A., Jr.; and Durgin, Robert F., 4,410,508., Cl. 424-81.000.
Christe, Karl O.; and Wilson, William W., 4,410,377., Cl. 149-109.400.
Currie, Richard W., 4,409,900., Cl. 102-213.000.
DaMocogno, Ninalbo G.; Siok, Donald A.; Bourassa, Denis L.; and Connerney, William R., 4,410,863., Cl. 332-37.00R.
Durenec, Peter, 4,409,793., Cl. 62-6.000.
Filler, Raymond L., 4,410,822., Cl. 310-311.000.
Malik, Roger J., 4,410,902., Cl. 357-13.000.
Russell, William J.; and Rosty, Roberta, 4,410,393., Cl. 156-629.000.
Sayles, David C., 4,410,470., Cl. 264-3.00R.
Schaubert, Daniel H.; and Farrar, Frederick G., 4,410,891., Cl. 343-700.0MS.
Smith, Bernard; and Dubuske, Stanley, 4,410,832., Cl. 315-3.000.
Environmental Protection Agency: *See—*
Meyer, Raymond A.; Marx, Larry F.; and Brugger, John E., 4,410,966., Cl. 367-87.000.
FCC: *See—*
Davis, Stevan A.; and Luedtke, Arthur, 4,410,890., Cl. 343-419.000.
Health and Human Services: *See—*
Rice, Kenner C., 4,410,700., Cl. 546-149.000.
Zierdt, Charles H., 4,410,630., Cl. 435-284.000.
Interior: *See—*
Smyres, Gary A.; and Haskett, Philip R., 4,410,496., Cl. 423-1.000.
National Aeronautics and Space Administration: *See—*
Myers, William N.; and Hein, Leopold A., 4,410,189., Cl. 277-117.000.
Rosser, Robert W.; and Taylor, Mark S., 4,410,682., Cl. 528-110.000.
Navy: *See—*
Battles, James W.; and Mathes, H. Bernard, 4,409,821., Cl. 73-116.000.
Burdette, George W., 4,410,749., Cl. 585-14.000.
Ganguly, Achintya K.; and Webb, Denis C., 4,410,833., Cl. 315-39.510.
Keller, Teddy M., 4,410,676., Cl. 528-9.000.
Redding, John J.; and Hauptmann, Robert O., 4,410,012., Cl. 138-121.000.
Redding, John J.; and Hauptmann, Robert O., 4,410,476., Cl. 264-173.000.
Richter, Herbert P.; and Dibble, Eugene J., 4,410,563., Cl. 422-108.000.
Supcoe, Robert F.; Radakovich, Thomas; and Rodgers, Stephen D., 4,410,363., Cl. 106-18.290.
Tucker, Leroy W.; and Nelson, Floyd E., 4,410,925., Cl. 361-42.000.
Tursi, Thomas P.; and Millington, Thomas R., 4,409,928., Cl. 122-406.00S.
Wieder, Herman H., 4,410,903., Cl. 357-29.000.
U.S. Philips Corporation: *See—*
Bodewig, Manfred, 4,410,127., Cl. 228-180.00A.
Carasso, Marino G.; Kleuters, Wilhelm J.; and Mons, Johannes J., 4,410,877., Cl. 340-347.0DD.
de Lang, Hendrik; and Bouwhuis, Gijsbertus, 4,410,241., Cl. 350-409.000.
Duijkers, Peter A., 4,410,814., Cl. 307-475.000.
Eisemann, Kurt, 4,410,971., Cl. 369-75.000.
Sangster, Frederik L. J., 4,411,010., Cl. 377-61.000.
Schomberg, Hermann, 4,409,838., Cl. 73-602.000.
Underhill, Michael J.; and Molle, Nicolaas J. M., 4,410,855., Cl. 328-151.000.
Van Buul, Marinus C. W.; and Kremers, Theodoor M. M., 4,411,001., Cl. 375-30.000.
vanden Broek, Arnoldus J. M.; Legierse, Petrus E. J.; and Ribberink, Henricus D. M., 4,410,978., Cl. 369-275.000.

United States Riley Corporation: *See—*
Horton, John L., 4,410,342., Cl. 62-23.000.

United States Steel Corporation: *See—*
Aiken, John E.; Didycz, William J.; and Glassman, Donald, 4,410,499., Cl. 423-210.000.

United States Surgical Corporation: *See—*
Noiles, Douglas G.; and Green, David T., 4,410,125., Cl. 227-19.000.

United Technologies Corporation: *See—*
Amoroso, Salvatore, Jr., 4,411,018., Cl. 455-75.000.
Brennan, John J.; and Prewo, Karl M., 4,410,635., Cl. 501-88.000.
Galasso, Francis S.; Veltri, Richard D.; and Birbara, Philip J., 4,410,504., Cl. 423-453.000.
Stalcup, Robert K.; and Prewo, Karl M., 4,410,394., Cl. 156-630.000.

Unitika Ltd.: *See—*
Okamoto, Shigetomi; and Tonomura, Yoshio, 4,410,591., Cl. 428-255.000.

Universita Karlova: *See—*
Kuzel, Radomir; Broukal, Josef; and Bouse, Vaclav, 4,410,598., Cl. 428-427.000.

University of California, Regents of the: *See—*
Fukuto, Tetsuo R.; and Ohta, Hiroki, 4,410,518., Cl. 424-202.000.
Hoyle, Burton J.; and Lee, Timothy B. K., 4,409,910., Cl. 111-1.000.
Price, Paul A.; and Nishimoto, Satoru K., 4,410,506., Cl. 436-542.000.
Sawyer, Donald T.; and Roberts, Julian L., Jr., 4,410,402., Cl. 204-59.00R.

University of Utah Research Foundation: *See—*
Miller, Jan D.; and Misra, Manoranjan, 4,410,417., Cl. 208-11.0LE.

University Patents, Inc.: *See—*
Apple, Howard P.; and Dauchot, Paul J., 4,409,986., Cl. 128-715.000.

Unkrey, Douglas W.: *See—*
Fernandez, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., 4,410,198., Cl. 280-281.0LP.

Uno, Teruo: *See—*
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,410,370., Cl. 148-11.50A.

Unrug, Kot F. Rock bolt overload warning device. 4,410,296., Cl. 405-259.000.

UOP Inc.: *See—*
Childs, Michael E., 4,410,335., Cl. 44-72.000.
Faschingbauer, Gerald L., 4,410,454., Cl. 502-306.000.
Gewartowski, Steve A., 4,410,754., Cl. 585-671.000.
Qualeatti, Gail M.; and Germanas, Dalia, 4,410,460., Cl. 260-409.000.

Updegrove, George F.: *See—*
Houpt, Grover K.; and Updegrove, George F., 4,410,774., Cl. 200-14.000.

Upjohn Company, The: *See—*
Axen, Udo F., 4,410,695., Cl. 542-426.000.
Barsa, Edward A.; Lin, Chung-Yuan; and Stuber, Fred A., 4,410,689., Cl. 528-367.000.
Nelb, Robert G., II; and Onder, Kemal, 4,410,684., Cl. 528-185.000.

Urabe, Namio, to Nippon Kokan Kabushiki Kaisha. Steel having excellent vibration attenuation performance and method of manufacturing the same. 4,410,374., Cl. 148-143.000.

Urban, Joseph J.; and Henderson, Norman L., to Hoechst-Roussel Pharmaceuticals Inc. Device for measuring tablet breaking force. 4,409,843., Cl. 73-851.000.

Uroda, James C.: *See—*
Hefner, Robert E., Jr.; and Uroda, James C., 4,410,686., Cl. 528-288.000.

Ushio Denki Kabushiki Kaisha: *See—*
Suzuki, Shunichi; and Kotaka, Masaharu, 4,410,837., Cl. 315-289.000.

Usui, Akira, to Shinwa Kagaku Kogyo Kabushiki Kaisha. Method and apparatus for packing articles with composite stretched films. 4,409,776., Cl. 53-399.000.

Usui, Yuichi; Murai, Shigeo; Kurosaki, Shiro; and Watanabe, Minoru, to Sumitomo Electric Industries, Ltd. Method of producing optical waveguide. 4,410,345., Cl. 65-3.150.

Valaas, Andrew M.: *See—*
DeVlieg, Garrett H.; and Valaas, Andrew M., 4,410,952., Cl. 364-565.000.

Valdiserri, Leo L.: *See—*
Lewis, Elyse M.; and Valdiserri, Leo L., 4,410,650., Cl. 524-119.000.

Vale, Wylie W., Jr.; and Rivier, Jean E. F., to Salk Institute for Biological Studies, The. GnRH Agonists. 4,410,514., Cl. 424-177.000.

Valeo SA: *See—*
Caray, Andre; and Despres, Dominique, 4,410,075., Cl. 192-106.200.

Valeron Corporation, The: *See—*
Huddle, David R.; and Coleman, Robert L., 4,409,868., Cl. 82-1.00C.

Vallis, Paul J.; and Hall, William H., to Bowater-Scott Limited. Toilet roll dispenser. 4,410,221., Cl. 312-39.000.

Van Buul, Marinus C. W.; and Kremers, Theodoor M. M., to U.S. Philips Corporation. Differential pulse code modulation transmission system. 4,411,001., Cl. 375-30.000.

Van Camp, Donald G.: *See—*
West, Joe B.; and Van Camp, Donald G., 4,410,076., Cl. 193-32.000.

vanden Broek, Arnoldus J. M.; Legierse, Petrus E. J.; and Ribberink, Henricus D. M., to U.S. Philips Corporation. Optically readable information disk. 4,410,978., Cl. 369-275.000.

van den Heuvel, Anthony P.: *See—*
Comroe, Richard A.; Kotzin, Michael D.; and van den Heuvel, Anthony P., 4,409,836., Cl. 73-504.000.

van der Lely, Cornelis. Tracked vehicles. 4,410,219., Cl. 305-35.0EB.

van der Wielen, Pierre, to Fabrique Nationale Herstal. Composite barrel and process for the manufacture thereof. 4,409,881., Cl. 89-16.000.

van der Zypen, Eugen: *See—*
Roussel, Philippe; Fankhauser, Franz; and van der Zypen, Eugen, 4,409,979., Cl. 128-303.100.

VanGinhoven, Robert M.; Seymour, Shaun A.; and Eberly, Harry C., to Sperry Corporation. Method of wrapping roll bales with plastic film. 4,409,784., Cl. 56-341.000.

Van Hest, Cornelis A. J. H., to Ruti-te Strake B.V. Device for forming a storage coil from a thread supplied from a yarn supply. 4,410,146., Cl. 242-47.010.

Vanmeter, James P.; and Chen, Chin H., to Eastman Kodak Company. Blocked photographic reagents. 4,410,618., Cl. 430-219.000.

van Nassau, Petrus J. M.; and Douwes, Adolphe M., to Unie Van Kunst-Mestfabrieken. Process for the removal of urea, ammonia, and carbon dioxide from dilute aqueous solutions. 4,410,503., Cl. 423-359.000.

Van Peppen, Jan F., to Allied Corporation. Process for manufacture of cyclohexanol from phenol. 4,410,741., Cl. 568-835.000.

Van Peppen, Jan F.: *See—*
Fisher, William B.; and Van Peppen, Jan F., 4,410,755., Cl. 585-800.000.

Van Scoy, Davis A., to Grove Valve and Regulator Company. Orifice meter with isolation chamber seal on the orifice disc carrier. 4,410,010., Cl. 138-44.000.

van Zanten, Francois, to Thomson - CSF. Frequency demodulator having automatic gain control. 4,410,856., Cl. 329-50.000.

Vapor Corporation: *See—*
Reip, Raymond G., 4,410,005., Cl. 137-488.000.

Vaporpak Pty. Limited: *See—*
Sandford, Geoffrey P.; and Alekna, Paull A., 4,409,946., Cl. 123-557.000.

Varela, Robert. Telltale structure and method of producing same. 4,410,382., Cl. 156-70.000.

Vasquez, Jesus G. Work holder. 4,410,023., Cl. 144-287.000.

VEB Filmfabrik Wolfen: *See—*
Plaschnick, Dieter; Roth, Christoph; Noll, Bernd; Kroha, Walter; and Kuhnert, Lothar, 4,410,624., Cl. 430-377.000.

Veldkamp, Wilfrid B., to Massachusetts Institute of Technology. Method and apparatus for shaping electromagnetic beams. 4,410,237., Cl. 350-320.000.

Veltri, Richard D.: *See—*
Galasso, Francis S.; Veltri, Richard D.; and Birbara, Philip J., 4,410,504., Cl. 423-453.000.

Verbeek, Francois: *See—*
Berg, Jan; Verbeek, Francois; and Bluten, Eric J., 4,410,544., Cl. 424-287.000.

Verbicky, John W.: *See—*
Dellacoletta, Brent A.; and Verbicky, John W., 4,410,735., Cl. 568-722.000.

Vereinigte Flugtechnische Werke-Fokker GmbH: *See—*
Hoppner, Heinz-Jochen; Kramer, Ulrich; Sgarz, Hugo; and Sadowski, Herbert, 4,410,151., Cl. 244-63.000.

Versatron Research Corporation: *See—*
Fernandez, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., 4,410,198., Cl. 280-281.0LP.

Victor Company of Japan, Ltd.: *See—*
Saito, Takashi; and Kumaki, Takashi, 4,410,972., Cl. 369-77.200.
Saito, Takashi; Kumaki, Takashi; and Kishi, Toru, 4,410,973., Cl. 369-77.200.
Segawa, Keiji; Murakami, Masaki; and Doi, Keiichiro, 4,410,974., Cl. 369-126.000.
Takehara, Hideaki, 4,409,712., Cl. 29-25.420.
Uchida, Masayoshi; and Tajima, Osamu, 4,410,976., Cl. 369-170.000.
Umeda, Hiroyuki, 4,410,919., Cl. 360-85.000.
Yamamura, Takashi, 4,410,921., Cl. 360-97.000.

Victor, John G., to Institute of Gas Technology. Ethanol extraction process. 4,410,745., Cl. 568-916.000.

Videki, Edwin R., II: *See—*
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,410,942., Cl. 364-200.000.

Vig, John R.: *See—*
Ballato, Arthur; and Vig, John R., 4,409,711., Cl. 29-25.350.

Vinekar, Sanjay R.; Hettiger, James; and Friedline, Karl L., to RCA Corporation. Burst gate keying and back porch clamp pulse generator. 4,410,907., Cl. 358-20.000.

Visser, Karl K.: *See—*
Beougher, Timothy K.; Pipoli, Joaquim A.; Visser, Karl K.; Bauck, Russell B.; and Lippert, Tony K., 4,409,780., Cl. 56-228.000.

Vivitar Corporation: *See—*
Curran, Kenneth J., 4,410,250., Cl. 354-33.000.

VLSI Technology Research Association: *See—*
Nakamura, Takuma; and Sugizaki, Kazumi, 4,410,951., Cl. 364-559.000.

Voest-Alpine Aktiengesellschaft: *See—*
Feichtner, Hanns E.; Haslmayr, Johann; Jaquemar, Christian; Hoislbauer, Friedrich; Rappold, Friedrich; and Feigl, Franz, 4,410,355., Cl. 75-5.000.

Vogt, Kuno J. Easy opening top closure member assembly for a container. 4,410,101., Cl. 220-257.000.

Voigt, Allan A.: *See—*
Fernandez, Fred D.; Speicher, John M.; Unkrey, Douglas W.; and Voigt, Allan A., 4,410,198., Cl. 280-281.0LP.

Voigt, Jurgen: *See—*
Anders, Dietmar; and Voigt, Jurgen, 4,410,306., Cl. 425-71.000.

Voroshazy, Lajos: *See—*
Torok, Sandor; Voroshazy, Lajos; Galambos, Peter; Daroczi, Ivan; and Ormenyi, Zoltan, 4,410,697., Cl. 544-165.000.

Vosper Thornycroft Limited: *See—*
Moore, John P., 4,409,926., Cl. 122-4.00D.

Vought, Kimber T.: *See—*
Baraglia, Nathan A.; Eitzinger, Robert; and Vought, Kimber T., 4,409,734., Cl. 29-861.000.

W. R. Grace & Co., Cryovac Division: *See—*
Bortolani, Ermanno, 4,410,089., Cl. 206-633.000.

WABCO Steuerungstechnik GmbH: *See—*
Gottling, Helmut; and Moller, Rudolf, 4,410,008., Cl. 137-627.500.

Wabersich, Ernst; and Sanders, Gerhard, to Korf and Fuchs Systemtechnik. Method and apparatus for cooling a wall region of a metallurgical furnace, in particular an electric arc furnace. 4,410,999., Cl. 373-76.000.

Wada, Minoru; and Fukuda, Minoru, to Toyo Boseki Kabushiki Kaisha. Photosensitive resin containing a combination of diphenyl-imiazolyl dimer and a heterocyclic mercaptan. 4,410,621., Cl. 430-281.000.

Wada, Tsuneo: *See—*
Goto, Satoshi; Kinoshita, Akira; Wada, Tsuneo; Takei, Yoshiaki; Akashi, Naoko; and Nomori, Hiroyuki, 4,410,615., Cl. 430-59.000.

Wagar, Robert L. Record storage apparatus. 4,410,094., Cl. 211-55.000.

Wagner, Jacob C. Ice-breaking and conveying system. 4,409,918., Cl. 114-40.000.

Wahl, Friedrich: *See—*
Scherl, Wolfgang; Abele, Ludwig; Wahl, Friedrich; and Fuchsberger, Hermann, 4,411,015., Cl. 382-51.000.

Wahl, Josef: *See—*
Mangold, Dietrich; Wahl, Josef; and Aders, Wolf-Karlo, 4,410,733., Cl. 568-603.000.

Waid, George M.; Franklin, Joseph E.; and Demianczuk, Dionisyj W., to Republic Steel Corporation. Manufacture of electrically welded steel pipe. 4,410,369., Cl. 148-2.000.

Wakeland, Charles A., to Recognition Equipment Incorporated. Bar-code width measurement system. 4,411,016., Cl. 382-62.000.

Wakimoto, Hirofumi: *See—*
Katayama, Hiroyuki; Ishikawa, Hidetake; Saito, Chikara; and Wakimoto, Hirofumi, 4,410,360., Cl. 75-60.000.

Wakoh, Shoji: *See—*
Toba, Hirotaka; Itoh, Masanori; Nakano, Keita; Wakoh, Shoji; Toyoshima, Toshihiko; and Todd, Hidemasa, 4,410,584., Cl. 428-215.000.

Waldmann, Helmut: *See—*
Wilms, Klaus G.; Waldmann, Helmut; and Grolig, Johann, 4,410,743., Cl. 568-860.000.

Walkes, Oswald A.: *See—*
Bergloff, Raymond A.; Hollis, James T.; and Walkes, Oswald A., 4,410,304., Cl. 417-346.000.

Walkow, Arnold M.: *See—*
Daniel, Wilbur L.; Linyaev, Eugene J.; Walkow, Arnold M.; and Wilkinson, Gregory J., 4,410,051., Cl. 175-4.510.

Wall, David L.: *See—*
Mantz, Arlan W.; Wall, David L.; Chapman, Dudley M.; Eng, Richard S.; and Nill, Kenneth W., 4,410,273., Cl. 356-319.000.

Wallis, Christopher J.: *See—*
Collington, Eric W.; Hallett, Peter; Wallis, Christopher J.; Hayes, Norman F.; Bradshaw, John; and Carter, Malcolm, 4,410,521., Cl. 424-244.000.

Wallis, Robert H.: *See—*
Pratt, William K.; Bader, Ronald S.; Chen, Wen-Hsiung; Rennick, Lyle V.; and Wallis, Robert H., 4,410,916., Cl. 358-263.000.

Walsh, William E., to Reynolds Metals Company. Separation of spent cathode carbon and alkaline ore. 4,410,423., Cl. 209-4.000.

Wang, Kuei-Hsiung; Biolchini, Robert J.; and Legatski, L. Karl, to FMC Corporation. Sodium-limestone double alkali flue gas desulfurization method. 4,410,500., Cl. 423-242.000.

Wang Laboratories, Inc.: *See—*
Barrow, Arthur B.; and Tsiang, Horace H., 4,410,941., Cl. 364-200.000.
Nelson, Alfred M.; and Rasekhi, Houshang, 4,410,896., Cl. 346-74.200.

Wang, Pen-Chung: *See—*
Renga, James M.; and Wang, Pen-Chung, 4,410,718., Cl. 560-103.000.

Wang, Tzu-Cheng. Key operated lock. 4,409,805., Cl. 70-32.000.

Warabi, Junichi: *See—*
Sakuma, Shinzo; Warabi, Junichi; and Kobari, Yukio, 4,410,777., Cl. 200-144.00B.

Warburton, Craig S.; and Baczek, Stanley K., to Diamond Shamrock Corporation. Membrane cell at increased caustic concentration. 4,410,404., Cl. 204-98.000.

Ward, Frank B.: *See—*
Hertl, William; Ward, Frank B.; and Weetall, Howard H., 4,410,633., Cl. 436-500.000.

Ward, Ian M.: *See—*
Ladizesky, Noe H.; Ward, Ian M.; and Phillips, Leslie N., 4,410,586., Cl. 428-245.000.

Warlick, Timothy A.: *See—*
Peters, Lester L.; and Warlick, Timothy A., 4,410,138., Cl. 239-95.000.

Warner-Lambert Company: *See—*
Cartwright, Cyril A.; Emmett, James S.; Michael, Arthur E.; Peleckis, Anthony J.; and Symes, Ernest M., 4,409,735., Cl. 30-47.000.

Wasco Products, Inc.: *See—*
Jentoft, Arthur P.; and Couture, Paul A., 4,409,767., Cl. 52-200.000.

Watanabe, Hideo: *See—*
Shin, Shigemitsu; Suzuki, Kunio; Kiyozumi, Yoshimichi; Ogawa, Kiyoshi; Takaya, Haruo; Bando, Kenichiro; Takami, Yasuo; Kohtoku, Yasuhiko; Watanabe, Hideo; Kawamura, Kichinari; and Shimazaki, Yuzi, 4,410,751., Cl. 585-640.000.

Watanabe, Minoru: *See—*
Usui, Yuichi; Murai, Shigeo; Kurosaki, Shiro; and Watanabe, Minoru, 4,410,345., Cl. 65-3.150.

Watanabe, Shunichi: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Watanabe, Yoshimi, to Sony Corporation. Helical scan VTR with deflectable head. 4,410,918., Cl. 360-77.000.

Watson, William R., Jr.: *See—*
White, Kenneth D.; and Watson, William R., Jr., 4,409,777., Cl. 53-587.000.

Watthey, Jeffrey W. H., to Ciba-Geigy Corporation. 3-Amino-[1]-benzazepin-2-one-1-alkanoic acids. 4,410,520., Cl. 424-244.000.

Watts, Eric A., to Beecham Group Limited. Aza-bicyclo-benzamide derivatives and pharmaceutical compositions and use thereof. 4,410,535., Cl. 424-265.000.

Wawro, Thaddeus J.; and Wright, Timothy A., to Carrier Corporation. Combination coupling retainer and support for a heat exchange unit. 4,410,033., Cl. 165-78.000.

Waxman, Albert S.; and Havlice, James F., to Diasonics, Inc. Ultrasonic imaging apparatus using a coupling fluid mixture of propylene oxide, ethylene oxide derivative and glycerine. 4,410,826., Cl. 310-336.000.

Weaver, Charles H.; and Kaltenekker, Bela L., to Fairchild Camera & Instrument Corporation. Method of removing bulk impurities from semiconductor wafers. 4,410,395., Cl. 156-662.000.

Webb, Denis C.: *See—*
Ganguly, Achintya K.; and Webb, Denis C., 4,410,833., Cl. 315-39.510.

Weber, Georg: *See—*
Baur, Gunter; Scheuble, Bernd; and Weber, Georg, 4,410,445., Cl. 252-299.500.

Weber, Werner, to Kracht Pumpen-und Motorenfabrik GmbH & Co. KG. Volume flow sensor of the gear wheel motor type. 4,409,829., Cl. 73-261.000.

Wedemeyer, Karlfried: *See—*
Klein, Alfons; Wedemeyer, Karlfried; Havenith, Lothar; and Kron, Rolf, 4,410,869., Cl. 336-94.000.

Weetall, Howard H.: *See—*
Hertl, William; Ward, Frank B.; and Weetall, Howard H., 4,410,633., Cl. 436-500.000.

Weihe, Clyde R., Jr. Conveyor system. 4,410,081., Cl. 198-725.000.

Weik, Edward: *See—*
Thomson, Roger; and Weik, Edward, 4,409,833., Cl. 73-302.000.

Weil, Max H.: *See—*
Bisera, Jose; and Weil, Max H., 4,409,977., Cl. 128-205.150.

Weilbacher, Jean-Claude: *See—*
Marini, Jean; Gravelle, Alain; and Weilbacher, Jean-Claude, 4,410,484., Cl. 376-252.000.

Weiss, Bernard J., to Raytheon Company. Combination microwave oven control system. 4,410,779., Cl. 219-10.55F.

Weitz, Hans-Martin: *See—*
Fischer, Rolf; Weitz, Hans-Martin; and Paust, Joachim, 4,410,719., Cl. 560-112.000.

Welch, Melvin B.; Dietz, Richard E.; and Capshew, Charles E., to Phillips Petroleum Company. Catalyst, method of producing the catalyst, and polymerization process employing the catalyst. 4,410,671., Cl. 526-119.000.

Welch, Melvin B.: *See—*
Dietz, Richard E.; and Welch, Melvin B., 4,410,451., Cl. 502-110.000.

Weller, Daniel L.: *See—*
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., 4,410,940., Cl. 364-200.000.

Wenger, Fritz. Apparatus for test-firing small-arms and hand-guns. 4,409,826., Cl. 73-167.000.

Wentworth, Fred A., Jr. Ion-vapor generator and method. 4,410,467., Cl. 261-18.00A.

Werner, Gerald C., to Motorola, Inc. Out of lock detector for a sample and hold phase lock loop. 4,410,861., Cl. 331-25.000.

Werres, Lothar: *See—*
Tautz, Jurgen; Werres, Lothar; and Reimer, Gerd, 4,410,487., Cl. 376-399.000.

Werth, Willard F.; and Craiglow, Robert L., to Rockwell International Corporation. Speech processor for processing analog signals. 4,410,764., Cl. 364-513.500.

Wertheimer, Bruce; and Pearson, Rune S., to Wertheimer, Bruce. Machine for stapling and folding a stack of paper sheets to form a book. 4,410,170., Cl. 270-37.000.

Wessel, Claude: *See—*
Gerber, Hans; Wessel, Claude; and Hidveghy, Ivan, 4,410,846., Cl. 318-490.000.

West, Joe B.; and Van Camp, Donald G., to Metcalf Construction Company. Dust suppressor. 4,410,076., Cl. 193-32.000.

Westech Hydraulics: *See—*
Westergaard, Rod; Morton, Lou; and Zeiders, Ken, 4,409,782., Cl. 56-328.0TS.

Westergaard, Rod; Morton, Lou; and Zeiders, Ken, to Westech Hydraulics; and Tenneco West. Multiple-pattern tree shaking mechanism. 4,409,782., Cl. 56-328.0TS.

Western Electric Company, Inc.: *See—*
Arcidiacono, Frank R.; and Koerckel, Gerard J., 4,410,867., Cl. 333-172.000.
Iyengar, Rama, 4,410,344., Cl. 65-3.110.

Westfalia Separator AG: *See—*
Zettier, Karl-Heinz; and Zurbruggen, Hugo, 4,410,319., Cl. 494-29.000.
Zurbruggen, Hugo; and Zettier, Karl-Heinz, 4,410,317., Cl. 494-4.000.

Westimayer, David A., to Deere & Company. Snowblower hydraulic chute rotation assembly. 4,409,748., Cl. 37-261.000.

Westinghouse Electric Corp.: *See—*
Campbell, Ira J., 4,409,731., Cl. 29-800.000.
Dickinson, Robert J.; and Wetherill, Todd M., 4,410,072., Cl. 192-8.00R.
Matty, Thomas C., 4,410,154., Cl. 246-182.00B.
Strong, John D.; and Matty, Thomas C., 4,410,947., Cl. 364-426.000.

Westley, John: *See—*
Liu, Chao-min; Tresner, Homer D.; and Westley, John, 4,410,712., Cl. 549-414.000.

Westmoreland, Julius C., to Inotek-Westmoreland Venture. Fluid compressor. 4,410,301., Cl. 417-264.000.

Weston, Donald E., to Brown Boveri Electric Inc. Arc spinner with magnetically driven puffer. 4,410,778., Cl. 200-148.00A.

Wetherill, Todd M.: *See—*
Dickinson, Robert J.; and Wetherill, Todd M., 4,410,072., Cl. 192-8.00R.

Wetterhorn, Richard H.; and Busch, David A., to Dresser Industries, Inc. Clamp for panel mounting of gauge instruments. 4,410,155., Cl. 248-27.100.

Weyer, Paul P. Combined linear and rotary actuator and floating ring gear. 4,409,888., Cl. 92-31.000.

Wheater, Robin A.: *See—*
Susko, John R.; and Wheater, Robin A., 4,410,647., Cl. 524-88.000.

Wheatley, Charles E., III, to Rockwell International Corporation. Digital frequency synthesizer with random jittering for reducing discrete spectral spurs. 4,410,954., Cl. 364-701.000.

Wheeler, Donald J.; Cooper, Christopher; and Krejsa, Charles R., to Guild International Inc. Spiral coil strip accumulator and method. 4,410,121., Cl. 226-118.000.

Wheeler, Glenn: *See—*
Ptasinski, James F.; and Wheeler, Glenn, 4,410,987., Cl. 371-25.000.

White, Irvin M.: *See—*
Bent, F. Eugene; and White, Irvin M., 4,409,779., Cl. 56-11.300.

White, Jeffrey A. Condensing apparatus and method for pressurized gas. 4,410,035., Cl. 165-111.000.

White, Kenneth D.; and Watson, William R., Jr., to Infra Pak (Dallas), Inc. Web threading apparatus. 4,409,777., Cl. 53-587.000.

Whiteside, Ross C., Jr.; Gist, Adolphus V.; and Doorakian, George A., to Dow Chemical Co., The. Process for preparing epoxy resins having improved physical properties when cured. 4,410,596., Cl. 428-413.000.

Whitey Co.: *See—*
Koch, Ulrich H.; and Williams, Peter C., 4,410,165., Cl. 251-174.000.

Whitledge, Gary A.: *See—*
Muterspaugh, Max W.; and Whitledge, Gary A., 4,410,864., Cl. 333-32.000.

Whitman, Richard W., to Fire Pro, Inc. Firefighting vehicle. 4,410,045., Cl. 169-24.000.

Whitt, S. Randall: *See—*
Martin, William L.; and Whitt, S. Randall, 4,409,825., Cl. 73-155.000.

Whitworthl, Edward T. Device to improve the fuel efficiency of an internal combustion engine. 4,409,951., Cl. 123-590.000.

Wieder, Herman H., to United States of America, Navy. Heterojunction-diode transistor EBS amplifier. 4,410,903., Cl. 357-29.000.

Wilhelmsson, Tore C.; and Lundstrom, Sten M. Transportation apparatus. 4,409,903., Cl. 104-162.000.

Wilkinson, Gregory J.: *See—*
Daniel, Wilbur L.; Linyaev, Eugene J.; Walkow, Arnold M.; and Wilkinson, Gregory J., 4,410,051., Cl. 175-4.510.

Wilkinson, James H., to Sony Corporation. Processing binary data. 4,410,990., Cl. 371-47.000.

Will, Peter. Device for treating faulty positions and postures of the human torso. 4,409,969., Cl. 128-78.000.

Williams, David C., to Lucas Industries Limited. Switching system for cyclic supply of electrical power to a plurality of loads. 4,410,794., Cl. 219-486.000.

Williams, James H., to Borden, Inc. Hydrolytically stable urea-formaldehyde resins and process for manufacturing them. 4,410,685., Cl. 528-259.000.

Williams, Peter C.: *See—*
Koch, Ulrich H.; and Williams, Peter C., 4,410,165., Cl. 251-174.000.

Wilms, Klaus G.; Waldmann, Helmut; and Grolig, Johann, to Bayer Aktiengesellschaft. Process for the preparation of 2,3-dimethylbutane-2,3-diol. 4,410,743., Cl. 568-860.000.

Wilnau, John A., to Proctor, Ennis H.; Proctor, Donald C.; and Page, Donald C. System and method for reinforced concrete construction. 4,409,764., Cl. 52-127.300.

Wilsey, Harvey J., to Ultra Carbon Corporation. Segmented heater assembly. 4,410,796., Cl. 219-553.000.

Wilson, Dennis M.: *See—*
Schulz, Gerald O.; and Wilson, Dennis M., 4,410,673., Cl. 526-202.000.

Wilson, Norma K. Combined tool for needlework. 4,410,114., Cl. 223-99.000.

Wilson, Terry L.: *See—*
Adams, Kenneth D.; Kurland, Marvin; Mead, Richard; Oliva, Ferdinand P.; and Wilson, Terry L., 4,409,913., Cl. 112-158.00B.

Wilson, William W.: *See—*
Christe, Karl O.; and Wilson, William W., 4,410,377., Cl. 149-109.400.

Wilton, Frank P.: *See—*
Dykstra, Edward G.; and Wilton, Frank P., 4,410,320., Cl. 604-27.000.

Wiltzius, Raymond D.: *See—*
Jacobs, Stanley C.; Wiltzius, Raymond D.; Minick, John R.; and Foster, Perry A., Jr., 4,410,403., Cl. 204-67.000.

Winter, Joseph, to Olin Corporation. Process for restructuring thin strip semi-conductor material. 4,410,392., Cl. 156-603.000.

Wischusen, Henry, III, to Rock-Tenn Company. Collapsible paperboard container. 4,410,129., Cl. 229-41.00B.

Wisniewski, Peter: *See—*
Schick, Edgar; and Wisniewski, Peter, 4,410,486., Cl. 376-306.000.

Witman, Mark W.; and Reinert, Gerard E., to Mobay Chemical Corporation. Polycarbonate having an improved impact performance. 4,410,662., Cl. 525-148.000.

Witte, Dieter; Jendrewski, Alfons; and Nadler, Gerhard, to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH. Circular fluorescent lamp with improved housing containing ballast and starting device. 4,410,834., Cl. 315-58.000.

Wlodkowski, Johann; Nutzel, Oswald; and Jungwirth, Dieter, to Dyckerhoff & Widmann Aktiengesellschaft. Recoverable form part for use in the region where a tendon is anchored in a prestressed concrete component. 4,410,162., Cl. 249-215.000.

Wohrl, Alfons: *See—*
Spies, Johann; and Wohrl, Alfons, 4,410,875., Cl. 340-52.00H.

Wolfgang, Bohm; Wolmer, Roger; and Malikowski, Willi, to Degussa Aktiengesellschaft. Material for electrical contacts. 4,410,491., Cl. 420-501.000.

Wollesen, Donald L., to American Microsystems, Inc. Notched cell ROM. 4,410,904., Cl. 357-45.000.

Wolmer, Roger: *See—*
Wolfgang, Bohm; Wolmer, Roger; and Malikowski, Willi, 4,410,491., Cl. 420-501.000.

Woltmann, Siegfried: *See—*
Chia, Han-Lie; and Woltmann, Siegfried, 4,410,507., Cl. 424-1.100.

Woodbury, David R.: *See—*
Shaw, Wilfrid G.; and Woodbury, David R., 4,410,448., Cl. 502-159.000.

Woodhouse, Richard G., to Lucas Industries Limited. Electrical circuit for driving a plurality of inductive loads. 4,410,808., Cl. 307-254.000.

Wootton, Gerald V.: *See—*
Lane, Parley C., Jr.; Tenney, Linwood P.; and Wootton, Gerald V., 4,410,691., Cl. 528-495.000.
Tenney, Linwood P.; and Wootton, Gerald V., 4,410,692., Cl. 528-495.000.

Wright, Timothy A.: *See—*
Wawro, Thaddeus J.; and Wright, Timothy A., 4,410,033., Cl. 165-78.000.

Wurmli, Albert; and Berendt, Hans U., to Ciba-Geigy Corporation. Condensation products containing sulphonic acid groups: additives for dyeing synthetic polyamide. 4,410,331., Cl. 8-589.000.

Wurmli, Arthur, to Rieter Machine Works Limited. Apparatus for separating fibre material. 4,410,340., Cl. 55-290.000.

Wydeven, Robert M., to Donaldson Company, Inc. Fluid filtering device. 4,410,427., Cl. 210-317.000.

Wyslotsky, Ihor; and Baker, Franklin E., Jr., to Shiff, Donald F. Seal testing device and method. 4,409,818., Cl. 73-49.300.

Xerox Corporation: *See—*
Griffiths, Clifford H.; and Melnyk, Andrew R., 4,410,616., Cl. 430-59.000.
Houston, Robert D.; and Liptak, Frank J., 4,410,895., Cl. 346-1.100.
Lu, Chin H.; and AuClair, Christopher J., 4,410,617., Cl. 430-106.000.

Xexex Industries, Inc.: *See—*
Battochio, George, 4,410,574., Cl. 428-43.000.

Xomox Corporation: *See—*
Sandling, Michael J., 4,410,003., Cl. 137-312.000.

Yachabach, Jerry, to Gladwin, Inc. Photo voltaic lighting for outdoor telephone booth. 4,410,930., Cl. 362-145.000.

Yahagi, Masakichi; Horiuchi, Shoichi; Toyama, Takahumi; Kashiwagi, Akio; Suzuki, Teruo; Igaki, Tetsuo; Horisawa, Kazuyuki; and Shoji, Mituhiro, to Shin Nisso Kako Co., Ltd. Chromogenic fluoran derivatives and the preparation and use thereof. 4,410,708., Cl. 548-407.000.

Yakubovich, Vladimir M.: *See—*
Sidorenko, Georgy I.; Stankevich, Vladimir I.; Yakubovich, Vladimir M.; and Nikitin, Yaroslav G., 4,409,985., Cl. 128-702.000.

Yamada, Masaru: *See—*
Takasaki, Yoshiyuki; Takahara, Yoshimasa; Izumi, Chikashi; Mori, Atsuhi; Nishiguchi, Masahiko; and Yamada, Masaru, 4,410,368., Cl. 127-38.000.

Yamada, Mitsuhiko: *See—*
Ueda, Sadao; Tokura, Isao; and Yamada, Mitsuhiko, 4,410,909., Cl. 358-75.000.

Yamada, Shin-ichi: *See—*
Hayasaka, Tetsutaro; Saito, Kuniro; Narita, Sen-ichi; Goto, Takao; Yamada, Shin-ichi; Saito, Teruo; and Okutani, Kazuyoshi, 4,410,716., Cl. 560-51.000.

Yamada, Tateo, to Sumitomo Kinzoku Kogyo Kabushiki Kaisha. Process for manufacturing seamless metal tubes. 4,409,810., Cl. 72-68.000.

Yamada, Yuji: *See—*
Enomoto, Masahiro; Awano, Yoshiyuki; Yamada, Yuji; and Aso, Akira, 4,410,222., Cl. 339-17.00F.

Yamagata, Kenji: *See—*
Noda, Kanji; Nakagawa, Akira; Hirano, Munehiko; Yamagata, Kenji; Nakashima, Yoichi; Hachiya, Terumi; Ide, Hiroyuki; and Koda, Akihide, 4,410,546., Cl. 424-317.000.

Yamagata, Ryutaro; Kozuka, Nobuhiko; Nishihama, Hitoshi; Koyama, Shigeo; and Sakai, Kazutada, to Mita Industrial Co., Ltd. Apparatus for developing latent electrostatic image. 4,410,259., Cl. 355-3.0DD.

Yamagishi, Yoshitaka: *See—*
Miyamoto, Akira; Sato, Katsuo; Nishimura, Toshiaki; Yamagishi, Yoshitaka; and Mitui, Yoshimasa, 4,410,690., Cl. 528-486.000.

Yamaguchi, Hiroaki; Hattori, Tadashi; and Ootsuka, Yoshinori, to Nippon Soken, Inc. Knock detecting apparatus for an internal combustion engine. 4,409,816., Cl. 73-35.000.

Yamaguchi, Hiromi: *See—*
Nakayama, Mutsuo; Yamaguchi, Hiromi; and Yamasaki, Harumasa, 4,410,694., Cl. 536-98.000.

Yamaguchi, Hiroyuki: *See—*
Fujimura, Kenji; Sekiya, Shigeru; Kamio, Kunimasa; Okuno, Koichi; Haraguchi, Satoru; Ohasi, Koiti; and Yamaguchi, Hiroyuki, 4,410,457., Cl. 252-508.000.

Yamaguchi, Masami; Nakazima, Toshiyuki; Tajitsu, Yoshiro; Kitahama, Yoshiharu; and Iwami, Isamu, to Asahi-Dow Limited. Method for manufacture of silicon carbide. 4,410,502., Cl. 423-345.000.

Yamaguchi, Masayuki: *See—*
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Fujimoto, Hiroaki; and Ohkita, Ryozo, 4,409,938., Cl. 123-335.000.

Yamaji, Katuhiko: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.

Yamamori, Kazuyoshi; Nishikawa, Reiji; Fujiwara, Tatsuo; and Asano, Toshimitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording medium. 4,410,603., Cl. 428-611.000.

Yamamoto, Kazumi, to Ikegami Tsushinki Co. Ltd. Apparatus for protecting an image pickup tube in a television camera. 4,410,915., Cl. 358-228.000.

Yamamoto, Manabu; and Ojima, Masahiro, to Hitachi, Ltd. Apparatus for detecting magneto-optical anisotropy. 4,410,277., Cl. 356-366.000.

Yamamoto, Minoru; Hirai, Masana; and Sakata, Jiro, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Gas separating members and a method of making the same. 4,410,338., Cl. 55-158.000.

Yamamoto, Takahiro: *See—*
Kohmoto, Osamu; and Yamamoto, Takahiro, 4,410,406., Cl. 204-192.00M.

Yamamura, Takashi, to Victor Company of Japan, Ltd. Apparatus for reproducing information signals from a disc-shaped recording medium and including a mechanism for pushing back a case for accommodating the recording medium therein. 4,410,921., Cl. 360-97.000.

Yamane, Tsuneo: *See—*
Komurasaki, Satoshi; Ueda, Atsushi; and Yamane, Tsuneo, 4,409,943., Cl. 123-418.000.

Yamanouchi Pharmaceutical Co. Ltd.: *See—*
Gushima, Hiroshi; Watanabe, Shunichi; Saito, Takeshi; Sasaki, Toshio; Eiki, Hideo; Oka, Yoshihiko; and Osono, Takashi, 4,410,626., Cl. 435-48.000.

Yamasaki, Harumasa: *See—*
Nakayama, Mutsuo; Yamaguchi, Hiromi; and Yamasaki, Harumasa, 4,410,694., Cl. 536-98.000.

Yamato, Akihiro: *See—*
Hasegawa, Shumpei; Yamato, Akihiro; and Otobe, Yutaka, 4,409,948., Cl. 123-571.000.

Yamauchi, Osami: *See—*
Ito, Akio; and Yamauchi, Osami, 4,410,290., Cl. 401-198.000.

Yamauchi, Terukazu; and Nakakura, Hirofumi, to Matsushita Electric Industrial Co., Ltd. Electric food preparation apparatus. 4,410,280., Cl. 366-314.000.

Yamazaki, Hiroaki: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.

Yamazaki, Tetu: *See—*
Hagiwara, Yutaka; and Yamazaki, Tetu, 4,410,070., Cl. 188-73.360.

Yamin, Hertzel: *See—*
Peled, Emanuel; and Yamin, Hertzel, 4,410,609., Cl. 429-105.000.

Yanagihara, Hiromichi; and Tokoro, Noriyuki, to Toyota Jidosha Kabushiki Kaisha. Exhaust gas recirculating type diesel engine. 4,409,947., Cl. 123-569.000.

Yanagisawa, Hiroshi: *See—*
Miyazaki, Haruhiko; Shiomi, Yasushi; Fujitus, Satoru; Masunaga, Katsuro; and Yanagisawa, Hiroshi, 4,410,722., Cl. 560-204.000.

Yanai, Tokiyoshi: *See—*
Nakayama, Masafumi; Yanai, Tokiyoshi; and Fukino, Masato, 4,410,059., Cl. 180-143.000.

Yano, Makoto; Shimada, Kiyoo; and Shibatani, Kyoichiro, to Kuraray Company, Limited. Gas sensor with pH-sensitive FET transducer. 4,409,980., Cl. 128-635.000.

Yano, Yashuhiro: *See—*
Haruta, Masahiro; Yano, Yashuhiro; Matsufuji, Yohji; Eida, Tsuyoshi; and Ohta, Tokuya, 4,410,899., Cl. 346-140.00R.

Yao, Neng-Ping: *See—*
Loutfy, Raouf O.; Brown, Alan P.; and Yao, Neng-Ping, 4,410,606., Cl. 429-17.000.

Yarnell, James A., to Dana Corporation. Shift-rail interlock bracket for compound transmission. 4,409,859., Cl. 74-477.000.

Yasuda, Takashi: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Yasue, Akira; Kato, Toshiji; and Takahashi, Yozo, to Onkyo Kabushiki Kaisha. Loudspeaker system. 4,410,063., Cl. 181-147.000.

Yasuhara, Yutaka: *See—*
Nishino, Masaki; Yasuhara, Yutaka; Fukuda, Tadanori; and Sakamoto, Sadayuki, 4,410,597., Cl. 428-423.100.

Yasumoto, Masataka: *See—*
Kawaoka, Yutaka; Oda, Hideo; Yasumoto, Masataka; Hirota, Kazuya; Ishinaga, Yuji; and Morita, Masakazu, 4,410,704., Cl. 548-766.000.

Yasumoto, Seiichi; Fushimi, Hitoshi; Ide, Jushi; and Okada, Masakazu, to Hitachi, Ltd. Data transmission system and method. 4,410,985., Cl. 371-22.000.

Yatabe, Takayuki: *See—*
Naka, Michiharu; Yatabe, Takayuki; and Koizumi, Hideki, 4,410,435., Cl. 252-42.100.

Yates, Winston F.: *See—*
Milligan, Charles A.; Videki, Edwin R., II; and Yates, Winston F., 4,410,942., Cl. 364-200.000.

Yerian, Harold W. Oil well rabbit. 4,410,300., Cl. 417-56.000.

Yoakum, John H., to Motorola, Inc. Automatic threshold squelch. 4,411,021., Cl. 455-222.000.

Yoke, James H. Method for production of corrugated paper. 4,410,316., Cl. 493-399.000.

York, Paul W.: *See—*
Gutschmit, Alan; and York, Paul W., 4,409,800., Cl. 66-9.00R.

Yoshida, Chosaku: *See—*
Saikawa, Isamu; Takano, Shuntaro; Yoshida, Chosaku; Takashima, Okuta; Momonoi, Kaishu; Kuroda, Seietsu; Komatsu, Miwako; Yasuda, Takashi; and Kodama, Yutaka, 4,410,522., Cl. 424-246.000.

Yoshida, Hideo: *See—*
Baba, Yoshio; Uno, Teruo; and Yoshida, Hideo, 4,410,370., Cl. 148-11.50A.

Yoshida, Junichi, to Casio Computer Co., Ltd. Exponential operation device. 4,410,956., Cl. 364-752.000.

Yoshida, Keiichiro. Method of and apparatus for producing metallic tape. 4,409,812., Cl. 72-189.000.

Yoshida, Ken: *See—*
Nishizaki, Tomoyoshi; Miyamoto, Minoru; Miyamoto, Kazuaki; Yoshida, Ken; Yamaji, Katuhiko; and Nakata, Yasushi, 4,409,799., Cl. 62-467.00R.

Yoshida Kogyo K.K.: *See—*
Matsuda, Yoshio, 4,409,802., Cl. 66-193.000.
Yuunaga, Saburo, 4,409,705., Cl. 24-205.16R.

Yoshii, Toshiya: *See—*
Tsunashima, Kenji; Yoshii, Toshiya; and Fukuyama, Takeo, 4,410,582., Cl. 428-212.000.

Yoshikawa, Ryoichi; Shigeta, Yoshihiro; Uchidoi, Masanori; Tosaka, Yoichi; and Haraguchi, Shosuke, to Canon Kabushiki Kaisha. Single lens reflex camera. 4,410,252., Cl. 354-153.000.

Yoshikawa, Ryoichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron beam exposure system. 4,410,800., Cl. 250-442.100.

Yoshimoto, Teruo: *See—*
Sugitani, Junichi; Yoshimoto, Teruo; and Takahashi, Makoto, 4,410,362., Cl. 420-584.000.

Yost, Carl D.: *See—*
Daniel, Roger P.; and Yost, Carl D., 4,409,835., Cl. 73-432.00R.

Young, Frederick A.; and Griffin, Edward L., to Hughes Aircraft Company. Spherical cavity microwave filter. 4,410,865., Cl. 333-208.000.

Young, George W.: *See—*
Kiovsky, Joseph R.; Young, George W.; and Saleh, Ramzi Y., 4,410,453., Cl. 502-253.000.

Yu, Cheng-Der; and Bruenner, Ursula, to Syntex (U.S.A.) Inc. Carbonate diester solutions of PGE-type compounds. 4,410,545., Cl. 424-305.000.

Yuan, Edward L.: *See—*
Goff, David L.; Yuan, Edward L.; and Proskow, Stephen, 4,410,612., Cl. 430-18.000.

Yuan, Shao W. Energy-saving cooling system. 4,409,798., Cl. 62-260.000.

Yurdin, Carl: *See—*
Monti, Carmel S.; Eisenkramer, Arthur; and Yurdin, Carl, 4,410,157., Cl. 248-125.000.

Yuunaga, Saburo, to Yoshida Kogyo K.K. Slider for a slide fastener. 4,409,705., Cl. 24-205.16R.

Zaborowski, Roy A., to Sperry Corporation. Digital-to-analog converter and analog-to-digital converter with controllable bi-polar and uni-polar capability. 4,410,880., Cl. 340-347.0DA.

Zabroski, Stanley E. Utility emergency lamp and solid state switching and battery charging circuit therefor. 4,410,835., Cl. 315-87.000.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Ehrlinger, Friedrich, 4,410,073., Cl. 192-18.00A.

Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See—*
Umezawa, Hamao; and Kondo, Shinichi, 4,410,516., Cl. 424-180.000.

Zama, Yoshimasa: *See—*
Sasaki, Takesada; Endo, Hiroshi; Zama, Yoshimasa; Shiraishi, Masahiko; Miura, Yosinari; and Yamaguchi, Masayuki, 4,410,013., Cl. 138-149.000.

Zann, Annie: *See—*
Dubois, Jean-Claude; Billard, Jean; and Zann, Annie, 4,410,283., Cl. 374-162.000.

Zeck, Ted E. Portable sample vessel. 4,409,850., Cl. 73-864.620.

Zeiders, Ken: *See—*
Westergaard, Rod; Morton, Lou; and Zeiders, Ken, 4,409,782., Cl. 56-328.0TS.

Zeilinger, Karl: *See—*
Henn, Werner; Bachschmid, Reiner; and Zeilinger, Karl, 4,409,935., Cl. 123-90.530.

Zenith Radio Corporation: *See—*
Miller, Robert L.; and DeVries, Adrian, 4,410,823., Cl. 310-313.00D.
Rypkema, Jouke N., 4,411,019., Cl. 455-180.000.

Zenyaku Kogyo Kabushiki Kaisha: *See—*
Takase, Muneaki; Nakamura, Tadahiro; Kamiya, Kazuo; Takezawa, Toshiyuki; Yamazaki, Hiroaki; and Iwaki, Takashi, 4,410,724., Cl. 562-456.000.

Zerbi, Pier C., to Nuova Agudio S.p.A. Device for moving the two sliding doors of a car of a continuous cable-way with automatic clamping. 4,409,905., Cl. 105-329.00S.

Zettier, Karl-Heinz; and Zurbruggen, Hugo, to Westfalia Separator AG. Self-discharging centrifugal drum. 4,410,319., Cl. 494-29.000.

Zettier, Karl-Heinz: *See—*
Zurbruggen, Hugo; and Zettier, Karl-Heinz, 4,410,317., Cl. 494-4.000.

Zhubrin, Sergei V.: *See—*
Udyma, Petr G.; Gilis, Ionas A.; Zhubrin, Sergei V.; Sakharnov, Alexandr V.; Rodioov, Boris A.; and Skornyakov, Vladimir V., 4,409,908., Cl. 110-346.000.

Ziemer, John H., to Union Carbide Corporation. Air boiling process to produce low purity oxygen. 4,410,343., Cl. 62-29.000.

Zierdt, Charles H., to United States of America, Health and Human Services. Lysis filtration culture chamber. 4,410,630., Cl. 435-284.000.

Zierhut, Lawrence G.: *See—*
Lo, David S.; Paul, Maynard C.; and Zierhut, Lawrence G., 4,410,963., Cl. 365-87.000.

Zilles, Stephen N.: *See—*
Carlson, Eric D.; Gladney, Henry M.; Lucas, Peter; Weller, Daniel L.; and Zilles, Stephen N., 4,410,940., Cl. 364-200.000.

Zimmerman, Wiley E.: *See—*
Salama, Mamdouh M.; Joosten, Michael W.; Zimmerman, Wiley E.; and Bockhorst, Rhea W., 4,409,824., Cl. 73-151.000.

Zimmermann, Heinrich; and Bierleutgeb, Sepp-Dieter. Turntable for record players. 4,410,977., Cl. 369-264.000.

Zimmermann, Herbert: *See—*
Stecher, Gunther; and Zimmermann, Herbert, 4,410,872., Cl. 338-114.000.

Zornig, Gerd: *See—*
Kroneisen, Armin; and Zornig, Gerd, 4,410,854., Cl. 324-468.000.

Zschauer, Karl-Heinz, to Siemens Aktiengesellschaft. Laser diode. 4,410,993., Cl. 372-44.000.

Zuckerman, Leonard, to Litton Systems, Inc. Angle position transducer. 4,410,270., Cl. 356-152.000.

Zurbruggen, Hugo; and Zettier, Karl-Heinz, to Westfalia Separator AG. Self-discharging centrifugal drum. 4,410,317., Cl. 494-4.000.

Zurbruggen, Hugo: *See—*
Zettier, Karl-Heinz; and Zurbruggen, Hugo, 4,410,319., Cl. 494-29.000.

Zwicky, Albert C.: *See—*
Pound, Virgil E.; Jensen, James R.; and Zwicky, Albert C., 4,410,056., Cl. 180-89.150.

Zwieg, Robert L.: *See—*
Bergman, Charles T.; and Zwieg, Robert L., 4,409,773., Cl. 53-54.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF OCTOBER, 1983

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bell Telephone Laboratories, Incorporated: *See—*
Strauss, Walter, Re. 31,423., Cl. 365-9.000.

Christopher, Glenn B., to Jet Research Center, Inc. Powdered metal casing for perforating charge and its method of manufacture. Re. 31,420., Cl. 428-546.000.

Colortronic Reinhard & Co., K.G.: *See—*
Tschritter, Alfons, Re. 31,418., Cl. 222-220.000.

Foxboro Company, The: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., Re. 31,416., Cl. 73-862.590.

Frolow, Jack L. Tennis racket. Re. 31,419., Cl. 273-73.00C.

Huber, Richard, to Klinger AG. Sealing system for shutoff elements. Re. 31,417., Cl. 137-1.000.

Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See—*
Wehrmann, Felix; Voelki, Rene-Hagen; and Wojta, Edwin, Re. 31,421., Cl. 521-42.000.

Jet Research Center, Inc.: *See—*
Christopher, Glenn B., Re. 31,420., Cl. 428-546.000.

Klinger AG: *See—*
Huber, Richard, Re. 31,417., Cl. 137-1.000.

Loshaek, Samuel; and Shen, Chah M., to Schering Corporation. Hydrophilic polymers and contact lenses of high water content. Re. 31,422., Cl. 526-264.000.

Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., to Foxboro Company, The. Electric signal transmitter for vibrating-wire sensor. Re. 31,416., Cl. 73-862.590.

Richardson, David A.: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., Re. 31,416., Cl. 73-862.590.

Schering Corporation: *See—*
Loshaek, Samuel; and Shen, Chah M., Re. 31,422., Cl. 526-264.000.

Shen, Chah M.: *See—*
Loshaek, Samuel; and Shen, Chah M., Re. 31,422., Cl. 526-264.000.

Simpson, Donald C.: *See—*
Olsen, Everett O.; Simpson, Donald C.; and Richardson, David A., Re. 31,416., Cl. 73-862.590.

Strauss, Walter, to Bell Telephone Laboratories, Incorporated. Magnetic domain detector. Re. 31,423., Cl. 365-9.000.

Tschritter, Alfons, to Colortronic Reinhard & Co., K.G. Metering apparatus for plastic materials. Re. 31,418., Cl. 222-220.000.

Voelki, Rene-Hagen: *See—*
Wehrmann, Felix; Voelki, Rene-Hagen; and Wojta, Edwin, Re. 31,421., Cl. 521-42.000.

Wehrmann, Felix; Voelki, Rene-Hagen; and Wojta, Edwin, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Building elements and their preparation. Re. 31,421., Cl. 521-42.000.

Wojta, Edwin: *See—*
Wehrmann, Felix; Voelki, Rene-Hagen; and Wojta, Edwin, Re. 31,421., Cl. 521-42.000.

LIST OF REEXAM PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bio-Energy Systems, Inc.: *See—*
Scholl, Gunter, B1 3,648,768., Cl. 165-171.000.

Scholl, Gunter, to Bio-Energy Systems, Inc. Heat-exchanger components. B1 3,648,768., 10-18-83, Cl. 165-171.000.

LIST OF DESIGN PATENTEES

Adams, Patrick J. Paint spreading tip for a collapsible tube. 271,028., 10-18-83, Cl. D19-55.000.

American Home Products Corporation: *See—*
Cassini, Oleg L., 270,986., Cl. D7-137.000.

American Hospital Supply Corporation: *See—*
Gammons, Clifford E.; and Moore, Francis C., 270,983., Cl. D6-204.000.

American Standard Inc.: *See—*
MacAleese, George K.; and Schoeff, Terry G., 271,040., Cl. D23-97.000.

Amerock Corporation: *See—*
Tegner, Raymond U. H., 270,993., Cl. D8-302.000.
Tegner, Raymond U. H., 270,994., Cl. D8-316.000.

Anderson, Byron D. Portable barbecue grill. 270,988., 10-18-83, Cl. D7-337.000.

Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., to Britt Tech Corporation. Liquid sprayer. 271,038., 10-18-83, Cl. D23-18.000.

Andersson, Roger S. I.: *See—*
Malmberg, Gunnar A.; Andersson, Roger S. I.; and Pettersson, Kjell A., 271,020., Cl. D15-15.000.

Archibald, Rae H. Overshoe. 270,964., 10-18-83, Cl. D2-264.000.

Arjani, Farouk; Kramer, Thomas J.; and Swan, Ralph M., to Pitney Bowes Inc. Word processing system having keyboard with one line display and CRT display. 271,018., 10-18-83, Cl. D14-106.000.

Arnold, William E.: *See—*
Stevens, Robert G.; Kelly, J. Joseph, III; and Arnold, William E., 270,971., Cl. D4-06.000.

Baikie, Roger B., to Canpro Sport Inc. Skate. 271,036., 10-18-83, Cl. D21-225.000.

Becker, Werner; and Reinke, Wolfgang, to Esselte Pendaflex Corporation. Protective pocket for the dialing knobs of the printhead of a labelling apparatus. 271,026., 10-18-83, Cl. D18-19.000.

Belknap, Raymond R.: *See—*
Guebert, Gerald E.; and Belknap, Raymond R., 270,978., Cl. D6-113.000.

Bennett, Carolyn L., to C. Bennett Scopes, Inc. Kaleidoscope. 271,032., 10-18-83, Cl. D21-60.000.

Berkman, Samuel. Combined mirror and cosmetic case. 271,050., 10-18-83, Cl. D28-77.000.

Bernatek, Anthony P., Sr. Flag staff support bracket. 271,006., 10-18-83, Cl. D11-182.000.

Boal, John R. Holder for protective spray and keys. 270,968., 10-18-83, Cl. D3-62.000.

Bott, John A. License plate holder. 271,011., 10-18-83, Cl. D12-193.000.

Bowen, Robert F.; and Herbst, Walter B., to Raytheon Company. Microwave steaming utensil or the like. 270,990., 10-18-83, Cl. D7-360.000.

Bratton, Ronald E.; Mango, Joseph R.; and Wolfe, Donald G., to Lincoln Manufacturing Company, Inc. Food steamer. 270,989., 10-18-83, Cl. D7-350.000.

Brinkley, Anthony. Pendant or charm. 271,003., 10-18-83, Cl. D11-79.000.

Bristol-Myers Company: *See—*
Du Cret, Doris, 271,049., Cl. D28-7.000.

Britt Tech Corporation: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 271,038., Cl. D23-18.000.

Brun, Serge, to Calor S.A. Facial vaporizer. 271,041., 10-18-83, Cl. D23-148.000.

Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., to Simmons Universal Corporation. Combined dressing table and plural shelf unit for an infant. 270,973., 10-18-83, Cl. D6-5.000.

Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., to Simmons Universal Corporation. Crib footboard. 270,982., 10-18-83, Cl. D6-198.000.

C. Bennett Scopes, Inc.: *See—*
Bennett, Carolyn L., 271,032., Cl. D21-60.000.

Caguco, Ely M. Combined cigarette case and lighter. 271,048., 10-18-83, Cl. D27-37.000.

Calor S.A.: *See—*
Brun, Serge, 271,041., Cl. D23-148.000.

Canpro Sport Inc.: *See—*
Baikie, Roger B., 271,036., Cl. D21-225.000.

Cascone, Ernesto; and Cascone, Vincent. Structural frame member. 271,055., 10-18-83, Cl. D25-74.000.

Cascone, Vincent: *See—*
Cascone, Ernesto; and Cascone, Vincent, 271,055., Cl. D25-74.000.

Cassini, Oleg L., to American Home Products Corporation. Fork or similar article. 270,986., 10-18-83, Cl. D7-137.000.

Chrones, Anthony, to Reliance Products Corporation. Nipple for a screw cap type bottle. 271,053., 10-18-83, Cl. D24-46.000.

Club Car, Inc.: *See—*
Saporito, Dominic, 271,008., Cl. D12-16.000.

Coach Products Corporation: *See—*
Stephenson, James D., 271,010., Cl. D12-98.000.

Communications Systems, Inc.: *See—*
Meyer, Daniel, 270,995., Cl. D8-350.000.

Cook, Anthony M., to Decon Laboratories, Inc. Jug or similar article. 270,999., 10-18-83, Cl. D9-376.000.

Cuminale, Raymond J., to General Mills Products Corp. Combined cleaning component holders and tray therefor. 270,979., 10-18-83, Cl. D6-146.000.

Cuminale, Raymond J., to Trifari Krussman & Fishel, Inc. Combined photo and jewelry display unit. 270,981., 10-18-83, Cl. D6-173.000.

Cyphert, Gilbert G., to Hoover Company, The. Carpet soil extractor or the like. 271,021., 10-18-83, Cl. D32-23.000.

Daimler-Benz Aktiengesellschaft: *See—*
Heinz, Werner; Jambor, Arno; and Schmidt, Adolf, 271,047., Cl. D26-122.000.

Davis, Robert P.: *See—*
Katz, Ira R.; and Davis, Robert P., 270,970., Cl. D3-71.000.

Decon Laboratories, Inc.: *See—*
Cook, Anthony M., 270,999., Cl. D9-376.000.

Dickson, Ian J. Advertising display unit. 271,031., 10-18-83, Cl. D20-19.000.

Draheim, Harvey J.: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,973., Cl. D6-5.000.
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,982., Cl. D6-198.000.

Du Cret, Doris, to Bristol-Myers Company. Applicator container. 271,049., 10-18-83, Cl. D28-7.000.

Esselte Pendaflex Corporation: *See—*
Becker, Werner; and Reinke, Wolfgang, 271,026., Cl. D18-19.000.

Fischer Industries, Inc.: *See—*
Saidat, Richard B., 271,023., Cl. D17-17.000.

Fish, Darrell D., to Universal Security Instruments, Inc. Case for an alarm system central controller. 271,002., 10-18-83, Cl. D10-121.000.

Fishler, Avery J., to Fishler, Jeffrey Alan. Combined truck bed liner and tool chest. 271,009., 10-18-83, Cl. D12-98.000.

Fishler, Jeffrey Alan: *See—*
Fishler, Avery J., 271,009., Cl. D12-98.000.

Gammons, Clifford E.; and Moore, Francis C., to American Hospital Supply Corporation. Inflatable mattress for treating a patient. 270,983., 10-18-83, Cl. D6-204.000.

General Mills Products Corp.: *See—*
Cuminale, Raymond J., 270,979., Cl. D6-146.000.

General Motors Corporation: *See—*
Palmer, Jerry P.; and Wittine, Randolph J., 271,012., Cl. D12-211.000.

Geraets, Josef F. G., to U.S. Philips Corporation. Needle unit for pick-up cartridge. 271,015., 10-18-83, Cl. D14-29.000.

Giannola, Mario F. Combination portable night light and air freshener. 271,042., 10-18-83, Cl. D26-51.000.

Glass Dimensions, Inc.: *See—*
Perkins, David R., 271,046., Cl. D26-104.000.
Perkins, David R., 271,056., Cl. D26-11.000.

Goodin, John W.; and Sharbaugh, David A., to USAC Electronics Industry Co., Ltd. Computer display console. 271,019., 10-18-83, Cl. D14-113.000.

Gordon, Richard F. Outdoor child's play unit. 271,037., 10-18-83, Cl. D21-244.000.

Guebert, Gerald E.; and Belknap, Raymond R. Drapery hanger. 270,978., 10-18-83, Cl. D6-113.000.

Haigh, Harold. Storage cabinet. 270,980., 10-18-83, Cl. D6-172.000.

Hartmann Luggage Company: *See—*
Katz, Ira R.; and Davis, Robert P., 270,970., Cl. D3-71.000.

Heger Plastics A/S: *See—*
Houghton, John R., 270,996., Cl. D8-359.000.

Heinz, Werner; Jambor, Arno; and Schmidt, Adolf, to Daimler-Benz Aktiengesellschaft. Lens for a combined vehicle headlight and signal light. 271,047., 10-18-83, Cl. D26-122.000.

Herbst, Walter B.: *See—*
Bowen, Robert F.; and Herbst, Walter B., 270,990., Cl. D7-360.000.

Hill, Michael W. Cooler for holding a plurality of beverage cans. 270,985., 10-18-83, Cl. D7-77.000.

Holcombe, Cressie E., Jr. Waist clip for physical exerciser. 271,034., 10-18-83, Cl. D21-191.000.

Hoover Company, The: *See—*
Cyphert, Gilbert G., 271,021., Cl. D32-23.000.

Houghton, John R., to Heger Plastics A/S. Hose cassette frame. 270,996., 10-18-83, Cl. D8-359.000.

Jambor, Arno: *See—*
Heinz, Werner; Jambor, Arno; and Schmidt, Adolf, 271,047., Cl. D26-122.000.

Jolliffe, John E., to SCM Corporation. Typewriter. 271,024., 10-18-83, Cl. D18-1.000.

Kanao, Shiro. Hose clamp. 270,997., 10-18-83, Cl. D8-396.000.

Katz, Ira R.; and Davis, Robert P., to Hartmann Luggage Company. Luggage. 270,970., 10-18-83, Cl. D3-71.000.

Kelly, J. Joseph, III: *See—*
Stevens, Robert G.; Kelly, J. Joseph, III; and Arnold, William E., 270,971., Cl. D4-06.000.

Kneale, Edward H., III, to Kneale, Edward H., III. Shelving unit. 270,977., 10-18-83, Cl. D6-113.000.

Kramer, Thomas J.: *See—*
Arjani, Farouk; Kramer, Thomas J.; and Swan, Ralph M., 271,018., Cl. D14-106.000.

Kuemmerling GmbH: *See—*
Persch, Hanns, 270,974., Cl. D6-24.000.

Larchmont Engineering and Irrigation, Inc.: *See—*
Tropeano, Philip L., 271,039., Cl. D23-35.000.

Legerius, Bengt E.; and Siebert, Hans W., to Telefonaktiebolaget L M Ericsson. Hand-cutter. 271,022., 10-18-83, Cl. D15-139.000.

Li, Robert S. K., to RJP Electronics Limited. Combined ruler and electronic calculator. 271,025., 10-18-83, Cl. D18-2.000.

Lightolier Incorporated: *See—*
Muller, Henry, 271,044., Cl. D26-85.000.

Lincoln Manufacturing Company, Inc.: *See—*
Bratton, Ronald E.; Mango, Joseph R.; and Wolfe, Donald G., 270,989., Cl. D7-350.000.

Lowinger, Andrew: *See—*
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,029., Cl. D19-60.000.
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,030., Cl. D19-60.000.

Lynn, Evelyn A. Adjustable thimble. 270,966., 10-18-83, Cl. D3-29.000.

M&M Luggage Co, Inc.: *See—*
Stark, Ted, 270,969., Cl. D3-71.000.

MacAleese, George K.; and Schoeff, Terry G., to American Standard Inc. Fireplace or similar article. 271,040., 10-18-83, Cl. D23-97.000.

Malmberg, Gunnar A.; Andersson, Roger S. I.; and Pettersson, Kjell A., to Stiga AB. Riding lawn mover. 271,020., 10-18-83, Cl. D15-15.000.

Mango, Joseph R.: *See—*
Bratton, Ronald E.; Mango, Joseph R.; and Wolfe, Donald G., 270,989., Cl. D7-350.000.

Matt, Joseph. Eyeglass case. 270,967., 10-18-83, Cl. D3-34.000.

Matthews, James J., to Ripley Company, The. Cable coring tool. 270,992., 10-18-83, Cl. D8-98.000.

McCoy, Kenneth H.; and Romain, John, to Romain, John. Exercise-massaging device. 271,051., 10-18-83, Cl. D24-36.000.

Meline, David W., to Western Electric Company, Inc. Telephone equipment cabinet chassis. 271,016., 10-18-83, Cl. D14-52.000.

Meyer, Daniel, to Communications Systems, Inc. Communications outlet escutcheon for mounting on floor duct boxes. 270,995., 10-18-83, Cl. D8-350.000.

Mole-Richardson Co.: *See—*
Parker, Lawrence M., 271,043., Cl. D26-63.000.

Montoya, Joseph D. Closure assembly for containers. 271,001., 10-18-83, Cl. D9-454.000.

Moore, Francis C.: *See—*
Gammons, Clifford E.; and Moore, Francis C., 270,983., Cl. D6-204.000.

Muller, Henry, to Lightolier Incorporated. Lighting fixture. 271,044., 10-18-83, Cl. D26-85.000.

Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, to North American Foreign Trading Corporation. Quizzer toy. 271,029., 10-18-83, Cl. D19-60.000.

Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, to North American Foreign Trading Corporation. Preprogrammed toy sound generator. 271,030., 10-18-83, Cl. D19-60.000.

Neily, David B. Drinking mug. 270,984., 10-18-83, Cl. D7-9.000.

Norstrud, Iven R.: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 271,038., Cl. D23-18.000.

North American Foreign Trading Corporation: *See—*
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,029., Cl. D19-60.000.
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,030., Cl. D19-60.000.

Ohashi, Shigeo. Switch frame. 271,014., 10-18-83, Cl. D13-32.000.

Olko, Henry. Armchair. 270,975., 10-18-83, Cl. D6-57.000.

Oral Ease Inc.: *See—*
Rosofsky, Paul M., 270,972., Cl. D4-25.000.

Palmer, Jerry P.; and Wittine, Randolph J., to General Motors Corporation. Vehicle wheel. 271,012., 10-18-83, Cl. D12-211.000.
Parker, Lawrence M., to Mole-Richardson Co. Combined flood and spot light. 271,043., 10-18-83, Cl. D26-63.000.
Parly Tools Manufacturing Limited: *See—*
Se-Kit, Yuen, 271,058., Cl. D26-42.000.
Perkins, David R., to Glass Dimensions, Inc. Oil lamp. 271,046., 10-18-83, Cl. D26-104.000.
Perkins, David R., to Glass Dimensions, Inc. Candle holder. 271,056., 10-18-83, Cl. D26-11.000.
Persch, Hanns, to Kuemmerling GmbH. Display stand. 270,974., 10-18-83, Cl. D6-24.000.
Perstorp AB: *See—*
Rimer, Alf, 271,000., Cl. D9-420.000.
Pettersson, Kjell A.: *See—*
Malmberg, Gunnar A.; Andersson, Roger S. I.; and Pettersson, Kjell A., 271,020., Cl. D15-15.000.
Pitney Bowes Inc.: *See—*
Arjani, Farouk; Kramer, Thomas J.; and Swan, Ralph M., 271,018., Cl. D14-106.000.
Pomerenke, William R. Kicking tee. 271,035., 10-18-83, Cl. D21-209.000.
Pritt, Donald S. Heel stabilizer. 270,965., 10-18-83, Cl. D2-314.000.
Qually, Robert L. Pacifier. 271,052., 10-18-83, Cl. D24-45.000.
Raytheon Company: *See—*
Bowen, Robert F.; and Herbst, Walter B., 270,990., Cl. D7-360.000.
Reinke, Wolfgang: *See—*
Becker, Werner; and Reinke, Wolfgang, 271,026., Cl. D18-19.000.
Reliance Products Corporation: *See—*
Chrones, Anthony, 271,053., Cl. D24-46.000.
Resource Interface Inc.: *See—*
Tamblyn, Bernard T., 271,045., Cl. D26-93.000.
Rimer, Alf, to Perstorp AB. Container for plastic bags. 271,000., 10-18-83, Cl. D9-420.000.
Ripley Company, The: *See—*
Matthews, James J., 270,992., Cl. D8-98.000.
RJP Electronics Limited: *See—*
Li, Robert S. K., 271,025., Cl. D18-2.000.
Roegner, Peter: *See—*
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,029., Cl. D19-60.000.
Nagel, Dietmar; Lowinger, Andrew; and Roegner, Peter, 271,030., Cl. D19-60.000.
Romain, John: *See—*
McCoy, Kenneth H.; and Romain, John, 271,051., Cl. D24-36.000.
Rosofsky, Paul M., to Oral Ease Inc. Handle for tooth brush or similar article. 270,972., 10-18-83, Cl. D4-25.000.
Rowland, David L. Compactly stackable armchair. 270,976., 10-18-83, Cl. D6-73.000.
Saidat, Richard B., to Fischer Industries, Inc. Electric violin. 271,023., 10-18-83, Cl. D17-17.000.
Saporito, Dominic, to Club Car, Inc. Golf car. 271,008., 10-18-83, Cl. D12-16.000.
Schaffer, Michael J.: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,973., Cl. D6-5.000.
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,982., Cl. D6-198.000.
Scheufler, John H. Barbecue. 270,987., 10-18-83, Cl. D7-335.000.
Schmidt, Adolf: *See—*
Heinz, Werner; Jambor, Arno; and Schmidt, Adolf, 271,047., Cl. D26-122.000.
Schoeff, Terry G.: *See—*
MacAleese, George K.; and Schoeff, Terry G., 271,040., Cl. D23-97.000.
SCM Corporation: *See—*
Jolliffe, John E., 271,024., Cl. D18-1.000.
Se-Kit, Yuen, to Parly Tools Manufacturing Limited. Combined fluorescent lamp and flashing beacon with automobile plug. 271,058., 10-18-83, Cl. D26-42.000.
Sharbaugh, David A.: *See—*
Goodin, John W.; and Sharbaugh, David A., 271,019., Cl. D14-113.000.
Siebert, Hans W.: *See—*
Legerius, Bengt E.; and Siebert, Hans W., 271,022., Cl. D15-139.000.
Simmons Universal Corporation: *See—*
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,973., Cl. D6-5.000.
Brunner, Merlin A.; Draheim, Harvey J.; and Schaffer, Michael J., 270,982., Cl. D6-198.000.
Skillius, Hans, to Stiga AB. Sled. 271,007., 10-18-83, Cl. D12-10.000.
Smith, Rodney W. Window vent. 271,054., 10-18-83, Cl. D25-53.000.
Spycher, Helmut. Demountable antenna. 271,017., 10-18-83, Cl. D14-86.000.
Stark, Sven O. S., to Tetra Pak International AB. Packaging container. 270,998., 10-18-83, Cl. D9-375.000.
Stark, Ted, to M&M Luggage Co, Inc. Luggage. 270,969., 10-18-83, Cl. D3-71.000.
Stephenson, James D., to Coach Products Corporation. Combined pickup truck cargo box, bed and tailgate. 271,010., 10-18-83, Cl. D12-98.000.
Stevens, Robert G.; Kelly, J. Joseph, III; and Arnold, William E. Applicator brush and spreader. 270,971., 10-18-83, Cl. D4-06.000.
Stiga AB: *See—*
Malmberg, Gunnar A.; Andersson, Roger S. I.; and Pettersson, Kjell A., 271,020., Cl. D15-15.000.
Skillius, Hans, 271,007., Cl. D12-10.000.
Sun, George C. Ornament. 271,004., 10-18-83, Cl. D11-127.000.
Sun, George C. Ornament. 271,005., 10-18-83, Cl. D11-128.000.
Swan, Ralph M.: *See—*
Arjani, Farouk; Kramer, Thomas J.; and Swan, Ralph M., 271,018., Cl. D14-106.000.
Tamblyn, Bernard T., to Resource Interface Inc. Lamp. 271,045., 10-18-83, Cl. D26-93.000.
Tegner, Raymond U. H., to Amerock Corporation. Pull. 270,993., 10-18-83, Cl. D8-302.000.
Tegner, Raymond U. H., to Amerock Corporation. Pull. 270,994., 10-18-83, Cl. D8-316.000.
Telefonaktiebolaget L M Ericsson: *See—*
Legerius, Bengt E.; and Siebert, Hans W., 271,022., Cl. D15-139.000.
Tetra Pak International AB: *See—*
Stark, Sven O. S., 270,998., Cl. D9-375.000.
Thiessen, Eldon D. Fluid dispensing pump. 270,991., 10-18-83, Cl. D7-398.000.
Threlkeld, John H.: *See—*
Anderson, Donald R.; Norstrud, Iven R.; and Threlkeld, John H., 271,038., Cl. D23-18.000.
Tirpik, Peter. Drop cord light. 271,057., 10-18-83, Cl. D26-37.000.
Trifari Krussman & Fishel, Inc.: *See—*
Cuminale, Raymond J., 270,981., Cl. D6-173.000.
Tripp, Walter C. Portable light table. 271,027., 10-18-83, Cl. D19-52.000.
Tropeano, Philip L., to Larchmont Engineering and Irrigation, Inc. Snow making spray unit. 271,039., 10-18-83, Cl. D23-35.000.
U.S. Philips Corporation: *See—*
Geraets, Josef F. G., 271,015., Cl. D14-29.000.
Universal Security Instruments, Inc.: *See—*
Fish, Darrell D., 271,002., Cl. D10-121.000.
USAC Electronics Industry Co., Ltd.: *See—*
Goodin, John W.; and Sharbaugh, David A., 271,019., Cl. D14-113.000.
Velez, Iluminda. Combined airplane assembly support member and control needle. 271,013., 10-18-83, Cl. D12-335.000.
Western Electric Company, Inc.: *See—*
Meline, David W., 271,016., Cl. D14-52.000.
Wittine, Randolph J.: *See—*
Palmer, Jerry P.; and Wittine, Randolph J., 271,012., Cl. D12-211.000.
Wolfe, Donald G.: *See—*
Bratton, Ronald E.; Mango, Joseph R.; and Wolfe, Donald G., 270,989., Cl. D7-350.000.

LIST OF PLANT PATENTEES

Bailey, Catherine H.; and Hough, L. Fredric, to Stark Brothers Nurseries and Orchards Company. Peach tree - N.J. F-2 cultivar. 5,123., 10-18-83, Cl. 42.000.
Bradford, Norman, to Stark Brothers Nurseries and Orchards Company. Genetic dwarf peach tree - Andergen cultivar. 5,124., 10-18-83, Cl. 43.000.
Hough, L. Fredric: *See—*
Bailey, Catherine H.; and Hough, L. Fredric, 5,123., Cl. 42.000.
Jackson & Perkins Company: *See—*
Warriner, William A., 5,121., Cl. 15.000.
Warriner, William A., 5,122., Cl. 28.000.
Stark Brothers Nurseries and Orchards Company: *See—*
Bailey, Catherine H.; and Hough, L. Fredric, 5,123., Cl. 42.000.
Bradford, Norman, 5,124., Cl. 43.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant Jacgold of the hybrid tea class. 5,121., 10-18-83, Cl. 15.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant 75-20031 jacdew. 5,122., 10-18-83, Cl. 28.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 18, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
22 4,409,689

CLASS 3
13 4,409,690
4,409,691

CLASS 4
286 4,409,692
543 4,409,693
545 4,409,694

CLASS 5
68 4,409,695
81 B 4,409,696

CLASS 6
6 4,409,697

CLASS 8
158 4,410,329
455 4,410,330
589 4,410,331
644 4,410,332

CLASS 10
152 T 4,409,698

CLASS 15
121 4,409,700
167 R 4,409,701
180 4,409,702
249 4,409,703
415 R 4,409,699

CLASS 17
45 4,409,704

CLASS 24
205.16 R 4,409,705
208 A 4,409,706
214 4,409,707
279 4,409,708

CLASS 28
155 4,409,709
196 4,409,710

CLASS 29
25.35 4,409,711
25.42 4,409,712
33 M 4,409,713
148.4 A 4,409,715
148.4 L 4,409,714
159 R 4,409,716
402.19 4,409,717
407 4,409,718
432 4,409,719
432.1 4,409,720
568 4,409,721
571 4,409,722
4,409,723
4,409,724
4,409,725
4,409,726
4,409,727
613 4,409,728
623 4,409,729
623.5 4,409,730
800 4,409,731
825 4,409,732
827 4,409,733
861 4,409,734

CLASS 30
47 4,409,735

CLASS 33
169 C 4,409,736
172 E 4,409,737
281 4,409,738

CLASS 34
10 4,409,739
11 4,409,740
162 4,409,741
168 4,409,742
191 4,409,743
207 4,409,744

CLASS 36
24.5 4,409,745

CLASS 37
58 4,409,746
69 4,409,747
261 4,409,748

CLASS 38
102.3 4,409,749

CLASS 40
107 4,409,750

CLASS 42
94 4,409,751

CLASS 43
102 4,409,752

CLASS 44
51 4,410,333
56 4,410,334
72 4,410,335

CLASS 46
93 4,409,753
169 A 4,409,754

CLASS 47
1.5 4,409,755

CLASS 48
210 4,410,336

CLASS 49
440 4,409,756
449 4,409,757
463 4,409,758

CLASS 51
284 R 4,409,760

CLASS 52
1 4,409,761
9 4,409,762
93 4,409,763
127.3 4,409,764
167 4,409,765
169.11 4,409,766
200 4,409,767
309.4 4,409,768
475 4,409,769
666 4,409,770
729 4,409,771
746 4,409,772

CLASS 53
54 4,409,773
77 4,409,774
167 4,409,775
399 4,409,776
587 4,409,777

CLASS 55
21 4,410,337
158 4,410,338
228 4,410,339
290 4,410,340
482 4,410,341

CLASS 56
10.2 4,409,778
11.3 4,409,779
228 4,409,780
295 4,409,781
328 TS 4,409,782
341 4,409,783
4,409,784

CLASS 57
78 4,409,785

CLASS 60
39.464 4,409,786
39.77 4,409,787
226.3 4,409,788
384 4,409,789
414 4,409,792
547.1 4,409,790
740 4,409,791

CLASS 62
6 4,409,793
23 4,410,342
29 4,410,343
98 4,409,794
140 4,409,795
160 4,409,796
239 4,409,797
260 4,409,798
467 R 4,409,799

CLASS 65
3.11 4,410,344
3.15 4,410,345
4.2 4,410,346
27 4,410,347

CLASS 66
9 R 4,409,800
75.1 4,409,801
193 4,409,802

CLASS 69
27 4,409,803

CLASS 70
14 4,409,804
32 4,409,805
276 4,409,806
340 4,409,807

CLASS 71
9 4,410,348
4,410,349
63 4,410,350
90 4,410,351
4,410,352
91 4,410,353
94 4,410,354

CLASS 72
60 4,409,808
4,409,809
68 4,409,810
82 4,409,811
189 4,409,812
190 4,409,813

CLASS 73
19 4,409,814
35 4,409,815
4,409,816
40.7 4,409,817
49.3 4,409,818
61.1 R 4,409,819
61.4 4,409,820
116 4,409,821
118 4,409,822
146 4,409,823
151 4,409,824
155 4,409,825
167 4,409,826
181 4,409,827
204 4,409,828
261 4,409,829
269 4,409,830
290 R 4,409,831
292 4,409,832
302 4,409,833
336 4,409,834
432 R 4,409,835
504 4,409,836
579 4,409,837
602 4,409,838
625 4,409,839
704 4,409,840
762 4,409,841
800 4,409,842
851 4,409,843
861 4,409,844
4,409,845
861.17 4,409,846
861.21 4,409,851
861.28 4,409,847
4,409,848
862.39 4,409,852
862.59 Re.31,416
863 4,409,853
863.82 4,409,849
864.62 4,409,850
864.91 4,409,854

CLASS 74
55 4,409,855
84 R 4,409,856
337.5 4,409,857
4,409,858
477 4,409,859
479 4,409,860
501 R 4,409,861
689 4,409,862

CLASS 75
0.5 B 4,410,356
5 4,410,355
10 R 4,410,358
10 V 4,410,357
49 4,410,359
60 4,410,360
63 4,410,361

CLASS 81
3.1 R 4,409,863
3.46 R 4,409,864
57.39 4,409,865
177 A 4,409,866
436 4,409,867

CLASS 82
1 C 4,409,868
2 R 4,409,869

CLASS 83
100 4,409,870
104 4,409,871
155 4,409,872
745 4,409,873
833 4,409,874
877 4,409,875

CLASS 84
1.01 4,409,876
1.23 4,409,877

CLASS 86
36 4,409,878

CLASS 89
1 B 4,409,879
1.804 4,409,880
16 4,409,881
163 4,409,882
192 4,409,883

CLASS 91
17 4,409,884
376 R 4,409,885
397 4,409,886
446 4,409,887

CLASS 92
31 4,409,888

CLASS 98
33 A 4,409,889
115 LH 4,409,890

CLASS 100
189 4,409,891

CLASS 101
93.18 4,409,892
129 4,409,893
211 4,409,894
248 4,409,895
367 4,409,896

CLASS 102
200 4,409,897
202.5 4,409,898
211 4,409,899
213 4,409,900

CLASS 104
7 B 4,409,901
17 R 4,409,902
162 4,409,903

CLASS 105
131 4,409,904
329 S 4,409,905

CLASS 106
18.29 4,410,363
20 4,410,364
84 4,410,365
90 4,410,366
308 N 4,410,367

CLASS 108
64 4,409,906
152 4,409,907

CLASS 110
346 4,409,908
4,409,909

CLASS 111
1 4,409,910
7 4,409,912
52 4,409,911

CLASS 112
158 B 4,409,913
237 4,409,914
266.1 4,409,915

CLASS 114
29 4,409,916
38 4,409,917
40 4,409,918
74 R 4,409,919
222 4,409,920
264 4,409,921
283 4,409,922
304 4,409,923

CLASS 118
406 4,409,924

CLASS 119
1 4,409,925

CLASS 122
4 D 4,409,926
26 4,409,927
406 S 4,409,928

CLASS 123
25 D 4,409,932
25 R 4,409,931
41.12 4,409,933
52 M 4,409,934
90.53 4,409,935
198 F 4,409,936
335 4,409,938
357 4,409,939
361 4,409,940
373 4,409,941
387 4,409,942
418 4,409,943
425 4,409,937
445 4,409,944
479 4,409,929
514 4,409,930
557 4,409,946
568 4,409,945
569 4,409,947
571 4,409,948
4,409,949
573 4,409,950
590 4,409,951
620 4,409,952

CLASS 124
7 4,409,953

CLASS 126
39 M 4,409,954
103 4,409,955
290 4,409,956
343.5 R 4,409,957
362 4,409,958
422 4,409,959
428 4,409,960
433 4,409,961
437 4,409,962
440 4,409,963
443 4,409,964
450 4,409,965

CLASS 127
38 4,410,368

CLASS 128
1.1 4,409,966
62 R 4,409,967
69 4,409,968
78 4,409,969
84 C 4,409,970
4,409,971
91 R 4,409,972
92 B 4,409,974
92 E 4,409,973
153 4,409,975
166 4,409,976
205.12 4,409,978
205.15 4,409,977
303.1 4,409,979
635 4,409,980
640 4,409,981
660 4,409,982
690 4,409,983
696 4,409,984
702 4,409,985
715 4,409,986
731 4,409,987
759 4,409,988
760 4,409,989
763 4,409,990
766 4,409,991
782 4,409,992
784 4,409,993
785 4,409,994

CLASS 131
84 R 4,409,995
94 4,409,996
235 ST 4,409,997

CLASS 132
9 4,409,998

CLASS 134
95 4,409,999

CLASS 136
221 4,410,756
248 4,410,757
254 4,410,758

CLASS 137
1 Re.31,417
116 4,410,000
217 4,410,001
238 4,410,002
312 4,410,003
360 4,410,004
488 4,410,005
493.8 4,410,006
516.29 4,410,007
627.5 4,410,008

CLASS 138
44 4,410,010
109 4,410,009
118.1 4,410,011
121 4,410,012
149 4,410,013
4,410,014

CLASS 139
383 A 4,410,015
435 4,410,016
436 4,410,017
450 4,410,018

CLASS 140
123.6 4,410,019

CLASS 141
65 4,410,020
95 4,410,021

CLASS 144
1 F 4,410,022
287 4,410,023
353 4,410,024
365 4,410,025

CLASS 148
2 4,410,369
11.5 A 4,410,370
11.5 R 4,410,371
12 C 4,410,372
16 4,410,373
143 4,410,374
187 4,410,375

CLASS 149
19.4 4,410,376
109.4 4,410,377
109.6 4,410,378

CLASS 156
54 4,410,379
62.2 4,410,380
64 4,410,381
70 4,410,382
73.1 4,410,383
167 4,410,384
181 4,410,385
235 4,410,386
245 4,410,387
307.3 4,410,388

398 4,410,389
461 4,410,390
574 4,410,391
603 4,410,392
629 4,410,393
630 4,410,394
662 4,410,395
664 4,410,396

CLASS 160

380 4,410,027

CLASS 162

78 4,410,397

CLASS 165

1 4,410,028
4,410,029
2 4,410,030
10 4,410,031
44 4,410,032
78 4,410,033
80 E 4,410,034
111 4,410,035
134 R 4,410,036
142 4,410,037
171 B1 3,648,768

CLASS 166

53 4,410,038
57 4,410,039
118 4,410,040
250 4,410,041
261 4,410,042
273 4,410,043
379 4,410,044

CLASS 169

24 4,410,045

CLASS 172

7 4,410,046
328 4,410,047
540 4,410,048

CLASS 173

2 4,410,049
112 4,410,050

CLASS 174

52 R 4,410,759
171 4,410,760

CLASS 175

4.51 4,410,051
50 4,410,052
53 4,410,053
107 4,410,054
173 4,410,055

CLASS 179

7.1 R 4,410,765
16 F 4,410,766
99 R 4,410,767
115.5 R 4,410,768
119 A 4,410,769
121 D 4,410,770
146 R 4,410,771
157 4,410,772

CLASS 180

89.15 4,410,056
133 4,410,057
143 4,410,058
4,410,059
205 4,410,060
268 4,410,061

CLASS 181

121 4,410,062
147 4,410,063
152 4,410,064
224 4,410,065

CLASS 182

135 4,410,066

CLASS 187

52 LC 4,410,067

CLASS 188

73.36 4,410,069
4,410,070
73.38 4,410,068

CLASS 192

2 4,410,071
8 R 4,410,072
18 A 4,410,073
48.7 4,410,074
106.2 4,410,075

CLASS 193

32 4,410,076

CLASS 194

1 K 4,410,077

CLASS 198

358 4,410,078
424 4,410,079
715 4,410,080
725 4,410,081
818 4,410,082
853 4,410,083

CLASS 200

11 K 4,410,773
14 4,410,774
52 R 4,410,775
83 P 4,410,776
144 B 4,410,777
148 A 4,410,778

CLASS 201

1 4,410,398

CLASS 202

248 4,410,399

CLASS 203

3 4,410,400

CLASS 204

11 4,410,401
59 R 4,410,402
67 4,410,403
98 4,410,404
180 P 4,410,405
192 EC 4,410,407
192 M 4,410,406
192 SP 4,410,408
277 4,410,410
283 4,410,411
286 4,410,412
290 R 4,410,413
415 4,410,409

CLASS 206

0.5 4,410,441
53 4,410,084
217 4,410,085
366 4,410,086
387 4,410,087
455 4,410,088
633 4,410,089

CLASS 208

8 LE 4,410,414
11 LE 4,410,415
4,410,416
4,410,417
48 AA 4,410,419
48 R 4,410,418
127 4,410,420
254 R 4,410,421
262 4,410,422

CLASS 209

4 4,410,423
273 4,410,424
525 4,410,090
546 4,410,091
557 4,410,092

CLASS 210

167 4,410,425
199 4,410,426
317 4,410,427
340 4,410,428
416.1 4,410,429
446 4,410,430
728 4,410,431
750 4,410,432
778 4,410,433

CLASS 211

11 4,410,093
55 4,410,094
60 T 4,410,095

CLASS 215

32 4,410,096
214 4,410,097
220 4,410,098

CLASS 219

10.55 F 4,410,779
53 4,410,780
64 4,410,781
89 4,410,782
98 4,410,783
121 LK 4,410,785
121 PY 4,410,784
124.22 4,410,786
124.34 4,410,787
130.1 4,410,788
132 4,410,789
219 4,410,790
307 4,410,791
383 4,410,792
460 4,410,793
486 4,410,794
492 4,410,795
553 4,410,796

CLASS 220

21 4,410,099
85 R 4,410,100
257 4,410,101
323 4,410,102

CLASS 221

25 4,410,103
241 4,410,104

CLASS 222

1 4,410,105
52 4,410,109
135 4,410,106
220 Re.31,418
321 4,410,107
380 4,410,108
402.24 4,410,110
509 4,410,111
602 4,410,112

CLASS 223

46 4,410,113
99 4,410,114

CLASS 224

39 4,410,115
40 4,410,116
42.06 4,410,117
222 4,410,118

CLASS 225

4 4,410,119

CLASS 226

109 4,410,120
118 4,410,121
199 4,410,122

CLASS 227

8 4,410,123
9 4,410,124
19 4,410,125

CLASS 228

180 A 4,410,127
180 R 4,410,126

CLASS 229

17 R 4,410,128
41 B 4,410,129

CLASS 235

69 4,410,797

CLASS 236

10 4,410,131
11 4,410,132
34.5 4,410,133

CLASS 237

2 B 4,410,134
8 R 4,410,135
55 4,410,136

CLASS 239

95 4,410,137
4,410,138
102 4,410,139
419.3 4,410,140
453 4,410,141

CLASS 241

18 4,410,142
209 4,410,143
236 4,410,144
264 4,410,145

CLASS 242

47.01 4,410,146
158 R 4,410,147
188 4,410,148
200 4,410,149

CLASS 244

53 R 4,410,150
63 4,410,151
110 B 4,410,152
111 4,410,153

CLASS 246

182 B 4,410,154

CLASS 248

27.1 4,410,155
58 4,410,156
125 4,410,157
214 4,410,158
349 4,410,159
642 4,410,161
674 4,410,160

CLASS 249

215 4,410,162

CLASS 250

231 SE 4,410,798
327.2 4,410,799
442.1 4,410,800
492.2 4,410,801
515.1 4,410,802
561 4,410,803
578 4,410,804

CLASS 251

9 4,410,164
174 4,410,165
306 4,410,163

CLASS 252

32.7 R 4,410,434
42.1 4,410,435
46.4 4,410,436
47.5 4,410,437
49.6 4,410,438
61 4,410,439
62.54 4,410,440
107 4,410,442
182 4,410,443
186.21 4,410,444
299.5 4,410,445
309 4,410,446
351 4,410,447
508 4,410,457
571 4,410,456

CLASS 260

239.1 4,410,458
244.4 4,410,459
409 4,410,460
410 4,410,461
429 R 4,410,462
4,410,463
463 4,410,464
465.5 R 4,410,465
990 4,410,466

CLASS 261

18 A 4,410,467

CLASS 264

1.2 4,410,468
1.5 4,410,469
3 R 4,410,470
25 4,410,471
29.3 4,410,472
45.3 4,410,481
103 4,410,473
109 4,410,474
122 4,410,475
173 4,410,476
174 4,410,477
248 4,410,478
255 4,410,479
262 4,410,480
515 4,410,482

CLASS 266

158 4,410,166
281 4,410,167

CLASS 269

21 4,410,168
32 4,410,169

CLASS 270

37 4,410,170

CLASS 271

227 4,410,171
288 4,410,172

CLASS 272

38 4,410,173
64 4,410,174
70 4,410,175
145 4,410,176

CLASS 273

43 D 4,410,177
73 C Re.31,419
143 R 4,410,178
153 S 4,410,179
156 4,410,180
238 4,410,181
268 4,410,182
416 4,410,183
422 4,410,184

CLASS 277

1 4,410,185
2 4,410,186
25 4,410,187
65 4,410,188
117 4,410,189
153 4,410,190

CLASS 279

35 4,410,191
121 4,410,192

CLASS 280

86 4,410,194
90 4,410,193
264 4,410,195
276 4,410,196
279 4,410,197
281 LP 4,410,198
615 4,410,199
618 4,410,200
688 4,410,201
804 4,410,202

CLASS 283

81 4,410,203

CLASS 285

24 4,410,204
47 4,410,205
405 4,410,206

CLASS 290

1 R 4,410,805
44 4,410,806

CLASS 293

118 4,410,207
132 4,410,208

CLASS 294

34 4,410,209
99 R 4,410,210

CLASS 296

189 4,410,212
213 4,410,211

CLASS 297

84 4,410,213
118 4,410,214
429 4,410,215

CLASS 299

2 4,410,216

CLASS 301

37 AT 4,410,217

CLASS 303

6 C 4,410,218

CLASS 305

35 EB 4,410,219

CLASS 307

68 4,410,807
254 4,410,808
255 4,410,809
300 4,410,810
311 4,410,811
350 4,410,812
362 4,410,813
455 4,410,816
475 4,410,814
4,410,815
514 4,410,817

CLASS 310

41 4,410,818
105 4,410,819
216 4,410,820
277 4,410,821
311 4,410,822
313 D 4,410,823
313 R 4,410,824
327 4,410,825
336 4,410,826
370 4,410,827

CLASS 312

39 4,410,221

CLASS 313

25 4,410,828
325 4,410,831
490 4,410,829
497 4,410,830

CLASS 315

3 4,410,832
39.51 4,410,833
58 4,410,834
87 4,410,835
96 4,410,836
289 4,410,837
320 4,410,838
4,410,839
368 4,410,840
382 4,410,841

CLASS 318

139 4,410,842
280 4,410,844
317 4,410,843
459 4,410,845
490 4,410,846

CLASS 320

34 4,410,847

CLASS 322

25 4,410,848

CLASS 323

237 4,410,849

CLASS 324

52 4,410,850
54 4,410,851
61 P 4,410,852
167 4,410,853
468 4,410,854

CLASS 328

151 4,410,855

CLASS 329

50 4,410,856

CLASS 330

253 4,410,857
257 4,410,858
298 4,410,859

CLASS 331

1 A 4,410,860
25 4,410,861
113 R 4,410,862

CLASS 332

37 R 4,410,863

CLASS 333

32 4,410,864
135 4,410,866
172 4,410,867
202 4,410,868
208 4,410,865

CLASS 336

94 4,410,869

CLASS 338

2 4,410,870
5 4,410,871
114 4,410,872
160 4,410,873
307 4,410,874

CLASS 339

17 CF 4,410,223
17 F 4,410,222
18 R 4,410,224
31 R 4,410,225
44 R 4,410,226
75 M 4,410,227
95 D 4,410,228
98 4,410,229
176 M 4,410,230
218 M 4,410,231
220 R 4,410,232

CLASS 340

52 H 4,410,875
347 CC 4,410,876
347 DA 4,410,879
4,410,880
347 DD 4,410,877
4,410,878
388 4,410,881
510 4,410,882
538 4,410,883
545 4,410,884
604 4,410,885
617 4,410,886
784 4,410,887
815.05 4,410,888
825.2 4,410,889

CLASS 343

368 4,410,894
419 4,410,890
700 MS 4,410,891
786 4,410,892
792 4,410,893

CLASS 346

1.1 4,410,895
74.2 4,410,896
76 PH 4,410,897
4,410,898
140 R 4,410,899
4,410,900
165 4,410,901

CLASS 350

6.6 4,410,233
6.8 4,410,234
96.18 4,410,235
96.33 4,410,236
320 4,410,237
347 E 4,410,238
354 4,410,239
356 4,410,240
409 4,410,241

CLASS 351

211 4,410,242
4,410,243
4,410,244
219 4,410,245

CLASS 352

91 S 4,410,247
169 4,410,246

CLASS 353

27 R 4,410,248

CLASS 354

25 4,410,251
4,410,258
30 4,410,249
33 4,410,250
153 4,410,252
195 4,410,253
203 4,410,254
230 4,410,255
234 4,410,256
308 4,410,257

CLASS 355

3 DD 4,410,259
3 SH 4,410,262
3 TR 4,410,263
4,410,264
10 4,410,260
51 4,410,265

CLASS 356

1 4,410,261
45 4,410,266
124 4,410,267
4,410,268
138 4,410,269
152 4,410,270
301 4,410,271
311 4,410,272
319 4,410,273
350 4,410,274
4,410,275
4,410,276
366 4,410,277
445 4,410,278

CLASS 357

13 4,410,902
29 4,410,903
45 4,410,904
80 4,410,905
4,410,906

CLASS 358

20 4,410,907
30 4,410,908
75 4,410,909
105 4,410,910
121 4,410,911
162 4,410,912
192.1 4,410,913
222 4,410,914
228 4,410,915
263 4,410,916
335 4,410,761

CLASS 360

15 4,410,917
77 4,410,918
85 4,410,919
4,410,920
97 4,410,921
109 4,410,922
137 4,410,923

CLASS 361

25 4,410,924
42 4,410,925
93 4,410,926
386 4,410,927
400 4,410,928

CLASS 362

32 4,410,929
145 4,410,930
267 4,410,931
294 4,410,932
371 4,410,933

CLASS 363

21 4,410,934
37 4,410,935
80 4,410,936
132 4,410,937

CLASS 364

200 4,410,938
4,410,939
4,410,940
4,410,941
4,410,942
4,410,943
4,410,944
4,410,945
4,410,946
426 4,410,947
431.01 4,410,948
465 4,410,949
513.5 4,410,763
4,410,764
551 4,410,950
559 4,410,951
565 4,410,952
603 4,410,953
701 4,410,954
718 4,410,955
752 4,410,956
900 4,410,957
4,410,958
4,410,959
4,410,960
4,410,961
4,410,962

CLASS 365

9 Re.31,423
87 4,410,963
189 4,410,964
230 4,410,965

CLASS 366

262 4,410,279
314 4,410,280
341 4,410,281

CLASS 367

87 4,410,966
4,410,967

CLASS 369

44 4,410,968
46 4,410,969
58 4,410,970
75 4,410,971
77.2 4,410,972
4,410,973
126 4,410,974
170 4,410,975
4,410,976
264 4,410,977
275 4,410,978

CLASS 370

11 4,410,979
109 4,410,980
4,410,981
110.1 4,410,982

CLASS 371

8 4,410,983
16 4,410,984
22 4,410,985
4,410,986
25 4,410,987
38 4,410,988
40 4,410,989
47 4,410,990
66 4,410,991

CLASS 372

32 4,410,992
44 4,410,993
45 4,410,994
69 4,410,995

CLASS 373

9 4,410,996
35 4,410,997
40 4,410,998
76 4,410,999

CLASS 374

156 4,410,282
162 4,410,283

CLASS 375

11 4,411,000
30 4,411,001
4,411,002
33 4,411,003
36 4,411,004
65 4,411,005
102 4,411,006
107 4,411,007

CLASS 376

154 4,410,483
252 4,410,484
260 4,410,485
306 4,410,486
399 4,410,487

CLASS 377

4,411,008
47 4,411,009
61 4,411,010

CLASS 378

10 4,411,011
17 4,411,012
34 4,411,013
59 4,411,014

CLASS 381

15 4,410,762

CLASS 382

51 4,411,015
62 4,411,016

CLASS 383

60 4,410,026
62 4,410,130

CLASS 384

93 4,410,284
109 4,410,220
278 4,410,285

CLASS 400

22 4,410,286
134 4,410,287
144.2 4,410,288
185 4,410,289
689 4,410,291

CLASS 401

198 4,410,290

CLASS 403

24 4,410,292
4,410,293
27 4,410,294
122 4,410,295

CLASS 405

164 4,410,297
259 4,410,296

CLASS 411

112 4,410,298

CLASS 417

56 4,410,300
264 4,410,301
299 4,410,302
312 4,410,303
346 4,410,304
440 4,410,299

CLASS 418

150 4,410,305

CLASS 419

48 4,410,488

CLASS 420

453 4,410,489
454 4,410,490
501 4,410,491
584 4,410,362

CLASS 422

27 4,410,492
58 4,410,493
106 4,410,494
108 4,410,563
186.18 4,410,495

CLASS 423

1 4,410,496
16 4,410,497
150 4,410,498
210 4,410,499
242 4,410,500
326 4,410,501
345 4,410,502
359 4,410,503
453 4,410,504
648 R 4,410,505

CLASS 424

1.1 4,410,507
81 4,410,508
84 4,410,509
92 4,410,510
94 4,410,531
177 4,410,511
4,410,512
4,410,513
4,410,514
180 4,410,515
4,410,516
195 4,410,517
202 4,410,518
226 4,410,519
244 4,410,520
4,410,521
246 4,410,522
4,410,523
248.51 4,410,524
248.57 4,410,525
250 4,410,526
4,410,527
4,410,529
251 4,410,528
4,410,530
4,410,532
359 4,410,307
4,410,533
263 4,410,534
265 4,410,535
149 4,410,308
267 4,410,536
269 4,410,537
270 4,410,538
273 R 4,410,539
4,410,540
4,410,541
274 4,410,542
278 4,410,543
287 4,410,544
305 4,410,545
317. 4,410,546
330 4,410,547
4,410,548

CLASS 425

71 4,410,306

CLASS 426

43 4,410,549
80 4,410,550
99 4,410,551
103 4,410,552
243 4,410,553
302 4,410,554
572 4,410,555
597 4,410,556
607 4,410,557

CLASS 427

39 4,410,558
4,410,559
44 4,410,560
54.1 4,410,561
4,410,562
123 4,410,564
130 4,410,565
161 4,410,566
163 4,410,567
244 4,410,568
304 4,410,569
374.1 4,410,570
385.5 4,410,571
407.1 4,410,572

CLASS 428

2 4,410,573
43 4,410,574
57 4,410,575
79 4,410,576
85 4,410,577
117 4,410,578
131 4,410,579
156 4,410,580
195 4,410,581
212 4,410,582
213 4,410,583
215 4,410,584
4,410,585
245 4,410,586
247 4,410,587
248 4,410,588
255 4,410,591
290 4,410,601
331 4,410,589
336 4,410,590
383 4,410,592
389 4,410,593
412 4,410,594
4,410,595
413 4,410,596
423.1 4,410,597
427 4,410,598
469 4,410,599
483 4,410,600
516 4,410,602
546 Re.31,420
611 4,410,603
681 4,410,604

CLASS 429

11 4,410,605
17 4,410,606
40 4,410,607
101 4,410,608
105 4,410,609
181 4,410,610

CLASS 430

5 4,410,611
18 4,410,612
30 4,410,613
45 4,410,614
59 4,410,615
4,410,616
106 4,410,617
219 4,410,618
234 4,410,619
276 4,410,620
281 4,410,621
312 4,410,622
341 4,410,623
377 4,410,624

CLASS 431

4,410,307

CLASS 432

4,410,308

CLASS 435

42 4,410,625
48 4,410,626
94 4,410,627
127 4,410,628
146 4,410,629
284 4,410,630

CLASS 436

8 4,410,631
20 4,410,632
500 4,410,633
4,410,634
542 4,410,506

CLASS 445

7 4,410,309
57 4,410,310

CLASS 455

26 4,411,017
75 4,411,018
180 4,411,019
219 4,411,020
222 4,411,021
327 4,411,022

CLASS 464

17 4,410,311

CLASS 474

13 4,410,312
82 4,410,313
251 4,410,314

CLASS 493

342 4,410,315
399 4,410,316

CLASS 494

4 4,410,317
10 4,410,318
29 4,410,319

CLASS 501

88 4,410,635
98 4,410,636

CLASS 502

22 4,410,450
24 4,410,449
60 4,410,452
110 4,410,451
159 4,410,448
253 4,410,453
306 4,410,454
327 4,410,455

CLASS 518

714 4,410,637

CLASS 521

27 4,410,638
42 Re.31,421
54 4,410,639
63 4,410,640
167 4,410,641

CLASS 523

122 4,410,642
161 4,410,643
176 4,410,644
206 4,410,645

CLASS 524

65 4,410,646
88 4,410,647
101 4,410,648
108 4,410,649
119 4,410,650
127 4,410,651
195 4,410,652
371 4,410,653
487 4,410,654
522 4,410,655
529 4,410,656
548 4,410,657
600 4,410,658

CLASS 525

53 4,410,659
54.1 4,410,660
66 4,410,661
148 4,410,662
162 4,410,663
180 4,410,664
328.4 4,410,665
417 4,410,666
440 4,410,667
4,410,668
474 4,410,669
533 4,410,675

CLASS 526

114 4,410,670
119 4,410,671
124 4,410,672
202 4,410,673
264 Re.31,422
279 4,410,674

CLASS 528

9 4,410,676
17 4,410,677
45 4,410,678
4,410,679
88 4,410,680
98 4,410,681
110 4,410,682
125 4,410,683
185 4,410,684
259 4,410,685
288 4,410,686
295.5 4,410,687
328 4,410,688
367 4,410,689
486 4,410,690
495 4,410,691
4,410,692

CLASS 536

56 4,410,693
98 4,410,694

CLASS 542

426 4,410,695
427 4,410,696

CLASS 544

165 4,410,697
255 4,410,698

CLASS 546

141 4,410,699
149 4,410,700
302 4,410,701
322 4,410,702

CLASS 548

142 4,410,703
216 4,410,705
335 4,410,706
360 4,410,707
407 4,410,708
543 4,410,726
570 4,410,709
766 4,410,704

CLASS 549

312 4,410,710
313 4,410,711
414 4,410,712
505 4,410,713
521 4,410,714
531 4,410,715

CLASS 560

51 4,410,716
87 4,410,717
103 4,410,718
112 4,410,719
121 4,410,720
124 4,410,721
204 4,410,722
214 4,410,723

CLASS 562

456 4,410,724
534 4,410,725
599 4,410,727
4,410,728
4,410,729

CLASS 564

327 4,410,730

CLASS 568

70 4,410,731
337 4,410,732
603 4,410,733
715 4,410,734
722 4,410,735
730 4,410,736
774 4,410,737
4,410,738
4,410,739
817 4,410,740
835 4,410,741
851 4,410,742
860 4,410,743
864 4,410,744
916 4,410,745
943 4,410,746

CLASS 570

247 4,410,747

CLASS 585

4 4,410,748
14 4,410,749
521 4,410,750
640 4,410,751
658 4,410,752
671 4,410,753
4,410,754
800 4,410,755

CLASS 604

27 4,410,320
56 4,410,321
153 4,410,322
212 4,410,323
368 4,410,324
389 4,410,325
390 4,410,326
391 4,410,327
892 4,410,328

CLASSIFICATION OF DESIGNS

D2—	264	270,964		172	270,980		359	270,996		211	271,012		60	271,029	D25—	53	271,054
	314	270,965		173	270,981		396	270,997		335	271,013			271,030		74	271,055
D3—	29	270,966		198	270,982	D9—	375	270,998	D13—	32	271,014	D20—	19	271,031	D26—	11	271,056
	34	270,967		204	270,983		376	270,999	D14—	29	271,015	D21—	60	271,032		37	271,057
	62	270,968	D7—	9	270,984		420	271,000		52	271,016		191	271,034		42	271,058
	71	270,969		77	270,985		454	271,001		86	271,017		209	271,035		51	271,042
		270,970		137	270,986	D10—	121	271,002		106	271,018		225	271,036		63	271,043
D4—	06	270,971		335	270,987	D11—	79	271,003		113	271,019		244	271,037		85	271,044
	25	270,972		337	270,988		127	271,004	D15—	15	271,020	D23—	18	271,038		93	271,045
D6—	5	270,973		350	270,989		128	271,005		139	271,022		35	271,039		104	271,046
	24	270,974		360	270,990		182	271,006	D17—	17	271,023		97	271,040		122	271,047
	57	270,975		398	270,991	D12—	10	271,007	D18—	1	271,024		148	271,041	D27—	37	271,048
	73	270,976	D8—	98	270,992		16	271,008		2	271,025	D24—	36	271,051	D28—	7	271,049
	113	270,977		302	270,993		98	271,009		19	271,026		45	271,052		77	271,050
		270,978		316	270,994			271,010	D19—	52	271,027		46	271,053	D32—	23	271,021
	146	270,979		350	270,995		193	271,011		55	271,028						

CLASSIFICATION OF PLANTS

P.—	15	5,121	28	5,122	42	5,123	43	5,124				

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	4,409,900		4,410,787		4,410,117	09 :	4,409,713		4,409,987		4,410,316
	4,410,189		4,410,826		4,410,175		4,409,735		4,410,005		4,410,489
4 :	4,409,755		4,410,835		4,410,224		4,409,820		4,410,022		4,410,554
	4,410,471		4,410,839		4,410,227		4,410,125		4,410,026		4,410,592
	4,410,934		4,410,861		4,410,284		4,410,155		4,410,030		4,410,628
6 :	4,409,692		4,410,874		4,410,293		4,410,199		4,410,047		4,410,735
	4,409,700		4,410,903		4,410,294		4,410,439		4,410,076		4,410,746
	4,409,704		4,410,916		4,410,301		4,410,504		4,410,078		4,410,807
	4,409,733		4,410,925		4,410,304		4,410,684		4,410,086		4,410,864
	4,409,749		4,410,944		4,410,328		4,410,689		4,410,115		4,410,907
	4,409,834		4,410,968		4,410,354		4,410,706		4,410,116	19 :	4,410,194
	4,409,839	8 :	4,409,961		4,410,376		4,410,914		4,410,180		4,410,627
	4,409,844		4,410,432		4,410,386		4,410,923		4,410,254		4,410,764
	4,409,862	9 :	4,409,720		4,410,398		4,410,961		4,410,311	20 :	4,409,695
	4,409,873		4,409,982		4,410,402		4,411,018		4,410,321		4,409,780
	4,409,879		4,410,067		4,410,409	10 :	4,409,918		4,410,334		4,409,783
	4,409,884		4,410,336		4,410,419		4,410,021		4,410,335	21 :	4,410,296
	4,409,924		4,410,392		4,410,430		4,410,405		4,410,414		4,410,329
	4,409,931		4,410,574		4,410,437		4,410,482		4,410,431		4,410,416
	4,409,977		4,410,605		4,410,440		4,410,579		4,410,433		4,410,685
	4,410,001		4,410,635		4,410,494		4,410,653		4,410,443		4,410,862
	4,410,023		4,410,870		4,410,505		4,410,661		4,410,460	22 :	4,410,024
	4,410,056		4,410,962		4,410,510		4,410,683		4,410,492		4,410,039
	4,410,107	01 :	4,409,921		4,410,514		4,410,713		4,410,500		4,410,066
	4,410,108		4,410,423		4,410,518	11 :	4,409,757		4,410,560		4,410,188
	4,410,149		4,410,470		4,410,526	12 :	4,409,694		4,410,599		4,410,342
	4,410,160	02 :	4,410,688		4,410,534		4,409,764		4,410,607		4,410,425
	4,410,168	04 :	4,410,305		4,410,545		4,409,864		4,410,625		4,410,426
	4,410,172		4,410,606		4,410,643		4,409,975		4,410,658		4,410,512
	4,410,174		4,410,841		4,410,682		4,410,136		4,410,745		4,410,693
	4,410,176		4,410,880		4,410,711		4,410,170		4,410,754	23 :	4,409,767
	4,410,181		4,410,910		4,410,749		4,410,349		4,410,756		4,409,923
	4,410,183		4,410,942		4,410,759		4,410,394		4,410,762		4,410,769
	4,410,198		4,410,988		4,410,825		4,410,930		4,410,765		4,410,905
	4,410,209	05 :	4,410,517		4,410,838		4,410,964		4,410,776		4,410,906
	4,410,230	06 :	4,409,701		4,410,845	13 :	4,409,717		4,410,810	24 :	4,410,050
	4,410,238		4,409,723		4,410,863		4,409,775		4,410,823		4,410,363
	4,410,250		4,409,726		4,410,889		4,409,853		4,410,848		4,410,508
	4,410,275		4,409,732		4,410,896		4,410,129		4,410,881		4,410,630
	4,410,377		4,409,782		4,410,904		4,410,344		4,410,888		4,410,634
	4,410,382		4,409,795		4,410,911		4,410,850		4,410,892		4,410,700
	4,410,395		4,409,804		4,410,917		4,410,890		4,410,927		4,410,757
	4,410,407		4,409,821		4,410,922	15 :	4,410,195		4,410,935		4,410,824
	4,410,421		4,409,842		4,410,940	17 :	Re.31,422		4,410,982		4,410,883
	4,410,436		4,409,889		4,410,954		4,409,708		4,411,019		4,410,891
	4,410,506		4,409,910		4,410,965		4,409,734	18 :	4,409,714		4,411,003
	4,410,555		4,409,911		4,410,966		4,409,762		4,409,970		4,411,006
	4,410,563		4,409,959		4,410,970		4,409,768		4,409,976	25 :	Re.31,416
	4,410,577		4,409,989		4,410,989		4,409,779		4,410,068		4,409,730
	4,410,581		4,410,007		4,411,004		4,409,818		4,410,069		4,409,736
	4,410,604		4,410,009	08 :	4,409,740		4,409,836		4,410,137		4,409,830
	4,410,758		4,410,044		4,410,148		4,409,957		4,410,138		4,409,849
	4,410,771		4,410,101		4,410,804		4,409,971		4,410,310		4,410,081

4,410,096
4,410,122
4,410,197
4,410,203
4,410,231
4,410,233
4,410,237
4,410,244
4,410,269
4,410,273
4,410,315
4,410,358
4,410,429
4,410,453
4,410,490
4,410,515
4,410,576
4,410,608
4,410,631
4,410,639
4,410,790
4,410,798
4,410,817
4,410,836
4,410,863
4,410,867
4,410,941
4,410,943
4,410,984
4,410,991
4,410,992
4,411,022
26 : 4,409,706
4,409,729
4,409,769
4,409,789
4,409,835
4,409,848
4,409,859
4,409,863
4,409,945
4,409,974
4,410,057
4,410,058
4,410,071
4,410,094
4,410,132
4,410,144
4,410,157
4,410,208
4,410,217
4,410,265
4,410,381
4,410,389
4,410,410
4,410,558
4,410,611
4,410,632
4,410,641
4,410,678
4,410,679
4,410,695
4,410,701
4,410,718
4,410,736
4,410,770
27 : 4,409,690
4,409,797
4,409,981
4,410,111
4,410,120
4,410,322
4,410,361
4,410,427
4,410,569
4,410,587
4,410,963
28 : 4,409,907
29 : 4,409,845
4,409,878
4,410,077
4,410,218
4,410,298
4,410,314
4,410,351
4,410,352
4,410,446
4,410,551
4,410,760
4,410,806
4,410,949
30 : 4,409,965
31 : 4,410,214
32 : 4,410,496
33 : 4,409,763
4,410,126
4,410,164
4,410,260
4,410,467
34 : Re.31,423
4,409,711
4,409,753
4,409,866
4,409,913
4,409,914
4,409,988
4,409,991
4,409,999
4,410,079
4,410,113
4,410,114
4,410,119
4,410,135
4,410,169
4,410,184
4,410,239
4,410,245
4,410,274
4,410,276
4,410,281
4,410,288
4,410,353
4,410,393
4,410,434
4,410,438
4,410,452
4,410,561
4,410,571
4,410,588
4,410,649
4,410,699
4,410,703
4,410,705
4,410,712
4,410,714
4,410,715
4,410,717
4,410,720
4,410,726
4,410,740
4,410,748
4,410,750
4,410,783
4,410,822
4,410,830
4,410,832
4,410,857
4,410,871
4,410,894
4,410,913
4,410,981
4,410,986
4,411,000
4,411,009
35 : 4,410,040
4,410,240
36 : Re.31,419
4,409,691
4,409,699
4,409,703
4,409,722
4,409,728
4,409,739
4,409,750
4,409,754
4,409,772
4,409,787
4,409,817
4,409,819
4,409,827
4,409,833
4,409,854
4,409,870
4,409,893
4,409,902
4,409,952
4,409,953
4,409,956
4,409,966
4,410,033
4,410,064
4,410,102
4,410,104
4,410,118
4,410,130
4,410,251
4,410,263
4,410,264
4,410,266
4,410,270
4,410,320
4,410,343
4,410,367
4,410,383
4,410,397
4,410,413
4,410,420
4,410,422
4,410,428
4,410,456
4,410,464
4,410,493
4,410,520
4,410,524
4,410,585
4,410,594
4,410,614
4,410,616
4,410,617
4,410,618
4,410,622
4,410,623
4,410,633
4,410,647
4,410,651
4,410,660
4,410,674
4,410,677
4,410,710
4,410,773
4,410,829
4,410,852
4,410,895
4,410,901
4,410,902
4,410,908
4,410,929
4,410,946
4,410,948
4,411,017
37 : 4,409,800
4,410,095
4,410,509
4,410,578
4,410,788
4,410,933
39 : 4,409,727
4,409,742
4,409,758
4,409,761
4,409,781
4,409,788
4,409,856
4,409,871
4,409,886
4,409,896
4,409,960
4,409,978
4,409,986
4,410,004
4,410,014
4,410,027
4,410,045
4,410,082
4,410,097
4,410,150
4,410,158
4,410,165
4,410,223
4,410,226
4,410,300
4,410,307
4,410,325
4,410,350
4,410,369
4,410,385
4,410,390
4,410,404
4,410,411
4,410,424
4,410,442
4,410,448
4,410,461
4,410,462
4,410,463
4,410,468
4,410,480
4,410,540
4,410,557
4,410,644
4,410,656
4,410,691
4,410,692
4,410,723
4,410,727
4,410,728
4,410,729
4,410,752
4,410,828
4,410,844
4,410,924
40 : 4,409,746
4,409,824
4,409,825
4,409,927
4,409,983
4,410,106
4,410,177
4,410,297
4,410,341
4,410,418
4,410,451
4,410,549
4,410,671
4,411,014
41 : 4,409,792
4,409,877
4,409,973
4,410,879
42 : 4,409,731
4,409,744
4,409,751
4,409,784
4,409,843
4,409,855
4,409,865
4,409,928
4,409,950
4,410,060
4,410,072
4,410,140
4,410,154
4,410,159
4,410,166
4,410,228
4,410,229
4,410,232
4,410,287
4,410,347
4,410,359
4,410,391
4,410,403
4,410,415
4,410,472
4,410,499
4,410,550
4,410,552
4,410,612
4,410,645
4,410,665
4,410,667
4,410,668
4,410,687
4,410,731
4,410,753
4,410,774
4,410,778
4,410,779
4,410,805
4,410,815
4,410,860
4,410,932
4,410,947
4,411,002
44 : 4,410,012
4,410,323
4,410,476
45 : 4,409,702
4,410,121
47 : 4,409,813
4,409,831
4,409,954
4,409,955
4,410,207
4,410,271
4,410,371
4,410,513
4,410,931
48 : Re.31,420
4,409,724
4,409,771
4,409,777
4,409,837
4,409,850
4,409,899
4,409,932
4,409,990
4,410,010
4,410,038
4,410,042
4,410,043
4,410,051
4,410,054
4,410,062
4,410,084
4,410,100
4,410,163
4,410,186
4,410,191
4,410,193
4,410,204
4,410,205
4,410,216
4,410,286
4,410,308
4,410,356
4,410,364
4,410,373
4,410,497
4,410,596
4,410,659
4,410,680
4,410,681
4,410,686
4,410,775
4,410,791
4,410,796
4,410,813
4,410,886
4,410,893
4,410,955
4,410,957
4,410,958
4,410,967
4,410,983
4,410,987
4,411,016
4,411,021
49 : 4,410,417
4,410,744
51 : 4,409,786
4,409,793
4,409,796
4,409,798
4,409,984
4,409,995
4,410,109
4,410,182
4,410,676
4,410,741
4,410,755
4,410,785
4,410,833
4,411,005
53 : 4,409,806
4,409,880
4,409,888
4,410,153
4,410,220
4,410,802
4,410,952
54 : 4,410,447
4,410,650
4,410,662
4,410,725
55 : 4,409,748
4,409,773
4,409,867
4,409,968
4,409,997
4,410,093
4,410,123
4,410,143
4,410,161
4,410,248
4,410,324
4,410,387
4,410,454
4,410,664
4,410,673
4,410,847
4,410,945
56 : 4,410,789

DESIGN PATENTS

6 : 271,019
04 : 270,968
270,980
271,021
06 : 270,966
270,984
270,987
271,001
271,010
271,018
271,035
271,043
271,048
271,051
271,057
08 : 271,016
09 : 270,992
12 : 270,967
271,013
13 : 271,031
17 : 271,023
271,042
271,052
18 : 270,983
270,989
271,003
271,040
19 : 270,985
271,038
24 : 271,002
25 : 270,977
270,990
271,039
271,046
271,056
26 : 271,006
271,009
271,011
271,012
27 : 270,995
271,054
32 : 271,027
34 : 270,969
270,972
271,004
271,005
271,008
271,029
271,030
271,050
36 : 270,971
270,975
270,976
270,979
270,981
270,986
271,024
271,044
271,049
41 : 270,991
42 : 270,999
271,032
44 : 271,053
45 : 271,028
47 : 270,970
271,034
48 : 270,978
49 : 271,037
53 : 270,988
54 : 270,965
55 : 270,973
270,982
270,993
270,994

PLANT PATENTS

06 : 5,121
5,122
5,124
34 : 5,123

U.S. GOVERNMENT PRINTING OFFICE : O—1983

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

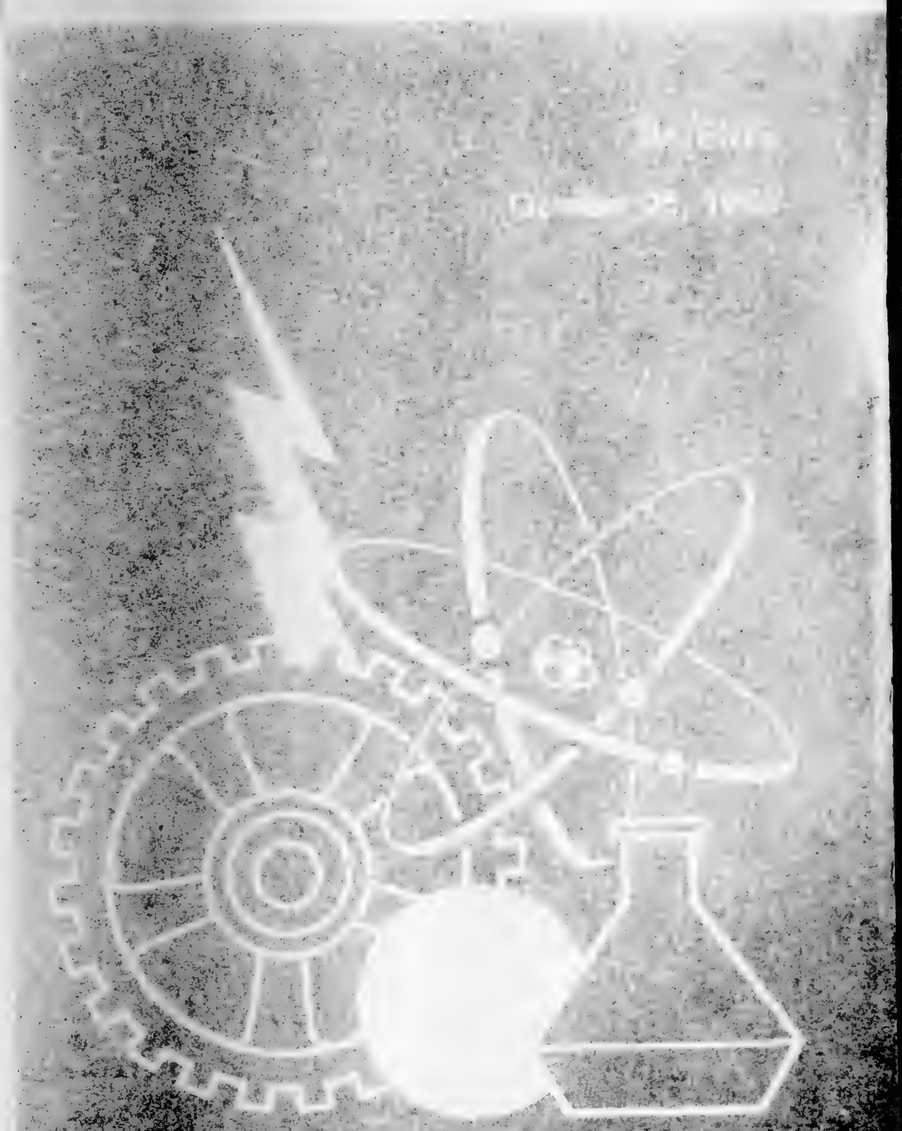
(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

OFFICIAL GAZETTE



PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

October 25, 1983 Volume 1035 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1035 OG 24
Reissue Applications Filed	1035 OG 24
Request for Reexamination Filed	1035 OG 24
Patent and Trademark Office to Sponsor Design Contest for Patent Grant Document	1035 OG 24
Registration to Practice	1035 OG 25
Errata	1035 OG 25
PTO Status	1035 OG 26
Notice to All Deposit Account Holders	1035 OG 27
Patent Certificates of Correction	1035 OG 28
Disclaimers	1035 OG 28
Disclaimers and Dedications	1035 OG 28
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1035 OG 29
Condition of Patent Applications	1035 OG 30
Reissue Patents Granted (31,424)	1377
Plant Patents Granted (5,125)	1381
Patents Granted	
General and Mechanical (4,411,023)	1383
Chemical (4,411,663)	1599
Electrical (4,412,090)	1719
Design Patents Granted (271,059)	1815
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 49
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 58
Change of Address Form and Subscription Order Form	Back Page

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.

GENERAL INFORMATION concerning PATENTS.

GENERAL INFORMATION concerning TRADEMARKS.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,278,528, Re. S.N. 482,404, Filed Apr. 6, 1983, Cl. 204/298, RECTILINEAR SPUTTERING APPARATUS AND METHOD, Manfred R. Kuehnle, et al., Owner of Record: *Coulter Systems, Bedford, Mass.*, Attorney or Agent: Sidney N. Fox, Ex. Gp.: 114

4,285,518, Re. S.N. 526,454, Filed Aug. 25, 1983, Cl. 273/001.509, BASKETBALL GOAL, John M. Pearo, Owner of Record: *Inventor,* Attorney or Agent: Robert B. Hughes, Ex. Gp.: 334

4,286,320, Re. S.N. 524,629, Filed Aug. 19, 1983, Cl. 364/200, DIGITAL ECOMPUTING SYSTEM HAVING AUTO-INCREMENTING MEMORY, Granville E. Ott, Owner of Record: *Texas Instruments, Dallas, Tex.*, Attorney or Agent: Leo N. Heiting, Ex. Gp.: 237

4,312,790, Re. S.N. 526,257, Filed Aug. 25, 1983, Cl. 252/455.2, AROMATICS PROCESSING CATALYSTS, Stephen A. Butter, et al., Owner of Record: *Mobil Oil Corp., New York, N.Y.*, Attorney or Agent: Alexander J. McKillop, Ex. Gp.: 116

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,926,832, Reexam. No. 90/000,450, Requested: Sept. 28, 1983, Cl. 252/181.6, GETTERING STRUCTURE, Aldo Barosi, Owner of Record: *Requester,* Attorney or Agent: David R. Murphy, Ex. Gp.: 223, Requester: S.A.E.S. Getters, Arlington, Va.

4,024,873, Reexam. No. 90/000,446, Requested: Sept. 19, 1983, Cl. 604/96, BALLOON CATHETER ASSEMBLY, William T. Antoshkiw, et al., Owner of Record: *Becton, Dickinson & Co., East Rutherford, N.J.,* Attorney or Agent: Kane, Dalsimer, et al., Ex. Gp.: 336, Requester: Richard J. Ridrick, Paramus, N.J.

Patent and Trademark Office to Sponsor Design Contest for Patent Grant Document

The Patent and Trademark Office is sponsoring a design competition to select a new design for its patent grants to reflect the revolutionary advances in high technology and the automation of the agency.

The present design has been in use for much of this century. The grant is in the form of a four-page folder with the patent printed separately and inserted inside. Pages 2, 3 and 4 of the folder are blank. A ribbon is inserted through eyelets on the left-hand side towards the fold, then tied and secured with a seal on the front.

A design is needed for a cover 8 by 12 inches, which includes a border in a contemporary style.

——The design should be limited to two colors on a light-colored paper stock.

——It should eliminate the hand-tied ribbon, but could include a ribbon crimped under an embossed, adhesive seal 2 inches in diameter.

——It should include the following words:

THE UNITED STATES OF AMERICA
There has been presented to the
COMMISSIONER OF PATENTS AND TRADEMARKS
An application for a patent for a new and useful invention. The title and description of the invention are contained in the specification and any drawings, a copy of which is annexed to and made a part of this patent. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law. Therefore this
UNITED STATES PATENT
Grants to the person or persons having title to the invention, as recorded in the Patent and Trademark Office, and their heirs or assigns, the right to exclude others from making, using or selling the invention throughout the United States of America for the term of seventeen years from the date of this patent, subject to the payment of maintenance fees as provided by law.

I have caused the seal of the Patent and Trademark Office to be Affixed this day of

——The design should also include a place for the signature of the Commissioner and the attesting officer, and for the seal and the patent number.

——The words appearing above in capital letters should appear in display type and should be indicated on the layout. Text lines may be enumerated. Type faces, weight and leading should be specified, and a sample line or lines of body type included. If any hand lettering is to be used in place of type it should be included on the layout.

A comprehensive layout should be submitted on bristol board or illustration board, with a protective flap furnished. The winner should be prepared to complete, and will be compensated for, final layout work. Typesetting of the text for the final layout will be done by the government.

Entries must be postmarked no later than Nov. 21, 1983. They will be judged by an impartial panel selected from representative groups with an interest in design and the patent system. The winner will receive $500 and an invitation to the National Inventors Day ceremony at the Patent and Trademark Office Feb. 12, 1984, when the winning design will be unveiled. If you live outside the Washington area, we will pay your way to the Office for the ceremony (subject to Government travel regulations).

To obtain a brochure with contest rules and an entry blank, contact the Office of Public Affairs, CP3-1D01, Patent and Trademark Office, Washington, D.C. 20231. Telephone (703) 557-3428.

DONALD J. QUIGG,
Deputy Commissioner of Patents and Trademarks.

Sept. 23, 1983.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished by the Commissioner of Patents and Trademarks on or before Nov. 28, 1983:

Baird, Wannell M., 2150 N. Lincoln Park West, #712, Chicago, Ill. 60614
Cohen, Alan C., 100 Wells St., #608, Hartford, Conn. 06103
Giaccherini, Thomas N., 51 Schuyler Ave., #5D, Stamford, Conn. 06902
Gorman, George C., 952 The Alameda, Berkeley, Calif. 94707

WILLIAM FELDMAN,
Director, Office of Enrollment and Discipline.

Errata

The following registration numbers were inadvertently omitted from the "Trademark Registrations Canceled" section of the Official Gazette of Apr. 26, 1983:

SECTION 7(d)

775903	SLIM DIET	U.S. CLASS	45
816279	TONGA	U.S. CLASS	51
1096318	MAMA REGINA	U.S. CLASS	42
1099620	COUNTRY ROADS	U.S. CLASS	25
1111080	WILD WILD WET	U.S. CLASS	41
1111081	THE WILD WILD WET and design	U.S. CLASS	41
1167900	THERMO-SDLV	U.S. CLASS	1
1171409	ADVER-TEE'S and design	U.S. CLASS	25

SECTION 18

543898	TRIDENT and design	U.S. CLASS	46
544029	RUFFLE	U.S. CLASS	46
655283	GALAXY	U.S. CLASS	39
732783	NERVE FINDER	U.S. CLASS	44
757011	MICHELLE D'ARCY	U.S. CLASS	47
767605	GOLDEN ANCHOR and design	U.S. CLASS	39
876139	FANCY FIXIN'S	U.S. CLASS	46
964925	QUICK SHOP	U.S. CLASS	101
988650	TUFF TOWELS	U.S. CLASS	42
1025732	BOLIDTAN	U.S. CLASS	19
1033492	AQUARIST	U.S. CLASS	1
1040343	BARNES	U.S. CLASS	25
1042179	ROAD	U.S. CLASS	9
1045667	KROC-O-BEANS	U.S. CLASS	29
1045668	KROC-O-FRIES	U.S. CLASS	29
1052630	YUMMY'S	U.S. CLASS	42
1053466	KROC-O-KLAMS	U.S. CLASS	29
1067332	BLAZER	U.S. CLASS	28
1069682	NIGHTLIGHT	U.S. CLASS	3
1072669	BAGS R' US	U.S. CLASS	18
1073902	BACITRACIN-MD	U.S. CLASS	5
1073925	TITAN	U.S. CLASS	7
1074440	TITAN TIP	U.S. CLASS	7
1078156	ELEPHANT EARS	U.S. CLASS	42
1082007	AUTO SOUND NORTH and design	U.S. CLASS	37
1099096	The GRIPPER	U.S. CLASS	1
1099554	ROOF-GUARD and design	U.S. CLASS	19
1108294	COOKIE MACHINE and design	U.S. CLASS	42
1112029	CHEDDAR BURGER	U.S. CLASS	29
1115461	MONSTER	U.S. CLASS	28
1125289	CHINA SILK	U.S. CLASS	3
1127113	GAME-TIME	U.S. CLASS	41
1094582	TITAN	U.S. CLASS	28
1138288	THERMAL-SPOT	U.S. CLASS	9
1146536	MARLAND	U.S. CLASS	7
1149483	SPECIAL RISKS	U.S. CLASS	36
1161931	NORTHWOOD	U.S. CLASS	19

Consequently, the above identified registrations are cancelled.

MARK NEWMAN,
Director Trademark Examining Operation.

Errata

"All reference to Patent No. D. 268,759 to Willard J. Hoebeke of Florida for 'FLUID METERING VALVE' appearing in the Official Gazette of Apr. 26, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,391,033 to Satoshi Shinozaki of Japan for 'METHOD OF MAKING V-ISOLATION GROOVES BY OVERFILLING WITH POLYCRYSTALLINE SILICON OF GRADED CONDUCTIVITY AND ETCHING' appearing in the Official Gazette of July 5, 1983 should be deleted since no patent was granted."

"All reference to Patent No. 4,394,154 to Richard J. Anderson, et al. of Calif. for 'SUBSTITUTED PYRIDYLOXYBENZO-2,1,3-OXADIAZOLES AND -THIADIAZOLES AND *N*-OXIDES THEREOF' appearing in the Official Gazette of July 19, 1983 should be deleted since no patent was granted."

Status of PTO Services

The following is an update of the status of PTO services as of September 2, 1983:

Service Item	FY 1983 Performance Goal (Calendar Days)	Actual as of November 5, 1982	Actual as of September 30, 1983
Filing Receipts:			
Patents	22	56	21
Trademarks	30	49	30
Patent Copies:			
Window Coupons	5	70% within 5 days	96% within 5 days
Mail Coupons	29*	95% within 29 days	100% within 22 days
Letter Orders	34*	3% within 34 days	100% within 24 days
Certified Copies:			
Trademark Registrations	30	19	18
Applications-As-Filed	20	98% within 15 days	98% within 10 days
File-Wrapper/Contents	N/A	86% within 20 days	100% within 20 days
Walk-up Certification	1	99% within 1 day	99% within 1 day
Trademark Search Library:			
Filing Drawings	21	29	16
Filing Reg. Certificates	3	8	3
Assignments:			
Patents	25	80	16
Trademarks	25	85	9
Avg. Days from Issue Fee Payment to Issue Date	90-100		91
Patent Official Gazette:			
In Bookstore	Issue Date	On Schedule	On Schedule
Mailed	Issue Date		Avg. 1 day late
Patent Grants Mailed	Issue Date	On Schedule	Avg. 1 day late
Patent Copies Available	Issue Date		99%
Trademark Official Gazette:			
In Bookstore	Issue Date	On Schedule	On Schedule
Mailed	Issue Date		On Schedule
Trademark Regs. Mailed	Issue Date	On Schedule	On Schedule

*Goal includes mail processing and delivery time.

IMPROVEMENTS TO SERVICES

- *Summary of Improvements During FY 1983* — Substantial progress was made over the past year in improving services rated in the 1982 User Survey as poor or fair. As reported in the last Official Gazette of each month, actions were taken to improve timeliness of services, integrity of files, search room working conditions, and quality of photocopy and microfilm reader/printer services.

  As shown in the table above, significant improvements were made in the timeliness of key services. Trademark, patented, and abandoned file histories from the PTO file repositories are being provided within three hours for 90–95% of the files. Files from the Federal Records Center are being provided within five days for most requests. In addition, 65% of all files requested by official search are found within 30 days. Almost all of those not found are old files controlled by the Federal Records Center.

  Several file integrity checks were made in many areas including the Trademark File Repository and all abandoned and patented files in the patent examining groups. Clear accountability for file integrity was established by assignment of individuals to specific areas of the file repositories. An automated file request system was implemented in April 1983 for patent examiners. This allows the Contact Representative staff to dedicate more of their time to handling requests from the public. Over the next year, we hope to obtain additional computer resources to automate file requests from the public and automatically monitor service response times.

  The Patent Search Room working conditions were improved by providing additional space, improving air temperature control and circulation, and establishing a quiet area. Compliments of our lessor, Charles E. Smith, new carpet, drapes and wall covering were installed. An order for new chairs, approved by the search room users, was placed with the General Services Administration.

  Photocopy and microfilm reader/printer quality was improved. New lenses were installed on existing machines and new machines were placed in service. Twenty-three photocopiers were replaced throughout the public areas, significantly improving copy quality.

  More improvements are planned for the coming year.

- *File Maintenance Contract*—Vanguard Technologies Corporation has recently been awarded a contract for the maintenance of PTO files in the Eads Street and Fern Street Files Repositories, the Public Search Room, the Trademark Search Library and the Scientific Library. Assumption of these duties by Vanguard, effective today, should have little effect on present operations since (1) very few changes in procedures are planned, (2) many of the individuals performing these functions for the PTO were hired by Vanguard and (3) all aspects of the contractor's operations will be closely monitored to ensure compliance with the rigid specifications contained in the contract.

Oct. 3, 1983.

THERESA A. BRELSFORD,
Assistant Commissioner for Administration.

Notice to All Deposit Account Holders

Beginning Oct. 15, 1983, please *mail deposit account remittances only* to:

Patent and Trademark Office
P.O. Box 70541
Chicago, Ill. 60673

To expedite credit to your deposit account and the treasury, and arrangement has been made between the Patent and Trademark Office, Treasury Department, and the First National Bank of Chicago utilizing a special "lockbox" depositary to receive deposit account remittances.

Checks should continue to be made payable to the Commissioner of Patents and Trademarks and be accompanied by *the top portion of your deposit account statement.* Submit only remittances for deposit accounts to this new address. All other correspondence should continue to be addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

LEONARD L. NAHME,
Director Office of Finance.

PATENT NOTICES

Certificates of Correction for the Week of Oct. 25, 1983

Re. 31,112	4,366,144	4,386,523	4,396,049
Re. 31,236	4,366,308	4,386,906	4,396,212
D. 268,807	4,366,977	4,387,030	4,396,345
D. 269,756	4,367,399	4,387,164	4,396,965
D. 270,062	4,367,864	4,387,931	4,396,994
D. 270,240	4,369,779	4,388,111	4,397,403
D. 270,261	4,371,239	4,388,297	4,397,404
4,207,274	4,371,240	4,388,470	4,397,478
4,240,937	4,371,241	4,388,616	4,397,749
4,261,109	4,371,382	4,388,633	4,397,860
4,269,859	4,373,246	4,388,964	4,398,896
4,284,869	4,375,672	4,389,059	4,399,144
4,295,732	4,375,934	4,389,252	4,399,350
4,299,478	4,376,023	4,389,910	4,399,559
4,316,986	4,376,051	4,390,120	4,399,589
4,324,530	4,379,315	4,390,404	4,399,724
4,337,583	4,380,020	4,391,103	4,400,105
4,339,975	4,380,393	4,391,670	4,400,652
4,341,118	4,381,029	4,392,132	4,400,667
4,350,895	4,381,520	4,392,211	4,400,814
4,355,594	4,383,098	4,392,782	4,401,214
4,357,089	4,383,885	4,393,046	4,401,447
4,357,709	4,384,725	4,393,833	4,401,623
4,359,088	4,385,171	4,394,418	4,401,736
4,359,561	4,386,065	4,394,602	4,402,061
4,363,406	4,386,142	4,395,253	
4,365,500	4,386,242	4,395,461	

Disclaimers

3,713,435.—*Roman Szpur,* Dayton, Ohio. PICKUP ELECTRODE WITH RIGID ELECTROLYTE CUP. Patent dated Jan. 30, 1973. Disclaimer filed Aug. 25, 1983, by the assignee, *NDM Corp.*

Hereby enters this disclaimer to all claims of said patent.

4,139,348.—*Mitchell E. Swartz,* Malden, Mass. ELECTROCHEMICAL PROCESS AND APPARATUS TO CONTROL THE CHEMICAL STATE OF A MATERIAL. Patent dated Feb. 13, 1979. Disclaimer filed Sept. 9, 1981, by the assignee, *Massachusetts Institute of Technology.*

Hereby enters this disclaimer to claim 53 of said patent.

4,229,854.—*Jesse C. Johnston, Jr.,* Carroll, Ohio. SOOT BLOWER CONSTRUCTION. Patent dated Oct. 28, 1980. Disclaimer filed Sept. 1, 1983, by the assignee, *The Babcock & Wilcox Co.*

Hereby enters this disclaimer to claims 1 and 4 of said patent.

Disclaimers and Dedications

3,805,769.—*Robert W. Sessions,* Hinsdale, Ill. DISPOSABLE ELECTRODE. Patent dated Apr. 23, 1974. Disclaimer and Dedication filed Feb. 4, 1981, by the assignee, *Minnesota Mining & Manufacturing Co.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

4,123,415.—*Allen D. Wambach,* Evansville, Ind. REINFORCED THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED RESISTANCE TO HEAT DEFLECTION. Patent dated Oct. 31, 1978. Disclaimer and Dedication filed July 27, 1983, by the assignee, *General Electric Co.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, Ext. 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Austin: McKinney Engineering Library, University of Texas....	(512) 471-1610
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions, Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,243,822 to 3,248,737, inclusive
Plant Patents ..... Numbers 2,616 to 2,627 inclusive

REISSUES

OCTOBER 25, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in *italics* indicates additions made by reissue.

Re. 31,424

RESPIRATORS

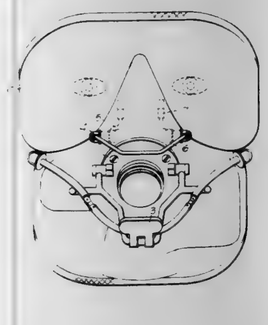
John Ernsting, Fleet, England; Thomas R. Morgan, Graniteville, S.C.; Leonard F. W. Palmer, Seaton, England; Alfred J. Rivers, Church Crookham, England, and Stephen M. Robson, High Wycombe, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, by said Ernsting, Palmer, River, and Robson and The United States of America as represented by the Secretary of the Air Force, Washington, D.C., by said Morgan

Original No. 4,294,243, dated Oct. 13, 1981, Ser. No. 967,122, Dec. 8, 1978. Application for reissue Oct. 27, 1982, Ser. No. 437,766

Claims priority, application United Kingdom, Dec. 9, 1977, 51378/77

Int. Cl.³ A62B *7/00*

U.S. Cl. 128—201.18 **8 Claims**



1. An oro-nasal respirator, comprising:

a. a visor;

b. a mask carried by said visor, said mask having a shape adapted to cover the nose and mouth of the wearer;

c. means for providing respiratory gas to the wearer through said mask;

d. means attached to said mask for selectively occluding the wearer's nose; said last mentioned means including a pair of spaced apart pivots penetrating through said mask in the nasal region thereof; yoke arms extending radially from said pivots on the inside of said mask; a handle secured to said pivots on the outside of said mask; said handle operable to rotate said pivots and cause said yoke arms to turn into the sides of the wearer's nose.

Re. 31,425

RESEALABLE CONTAINER

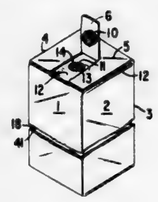
John J. Steinke, Whitehouse Station, and George Kaufman, North Brunswick, both of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Original No. 4,308,956, dated Jan. 5, 1982, Ser. No. 94,195, Nov. 14, 1979. Application for reissue Jul. 22, 1982, Ser. No. 400,865

Int. Cl.³ B43M *7/00;* **B65D** *5/70, 5/72*

U.S. Cl. 206—611 **8 Claims**

8. A three-dimensional container with a square or rectangular cross-section comprising a top portion, a bottom portion and 4 side portions, the top portion being formed by a hinged flap of each side portion and adapted to lap one another, [the inner-most flap being provided with a centrally registered opening,] the second inner-most flap being provided with a centrally registered opening, the second outer-most flap being provided with a [centrally] registered die-cut piece secured to the outer-most flap and the outer-most flap being provided



with a hinged flap portion to open and close the container with the die-cut portion secured to the hinged flap.

Re. 31,426

INTRA-ORAL ALIGNING ASSEMBLY

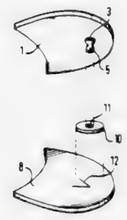
Karl Daiberl, Unterbergstrasse 4/II r., 8000 Münich, Fed. Rep. of Germany

Original No. 4,286,947, dated Sep. 1, 1981, Ser. No. 46,498, Jun. 7, 1979. Application for reissue Mar. 8, 1982, Ser. No. 356,161

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1978, 2825470; Dec. 23, 1978, 2853828

Int. Cl.³ A61C *19/04*

U.S. Cl. 433—72 **33 Claims**



1. An adjusting assembly for use in prosthodontics, occlusion diagnosis and/or occlusion therapy, comprising an upper jaw plate; a lower jaw plate, one of said plates being provided with an opening; and a pin having an externally threaded shaft partly received in one of the plates and having a free end adapted to be partly received in said opening, said free end being configurated as a spherical segment rigid with said shaft and having a spherical surface, said spherical surface being curved rearwardly from a point located on the longitudinal axis of the shaft through at least 100° of arc, said opening having a diameter being smaller than that of said spherical segment, the diameter and length of said opening as well as the diameter of said segment being so coordinated with one another that even at the largest degree of relative skewing to be expected of said bite plates a circumferential edge of said opening will abut said spherical surface along the entire length of said circumferential edge substantially without any freedom of play.

Re. 31,427
AROMA-ENRICHED COFFEE PRODUCTS AND PROCESS

Timothy A. Luboen, Springfield; Rudolf G. K. Strobel, Colerain; Richard N. Reinhart, Springfield, and Jayantilal M. Patel, Reading, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Original No. 3,769,032, dated Oct. 30, 1973, Ser. No. 189,746, Oct. 15, 1971. Continuation of Ser. No. 967,045, Dec. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 156,555, Jun. 24, 1971, abandoned. Application for reissue Jan. 6, 1982, Ser. No. 337,226

Int. Cl.³ A23F *5/46*

U.S. Cl. 426—594 **36 Claims**

1. An aromatized instant coffee product having an intense roast and ground coffee aroma, said product comprising the combination of a structurally compatible instant coffee having a pore factor of at least [0.9] *0.94* and an aroma-enriched carrier, said product having an initial aroma intensity of at least [70,000] *165,000* gas chromatograph counts, *and an aroma retention factor of 1.0.*

Re. 31,428
FIRE PROTECTIVE TAPE

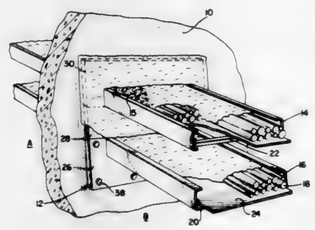
J. Watson Pedlow, Media, Pa., assignor to Thomas & Betts Corporation, Raritan, N.J.

Original No. 4,273,821, dated Jun. 16, 1981, Ser. No. 92,063, Nov. 6, 1979. Continuation-in-part of Ser. No. 872,820, Jan. 27, 1978, Pat. No. 4,189,619. Application for reissue Nov. 2, 1981, Ser. No. 317,699

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ B32B *7/00, 9/04, 5/16;* H02G *3/04*

U.S. Cl. 428—215 **11 Claims**



1. An electrical arc and fire protective tape for disposition about electrical equipment, cables, cable splices, appurtenant equipment or the like, comprising a resinous mixture coated as a wet mastic mixture and dried upon a fabric base or plastic sheet or film substrate, said mastic comprising an essentially halogen-free mixture of solids and thermoplastic binder resins dispersed as an emulsion in water, said solids including heat intumescing and expanding substances in approximate quantity of 4 to 25% to expand the mastic to porous heat insulating foam, ceramic frits in approximate quantity of 5 to 40% to provide a ceramic glaze upon the surface of the dry expanded mastic when exposed to high temperatures developed by fire, hydrated substances in approximate quantity of 10 to 40% and having bonded water evolvable only by application of sufficient heat to decompose and evolve water vapors, *fire protective solids of the character of antimony oxide and zinc borate in approximate quantity of about 2 to 15%,* and a resinous thermoplastic binder in approximate quantity of 5 to 40% to bind said solids to the form of a flexible film in coated form of the mastic, said binder being dispersed as an emulsion in water, there being sufficient water in the emulsion to convert said solids into a fluidized form for application as a coating upon said base or substrate, said percentages being by weight, the said solids quantity being based on the total solids of the composition.

Re. 31,429
PROCESS FOR PREPARATION OF 9-(DIHALOBENZYL)ADENINES

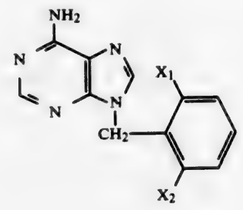
Robert Tull, deceased, late of Metuchen, N.J.; George D. Hartman, Lansdale, Pa., and Leonard M. Weinstock, Belle Mead, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Original No. 4,098,787, dated Jul. 4, 1978, Ser. No. 768,235, Feb. 14, 1977. Application for reissue Oct. 23, 1979, Ser. No. 87,603

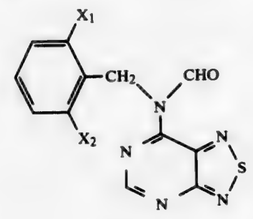
Int. Cl.³ C07D *473/34*

U.S. Cl. 544—277 **2 Claims**

1. The process for the preparation of compounds having the structure:



wherein X_1 and X_2 are independently halogen by reacting the compound having the structure:



wherein X_1 and X_2 are as defined above with Raney nickel in aqueous-alcohol solvent at about room temperature to about 125° C. for a period of about 1 hour to 24 hours.

Re. 31,430
CATALYSTS FOR THE HYDRATION OF NITRILES TO AMIDES

Clarence E. Habermann, and Ben A. Tefertiller, both of Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich.

Original No. 3,631,104, dated Dec. 28, 1971, Ser. No. 835,765, Jun. 23, 1969. Continuation-in-part of Ser. No. 791,807, Jan. 16, 1969, Pat. No. 3,597,481. Application for reissue Feb. 26, 1981, Ser. No. 238,712

Int. Cl.³ C07C *103/00*

U.S. Cl. 564—127 **25 Claims**

1. In the process for converting a nitrile to the corresponding amide, the improvement comprising: reacting by contacting an [aliphatic nitrile] *olefinic nitrile of 3 to 6 carbon atoms* in the presence of water with a heterogeneous, cupreous catalyst consisting essentially of copper prepared by reducing copper oxide, copper oxide, copper-chromium oxide, copper-molybdenum oxide or mixtures thereof.

Re. 31,431
MOVABLE WIPER FOR POTENTIOMETERS

Ernst Gass, Stuttgart, Fed. Rep. of Germany, assignor to Novotechnik KG Offterdinger & Co., Ostfildern, Fed. Rep. of Germany

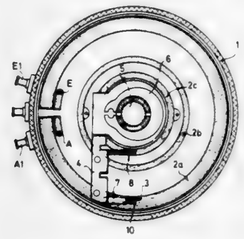
Original No. 4,237,443, dated Dec. 2, 1980, Ser. No. 50,190, Jun. 20, 1979. Continuation of Ser. No. 873,702, Jan. 30, 1978, abandoned. Application for reissue Jun. 11, 1982, Ser. No. 387,343

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706760

Int. Cl.³ H01C *10/50*

U.S. Cl. 338—202 **10 Claims**

1. In a wiper for high speed adjustable resistance, potentiometers and the like having a plurality of electrically conductive and flexible fingers which slidably engage a conductive surface along a given path and in which the fingers are arranged in parallel to each other with lateral separations therebetween and are carried by a relatively rigid support and having each a flexible length which extends outwardly from said support and in engagement with said conductive surface, the improvement comprising a common covering of yieldable elastomeric material extending over portions of said flexible lengths of said parallel fingers extending outwardly from said support and over portions of said lateral separations between said length portions to form a continuous covering over said length and separation portions, said elastomeric material having a high degree of internal friction and practically no elasticity thereby exerting a high dampening force on a possible oscillating movement of each of said fingers, the contact area of the wiper with said conductive surface being free of said elastomeric material.



PLANT PATENTS

GRANTED OCTOBER 25, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,125

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 2, 1982, Ser. No. 353,922
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of impatiens plant known by the cultivar name Milkyway, as described and illustrated, and particularly characterized as to uniqueness by its white flowers, variegated foliage, superior self-branching habit, tightly compact and symmetrically mounded growth habit, high floriferousness, and by its relative deterioration under low temperatures.

5,126

IMPATIENS PLANT

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Mar. 2, 1982, Ser. No. 354,077
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of impatiens plant known by the cultivar name Columbia, as described and illustrated, and particularly characterized by its excellent keeping qualities; generally light pink flower color; firm, thick and non-fragile flower petal texture; relatively slow growth and compact, tight habit; early flowering response; dark green foliage which provides a pleasant contrast with flower color; performs best under full sunlight, and its adaptability to different environments of use, including use initially as house plant which can later be transferred to the garden.

5,127

CHRYSANTHEMUM PLANT

William E. Duffett, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio

Filed Mar. 1, 1982, Ser. No. 353,021
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—78 1 Claim

1. A new and distinct cultivar of *Chrysanthemum morifolium*, Ramat., plant known by the cultivar name of Sequest, as described and illustrated, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; decorative capitulum type; dark yellow ray floret color; diameter across face of capitulum ranging from 85 to 110 mm. at maturity; uniform 10 week flowering response; medium plant height; spreading branching pattern; and being photosynthetically efficient, producing strong plants under low, winter light regimes with 14 to 16 hour continuous dark periods.

5,128

NEPHROLEPIS EXALTATA— ELEANOR CULTIVAR

G. Jack Hofland, Jordan Station, Canada, assignor to Jordan Station Wholesale Florist Limited, Jordan Station, Canada

Filed Jun. 16, 1982, Ser. No. 389,057
Int. Cl.[3] A01H *9/00*
U.S. Cl. Plt.—88 1 Claim

1. A new and distinct variety of *Nephrolepis exaltata* which is believed to be a whole plant mutation of the Curly Boston variety, substantially as herein illustrated and described, characterized by (a) a faster growth habit than the Curly Boston variety, (b) a mature 1-pinnate frond configuration which tends to be more oblong than that of the Curly Boston variety wherein the frond configuration is more tapered, (c) considerably more pronounced serrations on the pinnae margins than the Curly Boston variety, (d) larger pinnae than the Curly Boston variety, (e) when fully developed fewer pinnae per frond than the Curly Boston variety, (f) pinnae which tend to be slightly diagonally disposed along the midrib of the frond while the pinnae of the Curly Boston variety tend to be disposed at substantially right angles to the midrib of the frond, and (g) when fully developed bears fewer fronds per plant than the Curly Boston variety.

PATENTS

GRANTED OCT. 25, 1983

ERRATA

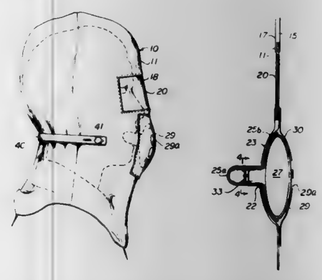
For CLASS	See PATENT NO.
502–035	4,411,818
502–167	4,411,820
502–117	4,411,821
502–168	4,411,822
502–168	4,411,823
502–323	4,411,824
525–315	4,412,061
381–060	4,412,096
381–092	4,412,097
381–043	4,412,098
381–051	4,412,099
381–100	4,412,100

PATENTS

GRANTED OCTOBER 25, 1983

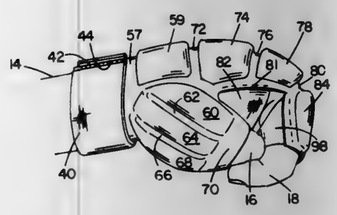
GENERAL AND MECHANICAL

4,411,023
SMOKE PROTECTIVE HOOD
Jay D. Pinson, 6520 Kingland Ct., San Jose, Calif. 95120
Filed Oct. 13, 1981, Ser. No. 310,651
Int. Cl.³ A42B *1/04;* A62B *23/00*
U.S. Cl. 2—7 **18 Claims**



7. A protective hood comprising a front wall, a rear wall having a configuration similar to the configuration of said front wall, means for securing said walls together along the top and side edges, each of said walls being multi-layered and including an outer layer of flexible, fire-retardant, non-combustible, heat-reflective material and an inner insulating layer of polyester cloth, means defining a first and second aperture in said front wall, a transparent non-flammable eyepiece mounted in said first aperture, a respirator secured in said second aperture, and a respirator-positioning member with a mouth gripping member mounted in said front wall adjacent said respirator.

4,411,024
PROTECTIVE GLOVE
J. Brian Hayes, Walhalla, S.C., assignor to The Kendall Company, Walpole, Mass.
Filed Dec. 29, 1980, Ser. No. 220,503
Int. Cl.³ A41D *13/08*
U.S. Cl. 2—20 **15 Claims**



1. A contact sport protective glove adapted to cover the back of the hand including at least a portion of the metacarpus, the knuckles between the metacarpus and the fingers, and at least a portion of each of the thumb and four fingers, comprising

a flexible member having a tough outer protective membrane and a smooth hand-contacting, inner membrane connected together around the peripheral edge of said member, said outer membrane having a plurality of discrete foam-filled, protective protrusions spaced from one another by thin areas providing bending of said member thereat,

said thin areas including

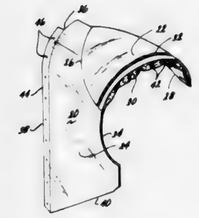
a plurality of transversely extending metacarpus areas extending between the opposite peripheral edges of said member, said metacarpus areas being longitudinally spaced from one another and defining at least one transversely extending metacarpus-protective protrusion therebetween,

a generally longitudinally extending area intermediate the portion of said glove adapted to cover said metacarpus and the portion of said glove adapted to cover said thumb portion,

a plurality of obliquely extending thumb areas connected at their proximal ends adjacent said longitudinal area and defining at least one thumb-protective protrusion therebetween, and

a plurality of finger areas, connected at their proximal ends adjacent the distal one of said metacarpus areas and at their distal ends being adjacent said peripheral edge, said finger areas being spaced from and generally parallel to one another and defining at least one finger-protective protrusion therebetween.

4,411,025
COMBINED CHEST PIECE AND SHOULDER PAD
Mark Magidson, Los Angeles, Calif., assignor to Moldex/Metric Products, Inc., Culver City, Calif.
Filed Dec. 22, 1982, Ser. No. 452,217
Int. Cl.³ A41D *1/00, 27/26, 27/02*
U.S. Cl. 2—97 **14 Claims**



1. A combined chest piece and shoulder pad, comprising

an integral unitary structure formed of molded non-woven fiber material including

a chest piece portion having a shape to form a foundation for the chest area of a jacket and with the chest piece portion having a central area surrounded by peripheral edge portions and with the peripheral edge portions more tightly compacted than the central area to provide for a tapering between the central area and the peripheral edge portions and with the central area compacted sufficiently to provide for a firm support of the jacket in the chest area, and

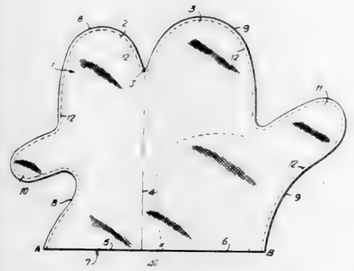
a shoulder pad portion having a shape to form a foundation for the shoulder portion of the jacket and with the shoulder pad portion having an inner edge and an outer edge and with a portion of the inner edge contiguous with a peripheral edge portion of the chest piece portion and with the inner edge more tightly compacted than the remaining portion of the shoulder pad portion and with the remaining portion of the shoulder pad portion tapering from the more tightly compacted inner edge to the outer edge which is less tightly compacted than the chest piece portion to form a lightly compacted shoulder pad to provide for a soft resilient support of the jacket in the shoulder area.

4,411,026

HAND COVERING

Michael Secter, c/o Robert Engel, P.O. Box 2421, Santa Fe, N. Mex. 87501

Filed Jun. 24, 1981, Ser. No. 277,056
Int. Cl.[3] A41D *00/00, 19/02, 19/00*
U.S. Cl. 2—158 **8 Claims**



1. A hand covering comprising a blank of material including front and back portions having respective bases and perimetral edges extending from said bases, said front and back portions being folded into overlying relation along a fold line serving as a common juncture and secured together along said perimetral edges to form an enclosure in which said bases form an open edge and the front and back portions lie in a plane, said front and back portions prior to folding thereof including respective radially projecting portions extending laterally from each of said front and back portions, said projecting portion from said front portion extending in a direction inclined to said fold line at a slight downwards angle towards said base of said front portion while said projecting portion from said back portion extends in a direction inclined to said fold line at a slight upwards angle away from said base of said back portion, said projecting portion from said rear portion being of larger size than said projecting portion from said front portion, said projecting portions being respectively of smaller size than their respective front and rear portions, said perimetral edges of said front and back portions including line segments joining said bases with said projecting portions smoothly and without discontinuity, said line segments being inclined in the same direction at acute angles with respect to said bases, such that when said portions are folded and secured together along the perimetral edges thereof and thereafter folded inside-out hollow thumb covering is formed which lies at an angle across said enclosure and is flexed to project from the plane of the front and back portions when a hand of a user is inserted into said enclosure.

4,411,027

BIO-ABSORBABLE COMPOSITE TISSUE SCAFFOLD

Harold Alexander, Short Hills; John R. Parsons, Montclair; Irving D. Strauchler, Irvington, and Andrew B. Weiss, Short Hills, all of N.J., assignors to University of Medicine and Dentistry of New Jersey, Newark, N.J.

Continuation of Ser. No. 33,945, Apr. 27, 1979, Pat. No. 4,329,743. This application Feb. 23, 1982, Ser. No. 351,454
The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.
Int. Cl.[3] A61F *1/00*
U.S. Cl. 3—1 **17 Claims**

1. A bio-compatible composition suitable for fabricating a non-migratory surgical article for the repair or replacement of ligament or tendon fibrous tissue of a human or non-human animal comprising a substrate of a plurality of carbon fibers completely enveloped by a bio-absorbable and bio-compatible polymer wherein the longitudinal axes of said carbon fibers are oriented in substantially the same direction and wherein said fibers provide a scaffold which promotes the growth of new



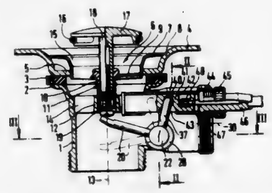
fibrous tissue which is oriented substantially parallel to the longitudinal axes of said carbon fibers.

4,411,028

DEVICE FOR ACTUATING A POPPET OF A TUB DRAIN VALVE

Johannes Högner, Schiltach, Fed. Rep. of Germany, assignor to Firma Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 12, 1982, Ser. No. 357,717
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1981, 3110151
Int. Cl.[3] E03C *1/24*
U.S. Cl. 4—199 **9 Claims**



1. An apparatus for operating a poppet valve which is mounted in a tub drain for upward and downward movement in a vertical drainpipe portion which also has a laterally extending horizontal tubular drain pipe portion, comprising a guide tube extending radially of the poppet valve, a control slide slidable in said guide tube and gaving a remote end remote from the poppet valve adapted to be connected to a remote control, a bearing cylinder extending into the horizontal tubular drain portion, a lever assembly connected between said control slide and said poppet valve including a journal pin portion rotatably mounted in said bearing cylinder, a first lever arm portion having one end connected to said pin portion and an opposite end connected to said control slide, and a second lever arm portion extending radially into the horizontal tub drain portion and being bent at its outer end so that it extends axially of the horizontal drain portion and radially of the vertical portion to a position at its outer end at a location below and in contact with the poppet valve, displacement of said slide causing movement of said first lever arm portion, rotation of said journal pin portion and shifting of the outer end of said second lever arm portion selectively upwardly or downwardly.

4,411,029

CONTROL DEVICE FOR THE WATER TANK OF A FLUSH TOILET

Jiunn-Cherng Huang, Taipei Hsien, Taiwan, assignor to Sin Sui Lai, Taiwan

Filed Dec. 14, 1981, Ser. No. 330,436
Int. Cl.[3] E03D *1/34, 1/14, 3/12*
U.S. Cl. 4—324 **4 Claims**

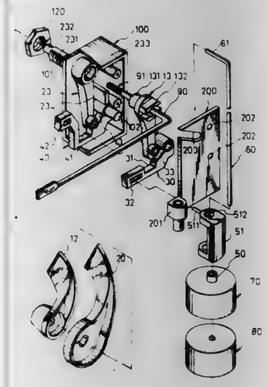
1. A two-level controlling device for the water-tank of a flush toilet comprising:

a housing having a threaded tube mounted to the water-tank;

at least one crank means extending through the housing to outside of the tank and embedded with a handle means;

a pulling rod means having its short arm caught into the rear of said at least one crank means and the front end of said short arm extending through shaft tube of said crank means and the housing to the outside of the tank and embedded with a handle means, and the long arm of said rod means connecting to a falling water head through a flexible member;

at least one cradle means provided inside said housing, and being kept in a position of engaging with a lower end of said crank means;



a connecting means having its upper portion movably connected to the outer end of said cradle means;

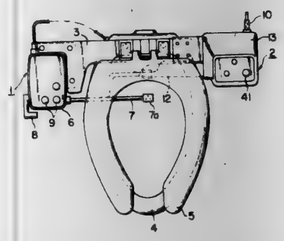
a floating means being movably connected to the lower portion of said connecting means; and when said handle means being pressed, rendering said crank means, said rod means and said cradle means to rotate a certain angle counter-clockwise, the floating means moving upward; said falling water head is thus opened to start flushing, until the flotation force of said floating means is lost.

4,411,030

APPARATUS FOR DRYING GENITALS AND THE POSTERIOR PARTS OF HUMAN BODY

Shinji Kawai, Toyota; Koichi Suzuki, Chiryu, and Yuji Yamaguchi, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Oct. 14, 1981, Ser. No. 311,476
Claims priority, application Japan, Oct. 16, 1980, 55-147713[U]; Oct. 25, 1980, 55-152806[U]
Int. Cl.[3] A61H *35/00;* **A47K** *3/22*
U.S. Cl. 4—443 **10 Claims**



1. An apparatus for drying genitals and the posterior parts of a human body after bathing by a bidet device comprising:

a fan to blow air for drying genitals and the posterior parts provided with electric motor means for rotating the fan,

heater means for heating the air,

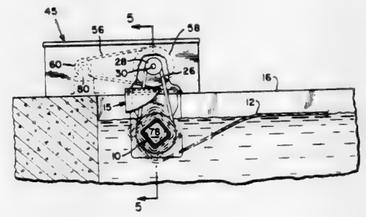
said heater means comprising at least two heater elements, and control circuit means comprising a thermostat connected in series with one of said heater elements to cut off the electric power supply to said one of the heater elements in the heater means when the temperature of the blown air exceeds a predetermined value while still energizing the other of said heater elements.

4,411,031

BUOYANT SWIMMING POOL COVER

Mike Stolar, Oakville, Canada, assignor to Stolar Pool Covers Ltd., Hamilton, Canada

Continuation of Ser. No. 211,234, Nov. 28, 1980. This application Nov. 30, 1981, Ser. No. 326,066
Int. Cl.[3] E04H *3/16, 3/18*
U.S. Cl. 4—502 **22 Claims**



1. A swimming pool cover assembly for a swimming pool having an adjacent wall and a remote wall, the cover assembly comprising a roller rotatable about a substantially horizontal axis, a flexible buoyant blanket attached at one end of said roller and wound on said roller in a direction so that the end thereof remote from said attached end extends toward said remote wall of the swimming pool from beneath said roller, support means to support said roller in a generally horizontal disposition with at least a portion thereof below the intended level of water in a pool, and drive means to rotate said roller about said horizontal axis in a direction to cause said blanket to be drawn below the intended level of water and onto said roller at a location below said horizontal axis and to rotate said roller in the opposite direction to unwind said blanket at a speed such as to permit deployment of said blanket by virtue of the buoyancy thereof.

4,411,032

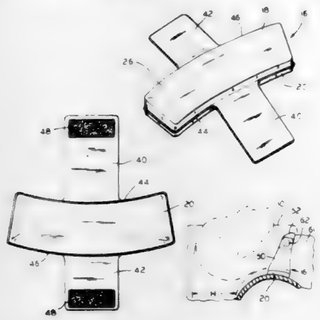
NECK REST FOR SHAMPOO BOWLS

Laury P. Lewy, 1310 Ashland, Wilmette, Ill. 60091

Continuation-in-part of Ser. No. 229,459, Jan. 29, 1981, abandoned. This application Feb. 2, 1982, Ser. No. 344,921
Int. Cl.[3] A54D *44/10, 19/00*
U.S. Cl. 4—523 **13 Claims**

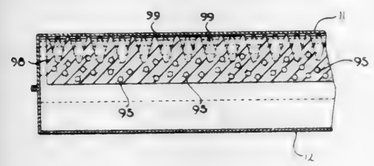
1. A neck rest to be secured around a person's neck and to fit different sized and shaped shampoo bowls, said neck rest comprising a body of flexible elastomeric material having an upper and lower surface; a compartment formed between the upper and lower surfaces filled with a padding material; a pair of elongated tab members extending outwardly from opposite ends of the body shaped to fit around a person's neck; and

means disposed on said tab members to adjustably and removably secure said tabs together at any desired length around a



person's neck, whereby said tabs may be adjusted to fit snugly around different sized necks.

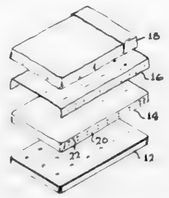
4,411,033
WAVELESS WATERBED
Charles W. Morgan, Rolling Hills, Calif., assignor to United Foam Corporation, Lynwood, Calif.
Continuation-in-part of Ser. No. 59,783, Jul. 23, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,169
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—450 **30 Claims**



1. A body supporting container capable of being filled with a liquid, said container having a substantially open celled foam disposed therein, said foam extending substantially along the horizontal dimensions of said container and occupying 20 to 80 percent of the depth of the container when said container is filled, said foam having a material of low specific gravity disposed throughout its body, said material of low specific gravity causing the foam to float in the liquid, above the bottom wall of the container, close to the top wall of the container, whereby wave motion in said filled container is dampened while the desirable qualities of the liquid-filled body supporting container are retained.

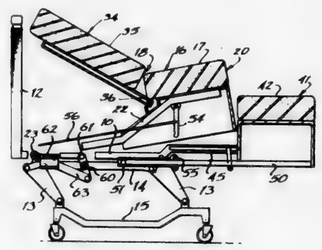
4,411,034
BLANKET DEVICE WITH ALARM
Althea M. W. Williams, 2097 W. 30th St., Los Angeles, Calif. 90018
Filed May 13, 1981, Ser. No. 263,265
Int. Cl.³ A47G *9/02*
U.S. Cl. 5—494 **9 Claims**

1. An apparatus of the class described comprising a mattress and a blanket, a first group of electrically conductive snaps mounted on the blanket, a second group of electrically conductive snaps mounted in generally fixed relationship to said mattress, said first group of snaps adapted to mate with said second group of snaps, an alarm system connected to said snaps in such a way that an alarm sounds when any of the mating snaps separate, and a thrashing movement adjustment means connected to said snaps to prevent said snaps from separating until



said blanket is moved a predetermined distance from its position on the bed.

4,411,035
MATERNITY CARE BED
Loel Fenwick, S. 161 Adams, Spokane, Wash. 99201
Filed Mar. 30, 1981, Ser. No. 248,701
Int. Cl.³ A61G *7/00*
U.S. Cl. 5—68 **10 Claims**



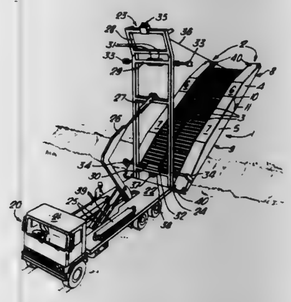
1. A combination labor, delivery and patient care bed, comprising:
- a seat section elevationally movable relative to the floor between a lowered position and a raised position;
- a foot section elevationally movable independently of the seat section for movement between raised and lowered positions outward from the seat section, and longitudinally movable to a position beneath the seat section;

and common framework means supporting said seat section and foot section independently of one another for relative movement of either with respect to the other.

4,411,036
TRANSPORTABLE BRIDGE
James P. Fitzgerald-Smith, Ossemsley, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Nov. 16, 1981, Ser. No. 321,511
Claims priority, application United Kingdom, Nov. 27, 1980, 8038076
Int. Cl.³ E01D *15/12, 15/14*
U.S. Cl. 14—2.4 **7 Claims**
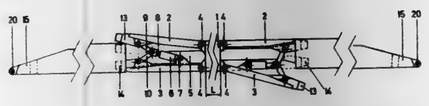
6. A transportable bridge including two substantially parallel trackway girders each having a decking face, a ground opposable face, a home bank end and a far bank end; said girders being leterally spaced apart by a multiplicity of articulated decking members each pivotally attached adjacent its two ends to the two girders respectively so as to be foldable in a direction permitting variation of the lateral separation of the two girders; said transportable bridge further comprising a transporter/launcher vehicle having a cab and a chassis, said vehicle including a launch frame having a hinged end connection to the rear end of the chassis, jacking means for tilting the launch

frame upwards from the chassis about the hinged end connection to a substantially vertical position, pivotal engagement means attached to the launch frame adjacent the hinged end connection engageable with the home bank ends of both girders when the bridge is located for transit upon the launch frame in an inverted position, adjustment means attached to the launch frame for varying the lateral separation of the two



girders, said adjustment means comprising at least one pair of opposed hydraulic jacks attached to the launch frame and respectively operative upon the two girders, and far bank end winching means operative between the launch frame and the far bank ends of the two girders for raising and lowering the bridge about the pivotal engagement means when the launch frame has been tilted to the substantially vertical position by the jacking means.

4,411,037
AUTOMATIC DEVICE FOR LAP JOINT CONNECTION ON THE INTRADOS OR EXTRADOS OF TWO BRIDGE ELEMENTS AND METHOD FOR THE CARRYING OUT THEREOF
Michel E. Terrien, and Claude Bouvet, both of Angers, France, assignors to Etat Francais, Paris, France
Filed Aug. 10, 1981, Ser. No. 291,452
Claims priority, application France, Jul. 28, 1980, 80 18255
Int. Cl.³ E01D *15/14, 15/12*
U.S. Cl. 14—2.6 **16 Claims**

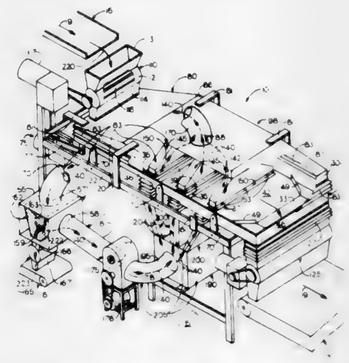


1. A device for permitting the lap joint connection of two bridge elements, said bridge elements being positionally interchangeable, ends of each bridge element comprising:
- a first flap hinged on the extrados of the bridge element;
- a second flap hinged on the intrados of the bridge element; and
- a means for the combined displacement in opposite directions of the first and second flaps; and

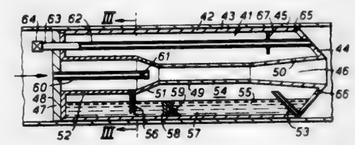
means for locking at least one flap to its respective bridge element and means for locking at least one other flap to the other bridge element.

4,411,038
PNEUMATIC CLEANING SYSTEM
Shinichi Mukai, 2411 22nd Ave., Kingsburg, Calif. 93631
Filed Nov. 16, 1981, Ser. No. 321,682
Int. Cl.³ A23N *12/00*
U.S. Cl. 15—3.13 **15 Claims**

14. A pneumatic cleaning system for particulate bulk material including debris and desired particles, the system comprising
- A. a substantially air-tight enclosure,
- B. a pan extending horizontally across the enclosure and having a perforate section,
- C. first air lock means disposed at one side of the perforate section for depositing such material from the exterior of the enclosure onto the pan in a layer,
- D. second air lock means disposed at the other side of the perforate section for removing the desired particles to the exterior of the enclosure,
- E. means for reciprocating the pan horizontally in a direction between said sides so that the layer is motivated across the perforate section in an agitated condition from the one side toward the other side,
- F. an outlet duct disposed to direct a stream of air upwardly through the perforate section and the layer thereat,
- G. an inlet duct having an opening generally aligned with the perforate section and disposed in closely adjacent, upwardly spaced relation to the layer, and
- H. blower means for supplying such stream of air to the outlet duct to urge the debris upwardly from the desired particles in the layer and for providing a vacuum at the inlet duct to draw the upwardly urged debris from the layer.



4,411,039
REMOVAL OF CONDENSED GAS FROM THE WALLS OF GAS PIPELINES
Cyril Timmins, and John J. Templeman, both of Solihull, England, assignors to British Gas Corporation, England
Filed Dec. 9, 1981, Ser. No. 329,064
Claims priority, application United Kingdom, Dec. 9, 1980, 8039347
Int. Cl.³ B08B *9/04*
U.S. Cl. 15—104.06 R **17 Claims**



1. A pig for passage through a gas pipeline for removing condensed gas from the wall of the pipeline and for revaporizing the gas or entraining mist or droplets in the gas flow through the pipeline, said pig comprising a body which fits in and is driven along the pipeline by differential pressure between the front and back of the pig, a flow gas duct located

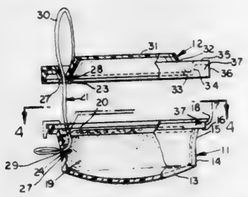
within the body of the pig and extending longitudinally thereof for receiving flow gas from the pipeline and including an outlet for discharging the flow gas in the pipeline ahead of the pig, the flow gas duct having a venturi so that the condensed gas is entrained into the flow gas duct in the gaseous or dense phase or in the form of mist or droplets for discharge in the pipeline ahead of the pig, flow gas inlet means, extending inwardly from the back end of the body and opening into said flow gas duct, for accelerating gas flowing thereinto from the pipeline for discharge into the flow gas duct, condensed gas inlet means extending into the body of the pig and arranged to collect gas which has condensed in the pipeline and condensed gas outlet means arranged to receive the collected gas and discharge the collected gas into the flow gas duct.

4,411,040

POCKET GOLF BALL WASHER

Robert F. Sharrow, 224 Longacre Ave., and Sidney L. Sherman, 5956 Jodie La., both of Erie, Pa. 16509

Filed Mar. 19, 1981, Ser. No. 245,523
Int. Cl.³ A63B 47/04
U.S. Cl. 15—104.94 **1 Claim**



1. In combination a golf ball cleaner (10) having a container (11), a cover (12), a cylindrical sponge (19), and a cord (21) adapted to be carried in the pocket of a golfer comprising,

said container (11) being generally cylindrical and cup-shaped and made of relatively rigid material,

a generally cup-shaped cover (12), and

said cylindrical sponge (19) received in said cup-shaped container, said sponge being flexible and fitting into said container and being adapted to be engaged by said cover, said container comprising,

a convex bottom (13) providing a reservoir for fluid below said sponge and extending upwardly therefrom to engage said cover,

a cylindrical side wall (14), integrally attached to said bottom and extending upwardly therefrom,

and an upwardly and outwardly extending frusto conical shaped side wall (15) integrally attached to said cylindricl side wall and extending upardly and outwardly therefrom providing a space of said sponge to expand into when said cover is closed,

a flat annular outwardly extending shoulder (16) attached to said upwardly and outwardly extending side wall (15),

an upwardly extending cylindrical rim (17) integrally attached to the outer periphery of said shoulder (16) and an outwardly extending flange head (18) integrally attached to said cylindrical rim (17),

said cover (12) being made of relatively rigid material and comprising an annular downwardly and outwardly inclined side wall (32) and a flat top (31) integrally attached to said downwardly and outwardly extending side wall (32) providing additional rigidity to said cover,

an outwardly extending rim (33) integrally attached to said downwardly and outwardly inclined side wall (32) and adapted to engage said sponge pushing said sponge downwardly preventing said sponge from interfering with closing of said cover and pushing against said body to prevent said cover from popping off said case,

and an upwardly and outwardly extending wall (34) integrally attached to said rim (33),

a cylindrical flange (35) integrally attached to said upwardly and outwardly extending wall (34),

and a cylindrical flange (36) integrally attached to said cylindrical flange (35) and extending downwardly therefrom,

and a flange head (37) integrally attached to the inner periphery of said cylindrical flange (36) and spaced downwardly from said cylindrical flange (35) and adapted to underlie a rib on said upwardly extending rib,

said cover (12) being adapted to be received in said container (11) with said outwardly and upwardly extending wall (32) of said cover resting on said upwardly and outwardly extending wall (15) of said container, said cylindrical flange (35) resting on said flange head (18) of said container and cylindrical flange (35) of said cover providing a seal therebetween and said cylindrical flange (35) overlying said flange head of said container and said flange head urging said cover toward said container thereby urging said inclined surface on said cover into engagement with said inclined surface (15) on said container and urging said cylindrical flange (35) into engagement with said sponge,

a cord extending through a first opening in said container and through a second opening in said container, then through a third opening in said cover and through a fourth opening in said cover and means on the ends of said cord to prevent said cord from being withdrawn,

said cord being substantially longer than the space between said openings whereby substantial loops are provided, a cover loop to receive the finger of an operator for holding said cleaner when said container is closed and a container to receive a towel and said cover may be removed a substantial distance from said container when said cover is opened.

4,411,041

SILVER-PLATED TOOTH BRUSH

Renato Braga, Via Ozanam, 4, Milano, Italy

Filed Mar. 3, 1981, Ser. No. 241,461
Claims priority, application Italy, Dec. 4, 1980, 26430 A/80
Int. Cl.³ A46B 9/04
U.S. Cl. 15—167 R **1 Claim**



1. A toothbrush comprising a handle and a head having a surface and fitted with bristles, at least that part of the head's surface which carries the bristles being coated with silver whose bactericidal properties, when contacted with water, are transferred by the water to the bristles by the ions of silver possessed within the silver, wherein the silver coating is applied before insertion of the bristles, said coating being also applied to the sides of the holes in which the tufts of the bristles are fitted to provide a sterilization action on the bristles and within the spaces among the base of the bristles, and between the sides of said holes and the bristles in such a way as to avoid proliferation of bacteria on the bristles from their base portions to the tips thereof.

4,411,042

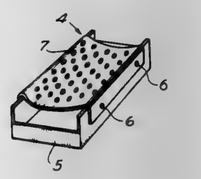
CLEANING DEVICE

Toshio Sakata, and Takeji Morikawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 21, 1981, Ser. No. 332,995
Claims priority, application Japan, Dec. 25, 1980, 55-186307
Int. Cl.³ G03G 21/00
U.S. Cl. 15—256.51 **10 Claims**

1. A cleaning device for removing toner from the surface of a moving member, said cleaning device including a cleaning member in pressing contact with the surface of the moving

member and formed with a plurality of perforations in the area where the cleaning member is in contact with said surface to



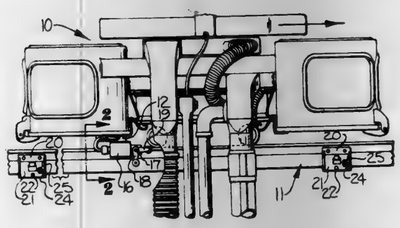
remove the toner by the edge portions defining said perforations.

4,411,043

TRAVELING PNEUMATIC CLEANER WITH REVERSING ARRANGEMENT

William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Charlotte, N.C.

Filed Apr. 2, 1982, Ser. No. 364,967
Int. Cl.³ A47L 5/14
U.S. Cl. 15—312 R **6 Claims**



2. Apparatus for cleaning textile mill rooms and comprising:

track way means for extending over a plurality of textile machines;

traveling pneumatic cleaner means supported on said track way means for movement in forward and reverse directions thereon, said traveling pneumatic cleaner means having tractor drive motor means for driving said cleaner means in movement along said track way,

reversing trip means mounted on said track way means at at least one predetermined location therealong for signaling at least one location at which a reversal in the direction of movement of said traveling pneumatic cleaner means along said track way means is to occur,

switch means mounted on said traveling cleaner means for engagement with said trip means during forward and rearward movement of said traveling cleaner along said track way means and relative to said trip means, said switch means being operable upon engagement with a trip means to change between a first state signaling that the traveling cleaner means should move forwardly and a second state indicating that the traveling cleaner should move rearwardly, and

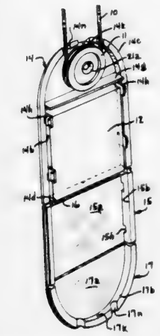
control circuit means operatively interconnecting said switch means and said tractor drive motor means and responsive to a change in state of said switch means for interrupting the delivery of electric power to said tractor drive motor means and after a predetermined short interval of delay energizing the tractor drive motor means to drive the traveling cleaner in an opposite direction.

4,411,044

CORD WEIGHT PULLEY

Boris Volfson, Middleton, Wis., assignor to Graber Industries, Inc., Middleton, Wis.

Filed Jan. 22, 1982, Ser. No. 341,858
Int. Cl.³ A47H 11/06; E05D 17/00
U.S. Cl. 16—219 **8 Claims**



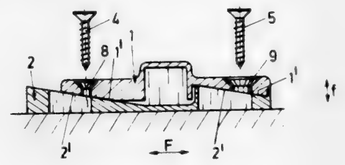
1. A cord weight pulley assembly for traverse rod installations comprising, a one-piece housing formed of synthetic resin material and including a first housing section having a lower weight receiving cavity and an upper pulley receiving cavity at an inner side thereof, a second housing section integrally connected along one edge by a first flexible hinge portion to one edge of the first housing section and adapted to be flexed along the first hinge portion relative to the first housing section to a closed position in overlying relation to said weight receiving cavity, and a third housing section integrally connected at one edge by a second flexible hinge portion to a second edge of the second housing section and adapted to be flexed along the second flexible hinge portion relative to the second housing section, when the latter is in its closed position, into and out of a closed position in overlying relation to the pulley receiving cavity in the first housing section, cord guide pulley means in said pulley receiving cavity, weight means in said weight receiving cavity, and means for retaining said second housing section in its closed position on said first housing section.

4,411,045

HINGE

Erich Röck, Höchst, and Klaus Brüstle, Lautersch, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Oct. 22, 1981, Ser. No. 313,976
Claims priority, application Austria, Nov. 14, 1980, 5604/80
Int. Cl.³ E05D 7/04
U.S. Cl. 16—243 **7 Claims**



1. In a hinge for pivotally mounting a door onto a body of an article of furniture, said hinge being of the type including a hinge casing adapted to be fastened to a door of an article of furniture, a mounting member adapted to be fastened to a body of the article of furniture, and at least one hinge link and at least

one hinge axle connecting said hinge casing and said mounting member, the improvement comprising:

an intermediate member positionable between said mounting member and the body for adjusting the relative spacing therebetween;

said mounting member having therethrough a round hole and having a central length portion and two opposite end length portions;

said central length portion supporting said hinge axle to extend in a longitudinal direction;

said mounting member having at said two opposite end length portions two inclined wedge faces extending parallel to said longitudinal direction of said hinge axle;

said intermediate member having two inclined wedge faces extending parallel to said longitudinal direction of said hinge axle and in contact with respective said inclined wedge faces of said mounting member, such that displacement of said intermediate member with respect to said mounting member in opposite directions parallel to said longitudinal direction will change the relative spacing of said mounting member from the body;

a screw extending through said round hole and through said intermediate member; and

said intermediate member having therethrough a slot elongated in a direction parallel to said longitudinal direction of said hinge axle, said screw extending through said slot, thereby enabling said displacement of said intermediate member with respect to said mounting member.

4,411,046

MULTI-PINTLE HINGE WITH RACK AND PINION SLIDE

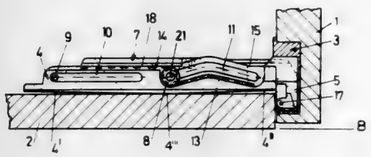
Peter Nawrath, Remscheid, Fed. Rep. of Germany, assignor to Julius Blum Gesellschaft m.b.H, Höchst, Austria

Filed Jan. 14, 1981, Ser. No. 224,923

Claims priority, application Austria, Jan. 15, 1980, A182/80.

Int. Cl.³ E05D *15/08*

U.S. Cl. 16—354 **14 Claims**



1. A furniture hinge having an opening angle of approximately 180°, said hinge comprising:

a base plate adapted to be fastened to a wall of an article of furniture;

a hinge casing adapted to be fastened to a furniture door;

a first hinge arm pivotally connected to said hinge casing and mounted for sliding movement with respect to said base plate;

a slide member;

means mounting said slide member on said first hinge arm for sliding movement in a longitudinal direction with respect thereto;

a second hinge arm having a first end pivotally connected to said hinge casing and a second end pivotally connected to said slide member;

whereby pivoting movement of said hinge casing with respect to said base plate causes said second hinge arm to move said slide member longitudinally with respect to said first hinge arm;

a first rack on said slide member;

a second rack fixed with respect to said base plate;

gear wheel means, mounted on said first hinge arm and in meshing engagement with said first and second racks, for, in resonse to sliding movement of said slide member longitudinally with respect to said first hinge arm, causing said first hinge arm to slide with respect to said base plate; and means for connecting said first hinge arm and said base plate and for guiding sliding movement of said first hinge arm with respect to said base plate, said connecting and guiding means comprising a first slide way portion fixed with respect to said base plate at an outer position relatively adjacent said hinge casing, a second slide way portion fixed with respect to said base plate at an inner position relatively spaced from said hinge casing, and engaging means on said first hinge arm extending into said first and second slide way portions for causing said sliding movement of said first hinge arm to follow the contour of said slide way portions, said first slide way portion having a curved contour such that upon opening or closing movement of said hinge casing with respect to said base plate, said first hinge arm, said slide member, said second hinge arm and said hinge casing are moved in a direction away from and generally normal to the mounting plane of said base plate.

4,411,047

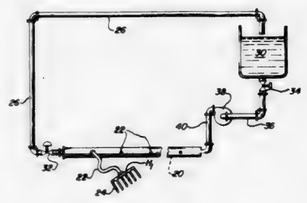
LIQUID DELIVERY SYSTEM

William W. Norton, Lincolnshire, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Feb. 21, 1979, Ser. No. 13,512

Int. Cl.³ A22C *9/00*

U.S. Cl. 17—51 **14 Claims**



1. A system for the delivery of liquid in predetermined amounts through a plurality of relatively small valved conduits, which comprises:

a relatively large elongated manifold chamber forming member, said chamber forming member communicating with each of said relatively small conduits; a source of liquid for delivery; conduit means providing flow communication between said source of liquid and said manifold chamber forming member, and centrifugal pump means positioned to continuously pump liquid from said source of liquid to said manifold chamber forming member, said centrifugal pump means being of a capacity sufficient to create and maintain a generally constant liquid pressure in said manifold chamber forming member irrespective of whether any or all of said relatively small conduits are open to permit liquid flow therethrough.

4,411,048

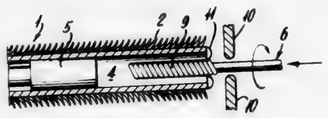
END CLOSURE FOR SAUSAGE CASINGS

Edward A. T. Green, Denny, England, assignor to Devro, Inc., Somerville, N.J.

Filed May 4, 1981, Ser. No. 260,506

Int. Cl.³ A22C *13/00, 11/12*

U.S. Cl. 17—49 **3 Claims**



3. A method of end-closing a strand of sausage casing comprising clamping the strand to prevent the strand from rotating about its longitudinal axis, twisting an end portion of said strand into a cord axially extending beyond the end of the strand, moving tensioning fingers into contact with the axially extending portion of said strand to maintain tension in said strand as said strand is twisted, removing said tensioning fingers from contact with said strand, invaginating said cord into said strand to form an end wall, and axially compressing said invaginated cord against said end wall to form an end closure.

4,411,049

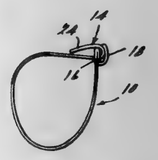
RETAINER STRAP

Norm E. Cristea, 2801 Barkman, Pontiac, Mich. 48055

Filed Dec. 16, 1980, Ser. No. 217,030

Int. Cl.³ B65D *63/02*

U.S. Cl. 24—20 EE **9 Claims**



1. A retainer strap comprising a head portion and a tail portion,

said head portion having two spaced-apart apertures therethrough and being comprised of a section of said strap folded substantially onto itself so that said apertures are in substantial alignment with one another, and

said tail portion being adapted to be inserted through said apertures to form a loop, and wherein a free end of said tail portion is foldable onto itself after being inserted through said apertures to put the loop in a holding configuration, and wherein a tab member formed on the end of said strap opposite said tail portion is foldable onto a portion of said folded free end to put the loop in a locking configuration, and wherein part of said head portion is also foldable with said tab member.

4,411,050

JEWELRY CLASP

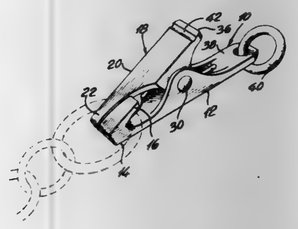
Guy Couture, 21 St. Paul St., Ste. Brigitte de Laval, Canada G0A 3K0

Filed Aug. 6, 1982, Ser. No. 405,944

Claims priority, application Canada, Aug. 24, 1981, 384472

Int. Cl.³ A44B *13/02*

U.S. Cl. 24—234 **4 Claims**



1. A jewelry clasp to removably attach a ring of a jewelry chain, comprising a pair of similar elongated planar elements extending opposite each other in the same general direction, each of which has a jaw at one end, a central body portion and a flat projection at its other end, said central body portion being of U-shape cross-section defining a pair of flat side legs projecting at right angles to the planar element and in transverse register, the legs of one of said elements directed towards and lapping the legs of the other element, a pivot rod extending through said legs transversely of said clasp, each jaw forming an integral hook, of U-shape cross-section, defining a web portion and a free tip, said hooks directed towards each other with their tip directed towards said pivot rod, said hooks taking a closed position upon relative pivotal movement of said elements about said pivot rod in a direction in which said jaws move towards each other, said hooks in said closed position lapping each other at a respective contact surface, which is inclined relative to said pivot rod, both hooks, when in closed position, defining a substantially continuous inside ring contact surface which, in a plane containing the longitudinal axis of said rod, is convex and has a radius of curvature substantially equal to the radius of curvature of the inside circumference of said ring, and a length sufficient to contact a substantial portion of the inside circumference of said ring, said inside ring contact surface, in a plane perpendicular to said axis of said pivot rod, being concave with a radius of curvature substantially equal to the radius of curvature of the cross-section of said ring, whereby said ring is contacted by said ring contact surface of said closed hooks over a substantial portion of its cross-section and, when taut, prevents opening of said hooks, the thickness of said web being much greater than the thickness of said tips to prevent deformation of the latter under stress, even when said clasp is made of a malleable precious metal, such as gold, a spring biasing said hooks in closed position, said spring including a central coiled portion surrounding said pivot rod between said legs, said flat projections providing finger actuated means for opening said hooks against the bias of said spring, one of said projections being longer than the other projection and having means to attach another jewelry chain ring.

4,411,051

PROCESS FOR HEAT TREATING TEXTILE MATERIAL ITEMS

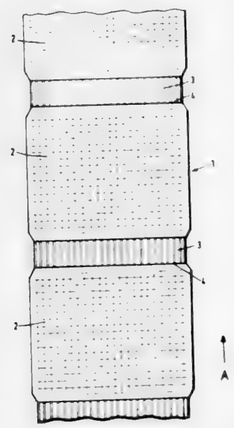
Gero Ehemann, Gross-Ippener, Fed. Rep. of Germany, assignor to Kurt Ehemann Spezialmaschinenfabrik KG, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 257,544

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1980, 3016365

Int. Cl.³ D06C *23/04;* **F25B** *29/00*

U.S. Cl. 26—18.5 **14 Claims**



1. A process for heat treating textile material webs, in particular knit fabric, characterized in that the textile material web is, in the regions in which it is to be protected during heat treatment from too intense an influence of steam, hot air or heat, cooled under the influence of a chilling or cooling agent to a

temperature selected to be so low that the material web during the subsequent heat treatment is only still reheated to a temperature that is not detrimental to the textile material web.

4,411,052

METHOD FOR MANUFACTURING AN ULTRASONIC TRANSDUCER ARRANGEMENT

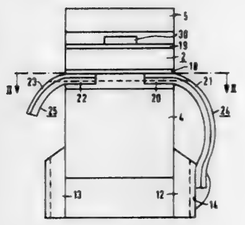
Erich Kämpf, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,455

Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019420

Int. Cl.³ H04R *17/00*

U.S. Cl. 29—25.35 **1 Claim**



1. In a method for the manufacture of an ultrasonic transducer arrangement having transducer elements which are provided with contact tabs of a contact foil, in which at least one flat side of a plastic foil serving as the contact foil is provided with a metal coating, and at least one flat side of a strip-shaped piezoelectric body is connected undetachably to a surface area of the metal coating of the contact foil, the other flat side of said contact foil being fastened to a damping body, and in which the piezoelectric body is subdivided into elements, several adjacent transducer elements forming a transducer group of transducer elements which are acoustically separated and electrically controlled in common, the improvement comprising:

(a) connecting transducer elements of the respective transducer groups to the metallic part of a contact foil having parts overhanging at both ends of the transducer elements, said contact foil separated into contact tabs for the individual transducer groups;

(b) connecting the tab at one end to a control conductor; and

(c) using the tab at the outer end to form electrically conductive bridges for the transducer elements of its transducer group.

4,411,053

ARRANGEMENT FOR EXCHANGING SUPPORTING OR DRIVING ROLLERS OF A CONTINUOUS CASTING PLANT

Werner Scheurecker, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jun. 19, 1980, Ser. No. 161,144

Claims priority, application Austria, Jul. 25, 1979, 5129/79

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—267 **5 Claims**

1. In an arrangement for exchanging supporting or driving rollers of a continuous casting plant of the type including:

a strand guide,

a first roller way and a second roller way arranged opposite each other on said strand guide and having bearing means accommodating rollers,

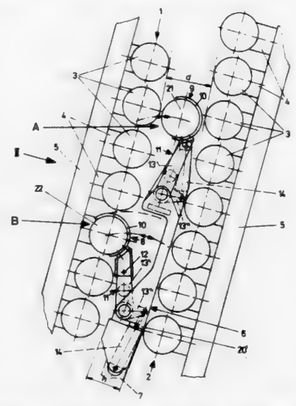
a sled adapted for movement between said first and said second roller ways for transporting a desired roller to and away from its respective bearing means,

roller seats on said sled for receiving a roller, and

moving means for moving a roller from its respective bearing means to said sled, and from said sled to its respective bearing means,

the improvement wherein:

said moving means comprises an adjustment means, and said roller seats are mounted on pivot arms hinged to said sled so as to be movable by operation of said adjustment means when said sled is between said roller ways, in a direction transverse to the longitudinal direction of said rollers,



between a transporting position in which said roller seats are retracted in said sled and an engagement position in which said roller seats project out of said sled, and wherein each of said roller seats includes a projection and each of said pivot arms includes a stop, said roller seat projection contacting said pivot arm stop when in said retracted position and contacting a roller adjacent the roller to be exchanged when in said engagement position.

4,411,054

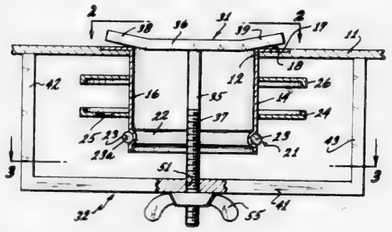
ART OF INSTALLING A SINK DRAIN FLANGE ASSEMBLY CAPABLE OF SUPPORTING A GARBAGE DISPOSAL

William Zeilenga, 10237 Walnut St., Bellflower, Calif. 90706

Filed Jul. 27, 1981, Ser. No. 287,521

Int. Cl.³ B23P *11/02;* **B25B** *27/14;* **B23Q** *1/00*

U.S. Cl. 29—434 **3 Claims**



1. A device for temporarily securing a drain flange tube within a drain hole of a sink, said device comprising:

a U-shaped yoke having an aperture substantially disposed at its center;

a tee-bolt having a threaded body and a cross bar disposed perpendicularly to said threaded body;

said threaded body having a diameter which allows it to pass through said aperture;

a nut for threading onto said body;

said cross bar has upturned ends which turn away from said threaded body.

3. A method of installing a sink drain flange tube assemly into a drain hole of a sink wherein the drain flange tube has at least one freely floating ring to be disposed therearound and a split ring of the spring type mounted in an external groove adjacent the end of the tube remote from the flange of the drain flange tube and for holding the floating ring in place, said method comprising:

placing the drain flange tube into the hole of said sink;

dropping a tee-bolt having a cross bar and a threaded body down through said drain flange tube with the cross bar resting on said drain flange and said threaded body depending through said drain flange tube;

holding a floating ring around the depending portion of said drain flange tube and said threaded body;

placing a U-shaped yoke having a centrally disposed aperture under said sink with the ends of said yoke touching said sink and said threaded body disposed through said aperture;

tightening a nut onto said threaded body to cause said yoke to be urged against said sink;

expanding said split ring so that said threaded body passes through the expanded ends, and;

placing said split ring into said groove.

4,411,055

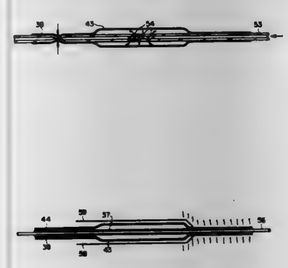
VASCULAR GUIDING CATHETER ASSEMBLY AND VASCULAR DILATING CATHETER ASSEMBLY AND A COMBINATION THEREOF AND METHODS FOR MAKING THE SAME

John B. Simpson, Menlo Park, and Edward W. Robert, Cupertino, both of Calif., assignors to Advanced Cardiovascular Systems, Inc., Mt. View, Calif.

Division of Ser. No. 151,175, May 19, 1980, Pat. No. 4,323,071, which is a continuation-in-part of Ser. No. 123,713, Feb. 21, 1980, abandoned, which is a continuation of Ser. No. 899,061, Apr. 24, 1978, abandoned. This application Aug. 10, 1981, Ser. No. 291,233

Int. Cl.³ B23P *11/02;* **B29C** *23/00*

U.S. Cl. 29—447 **6 Claims**



1. In a method for forming a dilating catheter assembly, providing first and second flexible tubular members formed of a heat-shrinkable material, the second tubular member having a diameter greater than that of the first tubular member, the first and second tubular members having proximal and distal ends, heating a portion of the second tubular member adjacent the distal end to a temperature above a predetermined temperature and introducing a fluid under pressure to cause expansion of said portion to form an inflatable annular portion and cooling the same while under pressure to maintain said inflatable annular portion in said second tubular member, inserting a mandrel into the first tubular member, heating the first tubular member to shrink it onto the mandrel, inserting the first tubular member with the mandrel therein into the second tubular member, heating the distal end of the second tubular member to cause it to shrink onto the first tubular member with the mandrel therein to form an adhesive-free seal between the distal ends of the first and second tubular member, and providing a fitting on the proximal ends of the first and second tubular members, said fitting having passages which are in communication with a passage in the first tubular member extending therethrough from the fitting to the distal end and in communication with a passage in the second tubular member extending from the fitting into the inflatable annular portion.

4,411,056

PRODUCTION OF STEEL PRODUCTS WITH MEDIUM TO HIGH CONTENTS OF CARBON AND MANGANESE AND SUPERIOR SURFACE QUALITY

Dionisyj W. Demianczuk, Parma; Gregory J. McLean, Brecksville, and Joseph E. Franklin, Medina, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 139,873, Apr. 14, 1980, Pat. No. 4,348,800. This application May 20, 1982, Ser. No. 380,269

Int. Cl.³ B22D *23/06*

U.S. Cl. 29—527.7 **9 Claims**

1. A method of making a high-strength steel product, comprising pouring an ingot mold 80% to 95% full of molten steel consisting essentially of 0.01 to 0.12% C, 0.1 to 0.6% Mn, 0 to 2.0% Cu, 0.15 max. % P, and 0.10 max. % S, balance iron and incidental elements, allowing said filling to undergo rimming action while a shell of rimmed essentially ferritic steel solidifies next to the mold surrounding a still-molten core, and then completing pouring of said molten steel into said ingot mold while adding to the molten steel in the mold sufficient manganese so that the core of the ultimate, filled ingot contains manganese in the range above 0.6%, to 1.75%, said addition to the molten steel in the mold during said completion of pouring also including adding material to provide a total core content of 0.01 to 0.9% C, 0 to 0.20% P, 0 to 0.5% S, 0 to 3.5% Si, 0 to 0.5% Al, 0 to 0.75% of each of one or more of the elements Cb, V, Ti and Zr, 0 to 0.075% B, 0 to 2.0% Cu, 0 to 2.0% Cr, 0 to 3.5% Ni and 0 to 1.0% Mo; and after solidification of the said ferrite-shell-carrying ingot, converting, by rolling that part of the solid ingot which was poured first and which constitutes at least about the lower 80% of the solid ingot, to a rolled product having a skin of rimmed steel which is essentially ferrite over the principal surface area of the product, and beneath said skin a core containing manganese in greater proportion than 0.6%, said addition of manganese or of material containing carbon as well as manganese during said completion of pouring of the first-defined molten steel being effected by injecting solid material containing manganese or manganese and carbon so that such manganese addition or manganese and carbon addition enters the molten steel in the mold while the stream of molten steel, which completes the pouring, falls into the steel in the mold.

4,411,057

METHOD OF MANUFACTURING A LASER SOURCE WITH STAMPED SUPPORT

Eugène Duda; Claude Tondu, and Alain Maumy, all of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 39,745, May 16, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 312,971

Claims priority, application France, May 18, 1978, 78 14762

Int. Cl.³ H01L *21/58, 23/36, 33/00*

U.S. Cl. 29—569 L **2 Claims**

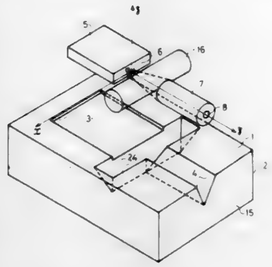
1. A method of manufacturing a semiconductor laser source including a laser chip and at least one optical fiber for collecting the radiation supplied from said laser chip on a support made of a cold-malleable metal of high thermal conductivity, said method comprising the steps of:

stamping, in a single operation, said support to permanently deform said support to have on a surface of said support, a flattened area and at least one Vee-shaped groove, acting as a recess for said optical fiber;

disposing said chip on said flattened area; and

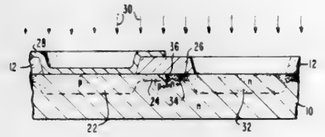
disposing said at least one optical fiber in said at least one Vee-shaped groove, said stamping step forming said flat-

tened area at such a depth below said surface and said Vee-shaped groove at such a width and depth below said



surface that light emitted from said chip is directed to said at least one fiber.

4,411,058
PROCESS FOR FABRICATING CMOS DEVICES WITH SELF-ALIGNED CHANNEL STOPS
John Y. Chen, Los Angeles, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.
Filed Aug. 31, 1981, Ser. No. 297,903
Int. Cl.³ H01L *21/265*
U.S. Cl. 29—571 **27 Claims**



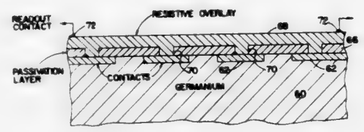
1. A process for fabricating CMOS devices formed on a semiconductor substrate provided with n-channel and p-channel regions of n- and p-type conductivity, respectively, which includes forming source, drain and gate portions in said regions and making electrical contacts to said portions, wherein the improvement comprises forming self-aligned channel stops between regions of the same conductivity and between regions of the opposite conductivity by

(a) forming a mask overlying and aligned with a number of said regions;
(b) implanting a number of first channel stops and well regions of one conductivity type;
(c) forming a layer overlying said regions;
(d) removing said mask and the corresponding portion of said layer, so as to leave the remaining portion of said layer overlying and automatically aligned with a number of said regions; and
(e) implanting a number of second channel stops and well regions of the opposite conductivity type.

4,411,059
METHOD FOR MANUFACTURING A CHARGE SPLITTING RESISTIVE LAYER FOR A SEMICONDUCTOR GAMMA CAMERA
Philip A. Schlosser, Columbus, and Don W. Miller, Westerville, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio
Division of Ser. No. 86,464, Oct. 18, 1979, Pat. No. 4,292,645. This application Aug. 18, 1980, Ser. No. 178,886
Int. Cl.³ H01L *21/283, 31/18*
U.S. Cl. 29—572 **2 Claims**

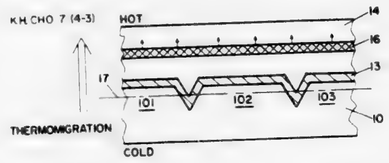
1. A method for manufacturing a solid state gamma ray detector comprising:

(a) providing a portion of high purity intrinsic semiconductor material having two opposed surfaces;
(b) regionally doping at spaced intervals both surfaces of the semiconductor material portion with parallel bands of p type material on one surface and orthogonal parallel bands of n type material on an opposed surface;
(c) applying a passivation layer over at least a portion of the regionally doped surfaces and providing an opening



through the passivation layer communication with the doped intervals on each surface;
(d) applying a resistive layer over at least a portion of the passivation layer, including application of material of the resistive layer within the opening of the passivation layer for conductive communication between the doped intervals on each surface and the resistive layer, and
(e) providing at least one electrical contact on said resistive layer for each surface.

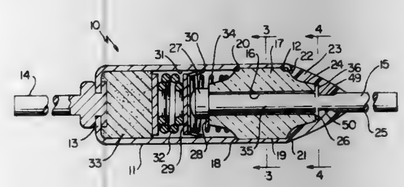
4,411,060
METHOD OF MANUFACTURING DIELECTRICALLY-ISOLATED SINGLE-CRYSTAL SEMICONDUCTOR SUBSTRATES
Kon H. Cho, West Windsor Township, Mercer County, N.J., assignor to Western Electric Co., Inc., New York, N.Y.
Filed Jul. 6, 1981, Ser. No. 280,600
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—576 W **7 Claims**

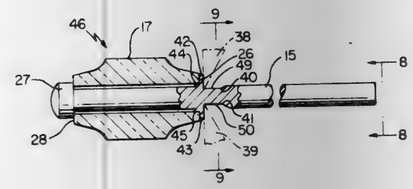


1. Method of manufacturing dielectrically-isolated single-crystal semiconductor island regions for semiconductor integrated circuits comprising the steps of:

contacting a first single-crystal semiconductor wafer having a dielectrically-coated major surface with spaced-apart grooves therein and a major surface of a second single-crystal semiconductor wafer with an intermediate thin metallic body positioned therebetween;
heating the contacted structure to join said first and said second single-crystal wafer and to fill the dielectrically-coated spaced-apart grooves with metal from the thin metallic body;
thermomigrating the metal of said thin metallic body through and out of said second single-crystal wafer and recrystallizing the second single-crystal wafer into a single-crystal semiconductor support region; and
removing material from the surface opposite said grooved major surface of the first wafer until said spaced-apart grooves are exposed thereby forming single-crystal island regions supported by the recrystallized single-crystal semiconductor support region.

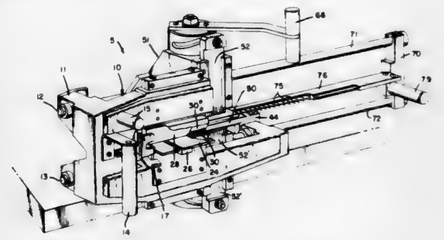
4,411,061
METHOD OF MAKING A THERMAL SWITCH HAVING A LEAD INTERLOCKED THERETO BY A SKIVED PART OF THE LEAD
Allen R. Clapper, and Burlin Davis, both of Laurel County, Ky., assignors to Emerson Electric Co., St. Louis, Mo.
Continuation of Ser. No. 277,647, Jun. 26, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 422,598
Int. Cl.³ H01H *69/00*
U.S. Cl. 29—622 **5 Claims**





1. In a method of making a thermally actuatable electrical switch construction having a housing means carrying an electrically insulating end plug provided with an opening means passing therethrough and in which a portion of a conductive lead is disposed so that opposed ends of said lead extend beyond opposed ends of said end plug and respectively define a fixed contact means inside said housing means and a terminal means outside said housing means, said lead having means interlocking with said end plug to tend to prevent axial movement of said lead into said housing means, said means of said lead that interlocks with said end plug comprising an integral part of said terminal means that extends outboard of said opening and is disposed against the respective opposed end of said end plug that is adjacent said terminal means whereby said lead and said part thereof comprise a one-piece member, said switch construction having a sealing compound disposed on said respective end of said end plug so as to extend onto said terminal means outboard of said part thereof whereby said compound covers said part, said compound extending into said opening from said respective end of said end plug and surrounding said portion of said lead within said end plug, the improvement comprising the steps of skiving said part from said lead, and compacting said skived part against said respective opposed end of said end plug, said steps of skiving and compacting comprising the step of forming said part to comprise a plurality of circumferentially spaced apart tab-like members extending substantially radially from said terminal means against said respective opposed end of said end plug and respectively having portions disposed in said opening in said end plug in circumferentially spaced apart relation to tend to center said portion of said lead in said opening of said end plug and to interlock with said compound in said opening to tend to prevent rotational movement of said lead relative to said end plug.

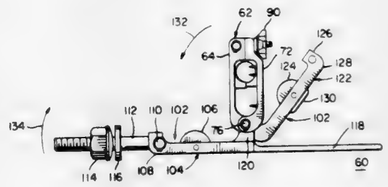
4,411,062
APPARATUS AND METHOD FOR TERMINATING RIBBON CABLE
Kenneth F. Folk, and Mark F. Jackson, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 21, 1981, Ser. No. 227,016
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—749 **23 Claims**



1. An apparatus for terminating the separated conductors at the free end of a ribbon cable to terminals in opposite sides of a connector, said apparatus comprising:

a conductor programming station having means for deflecting adjacent conductors of said cable in opposite directions from the plane of the cable, alternate conductors being deflected in the same direction, said conductor programming station lying on a linear path;
connector positioning means movable on said linear path relative to said programming station, said positioning means having means for holding said connector and positioning said connector between said oppositely deflected conductors subsequent to deflection at said programming station;
a terminating station movable on said linear path relative to said programming station and said connector positioning means, said terminating station being located between first and second insertions rams having means for terminating said conductors to said terminals in said connector while said connector is positioned between said oppositely deflected conductors.

4,411,063
SPLICE INSTALLING TOOL
Michael A. Grundfest, Queens County, N.Y., assignor to Thomas & Betts Corporation, Raritan, N.J.
Continuation of Ser. No. 55,638, Jul. 9, 1979, abandoned. This application May 5, 1981, Ser. No. 260,731
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—751 **15 Claims**



1. An installing tool for crimping a hollow sleeve upon two or more elongate conductors having insulation thereabout, the ends of said conductors being exposed, comprising: sleeve retention means to retain a hollow sleeve in a fixed position; conductor retention means adjacent said sleeve retention means and movably coupled thereto for engaging at least two conductors and retaining same within, and in a fixed position

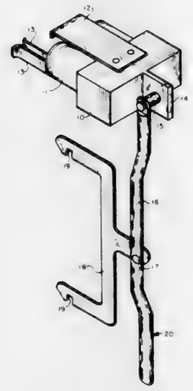
relative to, said hollow sleeve, said conductor retention means comprising a pair of selectively positionable lockable arms, one of such arms to each side of said sleeve retention means, each of said arms having at least one spike thereon to engage the insulation of a conductor and retain such conductor in said conductor retention means with the exposed end thereof in said hollow sleeve when said arm is in a closed position and locked; and crimping means adjacent said sleeve retention means and selectively operable to crimp said hollow sleeve onto said conductors to form an electrical and mechanical joint therebetween.

4,411,064

CIRCUIT CARD EXTRACTOR

James V. Koppensteiner, Chicago, and Joseph B. Onesto, Oak Lawn, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Jun. 18, 1981, Ser. No. 275,085
Int. Cl.³ H05K *3/36*
U.S. Cl. 29—764 **5 Claims**



1. A tool for facilitating the extraction of a printed circuit card from a holder, the latter having top and bottom parallel card guides each card guide including at least one transversely oriented guide track having respective lateral card edges resting therein, said circuit card including a handle mounted to a transverse edge of said circuit card, said tool comprising:
a mounting body including at least one magnet and a retainer clip, said magnet and retainer clip extending outward from a front face of said mounting body arranged to engage and attach said mounting body to said top card guide;
a handle rotatably mounted to said mounting body; and
a U-shaped linkage rotatably mounted to said handle said linkage including means for interlockingly engaging said circuit card handle;
whereby a pulling force applied to said handle extracts said circuit card from said holder.

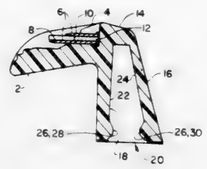
4,411,065

SHAVING CARTRIDGE ASSEMBLY

Robert A. Trotta, Pembroke, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Feb. 25, 1982, Ser. No. 352,150
Int. Cl.³ B26B *21/14*
U.S. Cl. 30—47 **7 Claims**

1. A shaving cartridge assembly comprising a platform portion, a cap portion, blade means disposed between said cap and platform portions, a back portion interconnecting said cap and platform portions, and a housing portion defined in part by said back portion and extending therefrom, said housing portion having an opening at one end thereof, said housing portion being adapted to receive a handle member substantially axially of said housing for connecting said assembly to said handle, and detent means extending inwardly of said opening from



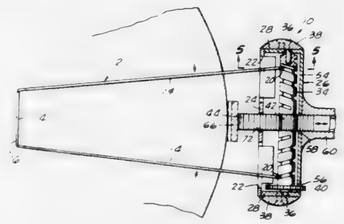
interior wall means of said housing portion, said detent means being adapted to snap into corresponding recess means on said handle.

4,411,066

CAKE CUTTER

Edward Allahverdian, 426 Wing St., #3, Glendale, Calif. 91705

Filed Jan. 6, 1983, Ser. No. 456,281
Int. Cl.³ A21C *15/04*
U.S. Cl. 30—114 **12 Claims**



1. A cake cutter comprising:
a housing having a top wall, a bottom wall, a rear wall, two side walls and a front plate;
a helical screw member having one side with helixes diverging to the right of center and the other side with helixes diverging to the left of center, and journaled into said side walls of said housing;
a pinion mounted on said helical screw member;
a three sided cutting blade having an apex end and two longitudinal sides, with the inner ends of said longitudinal sides formed to ride respectively on the helixes of said screw member;
a length limiting plate located in front of said front plate, and maintained in position by securing means; and
rack means having a handle member for moving said longitudinal cutter sides towards each other in conjunction with said pinion and said helical screw to secure a cut portion of a cake.

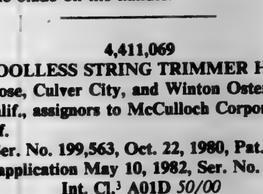
4,411,067

BLADE HOUSING DEVICE FOR CAST CUTTING TOOL

Norbert A. Kirk, 43 E. Ohio St., Room 930, Chicago, Ill. 60611

Filed Aug. 18, 1981, Ser. No. 294,006
Int. Cl.³ B27B *9/02*
U.S. Cl. 30—124 **18 Claims**

1. A cast saw device for cutting a cast comprising:
a cast cutting tool having a body, a shaft extending from said body, and a movable circular saw blade mounted on said shaft;
a housing device comprising a housing and an attaching means for attaching said housing to said body, said housing enclosing a substantial portion of said saw blade, said housing having a side periphery between front and rear walls thereof and a slot in said side periphery through which a portion of the edge of said saw blade projects varying distances, whereby the depth of cut of said saw blade is determined by the portion of the side periphery which is positioned in contact with the cast; and



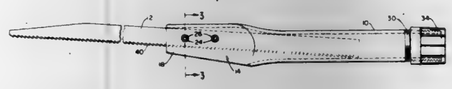
an aperture in said front and rear walls through which said shaft extends and lips extending inwardly from said walls and surround each said aperture to substantially surround said shaft up to said slot whereby the dust collected in said housing is retained therein.

4,411,068

HAND SAW

Panos Theodorides, 595 River St., Mattapan, Mass. 02126

Filed Jul. 20, 1981, Ser. No. 284,735
Int. Cl.³ B23D *45/00*
U.S. Cl. 30—166 R **5 Claims**



1. A hand saw comprising
a straight, hollow, tubular handle, one end of the handle being collapsed to form two closely spaced parallel walls with a slot cut through the handle at adjacent edges of said walls and aligned with the space between the walls,
threads provided on the other end of the handle to enable a handle extension to be secured thereto,
a straight band saw-type blade with teeth along one edge, narrower than the parallel walls so that the blade is fully confined by the handle to the very end of the handle at the collapsed end, said blade also having one end disposed between the closely spaced parallel walls and with the teeth of the saw facing the slot, said blade being axially aligned with the handle so as to form an extension thereof,
and a pair of set screws mounted in one of the parallel walls and bearing against one side of the blade to releasably retain the blade on the handle.

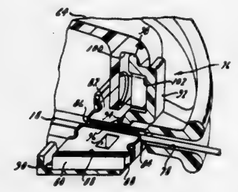
4,411,069

SPOOLLESS STRING TRIMMER HEAD

Albert R. Close, Culver City, and Winton Oster, Los Angeles, both of Calif., assignors to McCulloch Corporation, Los Angeles, Calif.

Division of Ser. No. 199,563, Oct. 22, 1980, Pat. No. 4,335,510.
This application May 10, 1982, Ser. No. 376,470
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **6 Claims**

1. A head for a trimmer using flexible trimming line as the cutting implement comprising:
housing means for containing a coil of trimming line, said housing means having an opening therethrough for egress of said trimming line, said opening being disposed in communication with the center of said coil through said opening to project the free end of said trimming line generally radially-outwardly from said housing means, said housing means being adapted to be rotated at high speed to rotate said coil and the generally radially-outwardly projecting free end of said trimming line therewith; and
clamping means associated with said housing means for securing said trimming line during rotation of said housing means and for releasing said coil through said opening without rotation of said coil said clamping means comprising;
a button member which is manually movably with respect to said housing means for releasing and clamping said trimming line;



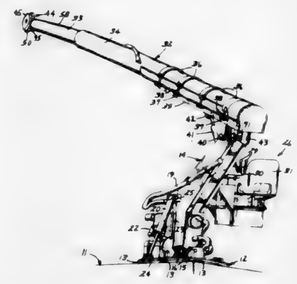
a clamping member resiliently biased in a direction to cause clamping of said trimming line and which is movable against said resilient bias when said button member is manually moved to release said trimming line; and
movement defining means including a slot and a rail residing in said slot, one of said slot and said rail being associated with said housing means and the other of said slot and said rail being associated with said clamping member, said slot and said rail causing said clamping member to move linearly in one direction to release said trimming line and linearly in the opposite direction to clamp said trimming line.

4,411,070

TREE-TRIMMING APPARATUS

George A. Boyum, North Mankato; Robert A. Renner, Mankato, and Ralph Lovelace, Edina, all of Minn., assignors to Jarraff Industries, Inc., North Mankato, Minn.

Continuation of Ser. No. 132,535, Mar. 21, 1980, abandoned.
This application Sep. 23, 1981, Ser. No. 304,840
Int. Cl.³ B27L *1/00*
U.S. Cl. 30—379.5 **44 Claims**



9. A tree-trimming apparatus comprising:
a mobile support;
pump means for supplying fluid under pressure;
an engine drivingly connected to said pump means;
a turntable rotatably mounted about a vertical axis on said mobile support;
a first fluid pressure operated motor means operatively connected to said turntable for imparting rotational motion to said turntable about said vertical axis;
first conduit means for connecting said first motor means to said pump means;

a pedestal pivotally mounted about a horizontal axis on said turntable;

first fluid pressure operated cylinder means operatively connected between said pedestal and turntable for imparting pivotal motion to said pedestal about said horizontal axis;

second conduit means for connecting said first cylinder means to said pump means;

a boom comprising an inner boom member telescopically contained in an outer boom member, said boom pivotally mounted on said pedestal about an axis normal to said horizontal axis;

second fluid pressure operated cylinder means operatively connected between said boom and said pedestal for imparting pivotal motion to said boom about said axis normal to said horizontal axis;

third conduit means connecting said second cylinder means to said pump means;

second fluid pressure operated motor means operatively connected to said inner boom member for imparting boom extending and boom retracting movements to said inner boom member;

fourth conduit means for connecting said second motor means to said pump means;

a circular saw mounted on the end of said boom;

third pressure operated motor means operatively connected to said circular saw for imparting rotational cutting motion to said circular saw;

fifth conduit means for connecting said third motor means to said pump means.

4,411,071

CHAIN SAW

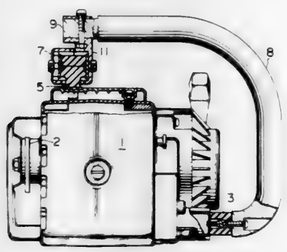
Hiroshi Takahashi, Fussa, and Yasuo Saito, Fujisawa, both of Japan, assignors to Kioritz Corporation, Japan

Filed Oct. 9, 1981, Ser. No. 310,351

Claims priority, application Japan, Oct. 13, 1980, 55-145337[U]

Int. Cl.³ B27B *17/02*

U.S. Cl. 30—381 **1 Claim**



1. A chain saw comprising: an engine block including an engine for driving a saw chain; and a front and a rear handle provided respectively at the front and rear parts of said engine block, said handles being connected at their one ends to said engine block in a vibration absorbing manner through vibration damping members, while the other ends of said handles oppose to each other and are connected to each other at least at two points through respective vibration damping members, at least one of said vibration damping members connecting said other ends of said handles being substantially T-shaped and connected to said engine block.

4,411,072

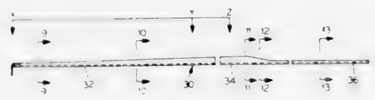
VARIABLE STIFFNESS RULE BLADE, RULE EMPLOYING SAME, AND METHOD OF MAKING SAME

Edward C. Rutty, Portland, and Carl C. Stoutenberg, Burlington, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sep. 30, 1982, Ser. No. 430,676

Int. Cl.³ G01B *3/10*

U.S. Cl. 33—138 **20 Claims**



1. A coilable rule blade having greater standout length comprising an elongated strip of resiliently deflectable metal having a substantially unform width in its coiled flattened state and, in its uncoiled state, a concavo-convex cross section along substantially its entire length, said cross section having a central segment of arcuate configuration defined by a radius R and having a depth H, said blade having a first portion in which the radius R of the central segment of the cross section gradually decreases and the depth H of the cross section gradually increases from values R_1 and H_1 respectively adjacent one end to values of R_2 and H_2 respectively at a point beyond the normal breakpoint of a blade of that width and having a cross section approximating that of the value of $\frac{1}{2}(R_1+R_2)$ and $\frac{1}{2}(H_1+H_2)$ respectively, said radius thereafter increasing and said depth of cross section decreasing towards the other end of the blade to values of R_3 and H_3 respectively; and a second portion in which the radius R_3 and depth of cross section H_3 are substantially uniform over the length thereof and which extends to adjacent said other end of said blade.

4,411,073

PITCH TESTING APPARATUS

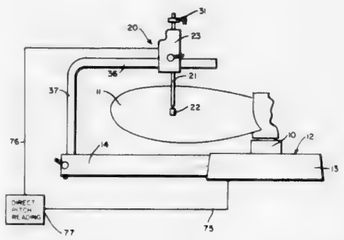
Terence J. Ryan, 39 Egerton St., Southport, Queensland, Australia 4215.

Filed Jul. 13, 1981, Ser. No. 282,508

Claims priority, application Australia, Jul. 11, 1980, PE4485

Int. Cl.³ G01B *5/24, 7/30*

U.S. Cl. 33—174 C **12 Claims**



1. An instrument for measuring the pitch of a propeller blade comprising:

(a) a probe shaft mounted for axial movement;

(b) means for maintaining the probe shaft in constant contact with the propeller blade at a fixed radial distance from the center of the blade;

(c) means for providing continuous relative rotation between the probe shaft and the blade;

(d) means for determining the amount of relative angular rotation between the blade and probe shaft;

(e) means for determining the amount of axial movement of the probe shaft during the relative angular rotation; and

(f) means for providing a direct reading of the pitch of the propeller blade at the radial distance at which the probe shaft is located and over the part of the blade traversed by the probe shaft based on the amount of relative angular rotation and the axial movement of the probe shaft.

4,411,074

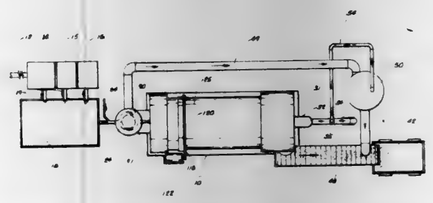
PROCESS AND APPARATUS FOR THERMALLY DRYING OIL WELL CUTTINGS

Charles L. Daly, 205 Baker St., Broussard, La. 70518

Filed Sep. 4, 1981, Ser. No. 299,543

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—32 **12 Claims**



1. A process for thermally aerating oil well drill cuttings to a substantially moisture-free state, comprising the following steps:

a. collecting the cuttings from an oil well bore and storing them in a retainer tank;

b. providing a cylindrical drying chamber with an exit end and an entrance end slightly elevated in relation to the exit end;

c. providing a spiral conduit connecting said retainer tank and said drying chamber;

d. feeding the cuttings into the drying chamber through said spiral conduit;

e. providing a source of pressurized air for assisting the movement of cuttings from said retainer tank down to said drying chamber;

f. providing a source of superheated air;

g. injecting the superheated air into the drying chamber to dry the cuttings;

h. rotating the drying chamber during the injection of the superheated air;

i. providing longitudinal trough-like means within the drying chamber for tumbling the cuttings within the chamber during the rotation of the chamber;

j. removing the dried cuttings from the drying chamber and conveying them into a storage tank.

4,411,075

PROCESS AND APPARATUS FOR DRYING OF SOLVENT CONTAINING MATERIAL

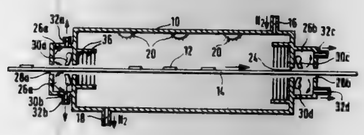
Bernd Blaudszun, Melsbach, Fed. Rep. of Germany, assignor to Lohmann GmbH & Co. KG, Neuwied, Fed. Rep. of Germany

Filed Oct. 14, 1981, Ser. No. 311,435

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1980, 3038791

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—32 **14 Claims**



1. In a process for drying of solvent containing material, in which the material is conducted through a drying chamber containing an inert gas, and in which inert gas is introduced into at least one lock chamber preceding and/or following the drying chamber, the improvement comprising: producing an annular flow of inert gas in the lock chamber by jetting a minor amount of the inert gas required for drying the material into the lock chamber in proximity to an opening of the drying chamber and a mixture of inert gas and sucked-in external air being discharged from the lock chamber in the peripheral region of the annular flow; and introducing the major portion of the inert gas directly into the drying chamber.

4,411,076

SHOE CONSTRUCTION

Horace A. Wilkinson, 13 Korocan Rd., Lilli Pilli, New South Wales, 2229, Australia

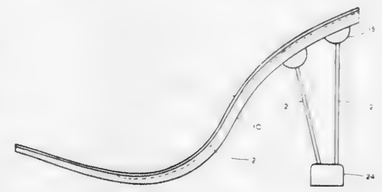
PCT No. PCT/AU81/00011, § 371 Date Sep. 29, 1981, § 102(e) Date Sep. 29, 1981, PCT Pub. No. WO81/02092, PCT Pub. Date Aug. 6, 1981

PCT Filed Jan. 29, 1981, Ser. No. 308,555

Claims priority, application Australia, Jan. 29, 1980, PE2154

Int. Cl.³ A43B *21/00, 21/36*

U.S. Cl. 36—34 R **8 Claims**



8. A heel construction for a shoe comprising a plurality of load bearing pin members, each having an enlarged head at one end thereof; a like plurality of socket members, each socket member having a cavity therethrough, each said cavity including a first passage of a first cross-section less than the cross-section of said enlarged head and a second passage of a second cross-section greater than the cross-section of said enlarged head, one pin member passing through each socket member with the shank of each pin member passing through the first portion of its respective socket member and the enlarged head of each pin member within the second portion of the respective socket member; a single lower heel member attached to the second end of each of said pin members; and means for fastening said socket members to a shoe sole to form a heel for the shoe with said pin members being load bearing members between said lower heel member and the shoe sole.

4,411,077

ATHLETIC SHOE WITH ATTACHED ANKLE BRACE

Jerome A. Slavitt, 7402 York Rd., Towson, Md. 21204

Filed Jan. 5, 1982, Ser. No. 337,269

Int. Cl.³ A43B *7/14, 7/20*

U.S. Cl. 36—89 **2 Claims**

2. An ankle brace for an athletic shoe comprising a pair of opposite side elastic and flexible bracing straps for the shoe each having corresponding ends cut on an angle to the longitudinal axis of the strap, means attaching each cut end of the straps to the athletic shoe near the heel and near the connection of the heel with the shoe upper at posterior angles relative to the plane occupied by the shoe sole, whereby the straps when extended from their connected ends will assume posterior angles of inclination, and cooperative fastener components on the opposite end portions of the straps, one fastener component

being on the exterior of each strap relative to the shoe near and above the attached end of the strap and being adjacent to the



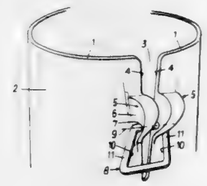
malleolus, and the other fastener component being on the other side of each strap near its free end portion.

4,411,078

DEVICE FOR CLOSING A SLOT IN AN UPPER OR GAITER OF A SKIING BOOT

Erwin Bucheder, Köflach, Austria, assignor to Koflach Sportgerate Gesellschaft, Köflach, Austria

Filed Aug. 7, 1981, Ser. No. 291,078
Claims priority, application Austria, Aug. 28, 1980, 4365/80
Int. Cl.³ A43B *5/04, 11/00*
U.S. Cl. 36—117 **6 Claims**



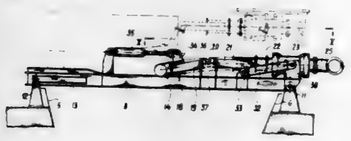
1. A device for closing a slot in an upper or gaiter of a skiing boot, characterized in that the mutually opposite edge portions defining the slot carry outwardly protruding cams, which are formed with bearing holes, a U-shaped fastener is pivoted in said bearing holes on an axis that is transverse to the longitudinal axis of the slot, and said cams have inclined surfaces which face away from the slot and are adapted to cooperate with the confronting side faces of the legs of the fastener.

4,411,079

SUCTION DRAG SYSTEM

Arie de Jager, Sliedrecht, Netherlands, assignor to IHC Holland N.V., Pependrecht, Netherlands

Filed Nov. 10, 1981, Ser. No. 320,291
Claims priority, application Netherlands, Nov. 13, 1980, 8006209
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—58 **7 Claims**



1. In a dredging vessel having a hold and coamings extending lengthwise of the vessel on opposite upper sides of the hold, the vessel having a suction drag system comprising a suction pipe with a suction pump, a discharge conduit for discharging dredged material into the hold, elbow means interconnecting the suction pipe and the discharge conduit, and derrick means by which the suction pipe may be moved outboard and lowered, and raised and brought inboard; the improvement comprising a plurality of support frames extending transversely across the hold and detachably secured at each end to a said coaming, at least one of said support frames carrying said derrick means and another of said support frames carrying said elbow means, said elbow means comprising parallelogram linkage disposed in a vertical plane transverse to the length of the vessel for raising and swinging inwardly, and lowering and swinging outwardly, the upper end of the suction pipe, a turnpiece providing a horizontal swivel joint between the elbow means and the upper end of the suction pipe about a horizontal axis transverse to the length of the vessel, and a horizontal cylinder for swinging said parallelogram linkage.

4,411,080

HIGH-LEAD YARDER RAKE

Donald B. Mann, 8811 131st Ave. Northeast, Lake Stevens, Wash. 98258

Filed Aug. 21, 1981, Ser. No. 295,077
Int. Cl.³ E02F *3/60, 3/48*
U.S. Cl. 37—117 **18 Claims**



1. A high-lead yarder rake capable of clearing brush, timber, and other debris at a logging site when hauled just above the surface along a main line with a main line yarder, comprising:
(a) a generally rectangular frame having a top, a bottom, two sides, a vertical, central cross-member extending between the top and bottom, and a horizontal tine support shaft extending between the sides;
(b) a plurality of leaf spring tines, pivotally mounted on the tine support with generally circular eyes to allow the tines to swing upwardly from the bottom of the frame, each tine extending downwardly to rest against the frame's bottom and projecting downwardly from the bottom;
(c) means to connect the rake to the main line to allow hauling of the rake along the main line;
(d) means to maintain the position of the rake relative to the main line when the rake is hauled; and
(e) means to maintain the spacing of the tines along the bottom of the frame.

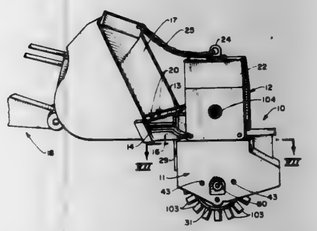
4,411,081

TRENCH COMPACTOR HAVING A VIBRATORY SHEEPSFOOT ASSEMBLY

Reginald D. King, 16252 Colfax Hwy., Grass Valley, Calif. 95945

Filed Jan. 15, 1982, Ser. No. 339,616
Int. Cl.³ E02F *3/76;* **E01C** *19/38*
U.S. Cl. 37—117.5 **9 Claims**

1. A sheepsfoot assembly for mounting upon the lip of a dozer or other prime mover, which comprises:
an upper vibratory machine housing section for a motor and clutch assembly,
a motor and a clutch assembly mounted therein,
a lower vibratory sheepsfoot section undermounted thereto, said lower section having a sheepsfoot frame which includes a pair of spaced vertical side walls, and spaced front and rear walls, the rear of which is vertical and normal to said side walls,
a pair of spaced bearing mounts disposed interior of each side wall, a shaft journalled for rotation in said bearing mounts, a drum mounted to said shaft and rotatable therewith, said drum having a plurality of spaced rows of compacting teeth extending outwardly from the outer periphery of said drum,
means interconnecting said drum and said motor for vibrating said drum when said motor is actuated,



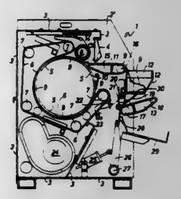
mount means for securing said sheepsfoot assembly to said prime mover, said mount means comprising a back flange secured generally vertically upon the rear wall of said lower section and a pair of vertically spaced parallel brackets extending rearwardly outward from and normal to said back flange for receiving said lip, and
at least one pair of vertically aligned apertures disposed in said brackets and adapted to receive securing means therein.

4,411,082

LAUNDRY IRONING DEVICE WITH PIVOTED BLADE FOLDER

Francois Ferrage, La Rivieve-de-Corps, France, assignor to Dubix, Saint Julien les Villas, France

Filed Oct. 8, 1981, Ser. No. 309,761
Int. Cl.³ D06F *65/10*
U.S. Cl. 38—9 **3 Claims**



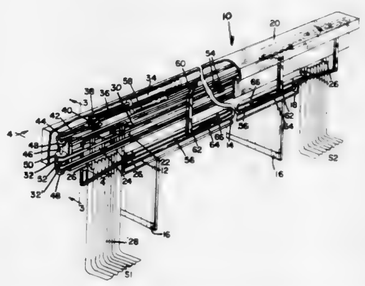
1. A drying and ironing device for the industrial treatment of long flat textile elements, said device comprising a casing, an engagement tank for the textile elements mounted at the front of the casing, a drying and ironing system mounted within said casing between the lateral flanks thereof and accessible from the front of the casing, said drying and ironing system comprising a heated cylinder, a guide path, mounted adjacent to said engagement tank inwardly thereof and comprising a frame about which endless drive strips are entrained, for delivering a textile element when the latter is discharged from the engagement tank, a drive cylinder, mounted near the discharge end of the guide path and adjacent said heated cylinder, for gripping the textile element when the latter is discharged from the guide path and for applying the textile element against the heated cylinder, a series of auxiliary cylinders disposed around the circumference of the heated cylinder from said drive cylinder to a discharge point constituted by the last auxiliary cylinder in the series in a direction measured from the drive cylinder around the circumference of the heated cylinder, and at least one endless belt disposed over the entire width of the heated cylinder and guided by said auxiliary cylinders such that the textile element is introduced between said endless belt and the heated cylinder and advances therebetween to the discharge point constituted by the last auxiliary cylinder for discharge from the drying and ironing system so as to hang down, after discharge, from the last auxiliary cylinder under the effect of gravity, and a system for folding the textile element and comprising a transverse folding blade, located beneath said last auxiliary cylinder and being fixed to a transverse support pivoting about a shaft which is disposed in a lower portion of the casing of the drying and ironing device directly below the discharge point of the drying and ironing system constituted by the last auxiliary cylinder and the longitudinal axis of which extends general parallel to the axis of the heated cylinder, electrical double-acting jack means for rocking said folding blade between two limit positions, means, for gripping and removing the textile element after the textile element has been folded through the action of said electrical double-acting jack means so as to straddle the folding blade, comprising a further guide path, extending outwardly of said casing beneath said engagement tank and formed by a plurality of endless strips entrained about a frame and driven by a further drive cylinder located at an input end of said further guide path in spaced relationship to an output end of said further guide path, and at least one presser roll bearing against said cylinder and disposed in a transversly oriented, freely rotatable manner at the end of a support member pivoting about a transverse axis located directly below the engagement tank, a receiver container disposed at the front of the casing under the further guide path and said engagement tank so as to receive the dried, ironed and folded textile element when the latter is discharged from the output end of said guide path, and means for automatically controlling said electrical jack means to provide rocking of the folding blade in one direction and then the other when the textile element, upon being discharged from the drying and ironing system, has unrolled by a given length corresponding to the formation of a fold on one side or the other of the folding blade, and to provide stopping and starting of the rocking of the folding blade at the end and beginning, respectively, of the process for folding the textile element, as well as for actuating said means for gripping and removing the folded textile element.

4,411,083

LAUNDRY SPREADER

Henry J. Weir, Chepstow, Wales, assignor to H. J. Weir Engineering Co., Ltd., England

Continuation-in-part of Ser. No. 209,018, Nov. 12, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 312,533
Claims priority, application Ireland, Nov. 22, 1979, 2227/79
Int. Cl.³ D06F *59/08*
U.S. Cl. 38—143 **5 Claims**



1. An apparatus for centering and spreading laundry articles

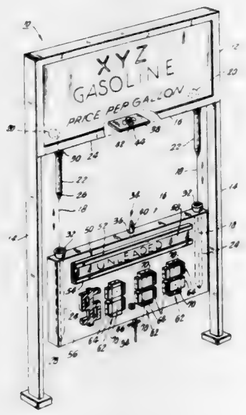
comprising: clipping means for gripping respective parts of a leading edge of a laundry article; respective carriages for conveying said clipping means; a track means along which said carriages can move from a contiguous initial position at a first loading station to a spaced apart position when the article has become fully spread out; an endless elongated means having a first run and a second run which extend along said track means; a lead carriage being fixed to said first run; a trailing carriage which idles with respect to said second run; an abutment means fixed to said second run and initially positioned equidistantly on the opposite side of a reference center-line from which said lead carriage is initially positioned therefrom while said carriages are at said leading station; and a drive means for moving said endless elongated means in one direction to draw said lead carriage along said track from said loading station and then in the reverse direction to return said lead carriage to said loading station, such that upon activation of said drive means, said endless elongated means moves in said one direction moving said lead carriage, with a respective laundry article edge gripped in said clipping means, along said track spreading out the laundry article, said lead carriage and said abutment means are moving toward each other crossing at said reference center-line then moving apart so that when said lead carriage draws one-half of the width of said article beyond said reference center-line, said abutment means will contact said trailing carriage having a respective edge of said article gripped in said clipping means, thus arresting further movement of said trailing and lead carriages and leaving said article spread and centered with respect to said reference line.

4,411,084

DISPLAY WITH CHANGEABLE CHARACTERS

John W. Kraus, Teaneck, N.J., assignor to Trans-World Manufacturing Corp., East Rutherford, N.J.

Filed Jun. 5, 1981, Ser. No. 271,001
Int. Cl.³ G09F *9/37*
U.S. Cl. 40—450 **40 Claims**



1. A changeable display, comprising:

a plurality of mechanical flip-flop elements, each said flip-flop element having a first side which is entirely of a first color, and a second side which is entirely of a second color;

a plurality of frame means, each said frame means for supporting and positioning a respective group of said flip-flop elements in an array, each array corresponding to a discrete character whereby said display is adapted to display several characters; and

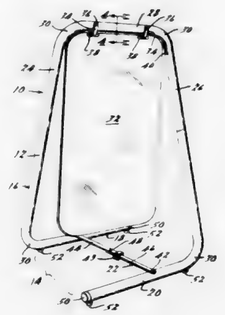
resilient means which connect each said flip-flop element to its respective said frame means to enable each flip-flop element to be manually individually retracted away from its respective frame means and then rotated to have a desired one of its first and second sides face outwardly of the display.

4,411,085

SLIT-TUBE SIGN STAND

Ian W. Farmer, Waltham Cross, England, assignor to Arken, Inc., Bloomfield Hills, Mich.

Filed Jan. 7, 1982, Ser. No. 337,720
Claims priority, application United Kingdom, Feb. 13, 1981, 81998893
Int. Cl.³ G09F *15/00, 7/22*
U.S. Cl. 40—610 **7 Claims**



1. A sign stand for displaying advertising messages and the like comprising

a single piece of tubular material formed into a base structure with two leg members and an upstanding frame structure,

said frame structure having two upstanding side members and an upper cross-bar,

said upper cross-bar having torsion-relieving means therein to allow said leg members to be spread apart easily and without permanently deforming any of said tubular material,

said torsion-relieving means comprising a slot formed in said tubular material along the underside of said upper cross-bar, and

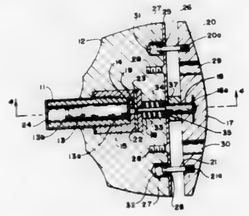
a sign panel attached to and positioned in said frame structure.

4,411,086

HAND HELD, SINGLE SHOT, FIREARM

John K. Christopherson, 9180 Falcon Cir., Sandy, Utah 84070

Filed Mar. 16, 1981, Ser. No. 243,719
Int. Cl.³ F41C *3/00*
U.S. Cl. 42—1 R **12 Claims**



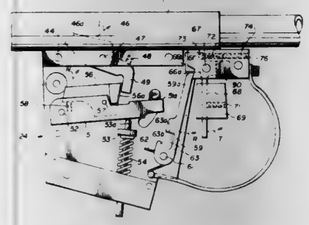
1. A single-shot, hand-held firearm, adapted for use with a cartridge having a primer, comprising a body; a barrel secured to said body, said barrel being adapted to receive and hold the cartridge; a firing pin normally spaced from the cartridge but adapted to be moved toward the cartridge so that it strikes the primer thereof; barrier means immediately adjacent the firing pin in its normal unfired, but ready to be fired, position and interposed between the firing pin and the primer of the cartridge in spaced relationship from said primer, said barrier means being adapted to stop movement of the firing pin toward said primer and hold said firing pin spaced from said primer until a predetermined pressure is applied by the firing pin against the barrier means so that said firing pin abruptly penetrates said barrier means, said firing pin being otherwise unimpeded in its travel path toward the primer when the firearm is ready to be fired; and means by which sufficient pressure can be applied to the firing pin whereby the firing pin abruptly penetrates the barrier means, passes through the space between the barrier means and the primer of the cartridge, and strikes the primer with sufficient force to detonate said primer, thereby causing the firearm to fire.

4,411,087

TRIGGER MECHANISM FOR FIREARMS

Floyd O. Aikman, 27 Roberts Dr., Howell, N.J. 07731

Filed Oct. 23, 1980, Ser. No. 199,711
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—69 A **7 Claims**



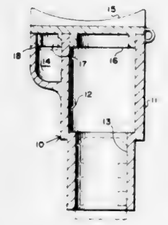
1. A trigger mechanism for a firearm such as a pistol or the like including a receiver, a bolt slideably disposed in said receiver, a firing pin slideably disposed in said bolt and means for yieldingly urging said firing pin from a retracted position into a firing position, a trigger housing mounted on said firearm, a trigger pivotally mounted on said housing, means for yieldingly urging said trigger in one direction of rotation, a sear pivotably mounted on said housing, means for yieldingly urging said sear in one direction of rotation for retaining engagement with said firing pin in said retracted position, trip means pivotally mounted on said trigger housing for movement between a first position and a second position, means for yieldingly urging said trip means from said first position into said second position, release means pivotally mounted on said trigger housing for retaining engagement with said trip means in said second position, means for yieldingly urging said release means into engagement with said trigger in a direction of rotation opposite said one direction of rotation of said trigger whereby rotation of said trigger in the opposite direction of rotation permits further movement of said release means out of said retaining engagement with said trip means and movement of said trip means into said first position for engagement with said sear to pivot said sear in the opposite direction of rotation out of said retaining engagement with said firing pin for movement of said firing pin from said retracted position into said firing position wherein said trigger includes a body pivotally mounted on said housing and a rod member for manually pivoting said trigger in said opposite direction, said trigger body including a stepped rear portion forming first and second surfaces, said release means being movable into one position in engagement with said first surface for retaining engagement with said trip means and being movable into a second position in engagement with said second surface for releasing said trip means wherein said trip means comprises a sear trip bar pivotally mounted at one end on said trigger housing, said trip bar having an outer end portion for retaining engagement with said release means in said second position, a sear trip pivotally mounted on said sear trip bar, spring means for yieldingly urging said sear trip in one direction of rotation into firing position, said sear trip being arranged to rotate in the opposite direction of rotation against said spring means for urging engagement with said sear in said firing position during the movement of said sear trip bar from said first position into said second position and into engagement with said sear during the pivotal movement of said sear trip bar from said second position into said first position for pivoting said sear out of retaining engagement with said firing pin.

4,411,088

WATER RESISTANT CHARGE CONTAINER FOR FIREARMS

Hugh R. Wilson, 10840 SW. 120th St., Miami, Fla. 33176

Filed Dec. 21, 1981, Ser. No. 332,606
Int. Cl.³ F42B *39/04*; F41C *27/00*
U.S. Cl. 42—90 **6 Claims**



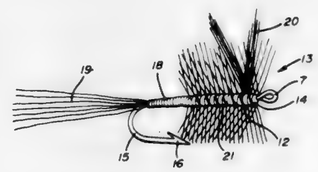
1. In a charge container for use with muzzle loading firearms, said container having a body, said body having a first chamber for containing at least one charge component, a second chamber for containing an additional component, partition means separating said first chamber and said second chamber, closure means for confining said components within said first chamber and said second chamber, the combination with said body, said first chamber, said second chamber, said partition means and said closure means of percussion cap holding means, said percussion cap holding means being mounted on the underside of said closure means, said percussion cap holding means and a percussion cap held thereby being completely enclosed within the outermost confines of said body and said closure means when said closure means is in a closed position for protecting said percussion cap against contamination.

4,411,089

FISHING FLY WITH SYNTHETIC FEATHER

Ronald A. Runeric, 113 W. Moreland Ter., Akron, Ohio 44302

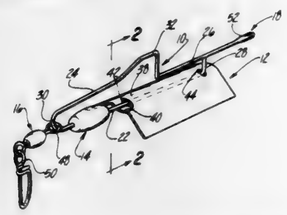
Continuation of Ser. No. 271,530, Jun. 8, 1981, abandoned. This application Jun. 14, 1982, Ser. No. 387,947
Int. Cl.³ A01K *85/08*
U.S. Cl. 43—42.53 **7 Claims**



1. The method of making a fishing fly incorporating a hook having a shank, a tail portion, a wing portion and a feather wherein said feather is formed of a plurality of synthetic fila-

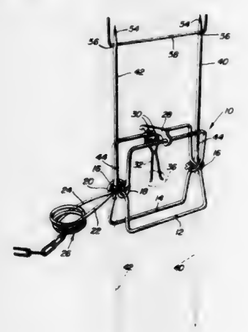
ments arranged in spaced parallel relation and fastened in a row to a first thread, folding said filaments around said first thread to position said filaments on one side thereof, wrapping said first thread spirally around the shank of said hook so that said filaments extend radially from said shank.

4,411,090
TROLLING PLANE
Ralph W. Seals, 5935 30th Ave. S., Gulf Port, Fla. 33707
Filed Feb. 19, 1982, Ser. No. 350,523
Int. Cl.³ A01K *95/00*
U.S. Cl. 43—43.13 **5 Claims**



1. In a trolling plane for submerging a fishing line, said plane being of the type comprising a wire frame having a support section extending fore and aft, said frame having a ramp section extending between a first bight at the forward end of the frame and a second bight located aft of the first bight, a ring on the ramp section of the wire frame for connection of a trolling line from a boat to the frame, said frame being adapted for connection of a fishing line thereto, a sinker mounted on said frame at a location forward of the second bight so that the frame assumes a diving attitude when the frame is suspended by the trolling line with the ring located at said second bight, and a hydrofoil mounted on the support section of said frame, the improvement wherein said hydrofoil has a central longitudinal axis extending fore and aft and is mounted on said support section for pivotal motion about its longitudinal axis relative to said frame.

4,411,091
ANIMAL TRAP WITH SUPPORT-SUSPENSION LEGS
Dennis G. Hedstrom, Rte. 1, Box 114, Iron, Minn. 55751, and Rocky O. Hedstrom, Rte. 7, Box 646, Alexandria, Minn. 56308
Filed Jan. 8, 1981, Ser. No. 223,279
Int. Cl.³ A01M *23/26*
U.S. Cl. 43—88 **2 Claims**



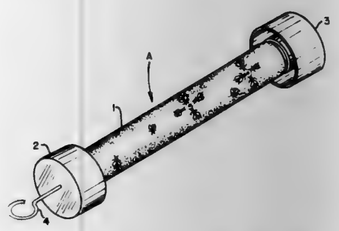
1. A trap for suspension from an overhead support and, alternately for support from the ground in vertically spaced relation relative to the ground, said trap comprising a pair of levers, said levers including corresponding first base ends and second jaw ends, fastener means pivotally connecting said base ends together for relative swinging of said levers between first open positions with said jaw ends displaced away from each other and second closed positions with said jaw ends displaced toward each other into at least closely adjacent positions, spring means operatively connected between said levers yieldingly biasing the latter toward said second positions, releasable latch means operative to releasably latch said levers in said first positions, each of said levers including a generally U-shaped portion including a pair of parallel legs and a bight portion extending between and interconnecting one pair of corresponding base ends of said legs, said bight portions comprising said jaw ends of said levers, said fastener means comprising a pair of fasteners pivotally connecting the free ends of the legs of corresponding levers, a pair of elongated rigid support members each including a flattened end having a transverse aperture for said fastener means and a pointed tip end, said fastener means extending through said apertures of the flattened ends and pivotally supporting said flattened ends of said elongate support members for swinging of said elongated support members relative to both of said levers about the axes of relative pivoting of said levers and with said axes extending substantially at right angles relative to said flattened ends of said support members, said pointed tip ends of said elongated support members each including a transverse bore therein, the pointed tip ends being provided for impaling in the ground to provide suport from the ground, and means including a length of bendable wire adapted for passing through the transverse bores of the elongated support members providing for selective adjustability in suspension from a support structure.

4,411,092
FISH TRAP HAVING A CARDIOIDAL STRUCTURE
Louis-Marie Lalancette, 532 Judith Jasmin, Chicoutimi, Quebec, Canada G7H 6M8
Filed Jun. 9, 1981, Ser. No. 272,017
Claims priority, application Canada, Apr. 1, 1981, 374390
Int. Cl.³ A01K *69/08*
U.S. Cl. 43—100 **6 Claims**



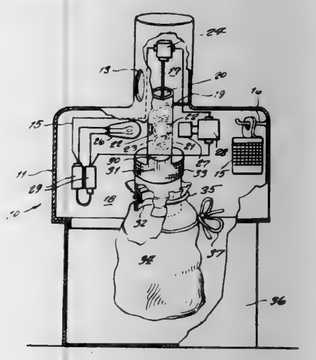
1. In a trap for catching small fishes of the type comprising a wire mesh basket provided with a central opening for allowing the fishes to enter the trap, the improvement wherein the basket has a cardioidal structure in order to reduce the possibilities for the fishes to escape from the trap, wherein the wire mesh basket comprises a cylindrical body with ends in the shape of a cardioid and a retrogressing zone extending along the whole height of the body, said retrogressing zone being flattened and comprising the opening of said basket in its middle portion and wherein the basket further comprises two flat wire mesh walls slantwisely mounted in the retrogressing zone from the central opening to the periphery of both ends of the cylindrical body respectively, said walls defining together with the body a funnel shaped opening extending in front of the central opening of the trap.

4,411,093
INSECT LURE
Daniel M. Stout, Kirkwood, Mo., and Charles B. Duff, Scottsdale, Ariz., assignors to Whitmire Research Laboratories, Inc., Kirkwood, Mo.
Filed Jun. 17, 1981, Ser. No. 274,551
Int. Cl.³ A01M *1/14*
U.S. Cl. 43—114 **22 Claims**



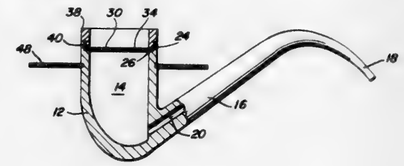
1. An insect lure for use in both attracting the insect to the lure from a distance and then terminating the life of the same after its adherence to the lure, comprising, a base member incorporating both the means for attracting and killing the insect, said base member having a superficial fluorescent attractant of luminescent material overprinted with silhouettes of insects for enhancing attraction of such insects to the lure, a coating of a highly viscous tackifier material for adhering the lure settled insect until its demise, said lure including a tubular base member, said tubular base member being formed as a wound tube, a light shade layer of paper applied over the base member to prevent the tube from color bleed therethrough, a wound layer of fluorescent paper forming the luminescent material applied over the light shade of paper, a coating of lacquer applied over the luminescent paper to function as tube barrier, and said tackifier coating being applied upon the lacquer barrier for enhancing insect adherence.

4,411,094
ELECTRONIC ROACH TRAP
Daniela Spackova, 300 W. 55th St., Apt. 14-S, New York, N.Y. 10019, and Richard M. Chen, 51-25 Goldsmith St., Elmhurst, N.Y. 11373
Filed Feb. 18, 1982, Ser. No. 350,117
Int. Cl.³ A01M *1/10*
U.S. Cl. 43—121 **2 Claims**



1. An electronic roach trap, comprising in combination, a hollow housing removably placed on a container, an upper and lower compartment in said housing, a tube therebetween, entry openings for roaches into said upper compartment, a bait means in said lower compartment, and electric eye means for actuating a helical empeller to force said roaches down through said tube, and a sleeve therebelow holding a disposal bag.

4,411,095
BUBBLE PIPE
Wilford A. Rushing, and Barbara R. Rushing, both of Bloomington, Ill., assignors to Rosemary E. Boelke and Art Boelke, both of Charlotte, N.C.
Filed Feb. 5, 1982, Ser. No. 346,215
Int. Cl.³ A63H *33/28*
U.S. Cl. 46—7 **1 Claim**



1. A bubble pipe device including an upwardly opening bowl and an elongated hollow stem having one end formed integrally with the lower end of the bowl and opening thereinto and the other end extending laterally outwardly from the bowl and adapted to be received in the mouth of a user, said bowl including an upper end internally threaded and enlarged annular portion defining an upwardly facing annular shoulder at the inner extremity thereof, a circular apertured insert plate removably received in said enlarged annular portion and seated on said shoulder, an externally threaded annular retaining member removably threaded into said enlarged annular portion above said plate and retaining the latter against removal from said enlarged annular portion, the threads in said enlarged annular portion extending upwardly through the upper periphery of said bowl and adapted, when said retaining member is removed, to facilitate the scraping of thin slivers of soap from a bar of soap scraped over the upper end of said bowl, said bowl including a peripheral groove formed in and extending about the exterior of said bowl, an apertured annular shield downwardly displaceable over the upper end of said bowl and removably snap fittingly engageable in said groove for retaining the down flow of soap bubbles exiting from the upper end of said bowl.

4,411,096
EDUCATIONAL TOY DOLL WITH WEIGHT TENDING TO RETURN HEAD
Samuel C. Smith, 210 Hartman Rd., Newton Centre, Mass. 02159
Filed Feb. 22, 1982, Ser. No. 351,114
Int. Cl.³ A63H *15/06*
U.S. Cl. 46—155 **8 Claims**

1. An educational toy comprising a body having at least a generally erect portion, an elongated guideway extending downwardly on the body from the top of the generally erect portion, a head of generally circular cross-section separably mounted on the body and directed by the guideway, said head including a peripheral rib engaging said guideway, means for angularly orienting the head in a normal at rest position on top

of the generally erect portion and means including a weight positioned in the head for supplying a torque tending to return



the head to its at rest position after it has been rotated downwardly along the guideway.

4,411,097

DOLL WITH MOVABLE ARMS, LEGS AND HEAD ACCOMMODABLE WITHIN TRUNK

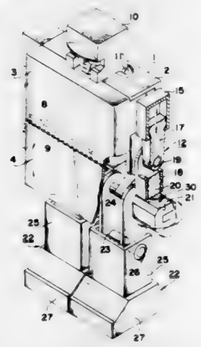
Katsuji Murakami, Tokyo, Japan, assignor to Kabushiki Kaisha POPY, Tokyo, Japan

Filed Sep. 16, 1981, Ser. No. 302,522

Claims priority, application Japan, Dec. 4, 1980, 55-174243[U]

Int. Cl.³ A63H *3/00, 3/46*

U.S. Cl. 46—161 **5 Claims**



1. A doll comprising a trunk defining a chest, addomen, back, waist and hips, and members simulating a head, shoulders, arms, hands, legs and feet,

said trunk being of a generally box shape,

having horizontally and centrally of the inner space a partition which defines an upper room and lower room within the trunk and fixedly connects at one upper edge thereof an upper lid on an upper hinge for pivotal movement in a vertical direction, and at a lower edge thereof a lower lid on a lower hinge for pivotal movement in a vertical direction, and

forming at the top an opening which is utilized when the head is accommodated within or emerged out of said upper room whereby the head in an emerged position locks to the upper edge portion of said upper lid, at the opposite side openings which are utilized when the shoulders, arms and hands are accommodated within or extended our of said upper room, and at the bottom an opening which is utilized when the legs and feet are accommodated within or extended out of said lower room whereby the feet in an accommodated position cover said opening at the bottom,

said head being rotatably moveable in a downward or upward vertical direction connected to an engaging pin mounted on said trunk within said upper room,

said shoulders respectively being fixed through a shoulder rod to a shoulder articulation which is rotatably connected to a shoulder articulating axle mounted on said trunk within said upper room, and

said legs respectively being pivotally journaled to a leg articulation axle mounted on said trunk within said inner room.

4,411,098

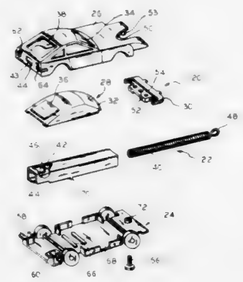
TOY VEHICLE

John D. Birdsall, 1262 Sunset Plz. Dr., Los Angeles, Calif. 90069; Ronald Liedtke, Addison, and Marvin Smollar, Northbrook, both of Ill., assignors to John D. Birdsall, Los Angeles, Calif.

Filed Dec. 11, 1981, Ser. No. 329,738

Int. Cl.³ A63H *17/00*

U.S. Cl. 46—206 **12 Claims**



1. A toy wheeled vehicle comprising a body having a key hole in the back area aligned with a tube inside the vehicle in a confronting relationship; an elongated coiled spring inside said tube; key means for linear insertion through said keyhole and into said tube; said key, keyhole, and tube being shaped to stabilize the positions of the key and coiled spring and to restrict key movement to a fixed orientation with only a substantially linear insertion and release motion; said key means comprising an elongated pair of spaced parallel plates joined on opposite ends having a handle on one end and a blade leading to a tip on the other end; latch means formed in the blade area on a side of at least one plate of said key to lock into mating keeper means formed on a confronting side of said tube; and spacer pin means positioned between said plates at a position intermediate said opposite ends which requires said side plates to flex in the area of said latch means when said plates are squeezed together.

4,411,099

SINGING ELECTRONIC FROG

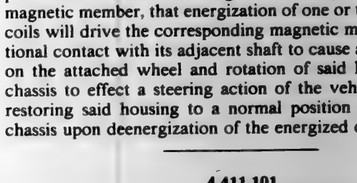
Radames Cancel, 35-50 81st St., Apt. 2-K, Jackson Heights, N.Y. 11372

Filed Feb. 12, 1982, Ser. No. 348,220

Int. Cl.³ A63H *33/26*

U.S. Cl. 46—232 **3 Claims**

1. A singing electronic frog, comprising in combination, a base in the shape of a frog's hind legs, a body in the shape of an upper torso of a frog, said body being pivoted on said base, an electronic circuit in said frog including a sound producing system, means to open said circuit when said body is upwardly pivoted away from said base, force element means for biasing said body away from said base, and mating alined juxtaposed



loop pile fastener elements secured to said body and said base for restraining said biasing force element means.

4,411,100

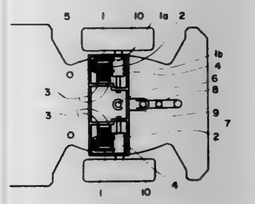
STEERING MECHANISM FOR RUNNING TOY

Yoshio Suimon, Nakajima Daiichi Bldg. No. 24-2, Yotsuga 4-chome, Shinjuku-ku Tokyo, Japan

Filed Dec. 28, 1981, Ser. No. 334,962

Int. Cl.³ A63H *17/36*

U.S. Cl. 46—235 **4 Claims**



1. Steering mechanism for toy vehicles and the like having a chassis, comprising a sealed boxlike housing, means pivotally mounting said housing on said chassis for movement relatively thereto about a vertical axis, a pair of wheels for said vehicle, means rotatably supporting said wheels on individual shafts formed of magnetic material positioned within opposite transverse ends of said housing, a pair of soft magnetic members mounted within said housing for movement toward and away from said respective shafts, a pair of energizeable coils so positioned within said housing and about a portion of each soft magnetic member, that energization of one or the other of said coils will drive the corresponding magnetic member into frictional contact with its adjacent shaft to cause a braking action on the attached wheel and rotation of said housing on said chassis to effect a steering action of the vehicle, and means restoring said housing to a normal position relative to said chassis upon deenergization of the energized coil.

4,411,101

APPARATUS AND METHOD FOR HEATING THE ROOT ZONE OF PLANTS

Edward A. Springer, and Ronald D. Smith, 611 Mountain View Ave., both of Petaluma, Calif. 94952

Filed Aug. 17, 1981, Ser. No. 293,681

Int. Cl.³ A01G *13/00*

U.S. Cl. 47—2 **1 Claim**

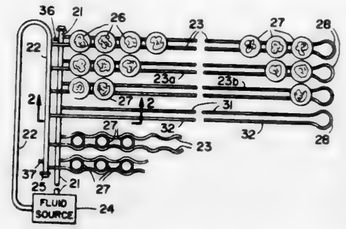
1. Apparatus for root zone heating of plants comprising:

input manifold means, outlet manifold means, and an array of fluid conveying heating tubes each coupled to said input manifold means and said outlet manifold means for the flow of a heating fluid therethrough,

said tubes being substantially cylindrical and being formed of a flexible self-supporting elastomeric terpolymer of ethylene, propylene and diene monomer,

adjacent tubes in said array being relatively spaced apart by a distance between about 2.5 centimeters and about 7.6 centimeters over substantially the entire lengths of said tubes and said tubes being positioned adjacent to growing plants,

said tubes being independently movable over substantially the entire lengths thereof, and



at least some of said tubes in said array being displaced from said array to a position above said array to provide for heating of the air space proximate said plants.

4,411,102

DOOR CONTROL

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Filed Aug. 20, 1980, Ser. No. 179,961

Int. Cl.³ E05F *17/00*

U.S. Cl. 49—110 **4 Claims**

1. In combination with an inclosure having a horizontal shelf and a passage thereabove normally disposed between a clerk on one side and a customer on the other for transaction of business, a pair of swinging doors lying in a common vertical plane normally closing said passage, said doors having adjacent substantially meeting edges when closed and a vertical actuating rod mounted for axial rotation adjacent the edge of each door remote from said adjacent edges, and means for simultaneously opening and closing said doors, comprising,

(a) a reciprocable carriage below said shelf and a horizontal, spring-biased actuator therefor with analogous mechanisms between said carriage and said actuator for swinging said doors simultaneously from closed position to their open positions in opposed planes approximately 90° from the plane of their closed position,

(b) each of said mechanisms comprising a bell-crank lever having a fixed pivotal fulcrum and pivots on opposite sides of said fulcrum,

(c) first linkage means extending between said carriage and one of said pivots,

(d) second linkage means extending between the other of

said pivots and the respective rod and keyed to the lower end thereof for rotation of the rod on its axis,

(e) a crank arm keyed to the upper end of said rod and pivotally mounted to the upper edge of said door intermediate the vertical edges thereof,

(f) a guide roller mounted on the upper edge of the door intermediate the vertical edges thereof,

(g) guide means for said roller above the door and in the plane of the doors when in closed position, and

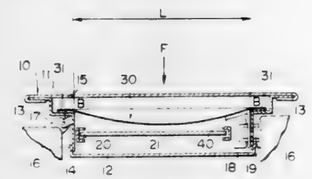
(h) means for automatically actuating said carriage reversely to effect simultaneous closing of the doors.

4,411,103

CONSTRUCTION OF A DOOR BEAM OF A MOTOR VEHICLE

Eiichi Ohmura, and Tateo Kitano, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 18, 1981, Ser. No. 264,560
Claims priority, application Japan, May 29, 1980, 55-71989
Int. Cl.³ B60J *5/04*; E06B *3/00*
U.S. Cl. 49—502 **9 Claims**



1. A vehicle door construction having a pair of side panels comprising:

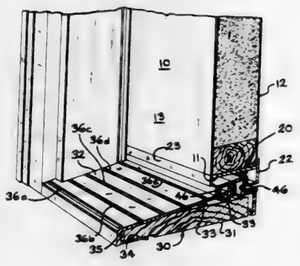
a door beam fixed to the door side panels at opposite ends of said door beam, said door beam being of an arcuate shape in plan view, said door beam being further configured such that the section modulus of said door beam is a maximum at a center section of said door beam and gradually decreases toward both opposite ends of said door beam, the contour of cross section of said door beam being of round wave shape.

4,411,104

INSWING DOOR BOTTOM AND SILL ASSEMBLY

William R. St. Aubin, Wood, Ohio, assignor to LST Corporation, Sylvania, Ohio

Continuation of Ser. No. 205,914, Nov. 12, 1980, abandoned. This application Dec. 30, 1982, Ser. No. 454,737
Int. Cl.³ E06B *1/70*
U.S. Cl. 49—470 **10 Claims**



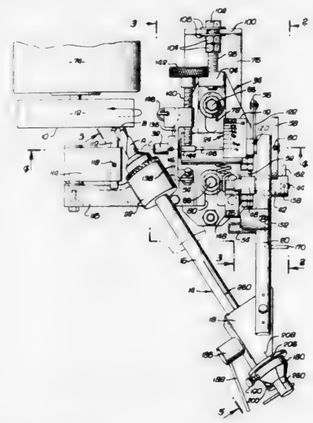
1. An improved bottom and sill assembly for mounting on exterior doors comprising; a bottom assembly for mounting on such door, said bottom assembly having a flexible and generally tubular sealing member extending along the inner edge of such door and projecting downwardly, said sealing member having a flexible and deflectable exterior wall spaced from an inside wall, a sill assembly positioned below and in mating relationship with said bottom assembly when such door is in a closed position, said sill assembly defining a horizontally extending projection adjacent the inner edge of such door which engages and deflects said sealing member when said door is closed to provide a weather-impervious barrier, said sealing member extending downwardly to an elevation below said horizontally extending projection, said horizontally extending projection deflecting said flexible and deflectable exterior wall inwardly from a first shape to a second shape along the entire horizontally extending projection when the door is closed, whereby a continuous seal is formed and maintained which wraps the horizontally extending projection on both its horizontal and vertical edges even when the door and sill are misaligned.

4,411,105

PRECISION DRILL BIT RESURFACING TOOL

Antti P. Raiha, Rte. #1, Box 512, Sandpoint, Id. 83864

Filed Jul. 23, 1981, Ser. No. 286,334
Int. Cl.³ B24B *3/28*
U.S. Cl. 51—124 R **9 Claims**



1. In a surfacing tool for a multiple lipped drill bit cooperable with a surface of a grinding wheel,

(a) a holder for the drill bit to be surfaced;

(b) a pivot block;

(c) means mounting the holder on the pivot block for movement about a swing axis;

(d) means mounting the pivot block for movement in a path which orients the swing axis substantially parallel to the operative surface of the grinding wheel, movement of said pivot block in its said path moving said swing axis towards and away from said operative surface;

(e) means forming a stop for limiting movement of said pivot block in its said path;

(f) means urging said pivot block normally to engage said stop;

(g) means movably mounting the stop for determining a starting position of the stop and a corresponding position of the swing axis in accordance with the size of the drill bit to be surfaced;

(h) feed means mounted on the stop for micrometric work stroke movement of the pivot block and the drill bit holder mounted thereon; and

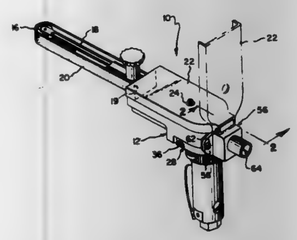
(i) marker means for providing a memory as to the excursion of said feed means so that said excursion can be exactly duplicated for all drill bit lips.

4,411,106

MINIATURE BELT GRINDER

Elwin H. Fleckenstein, Alden, and Walter N. Welsch, Tonawanda, both of N.Y., assignors to Dynabrade, Inc., Tonawanda, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,969
Int. Cl.³ B24B *23/06, 55/06*
U.S. Cl. 51—170 EB **8 Claims**



1. In a belt grinder having a casing, a drive pulley rotatably supported within the interior of said casing by a drive shaft of a pneumatic motor, a contact pulley spaced from said drive pulley and supported for rotation by an arm assembly projecting through a forward opening of said casing, and an endless belt trained about said pulleys, said motor having a housing secured to said casing and surrounding said shaft, the improvement, comprising:

passage means for venting exhaust air from said motor housing;

an exhaust passage in communication with said interior of said casing; and

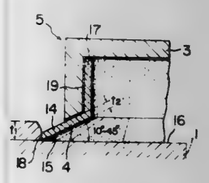
restricted exhaust passage means in communication with said passage means and said exhaust passage for generating therethrough high velocity flow of exhaust air from said motor housing to said exhaust passage to induce a flow of ambient air through said casing opening and said interior of the casing through said exhaust passage for the removal of dust, grit or debris therefrom, said restricted exhaust passage means comprises an annular nozzle adjacent said exhaust passage, and said passage means includes an annular chamber in surrounding relation to said annular nozzle.

4,411,107

GRINDING WHEEL FOR FLAT PLATES

Shinji Sekiya, Tokyo, and Takatoshi Ono, Nagareyama, both of Japan, assignors to Disco Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,305
Claims priority, application Japan, Feb. 1, 1980, 55-10888; Feb. 1, 1980, 55-10889
Int. Cl.³ B24D *5/00*
U.S. Cl. 51—209 R **9 Claims**



1. A grinding wheel for grinding the surface of flat plates comprising a cup rotatable about an axis perpendicular to the flat plate surface to be ground and having an open end for facing toward said flat plate surface and comprising a substantially cylindrical sidewall having interior and exterior peripheral surfaces;

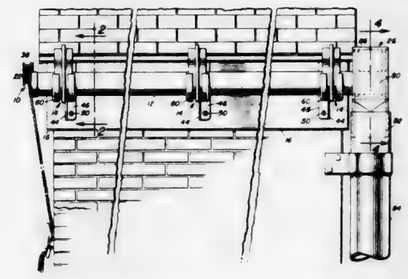
a grindstone which is an inverted, funnel-shaped, thin wall monolithic element having an axially elongate cylindrical mounting portion extending substantially throughout its length from the open end of said cup close along the cylindrical side wall of the cup and being telescoped with respect to said cup and means for affixing said cylindrical mounting portion to said cup, said grindstone consisting of a self-supporting thin layer of uniform thickness fixed to said cup without an electrodeposition substrate, said grindstone comprising a uniformly thin one-piece annular frusto-conical brim of grinding material having a central peripheral portion integrally extending from the end of the cylindrical mounting portion at the open end of the cup and which like a somewhat drooping hat brim angles cantilevered outwardly beyond the cylindrical mounting portion of the grindstone while angling away in a separated manner from the open cup end at an angle of from 100° to 135° to the axis of rotation of said cup, said brim of grinding material being circumferentially continuous, said brim protruding from said cylindrical mounting portion of the grindstone to a width of about 5 mm and having a thickness in the range of 0.1 mm to 0.5 mm, the axial length of said cylindrical mounting portion being substantially equivalent to the width of said brim, said brim and cylindrical mounting portion respectively forming the mouth and neck of an inverted funnel such that the outer peripheral edge of the brim is the sole part contactable with a flat plate surface to be ground and the full width of the brim of grinding material separates the open cup end from contact with the plate, said thin frusto-conical brim being of electrodeposited nickel metal having dispersed therein grains of a crystalline material.

4,411,108

GUTTER SYSTEM

Thomas P. Kerester, 1305 Kingston Ave., Alexandria, Va. 22302

Filed Jul. 8, 1981, Ser. No. 281,383
Int. Cl.³ E04D *13/06*
U.S. Cl. 52—11 **23 Claims**



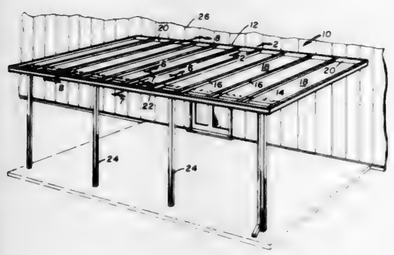
1. A support for a system for rotatably supporting a gutter comprising:

a support bracket for attachment to a building, said bracket having a curvilinear bearing surface;

a support member for attachment to a gutter, said support member being movably held by said support bracket; and

a plurality of discrete roller elements rotatably carried by one of said support brackets and said support member for rolling contact between said support member and said support bracket whereby said support member is movable relative to said bracket to rotate a gutter for the removal of debris.

4,411,109
BEAM-BRACED AWNING
Francis L. Struben, and Jean C. Struben, both of 3870 Jarrettsville Pike, Jarrettsville, Md. 21084
Filed Sep. 18, 1981, Ser. No. 303,376
Int. Cl.³ E04D *13/00*; E04B *7/04*; E04D *13/04*
U.S. Cl. 52—11 **9 Claims**



1. An awning, comprising:

a wall support means, said wall support means being substantially channel-like in configuration, said channel-like wall support means having a web and top and bottom flanges, said channel-like wall support means being suitably affixed to a wall through said web, said web being reinforced by increased thickness at the lowermost portion thereof, said top and bottom flanges being canted downwardly from said web, said top flange having a first and second downwardly projecting protrusions, said first downwardly projecting protrusion being located at the distal end of said top flange, said second downwardly projecting protrusion being longer than and spaced apart from said first downwardly projecting protrusion, said downwardly projecting protrusions extending the entire length of said wall support means, said spaced apart protrusions forming a pocket means thereby;

an outboard support means;

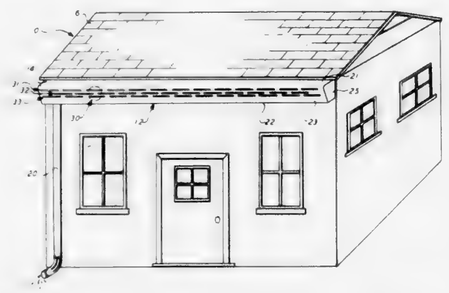
a plurality of beam means, said plurality of beam means being spaced apart and supported by and suitably affixed in place to said wall support means and said outboard support means, said plurality of beam means each being generally of an "I" configuration, said "I" configuration consisting of a vertical web and a top and bottom flange, each said beam means having two downwardly projecting protrusions, one of said two protrusions being located on each side of and spaced from said web of said beam means, thereby forming a pocket means on each side of said web, said downwardly projecting protrusions being flanged outwardly at the tips thereof, said downwardly projecting protrusions extending the entire length of said beam means;

a plurality of roof cover means, each said roof cover means of said plurality of roof cover means being partially inserted into said pocket means of each said beam means and then suitably affixed to the respective beam means;

a plurality of rigid sealing means, each said rigid sealing means of said plurality of rigid sealing means being partially inserted into said pocket means formed by said downwardly projecting protrusions of said wall support means and suitably affixed into place; and

a combined rain gutter and face plate means, said combined rain gutter and face plate means being suitably affixed to the outboard ends of said plurality of said beam means.

4,411,110
RAIN GUTTER
Robert J. Carey, 478 Leonardville Rd., P.O. Box 68, Belford, N.J. 00718
Filed Nov. 9, 1981, Ser. No. 319,385
Int. Cl.³ E04D *13/06, 13/08*
U.S. Cl. 52—11 **9 Claims**



1. An improved rain gutter for preventing entrance thereinto of leaves and other debris which cause rain gutter clogging and the stoppage of rain flow into downspouts, the improved rain gutter for being attached to a building adjacent the edge of a roof upon which rain falls, comprising:

generally closed longitudinally extending hollow rain gutter means including a front;

said front provided with a plurality of longitudinally extending, generally horizontally disposed, rows of interrupted slots, the interruptions between the slots in each row being displaced horizontally with respect to the interruptions between the slots of the next adjacent row of slots such that there is no generally vertical path of rainflow down said front which is not interrupted by at least one of said slots;

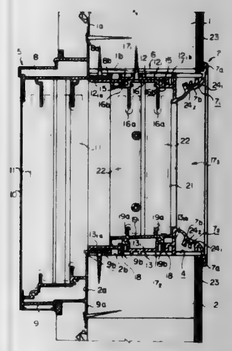
said front provided with a plurality of generally inwardly and downwardly extending flaps;

said flaps provided along the top edges of said slots for receiving rain flowing across said front and for diverting said rain into said hollow rain gutter means; and

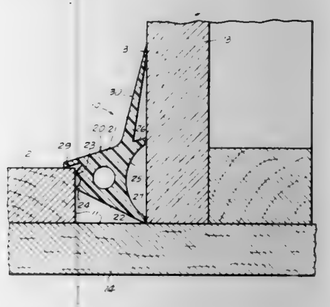
said slots being of a predetermined size sufficiently small to generally prevent the entrance thereinto, and into said hollow rain gutter means, of said leaves and other debris.

4,411,111
WINDOW SASH ASSEMBLY
Shuichi Hosooka, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Oct. 29, 1980, Ser. No. 201,696
Claims priority, application Japan, Nov. 13, 1979, 54-156461[U]
Int. Cl.³ E06B *1/04*
U.S. Cl. 52—213 **3 Claims**

1. A window sash assembly for installation in a building window opening which comprises an outer metal sash, an inner sash positioned and assembled indoors adjacent to said outer sash and a peripheral edge member positioned about the inner end of said inner sash to cover the adjacent open end of an indoor wall member, characterized in that said inner sash includes a main portion of adiabatic material which is integrally formed with said peripheral edge member at the inner end portion thereof and forms a sash main frame composed of similar upper, lower, right-hand, and left-hand frame members and extending from said peripheral edge member to the indoor pieces of said outer sash and metal upper and lower rail frames and metal left-hand ad right-hand door boxing frames being disposed along the inner periphery of said sash main frame, said sash main frame being formed into a first framework and said upper and lower rail frames and left-hand and right-hand door boxing frames being formd into a further framework, said further framework being separately mounted within and connected to said first framework to form a one-piece framework assembly which is fitted as a unit in said building window opening.



4,411,112
SEALING STRIP FOR AN EXPANSION VOID
Neil S. Golden, Los Angeles, Calif., assignor to Albert H. Allen, Beverly Hills, Calif., a part interest
Filed Oct. 27, 1981, Ser. No. 315,708
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—288 **8 Claims**



1. A strip for sealing an expansion void between the floor and a room wall comprising:

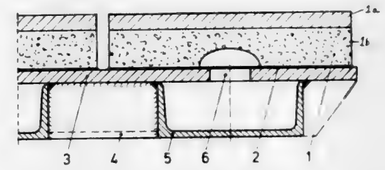
an elongated extruded strip of resilient material of uniform cross section having upper and lower surfaces converging toward one another from a relatively wide wall-engaging lateral side thereof;

said wall-engaging side of said strip being recessed and provided with upper and lower ribs extending lengthwise thereof, said upper rib being adapted to seat firmly against the wall adjacent the top of said void and said lower rib being adapted to seat firmly against the wall adjacent the bottom of said void;

the opposite relatively narrow lateral side of said strip being provided with at least one rib adapted to seat firmly against the edge of the floor side of said expansion void adjacent but below the upper surface of the floor; and

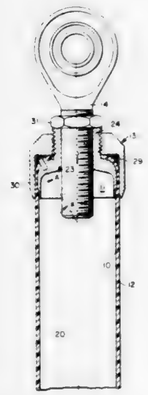
said ribs along the opposite lateral sides of said strip being adapted to cooperate with one another in providing a self-stabilizing generally triangular anchorage effective to lock said strip firmly assembled in said expansion void.

4,411,113
PREFABRICATED AERATION BLOCK FOR SILO BASES
Wilhelm Zimmermann, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany
Filed Mar. 19, 1981, Ser. No. 245,457
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 8007813[U]
Int. Cl.³ E04B *1/70*
U.S. Cl. 52—303 **4 Claims**



1. A prefabricated aeration units in a silo bases wherein said silo base is constructed of a plurality of such units comprising, a flat plate having a top side and a bottom side with a plurality of air connecting bores therethrough, a plurality of porous aeration blocks adherently affixed to the top side of the flat plate essentially centrally over said air connecting bores, transversely open shaped manifold air distribution support sections on the bottom side of the flat plate having side walls, the said side walls of the transversely open shaped manifold support sections being fixed to the plate, said units being adapted and constructed whereby a plurality may be disposed to be positioned along a bottom of a silo.

4,411,114
COMPRESSION-TENSION STRUT
Horst Wurtinger, Fürstenfeldbruck; Jochen Glissmann, Dachau, and Herbert Heissler, Munich, all of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 29, 1980, Ser. No. 221,335
Int. Cl.³ E04L *3/30*
U.S. Cl. 52—309.1 **10 Claims**



1. A strut for longitudinal tension and longitudinal compression comprising a tubular wrapping from reinforcing fibers in a synthetic resin on a core, with respectively one rounded cap provided at each end and exhibiting a central outer peg, the wrapping terminating on the rounded portion of this cap, the latter serving as a tension cap, and with respectively one compression cap attached to the outer peg and surrounding the rounded section of the wrapping, the wrapping of the strut exhibits longitudinal fibers extended over the two rounded

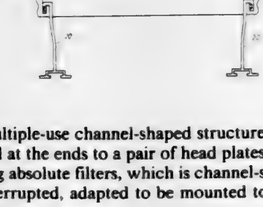
portions around pins fixedly provided on the rounded portions and oriented obliquely toward the outside; and the core being a pipe of a fiber-reinforced synthetic resin and respectively affixed to an inner peg of the tension cap, for the concomitant absorption of the longitudinal compression or of the longitudinal compression and longitudinal tension.

4,411,115

SPACER FRAMES FOR MULTI-PANE GLAZING UNITS

Taieb Marzouki, and Bernd Schweisser, both of Taunus, Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Division of Ser. No. 26,064, Apr. 2, 1979, Pat. No. 4,294,733.
This application Jun. 10, 1981, Ser. No. 272,276
The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.
Int. Cl.³ E04B *1/62*
U.S. Cl. 52—309.1 **6 Claims**



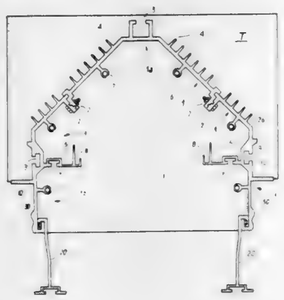
1. A spacer frame suitable for use in assembly of multiple pane units, comprising spacer elements in the form of a closed figure having, adhered on a selected bonding surface(s) a coating of a heat softenable elastic sealant composition which is shape-retaining and non-tacky at temperatures below 60° C. and capable of softening to bond-forming condition when heated to temperatures above 140° C. and which comprises a block copolymer having two polystyrene end blocks linked to an at least substantially saturated polyolefin rubber mid-block, an aliphatic hydrocarbon resin of melting point not less than 60° C., an epoxy resin, and finely divided inorganic filler.

4,411,116

MULTIPLE-USE CHANNEL-SHAPED STRUCTURE FOR SUSPENDED CEILING

Laurent Maillard, Milan, and Graziano Bregolin, Pavia, both of Italy, assignors to Thermosystem S.p.A., Italy

Filed Apr. 20, 1982, Ser. No. 370,031
Int. Cl.³ E04B *5/55*
U.S. Cl. 52—489 **5 Claims**



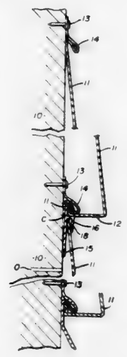
1. A multiple-use channel-shaped structure for false ceilings to be fixed at the ends to a pair of head plates, in particular for supporting absolute filters, which is channel-shaped, elongated and uninterrupted, adapted to be mounted to the ceiling with the channel-shaped concavity in the downward direction by means of a central continuous slot, further comprising outer cooling fins and outer recesses for the connection with cross spacer members; inner grooves for coupling with said head plates; supporting inner recesses and beads; and outer brackets for supporting said absolute filters.

4,411,117

BUILDING SIDING REPLACEMENT DEVICE AND METHOD

David J. Bolha, 939 S. Schenley Ave., Youngstown, Ohio 44509

Filed May 20, 1981, Ser. No. 265,382
Int. Cl.³ E04C *1/34*; E02D *37/00*; E04D *1/00*; E04G *23/02*
U.S. Cl. 52—521 **6 Claims**



1. A method of removing and reinstalling building siding comprising the steps of cutting a first section of siding to be removed immediately below the lower marginal edge of a second section of siding, moving the first section of siding downwardly so as to uncouple the overlapped lower edge of said first section of siding from a third section of siding, removing the first section of siding from the associated building, positioning a clamping strip having a hook shaped flange thereon partially between the remaining portion of the first section of siding and the lower marginal edge of the second section of siding, reinstalling said second section of siding by placing the free severed upper edge portion thereof between said clamping strip and the hook shaped flange thereon and re-engaging the lower edge of said first section of siding on said third section of siding.

4,411,118

PANEL SET FOR THE FORMATION OF ATHERMANOUS WALLS

Jorge C. Claver, Provenza 474, Barcelona, Spain

Filed Apr. 17, 1981, Ser. No. 255,041
Claims priority, application Spain, Apr. 30, 1980, 250.369[U]
Int. Cl.³ E04C *1/10*
U.S. Cl. 52—582 **9 Claims**

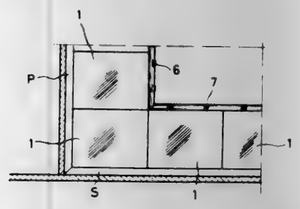
1. A panel set for the formation of athermanous walls comprising:

(a) panels for forming an anthermanous wall, each panel being formed for two rigid lateral, substantially sheet-like members and a central core of insulating plastics material between the sheet-like members, and having edges juxtaposable to corresponding edges of another panel; and

(b) coupling means fixedly connected to said panels for juxtaposably coupling one panel to another panel and including:

(i) a male mating element fixedly attached to a panel at an edge thereof and having an outwardly extending active member with at least one flank lateral surface inwardly tapered toward the panel edge to which said male mating element is attached;

(ii) a female mating element fixedly attached to a panel at an edge thereof and having an inwardly extending active member with an inlet opening adapted to receive insertion of the active male member of another panel when the panels are juxtaposed together at respective edges thereof; and



(iii) an adjustable resilient retractable stop means positioned in said female mating element for allowing insertion of said male active member and having a generally frustoconical end for engaging said inwardly tapered flank lateral surface of said male active member upon insertion and tightening the juxtaposed panels closer together at the respective edges thereof.

4,411,119

METHOD OF LAYING BRICK FOR SWIMMING POOL PATIOS AND THE LIKE

Richard L. Miller, 233 Broadway, Room 3612, New York, N.Y. 10007

Filed Nov. 17, 1980, Ser. No. 207,765
Int. Cl.³ E04H *3/16*
U.S. Cl. 52—747 **3 Claims**



1. A method of laying a brick surface around an area, which comprises:

laying at least one continuous concentric row of brick around said area, said laying including starting said row of brick with a pointed wedge-shaped brick followed by a plurality of progressively tapered bricks until the last of said tapered bricks attains a width equal to the width of standard conventional bricks, said standard bricks being then used to complete the laying process, whereby a brick surface by way of laying at least one continuous row of brick can be laid without cutting and fitting, wherein said area is an approximately horizontal area, said area being a swimming pool.

4,411,120

ALUMINUM SHINGLE ACCESORIES

Billy H. Ellis, No. 4 Edgehill Rd., Joshua, Tex. 76058, and Randall Ellis, 7505 Ridgeway, Fort Worth, Tex. 76180

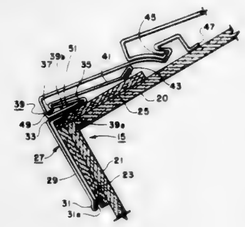
Filed May 4, 1981, Ser. No. 260,001
Int. Cl.³ E04B *7/00*
U.S. Cl. 52—748 **4 Claims**

1. A method of installing metal shingles to roof decking at an eave and gable end, each of the shingles being of the type having a lower forwardly projecting flange for engaging an interlocking slot of another shingle, comprising:

providing an accessory with first and second flat portions bent to form a corner, each flat portion having a free edge, the accessory further having a channel formed between the second flat portion and the corner;

securing one of the accessories to an eave to serve as a starter strip, with the channel and second flat portion extending forwardly above the roof decking, and with the first flat portion depending downwardly to serve as a drip edge;

securing a first row shingle to the roof decking with its flange inserted into the channel;



securing another one of the accessories to the gable end to serve as a gable strip, with its channel and second flat portion located outside the decking and extending downwardly, to serve as a drip edge, the first flat portion extending above the roof decking; and

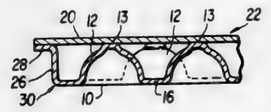
bending the sides of the shingles next to the gable end downwardly and inserting the sides into the channel.

4,411,121

STRUCTURAL MEMBER WITH TRUNCATED CONICAL PORTION AND COMPOSITE PANEL INCLUDING SAME

Peter A. Blacklin, Columbia; James R. Dougherty; Richard J. Johnson, both of Baltimore, and Donald L. Tate, Millersville, all of Md., assignors to Tate Architectural Products, Inc., Jessup, Md.

Filed Feb. 2, 1981, Ser. No. 230,671
Int. Cl.³ E04C *2/32*
U.S. Cl. 52—792 **20 Claims**



1. A sheet of structural material comprising:

a pattern of dome-like projections extending from the plane of said sheet and of which at least a major portion of the configuration of each dome-like projection is circular in plan view, said dome-like projections in the plane of said sheet being arranged in a geometric pattern that substantially limits the elongation of the material to the areas defined by the substantially circular configurations,

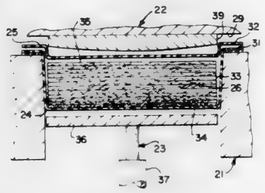
at least one of said dome-like projections further comprising a truncated cone portion formed in a peak area thereof having a flattened uppermost planar surface parallel to the plane of said sheet, thereby increasing overall depth and resistance to crushing.

4,411,122

APPARATUS AND METHOD FOR PRESSURE RESIZING OF PRODUCTS

Darrel G. Cornish, McFarland, and Carroll P. Hartl, Madison, both of Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

Filed May 23, 1980, Ser. No. 152,759
Int. Cl.³ B65B *1/24, 55/00, 63/02*
U.S. Cl. 53—436 **23 Claims**



1. An apparatus for pressure resizing a product into substantial conformity with the inside surface of a preformed package having a body member including a side wall and an end wall, the package also having a closure panel opposite the end wall, the product being arranged in the form of a mass having a side surface, an end surface and a closure surface opposite the end surface, the apparatus comprising:

a pressure resizing cavity resilient having a side wall restraint member that is of substantially the same size and shape as the side wall of the body member of the package, there being substantially no gaps between the side wall restraint member and the package body member side wall;

a closure end restraint member positioned with respect to the cavity to contact and to apply force to substantially the entire closure surface of the product; and

pressure generating means for imparting a force to the end surface of the product, said pressure generating means including a surface, there being substantially no gaps between said surface of the pressure generating means and the package body member end wall;

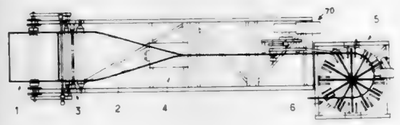
whereby the side wall restraint member, closure end restraint member and pressure generating means combine to resize the product by a restrained cavity concept to conform substantially to the size and configuration of the cavity.

4,411,123

PACKAGING APPARATUS

Raoul L. A. Gautier, Belmont sur Vair, France, assignor to Societe Generale des Eaux Minerales de Vittel, Vittel, France

Filed Nov. 25, 1980, Ser. No. 210,364
Claims priority, application France, Sep. 6, 1980, 80 13039
Int. Cl.³ B65B *9/08*
U.S. Cl. 53—550 **13 Claims**



1. Packaging apparatus for forming a connected series of containers from an elongated strip of film and for disposing materials in each of said containers, said apparatus comprising:

(a) a supply of the elongated strip of film;

(b) means for withdrawing the film from said supply and for advancing the film along a path;

(c) means disposed at a first station adjacent said path for operating upon and for forming the film into the series of connected containers;

(d) means disposed at a second station along said path downstream of said first station for injecting material at periodic intervals into a single one of the series of containers as it is brought one at a time to said second station, said injecting means comprising opening means for engaging the film that is brought to said second station and for effecting an opening in each container whereby said injecting means may inject materials into each container as it is disposed at said second station, whereby the length of the elongated strip is decreased;

(e) means for imparting a relatively stationary relationship between each container of the series and said material injecting means, thereby permitting the injection of materials by said material injecting means into each of said containers of the series; wherein said imparting means comprises a carousel, motor means for providing a rotational movement to said carousel, and said opening means comprises a plurality of holding means, each spaced at given intervals about the periphery of said carousel, each of said holding means for receiving and holding one of the containers of the series; and

(f) strip length compensating means responsive to the advancement of the strip along said path for disposing the containers of the series closer together while being filled with material by said injecting means wherein said strip length compensating means comprises a plurality of positioning adjusting means, each coupled to a corresponding holding means and operative in response to the rotation of said carousel for disposing its corresponding holding means along a radial path towards the axis of said carousel, whereby successive containers of the strip are spaced closer together after they have been filled with material by said injecting means.

4,411,124

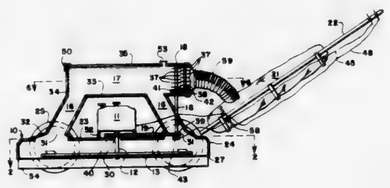
Patent Not Issued For This Number

4,411,125

MULTI-FUNCTION APPARATUS FOR LAWN MAINTENANCE

Hubert E. Strickland, 1108 Wright Ave., Chesapeake, Va. 23324

Filed May 17, 1982, Ser. No. 378,725
Int. Cl.³ A01D *53/00, 53/08*
U.S. Cl. 56—16.9 **3 Claims**



1. A lawn maintenance apparatus comprising:

(a) a housing open at the bottom and comprised of a substantially horizontally disposed deck and peripherally disposed sidewall, and provided with four wheels for rolling support, said deck containing a central aperture and four arcuate apertures spaced 90° apart in a circular locus about said central aperture,

(b) an engine mounted atop said deck and equipped with a drive shaft which is downwardly directed from said engine and penetrates said central aperture,

(c) a cutting blade mounted upon said drive shaft, disposed below said engine within said housing and adapted for rotation in a horizontal plane, said cutting blade having four extremities arranged in a cross design, each extremity having an upwardly angled portion positioned to pass below said arcuate apertures,

(d) ducting means communicating with said arcuate apertures for upwardly conveying lawn debris,

(e) a collector box positioned above said engine and in communication with said ducting means,

(f) means driven by said engine for mulching said debris, said means comprising a series of counter-rotating intermeshing circular discs mounted upon two rods positioned within said collector box,

(g) a removable porous container adapted to collect said mulched debris, and

(h) handle means pivotably associated with said housing.

thereof, said platform having releasable clamping means for holding the trimming device thereon,

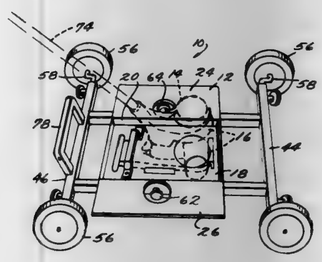
frame means for supporting said platform, said frame means having front and rear ground engaging wheel means spaced apart a selected distance on said frame means, said frame means including a pair of substantially parallel arms extending between said front and rear wheel means and spaced apart a selected distance, said platform having a pair of substantially parallel guide wall means spaced apart a distance slightly less than said selected distance so that said pair of guide wall means is disposable between said parallel arms of said frame means and slidable with said platform with respect to said arms over at least a said portion of said selected distance toward and away from said front wheel means, releasable gripping means for securing said platform on said frame means in a selected position between said front and rear wheel means.

4,411,126

CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Filed Feb. 26, 1982, Ser. No. 353,002
Int. Cl.³ A016 *3/06*
U.S. Cl. 56—17.5 **8 Claims**



1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said carriage comprising:

a platform having a top and a bottom side, an aperture in said platform for receiving and supporting the motor driven trimming device with the cutting element located on said bottom side and the housing located on the top side

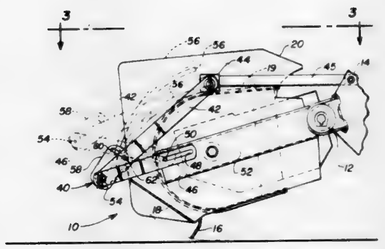
---

4,411,127

FLOATING WINDGUARD

Anthony F. Diederich, Jr., Terre Hill; Peter P. Haldeman, Reinholds, and Willis R. Campbell, Ephrata, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 5, 1982, Ser. No. 365,704
Int. Cl.³ A01D *89/00*
U.S. Cl. 56—364 **8 Claims**



1. A windguard for use on a pick-up mechanism attachable to the frame of a crop harvesting machine, said windguard comprising:

(a) a bar extending transversely of said pick-up mechanism;

(b) a plurality of tines attached to said bar along the length thereof;

(c) said bar being movable in a first direction upward and away from said pick-up mechanism and in a second direction downward and toward said pick-up mechanism during operation of said pick-up mechanism;

(d) link means supporting sid bar, said link means being pivotable in one direction to move said bar in said first direction and in the opposite direction to move said bar in said second direction; and

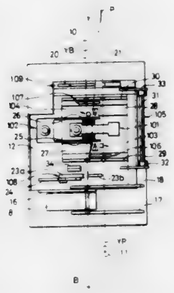
(e) said bar being rotatably connected to said link means.

4,411,128

METHOD AND APPARATUS FOR SPLICING SPUN YARNS

Hiroshi Mima, Joyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Japan

Filed Sep. 23, 1981, Ser. No. 304,848
Claims priority, application Japan, Sep. 26, 1980, 55-134986
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—22 **9 Claims**



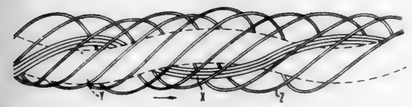
1. A method for splicing spun yarns in an automatic winder by sucking yarn ends on both the bobbin and package side into yarn end control nozzles respectively, inserting yarn ends into a yarn splicing nozzle and being subjected to an air jet to splice them in the yarn splicing nozzle, characterized in that the sucking action of the yarn end control nozzle is stopped when or after the treatment of the yarn ends is completed, and then a compressed fluid is jetted from the splicing nozzle to effect splicing.

4,411,129

COMPOSITE YARN

Alan Parker, Bolton, and Peter J. Dickinson, Rossendale, both of England

Division of Ser. No. 218,313, Dec. 19, 1980. This application Sep. 7, 1982, Ser. No. 415,503
Claims priority, application United Kingdom, Dec. 22, 1979, 7944318
Int. Cl.³ D02G *3/36, 3/38*
U.S. Cl. 57—228 **3 Claims**



1. A yarn including a component of staple fibres and a component formed by a continuous strand, wherein some of the staple fibres form an inner core around which the continuous strand is twisted and some of the staple fibres form a sheath twisted around the inner core and the continuous strand.

4,411,130

HEAD FOR THE SIMULTANEOUS LAYING OF OPTICAL FIBERS WITHIN A GROOVED CYLINDRICAL SUPPORT

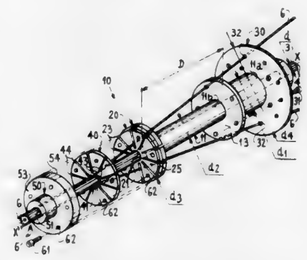
Gilles Dubois, and Jean P. Hulin, both of Conflans Sainte Honorine, France, assignors to Lignes Telegraphiques et Telephoniques, Conflans-Ste. Honorine, France

Filed Feb. 9, 1982, Ser. No. 347,255
Claims priority, application France, Feb. 17, 1981, 81 03062
Int. Cl.³ D07B *5/00;* D01H *13/04*
U.S. Cl. 57—352 **10 Claims**

1. A head for the simultaneous laying of optical fibers within grooves formed in the periphery of a cylindrical support rod, comprising:

a hollow tube through which the support rod passes longitudinally in continuous motion;

a first member having the shape of a washer and a larger diameter than the tube, said member being rigidly fixed to and located in alignment with said tube, said support rod being permitted to pass through a central opening formed in said member, said central opening being provided with an internal flange having radial projecting portions equal in number to the grooves of the support rod so that each projecting portion rests substantially at the bottom of a groove, said washer-shaped member being provided with



radial slits formed in its periphery and spaced at the same angular intervals as the projecting portions of said flange, each optical fiber being thus caused to engage within one slit and positioned with respect to one groove of said support rod;

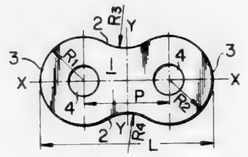
a cylindrical member for inserting the optical fibers in the grooves of the support rod, said cylindrical member being rigidly fixed to the washer-shaped member and pierced by a central opening which is located in alignment with the opening of said washer-shaped member and through which said support rod is permitted to pass, each fiber being applied by said inserting member within one groove of said support rod.

4,411,131

CHAIN LINK PLATE

Tatsuo Ohnishi; Takeshi Uemura, and Teruo Nakajima, all of Osaka, Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Jan. 5, 1981, Ser. No. 222,238
Claims priority, application Japan, Mar. 25, 1980, 55-036911
Int. Cl.³ F16G *15/14*
U.S. Cl. 59—78 **4 Claims**



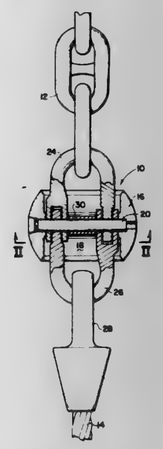
1. A link plate for a link-type chain, said link plate including a pair of enlarged end parts joined together by an intermediate constricted part, each end part having an opening extending therethrough, said link plate being symmetrical about a first axis which extends longitudinally of the link plate and passes through the centers of the openings, the link plate also being symmetrical about a second axis which extends perpendicular to the first axis and perpendicular to the axes of said openings and passes through a point on said first axis which is the midpoint between the axes of said openings, the improvement wherein each end part has a convex curved exterior edge surface generated about a first radius which is centered on the first axis, wherein the intermediate constricted part has upper and lower concave curved exterior edge surfaces each defined about a second radius which is generated about a center point located in sidewardly spaced relationship from the link plate, the second radius being equal to the first radius, the concave curved exterior edge surface of the intermediate constricted part being merged with the convex curved exterior edge surface of the adjacent end part along a common line which is tangential to both curved exterior edge surfaces, wherein the longitudinal distance between the centers of said openings is equal to twice said first radius, wherein said convex exterior edge surface as associated with each end part includes opposite side edge surface portions which are of selected lengths and are intersected by a third axis which is parallel to said second axis but extends through the center point of said first radius as associated with the respective end part, and wherein said concave exterior edge surface as it extends from one end to the other end thereof defines a contour which is identical to the contour of said side edge surface portion of said convex exterior edge surface so that the concave exterior edge surface on a first said link plate in its entirety compensatingly contacts the side edge surface portion of a second said link plate when said first and second link plates are positioned in side-by-side but longitudinally offset relationship to one another.

4,411,132

WIRE ROPE TO CHAIN CONNECTOR FOR ANCHORING SYSTEMS

Edward J. Crook, Jr., Tulsa, Okla., assignor to The Crosby Group, Tulsa, Okla.

Filed Aug. 31, 1981, Ser. No. 297,837
Int. Cl.³ F16G *15/04*
U.S. Cl. 59—85 **5 Claims**



1. A connector for coupling a chain to a wire rope comprising:

a housing having an axially symmetric opening through said housing and an exterior surface circularly concentric to said opening;

a retaining pin adapted to mount within said housing such that said pin perpendicularly intersects the longitudinal axis of said opening at essentially the center of said housing;

a pair of substantially U-shaped members capable of being assembled within said opening of said housing and said U-shaped members having openings at the end of each arm of said U-shaped members such as to interact, when assembled, with each other so that the openings will be coaxial and will accept said retaining pin; and

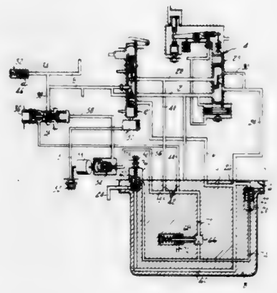
a means to maintain said U-shaped members, pin and housing in an assembled state.

4,411,133

FUEL CIRCUITS FOR FUEL CONTROLS

Charles F. Stearns, East Longmeadow, Mass., and Herbert W. Tutherly, Windsor, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 29, 1980, Ser. No. 191,544
Int. Cl.³ F02C *9/04*
U.S. Cl. 60—39.281 **7 Claims**



1. A hydromechanical fuel control for controlling fuel flow to a gas turbine engine including:

three parallel flow circuits between an inlet and an outlet to the engine;

a first circuit including a motor valve responsive to engine power requirements dividing into one branch with a first throttle valve window and another branch with a servo valve window;

a second circuit including a second throttle valve window in parallel with the servo valve window of said first circuit; and

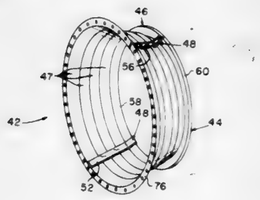
a third circuit including valve means providing fuel flow as a function of a compressor discharge pressure.

4,411,134

APPARATUS FOR THE REPAIR AND REPLACEMENT OF TRANSITION DUCTS ON JET ENGINES AND BRACKET THEREFOR

David L. Moir, 2 Barbara Rd., Lake Ronkonkoma, N.Y. 11779

Filed Oct. 26, 1981, Ser. No. 314,573
Int. Cl.³ F02C *7/20*
U.S. Cl. 60—39.31 **11 Claims**



1. Apparatus for replacing a fatigued transition duct assembly on a jet engine comprising a replacement louvered transition duct formed as a plurality of sections each of which has complementary joining ends,

a bracket,

said bracket being defined by a planar member having two faces,

a spaced array of louvered segments affixed to one face of said planar member such that respective ones of said

louvered segments are adapted to receive and interfit with respective ones of the louvers of adjacent joining ends of two of said duct sections,

a rigid offset element affixed to and extending from said one face of said planar member with the plane of said offset element disposed essentially at right angles to the disposition of said louvered segments and oriented so as to substantially divide the same,

and means on said joining ends of said duct sections for assembling the same to said offset element whereby when said joining ends of said duct sections are received in said bracket and assembled on opposite sides of said offset element, each of said louvered segments substantially fills the space of the respective louver of the joining ends and causes the other face of said planar member to be disposed along the interior periphery of the assembled duct sections effectively bridging and sealing the joint that exists therebetween.

4,411,135

DRIVE UNIT, ESPECIALLY FOR MOTOR VEHICLES

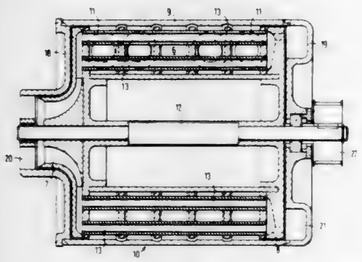
Helmut Striebich, Karlsruhe, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 22, 1981, Ser. No. 256,618

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016228

Int. Cl.³ F01K *23/10*; F02C *1/04*

U.S. Cl. 60—616 **9 Claims**



1. In a drive assembly, especially for motor vehicles, of the type comprising an internal combustion engine and an exhaust-gas turbine unit including a compressor, a secondary turbine and an exhaust-gas turbine having hollow blades and driven by the exhaust gases of the internal combustion engine, interconnected with each other, through which an operating medium flows from the compressor to the secondary turbine, means for utilizing both kinetic energy and heat energy of the exhaust gases of the internal combustion engine by a thermal work process superimposed in said exhaust-gas turbine, wherein said means for utilizing comprises hollow blade means fluidically communicating with said compressor and said secondary turbine for passing a working medium compressed by said compressor therethrough to said secondary turbine with said medium being in heat exchange relationship with the exhaust gases while in said hollow blade means and expanding in said secondary turbine and releasing power, the turbine blades being formed by pipes with a substantially circular cross section rigidly connected with said exhaust gas turbine.

4,411,136

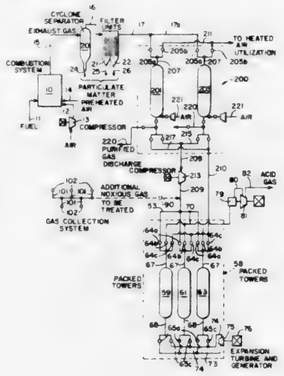
SYSTEM FOR TREATING AND RECOVERING ENERGY FROM EXHAUST GASES

Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

Continuation-in-part of Ser. No. 962,103, Nov. 17, 1978, Pat. No. 4,265,088, which is a continuation-in-part of Ser. No. 674,219, Apr. 6, 1976, Pat. No. 4,126,000, which is a continuation-in-part of Ser. No. 565,045, Apr. 4, 1975, Pat. No. 3,970,524, which is a continuation-in-part of Ser. No. 486,562, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 252,610, May 12, 1972, abandoned. This application Nov. 10, 1980, Ser. No. 205,348

Int. Cl.³ F01K *21/00, 3/00*

U.S. Cl. 60—648 **25 Claims**



1. A process of treating hot exhaust gas containing environmentally harmful components to separate said components and recover at least a portion of the thermal energy of said gas, comprising the steps of:

(a) removing particulate matter from the gas;

(b) passing said gas through a heat exchange zone in direct heat exchange relationship with a relatively high heat capacitance solid material to transfer a portion of the thermal energy of the gas to the solid material for concurrently cooling said gas and heating said solid material;

(c) separating the harmful, less volatile components of said gas from the more volatile components;

(d) compressing the gas at some time prior to the completion of step (c);

(e) discharging the more volatile components of the cooled gas to atmosphere;

(f) processing the less volatile components of the cooled gas; and

(g) recovering at least a portion of the thermal energy of said gas by passing a first heat transfer fluid other than said gas in direct heat exchange relationship with said heated solid material to concurrently cool said solid material and heat said first fluid.

4,411,137

PRIMING DEVICE FOR BURNER MANIFOLDS OF GAS TURBINE ENGINE

Maurice N. Pearce, Mickleover, England, assignor to Rolls-Royce Limited, London, England

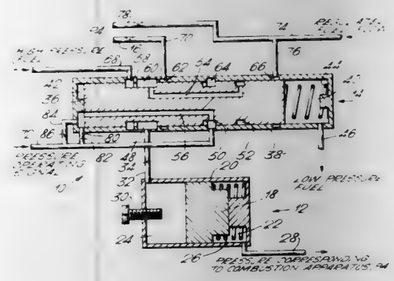
Filed Sep. 28, 1981, Ser. No. 306,524

Claims priority, application United Kingdom, Oct. 30, 1980, 8034940

Int. Cl.³ F02G *1/00*

U.S. Cl. 60—739 **8 Claims**

1. A fuel priming device for gas turbine engine burner manifolds comprising a fuel accumulator, a control valve, a control valve operating means, a regulated fuel supply, a relatively high pressure fuel supply and at least one burner manifold, the fuel accumulator and the regulated fuel supply are arranged to supply fuel sequentially to the burner manifold through the control valve, and the relatively high pressure fuel supply is arranged to supply fuel to the fuel accumulator through the control valve, the control valve being moveable by the control valve operating means from a first position in which the fuel accumulator is connected to the relatively high pressure fuel



supply to a second position in which the relatively high pressure fuel supply is disconnected from the fuel accumulator and the fuel accumulator is connected to the burner manifold to provide a metered quantity of fuel to the burner manifold against a pressure in the burner manifold and a third position in which the regulated fuel supply is connected to the burner manifold and the fuel accumulator is disconnected from the burner manifold.

4,411,138

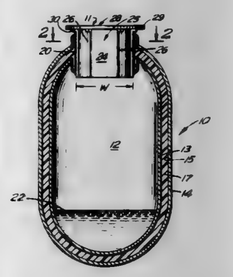
NECK TUBE CLOSURE ASSEMBLY FOR CRYOGENIC CONTAINERS

Douglas R. Leithauser, Indianapolis, and John K. Young, Carmel, both of Ind., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 17, 1982, Ser. No. 408,915

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—50 **15 Claims**



1. In combination a cryogenic storage container having inner and outer walls separated by a vacuum space filled with insulating material, an elongated neck tube traversing the outer and inner walls in a substantially vertical direction from the designated top end of the container to provide therethrough an access opening into the interior of the container for introducing and removing perishable products with said neck tube having a predetermined geometry and size, a predetermined measure of a cryogenic refrigerant located within the interior of said container, and a closure assembly removably inserted within said neck tube, said closure assembly comprising;

a neck plug having an elongated body with a periphery conforming in geometry to the geometry of the neck tube;

a cover plate transversely mounted upon said neck plug and having an annular rim overhanging said neck plug for supporting said neck plug in said neck tube; and

a multiplicity of spacer elements arranged about the periphery of said neck plug and radially extending therefrom to establish a concentric relationship between said neck plug and neck tube and to form an annular clearance space therebetween which is uniform in cross sectional dimension and with additional spacer elements for separating said rim of said cover plate from said container so as to extend said clearance space therebetween, said spacer elements occupying a minimum of space within said annular clearance space.

4,411,139

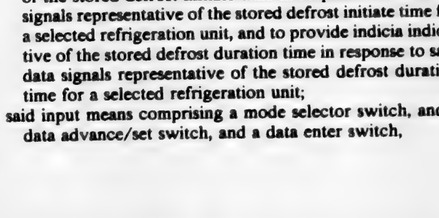
DEFROST CONTROL SYSTEM AND DISPLAY PANEL

Peter J. Bos, Manitowoc, Wis., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 9, 1981, Ser. No. 252,668

Int. Cl.³ F25B *49/00*; F25D *21/06*

U.S. Cl. 62—126 **8 Claims**



1. A defrost control apparatus for one or more refrigeration units having associated defrosting equipment comprising:

input means for selectively producing corresponding to each of said refrigeration units programming data, a user defrost initiate signal, a user defrost terminate signal, a program defrost initiate time review signal, and a program defrost duration review signal;

memory means for storing said programming data;

processing means responsive to stored defrost initiate time and duration data for providing a program constrained defrost control output corresponding to each of said refrigeration units, and responsive to a user initiate defrost signal corresponding to a selected refrigeration unit for providing an initiate defrost control output thereto and for a predetermined period, and responsive to a user terminate defrost signal corresponding to a selected refrigeration unit to provide a terminate defrost output thereto, and responsive to a program defrost initiate time review signal to interrogate said memory means and provide data signal representative to the stored defrost initiate time corresponding to a selective refrigeration unit, and responsive to a program defrost duration review signal to interrogate the memory means and provide data signals representative of the stored defrost duration time for a selected refrigeration unit;

display means responsive to said program constrained defrost control outputs for providing indicia indicative of the defrost status thereof, and to provide indicia indicative of a manually initiated defrost cycle in response to said user initiated output, and to provide indicia indicative of a manually terminated defrost cycle in response to said user terminate defrost output, and to provide indicia indicative of the stored defrost initiate time in response to said data signals representative of the stored defrost initiate time for a selected refrigeration unit, and to provide indicia indicative of the stored defrost duration time in response to said data signals representative of the stored defrost duration time for a selected refrigeration unit;

said input means comprising a mode selector switch, and a data advance/set switch, and a data enter switch,

said mode selector switch having a program review mode function position and said data advance/set switch being actuatable with said mode selector switch in program review mode function position to constrain said processing means to interrogate the stored defrost initiate time data and to actuate a display indicia indicative of the programmed defrost initiate relative time for a display indentified defrost control output; and

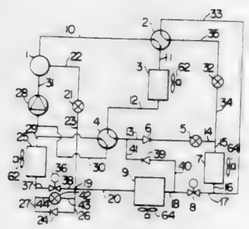
the actuation of the program review mode function is permitted while and without interruption to the normal sequencing and timing of the defrost cycle of the defrost control outputs as constrained by the stored defrost initiate and duration time data.

4,411,140

ABSORPTION TYPE COOLING AND HEATING SYSTEM

Naoto Katsumata; Noriaki Horiuchi, and Shigeru Kimura, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 1, 1982, Ser. No. 344,803
Claims priority, application Japan, Feb. 9, 1981, 56-17001
Int. Cl.³ F25B *13/00*
U.S. Cl. 62—324.2 **6 Claims**



1. An absorption type cooling and heating system comprising:

a path connecting a generator through a first change-over valve, an outdoor heat exchanger, a second change-over valve, a first valve, a first expansion valve, a first indoor heat exchanger, a second valve and a second indoor heat exchanger to a point of confluence with a diluted solution, so that the two indoor heat exchangers can be connected in series with each other;

a path connecting said generator to said point of confluence through a pressure reducing valve;

a path connecting said point of confluence to an absorber through a third valve;

a path connecting said absorber to said generator through said second change-over valve and a solution pump;

a path connecting said first change-over valve to a second expansion valve through said first indoor heat exchanger;

a path connecting said second expansion valve to said outdoor heat exchanger through said first change-over valve;

a path connecting said outdoor heat exchanger to said point of confluence through said second change-over valve, said absorber and a fifth valve;

a path connecting said point of confluence to said second change-over valve through said second indoor heat exchanger and an eighth valve; and

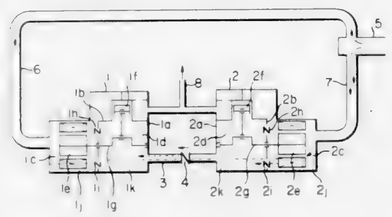
a path connecting a third expansion valve in series with said third valve.

4,411,141

PARALLEL OPERATION COMPRESSOR TYPE REFRIGERATING APPARATUS

Akira Hara, Wakayama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 30, 1981, Ser. No. 335,662
Claims priority, application Japan, Feb. 6, 1981, 56/17102
Int. Cl.³ F25B *43/02*
U.S. Cl. 62—468 **4 Claims**



1. A parallel operation compressor type refrigerating apparatus comprising:

first and second compressors, each of said compressors having a partition in the crankcase thereof separating the crankcase in a motor chamber and a compressing element chamber, said partition having a pressure equalizing opening in the upper part thereof and a lubricant equalizing non-return valve in the lower part thereon in the lubricant sink in the lower part of the crankcase and allowing passage of lubricant only from said motor chamber into said compressing element chamber;

a suction pipe means adapted to conduct lubricant-containing refrigerant gas from a refrigeration cycle system to said compressor type refrigerating apparatus and having a separation means at its downstream end for separating the circulating lubricant-containing refrigerant gas into refrigerant gas and lubricant;

a first suction branch pipe means extending from said separation means to said first compressor for supplying a portion of the refrigerant gas to said first compressor;

a second suction branch pipe means extending from said separation means to said second compressor for supplying the remainder of the refrigerant gas and the separated lubricant to said second compressor;

a pressure and lubricant equalizing pipe means connecting the lubricant sinks of said compressing element chambers of said first and second compressors; and

a non-return valve means in said pressure and lubricant equalizing pipe means for permitting flow of lubricant only from said second compressor to said first compressor.

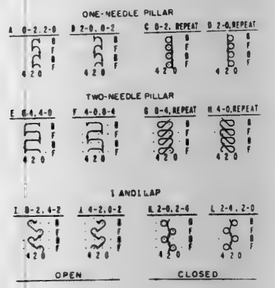
4,411,142

ELASTIC YARN SUPPLY PACKAGE

Klaus J. Regenstein, Willich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jul. 14, 1982, Ser. No. 398,224
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1981, 3129350
Int. Cl.³ D04B *7/04*
U.S. Cl. 66—196 **8 Claims**

1. An improved elastic thread supply package in the form of a double-face, two thread-system, warp-knit tape from which elastic threads may be unravelled and wherein the repeating stitch pattern from each thread system is no more than two wales wide, the improvement comprising for ease of splitting the package into narrower tapes, the stitch patterns from each



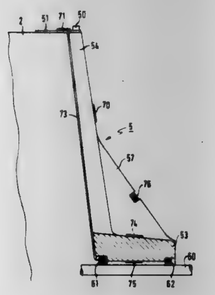
bar having underlaps which form no crossovers between adjacent wales.

4,411,143

LAUNDRY TREATMENT MACHINE

Michael Scholl, Poing, and Herbert Klassen, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 1, 1981, Ser. No. 279,527
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3025088
Int. Cl.³ D06F *21/04, 33/02*
U.S. Cl. 68—12 R **7 Claims**



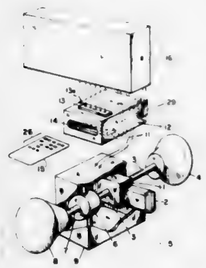
1. Laundry treatment machine comprising a housing, a carrier disposed in the housing, a laundry drum rotatably supported by said carrier, said carrier having parts thereof being exposed to loads affected by the weight of the drum, electromechanical transducers being disposed on said parts of said carrier and producing output signals representing a measure of the weight and the weight change of said drum, and a signal processing device receiving said output signals, said electromechanical transducers being in the form of strain gauges, and said carrier including a drum container for said drum and members connecting said drum to said drum container, at least one of said strain gauges being attached to said connecting members.

4,411,144

ELECTRONIC LOCK SYSTEM

Kemal Aydin, Little Falls, N.J., assignor to Kadex, Inc., New York, N.Y.

Division of Ser. No. 75,957, Sep. 17, 1979, abandoned, which is a division of Ser. No. 849,163, Nov. 7, 1977, Pat. No. 4,177,657, which is a continuation of Ser. No. 667,105, Apr. 16, 1976. This application Mar. 16, 1981, Ser. No. 244,316
Int. Cl.³ E05B *49/02*
U.S. Cl. 70—278 **4 Claims**



1. In an electronic lock system wherein a lock has a memory for storing a changeable code, means for receiving and reading a coded key, means for comparing the code read from the key with the code stored in the memory, and means responsive to said comparison for opening the lock; the improvement wherein said key has first and second coded regions, and said lock comprises means for comparing the code of said first field with the code of said memory, means responsive to a given code in said second field for changing the code in said memory, said means for opening said lock being responsive only to a comparison of the code in the memory and said given code in said second field for opening said lock, whereby a given key can be employed only once in the opening of said lock.

4,411,145

CAN-MAKING METHOD

Leon L. Lewis, Butler Township, Butler County, and Michael V. Murray, Monroeville Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 155,272, Jun. 2, 1980. This application Jan. 18, 1982, Ser. No. 340,561
Int. Cl.³ B21D *22/28, 51/26*
U.S. Cl. 72—42 **11 Claims**

1. Method of forming a workpiece of blackplate comprising placing on one surface thereof a coating of a composition comprising, in an aqueous carrier,

(A) about 5% to about 20% organic moiety comprising:

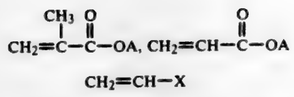
(i) in an amount from about 3 parts to about 9 parts by weight of an acrylic polymer comprising:

(a) from about 5% to about 35% by weight of a polymerizable, ethylenically unsaturated monomer having the structural formula

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-\overset{\displaystyle O}{\overset{\|}{C}}-OH$$

wherein R_1 is selected from the group consisting of hydrogen and a methyl radical and

(b) from about 65% to about 95% by weight of at least one ligand-free, polymerizable, ethylenically unsaturated monomer selected from the group consisting of monomers having the structural formulas:



and mixtures thereof wherein A is an organo radical having from about one to about ten carbon atoms, and X is an organo radical selected from the group consisting of aryl and alkaryl radicals, and

(ii) about 1 part to about 20 parts by weight of a wax, and

(B) about 15% to about 45% finely divided molybdenum disulfide, and

(C) in a concentration sufficient to provide a mole ratio of metal ions to total carboxylic acid group equivalents (M^{++}/COO^{-}) from about 0.075 to about 0.500 of a cross-linking agent represented by the formula $M(NH_3)_nY_2$ wherein M is a metal selected from the group consisting of Zn, Cd, Cu, Ni, and mixtures thereof, n is the coordination number of said metal and is an integer from four to six, Y is an equivalent of a carboxyl-containing anion selected from the group consisting essentially of carbonate, formate, and acetate,

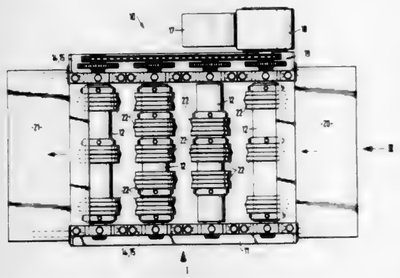
and forming said workpiece.

4,411,146

METHOD AND APPARATUS FOR THE STRAIGHTENING AND STIFFENING OF STARTING SHEETS IN ELECTROLYTIC REFINING PLANTS

Jukka Sulasaari, Tampere, and Seppo Heinonen, Rauma, both of Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Apr. 15, 1981, Ser. No. 254,412
Claims priority, application Finland, Apr. 15, 1980, 801203
Int. Cl.³ B21D *1/10*
U.S. Cl. 72—180 **11 Claims**



1. A method for the straightening and stiffening of starting sheets in electrolytic refining plants, comprising shaping the same predetermined areas of the starting sheet surfaces at least once during successive shaping stages in such a manner that the elasticity range of the starting sheet material is at least in part exceeded, comprising pressing certain areas of the sheet in one shaping stage into patterns deviating from the plane of the starting sheet surface, then pressing the same areas in the opposite direction in a second shaping stage to work harden the sheet material, the pressing force of a movable roller of each of a plurality of roller pairs against the other roller of each roller pair being adjusted in order to produce a pressing force of desired degree.

4,411,147

ROLLING DIES AND METHOD OF FORMING THE SAME

Terry D. Capuano, Hinckley, Ohio, assignor to Russell Burdsall & Ward Corporation, Mentor, Ohio

Filed Aug. 12, 1981, Ser. No. 292,256
Int. Cl.³ B21H *3/06*
U.S. Cl. 72—220 **19 Claims**



1. A method comprising the steps of providing a thread rolling die having a plurality of longitudinally extending thread form ridges with each of the thread form ridges having a crest portion and a pair of flank surfaces extending between the crest portion and root portions disposed on opposite sides of the thread form ridge, providing a circular hob having an annular forming section with projections thereon and a first smooth annular side surface area disposed radially inwardly of the forming section, and forming indentations in one of the flank surfaces of one of the thread form ridges at locations spaced from the crest portion of the one thread form ridge by rolling the circular hob along the one flank surface of the one thread form ridge while leaving the crest portion of the one thread form ridge free of indentations, said step of forming indentations in the one thread form ridge by rolling the circular hob along the one thread form ridge including pressing the projections on the annular forming section of the hob into a portion of the one flank surface adjacent to a root portion of the one thread form ridge and sliding the first smooth annular side surface area of the hob on a portion of the one flank surface adjacent to the crest portion of the one thread form ridge.

4,411,148

PRESS BRAKE

Hans Aschauer, Eferding, and Günter Funk, Traun, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Mar. 25, 1981, Ser. No. 247,226
Claims priority, application Austria, Apr. 24, 1980, 2203/80
Int. Cl.³ B21D *5/04*
U.S. Cl. 72—306 **8 Claims**

1. In a press brake comprising a frame, a driven bending tool, a second tool adapted to cooperate with the driven bending tool for bending a sheet metal element, clamping means for holding the sheet metal element in fixed position relative to the tools, and a four-bar linkage for driving the driven bending tool, the improvement of the four-bar linkage comprising

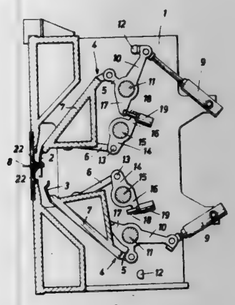
(a) two crank arms mounted on the frame, the crank arms each having respective first ends,

(b) an adjustable pivot mounting one of the crank arms at an end opposite to the first end thereof on the frame,

(c) a link connecting the first ends of the crank arms, the link carrying the driven bending tool,

(d) an adjusting drive for adjusting the adjustable pivot of the one crank arm relative to the frame, the drive comprising a double-armed adjusting lever pivotally mounted on the frame, one arm of the adjusting lever carrying the adjustable pivot with said adjustable pivot linking the one adjusting lever arm to the opposite end of the one crank arm, and a control lever operatively connected to an end opposite to the first end of the other crank arm, the control lever cooperating with the other arm of the adjusting lever, and

(e) means for driving the link carrying the driven bending tool



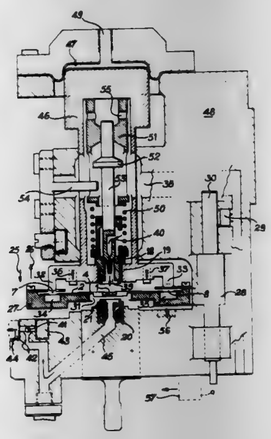
by imparting a predetermined angular movement to the other crank arm and actuating the adjusting drive in response to said angular movement by the control lever which is operatively connected to the other crank arm and cooperates with the other adjusting lever arm.

4,411,149

MACHINE FOR BENDING CONDUCTORS OF A SEMICONDUCTOR CHIP DEVICE

Raymond L. Delorme, Bagnolet, France, assignor to Compagnie Internationale pour l'Informatique Cii Honeywell Bull, Paris, France

Filed Dec. 2, 1981, Ser. No. 326,591
Claims priority, application France, Dec. 5, 1980, 80 25856
Int. Cl.³ B21D *5/01*
U.S. Cl. 72—385 **17 Claims**



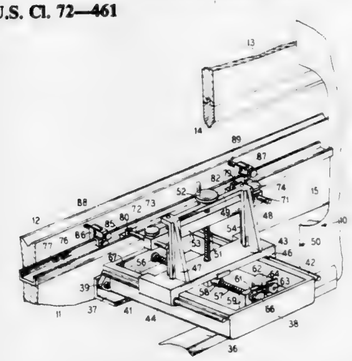
1. In a machine for bending the extending conductors of an integrated circuit chip (1) to form contacts (12) for mounting of the chip to a connection substrate (10), said chip being preliminarily mounted on an insulating support (2) provided with at least one opening (3) at the center of which the chip is located, conductors (4) extending across the opening and connecting points of contact (17) of the chip (1) with the conductors (4) on the insulating support (2) while supporting the chip (1) in the opening (3), each said conductor having a connector section represented by a part of the conductor (4) which extends from the corresponding contact point (17) of the chip (1) to the neighborhood of a force relieving structure (9) connected with conductor (4) and located adjacent the edge of the opening (3), said machine comprising a bending base (20), movable bending means disposed opposite the base (20), means (27) for displacing the insulating support for the chips and for bringing each chip onto the base (20) in a first direction (25) perpendicular to the chip (1), and to remove the chip after bending, in the said perpendicular direction, but in a second direction (26) opposed to the first direction, and means (39, 40) for positioning the chip on the base, the improvement comprising the bending base (20) having a recessed housing (21) the circumference of which is slightly greater than the circumference of the chip (1) for receiving the chip and a plane rim (23) adapted to engage the contacts (12) to be bent adjacent the circumference of the chip, and the movable means for bending including a first movable poiece (18) movable within a second piece (19) in the said perpendicular direction and in the first and second directions, said first movable piece (18) being situated opposite the base (20) and having a plane rim (24) corresponding to the plane rim (23) of the base, and adapted to be positioned so as to wedge the contacts (12) of the chip (1) adjacent the circumference of the chip during bending of the conductors, and the second piece (19) being movable in said perpendicular direction and in the two directions, said second movable piece (19) surrounding the first piece (18) and adapted to bend the conductors (4) to form the contacts (12) for each of which to have a bend (13) which takes the form of the outline of the rim (23) of the base (20) and a linear part (14) connected to said bend (13) in a direction substantially perpendicular to the chip, forming said linear part for connecting in continuous manner with the remaining portion (15) of the conductor (4) situated between said linear part and the insulating support (2), and elastic means (50) interposed between the first and second pieces to apply to the first piece (18) a force opposing the relative movement of the first piece (18) with respect to the second piece (19).

4,411,150

BACKGAUGE STRUCTURE

Dean A. Klein; Steven C. Davis, both of Lake City, and Jerome J. Wroblewski, Red Wing, all of Minn., assignors to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Oct. 21, 1981, Ser. No. 313,293
Int. Cl.³ B21D *11/22*
U.S. Cl. 72—461 **4 Claims**



1. A metal working machine including a frame member with a first die, a movable ram supported on said frame, a second die carried by said ram to engage and form metal in cooperation with said first die, driving means for said ram, a movable backgauge assembly engageable with said metal to index the assembly attached to said frame, a pair of parallel horizontal guide shafts for said backgauge attached to said frame, a carriage with a pair of ways in which said guide shafts are received, a lead screw rotatable attached to said frame and threadedly received by said carriage, carriage drive means

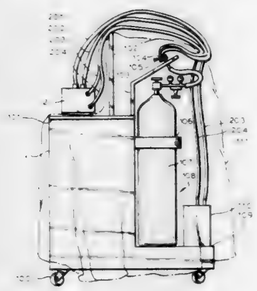
connected to said lead screw to drive said carriage away from and toward said first and second dies, a pair of upright members attached to said carriage, a horizontal member attached to said pair of upright members, a pair of parallel horizontally extending support bars attached to opposite ends of said horizontal member, a gauging channel member attached to the ends of said pair of horizontally extending support bars which are nearest to said first and second dies, a pair of spaced gauging finger supports attached to the edge of said gauging channel member nearest said first and second dies, said gauging finger supports each including a body member with a top groove formed therein which extends to the front surface nearest said first and second dies, a rectangular shaped finger holder formed with a hemispherical rear surface mounted in said top groove, a pair of L-shaped slots formed in said body member, a pair of L-shaped arms attached to said finger holder and extending through said L-shaped slots, spring means attached to said L-shaped arms to bias said finger holder to a horizontal position in said groove, and a gauging finger mounted in said finger holder, including a threaded adjustment shaft threadedly received in said body member with one end engageable with said hemispherical surface of said finger holder and adjustable to vary the position of body member toward and away from said first and second dies, wherein said finger holders can be rotated upwardly out of said groove against the bias of said spring means such that said hemispherical surface of said finger holder slides on the end of said threaded adjustment shaft, and wherein said gauging finger is a round shaft with an extending flatted surface.

4,411,151

DEVICE FOR CALIBRATING GAS ELECTRODES

Manfred Kessler, an den Harindicsm 50, 8520 Erlangen, Fed. Rep. of Germany, and Jens Höper, Erlanngen, Fed. Rep. of Germany, assignors to Manfred Kessler, Erlangen, Fed. Rep. of Germany

Filed Apr. 29, 1981, Ser. No. 258,725
Int. Cl.³ G01N *33/48*
U.S. Cl. 73—1 G **3 Claims**



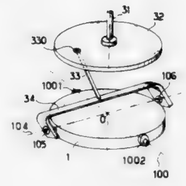
1. Device for calibrating gas electrodes within sterile environment of an operation room, comprising a movable frame having one side to be sterilized and another side which remains nonsterile; a work table arranged on said frame at said one side; a calibrating chassis mounted on said table at said one side and carrying a gas calibrating container into which an electrode to be calibrated is inserted; a gas supply unit mounted on said frame at another side thereof; a yoke mounted on said work table and separating said one side from said another side; hoses connected to said gas calibrating container and provided with rapid clutches connectable to said gas supply unit, said another side and said yoke being covered with sterile cloth, said yoke supporting said hoses such that they extend from said one side over said yoke to said another side.

4,411,152

METHOD AND APPARATUS FOR TESTING PIPES

Werner Röll, Hamm, Fed. Rep. of Germany, assignor to Estel Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Jul. 28, 1981, Ser. No. 287,630
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1980, 3029180
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—46 **18 Claims**



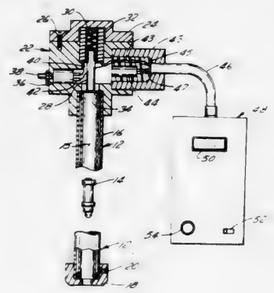
1. A method for testing tightness of threaded connections of oilfield pipes, comprising the steps of: threading a tapped connecting sleeve onto a threaded pipe end portion to establish a threaded connection therebetween; subjecting the region of the threaded pipe end portion connected to said sleeve to internal hydraulic pressure; and applying pressure additionally from the outside to the sleeve end; and limiting the volume of hydraulic pressure medium by an annular ring-shaped space along said threaded connection, pressure applied from the outside compensating said internal hydraulic pressure for preventing widening of the sleeve and accompanying leakage between pipe and sleeve threads.

4,411,153

SCLEROMETER

Alfred H. Lewis, 1455 Sherbrooke W., Montreal, Quebec, Canada

Filed Apr. 27, 1982, Ser. No. 372,144
Int. Cl.³ G01N *3/48*
U.S. Cl. 73—79 **7 Claims**



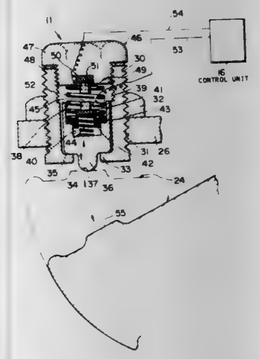
1. A hardness tester comprising a guiding member having an elongated passageway therein, a striker freely movable in said elongated passageway, means for retaining said striker in a position remote from one end of said passageway, means for releasing said striker from said retaining means to permit said striker to freely move to said one end, timer means, said timer means having first means associated therewith to activate the timer when a first sound wave impinges thereon, second means to stop said timer when a further sound wave impinges thereon.

4,411,154

SWITCH FOR SENSING A PRESET POSITION OF A THROTTLE VALVE

Hidetoshi Kitamura, Higashikurume, and Hirohisa Kato, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 18, 1982, Ser. No. 340,494
Claims priority, application Japan, Feb. 20, 1981, 56-23880[U]
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **10 Claims**



1. A switch for sensing a preset position of a throttle valve in an internal combustion engine, comprising:
(a) a lever secured to said throttle valve for movement through a predetermined path corresponding to movement of said throttle valve;
(b) a stationary casing disposed in said path such that said lever encounters said casing when said lever moves toward the casing, whereby the throttle lever is stopped by encountering the casing;
(c) a plunger movably disposed in said casing;
(d) first means for resiliently holding said plunger normally in a position in which part of the plunger projects from the casing in said path whereby when the lever moves toward the casing and the plunger, the lever encounters the plunger first and the casing second and moves the plunger until the lever encounters the casing and is stopped by said casing;
(e) a first contact supported on the casing;
(f) a second contact and second means for movably supporting said second contact on the plunger in opposed relation to said first contact for movement with said plunger toward said first contact, such that when said lever moves toward the casing and the plunger, the second contact engages the first contact before the lever encounters the casing; and wherein
(g) said second means includes means for resiliently holding the second contact normally in a position fixed with respect to the plunger in which the second contact is separated from the first contact when said plunger is held in its normal position and permitting said plunger to move slightly relative to said second contact after said first and second contacts have engaged.

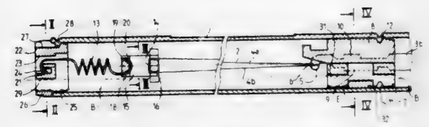
4,411,155

SENSOR FOR DETECTING THE LEVEL OF LIQUID IN A TANK

Jean Coulange, Conflans Sainte-Honorine, France, assignor to e.d. Veglia, Paris, France

Filed Jun. 29, 1981, Ser. No. 278,566
Claims priority, application France, Jun. 27, 1980, 80 14377
Int. Cl.³ G01F *23/24*
U.S. Cl. 73—295 **5 Claims**

1. A sensor for detecting the level of a liquid which comprises a conducting wire whose resistance has a high coefficient of temperature, the wire forming at least one pair of substantially parallel strands; adjacent connection pieces to which the ends of said wire are fixed; a tubular housing open at its upper and lower opposite ends; a spring having one end thereof connected to said wire at the junction of said strands; a removable assembly spindle; a lower holding piece fixedly mounted at the lower end of said tubular housing and provided



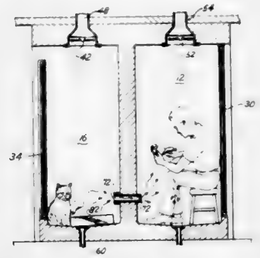
with an axial passage for said removable assembly spindle, the other end of said spring being hooked to said lower holding piece; and an upper holding piece for holding said connection pieces, said upper holding piece being slidable in said tubular housing and fixedly mounted near the upper end of said tubular housing and being provided with an axial passage with abutment for said removable assembly spindle.

4,411,156

ODOR TESTING APPARATUS

Henry E. Lowe, 21725 Allegheny St., Cassopolis, Mich. 49031

Filed Feb. 5, 1981, Ser. No. 231,867
Int. Cl.³ G01N *1/22, 33/24, 33/48*
U.S. Cl. 73—432 R **15 Claims**



1. A structure for testing small animal litter, comprising a plurality of animal confinement compartments in which the animals live and consummate their daily functions and in which litter for animal waste is placed for use by the animals, a compartment for enclosing a person testing the odors of the litter in particular animal compartments, port means near the bottom of each animal compartment, separate air flow conduits connecting said port means with the odor tester compartment for drawing air from the lower portion of the animal compartment into the tester compartment, a valve means for controlling each of said conduits, a fan for creating a flow of air from said animal compartments through selected port means and conduits and into said tester compartment, and an access door through which a tester can enter the tester compartment without passing through an animal compartment.

4,411,157

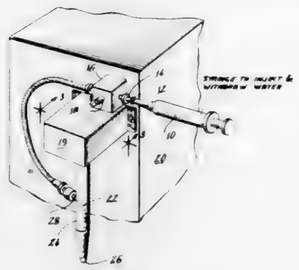
CONTAMINATION-FREE TRANSFER AND PURGE APPARATUS

Eugene R. Babin, 10 Buttonball Ter., Norwalk, Conn. 06851, and William R. Drago, 22 Gerry St., Greenwich, Conn. 06830

Filed May 27, 1982, Ser. No. 382,809
Int. Cl.³ G01N *1/28*
U.S. Cl. 73—864.81 **7 Claims**

4. A method for transferring a fluid sample from a container to a purge and trap sampler without exposing said fluid sample to the atmosphere comprising the steps of withdrawing the fluid sample from the container by means of a hypodermic

syringe, connecting the syringe to a valve body on said sampler without exposing said fluid sample to the atmosphere moving a two-way valve to its open position, providing a purge vessel having a tubular-shaped side arm on said sampler,



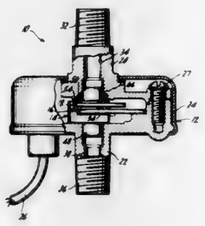
providing a tubing connected at one end to said valve body and passing the free end thereof through said side arm whereby the extremity of said tubing is positioned in the bottom of said purge vessel so that a contamination-free fluid sample is introduced into said sampler for processing.

4,411,158

APPARATUS FOR SENSING THE CONDITION OF A FLUID

Alfred Schaff, Jr., Marina Del Rey, Calif., assignor to Ametek, Inc., New York, N.Y.

Filed Apr. 14, 1981, Ser. No. 254,114
Int. Cl.³ G01L 9/06
U.S. Cl. 73—721 **7 Claims**



1. An apparatus for sensing the condition of a pressurized fluid, comprising:

a semiconductor chip having a diaphragm portion adapted for exposure to a pressurized fluid and an adjacent terminal portion adapted for connection to external circuitry for providing a measurement of the condition of the pressurized fluid, said semiconductor chip having sensing elements integrally formed within said diaphragm portion beneath a protective semiconductor layer, and conductor elements in electrical contact with said sensing elements, said conductor elements being integrally formed within said chip beneath said protective semiconductor layer and extending from said diaphragm portion to said terminal portion;

a housing having wall; and

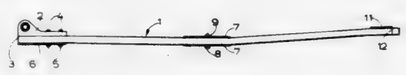
means for mounting said semiconductor chip with said housing with the walls of said housing spaced from said semiconductor chip, said mounting means cooperating with said housing to form a fluid barrier for confining the flow of said pressurized fluid into contact with said diaphragm portion and isolating said diaphragm portion from said terminal portion to prevent said terminal portion from being exposed to said pressurized fluid while permitting the pressurized fluid to contact said diaphragm portion so that the condition of the pressurized fluid can be sensed.

4,411,159

A FIBRE REINFORCED RESIN COMPOSITE LEAF SPRING FOR DETERMINING THE MAGNITUDE OF A LOAD

Peter Spear, Wolverhampton, and Paul A. Anson, Walsall, both of England, assignors to Rubery Owen Group Services Limited, Wednesbury, England

Filed Jul. 10, 1981, Ser. No. 282,079
Claims priority, application United Kingdom, Jul. 12, 1980, 8022876
Int. Cl.³ G01L 1/22
U.S. Cl. 73—768 **11 Claims**



1. A method of making a fibre-reinforced, resin composite leaf spring for determining the magnitude of a load, comprising the steps of: superimposing a first outer spring element, an inner element and a second outer spring element and bonding said elements together, said inner element comprising a plurality of layers of cured resin impregnated fibres and each said outer element comprising at least one layer of spring material; during laying up of said layers introducing into a part of the composite leaf spring in which a bending moment is induced in use a strain responsive member which is orientated so as to be subjected to a strain resulting from the bending moment induced in use and which by being introduced during the laying up of said layers is thereby located, embedded and secured within the solid finished composite leaf spring, and embedding within the composite leaf spring signalling means extending between said strain responsive member and an end of the composite leaf spring.

5. A fibre-reinforced, resin composite leaf spring for determining the magnitude of a load made by the method according to claim 1 and in which said signalling means (said first signalling means) is adapted to communicate a signal (said first signal) from said strain responsive member (said first strain responsive member) to an indicator or monitoring device, a second strain responsive member is located and held within the composite leaf spring in proximity to said first strain responsive member, and second signalling means is provided embedded within the composite leaf spring and adapted to communicate to the indicator or monitoring device a signal (said second signal) from said second strain responsive member, such that the resultant or summation of said first and second signals taken together is a function of either a strain detected by said first strain responsive member when said second strain responsive member is at a neutral plane of the composite leaf spring when loaded and said first strain responsive member is spaced from said neutral plane, or of strains detected by said first and second strain responsive members when both said strain responsive members are spaced from said neutral plane.

4,411,160

VANE MODULUS SOIL TESTER

Alan J. Lutenegger, Ames, and John M. Pitt, Nevada, both of Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jul. 27, 1981, Ser. No. 287,414
Int. Cl.³ G01N 3/24
U.S. Cl. 73—843 **20 Claims**

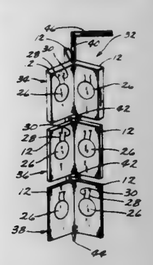
1. A vane modulus soil tester, comprising,

a plurality of generally thin blades having opposite surfaces,

means for supporting said blades in generally radially extended and circumferentially spaced-apart relation,

at least two pressure sensors each being operative to measure pressure changes on a single surface of a blade, one pressure sensor being mounted on one blade and facing in one rotational direction and the other being mounted on another blade and facing in the opposite rotational direction, and

power means for rotating said blades in opposite directions.

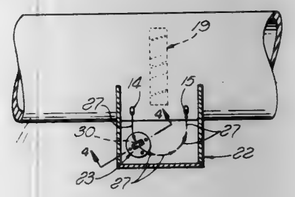


4,411,161

MASS FLOWMETER OR THE LIKE

Milton H. November, Hacienda Heights, Calif., assignor to International Telephone & Telegraph Corporation, New York, N.Y.

Filed Aug. 10, 1981, Ser. No. 291,569
Int. Cl.³ G01F 1/90, 15/04
U.S. Cl. 73—861.03 **8 Claims**



1. A mass flowmeter comprising: a hollow cylindrical pipeline section having an external surface; first means fixed relative to said section to provide an enclosed space adjacent said surface; a quartz tuning fork fixed inside said space; a detector fixed relative to said tuning fork, said section having first and second passageways extending therethrough, said first passageway being provided to admit a portion of a gas flowing inside said section into said enclosed space, said entering gas moving into engagement with said tuning fork to cause the same to vibrate at a frequency which is a function of the density of said entering gas, gas in said space flowing out of said space through said second passageway and thus returning to the interior of said section; a turbine meter having a rotor rotatably mounted inside said section between said first and second passageways, said turbine meter producing output pulses at a pulse repetition frequency f_o directly proportional to the rate of volume flow of said gas inside said section; and second means connected from said detector and from said turbine meter to produce an electrical output of a magnitude proportional to a function m, where

$$m = Kf_o(AT^2 + BT + C),$$

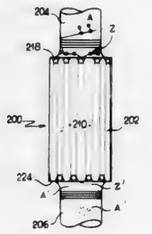
and where A, B, C and K are constants, and T is a period directly proportional to the vibrational period of said tuning fork, said function being proportional to the mass flow rate of said gas inside said section, B being smaller or larger than zero or equal to zero, the sole power to said quartz tuning fork being from the flow of said gas.

4,411,162

GAUGE WIRE DYNAMOMETER WOUND AND CONNECTED IN AN ELECTRICAL BRIDGE ARRANGEMENT

Jean-Claude Valadier, Paris, France, assignor to Testut Aequitas, Paris, France

Filed Feb. 19, 1981, Ser. No. 235,913
Claims priority, application France, Mar. 7, 1980, 80 05153; Jun. 20, 1980, 80 13727
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 **18 Claims**



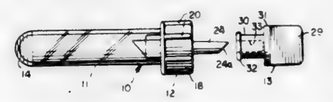
1. A dynamometer of the type comprising a testing body having a substantially continuous solid surface, said body being deformable under the effect of an applied force, sensing means comprising gauge wire and adapted to detect said deformation of the testing body, the gauge wire being connected in an electrical bridge arrangement, said body defining bearing zones formed integrally as a part of the material of the testing body, which zones are adapted to receive and retain in position four series of windings of prestressed gauge wire, remaining in close contact with the testing body, a first two of which having principal segments oriented parallel to the force to be applied, and the other two of which having principal segments oriented perpendicularly to the force to be applied, said four series of windings forming the electrical bridge arrangement, the segments oriented parallel to the force to be applied being located in opposite arms of the bridge arrangement, as are the segments oriented perpendicularly to the force to be applied, said bearing zones receiving the first two series of windings having their principal segments oriented parallel to the force to be applied being constituted by circular shoulder machined in the material of the testing body to produce a circular edge used for anchoring the gauge wire.

4,411,163

VENTABLE SAMPLE COLLECTION DEVICE

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 27, 1981, Ser. No. 287,277
Int. Cl.³ A61B 5/14
U.S. Cl. 73—864.02 **17 Claims**



1. A device for collecting fluid samples for laboratory use, comprising an open-ended vial having at least one arcuate flange projecting outwardly therefrom at said open end; a cap having a generally cylindrical side wall and an end wall defining a cavity removably received on the open end of said vial; said cap having an elongated collection tube portion projecting outwardly from said end wall and an inner tube portion disposed within said cavity and aligned with said collection tube portion; said cap also having at least one internal thread pro-

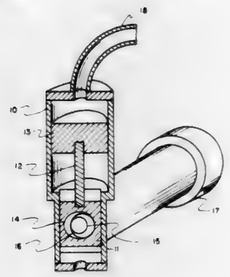
vided by the inner surface of said side wall and engagable by said flange for directing said vial axially when said flanged end of the vial is rotated within said cavity; said end wall having a vent opening therethrough; said vent opening being positioned and arranged to be sealed by said flange when said open end of said vial is fully threaded into said cavity of said cap.

4,411,164

ROTARY TO RECIPRICATING MOTION TRANSLATOR

Peter Durenec, Annandale, and Aubrey J. Dunn, Springfield, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 2, 1981, Ser. No. 269,205
Int. Cl.³ F16H *25/08*; F01B *9/00*
U.S. Cl. 74—55 **6 Claims**



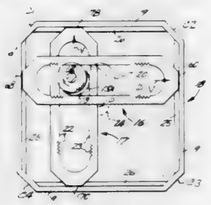
1. A device for converting rotary motion to reciprocating motion including:
- a shaft capable of rotating about a central longitudinal first axis;
- a circular cam on said shaft with its center offset by a predetermined distance from said first axis;
- a yoke assembly including a yoke with an elliptical slot therein, whereby said cam fits into said slot, and a yoke guide which supports said yoke for reciprocating motion along a second axis normal to said first axis and whereby, as said shaft is rotated at a constant angular velocity about said first axis, said yoke reciprocates with a sine wave motion along said second axis.

4,411,165

POWER TRANSMISSION UNIT WITH INFINITE SPEEDS

Lyle B. Evans, 9135 SW. Summerfield Ct., Tigard, Oreg. 97223

Continuation-in-part of Ser. No. 235,417, Feb. 17, 1981, abandoned. This application Nov. 19, 1981, Ser. No. 322,950
Int. Cl.³ F16H *21/42*
U.S. Cl. 74—63 **18 Claims**



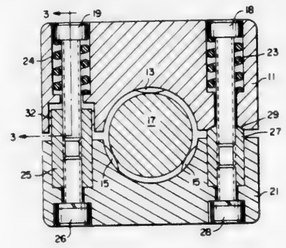
1. A power transmission unit comprising,
- a housing,
- a power input shaft,
- a speed selector assembly adjustably carried by the housing and including gear means, said gear means including a pinion gear powered by said input shaft,
- a rotor,
- a power output shaft driven by said rotor,
- gear rack components within said housing and in driving engagement with said rotor,
- said pinion gear adapted to impart motion to the gear rack components,
- a cam structure movable with the speed selector assembly and acting on said gear rack components, and
- said speed selector assembly positionable so as to locate said pinion gear proximate the axis of rotor rotation, said speed selector additionally positionable to locate the pinion gear away from the axis of rotor rotation whereat the pinion gear sequentially drives the gear rack components along vectors offset from the axis of rotor rotation whereby a speed reduction is effected between the power input and output shafts.

4,411,166

PRECISE LINEAR ACTUATOR

Mitch Marcovici, Murray Hill, N.J., assignor to Keuffel & Esser Company, Morristown, N.J.

Filed Mar. 16, 1981, Ser. No. 244,444
Int. Cl.³ F16H *25/08, 25/18*
U.S. Cl. 74—89 **5 Claims**



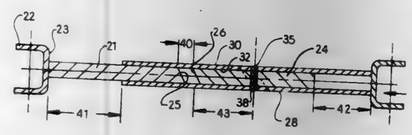
1. In a mechanism for converting rotation of a drive shaft into linear displacement along the axis of said shaft; which mechanism comprises a pair of body members joined to substantially encompass the circumference of said shaft, and a plurality of roller members mounted on said body members and distributed regularly about said shaft circumference in rolling surface contact therewith, the axes of said roller members being disposed at an angle to said shaft axis to thereby cause said roller members to follow helical paths along the shaft surface during contacting rotation therewith resulting in displacement of said mechanism along said shaft axis; the improvement in means for joining said body members which eliminates indiscriminate displacement of said mechanism with respect to said shaft, said improvement comprising:
- (a) means situated on one side of said shaft forming a ball joint between said body members;
- (b) means urging said body members into contact at said ball joint;
- (c) first means situated on the opposite side of said shaft for urging said body members about the horizontal, shaft-parallel axis of said ball joint toward contact at said opposite side, thereby urging said roller members into contact with said shaft; and
- (d) second means situated on said opposite side of said shaft for urging said body members about the vertical axis of said ball joint toward contact at said opposite side.

4,411,167

BREAKAWAY SHAFT ASSEMBLY

John D. Mohr, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 13, 1981, Ser. No. 310,566
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—492 **10 Claims**



1. A breakaway shaft assembly, comprising:
- (a) a segmented shaft member;
- (b) a segmented tube member, at least one of said segmented shaft and tube members having mating camming surfaces at the location of segmentation;
- (c) means for retaining said segmented tube member and one segment of said segmented shaft member together for conjoint axial movement due to axial loading until both segments of said shaft member are interengaged, whereupon said retaining means is overcome allowing both said tube member segments to telescopically move relative to said shaft member segments in response to further axial loading;

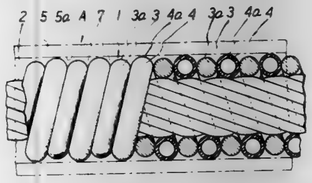
and
- (d) means for limiting the telescopic travel of said tube member relative to said shaft member when said location of segmentation for each of said tube member and shaft member are aligned, whereupon breakaway separation of the segments of each of said members occurs in response to still further axial loading.

4,411,168

INNER CABLE

Junnosuke Yoshifuji, Takarazuka, Japan, assignor to Nippon Cable System, Inc., Hyogo, Japan

Filed Feb. 18, 1981, Ser. No. 235,570
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R **3 Claims**



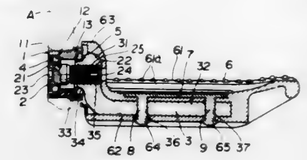
1. In an inner cable comprising a core and teeth formed by spirally winding at least one metal wire on the outer surface of the core at the same intervals, the improvement which comprises:
- a hollow plastic member which is made of synthetic resin, is deformable in accordance with depression pressure of opposed tooth members, is restorable to an original form after removal of said pressure, and is spirally wound on the outer surface of the core so as to be positioned between the adjacent teeth, a top portion of said elastic member projecting outwardly higher than those of said adjacent teeth, whereby when said inner cable and an inner surface of a conduit into which said inner cable is inserted slideably in contact together, noise is reduced and when said adjacent teeth mesh with said opposed tooth members, said hollow elastic member between said adjacent teeth is deformed by said opposed tooth members to an extent so as not to prevent the meshing.

4,411,169

PEDAL FOR A BICYCLE

Nobumi Takeda, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Oct. 18, 1979, Ser. No. 85,950
Claims priority, application Japan, Nov. 11, 1978, 53-155523[U]
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—594.4 **3 Claims**



1. A pedal for a bicycle, comprising:
- a bearing cylinder having means for connecting said bearing cylinder to a bicycle crank arm;
- a pedal shaft supported rotatably to said bearing cylinder, said pedal shaft supporting an L-shaped frame having a vertical portion connected to said pedal shaft and a rod-like horizontal portion of non-circular cross section displaced with respect to the axis of said pedal shaft and extending in the same direction as the axis of said pedal shaft, said frame having at said vertical portion a projecting portion extending in the same direction as the axis of said pedal shaft, said projecting portion having at a central portion thereof a threaded bore screwably connected with said pedal shaft and at the outer periphery thereof a ball race, said pedal shaft having a ball race at the outer periphery thereof, said ball races carrying balls which rotatably support said pedal shaft and frame to said bearing cylinder;
- a pedal body comprising a main body portion and a pedal outline portion formed in continuation of said main body portion, said pedal body having on the upper surface thereof near an outer peripheral portion a foot bearing surface, said main body portion having at a substantially intermediate portion thereof a longitudinal fitting bore extending in the same direction as the axis of said pedal shaft and opening at a side facing said crank arm, said fitting bore having a non-circular cross section complementary to that of said frame and being large enough to receive therein and cover said frame so that said frame is fit into said fitting bore and covered by said pedal body to support said pedal body to said frame and to lock said pedal body from relative rotative movement with respect to said frame; and
- fixing means for fixing said pedal body to said frame.

4,411,170

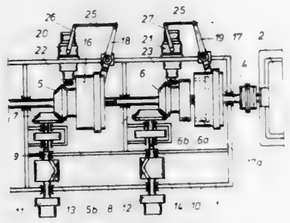
WIRE ROLLING MILL IN BLOCK FORM, A SO-CALLED WIRE BLOCK WITH AT LEAST ONE DRIVEN LINE SHAFT

Herbert Vogelgesang, St.-Ingbert, Fed. Rep. of Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Apr. 10, 1981, Ser. No. 252,933
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—661 **6 Claims**

1. A wire rolling mill comprising:
- a driven line shaft;

a plurality of driving bevel gears freely rotatably mounted on said driven line shaft;
a plurality of clutch means associated respectively with said driving bevel gears for selectively coupling said associated driving bevel gears to said driven line shaft;
a plurality of driven bevel gears meshed respectively with associated ones of said driving bevel gears;
a plurality of driven stand shafts connected to associated ones of said driven bevel gears, whereby actuation of one of said clutch means causes an associated driving bevel gear, driven bevel gear and driven stand shaft to rotate at a first speed;

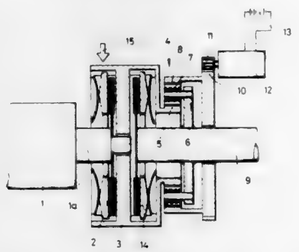


a plurality of supplementary drive means associated with respective ones of said driven stand shafts for rotating the associated driven stand shaft at a second speed, lower than said first speed, when actuated; and
a plurality of safety means associated with respective ones of said clutch means and associated supplementary drive means for disengaging a clutch means when the associated supplementary drive means is actuated and disengaging a supplementary drive means when the associated clutch means is actuated.

4,411,171
VEHICLE DRIVE

Ernest Fiala, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Jun. 10, 1981, Ser. No. 272,217
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1980, 3022373
Int. Cl.³ F16H *37/06*; B60K *41/08, 9/04, 41/28*
U.S. Cl. 74—675 **9 Claims**

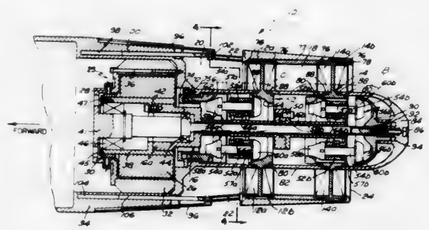


1. In a vehicle having an internal combustion engine, a flywheel associated with said engine, a drive shaft, a first clutch means arranged between said flywheel and said drive shaft for coupling said flywheel to said drive shaft, and a second clutch means arranged between said flywheel and said engine for coupling said engine to said flywheel, the improvement comprising a motor-generator means, a planetary gear train connected between said flywheel and said motor-generator means, wherein said gear train includes a planetary gear carrier for mounting a planetary gear, and means for rigidly connecting said planetary gear carrier with said drive shaft.

4,411,172
VARIABLE SPEED REDUCING AND TORQUE TRANSMITTING SYSTEM

Michael DeMarco, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 20, 1981, Ser. No. 236,478
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—690 **3 Claims**

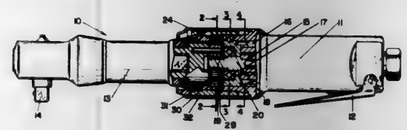


1. A variable speed transmission comprising:
driving means adapted to be rotated around a common axis at a rotational velocity, said driving means for driving at said rotational velocity;
a first plurality of satellites with each of said first plurality of satellites arranged in contact with said driving means, each of said first plurality of satellites adapted to be rotated on its own axis by said driving means and to be rotated around said common axis by said driving means at said driving means rotational velocity;
a second plurality of satellites with each of said second plurality of satellites arranged in contact with said driving means, each of said second plurality of satellites adapted to be rotated on its own axis by said driving means and to be rotated around said common axis by said driving means at said driving means rotational velocity;
a first impeller abutting each of said first plurality of satellites in such a manner as to be driven by said first plurality of satellites;
a first speed control means abutting each of said first plurality of satellites; said first speed control means controlling the speed of said first impeller, said first speed control means including a first piston having said common axis, said first piston adapted to be displaced in a direction along said common axis;
each of said first plurality of satellites include a shaft with a concave radius piece at one end and a convex radius piece at the other end, one of said radiused pieces abutting said first piston and the other of said radiused pieces abutting said first impeller;
a second impeller abutting each of said second plurality of satellites in such a manner as to be driven by said second plurality of satellites;
a second speed control means abutting each of said second plurality of satellites; said second speed control means controlling the speed of said second impeller, said second speed control means including a second piston having said common axis, said second piston adapted to be displaced along said common axis;
each of said second plurality of satellites include a shaft with a concave radius piece at one end and a convex radius piece at the other end, one of said radiused pieces abutting said second piston and the other of said radiused pieces abutting said second impeller; and
said first and second impellers are arranged to have said common axis and are displaced from each other along said common axis.

4,411,173
MULTI-PURPOSE FRONT END PLATE FOR MOTOR OF PNEUMATIC TOOL

John E. Mixer, Chardon, Ohio, assignor to Black & Decker Inc., Newark, Del.

Filed Sep. 1, 1981, Ser. No. 298,378
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—785 **6 Claims**

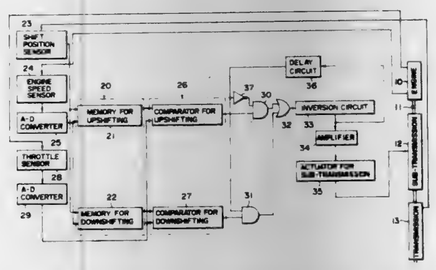


1. In combination with a pneumatic tool or other device having a motor housing and further having a second housing forwardly of the motor housing, a motor in the motor housing, the motor having a liner and further having a rotor provided with a rotor shaft, a multipurpose front end plate for the motor, said end plate comprising a cylindrical member having a bore and a counterbore therein, the counterbore providing a bearing seat, a bearing in the bearing seat, the rotor shaft passing through the bore and being journaled in the bearing, a pinion gear on the end of the rotor shaft forwardly of the bearing, the cylindrical member further having an integral annular portion extending forwardly of the bearing, an internal ring gear formed within the annular extending portion, gearing means between the internal ring gear and the pinion gear on the rotor shaft, the annular extending portion of the cylindrical member further having an outer cylindrical surface for piloting the second housing thereon, and means for circumferentially aligning the cylindrical member with the motor housing, said means including a hole formed in the motor housing, the cylindrical member having an external pocket formed thereon, and a ball seated between the hole and the pocket.

4,411,174
TRANSMISSION SHIFT CONTROL DEVICE

Takeshi Yokoi, and Noritaka Yanagihara, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 46,171, Jun. 7, 1978, abandoned. This application Apr. 27, 1981, Ser. No. 258,031
Claims priority, application Japan, Aug. 30, 1978, 53-105826
Int. Cl.³ B60K *41/04*
U.S. Cl. 74—866 **12 Claims**

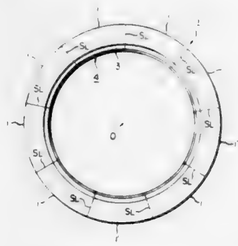


1. A transmission shift control device for control of transmission of a vehicle having an internal combustion engine with an intake system, said control comprising:
throttle sensor means for generating an actual throttle signal representing the present throttle opening of the engine intake system;
engine speed sensor means for generating an actual engine speed signal representing the present engine rotational speed;
shift position sensor means for generating an actual shift position signal designating the present shift position of said transmission;
upshifting memory means, which stores upshifting limits for various values of one of said throttle signal and said engine speed signal corresponding to various shift positions of said transmission, for providing one of said stored upshifting limits as an upshift limit signal in accordance with (1) the other of said throttle signal and said engine speed signal and (2) said shift position signal;
downshifting memory means, which stores downshifting limits for various values of said one of said throttle signal and said engine speed signal corresponding to various shift positions of said transmission, for providing one of said stored downshifting values as a downshift limit signal in accordance with (1) said other of said throttle signal and said engine speed signal and (2) said shift position signal;
first comparator means, which receives said upshift limit signal from said upshifting memory means and said one of said throttle signal and said engine speed signal for comparing these two received signals with each other, and for generating an upshift demand signal when said one of said throttle signal and said engine speed signal is smaller than said upshift limit signal;
second comparator means, which receives said downshift limit signal from said downshifting memory means and said one of said throttle signal and said engine speed signal, for comparing these two received signals with each other and for generating a downshift demand signal when said one of said throttle signal and said engine speed signal is larger than said downshift limit signal; and
switching circuit means, which receives said upshift demand signal from said first comparator and said downshift demand signal from said second comparator, for determining shifting of said transmission in accordance with receipt of one of said upshift demand and downshift demand signals.

4,411,175
METHOD FOR MAKING A RING-SHAPED MOLD

Kenichi Takahashi; Koichi Hirano, both of Kodaira, and Shoji Futamura, Kawasaki, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo and Institute of Technology Precision Electrical Discharge Works, Kawasaki, both of, Japan

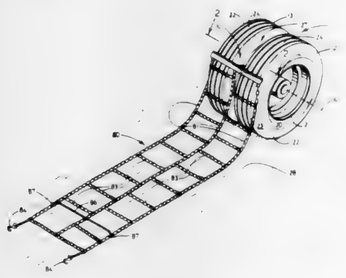
Filed Oct. 6, 1980, Ser. No. 193,977
Claims priority, application Japan, Oct. 18, 1979, 54/134512
Int. Cl.³ B21K *5/20*; B23P *17/00*
U.S. Cl. 76—107 R **19 Claims**



1. A method of constructing a ring-shaped mold for tire manufacturing and which includes radially outer portions having an inside diameter defining a tire track configuration comprising:
forming a workpiece ring having the inside diameter with the tire track configuration;
cutting the workpiece ring along a plurality of angularly spaced radial lines to form it into a plurality of blocks

using a wire cutting tool which cuts a minimum of the material away from the workpiece;
and thereafter assembling the blocks into an annular shape to form a ring-shaped mold;
the workpiece ring including opposite faying surfaces;
said method including cutting the workpiece ring from opposite outside faces thereof only into the faying surfaces using a saw which cuts to an increased width with repsect to the wire cutting tool.

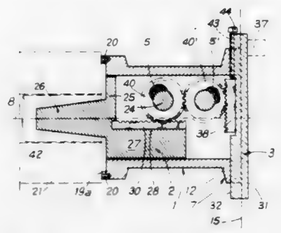
4,411,176
ASSEMBLY FOR INSTALLING CHAINS
Lonnie L. Mason, 2725 Canary Dr., Visalia, Calif. 93277
Filed Jan. 5, 1981, Ser. No. 222,497
Int. Cl.³ B60C *27/06*
U.S. Cl. 81—15.8 **5 Claims**



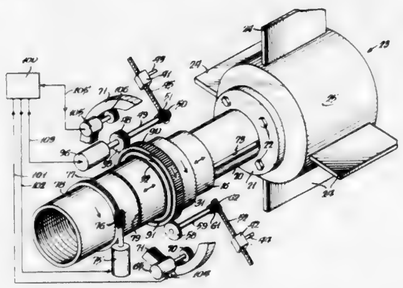
1. An assembly for installing chains or the like on dual wheels rotational about an axis of rotation and having circumferentially extending treads and juxtaposed substantially curved sidewalls, the assembly comprising a frame having a first portion dimensioned for engagement with the treads of both wheels when disposed in a primary attitude in contact with the treads substantially parallel to the axis of rotation of the wheels, a second portion deployed for extension between the sidewalls of the wheels and a third portion borne by the second portion in spaced relation to the first portion and dimensioned for engagement with the sidewalls of the wheels when the first portion is disposed in said primary attitude to bind the frame on the wheels with said wheels captured between the first and third portions of the frame, said third portion of the frame having convex surfaces which face and engage the sidewalls of the dual wheels when the first portion of the frame is disposed in said primary attitude and the third portion of the frame being adjustable to move said convex surfaces toward or from each other; and means borne by the frame for supporting chains in depending relation thereon.

4,411,177
NUMERICAL CONTROL SURFACING PLATE
Michel Batistoni, Dracy le Fort, France, assignor to Framatome, Courbevoie, France
Filed Mar. 11, 1981, Ser. No. 242,763
Claims priority, application France, Mar. 14, 1980, 80 05835
Int. Cl.³ B23B *3/12*
U.S. Cl. 82—2 E **4 Claims**

1. Surfacing plate for a boring and milling machine comprising a boring spindle rotatable and slidable longitudinally in a milling spindle, said plate comprising a hollow cylindrical body having a rear end fixed to the milling spindle and a front head on which a radial guide is formed for a tool holder slide the radial movement of which is controlled by the boring spindle through a mechanical control unit located inside said cylindrical body and comprising two longitudinal racks arranged on a central part sliding longitudinally inside said body under the action of said boring spindle and two radial racks fast to said tool holder slide and connected kinematically and independently to said two longitudinal racks, respectively, through two independent transmission trains, said two radial racks being arranged on two independent parts slidably mounted on said slide in the radial direction and each independently connected to said slide by an adjusting system for the opposite adjustment of the relative radial position of said two radial racks, so as to take up the slack in the kinematic transmission in each direction of the axial movement of said boring spindle.

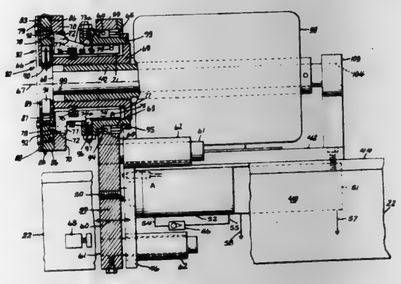


4,411,178
PIPE END PREPARATION MACHINE
Edward H. Wachs, Lake Forest, and Horst Kwech, Lake Bluff, both of Ill., assignors to Power Cutting Incorporated, Lake Bluff, Ill.
Filed Jun. 4, 1981, Ser. No. 270,409
Int. Cl.³ B23B *3/24*
U.S. Cl. 82—4 C **5 Claims**



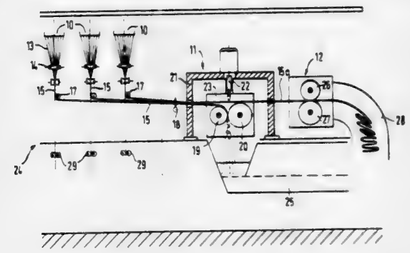
1. A pipe end preparation machine comprising: a frame mounted on a mast positionable in oriented relation from and beyond an end of a pipe; a tool head, means mounting the tool head on said frame for rotation about an axis, means for rotating the tool head; a tool slide, means mounting the tool slide on said tool head for movement along a path radial to said axis to provide radial feed for a tool carried thereon; and drive mechanism for moving said tool slide radially including a rotatable gear carried by the tool head, a ring gear mounted rotatably relative to said tool head and meshing with said rotatable gear, and means including a variable speed motor with an output shaft which is braked when the motor is deenergized and a disengageable clutch operable to connect or disconnect the motor output shaft with a drive gear meshing with the ring gear operable to establish three different conditions of operation of the tool slide responsive to three different conditions of operation of the ring gear including a first condition wherein the clutch is disengaged and the ring gear is free to rotate with the tool head as caused by engagement of the rotatable gear with the ring gear and the tool slide does not move radially, a second condition wherein the clutch is engaged and the motor output shaft is braked to lock the ring gear against rotation and the rotatable gear is caused to rotate by rotation of the tool head relative to the ring gear and the tool slide moves radially, and a third condition wherein the clutch is engaged and the motor operating to rotate the ring gear and modify the rotation of the rotatable gear from that obtained in the second condition to obtain a different speed of radial movement of the tool head than that in the second condition.

4,411,179
APPARATUS FOR CUTTING TUBING INTO PREDETERMINED LENGTHS
Steven L. Stroup, 317 S. Bennett, Bluffton, Ind. 46714
Filed Sep. 26, 1980, Ser. No. 191,319
Int. Cl.³ B23B *5/14*; B26F *3/00*
U.S. Cl. 82—71 **4 Claims**



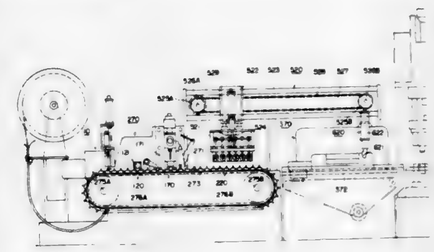
1. Apparatus for cutting metallic tubing in predetermined lengths comprising a stationary supporting frame, means on said frame for moving a straight length of tubing unidirectionally intermittently along a straight path in alignment with the longitudinal axis of said tubing, means for cutting off said tubing while it is stationary between movements; said cutting off means being in the form of a mechanism having a passage therethrough in coaxial alignment with said straight path, said mechanism including a body rotatable about the axis of said passage, a cutting device carried by said body and selectively movable radially toward and away from said passage, motor means for rotating said body, actuating means for moving said cutting device on said body; said actuating means including a member carried by said frame for reciprocation operatively connected to said cutting device whereby movement of said reciprocable member in one direction moves said cutting device radially inwardly of said passage and movement of said member in the opposite direction moves said cutting device radially outwardly, said body including a gib device having three radial guide ways equally angularly spaced apart, said cutting device being received by one of said guide ways, two cutting back-up devices received by the other two guide ways, respectively, said cutting and back-up devices being movable toward and away from said passage, said reciprocating member also being operatively connected to said back-up devices for moving them in unison with said cutting device, said motor means including an electric motor having a hollow shaft coaxially disposed relative to said straight path, said body being secured to said shaft and having a hub portion provided with a cylindrical outer surface, said hub having three elongated axially extending recesses equally angularly spaced apart in axial alignment with said three guide ways, respectively; said actuating means further including three lever elements movably disposed within said three recesses, respectively, said lever elements being pivotally connected to said hub for radial movement, one end of each lever element being connected to a respective one of said cutting and back-up devices, a sleeve slidably mounted axially on said hub but for rotation therewith, said reciprocable member being connected to said sleeve, said lever elements having inclined cam surfaces annularly aligned and disposed in cooperative relation with the interior of said sleeve, the cam surface of the lever element which is connected to said cutting device being longer than the cam surfaces on the other two lever elements, said sleeve being operatively engageable with said cam surfaces to force said cutting and back-up devices inwardly in accordance with the lengths of the respective cam surfaces.

4,411,180
PROCESS AND DEVICE FOR INTRODUCTION OF A CONTINUOUS YARN IN A CUTTING MACHINE
Giordano Roncato, Aix les Bains, France, assignor to Vetrotex Saint-Gobain, France
Filed Sep. 8, 1981, Ser. No. 299,930
Claims priority, application France, Sep. 12, 1980, 80 19704
Int. Cl.³ D01G *1/04*
U.S. Cl. 83—37 **20 Claims**



1. A process of cutting at least one continuous yarn in a cutting machine formed by a blade-carrying roll and a support roll rotating in opposite directions about axes in substantially a horizontal plane comprising drawing said yarn from an upstream location downstream to said cutting machine along a first path of movement through a zone defined by opposite sides of said blade-carrying roll, deflecting said yarn from said first path to a second path of movement along which said yarn is supported in surface contact, adjacent a cutting zone between said rolls, as it lays flat on the roll of said cutting machine disposed upstream of the other roll, moving said yarn into said cutting zone, and collecting individual substantially equal length sections cut from said yarn.

4,411,181
FULLY AUTOMATIC APPARATUS FOR PRODUCING AN ELECTRICAL CORD OF A PREDETERMINED LENGTH WITH A PLUG ATTACHED THERETO
Hideo Imai, Kyoto, Japan, assignor to Kawasaki Electric Wire Co., Ltd., Kanagawa, Japan
Filed Jun. 16, 1981, Ser. No. 274,222
Claims priority, application Japan, Mar. 22, 1979, 54-33915
Int. Cl.³ B26D *7/06*; H01R *43/04*
U.S. Cl. 83—150 **10 Claims**



1. An apparatus for cutting and holding a piece or wire cord, said apparatus comprising:
(a) conveyor means including a plurality of plate means for movement in a first direction, and a plurality of holding

blocks wherein each of said holding blocks is mounted on a corresponding one of said plate means, each of said holding blocks having a fixed portion and a slidable holder portion, said slidable holder portion being slidable relative to said fixed portion;

(b) advancing means for advancing said wire cord a predetermined length in a second direction perpendicular to said first direction;

(c) cutter means positioned downstream of said advancing means for cutting said wire cord into cut portions of said predetermined length; and

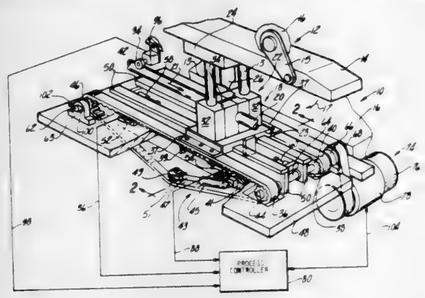
(d) loading means positioned downstream of said cutter means and operatively coupled thereto for engaging a holder portion of one of said holding blocks to prevent the movement of said holder portion in said first direction while said fixed portion is moved in said first direction to thereby cause a relative sliding movement between said holder portion and said fixed portion thus forming a space between two adjacent holding blocks having a width at least as great as the width of said wire cord, pushing said cut wire cord into said space, and releasing said holder portion such that said holder portion slides in said first direction whereby said cut wire cord is held between said holder portion of said one of said holding blocks and the fixed portion of an adjacent holding block.

4,411,182

BELT DRIVEN FLYING CUTOFF APPARATUS

John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Filed Apr. 27, 1981, Ser. No. 258,230
Int. Cl.³ B23D *21/00, 25/04*
U.S. Cl. 83—319 **11 Claims**



1. Apparatus for use in cutting an elongate workpiece on the fly which is continuously moving along its longitudinal axis, comprising:

a base;

a carriage assembly mounted on said base for bidirectional movement along said longitudinal axis between a starting position and a finishing position;

means mounted on said carriage assembly for cutting said workpiece; and,

means for moving said carriage assembly on said base in synchronism with the movement of said workpiece, including

(1) at least two flexible belt members fixedly secured to said carriage assembly and longitudinally extending essentially parallel to said longitudinal axis,

(2) means for mounting said belt members for bidirectional movement essentially parallel to said longitudinal axis,

(3) reversible drive means coupled with said mounting means for moving said belt members, whereby to move said carriage assembly from said starting position to said finishing position and from said finishing position back to said starting position, and

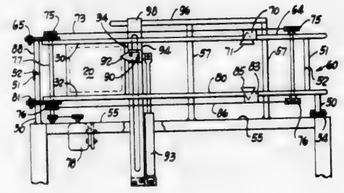
(4) means for adjusting the natural frequency of at least one of said belt members relative to the other of said belt members in order to prevent resonance of said belt members.

4,411,183

APPARATUS FOR CUTTING PIE-SHAPED OPENINGS IN FIBERBOARD DUCT

Mark J. Auer, 23520 Lake Rd., Bay Village, Ohio 44140

Division of Ser. No. 169,916, Jul. 17, 1980. This application Sep. 28, 1982, Ser. No. 425,498
Int. Cl.³ B23D *23/02*
U.S. Cl. 83—581 **5 Claims**



1. Apparatus for cutting pie-shaped cuttings in a linear unit of fiberboard hollow duct having an upper wall, a lower wall, an inner sidewall, and an outer sidewall wherein each pie-shaped cutting comprises corresponding triangular cuts in the duct upper and lower walls and intervening vertical cuts in the duct interior sidewall corresponding to the base of the triangular cuts, the apparatus comprising:

a pair of movable upper knives movably supported on a lower guide means and adapted to cut a triangular cut in the upper duct wall with the apex angle adjacent to the outer sidewall and the base adjacent to the inner sidewall, said guide means adjustable to provide an apex angle cut between about 5 and 85 degrees;

a pair of movable lower knives movably supported on a lower guide means and adapted to cut a triangular cut in the lower duct wall corresponding and vertically below to the triangular cut in the upper duct wall;

and a pair of vertically movable knives movably supported on support means adapted to align with the base points of the corresponding upper and lower triangular cuts to produce pie-shaped cuts capable of being removed from the duct;

and said knives operated by drive means to cause reciprocating cutting movement of said knives.

4,411,184

MUSICAL INSTRUMENT HAVING PROGRAMMABLE AUTOMATIC RHYTHM PATTERN VARIATIONS

David A. Jones, deceased, late of Villa Park, Ill. by Diane S. Jones, administrator, assignor to Marmon Company, Chicago, Ill.

Continuation of Ser. No. 163,084, Jun. 26, 1980, abandoned. This application Apr. 23, 1982, Ser. No. 371,383
Int. Cl.³ G09B *15/02;* **G10H** *1/40*
U.S. Cl. 84—1.03 **7 Claims**

1. In an electrical musical instrument having an automatic rhythm system which varies rhythm patterns in response to rhythm variation signals, rhythm variation select signals, variation clock signals to control the rate of change of said rhythm variations and an automatic variation signal, an operator programmable rhythm variation system comprising:

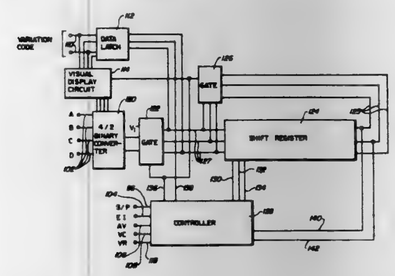
storage means for storing sequences of rhythm variation signals in response to said rhythm variation select signals;

input/output means comprising:

a binary coded output converter for receiving said rhythm variation select signals and generating said rhythm variation signals;

gating means having an input connected to said converter and an output connected to said storage means for gating said rhythm variation signals to said storage means; and

a data latch connected to the output of said gating means for storing the instant rhythm variation signal being played or programmed; and



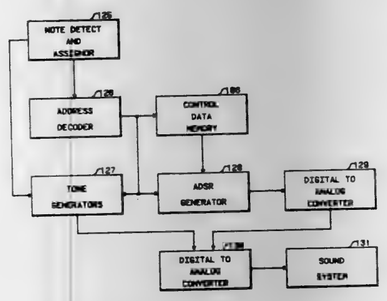
control means responsive to said variation clock signals, said rhythm variation select signals and said automatic variation signal to control said input/output means and said storage means to store and retreive rhythm variation signals in said storage means.

4,411,185

TOUCH RESPONSIVE KEYBOARD ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd, Hamamatsu, Japan

Filed Apr. 2, 1982, Ser. No. 364,955
Int. Cl.³ G10H *1/34, 1/46*
U.S. Cl. 84—1.27 **10 Claims**



1. In an electronic musical instrument having a keyboard comprising an array of keyboard switches, each operable in an unactuated or an actuated keyswitch state, apparatus for producing musical tones having musical tone effects responsive to the motions imparted to actuate said keyswitches comprising:

a plurality of motion transducers each of which is associated with a corresponding one of said keyboard switches whereby a transducer signal is generated by each motion transducer in response to the motion imparted to actuate its corresponding keyboard switch,

a detection means whereby a detection signal is generated corresponding to each said keyboard switch operated in its actuated keyswitch state,

a plurality of tone generators for creating musical tones each of which produces a musical tone effect in response to a tone control signal,

a maximum signal detection means whereby one said tone control signal is generated corresponding to the maximum value of each said transducer signal, and

an assignor means responsive to each said detection signal for assigning tone generators in said plurality of tone generators to actuated keyswitches and for assigning a corresponding tone control signal to each said assigned tone generator thereby producing said musical tones having musical tone effects responsive to the motions imparted to actuate said keyswitches.

4,411,186

STRINGED MUSICAL INSTRUMENT HAVING SOUNDBOARD

Eric Faivre, 12 Impasse Mousset, 75012 Paris, France

Filed Nov. 23, 1981, Ser. No. 324,260
Claims priority, application France, Dec. 2, 1980, 80 25526
Int. Cl.³ G10D *3/02*
U.S. Cl. 84—291 **17 Claims**



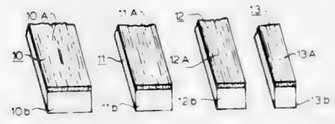
1. A stringed musical instrument of the type comprising a substantially rigid body and a plurality of strings attached at one end to a tailpiece, the improvement comprising a flexible soundboard of acoustic material, one edge of said soundboard bearing against said instrument body and an opposite edge of said soundboard bearing against said tailpiece, said soundboard freely extending between said one edge and said opposite edge, means for fulcruming said tailpiece on said instrument body.

4,411,187

COMPOSITE MARIMBA BARS

Daleth F. Roper, 418 W. Evergreen Ave., Monrovia, Calif. 91016, and Lowell H. Montz, 1470 27th Ave., Sacramento, Calif. 95822

Filed Nov. 27, 1981, Ser. No. 325,205
Int. Cl.³ G10D *13/08*
U.S. Cl. 84—402 **10 Claims**



1. An array of vibratile musical bars having different fundamental tones and substantially similar ringing decay characteristics, each bar being a composite of a plurality of dissimilar materials and one of said materials having a longer decay characteristic wherein the bar having a higher decay period has a larger content of said one material.

4,411,188

DEVICE FOR SPEED CONTROL OF CYLINDER PISTON, PARTICULARLY USEFUL FOR A FIREARM

Olle Gustavsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Dec. 18, 1980, Ser. No. 217,598
Claims priority, application Sweden, Dec. 18, 1979, 7910400
Int. Cl.³ F41F *11/07*
U.S. Cl. 89—20 A **5 Claims**

5. In a firearm having a closing mechanism operable between an open and closed position, said closing mechanism operating in response to the relative motion produced by a piston cylinder assembly, a device for controlling said relative motion comprising:

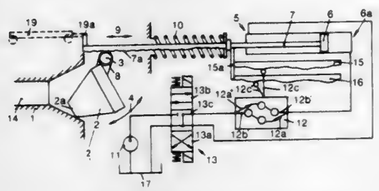
first and second constant flow valves connected to provide first and second hydraulic fluid flow paths for said piston

cylinder assembly, said flow valves each having a pin longitudinally displaceable against a spring whereby displacement of said pin controls fluid flow;

cam means providing first and second cam profiles for actuating first and second of said pins, said cam means connected to move in response to relative movement between said piston and cylinder;

first and second arms each rotatably supported at one end, the underside of said arms contacting one of said pins;

first and second link parts rotatably connected to a remaining end of said first and second arms, said link parts being spring biased in a first angular position, against a respective arm, and displaceable to a second angular position with respect to said arm;



a roller connected on an end of each link part and in contact with a respective cam profile;

a spring biasing said arms whereby respectively connected rollers are urged against one of said cam profiles whereby said cam profiles in a first direction of movement forces said link part against said first angular position displacing a respective arm and contacting pin, and in an opposite direction forces said roller and link member to be angularly displaced with respect to an attached arm inhibiting displacement of said pin.

4,411,189

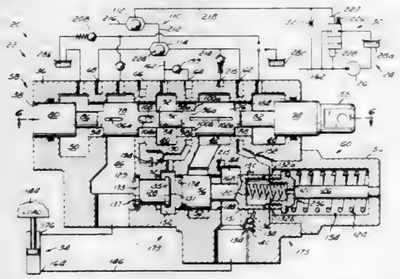
FLUID FLOW CONTROLLING DEVICE

Wendell E. Miller, Warsaw, Ind., assignor to The Scott and Fetzer Company, Lakewood, Ohio

Continuation of Ser. No. 816,865, Jul. 18, 1977, abandoned. This application Jan. 19, 1981, Ser. No. 226,394

Int. Cl.³ F15B *11/08, 13/042*

U.S. Cl. 91—420 **94 Claims**



1. In a fluid flow controlling device (22 of FIG. 1, 203 of FIG. 7, or 400 of FIG. 8) of the type having a body (36, 308, or 398) that includes a pressure inlet channel (40 or 314), that includes a first work port channel (44 or 320), and that includes return port means (48+50, 324+326, or 326+456+468) with a first branch channel (48, 324, or 456), and having selective communication means in said body for selectively communicating said pressure inlet channel with said first work port channel, and for selectively communicating said first work port channel with said first branch channel, the improvement in which said selective communication means comprises:

serivce channel means (42 or 318), in said body being interposed intermediate of said pressure inlet channel and said first branch channel, for receiving fluid from said pressure inlet channel and for returning fluid to said first branch channel;

selectively positionable valving element means (54, 312, or 404), communicating with said pressure inlet channel, with said work port channel, and with said service channel means, and being movable from a stand-by position (FIG. 1 or FIG. 7) wherein said first work port channel is isolated from said pressure inlet channel, to a first operating position (FIG. 2, or FIG. 8) for establishing and selectively sizing a first fluid flow path (170 of FIG. 2, or 508 of FIG. 8) from said pressure inlet channel to said service channel means, and to a second operating position (FIG. 3, or FIG. 9) for establishing and selectively sizing a second fluid flow path (182 of FIG. 3, or 514 of FIG. 9) from said service channel means to said first branch channel; and

flow controlling means (60 or 306), interconnecting said service channel means and said first work port channel, and comprising a flow control plunger (56) that is movable from a free-flow position (FIG. 4), for controlling the rate of fluid flow through said first fluid flow path in proportion to said selective sizing thereof, and for controlling the rate of fluid flow through said second fluid flow path in proportion to said selective sizing thereof.

4,411,190

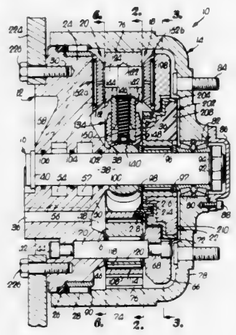
ENERGY TRANSLATION DEVICE HAVING INDIVIDUALLY COMPENSATED SLIDING VALVES AND COUNTERBALANCING MECHANISM

John B. Kilmer, 9030 Maple, Wichita, Kans. 67209

Filed May 7, 1981, Ser. No. 261,043

Int. Cl.³ F01B *1/06*; F16K *25/02*

U.S. Cl. 91—487 **18 Claims**



1. In an energy translation device of the type including a member shiftable along a defined path of travel and presenting a pair of opposed faces, a plurality of fluid displacement assemblies operatively associated with said member, and means for input and output of hydraulic fluid to and from said assemblies including hydraulic fluid valving apparatus for said displacement assemblies, the improvement comprising:

a pair of opposed, cooperating, apertured valve bodies located adjacent each of said displacement assemblies and respectively disposed proximal to said opposed member faces and in communication with the adjacent displacement assembly;

means mounting each of said bodies for movement thereof toward and away from said member and independently of any such movement of any other body;

structure interconnecting the opposed bodies of each respective pair of bodies in pressure-communicating relationship; and

actuation means associated with each of said bodies and operably connected to the adjacent interconnecting structure for urging each pair of said opposed bodies toward said member with equal but oppositely directed forces.

4,411,191

CENTRALLY MECHANICALLY CONTROLLED PRINTING MACHINE

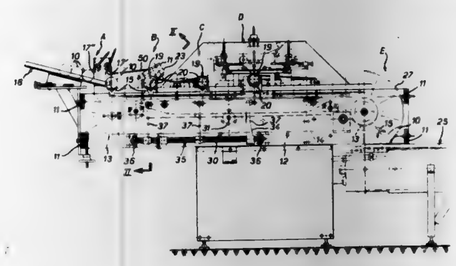
Guy Combeau, Aixe-sur-Vienne, France, assignor to Societe d'Exploitation des Machines Dubuit, Paris, France

Filed Jul. 22, 1981, Ser. No. 285,762

Claims priority, application France, Jul. 29, 1980, 80 16651

Int. Cl.³ B41F *17/22*

U.S. Cl. 101—38 A **12 Claims**



1. A centrally mechanically controlled printing machine, comprising a conveyor equipped with spaced-apart article carriers for accommodating articles to be printed, a plurality of work stations disposed along said conveyor, each of said work stations being equipped with a separate mandrel transfer unit for selectively picking up an article from one of said article carriers and dropping said article off, the operation of said mandrel transfer units being synchronously controlled by cam means responsive to the advancement of said conveyor, said cam means being at least a single cam which is provided for at least two of said work stations, a cam follower cooperable with said single cam, a central control shaft common to said two work stations, said cam follower being fixed for rotation with said central control shaft, and an actuating lever for controlling each of said mandrel transfer units being fixed for rotation with said central control shaft.

4,411,192

ROTARY STAMP

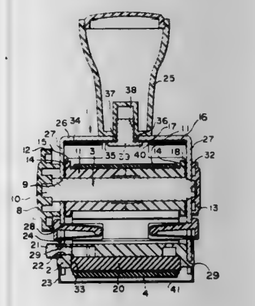
Naoyuki Fujihara, Konan, Japan, assignor to Shachihata Industrial Co., Ltd., Aichi, Japan

Filed Jan. 27, 1981, Ser. No. 228,745

Claims priority, application Japan, Feb. 1, 1980, 55-12254[U]

Int. Cl.³ B41J *1/60*

U.S. Cl. 101—111 **1 Claim**



1. In a rotary stamp comprising:

an inverted U-shaped frame comprising a top plate and right and left side plates, each of said side plates having a circular opening formed substantially at the center thereof, a rectangular opening below said circular opening and a recess at the lower end thereof;

a shaft rotatably inserted into said circular openings;

a pair of spring means, each being inserted into a different one of said rectangular openings;

a bridge mounted between said recesses and having a further recess at the lower portion thereof;

cylinder means securely fitted on the outer circumference of said shaft at the portion positioned inside said side plates, said cylinder means having flanges at both ends thereof and being equipped on an outer circumference of portions between said flanges with a number of spaced apart ridges extending the full axial length of said cylinder between said flanges;

operating means for rotating said shaft and directly fitted on the portion of said shaft in the outsides of said side plates;

an ink-absorbed member incorporated in said further recess of said bridge;

an endless belt-like stamping member mounted around said cylinder means and said ink-absorbed member, made of a porous elastic material and having a number of character portions formed on the outer surface thereof, said endless belt-like stamping member being mounted between said flanges on said cylinder means and being equipped on the inner surface thereof with grooves spaced-apart to the same degree as said ridges to mate with respective ones of said ridges, said endless belt-like stamping member being of the same width as a distance between said flanges thus allowing said belt-like stamping member to lay smoothly over said cylinder and wherein said belt-like stamping member is always maintained in alignment by said flanges and said cooperating grooves and ridges;

a pair of covers, for covering the front and back portions of said frame, respectively;

a cap so disposed as to be capable of moving up and down along the outer surfaces of said side plates of said frame and the outer surfaces at the lower portions of said covers;

said spring means normally pushing said cap downwardly so that the surface of one of said character portions is pulled into said cap when one character portion reaches the lowermost position due to the rotation of said operating means, and allowing the surface of said one character portion to protrude outwardly from said opening of said cap thereby to effect stamping when said cap is pressed against an article to be stamped against the force of said spring means;

the improvement wherein said cylinder comprises a unitary element; each of said flanges having knurls around the outer circumference thereof, and said top plate having on a surface thereof downwardly directed elastic plates having on lower ends thereof pawls engaging said knurls on each of said flanges enabling rotation of said cylinder in small increments.

4,411,193

ROLLER GEAR DRIVE

Max W. Hess, North Richland Hills, Tex., assignor to Dahlgren Manufacturing Company, Dallas, Tex.

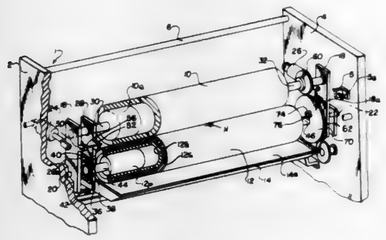
Filed May 26, 1981, Ser. No. 266,895

Int. Cl.³ B41F *7/26, 7/36, 7/40*

U.S. Cl. 101—148 **3 Claims**

1. In a liquid metering device wherein first and second rollers are urged into pressure indented relation to form a metering nip, liquid being transferred to the metering nip by the second of the pair of rollers, the improvement comprising: a drive gear rotatable relative to said second roller; a first drive pin on the drive gear; a second pin connected to said second roller, said first pin being disposed to engage the second pin to limit rotation of the drive gear relative to the second roller; and a driven gear secured to said first roller, said driven gear being disposed in meshing relation with said drive gear such that initial rotation of said drive gear imparts rotation through said

driven gear for rotating said first roller and said second roller such that adjacent surfaces of the first and second roller move in the same direction at substantially equal surface speeds until

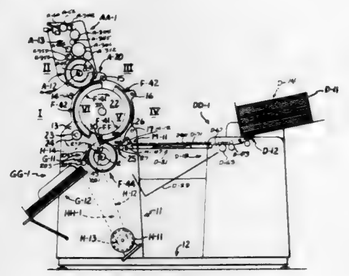


said first pin engages said second pin to cause adjacent surfaces of the first and second rollers to move in the same direction at different surface speeds.

4,411,194
PRINTING PRESS

William W. Davidson, Jr., Port Washington, N.Y., assignor to North Shore Precision Research Corporation, Ossining, N.Y.

Division of Ser. No. 866,778, Jan. 3, 1978, Pat. No. 4,231,291, which is a division of Ser. No. 498,844, Aug. 19, 1974, Pat. No. 4,098,185, which is a division of Ser. No. 235,221, Mar. 16, 1972, Pat. No. 3,848,320, which is a continuation-in-part of Ser. No. 73,161, Sep. 17, 1970, abandoned, which is a continuation-in-part of Ser. No. 658,385, Aug. 4, 1967, abandoned. This application Jul. 16, 1980, Ser. No. 169,526
Int. Cl.³ B41F *13/00, 21/00*
U.S. Cl. 101—216 **10 Claims**

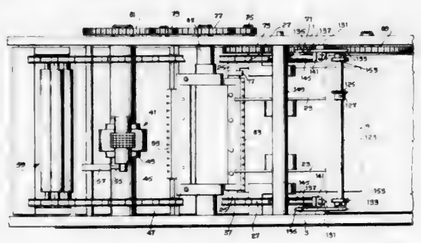


1. In a printing press having a rotating shaft for supporting a print cylinder;
at least a first and a second cam, spaced longitudinally on said shaft and extending radially outward thereof for controlling functions of said printing press upon rotation of said shaft,
said first cam including a first and a second slot means spaced radially outwardly of said shaft,
said second cam including a first and a second slot means spaced radially outwardly of said shaft; and
means for securing each cam to rotate with said shaft, yet permitting selective circumferential adjustment of the position of each cam on said shaft independent of each other cam on said shaft;
said securing means including a radial disk mounted to rotate with said shaft and positioned on one side of said first cam facing away from said second cam,
first fastener means extending through said first slot means of both of said first and second cams for securing said first cam in a selected circumferential position to rotate with said disk,
second fastener means extending through said second slot means of both said first and second cams for securing said second cam in a selected circumferential position to rotate with said disk,
said second fastener means including a spacer extending through said second slot means of said first cam for maintaining said second cam in longitudinally spaced relation to said first cam on said shaft, and
both said first and second fastener means including means for loosening or tightening the same accessible from one side of said second cam facing away from said first cam.

4,411,195
PRINTING PRESS WITHIN TEAR-LINE TRACING MEANS

Christian Tailleux, Ste-Anne des Plaines, and Jacques Charbonneau, Brossard, both of Canada, assignors to Multidick Inc., Montreal, Canada

Filed Jan. 12, 1982, Ser. No. 338,898
Int. Cl.³ B41F *13/56*
U.S. Cl. 101—226 **12 Claims**



1. A printing press including a printing section delivering printed sheets onto a conveying section at a receiving station of said conveying section, said conveying section incorporating a horizontally movable conveyor provided with means for gripping said printed sheets discharged from said receiving station and moving them away from said receiving station, said printing press being characterized by the provision in combination therewith of means for producing tear-lines on said printed sheets, said means comprising:
a rotary shaft disposed transversely of and above said conveyor, adjacent to and downstream of said receiving station
a first tear-line tracer assembly fixedly mounted on said shaft, said first tracer assembly projecting radially from and lengthwise of said shaft and including a first tracer blade having an elongated serrated straight cutting edge extending parallel to the shaft rotation axis, said serrated cutting edge being adapted to produce tear-lines when applied over and across said printed sheet material as said sheet material is moved by said conveyor;
a second tracer assembly adjustably mounted on the rotary shaft, said second tracer assembly projecting radially and comprising a second tracer blade having an elongated straight serrated cutting edge extending parallel to the shaft rotation axis, said serrated cutting edge being adapted to produce tear-lines when applied over and across said printed sheets as said sheets are moved by said conveyor, and means for adjustably mounting said second blade on said shaft to position said second blade at a selected angle with respect to the blade of said first tear-line tracer assembly,
a rotary support roll beneath said conveyor and over the top of which said printed sheets bear as they are moved by said conveyor, the axes of rotation of said shaft and of said support roll lying in a common vertical plane;
means in said first and second tear-line assemblies to adjust the cutting edges of their respective blades, when lying in said vertical plane, with respect to the top of said support roll to ensure production of said tear-lines on said printed sheets when the latter move therebetween, and

means for synchronizing the rotation of said rotary shaft and said support roll with the movement of said conveyor to produce said tear-lines on the printed sheets at a selected location thereon,
wherein said means adjustably mounting said second tracer assembly on said shaft comprises:
a blade holding plate having a length greater than said second blade to define portions projecting away from the ends of said second blade;
means adjustably clamping said plate and blade together to allow relative displacement of said blade and plate transversely thereof;
two-part clamping collars and means securing said collars on said shaft;
wherein one part of each of said collars has a holding finger projecting away from said rotary shaft when said collars are secured thereto, said holding fingers being constructed to receive said projecting portions of said blade and means fixing said holding plate to said holding fingers whereby said second blade, through said holding plate and collars, may be positioned on said shaft at said selected angle.

4,411,196
IMPRINTER WITH LOCKING AND RELEASING DEVICE

Keizo Kubo, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

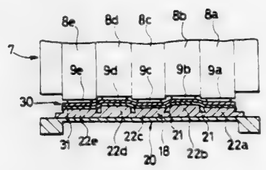
Filed Feb. 12, 1982, Ser. No. 348,454
Claims priority, application Japan, Feb. 24, 1981, 56-24860
Int. Cl.³ B41F *3/20*
U.S. Cl. 101—269 **4 Claims**

1. In an imprinter with a locking and releasing device, having an elongated printing bed and a carriage supporting a printing roller and mounted on the printing bed for moving thereacross by means of guide rollers of the carriage to imprint a form with the types arranged on the printing bed, said carriage being turnable to and away from the printing bed between an operative position in which the carriage is on the printing bed and an inoperative position in which the carriage is away from the printing bed, the improvement comprising:
support means (7) including a pair of upright portions (8) projecting outwardly from the printing bed and spaced from each other, each of said upright portions being formed with an inclined edge (38) and a vertical edge (39) forming a carriage locking structure;
a unit of guide frames (12) each mounted at one end thereof on the support means for carrying the carriage thereon and turnable to and away from the printing bed, said guide frames being each formed with an elongated guide groove (16) for engaging each of the guide rollers of the carriage, said guide frames being each further formed with first and second grooves (17, 18) opposite to each other with respect to the elongated guide groove;
engaging means including a first transverse shaft (19) having both ends engaging the first grooves of the guide frames, respectively and being movable with respect to the latter;
actuating means including a second transverse shaft (21) having both ends engaging the second grooves of the guide frames, respectively and being movable with respect to the latter;
means (24, 24) for connecting the first and second transverse shafts to each other;
swingable means (22) mounted on the unit of guide frames and engaging the second transverse shaft (21), so that the swingable means may be moved in association with the first and second transverse shafts;
first spring means (20) normally biasing the first and second transverse shafts in one direction to hold the first transverse shaft in cooperation with the carriage locking structure of said support means when the carriage and the unit of guide frames are in the operative position of the printing bed; and
second spring means (40) normally biasing the unit of guide frames together with the carriage toward the inoperative position away from the printing bed, said swingable means being adapted to move in a direction to release the first transverse shaft and accordingly the unit of guide frames from the locking structure of said support means when the carriage is moved to a position for swinging the swingable means at the end of printing operation, and said second spring means moving the unit of guide frames together with the carriage into the inoperative position away from the printing bed.

4,411,197
PRINTING DEVICE FOR HAND LABELER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Filed May 24, 1982, Ser. No. 381,547
Claims priority, application Japan, Aug. 14, 1979, 54-111220
Int. Cl.³ B41K *1/10;* B41J *11/20*
U.S. Cl. 101—291 **8 Claims**



1. A printing device for printing a plurality of types on an imprintable medium, comprising:
a printing head having a plurality of types, the plurality of types comprising a plurality of rotatable means with each rotatable means carrying a respective series of types and each rotatable means being rotatable to move a respective type of the respective series to a printing position; at the printing position, the types of each of the rotatable means then at the printing position together define a printing surface on which the types are positioned for engaging an imprintable medium;
a platen for supporting an imprintable medium and including a type receiving plate positioned for being contacted by the types of the printing surface;
means mounting all of the rotatable means for movement together as one unit, and means for moving all of the rotatable means and the types thereof then on the printing surface toward and simultaneously against the type re-

ceiving plate for imprinting an imprintable medium on the plate;

the type receiving plate being comprised of a plurality of independent lands, corresponding in position to respective ones of the types on the printing surface; each type is to be contacted and the top surface together being generally planar; each of the lands being independently elastically deformable for establishing a generally uniform printing pressure for each of the types against a respective land when the types simultaneous contact the lands; said plate having a general orientation and the top surfaces of said lands being sloped in orientation with respect to said plate for matching the slopes of the imprintable surfaces of said types.

4,411,198

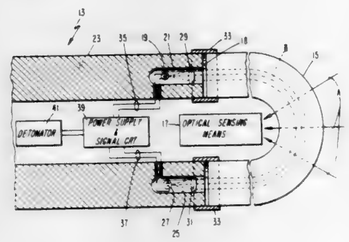
IMPACT FUZE

John E. Shrader, Mercer Island, and Alan B. Zimmerschied, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 24, 1981, Ser. No. 247,076

Int. Cl.³ F42C *19/06*

U.S. Cl. 102—216 **11 Claims**



1. An impact fuze for use in a warhead assembly having a nose made of optically transparent material comprising:

(a) light generating means for producing a light beam,

(b) light receiving means,

(c) said light generating means and said light receiving means spacedly positioned from one another for enabling said light beam to travel from said light generating means, through a path in said optically transparent nose material and to said light receiving means, and

(d) circuit means coupled to said light receiving means for producing a signal upon the detection of an abrupt change in sensed light by said light receiving means.

4,411,199

BOOSTER FOR MISSILE FUZE WITH CYLINDRICAL WALL HOLES

Patrick A. Yates, China Lake, Calif., and Patrick M. McInnis, Garderville, Nev., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1981, Ser. No. 248,932

Int. Cl.³ F42C *15/06*

U.S. Cl. 102—481 **13 Claims**

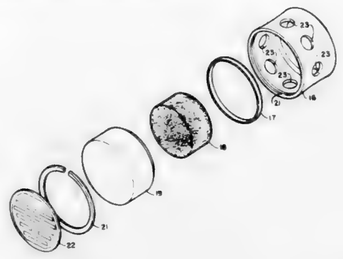
1. A booster for a missile warhead detonation system comprising:

a sleeve having cylindrical walls and a shouldered open end and an open end and a plurality of apertures extending through said cylindrical walls;

a metallic cup fitting within said sleeve to be sealingly supported by said shouldered open end;

a booster explosive charge fitting in and supported by said metallic cup in alignment with said plurality of apertures in said sleeve wall;

a nonmetallic cup fitted within said sleeve and in cooperative arrangement with said metallic cup enclosing said booster charge and dimensioned to extend in proximate alignment with the open end of said sleeve; and



means connected to the open end of said sleeve for retaining said metallic cup, said booster charge, and said nonmetallic cup within said sleeve.

4,411,200

SHORT TRAJECTORY ROUND

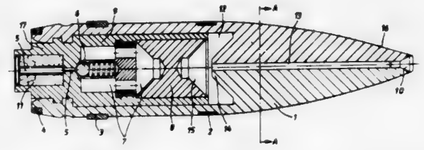
Uwe Brede; Horst Penner; Rudolf Stahlmann, all of Fürth, and Erich Zeiher, Fürth-Vach, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Aug. 14, 1978, Ser. No. 946,042

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736529

Int. Cl.³ F42B *13/20*

U.S. Cl. 102—529 **24 Claims**



1. A short range trajectory round having an aerodynamic resistance which sharply increases at a predetermined time after discharge of the round from a barrel of a weapon comprising a body having a longitudinal axis and a forward tip portion and a rear base portion, at least one segment means forming a part of the body, at least a portion of the at least one segment means being arranged for outward movement away from the longitudinal axis, the at least one segment means at least partially delimiting an inner cavity within the body terminating at a predetermined distance from the tip portion, and plunger means having a forward portion and a rearward portion disposed within the cavity and arranged for movement in the longitudinal direction of the round between at least a rearward position and a forward position, the plunger means being movable to the forward position in response to the firing of the round for form-lockingly engaging the at least one segment means to prevent movement of the portion of the at least one segment means away from the longitudinal axis of the round thereby to establish a first aerodynamic resistance for the round, the plunger means being movable toward the rearward position in response to a force acting on the forward portion thereof after discharge of the round from the barrel of the weapon for disengaging the at least one segment means to enable outward movement of the portion of the at least one segment means with respect to the longitudinal axis of the round and thereby establish at least a second aerodynamic resistance for the round which is greater than the first aerodynamic resistance.

23. A short range trajectory round having an aerodynamic resistance which sharply increases at a predetermined time after discharge of the round from a barrel of a weapon comprising a body having a longitudinal axis, at least one segment means forming a part of the body, at least a portion of the at least one segment means being arranged for outward movement away from the longitudinal axis, connector means cooperating with the at least one segment means for establishing a temporary connection between the at least one segment means and other portions of the body in response to the firing of the projectile to prevent movement of the portion of the at least one segment means away from the longitudinal axis of the round thereby to establish a first aerodynamic resistance for the round, and delay means for enabling termination of the temporary connection established by the connector means at a time after discharge of the round from the barrel of the weapon so as to enable outward movement of the portion of the at least one segment means with respect to the longitudinal axis of the round and thereby establish at least a second aerodynamic resistance for the round which is greater than the first aerodynamic resistance, and wherein the body is formed of a plurality of segment means configured to delimit an inner cavity within the body, the connector means being arranged within the cavity for establishing a temporary connection with the segment means in response to a force acting thereon and generated by the firing of the round.

4,411,201

RAILWAY CAR DIAPHRAGM CONSTRUCTION

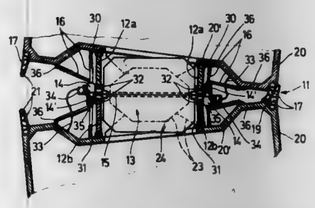
Helmut Hassel, Donauwörth, and Reimund Stark, Griesbeckerzell, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,184

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024635

Int. Cl.³ B60D *5/00*; B61D *17/14, 17/22*

U.S. Cl. 105—8 R **8 Claims**



1. A bridging structure for vehicles, comprising a first flexible tunnel section, first means (**30**) securing said first tunnel section to its respective vehicle end in a sealing manner, a second flexible tunnel section (**12*b***), second means (**31**) securing said second tunnel section (**12*b***) to its respective vehicle end in a sealing manner, flexible sealing joint means (**32**) all around a facing end of each tunnel section for sealing the tunnel sections to each other, interlocking means (**14**, **14'**) operatively arranged for locking the first and second tunnel sections (**12*a***, **12*b***) to each other to maintain a continuous seal all around between the two tunnel sections, said bridging structure further comprising elastic suspension means (**16**) on each vehicle, first pivot means (**35**) for pivoting said suspension means (**16**) to each of said first and second tunnel sections (**12*a***, **12*b***) and second pivoting means (**36**) pivoting said suspension means to a respective vehicle section, said elastic suspension means comprising damping means for damping any movements of said first and second tunnel sections (**12*a***, **12*b***), said elastic suspension means being arranged in pairs so that at least one pair of elastic suspension means is provided on each side of the respective tunnel section, and so that the elastic suspension means forming a pair are arranged at an angle relative to each other.

4. A bridging structure for vehicles, comprising two flexible cooperating sectional members (**17**), connecting means (**18**, **19**, **19*a***) at each vehicle end corner adjacent to an outer shell wall thereof for connecting the respective sectional member to the corresponding vehicle end in such a position that a substantially streamlined continuity is provided for and between two outer shell walls of adjacent vehicles, wherein said flexible cooperating sectional members (**17**) are constructed as inflatable multichamber hollow sections, said hollow sections extending at least partially around an end edge of a vehicle section, wherein said connecting means comprise a steel core (**19**) attached to said multichamber hollow sections (**17**) and groove means (**18**) around an end corner of a vehicle section into which said steel core of the respective hollow section is clamped with a press fit, wherein said connecting means further comprise tensioning means (**22**) operatively connecting said steel core (**19**) to an end of a vehicle section for securing said multichamber hollow section in a tension adjustable manner, and air pressure supply means (**25**,**25'**) operatively connected to said inflatable multichamber hollow sections (**17**) for positively controlling the pressure in said hollow sections (**17**).

6. A bridging system for vehicles, comprising a first bridging structure including a first flexible tunnel section (**12*a***), first means (**30**) securing said first tunnel section to its respective vehicle end in a sealing manner, a second flexible tunnel section (**12*b***), second means (**31**) securing said second tunnel section (**12*b***) to its respective vehicle end in a sealing manner, flexible sealing joint means (**32**) all around a facing end of each tunnel section for sealing the tunnel sections to each other, and interlocking means (**14**, **14'**) operatively arranged for locking the first and second tunnel sections to each other to maintain a continuous seal all around between the two tunnel sections, whereby the first bridging structure performs primarily a sealing function, and elastic suspension means (**16**) for suspending said first bridging structure, said elastic suspension means being arranged in pairs so that at least one pair of elastic suspension means is provided on each side of the respective tunnel section, and so that the elastic suspension means forming a pair are arranged at an angle relative to each other, said system further comprising a second bridging structure including two flexible cooperating sectional members (**17**), connecting means (**18**, **19**, **19*a***) at each vehicle end corner adjacent to an outer shell wall thereof for connecting the respective sectional member to the corresponding vehicle end in such a position that the second bridging structure provides a substantially streamlined transition for and between two outer shell walls of adjacent vehicles, said sectional members (**17**) having inflatable chambers, and air pressure supply means (**25**) operatively connected to said inflatable chambers for positively controlling the air pressure in said chambers, said sectional members of two adjacent vehicles facing each other when the vehicles travel along a straight path, said sectional members of two adjacent vehicles sliding alongside and in parallel to each other on the inner side of a curve substantially in parallel to a longitudinal vehicle axis.

4,411,202

RAIL VEHICLE

Ernst F. Kreissig, Seuzach, Switzerland, assignor to Schweizerische Lokomitiv-und Maschinenfabrik, Winterthur, Switzerland

Filed Jul. 7, 1980, Ser. No. 166,098

Claims priority, application Switzerland, Jul. 11, 1979, 6454/79

Int. Cl.³ B61F *3/04, 5/02, 5/50*

U.S. Cl. 105—199 R **4 Claims**

1. A rail vehicle comprising

a body having a longitudinal center plane, a transverse center plane, and a center of gravity on said transverse center plane;

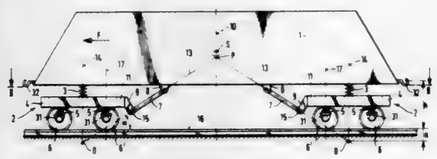
a pair of bogies supporting said body thereon, each said bogie having a pair of wheel sets thereon; and

a pair of rods disposed symmetrically of said transverse center plane for transmitting traction and braking forces between said bogies and said body, each said rod being

angularly disposed in said longitudinal center plane and having one end articulated to said body and an opposite end articulated to a respective one of said bogies, each said rod having a longitudinal axis with an imaginary extension intersecting a transverse center plane of said respective bogie at a point below said wheel sets to impart a forward pitching moment on said leading bogie and thereby increase the loading of the leading axle of the leading bogie relative to the direction of movement of the vehicle and wherein said longitudinal axes of said inclined rods intersect said transverse center plane of said body at a point near said center of gravity to preclude transmission of a body pitch to said bogies.

4. A rail vehicle comprising

a body having a longitudinal center plane, a transverse center plane, and a center of gravity on said transverse center plane;



a pair of bogies supporting said body thereon, each said bogie having a pair of wheel sets with each wheel set including an axle; and

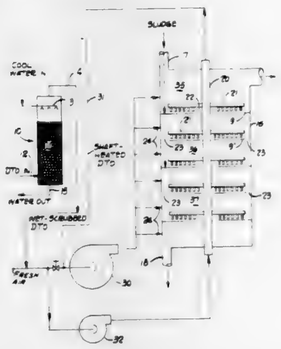
a pair of rods disposed symmetrically of said transverse center plane for transmitting traction and braking forces between said bogies and said body, each said rod being angularly disposed in said longitudinal center plane and having one end articulated to said body and an opposite end articulated to an axle of a respective one of said bogies, each said rod having a longitudinal axis with an imaginary extension intersecting a transverse center plane of said respective bogie at a point below said wheel sets with said longitudinal axes of said inclined rods intersecting said transverse center plane of said body at a point near said center of gravity.

4,411,203

PROCESS FOR UTILIZING LOW CALORIFIC VALUE OFF-GASES AND SIMULTANEOUS DEODORIZATION THEREOF

Frederick M. Lewis, Mountain View, Calif., assignor to Sterling Drug Inc., New York, N.Y.

Filed Jun. 8, 1982, Ser. No. 386,433
Int. Cl.³ F23J *3/00*
U.S. Cl. 110—341 **8 Claims**



1. In a waste disposal process, including settling suspended solids from sludge which has been conditioned to make it dewaterable, optionally thermally conditioning said sludge to aid dewatering thereof, removing a malodorous off-gas evolved from said sludge during treatment thereof, dewatering said sludge, and incinerating the dewatered sludge in a multiple hearth furnace provided with a rotatable central shaft and rabbling arms connected for rotation therewith, which arms are internally in open flow communication with said central shaft through which shaft-cooling gas is flowed, the improvement comprising,

(a) wet-scrubbing said malodorous off-gas having a heating value less than about 100 BTU/ft³, so as to provide a wet-scrubbed stream at a temperature within the range from about 32° F. to about 90° F.;

(b) passing said wet-scrubbed stream, in a major proportion by volume of said shaft-cooling gas, through said central shaft so as to provide shaft-heated gas at a temperature above 212° F. but below about 600° F.; and,

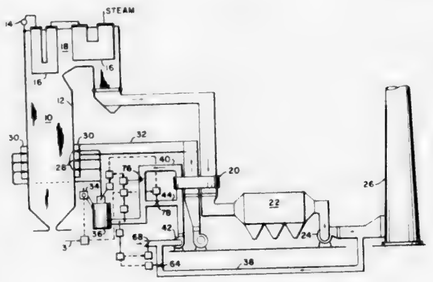
(c) ducting said shaft-heated gas into said furnace's combustion zone to provide pre-heated gas to assist in incineration of said sludge, said simultaneously to assist in deodorization of said shaft-heated gas.

4,411,204

METHOD OF FIRING A PULVERIZED FUEL-FIRED STEAM GENERATOR

Thomas B. Hamilton, Farmington, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 7, 1981, Ser. No. 327,844
Int. Cl.³ F23D *1/00*
U.S. Cl. 110—347 **3 Claims**



1. In a steam generator for burning pulverized fuel having a mill for pulverizing the fuel, a furnace wherein the fuel is burned thereby generating hot flue gas, steam heating surface disposed downstream of the furnace in the flow path of the hot flue gas leaving the furnace whereby heat is transferred from the hot flue gas thereby cooling the flue gas traversing said steam heating surface, a particle collector disposed downstream of the furnace wherein particles entrained in the flue gas are removed therefrom, and a fan disposed downstream of said heating surface and said particle collector for boosting the pressure of the cooled clean flue gas before it is vented to the atmosphere, a method of firing said steam generator comprising:

a. feeding solid fuel to the mill for pulverizing therein at a controlled rate in response to load demand on the steam generator;

b. recirculating a portion of the cooled clean flue gas leaving said booster fan to the mill;

c. mixing ambient air into the recirculated flue gas before introducing the gaseous mixture thereof into the mill;

d. conveying the fuel pulverized in the mill to the furnace entrained in said gaseous mixture of recirculated flue gas and air;

e. controlling the volume flow rate of said gaseous mixture to the mill in response to the feed rate of fuel to the mill;

f. measuring the oxygen content of said gaseous mixture of recirculated flue gas and air entering the mill; and

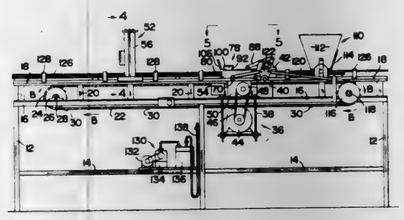
g. controlling the volume flow rate of recirculated flue gas and the volume flow rate of air with respect to each other in response to said oxygen measurement so as to maintain the oxygen level in said gaseous mixture entering the mill at a level of at least 12% by volume.

4,411,205

SEED PLANTER

James T. Rogers, Rt. 1, Box 253, Dover, Fla. 33527

Filed Sep. 30, 1982, Ser. No. 431,780
Int. Cl.³ A01C *5/04*
U.S. Cl. 111—1 **15 Claims**



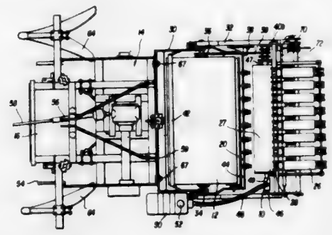
1. An automatic seed planter of the type primarily intended for depositing seeds into prepared growing medium in a seedling flat, said seed planter comprising: a support frame including conveyor means mounted thereon for transporting a seedling flat along the longitudinal dimension of the top of said frame; drive means mounted on said frame and operatively connected to said conveyor means; dibbler means mounted on said frame above said conveyor means and operatively connected to said drive means, whereby a seedling flat containing growing medium may pass under said dibbler means and said dibbler means will be actuated by said drive means to prepare a receptacle in the growing medium for seed; and seed delivery means mounted on said frame above said conveyor means downstream of said dibbler means, said seed delivery means comprising a seed frame mounted in substantially transverse relation to said top of said support frame; a delivery plate mounted on said seed frame in substantially parallel, spaced apart relation to said top of said support frame and including a plurality of delivery apertures formed through said delivery plate, each one of said plurality being in substantial registry with a receptacle prepared by said dibbler means; a transfer plate movably mounted in juxtaposition above said delivery plate and including a corresponding plurality of transfer apertures formed therethrough, each one of said plurality being in substantial registry with a corresponding one of said delivery apertures when said transfer plate is moved from a first position to a second position, said transfer plate being operatively connected to said drive means for reciprocal movement with respect to the longitudinal dimension of said support frame top; a seed hopper mounted on said seed frame above said transfer plate, the bottom of said hopper communicating with the top of said transfer plate such that said first position is defined by placement of said transfer apertures beneath said hopper bottom and said second position is defined by placement of said transfer apertures in registry with said delivery apertures; and said seed delivery means further comprising a plurality of guide fingers mounted on said seed frame in substantially transverse relation to said support frame top, each of said plurality of guide fingers including a distal end disposed in spaced apart registry with one of said delivery apertures and disposed in engaging registry with one of said transfer apertures when said transfer plate is in its second position, whereby each one of said distal ends will assist in causing a seed carried within a corresponding one of said transfer apertures to fall therefrom, through the corresponding one of said delivery apertures, and into the receptacle prepared in the seedling flat by said dibbler means.

4,411,206

PRECISION SOWER

Donald C. Hiscock, Rotorua, New Zealand, assignor to Development Finance Corp of New Zealand, Wellington, New Zealand

Filed Jul. 20, 1981, Ser. No. 284,813
Int. Cl.³ A01C *7/04*
U.S. Cl. 111—34 **7 Claims**



1. A precision seed sowing apparatus comprising:

a rotatable drum mounted in use to roll over roll in which seeds are to be sown,

regularly spaced orifices passing through the circumference of said drum, each said orifice lying in a common plane perpendicular to the axis of said drum,

means for receiving a source of vacuum in the interior of said drum whereby the pressure at the radially interior end of said orifices is lower than at the exterior end,

seed feeding means exterior to said drum and cooperable with said orifices,

seed discharging means cooperable with said orifices, said discharging means comprising:

pins, each of which is aligned with a said orifice, said pins being mounted on bar members, each said bar member being substantially parallel with the longitudinal axis of said drum,

a pair of disc members each having a plurality of radial guideways, one disc member being adjacent each end of said drum, each of said bar members being slideable radially inwardly and outwardly within each said guideway, said discs and bars being rotatable with said drum,

biasing means biasing each said bar inwardly so that at rest each said pin is positioned radially inward from its corresponding orifice, and,

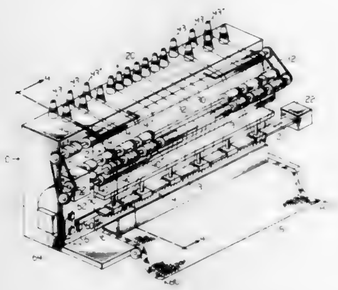
cam means fixed relative to said drum and having a first striking surface and a second striking surface in the path of travel of a striking surface of each said bar, the first striking surface being positioned so that contact with the striking surface of said bar advances said bar against said biasing means directly radially outwardly whereby the row of pins on said advanced bar passes through the aligned row of orifices to dislodge seeds along said row of orifices, said first cam surface being positioned to advance said bar at or near the bottom-most point of rotation of said drum, said second striking surface being positioned so that contact is maintained with the striking surface of said bar after it has passed said first striking surface to maintain said row of pins on said bar within said orifices until said row of orifices has rotated clear of said soil over which the drum is travelling, said biasing means returning each said bar to its rest position after its striking surface has passed said second cam striking surface.

4,411,207

YARN SAVING METHOD AND APPARATUS

James D. Brock, Chattanooga, Tenn., and Gerald B. Morrison, Dalton, Ga., assignors to Tuftec, Inc., Dalton, Ga.

Filed Apr. 22, 1982, Ser. No. 370,981
Int. Cl.³ D05C *15/32, 15/28*
U.S. Cl. 112—79 A **13 Claims**



1. In a tufting machine including means for advancing a web of backing material, a plurality of needles mounted in an elongate needle bar reciprocable toward and away from said backing material, said needles threaded with yarn for piercing said backing material, means for feeding yarn to said needles at a speed related to the advancement of said backing material and the reciprocation of said needles, and means for shifting said needle bar laterally with respect to said backing material, the improvement comprising:

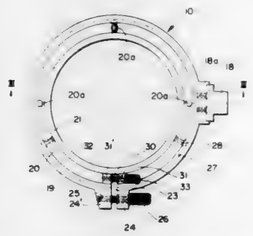
means for slowing the speed at which said yarn is fed to the outermost needle at the outwardly moving end of said needle bar as said needle bar is shifted laterally, until said needle bar returns to its original position.

4,411,208

EMBROIDERY FRAME FOR AUTOMATIC EMBROIDERY MACHINE

Koji Nishida, and Taneichi Kawai, both of Anjo, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 4, 1981, Ser. No. 289,994
Claims priority, application Japan, Aug. 5, 1980, 55-107322; Sep. 18, 1980, 55-133011
Int. Cl.³ D05C *1/04, 7/04, 9/06*
U.S. Cl. 112—103 **7 Claims**



1. An embroidery frame for an embroidery machine having a traveller comprising:

an annular outer frame member with an adjustable circumference, said outer frame member having mounting means for removably securing the outer frame member to the traveller of the machine,

an annular intermediate frame member with an adjustable circumference, said intermediate frame member being sized to fit within the outer frame member along the inner periphery of the outer frame member,

an inner frame member, said inner frame member being sized to fit within the intermediate frame member along the inner periphery of the intermediate frame member,

first adjusting means on the intermediate frame member for adjusting the circumference of the intermediate frame member to releasably clamp the intermediate frame member against the inner frame member so that a cloth to be embroidered can be held firmly between the inner frame member and the intermediate frame member,

alignment means for holding the intermediate frame member within the outer frame member while still permitting the intermediate frame member to rotate relative to the outer frame member so that, when the outer frame member is mounted on the machine, the intermediate and inner frame members, and any cloth held by those members, can be freely rotated to properly orient the frame members and cloth relative to the machine, and

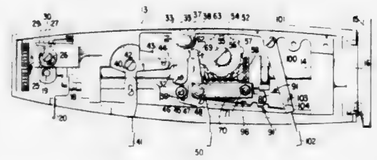
second adjusting means of the outer frame member for adjusting the circumference of the outer frame member to releasably clamp the outer frame member against the intermediate frame member so that all frame members and any cloth held by the frame members are fixed relative to the machine's traveller.

4,411,209

CAM SELECTOR MECHANISM FOR SEWING MACHINES

Jan Szostak, Lincroft, and Henry Schaeflern, Pittstown, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jul. 6, 1982, Ser. No. 395,527
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 A **4 Claims**



1. A pattern cam selector mechanism for a needle jogging mechanism in the frame of a zig zag sewing machine employing a control block slidably supported for movement relatively to said sewing machine frame, a manually influenced actuating member in said sewing machine operatively connected to said control block, cam surfaces formed on said control block, and pattern cam selector linkage means responsive to said cam surfaces, the improvement in which said cam surfaces include a pair of substantially identically shaped cam tracks arranged laterally opposite each other in mirror image relation on said control block, said pattern cam selector linkage means arranged in tracking relation with one of said cam tracks, and an abutment pin carried on said sewing machine frame and arranged in tracking relation with the other of said cam tracks at a point along said cam track which is in substantial mirror image relation with that tracked by said pattern cam selector linkage means.

4,411,210

ACTUATING MECHANISM FOR A DOUBLE POINTED LOOPER IN A SEWING MACHINE

Karl H. Killinger, Dover, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 17, 1981, Ser. No. 331,699
Int. Cl.³ D05B *57/02, 97/02, 97/10*
U.S. Cl. 112—199 **4 Claims**

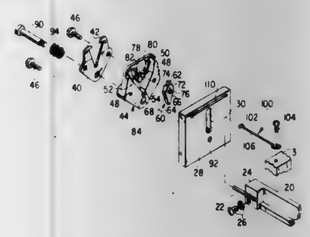
1. A sewing machine having a frame, a thread carrying needle arranged for reciprocating motion in said frame, a looper having two loop seizing points and arranged for pivotal motion in said frame, and an actuating means for effecting said motions thereby alternately placing each of said two loop seizing points into cooperative engagement with said needle in the formation of chain stitches, wherein said actuating means comprises:

a. a guide member having an elongated guide channel;

b. an actuating member constrained in said elongated guide channel;

c. means for imparting reciprocatory motion to said actuating member along said elongated guide channel;

d. a cam rigidly attached to said looper, said cam having two intersecting cam tracks;



e. cam follower means associated with said actuating member and arranged in sliding engagement with said cam tracks; and

f. a gate means for alternately blocking each of said two intersecting cam tracks so that said cam follower will slidingly engage the other of said two intersecting cam tracks thereby effecting pivotal motion of said looper alternately placing each of said two loop seizing points into cooperative engagement with said needle.

4,411,211

METHOD OF AND APPARATUS FOR ATTACHING SLIDE FASTENER COUPLING CHAINS TO A FLEXIBLE SUPPORT

Halmüt Heimberger, Steinhausen, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Filed Oct. 22, 1981, Ser. No. 314,047
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040286
Int. Cl.³ D05B *97/10, 29/06, 27/04*
U.S. Cl. 112—265.2 **10 Claims**

1. A method of securing a slide fastener coupling chain to a flexible support, comprising the steps of:

(a) incrementally advancing said support past a stitching location;

(b) feeding said coupling chain to said support and said stitching location and incrementally advancing said coupling chain past said location;

(c) sewing said coupling chain to said support at said location by repeatedly passing a sewing needle between coupling heads of said chain and through said support at said location synchronously with the increment feeds of said support and said coupling chain; and

(d) controlling the displacement per increment of feed of at least one of said incremental feeds to ensure flat, corrugation-free contact of the coupling chain with the support to which it is stitched at least after washing or ironing treatment thereof.

6. An apparatus for sewing a coupling chain to a flexible support comprising:

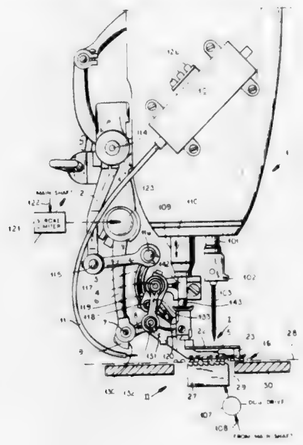
a sewing machine table provided with a fabric-feed mechanism for advancing said support past a stitching location;

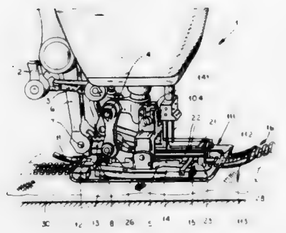
a sewing machine head overhanging said table and provided with reciprocatable needle bar displacing a needle through said support at said location in synchronism with said mechanism;

a biased presser foot mounted on said head and riding on said support at said location;

a transport foot on said presser foot engageable with a coupling chain for advancing same past said location for stitching of said coupling chain to said support by said needle;

a chain-feed mechanism synchronized with said needle bar for incrementally displacing said chain past said location;





and

control means operatively connected to one of said mechanisms for varying the displacement increment thereof to ensure flat contact of said chain and said support upon the stitching of said chain to said support.

4,411,212

APPARATUS FOR REDUCING ROLL AND PITCH MOTIONS OF FLOATING VESSELS

Gunnar B. Bergman, Montecito, Calif., assignor to SeaTek, Goleta, Calif.

Continuation of Ser. No. 45,615, Jun. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 920,469, Jun. 29, 1978, abandoned. This application Mar. 13, 1981, Ser. No. 243,354
Int. Cl.³ B63B *39/03, 39/06*
U.S. Cl. 114—125 **18 Claims**

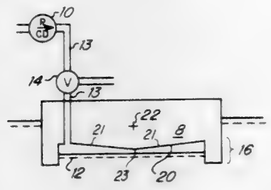
1. Apparatus for reducing roll and pitch motion of a floating vessel having first and second modes of operation, said apparatus comprising:

a recessed cavity formed and symmetrically disposed in a substantial portion of the bottom of the hull of the vessel, said cavity having a bottom portion completely open to the water and having a top, corresponding to the bottom of the hull of the vessel, in the form of a dihedral extending the entire length of the cavity having an axis parallel to a transverse axis of the vessel;

conduit means coupled to the top of said cavity for providing air passageways thereto; and

means coupled to said conduit means for selectively providing air to the cavity to control the water level therein;

said water level in said cavity being selected to control the rate of change of the righting moment of the vessel by substantially reducing the natural roll and pitch righting moments thereof in the first mode of operation, and by substantially restoring the natural roll and pitch righting moments thereof in the second mode of operation;



said first and second modes of operation being determined by the water level in the cavity during roll and pitch motion of said floating vessel;

the top of the cavity being formed so that the water surface in the cavity contacts the top of the cavity at preselected values of roll and pitch inclination of the vessel.

4,411,213

TWIN-HULL WATERCRAFT

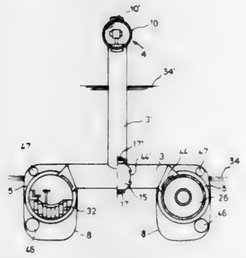
Günther R. Laukien, Silberstreifen, D 7512 Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,471

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938319

Int. Cl.³ B63H *8/00, 8/04, 8/22*

U.S. Cl. 114—312 **17 Claims**



1. A twin-hull watercraft comprising two hulls disposed parallel to and spaced apart from each other, said hulls being rigidly and directly interconnected by at least a pair of hollow tubular transverse struts lying substantially in the plane of said hulls, a vertical hollow tubular superstructure extending upwardly from and communicating with the interior of one of said transverse struts along substantially the central longitudinal plane between said hulls, a pilot's cab disposed on said superstructure, said hulls and said struts being designed as pressure-resistant buoyancy bodies in that their weight is less than the weight of water displaced by them, said hulls being designed as tight pressure vessels of the submarine type and being provided with cells that may be flooded and blown, said pilot's cab being a pressure vessel buoyancy body in that its weight is less than the weight of water it displaces in the submerged condition, said hulls, struts and pilot's cab arranged to be weight-stable in the fully submerged condition and in the partially submerged condition wherein the pilot's cab is at least partly above the mean waterline whereby said watercraft can be used both as a form-stable surface-bound watercraft and as a weight-stable semi-submersible craft or a weight-stable submersible craft, and at least one egress means provided in at least one of the transverse struts and the pilot's cab.

4,411,214

ROWING SCULL

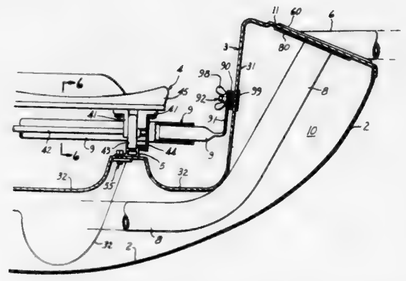
Kotaro Horiuchi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 29, 1980, Ser. No. 221,052

Claims priority, application Japan, Dec. 29, 1979, 54-172716; Dec. 29, 1979, 54-172717

Int. Cl.³ B63B *35/72*

U.S. Cl. 114—347 **7 Claims**



1. A rowing scull comprising: a hull member comprising a bottom, a sidewall and a continuous edge around said sidewall, a cockpit member having a sidewall and a bottom and a deck member, said deck member having an inner opening and an outer edge, its outer edge being fully sealingly engaged to said hull edge, and a said cockpit member being fully and sealingly connected to said deck member around its said opening; a rigid frame member reinforcingly attached to said deck member at both sides of said cockpit member and extending beneath said cockpit member between said cockpit member and said hull member, without attachment to either the cockpit member or to said hull member whereby said deck member comprises a main strength member for said scull reinforced by said frame member; and a pair of outriggers, each being attached to the top of said deck member at a respective side of said cockpit.

4,411,215

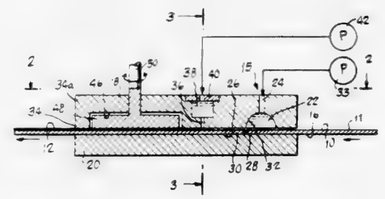
APPARATUS FOR PRODUCING STRIPED SURFACE COATINGS

J. Lynn Gailey, Newton Falls, and Carl A. Wollam, Cortland, both of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Division of Ser. No. 226,705, Jan. 21, 1981, Pat. No. 4,356,216. This application Jun. 11, 1982, Ser. No. 387,491

Int. Cl.³ B05C *5/02*

U.S. Cl. 118—111 **5 Claims**



1. Apparatus for forming a continuous adherent coating layer on a major surface of a strip article, including

(a) means defining a path of longitudinal advance of said article, including an extended wall facing said major surface of said article and so arranged that the advancing article moves longitudinally relative thereto;

(b) means at one end of said wall constituting a dam extending transversely of the path of article advance so as to be disposed in adjacent spaced relation to the article major surface facing said wall;

(c) means for supplying a first liquid coating material to the last-mentioned article major surface ahead of said dam, to establish thereon a continuous wet coating layer; and

(d) means for uniformly restraining said article against movement of said major surface away from said wall beyond a predetermined distance during advance of said article past said wall, equal to a desired thickness of said wet coating layer, such that said major surface and said wall mutually define a gap entirely filled by said wet coating layer across the width of said layer;

wherein the improvement comprises;

(e) means for delivering through said wall, to at least one locality in said gap, a second liquid coating material under pressure sufficient to displace locally the first liquid coating material in the wet coating layer, thereby to establish a stripe of the second liquid coating material in the wet coating layer, said means including an aperture in said wall at said one locality for admitting said second liquid coating material to said gap.

4,411,216

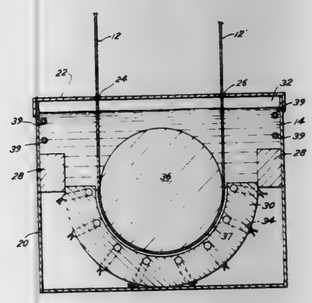
PRESSURE SATURATOR

Howard K. Menser, Plymouth, Ind., assignor to Miply Equipment Inc., South Bend, Ind.

Filed Nov. 12, 1981, Ser. No. 320,317

Int. Cl.³ B05C *3/12*

U.S. Cl. 118—117 **13 Claims**



1. A pressure saturator for impregnating a porous substrate with a solid from a saturant solution, comprising a housing forming a reservoir for holding the saturant solution, a base member having an arcuate inner wall forming a depression in the bottom of said reservoir, a mandrel disposed in said reservoir with a portion thereof extending into said depression for guiding the substrate through the saturant solution, the perimeter of said portion of said mandrel being spaced from and in close proximity to said arcuate inner wall of said base member and, in combination with said inner wall, defining an unobstructed chamber the radial width of which is sufficiently narrow to produce by hydraulic action an increase in pressure of the solution therein as the substrate passes therethrough, and heating element means disposed in said base member for heating the saturant solution in said depression.

4,411,217

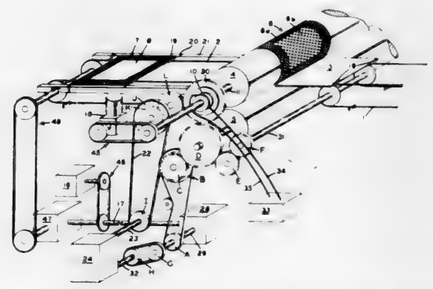
OVERRUNNING SYNCHRONIZABLE CLUTCH AND APPARATUS FOR TREATING WORK PIECES IN REGISTER WITH A PHYSICAL CHARACTERISTIC THEREOF

James P. Valenti, Lancaster, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Apr. 8, 1982, Ser. No. 366,241

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—212 **6 Claims**



1. An apparatus for treating work pieces in register with a physical characteristic thereof, said work pieces being conveyed through said apparatus, comprising in combination:

(a) first and second conveying means for transporting the work pieces through said apparatus;

(b) means interposed between said first and second conveying means for treating the work pieces, comprising an upper rotary work piece-engaging member and a rotary back-up member therefor;

(c) first and second drive means for activating the conveying means and the work piece treating means operably connected by an overrunning, synchronizable clutch, for synchronizing the movement of said first and second conveying means and said work piece treating means, said clutch having

(1) an outer housing disengagably operably connected to and synchronized with said first and second conveying means and the work piece treating means, and adapted to be driven by said first drive means, and

(2) an inner housing operably connected to the upper rotary work piece-engaging member and adapted to be driven by said second drive means when said first drive means is inactivated, and

(3) means interposed between said inner and outer housings of said clutch adapted to operably connect them when said first drive means is activated, whereby both clutch housings, the work piece treating means, and the first and second means for conveying the work pieces are then driven in unison by said first drive means.

4,411,218

APPARATUS FOR PRODUCING STRAITED SURFACE COATINGS

Carl A. Wollam, Cortland; J. Lynn Gailey, Newton Falls, and Alexander F. Chalmers, Warren, all of Ohio, assignors to Alcan Aluminum Corporation, Cleveland, Ohio

Division of Ser. No. 226,706, Jan. 21, 1981, Pat. No. 4,356,217. This application Jun. 11, 1982, Ser. No. 387,492

Int. Cl.³ B05C *5/02*

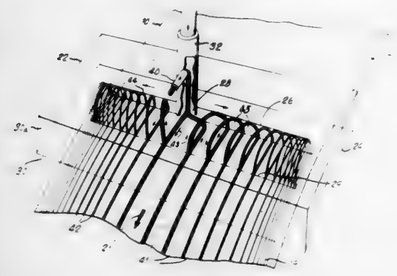
U.S. Cl. 118—411 **9 Claims**

1. Apparatus for producing a longitudinally striated coating on a major surface of an elongated strip article, comprising

(a) structure defining an elongated trench for containing liquid coating material, said trench having an open long side of length equal to a predetermined desired width of

coating to be applied to a strip article major surface, said trench being otherwise enclosed and further having at least one aperture, in a long side of the trench and spaced from said open side and shorter than the entire length of the trench, for admitting flowing liquid coating material to the trench;

(b) means for continuously advancing a strip article longitudinally past said trench open side in a direction transverse to the long dimension of the trench open side while maintaining a major surface of the article in facing proximate relation to the trench open side so as to constitute a moving wall closing said open side; and



(c) means for delivering under pressure to the trench, through each said aperture, concurrent laminar flows of at least two liquid coating materials, for maintaining the trench entirely filled with the liquid coating materials and applying to the article major surface at said open side a coating layer thereof comprising alternating longitudinal striations of the two coating materials resulting from distribution of the two coating materials within the trench caused by movement of the article major surface at said open side.

4,411,219

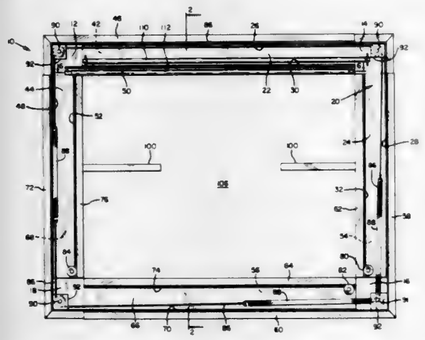
APPARATUS FOR PROTECTING THE FRAME SURROUNDING A WINDOW OR DOOR OPENING AND A WINDOW OR DOOR WITHIN THE OPENING

Jack L. Keith, Oregon City, Oreg., and Thomas E. Gies, 3227 SW. 25th, Gresham, Oreg. 97030, assignors to Thomas E. Gies, Gresham, Oreg.

Filed Feb. 22, 1982, Ser. No. 351,188

Int. Cl.³ B05C *21/00*

U.S. Cl. 118—505 **16 Claims**



1. An apparatus for protecting the frame surrounding a window or door opening and a window or door within the opening comprising:

a rectangular framework comprising plural frame members which are slidably interconnected so as to permit the framework to expand and contract in two dimensions;

biasing means mounted to said framework for contracting the framework; and

said framework including engagement means for engaging the periphery of the window or door frame to clamp the framework to such frame and cover the frame upon contraction of the framework.

4,411,220

MASS PRODUCTION UNIT FOR PRODUCING EGGS OF AN INSECT

Jean D. Voegele; Pierre E. J. Jourdheuil, both of Antibes, and Jeanne Daumal, Juan-les-Pins, all of France, assignors to Inst. Nat. de la Recherche Agronomique, France

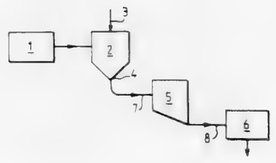
PCT No. PCT/FR80/00113, § 371 Date Mar. 6, 1981, § 102(e) Date Mar. 6, 1981, PCT Pub. No. WO81/00185, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 7, 1980, Ser. No. 243,981

Claims priority, application France, Jul. 10, 1979, 79 17904

Int. Cl.³ A01K *67/00*

U.S. Cl. 119—1 **7 Claims**



1. Mass-production unit for the eggs of an insect, notably of the meal-moth genus, comprising:

an incubator for eggs of said insect, including a ventilated enclosure comprising movable supports for stacks of alveolar elements horizontally, said alveolar elements each containing one egg and a dosed amount of feeding semolia;

a hatcher for receiving eggs at the pre-nymph stage from said incubator and containing movable supports for the stacking of said alveolar elements in parallel and edge-wise in line with an outlet hopper, and provided with a carbon dioxide inlet for the narcosis of imagos emerging from said pre-nymph stage; and

a laying place wherein said imagos provide for the production of eggs, including an arrangement of parallel sheets arranged edge-wise in line with an outlet hopper to a collector member for said eggs;

said hatcher, laying place and collector being connected successively by a pneumatic transport duct, said incubator, hatcher and laying place being provided with means for regulating temperature and, if necessary, ventilation

---

4,411,221

TURNING OF EGGS IN INCUBATORS

Francis H. Pearce, West Brinsea, Congresbury, Avon BS19 5JR, England

Filed Feb. 1, 1982, Ser. No. 344,869

Claims priority, application United Kingdom, Feb. 25, 1981, 8105871

Int. Cl.³ A01K *41/06*

U.S. Cl. 119—44 **11 Claims**

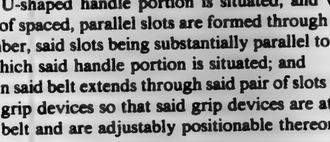
1. In an incubator which comprises:

a housing for accomodating eggs to be hatched;

a member within the housing and capable of moving with respect to the housing;

motive means for intermittently causing relative movement between the member and the housing; and

a first layer of elongate channel-defining elements each having a longitudinally extending axis and capable of contacting the member in a manner such that, upon intermittent movement of the member, each element is caused to undergo corresponding intermittent rotational movement about its own longitudinal extending axis thereby causing rotation of any eggs located within the element;



the improvement which comprises the provision of a further layer of elongate channel-defining elements accomodated above, and in contact with, the elements of the first layer in a manner such that rotation of the elements in the first layer causes rotation of the elements in the further layer.

4,411,222

SAFETY APPARATUS FOR PASSENGERS ON VEHICLES

Morton M. Wolfson, 70-34 Olcott St., Forest Hills, N.Y. 11375

Filed Feb. 19, 1982, Ser. No. 350,293

Int. Cl.³ A01K *29/00*; A41F *19/00*

U.S. Cl. 119—96 **4 Claims**



1. Safety belt apparatus for passengers on vehicles, such as motorcycles and the like, said apparatus comprising:

a belt adapted to encircle the waist region of a vehicle operator;

a pair of grip devices attached to said belt, each grip device including a substantially U-shaped handle portion having a pair of free ends and a substantially planar plate member to which said free ends of said U-shaped handle portion are fixed so that said handle portion and plate together define a closed loop, said plate member being situated in a plane which is substantially normal to a plane in which said U-shaped handle portion is situated, and wherein a pair of spaced, parallel slots are formed through said plate member, said slots being substantially parallel to the plane in which said handle portion is situated; and

wherein said belt extends through said pair of slots of each of said grip devices so that said grip devices are attached to said belt and are adjustably positionable thereon.

4,411,223

METHOD OF OPERATING AN I.C. ENGINE

Martin Kiely, Airglooney, Tuam, Co. Galway, Ireland

Filed Jun. 19, 1981, Ser. No. 275,512

Claims priority, application Ireland, Jun. 20, 1980, 1292/80; May 14, 1981, 1079/81

Int. Cl.³ F02B *43/08, 75/12*

U.S. Cl. 123—3 **12 Claims**

1. Fuel supply apparatus for an internal combustion engine comprising:

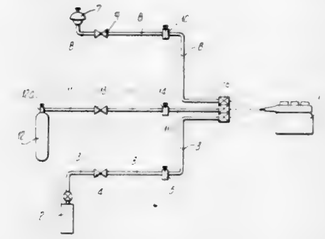
(a) means for generating hydrogen gas comprising

(i) a reactor vessel adapted to accommodate a quantity of an alkali metal or an alkaline earth metal, and

(ii) means for supplying water to said metal to generate hydrogen gas by the reaction of said metal with water, said water supplying means being responsive to changes in gas pressure in said reactor vessel;

(b) a hydrogen dust for communicating between the reactor vessel and the intake of an internal combustion engine;

(c) an air duct for communicating between the atmosphere and the engine intake and/or an oxygen duct for communicating between an oxygen source and the engine intake.



(d) a vacuum-operated non-return valve for admitting hydrogen from the reactor vessel through the hydrogen duct when the pressure at the engine intake is less than the gas pressure in said reactor vessel; and

(e) valve means in each of said ducts, each of which is adapted for controlling at least in part the flow of gas through the respective duct, and is interlinked with the other or others of said valve means, so that flow of hydrogen gas through the hydrogen duct is controllable in proportion to the flow of air through the air duct and/or the flow of oxygen through the oxygen duct.

4,411,224

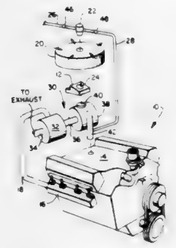
FLUID INJECTION SYSTEM FOR A TURBOCHARGED INTERNAL COMBUSTION ENGINE

Toronta P. Goodman, Summit Point, W. Va., assignor to The Goodman System Company, Inc., New York, N.Y.

Filed Sep. 24, 1981, Ser. No. 305,263

Int. Cl.³ F02D *19/00*; F02M *25/04*

U.S. Cl. 123—25 A **11 Claims**



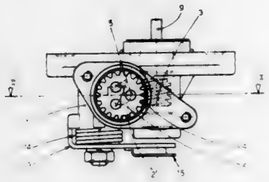
1. A system for injecting fluid into an internal combustion engine, said system comprising means for supplying an air/fuel mixture to said engine, means driven by the exhaust gases of said engine for receiving said mixture and pressurizing said mixture in proportion to the load on said engine, and flow passage means connected to a source of said fluid and to said pressurizing means for receiving said fluid and said mixture, said flow passage means being formed and arranged to draw said fluid from said source in response to the flow of said mixture and inject it into said supplying means at a rate proportional to the pressure of said mixture.

4,411,225

OIL PUMP FOR INTERNAL COMBUSTION ENGINES

Pierluigi Dell'Orto, Milan, Italy, assignor to Dell'Orto S.p.A., Milan, Italy

Filed Apr. 2, 1982, Ser. No. 364,648
Claims priority, application Italy, Apr. 7, 1981, 20966 A/81
Int. Cl.³ F01M *3/02, 1/00*
U.S. Cl. 123—73 AD **5 Claims**



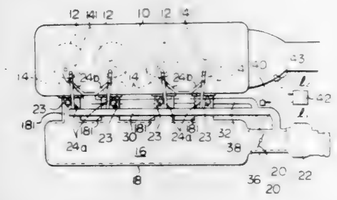
1. An oil pump for two-stroke internal combustion engines, intended to feed such engines from separate fuel and oil tanks, of the type comprising a distributing body, which is caused to rotate by a worm-and-wheel mechanism and which houses one or more cylinders positioned parallel to the axis of the body itself at a short distance therefrom, within each of which cylinders a cam-controlled piston can be displaced against the action of return-spring means, characterized in that the said distributing body coincides with the wheel of the worm-and-wheel mechanism and does not have a true and proper rotation axle, in that the said cylinders are fed and discharged at their ends facing the front surface of the distributing body, and in that the cam controlling the pistons of said cylinders is in the form of an inclined plane, the inclination of which can be varied under the control of means acting in response to the opening of the carburettor throttle valve of the engine to which the pump is applied.

4,411,226

INTAKE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Takeshi Okumura, 122-1 Momozono; Kiyoshi Nakanishi, 1321, Mishuku, both of Susono-shi, Shizuoka-ken, and Tokuta Inoue, 257-10, Senmaibara, Icchoda, Mishima-shi, Shizuoka-ken, all of Japan

Filed Aug. 14, 1981, Ser. No. 292,886
Claims priority, application Japan, Oct. 17, 1980, 55-144439
Int. Cl.³ F01L *3/06*
U.S. Cl. 123—188 M **4 Claims**



1. An intake system for an internal combustion engine, comprising:

a main intake passageway having helical shaped ends opened to respective combustion chambers of the engine, each of the helical shaped ends comprising an inlet portion of a straight tube shape for receipt of flow and an outlet portion of a helical shape for discharge of flow;

a first sub-intake passageway having ends, at least one end of which is connected to the outlet portion of the respective helical shaped end so that the flow of fluid from the first sub-intake passageway assists to increase the intake efficiency of the flow of fluid introduced from the main passageway to the respective combustion chambers;

a second sub-intake passageway having ends, each of which is connected to the inlet portion of the respective helical shaped end so that the flow of fluid from the second sub-intake passageway assists to increase the effect of a swirl introduced from the main passageway to the respective combustion chamber; and

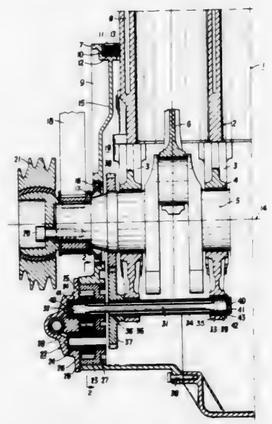
change-over means responsive to operating conditions of the engine for selectively introducing fluid into the first sub-intake passageway or the second sub-intake passageway.

4,411,227

INTERNAL COMBUSTION ENGINE

Gerhard Feichtinger, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Nov. 13, 1981, Ser. No. 321,047
Claims priority, application Austria, Nov. 27, 1980, 5811/80
Int. Cl.³ F01M *1/00*
U.S. Cl. 123—196 R **2 Claims**



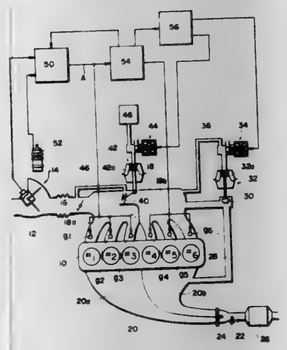
1. An internal combustion engine comprising, a crankcase, an engine unit support elastically mounted in said crankcase, said engine unit support including a cylinder head, a cylinder, a piston, a connecting rod, crankshaft main bearings and a crankshaft, an oil pump mounted on a front wall of said crankcase, means for driving said pump by said crankshaft, said pump including a driven pump gear, a hollow cylindrical bearing bushing supporting said driven gear, said driving means comprising a rotatable flexible shaft having one end extending into said bushing which is connected adjacent an outer end thereof to said one end for rotation with said shaft, bearing brackets extending from said crankshaft main bearings, said driving means further comprising a hollow cylindrical sleeve rotatably mounted on at least a first pair of said brackets lying adjacent said pump, said flexible shaft extending into said sleeve, the other end of said shaft being connected to an inner end of said sleeve for rotation therewith, and said shaft being axially displaceable within said bushing and said sleeve at said connected ends thereof.

4,411,228

SPLIT TYPE INTERNAL COMBUSTION ENGINE

Fukashi Sugasawa, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Filed Nov. 24, 1980, Ser. No. 209,969
Claims priority, application Japan, Nov. 27, 1979, 54-153440
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—198 F **6 Claims**



1. An internal combustion engine comprising:

(a) first and second cylinder units each including at least one cylinder;

(b) an intake manifold having therein a throttle valve, said intake manifold being divided downstream of said throttle valve into first and second intake passages respectively communicating with said first and second cylinder units, said intake manifold second intake passage having therein a stop valve near its entrance;

(c) an exhaust passage;

(d) an EGR passage connected from said exhaust passage to said intake manifold second intake passage for recirculating engine exhaust gases into said intake manifold second intake passage, said EGR passage having therein an EGR valve;

(e) control means for providing a control signal and for disabling said second cylinder unit when the engine load is below a predetermined value;

(f) valve drive means responsive to the control signal from said control and disabling means for closing said stop valve and opening said EGR valve, said valve drive means adapted to prevent the simultaneous opening of both of said stop and EGR valves and including:

(1) a first vacuum source;

(2) a second vacuum souce;

(3) a pressure source whose pressure is higher than that of the first and second vacuum sources;

(4) a first valve actuator having a working chamber;

(5) a conduit for connecting said working chamber to said first vacuum source through a restriction orifice;

(6) said first valve actuator being operable to close said EGR valve when said first valve actuator working chamber is communicated with said pressure source and to open when said first valve actuator working chamber is communicated with said first vacuum source through said restriction orifice;

(7) a second valve actuator having a working chamber, said second valve actuator being operable to open said stop valve when said second valve actuator working chamber is communicated with said pressure source and to close said stop valve when said second valve actuator working chamber is communicated with said second vacuum sources;

(8) a first valve responsive to the control signal from said control and disabling means to communicate said first valve actuator working chamber with said first vacuum source through said restriction orifice, said first valve being operable to communicate said first valve actuator working chamber with said pressure source in the absence of the control signal;

(9) a second valve responsive to the control signal from said control and disabling means to communicate said second valve actuator working chamber with said second vacuum source, said second valve being operable to communicate said second valve actuator working chamber with said pressure source in the absence of the control signal;

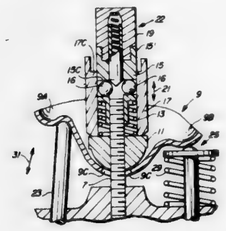
(10) a conduit connected from said first valve actuator working chamber to said second valve actuator working chamber, said conduit having therein a check valve for permitting flow from said second valve actuator working chamber to said first valve actuator working chamber but note vice versa.

4,411,229

CYLINDER DEACTIVATION DEVICE

Nikolaus A. Curtis, Yuma, and James E. Karner, Tucson, both of Ariz., assignors to Mile-Age Research Corporation, Yuma, Ariz.

Filed Feb. 9, 1981, Ser. No. 232,877
Int. Cl.³ F02D *13/06*
U.S. Cl. 123—198 F **3 Claims**



1. A cylinder deactivation device for installation in an internal combustion engine, said device comprising in combination:

(a) a rocker arm having an end portion for engaging a valve and a mid portion pivotal about a rocker ball;

(b) a stud rigidly attached in fixed relation to a cylinder head of said engine and extending through a hole in said rocker ball, said stud having a threaded upper end portion;

(c) a cylindrical stand element having a lower threaded opening tightly threaded onto said upper end portion of said stud, said stand element having a plurality of cylindrical lateral openings, and an upper opening extending from the top of said stand element to the inner end portions of said lateral openings;

(d) a sleeve element slidably disposed about said stand element and having a lower end portion engaging said rocker ball, said sleeve element also having an inner recess alignable with said lateral openings;

(e) a compression spring in said sleeve element having an upper end engaging said stand element and a lower end urging said sleeve element against said rocker ball;

(f) a plurality of balls disposed in said plurality of lateral openings, respectively;

(g) a plunger element disposed in said upper hole and movable to a lower position when said recess is aligned with said lateral openings to force said balls partially into said recess to lock said sleeve element in fixed relation to said stand element, said plunger element also being movable to an upper position which allows said balls to slide inward in said lateral holes to allow said sleeve element to slide freely over the outer surface of said stand element;

(h) a solenoid rigidly attached to the upper end portion of said stand element, said plunger element being incorporated into said solenoid

whereby said rocker ball provides a fixed pivot for said rocker

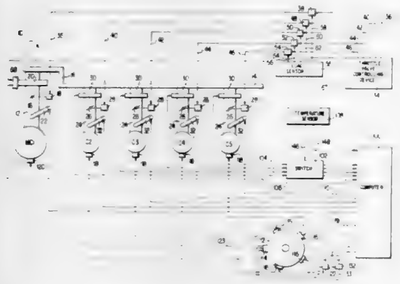
arm when said plunger is in said lower position and yields to said rocker arm when said plunger is in said upper position.

4,411,230

MASTER CYLINDER INTERNAL COMBUSTION ENGINE

John K. Lee, 11909 Gainsborough Rd., Potomac, Md. 20854

Filed Jun. 17, 1981, Ser. No. 274,392
Int. Cl.³ F02D *17/02*
U.S. Cl. 123—198 F **10 Claims**



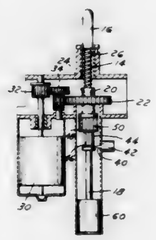
1. An internal combustion engine comprising:
(a) a plurality of cylinders all of which are normally operating motive cylinders at least during operation of said engine subsequent to starting and during warm-up, one of said cylinders being a master cylinder having a displacement larger than any of the remaining cylinders, and
(b) means for deactivating all but the master cylinder after engine warm-up under no load and selectively activating at least one of said plurality of cylinders to provide motive power in response to increasing load imposed on said engine.

4,411,231

CARBURETOR THROTTLE VALVE ACTUATOR

Shunso F. Watanabe, Livonia; Theodore W. Daykin, Dearborn, and Elmer T. Heiney, III, Huntington Woods, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 16, 1982, Ser. No. 369,326
Int. Cl.³ F02M *3/00*; **F02D** *31/00*
U.S. Cl. 123—339 **9 Claims**



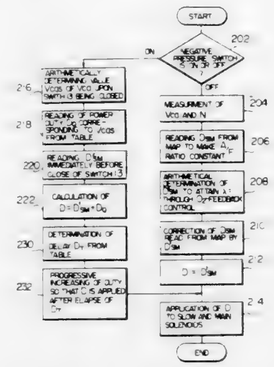
1. A motor vehicle throttle valve actuator comprising a longitudinally movable actuator having a first range of movement for actuating a vehicle throttle valve in a speed control mode and having a second range of movement for actuating the vehicle throttle valve in an engine idle speed control mode;
a drive means coupled to said actuator for effecting the longitudinal movement of said actuator in said ranges;
clutching means engageable with said actuator for rendering the actuator operable in said ranges;
the actuator comprising an elongated screw means coupled to the drive means;
the clutching means being engageable with said screw means to hold the screw means against rotation while permitting a transitory longitudinal movement of the screw means between minimum and maximum throttle valve opening positions in response to drive thereof by the drive means,
and spring means biasing the screw means in a throttle valve closing direction toward the second range of movement;
the said clutching means including a stepped diameter splined means having first and second portions of differing diameters fixed to the screw means engagable alternately by the holding means to define the ranges of movements of the screw means;
the longitudinal extent of the smaller diameter first portion of the splined means defining lower and upper limits of the speed control range of movement of the screw means and throttle valve, the longitudinal extent of the larger diameter portion of the splined means defining the upper and lower limits of the idle speed control range of movement of the screw means and throttle valve, the displacement of the holding means from the first portion spline permitting a free wheeling longitudinal movement in an axial throttle valve closing return movement of the screw means under the bias of the spring means until the holding means engages the splines of the second portion to again hold the screw means against rotation in the idle speed control range.

4,411,232

METHOD OF CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Takeshi Atago, and Toshio Manaka, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 30, 1981, Ser. No. 259,163
Claims priority, application Japan, May 6, 1980, 55-58682
Int. Cl.³ F02D *33/00*
U.S. Cl. 123—438 **3 Claims**



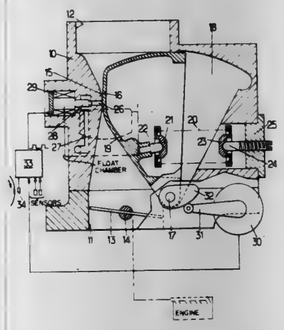
1. In a control system for controlling an air-fuel ratio of an air-fuel mixture supplied to an internal combustion engine, the system comprising a sensor for sensing an absolute intake negative pressure of said internal combustion engine, negative pressure switch means for detecting that a difference between the atmospheric pressure and said absolute intake negative pressure has attained a predetermined value, means for detecting a revolution number of said engine, a sensor for sensing a quantity of oxygen in the exhaust gas of said engine, means for controlling a fuel supply to said engine, and a data processing unit including a central processing unit and a read-only memory for executing arithmetic operation in order to control the air-fuel ratio in dependence upon output data derived from said sensors and detecting means,
a method of controlling said control system in such a manner that the exhaust gas components are kept within a permissible range even in an accelerating operation at places of high altitude where an oxygen content in air is decreased, the method comprising the steps of:
(a) detecting the atmospheric pressure and the corresponding altitude by said absolute intake negative pressure sensor in dependence upon said negative pressure switch means detecting, that a difference between the atmospheric pressure and said absolute intake negative pressure has attained a predetermined value;
(b) arithmetically determining a fuel supply quantity which maintaines the exhaust gas components within the permissible range at the accelerating operation at the altitude detected in the detecting step; and
(c) applying said arithmetically determined fuel supply quantity to said fuel supply control means.

4,411,233

CARBURATION DEVICES FOR INTERNAL COMBUSTION ENGINES

Jacques Chenet, Sevres, and Michel Pierlot, Le Pecq, both of France, assignors to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur-Seine, France

Filed Jul. 17, 1980, Ser. No. 169,843
Int. Cl.³ F02M *7/12*
U.S. Cl. 123—439 **4 Claims**



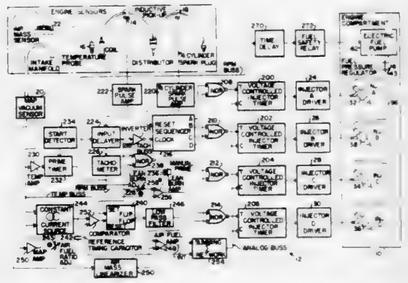
1. A carburetion device for a four cylinder internal combustion engine having intake and exhaust valves, of the type wherein a couple of cylinders inherently receive a fuel/air mixture leaner than the other couple, said device comprising:
an intake passage,
an operator operated main throttle in said passage,
an auxiliary throttle located in said passage upstream of said main throttle and which opens automatically and progressively as the air flow through said passage increases,
a fuel flow circuit extending from a float chamber to a discharge orifice, opening into the intake passage substantially at the throat of a venturi formed by a constricted part of the passage and by said auxiliary throttle member,
and fuel/air mixture control means having a solenoid valve located on said fuel flow circuit, electrical means operatively associated with the auxiliary throttle for providing a signal depending on the position of said auxiliary throttle and electronic circuit means connected to receive said signal and constructed to provide one actuating pulse to said solenoid valve per revolution of the engine at times selected for the solenoid valve to open before opening of an intake valve of a cylinder inherently receiving a leaner fuel mixture and to meter the duty ratio of said pulses responsive to said signal.

4,411,234

FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Harold G. Middleton, Seattle, Wash., assignor to Advanced Fuel Systems, Seattle, Wash.

Filed Nov. 17, 1980, Ser. No. 207,693
Int. Cl.³ F02D *5/02*
U.S. Cl. 123—485 **14 Claims**



1. A fuel system for an internal combustion engine, comprising:
a cylindrical conduit receiving induction air through an inlet and having an outlet connected to an intake manifold for said engine;
a butterfly valve mounted in said conduit operatively connected to a throttle for controlling the flow of induction air through said conduit;
a plurality of transducer means for measuring engine operating conditions of temperature, rotational velocity and induction air mass flow of said internal combustion engine, and generating corresponding indicating signals;
control means receiving said indicating signals and generating an injector control signal corresponding to the quantity of fuel to be mixed with said induction air, said injector control signal being a periodically generated pulse having a duration determined by the magnitude of a fuel quantity signal, said fuel quantity signal being generated by a calculator circuit including timer means having a charging input which floats when said timer means is set and is held at a predetermined voltage when said timer means is reset, a timing capacitor connected between the charging input of said timer means and a fixed voltage, trigger means for periodically setting said timer means at a rate which is proportional to the measured rotational velocity of said engine, charging means connected to said timing capacitor for applying a charging current to said timing capacitor which is inversely proportional to the measured temperature of said engine, integrator means for generating as said fuel quantity signal an output signal having a magnitude indicative of the integral with respect to time of the difference between the measured induction air mass flow and the voltage across said timing capacitor, and comparator means connected to said timer means and said integrator means for resetting said timer means responsive to the voltage across said timing capacitor reaching a predetermined percentage of said fuel quantity signal, whereby the magnitude of said fuel quantity signal is automatically adjusted to maintain the duty cycle of said timer means at a value determined by the measured induction air mass flow by varying said fuel quantity signal in inverse proportion to the measured temperature and rotational velocity of said internal combustion engine and in direct proportion to the measured induction air mass flow of said internal combustion engine; and
a fuel injector mounted in said conduit receiving pressurized fuel and injecting said fuel into said conduit in response to said injector control signal, said fuel undergoing a pressure drop upon injection sufficient to produce flash vapor-

ization of at least a major part of said fuel, thereby promoting complete combustion of said fuel.

4,411,235

FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINE

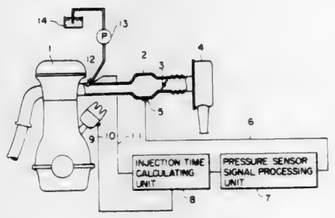
Kazuo Shinoda; Nobuyuki Kobayashi, both of Toyota, and Toshiaki Isobe, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 7, 1982, Ser. No. 337,716

Claims priority, application Japan, Jul. 24, 1981, 56-115272

Int. Cl.³ G01F *1/68;* F02D *5/00*

U.S. Cl. 123—488 **16 Claims**



1. A fuel injection system for internal combustion engines having an amount of fuel injection controlled in relation to pressure measured in an intake pipe, characterized in that a pressure sensor signal processing unit connected between a pressure sensor for measuring the pressure in the intake pipe and a calculating unit for calculating fuel injection time comprises a first low pass filter, a second low pass filter connected in series to said first low pass filer, a subtraction circuit connected to the output terminal of the first low pass filter and the output terminal of the second low pass filter and an addition circuit connected to the output terminal of said subtraction circuit and the output terminal of the first low pass filter.

4,411,236

AIR-FUEL RATIO CONTROL SYSTEM

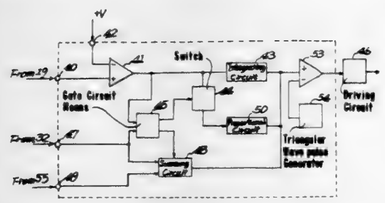
Fujio Matsui, Mussashino, and Hitoshi Suzuki, Niiza, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Dec. 9, 1980, Ser. No. 214,604

Claims priority, application Japan, Dec. 13, 1979, 54-162073

Int. Cl.³ F02B *3/00;* F02M *17/00*

U.S. Cl. 123—492 **11 Claims**



1. In a system for controlling an air-fuel ratio for an internal combustion engine having an induction passage, an exhaust passage, a throttle valve, first detecting means for detecting a concentration of a constituent of exhaust gases passing through said exhaust passage, means for supplying air-fuel mixture to the induction passage, electromagnetic valve means for correcting the air-fuel ratio of the air-fuel mixture supplied by said air-fuel mixture supply means, comparator means for comparing the output signal of said first detecting means with a reference value, integrating circuit means including a proportional circuit for integrating the output of said comparator means, driving circuit means for driving said electromagnetic valve means in dependency upon the output signal of said integrating circuit means, the improvement of the system comprising:

second detecting means for detecting the operation of said engine;

a first switch means for decreasing the control operation of the system;

gate circuit means responsive to the outputs of said comparator means and said second detecting means for actuating said first switch means;

said gate circuit means comprising logic gate means responsive to the output of said comparator means when lean air-fuel mixture is supplied and to the output of said second detecting means at the acceleration of the engine for actuating said first switching means.

4,411,237

DRIVE MECHANISM FOR FUEL INJECTION PUMPS OF AN INTERNAL COMBUSTION ENGINE

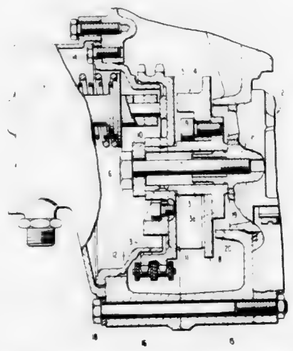
Erich Ableitner, Remseck; Ulrich Conrad, Ludwigsburg; Hans-Otto Derndinger, and Gerd Niemeier, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,298

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939063

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—501 **7 Claims**



1. A drive mechanism for a fuel injection pump of an internal combustion engine, the drive mechanism including a drive shaft adapted to be connected to a camshaft of the fuel injection pump, a drive sprocket means provided on the drive shaft, and an injection timer means arranged on the drive shaft, characterized in that

the drive shaft is formed as a socket sleeve member and is floatingly supported on the camshaft,

means are provided for centering the drive sprocket means relative to the injection timing means,

the drive sprocket means includes an annular recess engageable with the centering means,

the drive sprocket means and injection timer means are disposed in a crankcase,

a timing case cover means is provided for covering the crankcase, and

the centering means is a centering ring attached to one of the timing case cover means and an end wall of the crankcase.

4,411,238

PUMP-INJECTOR DEVICE FOR AN INTERNAL COMBUSTION ENGINE

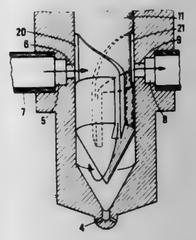
Andre Ecomard, Marly le Roi, and Louis Briand, Sevres, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jul. 24, 1981, Ser. No. 286,324

Claims priority, application France, Jul. 25, 1980, 80 16551

Int. Cl.³ B05B *9/00*

U.S. Cl. 123—501 **6 Claims**



1. A pump injector device for internal combustion engine, comprising a body provided with a bore whose bottom communicates with at least one fuel injection orifice or nozzle, at least one fuel inlet duct opening in the bore through an inlet port, said duct being connected with a source of pressurized fuel, a piston or plunger slidably mounted in said bore between a first end position where said piston obturates said injection nozzle and a second end position where said piston is spaced from said bottom of said bore, and fuel metering means for injecting a determined fuel quantity, said fuel metering means comprising:

(a) at least one feed groove provided in the piston wall and opening at the end thereof located closest to the injection orifice, this groove periodically communicating with said fuel inlet port during the displacement of the piston and forming at least one edge inclined to the piston axis and whose position relative to said inlet port controls the fuel injection, and

(b) means for adjusting the angular distance separating said inlet port and said inclined edge of said groove.

4,411,239

FUEL COOLING SYSTEM FOR USE WITH A CLOSED FUEL INJECTION CIRCUIT IN A DIESEL ENGINE

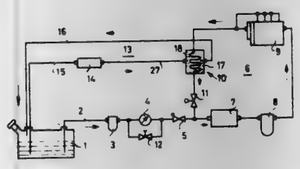
Heinz Kelch, Königsfeld, Fed. Rep. of Germany, assignor to Kienzle Apparate GmbH, Fed. Rep. of Germany

Filed Feb. 16, 1982, Ser. No. 349,270

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1981, 3107141

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—557 **8 Claims**



1. A cooling system for the fuel used in a diesel engine comprises a fuel tank, a suction pipe connected at one end to said fuel tank, a closed fuel injection circuit connected to the other end of said suction pipe for receiving fuel from said fuel tank, a fuel cooling circuit having an inlet end and an outlet end each opening into said fuel tank, a fuel pump for circulating fuel through said fuel cooling circuit, a heat exchanger connected to said fuel cooling circuit and to said closed fuel injection circuit for circulating the fuel flowing in said closed circuit in indirect heat transfer relation with the fuel circulating in said fuel cooling circuit.

4,411,240

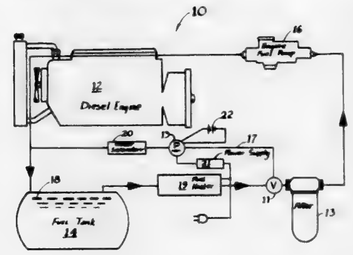
METHOD AND APPARATUS FOR THE PREVENTION OF LOW TEMPERATURE DIESEL ENGINE FAILURE

John J. Kravetz, 87 Ox Bow Rd., Fairfield, Conn. 06430

Filed May 5, 1982, Ser. No. 374,965

Int. Cl.³ F02N *17/02;* F02M *31/00*

U.S. Cl. 123—557 **16 Claims**



1. A method for preventing waxing and sudden failure in a diesel engine which comprises part of a diesel fuel circulatory system, with said circulatory system further including a fuel storage tank, said method comprising the steps of diverting diesel fuel flow from said engine and associated fuel pump only during non-operation of the engine and thereafter circulating said diesel fuel during said non-operation in an auxiliary closed fuel line loop integral with said diesel fuel circulatory system but which loop does not include said engine and associated fuel pump with said fuel storage tank being included within said auxiliary fuel line loop.

4,411,241

METHOD OF CONTROLLING EGR FOR INTERNAL COMBUSTION ENGINES

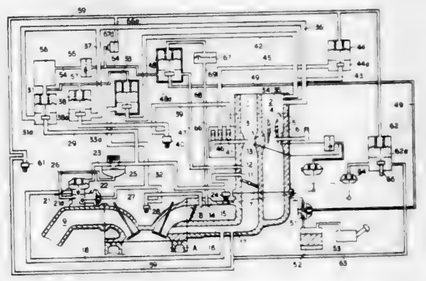
Tokuzi Ishida, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 23, 1982, Ser. No. 361,055

Claims priority, application Japan, Jun. 15, 1981, 56-90907

Int. Cl.³ F02M *25/06;* F02P *5/00;* F02M *33/02*

U.S. Cl. 123—568 **4 Claims**



1. A method of controlling exhaust-gas recirculation for an internal combustion engine having a primary intake passage for supplying an air-fuel mixture under a full range of loads, a secondary intake passage for supplying an air-fuel mixture under high loads, and an exhaust-gas recirculation passage

having an exhaust-gas recirculation valve for introducing an exhaust gas into said primary intake passage, said method comprising the step of utilizing a vacuum at a primary throttle valve in said primary intake passage and a vacuum at a secondary throttle valve in said secondary intake passage to control said exhaust-gas recirculation valve.

4,411,242

METHOD AND APPARATUS FOR CONTROLLING EGR IN INTERNAL COMBUSTION ENGINE

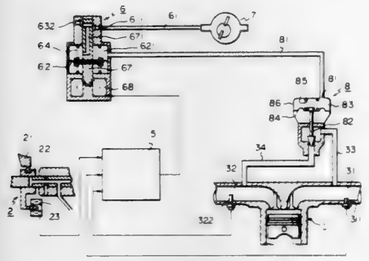
Toshihiko Igashira, Toyokawa; Takeshi Tanaka, Toyohashi; Kiyonori Sekiguchi, Aichi, and Hiromichi Yanagihara, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Apr. 1, 1982, Ser. No. 364,456

Claims priority, application Japan, Apr. 3, 1981, 56-49291; Jun. 9, 1981, 56-95522; Feb. 16, 1982, 57-23465

Int. Cl.³ F02M *25/06*

U.S. Cl. 123—569 **8 Claims**



4. An apparatus for controlling the EGR in an internal combustion engine, comprising an EGR valve having a diaphragm chamber, a path for supplying pressure to said diaphragm chamber, a constant pressure valve for maintaining the pressure supplied to said diaphragm chamber at a selected value, means for detecting the fuel amount, a cam driven by the axis of the fuel regulating lever of a fuel injection pump, a cam follower actuated by said cam, and a first and a second spring inserted between said cam follower and the valve shaft of said constant pressure valve, the preset loading of said first spring being determined by the preset loading of said second spring, wherein the profile of said cam is determined by the following equation:

$$W = -l_3\theta^2 + m_3\theta - n_3$$

where

W is the preset loading in kg;

θ is the phase of the cam in degrees;

n_3 is a constant; and

l_3 and m_3 are constants having the following relationship:

$$l_3/m_3 = (R_0/4G)\text{-}a_3$$

where

R_0 is a constant between 14 and 15 as the stoichiometrical air-fuel ratio of the fuel,

G is the intake gas amount per revolution of the engine under typical running conditions in g/rev, and

a_3 is a constant between 2.5 and 3.6.

4,411,243

EXTERNALLY OPERATED INTERNAL COMBUSTION ENGINE

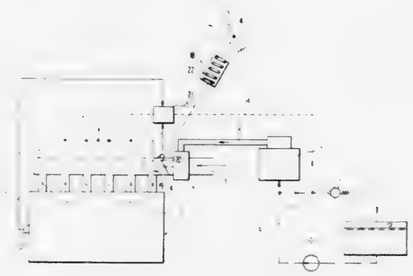
Horst Hardenberg, Stuttgart, and Horst Bergmann, Esslingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz AG, Fed. Rep. of Germany

Filed Feb. 25, 1981, Ser. No. 237,901

Claims priority, application Fed. Rep. of Germany, Feb. 29, 1980, 3007664

Int. Cl.³ F02B *7/02*

U.S. Cl. 123—577 **7 Claims**



1. A multicylinder internal combustion engine having at least a spark plug operable by a homogeneous fuel mixture, the engine comprising a heated evaporator means for completely vaporizing a liquid fuel, means connected with the evaporator means for producing an air/fuel mixture having an approximately constant composition, throttle valve means for providing a load range dependent control of a volume of fuel supplied to the engine, wherein means are provided for connecting the throttle valve means with a load control member of the engine so that the throttle valve means is fully opened in a partial load range of the engine and remains in the fully opened position upon a further movement of the load control member, means are provided for directly injecting liquid fuel into respective cylinders of the engine, and means are at least indirectly coupled with the load control member and liquid fuel injecting means for controlling a supply of liquid fuel to the cylinders in dependence upon at least one of a load range of the engine and a rotational speed of the engine.

4,411,244

AIR FLOW MEASURING DEVICE FOR INTERNAL COMBUSTION ENGINES

Kei Kimata, Aichi; Taugito Nakazeki, and Yoshinobu Yasuda, both of Iwata, all of Japan, assignors to NTN Toyo Bearing Co., Ltd., Osaka, Japan

Division of Ser. No. 36,493, May 7, 1979, Pat. No. 4,239,028, which is a division of Ser. No. 710,126, Jul. 30, 1976, Pat. No. 4,153,018. This application Oct. 1, 1980, Ser. No. 192,845

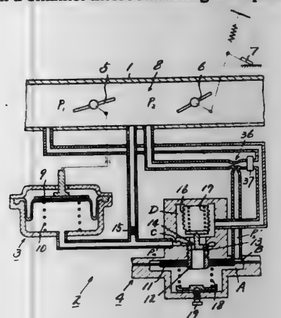
Claims priority, application Japan, Jul. 31, 1975, 50-93972; Sep. 2, 1975, 50-106795

Int. Cl.³ F02D *11/08*

U.S. Cl. 123—389 **1 Claim**

1. In an internal combustion engine having a fuel control unit, an air suction pipe means, and throttle means, the improvement of an air fuel ratio compensating device for improving the performance of the engine, said compensating device comprising a flow detection valve interlocked to the fuel control unit, a flow control valve interlocked to the throttle means, an area flow meter for keeping constant the difference in the pressures existing on opposite sides of the flow detection valve and measuring the amount of inflow by the opening area of the flow detection valve, a feedback control unit comprising pressure-sensitive amplifier means for detecting and amplifying the deviation of said pressure difference by a pressure difference setting diaphragm associated therewith, and valve opening means for opening the flow detection valve by the output

from said pressure-sensitive amplifier means, and compensation means for compensating for the fluid pressure acting on opposite sides of said pressure difference setting diaphragm according to operating conditions of the internal combustion engine, wherein the compensation means includes a venturi disposed in a channel interconnecting the upstream and downstream sides of the flow detection valve and a valve opening unit located between the venturi and the upstream side of the flow detection valve for opening the venturi according to the operating conditions of the engine, with the pressure in the throat of the venturi acting on the pressure difference setting diaphragm.



4,411,245

INTERNAL COMBUSTION ENGINE CONTACTLESS IGNITION SYSTEM OF SUPPLY VOLTAGE VARIATION COMPENSATION TYPE

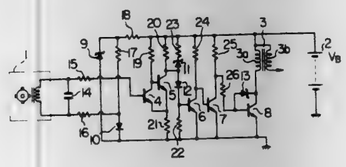
Toshio Tanaka, Anjo, and Katsuteru Miwa, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 22, 1981, Ser. No. 304,559

Claims priority, application Japan, Sep. 26, 1980, 55/136700

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—609 **8 Claims**



1. An internal combustion engine contactless ignition system of the supply voltage variation compensation type including:

means for generating an alternating current signal synchronized with the rotation of an engine,

an ignition coil for generating a high spark voltage,

an input transistor and a power transistor which are responsive to said alternating current signal to control energization of said ignition coil,

means responsive to variation of a voltage of a power source to shift an operating level of said input transistor,

means for causing said operating level of said input transistor to exhibit a hysteresis characteristic,

means for controlling said input transistor such that an operation level for switching said input transistor from its ON state to its OFF state substantially differs from that for switching said input transistor from its OFF state to its ON state, and

further comprising an inverting transistor having a base connected to an output of said input transistor, an emitter connected to one end of said power source through a common emitter resistor and a collector connected to the other end of said power source through a collection resistor to control said power transistor.

4,411,246

IGNITION SYSTEM AND METHOD FOR INTERNAL COMBUSTION ENGINE

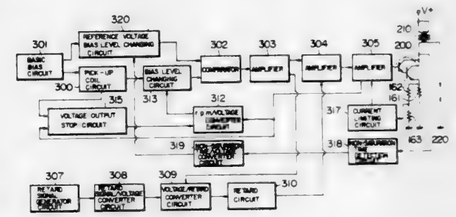
Noboru Sugiura, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,574

Claims priority, application Japan, Oct. 26, 1979, 54-137685

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—644 **16 Claims**



1. An ignition system for the internal combustion engine, comprising:

(a) means for generating an electrical signal repeated in synchronism with the rotation of the engine;

(b) timing means for providing a retard start timing signal and a conduction start timing signal on the basis of said electrical signal;

(c) retard means for determining a retard time in accordance with the operating conditions of said engine and providing an ignition timing signal at a time point when said retard time has passed following said retard start timing signal;

(d) conduction duty increasing means for advancing the timing of said conduction start timing signal in a manner to increase the conduction duty of the ignition coil depending on the revolutional speed of said engine;

(e) power output means for starting the conduction of a current for storing in said ignition coil the electromagnetic energy required for producing an ignition pulse at the time of said conduction start timing signal, said power output means substantially cutting off said current at the time of said ignition timing signal; and

(f) ignition security means for setting an ignition time required for generating said ignition pulse in response to said substantial cut-off of said ignition coil current, said ignition time starting from said ignition timing provided by said retard means, signal and including means for preventing said conduction duty increasing means from advancing the timing of said conduction start timing signal before the lapse of said ignition time.

4,411,247

DISTRIBUTORLESS IGNITION SYSTEM FOR MULTICYLINDER INTERNAL-COMBUSTION ENGINES

Shizuo Kunita, Kawagoe; Osamu Akimoto, Niiza; Osamu Sugie, Handa; Michio Iyoda, and Kazuo Suzuki, both of Kariya, all of Japan, assignors to Sanke Electric Co., Ltd., Saitama and Nippondenso Co., Ltd., Aichi, both of, Japan

Filed Apr. 8, 1981, Ser. No. 252,251

Claims priority, application Japan, Apr. 24, 1980, 55-54692

Int. Cl.³ F02P *5/00*

U.S. Cl. 123—655 **5 Claims**

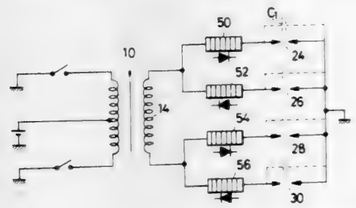
1. In an ignition system for a multicylinder, spark-ignition, internal-combustion engine, wherein an ignition coil develops voltages in its two opposite directions for causing discharges at first, second, third and fourth spark plugs in timed relation to

the revolutions of the engine, the improvement which comprises:

(a) a first high-voltage rectifier diode connected in series with the first spark plug to form a first ignition circuit which is connected at one end to one extremity of the ignition coil, the first diode being oriented to permit current flow to the first spark plug in response to the voltage developed in a first direction in the ignition coil;

(b) a second high-voltage rectifier diode connected in series with the second spark plug to form a second ignition circuit which is connected at one end to said one extremity of the ignition coil and at the other end to the other end of the first ignition circuit, the second diode being oriented to permit current flow to the second spark plug in response to the voltage developed in a second direction in the ignition coil;

(c) a third high-voltage rectifier diode connected in series with the third spark plug to form a third ignition circuit which is connected at one end to the other extremity of the ignition coil and at the other end to said other ends of the first and second ignition circuits, the third diode being



oriented to permit current flow to the third spark plug in response to the voltage developed in the second direction in the ignition coil; and

(d) a fourth high-voltage rectifier diode connected in series with the fourth spark plug to form a fourth ignition circuit which is connected at one end to said other extremity of the ignition coil and at the other end to said other ends of the first, second and third ignition circuits, the fourth diode being oriented to permit current flow to the fourth spark plug in response to the voltage developed in the first direction in the ignition coil;

(e) each diode comprising a stack of square-shaped silicon rectifier diode chips, each having a reverse breakdown voltage in the range of from about 400 to about 850 volts in order to enable the diode to withstand steep overvoltages, the reverse breakdown voltage of each diode ranging from about 27.5 to about 45.0 kilovolts, whereby each diode can function without degradation or rupture even when current flows therethrough in its reverse breakdown region, and can dampen voltages greater than the reverse breakdown voltage thereof.

4,411,248
CATAPULT CONSTRUCTION
Gilbert Kivenson, 22030 Wyandotte St., Canoga Park, Calif. 91303
Filed Nov. 27, 1981, Ser. No. 325,224
Int. Cl.³ F41B *7/00*
U.S. Cl. 124—20 R **5 Claims**

1. A compact catapult for launching projectiles for target practice, plinking and the taking of small game comprised in combination of the following:

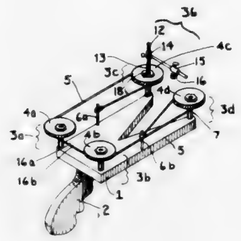
a. an elongated base having four pillars mounted to the top thereof and arranged in pairs so as to make up a front pair and a rear pair;

b. two anchoring posts also mounted to the top of said base so as to be positioned intermediate between the front and rear pairs of the pillars;

c. four conically grooved reels mounted by low friction bearings on said pillars so as to be freely rotatable;

d. an elastic cord fastened between said anchoring posts and stretched so as to pass around the reels and fit into the conical grooves, becoming partially tensed and having a center portion between the rear pair of reels which is perpendicular to the line of fire of the catapult;

e. a pair of closely spaced marks imprinted on the elastic cord in the middle of said center portion, the marks serving to define an accurately reproducible loading point for projectiles;

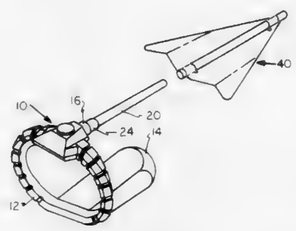


f. an aiming device with a horizontally and vertically adjustable peep sight mounted on one of the front pair of pillars;

g. a handle fixed to the bottom of said base permitting the catapult to be firmly held in one hand;

whereby a U-shaped projectile can be directly placed over said center portion of the elastic cord between said marks without the need for a projectile holder such as a pouch, the cord drawn back so as to tense it further and then released to cause a U-shaped projectile to be propelled along the line of fire.

4,411,249
TOY GLIDER WITH PNEUMATIC LAUNCHER
Bonnie R. Fogarty; A. Edward Fogarty, both of 3513 School Ave., Sarasota, Fla. 33579; Ralph Nowak, 22 Roosevelt Ave., Marblehead, Mass. 01945, and Jack S. Lovewell, 37 Central St., Peabody, Mass. 01960
Filed May 27, 1982, Ser. No. 382,695
Int. Cl.³ F41B *11/00*
U.S. Cl. 124—64 **10 Claims**

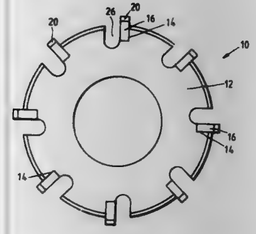


1. A toy glider and launcher therefor, comprising:

(a) a pneumatic launcher, including a closed loop flexible conduit having an integrally formed air bulb in fluid communication therewith, said air bulb being positionable for concealment in the palm of the user's hand when said flexible conduit is positioned around the user's wrist, and an open-ended launching tube for holding a projectile prior to launching, said launching tube being in fluid communication with said flexible conduit and said air bulb; and

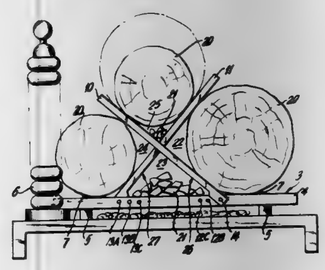
(b) a projectile, including a flight tube having one open end and one closed end, said flight tube being moveably positionable on said launching tube of said pneumatic launcher, and a wing fastened to said flight tube.

4,411,250
TRUEING TOOL
Horst Lach, Dammstrasse 5, D-6450 Hanau, Fed. Rep. of Germany
Filed Apr. 22, 1981, Ser. No. 256,585
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1980, 3016740
Int. Cl.³ B24B *53/00*
U.S. Cl. 125—11 CD **2 Claims**



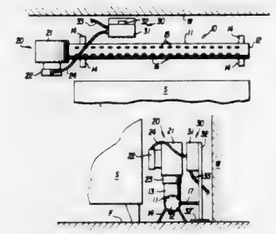
1. In a trueing tool for dressing and maintaining the shape of the working surface of a grinding wheel to maintain a predetermined profile on said working surface and remove grinding contaminants therefrom, the combination comprising a trueing roller including a shaft body, a plurality of segments on the periphery of said body, each of said segments including a breast surface and a chip chamber formed on and partially defining said segment, means integrally securing at least one profiled cutter plate on each breast surface with the cutters of succeeding segments being displaced relative to the cutter on the preceding segment to cooperatively and sequentially define a predetermined profile on the working surface of said grinding wheel and to collect in successive chip chambers the portion of said working surface removed by said cutter when said trueing tool is engaged with said working surface of said grinding wheel, each of said cutter plates including a coating of hardened material harder than the substance of the plate.

4,411,251
FIREPLACE INSERT
James Parton, 300 E. 56 St., New York, N.Y. 10022
Filed Jul. 22, 1981, Ser. No. 285,769
Int. Cl.³ F23H *13/02*
U.S. Cl. 126—165 **9 Claims**



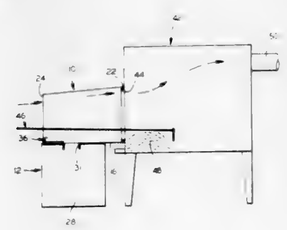
1. A metal fireplace insert comprising a frame, a plurality of arms pivotly mounted on said frame, each of said arms being pivoted for independent movement relative to each other and to the frame to form a plurality of log-receiving spaces, said frame comprises a pair of side bars and front and rear bars mounted to said side bars, said side bars being located adjacent the opposite edges of the front and rear bars, said arms being pivotly mounted on said side bars, each of said side bars having a front and rear arm pivotly mounted thereon, the front and rear arms pivotly mounted on one side bar being independently movable from the front and rear arms of the other side bar, said front and rear arms being pivoted for independent movement on opposite sides of each of said side bars.

4,411,252
WALL PROTECTOR AND HEAT CIRCULATOR
Berland M. Funkhouser, P.O. Box 2395, Winchester, Va. 22601
Filed Dec. 3, 1981, Ser. No. 327,188
Int. Cl.³ F24C *15/36*
U.S. Cl. 126—201 **5 Claims**



1. A device for placement between a free-standing heating unit and a vertical surface to prevent overheating of the vertical surface by the radiation of heat from the heating unit comprising an elongated tubular element mounted on support means and having one end closed, the other end being open; a fan assembly operatively connected with said other end of said tubular element to introduce a controlled flow of air into the interior said tube and discharged from said tube through at least two circumferentially spaced apart openings on the upper surface of said tube, one of said at least two openings being so positioned on said upper surface as to direct air passing therethrough from the interior of said tubular element in the direction of the vertical surface, the other side of said at least two openings being so positioned on said upper surface as to direct air passing therethrough from interior of said tubular element toward the adjacent heating unit surface; a temperature sensitive control assembly operatively associated with said fan assembly and activated by the temperature of the air heated by the heating unit; first electrical conduit means interconnecting said control assembly and said fan assembly and second electrical conduit means interconnecting said control assembly with a conventional source of electrical power.

4,411,253
ASH HOOD
Paul W. Devin, 31 Taine Mountain Rd., Unionville, Conn. 06085
Filed Nov. 5, 1982, Ser. No. 439,648
Int. Cl.³ F23J *1/00*
U.S. Cl. 126—242 **7 Claims**



1. A substantially portable device for use in removing ash

from a stove or the like without need for any attachment thereto, the stove having an ash-removal opening through which a draft of air flows during normal operation, said device comprising:

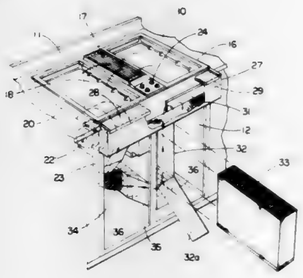
a duct having an open front end dimensioned and configured to substantially enclose the ash-removal opening of the stove for direct, close-fitting positioning thereagainst, and an open back end for free air flow and ash removal access, the bottom wall portion of said duct having an opening therethrough intermediate said front and back ends and entirely within the confines of said duct, said device also including a displaceable door for covering said bottom wall portion opening, and means for securing said duct to an ash receptacle disposed therebeneath to permit free-standing positioning of said device in front of the stove, said duct providing an extension from the stove opening when aligned generally horizontally therewith and positioned thereagainst, whereby ash can be withdrawn from the stove and guided to said opening, through which it can fall into the underlying receptacle, and whereby the draft of the stove will cause air to flow into said back end and to sweep across said opening, to prevent the escape of any substantial amount of airborne ash fines or dust.

4,411,254

COUNTERTOP RANGE WITH PROXIMITY VENTILATION AND ELECTRONIC AIR CLEANER

Thomas R. Field, Noblesville, and Donald J. Simon, Indianapolis, both of Ind., assignors to The Jenn-Air Corporation, Indianapolis, Ind.

Filed Apr. 24, 1981, Ser. No. 257,497
Int. Cl.³ F24C *15/20*
U.S. Cl. 126—300 **5 Claims**



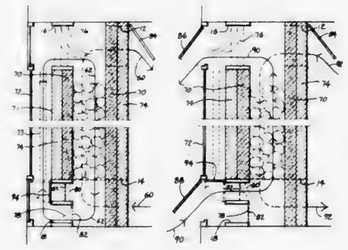
1. In a cooking range assembly for installation in a conventional stack-on kitchen cabinet having a countertop and underlying cabinet doors, said assembly being of the type having a drop-in range component with surface heating units and a proximity ventilating air intake on its top surface and including an enclosure forming a ventilating air plenum chamber and mounting a motor-driven fan having a discharge fitting and further including a first air filtering member housed in said enclosure spaced from said air intake and upstream from said fan, said chamber and fan depending beneath said top surface, said drop-in range component being accommodated in a cut-out portion of the cabinet countertop, the improvement comprising a housing downstream from said fan discharge fitting and including a second air filtering member in the form of an electrostatic air filtering unit, said housing being mounted closely adjacent said plenum chamber within the cabinet, a conduit connecting said fan discharge fitting and the interior of said filtering unit housing, and a discharge passage for said housing terminating at a discharge means including an extension chamber overhanging said cabinet doors and further including an aperture at the front of the cabinet and beneath the countertop for discharging filtered air generally downwardly along the exterior face of said cabinet doors into the kitchen environs.

4,411,255

PASSIVE THERMAL STORAGE WALL STRUCTURES FOR HEATING AND COOLING BUILDINGS

Kenneth S. Lee, 2046 Mershon, Ann Arbor, Mich. 48104

Filed Jan. 6, 1981, Ser. No. 222,896
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—429 **22 Claims**



1. A building wall for thermal storage and passive air siphon heat exchange comprising a plurality of hollow vertical parallel columns formed inside a wall of sufficient mass for significant thermal storage,

vent means at the top and bottom of a first column, said vent means of the first column communicating with the interior of a building,

vent means at the top and bottom of a second column adjacent the first column, said vent means of the second column adapted to communicate with an external solar air collector,

said wall providing heat exchange between the air in the adjacent columns when the air is moving in both columns, said movement of the air in one column caused primarily by the exchange of heat with the other column of moving air, and said wall providing thermal storage or thermal release when air is moving in only one of the adjacent columns, and

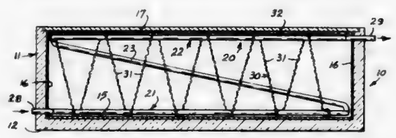
a bi-directional valve in the upper vent and a uni-directional valve in the lower vent of the column in communication with the external air collector.

4,411,256

SOLAR COLLECTOR

Philip J. Fleming, Rte. 3, Box 162, Quincy, Fla. 32351

Filed Mar. 16, 1982, Ser. No. 358,563
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—441 **7 Claims**



7. A solar collector comprising a housing having a bottom wall, side and end walls, said side and end walls defining a window opening, said walls having substantial insulation, the inner faces of said side and end walls being highly reflective, said bottom wall having an inner nonreflecting heat absorbing surface, said side walls having substantial height but less than the width of said bottom wall, liquid piping means disposed within said container, said piping means including series connected spaced lengths of pipes at upper and lower levels within the housing, said lengths being so positioned that the solar shadows from the lengths at the upper levels during normal operation do not substantially cover the lengths at the lower levels, said pipes having nonreflecting heat absorbing surfaces,

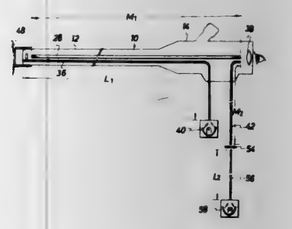
screen means engaging and extending between the lengths of the upper and lower levels forming an open baffle, said screen means having nonreflecting heat absorbing surfaces, and a transparent window covering mounted on said container and over said window opening.

4,411,257

INSPECTION ENDOSCOPE

Masashi Machida, Tokyo, Japan, assignor to Machida Endoscope Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1981, Ser. No. 327,130
Claims priority, application Japan, Dec. 9, 1980, 55-175618
Int. Cl.³ A61B *1/06*
U.S. Cl. 128—6 **4 Claims**



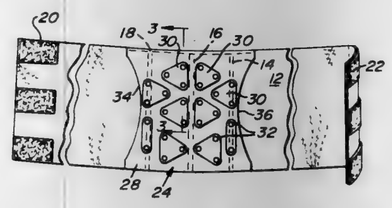
1. An inspection endoscope comprising an eyepiece, an insertion tube having an image guide and a first light guide extending therethrough with a first end of each located opposite an object to be observed, a handle portion including said eyepiece permitting visual observation of an object being observed, a first light source located opposite the second end of said first light guide to carry light to illuminate the object being observed, said eyepiece located at the second end of said image guide and an improvement comprising a data introduction guide having a first end opposite a data device and a second end located at said eyepiece, said data device comprising a display related to the observation being made, said display comprising data to be simultaneously visually compared while the object is being observed, said display comprising a color identifying sheet, said data device further comprising a second light source and a second light guide, a first end of said second light guide located opposite said second light source and a second end of said second light guide located opposite said color identifying sheet with the combination of said second light source, said second light guide and said data introduction guide presenting the same optical decay characteristics as the combination of said first light source, said first light guide and said image guide.

4,411,258

METHOD AND DEVICE FOR RELIEVING PAIN

Charles Pujals, Jr., 119 Fayette St., Bridgeton, N.J. 08302

Continuation-in-part of Ser. No. 129,154, Mar. 10, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,459
Int. Cl.³ A61H *7/00*
U.S. Cl. 128—60 **7 Claims**



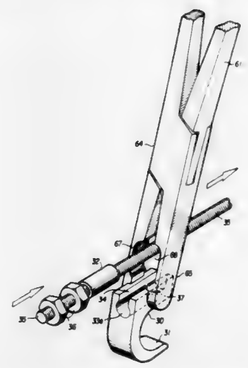
6. A peripheral modulation pad adapted to be attached to a binder for circumscribing a person's waist comprising a flexible member of non-uniform thickness so as to have thick portions and thin portions, the thicker portions having a plurality of generally pointed projections integral therewith, the thin portions being entirely free of projections, the height of the projections being uniform and the thicker portions being arranged in a pattern to provide intense stimulation to the lower back area.

4,411,259

APPARATUS FOR ENGAGING A HOOK ASSEMBLY TO A SPINAL COLUMN

Denis S. Drummond, 1214 Wellesley St., Madison, Wis. 53703

Continuation of Ser. No. 118,315, Feb. 4, 1980, abandoned. This application Nov. 24, 1981, Ser. No. 324,422
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—69 **6 Claims**



5. Apparatus comprising hooks, a threaded rod with sleeves and nuts and a windowed hook holder, said windowed hook holder comprising two shank members operably connected by hinge means, said hinge means providing scissor action between the shank members, said shank members each having first and second ends, the first ends of the skank members forming two opposing jaws for firmly grasping hooks, said jaws of said hook holder containing two opposing purchasing nubs for engaging mating openings in the sides of said hooks to firmly hold said hooks, the area behind the jaws consisting of an enlarged opening forming a window, said window opening cooperating with said jaws and being of sufficient size to allow passage through the opening of said threaded rod with sleeves and nuts assembled on the rod when said jaws are grasping a hook, and the second ends of the shank members opposite the jaws form substantially circular openings for holding fingers, further wherein there is disposed proximate said substantially circular openings, releasable locking means consisting of two opposing step-bar members extending inwardly from the shank members toward each other and in an overlapping relationship for releasably locking the scissor action of said shank members in a fixed position, so that an object may be firmly held in the jaws without having to maintain pressure on said substantially circular openings.

4,411,260

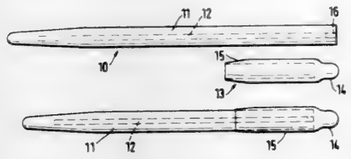
PENIS PROSTHESIS

Walter Koss, Industriestrasse, D-6222 Geisenheim, Fed. Rep. of Germany

Filed Nov. 23, 1981, Ser. No. 324,008
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 8031230[U]
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **12 Claims**

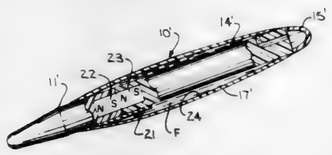
1. A penis prosthesis in the form of a flexible rod member

which comprises implantable plastic material at least in the outer region, characterized in that the rod member is subdivided into at least two portions and having means for connecting said at least two portions comprising one portion having a



tubular extension portion at one end adapted to receive and overlap an end of at least one other of said at least two portions, whereby said extension portion is adapted to be pushed over said at least one other portion.

4,411,261
SEMI-RIGID PENILE IMPLANT
Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corporation, Racine, Wis.
Continuation-in-part of Ser. No. 150,231, May 15, 1980, Pat. No. 4,318,396, and Ser. No. 266,455, May 22, 1981. This application Dec. 9, 1981, Ser. No. 328,827
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **5 Claims**



1. In a penile implant comprising a relatively rigid support portion having a stem at one end for insertion into the root end of a corpus cavernosum of a penis; a separate relatively rigid, elongated tip portion with a tip at one end for insertion in the glans end of the corpus cavernosum and an intermediate portion comprising a flexible sleeve connected at one end to the support portion and at the other end to the tip portion, the improvement which comprises providing said other ends of the support portion and tip portion with attachment means which can be used to removably attach the support portion and tip portion together in the form of a unitary rod.

4,411,262
CONSTRUCTIONAL MATERIAL
Wulf von Bonin; Ulrich von Gizycki; Kuno Wagner, all of Leverkusen, and Dietmar Schäpel, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Continuation of Ser. No. 898,753, Apr. 21, 1978, which is a continuation of Ser. No. 782,656, Mar. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 684,131, May 7, 1976, abandoned. This application Dec. 31, 1981, Ser. No. 336,206
Int. Cl.³ A61F *13/04*
U.S. Cl. 128—90 **30 Claims**

1. A flexible, workable bandaging or medical material which is stable in storage when kept under moisture-free conditions and which forms a cross-linked rigid self-supporting structure free of extensive foaming upon exposure to sufficient moisture comprising a flexible substrate impregnated or coated with a reactive one-component system consisting essentially of the free isocyanate group bearing reaction products of polyisocyanates selected from the group consisting of

phenylene-1,3-diisocyanate, phenylene-1,4-diisocyanate, mixtures of phenylene-1,3- and -1,4-diisocyanate, tolylene-2,4-diisocyanate, tolylene-2,6-diisocyanate, mixtures of tolylene-2,4- and -2,6-diisocyanate, diphenylmethane-2,4'-diisocyanate, diphenyl- methane-4,4'-diisocyanate, mixtures of diphenylmethane-2,4'- and -4,4'-diisocyanate, naphthylene-1,5-diisocyanate, triphenylmethane-4,4',4''-triisocyanate, polyphenyl-poly- methylene polyisocyanates obtained by aniline-formaldehyde condensation followed by phosgenation, with compounds which contain at least two hydrogen atoms that are reactive with isocyanates selected from the group consisting of polyesters, polyethers, polythioethers, polyacetals, polycarbonates, polyurethanes, polyureas, polyester amides, low molecular weight polyhydroxyl compounds and water.

18. A medical splinting or bandaging material comprising a flexible, workable substrate impregnated or coated with a reactive system consisting essentially of the free isocyanate group bearing reaction product of an aromatic polyisocyanate and a compound which contains at least two hydrogen atoms that are reactive with isocyanate groups, said reaction product being so formulated that:

(a) it is free of oxycarbonyl isocyanate groups;
(b) it has a viscosity below 50,000 cP at 20° C.;
(c) it contains less than about 1% by weight of volatile components which can be removed by evaporation at 12 Torr and 20° C. in one hour;
(d) said impregnated or coated flexible substrate remains stable and flexible in the absence of moisture;
(e) it will render said impregnated or coated flexible substrate into a cross-linked rigid self-supporting structure free of extensive foaming after forming into a planar or hollw configuration by reaction with water.

19. A process of forming a planar or hollow cross-linked rigid, self-supporting medical splint or bandage comprising;

(a) impregnating or coating a flexible substrate with a free isocyanate group bearing reaction product of an aromatic polyisocyanate with a compound which contains at least two free hydrogen atoms that are reactive with isocyanate groups, said reaction product being storage stable in the absence of moisture, being free pf oxycarbonyl groups; containing less than about 1% by weight of volatile components which can be removed by evaporation at 12 Torr and 20° C. in one hour; and having a viscosity below 50,000 cP at 20° C.;
(b) shaping said impregnated or coated flexible substrate to the desired configuration about the portion of the body to be supported or immobilized; and
(c) reacting said free isocyanate groups with water to yield said cross-linked rigid structure free of extensive foaming.

20. A process of forming a planar or hollow cross-linked, rigid self-supporting medical splint or bandage comprising:

(a) impregnating or coating a flexible substrate with organic compounds with molecular weights no greater than about 10,000 and containing SiOR-groups, where R is a C_1–C_{18} alkyl, a C_4–C_{14} cycloalkyl or a phanyl group, which hydrolyze upon exposure to atomspheric moisture, said compounds being storage stable in the absence of moisture;
(b) shaping said impregnated or coated flexible substrate to the desired configuration about the portion of the body to be supported or immobilized; and
(c) reacting said organic compounds with water to yield said cross-linked rigid structure.

4,411,263
INFANT EYE SHIELD
Gayle Cook, 8180 Forestdale Dr., Charlotte, N.C. 28212
Filed Sep. 23, 1981, Ser. No. 305,025
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—132 R **4 Claims**



1. An infant eye shield, for protecting an infants' eyes from phototherapy treatment light, comprising:

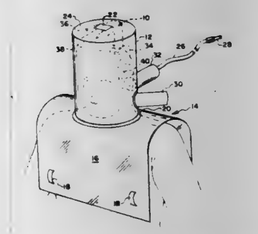
an eye piece having two oval shaped protective areas which fit over the infants' eyes, a bridge area which fits over the infant's nose and interconnects said protective areas, and two temple elements oppositely connected to and radiating outwardly from said protective areas for placement over the infant's temples, wherein said temple elements are made of material with small thread-like loops thereon; and

individual adhesive tabs having, a skin side with self sticking adhesive thereon for removably adhering to the infant's skin at each temple area, and an outer side having a multiplicity of small hooks thereon, such that

said eye piece is removably secured to the infant by engaging said loops of said temple onto said hooks when said tabs are removably attached to the infants' temples, wherein

said shield covers a minimum area of the infant's facial skin.

4,411,264
SUPPLIED AIR RESPIRATOR
Earl B. Jacobson, Crystal Lake, Ill., assignor to Nuclear Power Outfitters, Crystal Lake, Ill.
Filed Jul. 25, 1980, Ser. No. 172,425
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—201.23 **4 Claims**



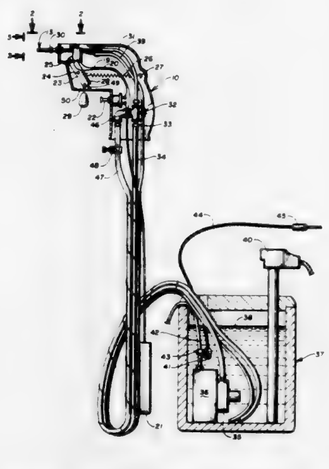
1. An improved supplied air respirator adapted to be connected to a source of air, said respirator, said comprising a hood adpted to fit over the head of a user and having at least one clear portion adapted to be positioned over the eyes of the wearer which portion is capable of fogging improvement comprising:

air flow baffle means detachable from the respirator and adapted to supply air from the air source into the interior of the respirator and including means for increasing the air flow efficiency without increasing the operating noise level of said baffle means;

said air flow baffle means are adapted to be detachably secured on the inside surface of said respirator, said baffle means including an air flow distribution member shaped and adapted to direct air into at least one portion of said respirator; and

said air flow baffle means include a flexible tubing having a plurality of lateral openings along the circumference and length thereof and a foam layer sealingly engaged around said length covering said openings, said foam layer substantially uniformly surrounding said tubing along said length thereof and a porous material binding secured around said layer, said binding compressing said layer to eliminate any gaps in said layer and to protect said foam layer.

4,411,265
EAR WAX REMOVING DEVICE
John E. Eichenlaub, 1300 France Ave. South, Golden Valley, Minn. 55416
Continuation of Ser. No. 49,179, Jun. 18, 1979, abandoned. This application Jun. 19, 1981, Ser. No. 275,209
Int. Cl.³ A61F *7/12*
U.S. Cl. 128—303.1 **12 Claims**



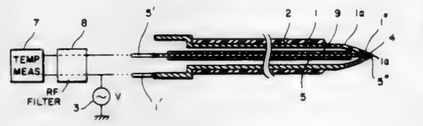
10. An ear wax removing device comprising:

(a) a mounting member;
(b) a curette having a hollow interior and rigid exterior surfaces movably mounted on said mounting member for forward and rearward longitudinal movement relative thereto and having a forward end portion and rearward end portion;
(c) said curette having fluid passages defined within the hollow interior through which a warm fluid may be circulated;
(d) a mechanism connected to said curette for controllably circulating warm fluid therethrough; and
(e) resiliently biased mounting mechanism connected to said curette and supporting and gently urging said curette forwardly.

4,411,266
THERMOCOUPLE RADIO FREQUENCY LESION ELECTRODE
Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178
Filed Sep. 24, 1980, Ser. No. 190,302
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.18 **6 Claims**

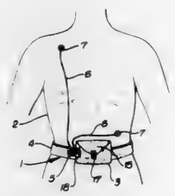
1. An electrode adapted for making radio frequency heat lesions in the tissue of the living body and having built-in a thermocouple sensor which can sense the temperature of the bodily tissue which is being heated, the electrode having an elongated shape with a distal end that is intended to be directed at the bodily tissue to be heated and a proximal end having connection means which is adapted to be connected to an external source of radio frequency energy and to an external

thermocouple temperature monitoring apparatus, a portion of the elongated portion of said electrode being covered with an insulating material, said electrode having an uninsulated conductive tip at its distal end from which, when in use, radio frequency current will flow to heat surrounding tissue, said electrode comprising conductive means connecting said uninsulated tip to said connection means located near said proximal end of said electrode and adapted for connection to an external source of radio frequency potential whereby when in use said uninsulated tip will be at said radio frequency potential, said electrode comprising a first metal wire element and a second metal wire element, both metal wire elements running from said proximal end to said distal end of said electrode, said two metal elements being the two sides of a thermocouple pair, said two metal elements being electrically insulated from each other over the length of said electrode except at said distal end, the distal ends of said two metal elements being electrically



fused at said distal end of said electrode to form a thermocouple junction in such a way that a portion of each of said distal ends of said two metal elements and a portion of said fused junction are part of external surface of said uninsulated tip, the proximal ends of said two metal elements near the proximal end of said electrode are so adapted to be connected through said connection means to an external thermocouple junction potential measuring apparatus; whereby, when in use and when said electrode is inserted into the living body, then the radio frequency potential at said uninsulated tip of said electrode will cause current to flow in, and thus heat up, the tissue surrounding said uninsulated tip, and said distal portions of said two metal elements and said portion of thermocouple junction which are on the external surface of said uninsulated tip will provide intimate thermal contact with the heated tissue adjacent to said external surface, and thus, a reliable measure of the temperature of said adjacent tissue.

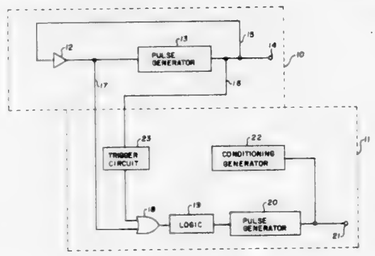
4,411,267
TELEMETRY TRANSMITTER HOLDER
Arnold M. Heyman, 2701 West Alameda Ave., Burbank, Calif. 91505
Filed Feb. 23, 1981, Ser. No. 237,520
Int. Cl.³ A61F 7/00; A61N 1/22
U.S. Cl. 128—385 **8 Claims**



6. A device for holding medical equipment or the like about the midsection of a person comprising:
- a washable pouch fabricated from a piece of waterproof, spongy foam material having a bottom, a top, opposing sides, and opposing ends adjacent to said opposing sides and said top and bottom, with a first opening at said top and an integral securable flap joined to said pouch adjacent to said top, said flap being closable and securable over said opening;
- a long, narrow, flexible, washable strip attached to said pouch at one of said opposing ends, said strip being fabricated from a piece of spongy foam material to which has been bonded on one side a fibrous cloth material having a pile surface suitable for engaging hook fibers, said strip placed for placement around the midsection of a person beneath the person's clothing with the spongy foam side of the strip against the midsection of the person;
- a washable tab of material, one surface of which contains hook fibers, said tab being attached along at least one of its edges to the said opposing end of said pouch opposite to said end at which said strip is attached, said tab for engaging said pile surface when said strip is placed around the midsection of a person;

whereby medical equipment or the like may be securely held in said pouch and said pouch may be securely and comfortably attached about the mid-section of a person.

4,411,268
MUSCLE STIMULATOR
James A. Cox, Sewell, N.J., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 10, 1982, Ser. No. 347,514
Int. Cl.³ A61N 1/36
U.S. Cl. 128—421 **36 Claims**

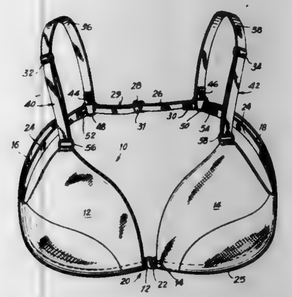


1. A system for inducing a desired functional contraction in muscle tissue while conditioning the contracile properties of said tissue for said functional contraction which comprises:
- means for generating pacing stimulation signals having parameters established by a desired functional contraction of particular muscle tissue including means applying said pacing stimulation signals to the body for initiating said desired functional contraction of said particular muscle tissue; and
- means for generating a conditioning stimulation signal having parameters established by said desired functional contraction including means applying said conditioning stimulation signals to the body for conditioning the contractile properties of said particular muscle tissue.

4,411,269
FRONT OPENING BRA WITH ADJUSTABLE BACK
Ronald Weintraub, New York, N.Y., assignor to Flexnit Company, Inc., New York, N.Y.
Filed Sep. 4, 1981, Ser. No. 299,589
Int. Cl.³ A41C 3/02, 3/00
U.S. Cl. 128—482 **11 Claims**

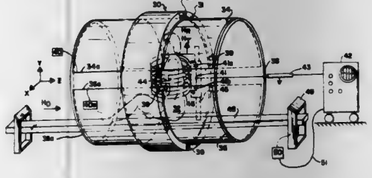
1. A brassiere comprising a pair of breast cups, a front-opening closure connected to said breast cups, and an adjustable back strap connecting side panels of said bust cups to one another, a pair of adjustable shoulder straps extending from the upper portions of said breast cups and terminating at the back of said brassiere in the general vicinity of the joint connection formed by said adjustable back strap and said side panels; and connection means at at least one of said joints of said adjustable back strap and said side panels with said adjustable shoulder strap comprising a triangular-like element which is coupled to said adjustable back shoulder straps and to said side panel by

means of looped sections formed on said side panel and on said adjustable back and shoulder straps; and said triangular-like element is provided with at least a pair of adjacent arms ex-



tending from one corner of said triangular-like element with protrusions at the ends of said arms for precluding said looped sections from slipping off said arms.

4,411,270
APPARATUS AND METHOD FOR NUCLEAR MAGNETIC RESONANCE SCANNING AND MAPPING
Raymond V. Damadian, 64 Shorthill Rd., Forest Hills, N.Y. 11375
Division of Ser. No. 961,858, Nov. 20, 1978, Pat. No. 4,354,499.
This application Oct. 13, 1981, Ser. No. 310,782
Int. Cl.³ A61B 5/05
U.S. Cl. 128—653 **24 Claims**



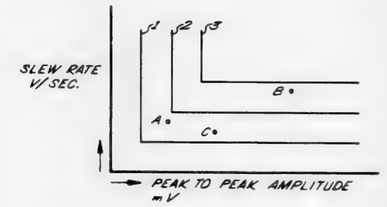
1. A method of detecting selected nuclei within a specimen comprising:
- (a) providing a primary static magnetic field having a known field configuration in a three dimensional space having an "X", "Y", and "Z" dimensional frame of reference, the primary static magnetic field having a magnetic field orientation in the "Z" direction;
- (b) superimposing a focusing static magnetic field having a magnetic field orientation in the "Z" direction and having a selectable gradient in the "Y" direction on the primary static magnetic field to produce a resulting static magnetic field having a magnetic field orientation in the "Z" direction and having a known field configuration;
- (c) providing a source of oscillating magnetic radiation having a selectable frequency;
- (d) selecting a frequency ω_o of the source of oscillating magnetic radiation to satisfy the equation:

$$\omega_o = |H_o|\gamma$$

where:
- ω_o = resonance angular frequency of the selected nuclei
- $|H_o|$ = magnitude of resulting static magnetic field at a particular location
- γ = gyromagnetic ratio for the selected nuclei and is a constant for the selected nuclei

for the selected nuclei at a resonance domain located within the resulting static magnetic field where the field strength is substantially $|H_o|$;
- (e) positioning the specimen such that the resonance domain impinges on the specimen;
- (f) orienting the oscillating magnetic radiation having frequency ω_o in a direction such that its magnetic field orientation is orthogonal to the "Z" direction;
- (g) directing the oscillating magnetic radiation to the resonance domain whereby a nuclear magnetic resonance signal is generated for the selected nuclei in the specimen located within the resonance domain;
- (h) receiving the nuclear magnetic resonance signal generated; and
- (i) processing the nuclear magnetic resonance signal to determine a nuclear magnetic resonance value representing the selected nuclei extant in the resonance domain within the specimen.

4,411,271
BODY TISSUE DEPOLARIZATION EVALUATION SYSTEM
H. Toby Markowitz, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Feb. 10, 1982, Ser. No. 347,522
Int. Cl.³ A616 5/04
U.S. Cl. 128—703 **15 Claims**

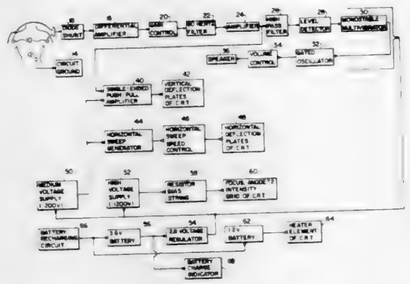


1. An evaluation system for use in conjunction with a body implantable body stimulator, the body stimulator including a stimulaton delivering and depolarization sensing lead system, said evaluation system comprising:
- input means adapted for connection to said lead system;
- means for digitizing depolarization signals sensed by said lead system;
- computing means including means for identifying excursions in the digitized depolarization signals and means for evaluating identified excursions in accordance with a preselected plurality of merit criteria; and
- output means for giving an indication of at least that excursion having the highest merit that satisfies said merit criteria.

4,411,272
MINIATURE, BATTERY-POWERED CATHODE RAY TUBE DISPLAY HEART MONITOR
Jerry A. Phelps, Sr., 6013 Innes Trace Rd., Louisville, Ky. 40222
Filed Sep. 9, 1981, Ser. No. 300,610
Int. Cl.³ A61B 5/04
U.S. Cl. 128—711 **1 Claim**

1. An cardioscope apparatus for detecting the electrical heart activity of a patient and for producing output in accordance therewith for presentation both by an associated cathode ray tube and an associated audio output device, said apparatus comprising:
- electrode means, adapted to be connected to the body of a patient, for detecting the electrical activity of the patient's heart;
- a differential amplifier connected to said electrode means;
- a diode shunt connected across the input of said differential

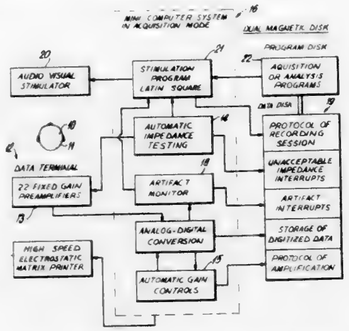
amplifier to protect the differential amplifier from circuit overloads;
a passive 60 Hertz filter for filtering the output of said differential amplifier;
a further amplifier for amplifying the output of said filter;
a gain control circuit separate from said further amplifier for enabling continuous adjustment of the gain of the output of said differential amplifier;
a passive high pass filter connected to the output of said further amplifier;
a monostable multivibrator for receiving as an input thereto the output of said high pass filter;
a level detector for adjusting the input to said monostable multivibrator;
a gated oscillator, including a plurality of Nand gates, connected to the output of said monostable multivibrator;
an audio output device connected to the output of said oscillator;



a volume control circuit for adjusting the volume of the output signal produced by said audio output device;
a single ended push-pull amplifier connected to the output of said further amplifier for supplying a control voltage to the vertical deflection plates of the said associated cathode ray tube, and
power supply means, comprising only positive voltage batteries, for supplying the necessary supply voltages for the said associated cathode ray tube and the remainder of the circuitry for the apparatus, said power supply means including a voltage regulator for regulating the voltages supplied, said apparatus further comprising a horizontal sweep generator connected to said power supply means and the horizontal deflection plates of the cathode ray tube and, including means for adjusting the horizontal sweep speed.

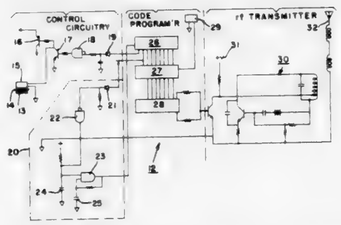
4,411,273
SYSTEM AND METHOD FOR ELECTRODE PAIR DERIVATIONS IN ELECTROENCEPHALOGRAPHY
E. Roy John, 930 Greacen La., Mamaroneck, N.Y. 10546
Filed Jan. 30, 1978, Ser. No. 873,118
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—731 **4 Claims**

1. A method in electroencephalography for the determination of the differences in electrical output representing brain waves between selected pairs of electrodes, the method comprising:
removably securing a plurality of electrodes to the head of said subject under test;
automatically presenting a selected program of external stimuli to said subject to obtain the subject's evoked responses thereto;
simultaneously amplifying the signals representing brain wave evoked responses from each of said electrodes;
converting the said amplified signals into digital form; and
computing the differences of said simultaneous amplified signals between a plurality of selected pairs of electrodes by selecting said pairs so that the same signals from each electrode are used in a plurality of said selected pairs and automatically subtracting one digitized signal from one



electrode of each of said pairs from the digitized signal from the other electrode of the same said pair, and displaying the said computed differences.

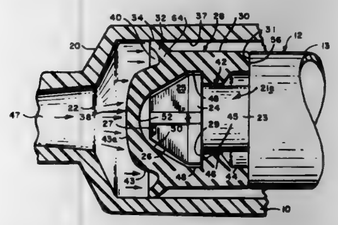
4,411,274
APPARATUS AND METHOD FOR MONITORING THE OESTRUS CYCLE IN FEMALE ANIMALS
Thad F. Wright, Yadkinville, N.C., assignor to Agricultural Computer Systems, Inc., Yadkinville, N.C.
Filed May 20, 1981, Ser. No. 265,551
Int. Cl.³ G07C *11/00*
U.S. Cl. 128—738 **12 Claims**



1. Apparatus for monitoring the oestrus cycle in female animals comprising: a switch means positioned on the female signal, a transmitting means for attachment to the female animal communicating with said switch means, said transmitting means for generating a long range signal burst, said transmitting means including time delay circuitry, said time delay circuitry preventing signal transmission until a predetermined time lapse occurs from the time said switch means is initially activated independent of the length of switch activation, a receiving unit for receiving signals generated by said transmitting means, said receiving unit including a printing means for recording data from said transmitting means.

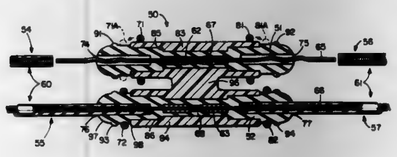
4,411,275
SYRINGE
Russell G. Raitto, Fitzwilliam, N.H., assignor to Concord Laboratories, Inc., Keene, N.H.
Division of Ser. No. 317,307, Nov. 2, 1981, Pat. No. 4,372,325, which is a division of Ser. No. 870,118, Jan. 17, 1978, Pat. No. 4,354,507, which is a continuation-in-part of Ser. No. 714,644, Aug. 16, 1976, abandoned. This application Nov. 22, 1982, Ser. No. 443,376
Int. Cl.³ A61B *5/14*
U.S. Cl. 128—763 **1 Claim**

1. A method for taking a sample of blood using a disposable syringe assembly particularly suited because of the low force requirement for the operation thereof to be used for obtaining a blood sample for a patient wherein said syringe comprises a barrel having a cylindrical inner wall and a plunger comprising a plunger stem and a compressible, elastomeric, generally cylindrical plunger tip of lesser diameter than the inner wall of said barrel, said plunger tip having an integral, annular elastically deformable wiper extending peripherally radially outwardly and axially forwardly from said plunger tip at a forward portion thereof at an acute angle to the longitudinal center axis of said plunger tip and terminating at the outer edge thereof in a wiping edge having a minimal diameter slightly in excess of the diameter of the inner wall of said barrel, thereby forming a sealing engagement with the inner wall of said barrel, said annular wiper being the sole sealing element between



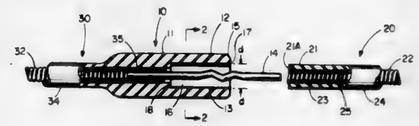
said plunger tip and said wall, said plunger being spaced from said barrel along the length thereof so that axial movement between said plunger and said barrel is substantially free of frictional contact except for the contact by said sole sealing element, said syringe having a hypodermic needle attached thereto;
said method comprising moving said plunger tip axially forwardly to expel liquid anti-coagulant and air from said barrel until said plunger tip reaches its forward limit at which there is a predetermined space between said tip and said floor and at which a predetermined amount of said anti-coagulant remains in said barrel; followed by inserting said needle into a blood vessel of a patient and permitting the blood pressure in said blood vessel to move said plunger tip and plunger axially rearwardly in said barrel to take a sample of blood.

4,411,276
IMPLANTABLE MULTIPLE CONNECTOR
Eugene A. Dickhudt, and Roger A. Paulson, both of New Brighton, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 28, 1981, Ser. No. 258,259
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **8 Claims**



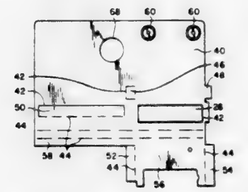
1. A body implantable connector for connecting cut ends of a pair of body implantable leads, each lead including a helical conductor having a lumen, the helical conductor being encased in an insulator, the connector comprising:
sheath means made of a pliable rubber-like nonconductive material which is generally inert to body fluids, the sheath means being provided with a pair of open ends shaped for closely receiving cut ends of the leads and for frictionally fitting about the insulators of the leads in a generally fluid-tight connection, the material having sufficient strength to resist breaking under the forces normally exerted on the connector while implanted, but being sufficiently pliable to deform and so that the sheath means contracts about the leads under the frictional forces created between the sheath means and the insulators when the leads are urged in directions tending to separate them from the connector; and
a wire means mounted in the sheath means and projecting within the open ends for mating in each lumen and including means for making conductive and mechanical connections between the helical conductors.

4,411,277
IMPLANTABLE CONNECTOR
Eugene A. Dickhudt, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 28, 1981, Ser. No. 258,260
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—784 **8 Claims**



1. A body implantable connector for connecting to a cut end of a body implantable lead which includes a helical conductor having a lumen, the helical conductor being encased in an insulator, the connector comprising:
sheath means made of a pliable rubber-like nonconductive material which is generally insert to body fluids, the sheath means being provided with a generally cylindrical open end shaped for closely receiving a cut end of the lead and for frictionally fitting about the insulator of the lead in a generally fluid-tight connection, the material having sufficient strength to resist breaking under the forces normally exerted on the connector while implanted, but being sufficiently pliable to deform so that the sheath means contracts about the lead under the frictional forces generated between the sheath means and the insulator when the lead is urged in a direction tending to separate the lead from the connector; and
wire means mounted in the sheath means and projecting within the open end for mating in a lumen and including means for making a conductive and mechanical connection to the helical conductor.

4,411,278
CIGARETTE MAKING MACHINE
Arnold Kastner, 10220 Armand Lavergne, Montreal, Quebec, Canada
Filed Jul. 24, 1981, Ser. No. 286,539
Int. Cl.³ A24C *5/02, 5/66, 5/42*
U.S. Cl. 131—70 **6 Claims**



1. In a cigarette making machine of the type wherein a supply of tobacco for a single cigarette is compacted into cylindrical form within a tobacco compacting chamber which tobacco form is then axially moved by an elongate spoon and

injected by the spoon into a preformed cigarette tube positioned exteriorly of the machine on a hollow nipple,

the improvement wherein movable component parts of the machine are carried by an assembly plate comprising a single blank of sheet metal, upper and lower spaced and parallel surfaces of the tobacco compacting chamber and guide means for guiding movement of the spoon comprising bent portions of the single blank, wherein said assembly plate is carried within and secured to an outer plastic shell, said shell including locator projections which are deformed into firm contact with said assembly plate.

4,411,279

SMOKING PRODUCT AND PROCESS FOR MANUFACTURING SAME

Julian R. Martin, Winston-Salem, and Larry W. Sides, Welcome, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 155,876, Jun. 2, 1980, Pat. No. 4,326,543.
This application Nov. 25, 1981, Ser. No. 324,753
Int. Cl.³ A24C *5/56*; A20C *5/58*
U.S. Cl. 131—94 **14 Claims**

1. A process for manufacturing a filter-tipped smoking product from a rod-shaped wrapped section of tobacco, a rod-shaped non-wrapped fibrous filter and a web of tipping paper which comprises:

(a) applying to at least 30 percent of the surface area on one side of the web of tipping paper between 10 and 60 grams of a hot-melt adhesive per square meter of said surface area actually coated, the quantity of adhesive applied to said surface area being sufficient to provide an adhesive coating thickness of at least 8 microns and the combined thickness of the tipping paper and adhesive coating applied thereto being no more than 125 microns,

(b) cutting the adhesive-coated tipping paper into segments of predetermined length,

(c) moving the wrapped section of tobacco and the non-wrapped fibrous filter into abutting, axial alignment,

(d) heating the adhesive-coated segment of tipping paper sufficiently to activate the adhesive and bringing the adhesive-coated side thereof into contact with the non-wrapped fibrous filter and the abutting end of the section of tobacco,

(e) wrapping the segment of tipping paper coated with the heat-activated adhesive in sealing engagement around the non-wrapped fibrous filter and the abutting end of the section of tobacco so that substantially the entire length of the filter and the abutting end of the section of tobacco are circumferentially enveloped by the tipping paper, and

(f) maintaining the wrapped segment of tipping paper in sealing engagement with the non-wrapped fibrous filter and the abutting end of the section of tobacco for a sufficient time period to permit cooling and setting of the heat-activated adhesive in the assembled filter-tipped smoking product.

4,411,280

VENTILATED THERMOPLASTIC POLYMER FOAM FILTER RODS

Terry S. Floyd, Clover, S.C.; Donna G. Rhoden, Charlotte, N.C., and Walter E. Bradley, Fort Mill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed Sep. 11, 1981, Ser. No. 301,251
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—332 **7 Claims**

7. A cigarette filter rod comprising a cellulose acetate substantially opened-cell foam characterized by the presence of at least some cells which are bridged by fibrils, said rod being surrounded by a water and air pervious high density skin structure having a discontinuity such as to produce a rod ventilation of greater than 85 percent, said discontinuity being in the form of pores having an average size of from about 50 to 150 microns and frequency of from 15 to 500 pores per square



millimeter, said pores being randomly disposed in the skin structure.

4,411,281

HAIRDRESSING DEVICE FOR STYLING, WINDING AND DRYING HAIR

Klaus Doern, Essen-Bredeney, Fed. Rep. of Germany, assignor to Wik Elektro-Hausgerate Vertriebsgesellschaft mbH & Co., Productions-KG, Essen, Fed. Rep. of Germany

Filed Jul. 28, 1982, Ser. No. 402,822
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1982, 3204469
Int. Cl.³ A45D *2/24*
U.S. Cl. 132—37 R **8 Claims**



1. In a hairdressing device having a handle and a round brush presenting bristles distributed on its circumference, the round brush including an inner tube, an outer tube and, on the inner tube, rows of bristles swingably mounted, the bristles penetrating the outer tube to an extended position or being retracted within the outer tube by relative rotary movement between the inner tube and the outer tube, the improvement comprising:

(a) a depressable operating key mounted on the handle and having an operating cam;

(b) said operating cam being effective, when the operating key is depressed, to act against a follower member mounted on said inner tube and rotate said follower member, rotation of said follower member being effective to rotate one of said inner and outer tubes relative to the other of said inner and outer tubes; and

(c) a restoring spring connecting said inner and outer tubes;

(d) release of said operating key permitting said spring to reset said outer tube to a starting position relative to its said inner tube and effect the extension of said bristles through said outer tube.

4,411,282

MASCARA APPLICATOR WAND AND RECEPTACLE

Karen A. Wavering, Chicago, Ill., assignor to W. Braun Company, Chicago, Ill.

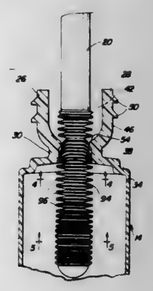
Filed Mar. 15, 1982, Ser. No. 357,978
Int. Cl.³ A45D *40/30*
U.S. Cl. 132—88.5 **13 Claims**

1. A mascara applicator wand assembly comprising an elongated rod having an upper handle end and having a lower applicator end, said lower applicator end including applicator means for applying mascara to eyelashes for cosmetic purposes,

said applicator means comprising disk-like rings distributed as a coaxial array attached to and encircling said rod means at said lower applicator end thereof,

said rings including resiliently flexible radially outwardly directed marginal rib portions having convex peripheral edges,

said rings defining therebetween continuous annular grooves



opening outwardly for retaining controlled amounts of mascara for cosmetic application,

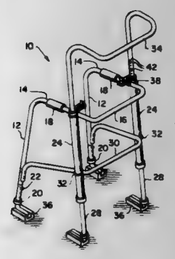
said annular grooves including grooves of varying radial depth distributed axially along side applicator end of said rod to provide shallow and deeper recesses between said rings for retention of lesser and greater amounts of mascara to be applied cosmetically.

4,411,283

INVALID WALKER

Frank J. Lucarelli, 1017 Western Trail, Keller, Tex. 76248

Filed Dec. 30, 1981, Ser. No. 335,629
Int. Cl.³ F16M *13/08*
U.S. Cl. 135—67 **10 Claims**



1. An invalid walker suitable for use on level or inclined surfaces, or for up and down stairs including the combination of rear legs members, side supports, top and bottom supports and feet, the improvement comprising an adjustable front leg assembly including a pair of guide tubes attached to said support members, front legs telescopically movable upwardly and downwardly within said guide tubes, an adjustment member attached to said front legs and movable therewith for moving said legs within said guide tubes, and locking means for locking said front legs within said guide tubes at preset locations.

4,411,284

WALKING AID TIP ASSEMBLY

Eric J. Opitz, 31280 Ramble Rd., Franklin Village, Franklin, Mich. 48025

Filed Nov. 19, 1981, Ser. No. 323,051
Int. Cl.³ A45B *9/04*
U.S. Cl. 135—81 **1 Claim**

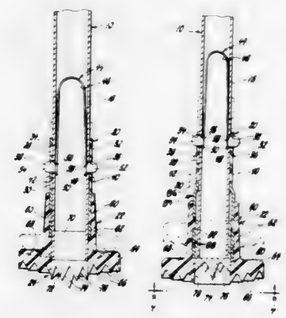
1. An attachment for the groundward end of a walking aid comprising:

a ground-engaging member fixedly secured in said groundward end of said walking aid and having a spike extending in the groundward direction therefrom;

a sleeve slidably secured about said groundward end of said walking aid and axially moveable relative thereto, said sleeve having three annuli of holes spaced therealong;

a resilient foot securely mounted on said sleeve and below said annuli of holes, said foot having an outwardly projecting annular flange at the groundward end thereof and having a ground engaging surface at the groundward end of said flange, said surface having a plurality of annular grooves therein;

and latch means in said walking aid and selectively engageable with holes in one of said annuli of holes to secure said sleeve and said foot in one position relative to said walking aid and said ground engaging member to permit engagement of said spike on said ground engaging member with the ground and



separate said ground engaging surface of said foot from the ground, said latch means being selectively moveable to engage holes in another annuli of holes in said sleeve to secured said sleeve relative to said groundward end of said walking aid and said spike on said ground engaging member in a second position separating said spike from the ground and engaging said ground engaging surface of said foot with the ground, and said latch means being selectively moveable to engage holes in another of said annuli of holes in said sleeve to secure said sleeve relative to the groundward end of said walking aid and said ground engaging member in a third position engaging both said spike and said ground engaging surface of said foot with the ground, said annuli of holes additionally permitting said sleeve and foot in any of said three positions to be rotationally indexed so as to compensate for wear on any given portion of the ground engaging surface of said foot.

4,411,285

DEMAND VALVE

Hugh H. B. Oswell, Hexham, England, assignor to Submarine Products Limited, Northumberland, England

Filed May 18, 1981, Ser. No. 264,401
Claims priority, application United Kingdom, May 20, 1980, 80166979; Jun. 27, 1980, 8021211
Int. Cl.³ G05D *11/00*; A62B *7/04*
U.S. Cl. 137—112 **12 Claims**

1. A valve comprising:

a housing;

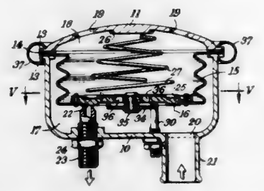
a flexible diaphragm operatively positioned within said housing for forming first and second chambers;

said first chamber being in communication with an external pressure source;

a first port and a second port being operatively positioned within said second chamber;

said flexible diaphragm including a substantially rigid, planar portion affixed thereto and forming a port closure surface for engaging and closing said first port, said flexible dia-

phragm and said first port being so disposed relative to one another that the port closure surface contacts the first port at a location spaced from the centre of pressure of the flexible diaphragm, whereby establishment of an operative difference of pressure across the flexible diaphragm causes the flexible diaphragm to pivot so as to unseat the closure surface and thereby open said first port; and



low pressure relief safety valve means including a valve member mounted on the planar portion and movable in response to a pressure difference thereacross to relieve excessively low pressures in the second chamber by permitting said external pressure in said first chamber to flow into the second chamber.

4,411,286

LIQUID SEAL VALVE

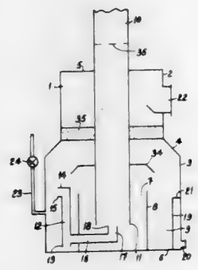
Gerald G. Ball, London, England, assignor to Peabody Holmes Limited, Huddersfield, England

Filed Feb. 27, 1981, Ser. No. 238,921

Claims priority, application United Kingdom, Mar. 6, 1980, 8007688

Int. Cl.³ F16K *9/00*

U.S. Cl. 137—253 **6 Claims**



1. A liquid seal valve comprising a first vessel having a lower part which includes a closed bottom and a wall extending upwardly from said bottom and a gas outlet from an upper part of the vessel, a second, open-topped vessel within the lower part of said first vessel, said second vessel having a wall extending to said closed bottom end spaced upwardly from said wall of the first vessel providing a radial gap between said walls of said first and second to vessels, a gas inlet pipe extending downwardly through said upper part of the first vessel and through the open top of said second vessel into a liquid trap in said second vessel, the lower end of said gas inlet pipe being disposed below the level of the surface said liquid trap when there is no gas flow through said inlet pipe, whereby gas entering the valve via said inlet pipe can flow via said second vessel to the gas outlet in said first vessel, and pipe means providing communication between the lower end of said gas inlet pipe and at least two regions in said first vessel, said pipe means including a first, open-ended pipe externally of, and to one side of, said second vessel, said first pipe being disposed in said radial gap and having a smaller cross-sectional area than said second vessel, said first pipe having a first open end below said level and a second open end above said level, and a second pipe connected to said first pipe intermediate the first and second open ends of the latter, said second pipe leading from said first pipe to the interior of said second vessel and having an open end opposite to, and adjacent to, the lower end of said gas inlet pipe.

4,411,287

VALVE-TYPE CLOSURE FOR CONTAINERS

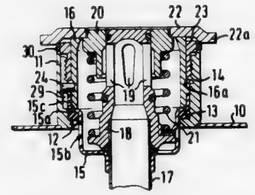
Roger J. Hyde, Kettering, England, assignor to Alumasc Limited, London, England

Filed Apr. 16, 1981, Ser. No. 254,932

Claims priority, application United Kingdom, Apr. 22, 1980, 8013176

Int. Cl.³ F16K *51/00*; F16L *37/00*; B65D *83/00*

U.S. Cl. 137—315 **8 Claims**



1. A closure arrangement for a metal container comprising in combination a neck adapted to be rigidly secured to said container, a screw-threaded socket internally of said neck, and a valved closure to be screw-threaded into said socket; a construction of said valved closure comprising a tubular body, a closure valve housed within said body to control fluid flow therethrough, a sleeve rotatably mounted exteriorly on said body, means locating said sleeve against axial displacement of said sleeve on said body, said sleeve having an external screw-thread to engage said internal screw-thread of said socket, and a guiding connection between said tubular body and said neck to restrict rotation of said body in said neck and allowing axial travel of said body into said neck to a fully-inserted position on screwing-in of said sleeve, and said guiding connection including body-retaining means operative to limit axial travel of the body from the fully-inserted position on occurrence of rotation of the body in the neck in the unscrewing direction on unscrewing the sleeve; and pressure-gas relief means including a gas passage, and a seal operative to close the gas passage in said fully-inserted position of the body, said gas passage being opened around said seal on travel of the body axially from the fully-inserted position.

4,411,288

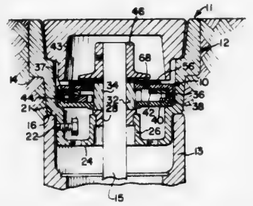
VALVE POSITION INDICATOR WITH VARIABLE INDICATOR PLATES

Lorand H. Gain, Jr., Montgomery, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 27, 1981, Ser. No. 287,423

Int. Cl.³ F16K *1/28, 37/00*

U.S. Cl. 137—363 **4 Claims**



1. In a valve position indicator for a buried valve having an operating shaft extending to ground level and requiring a predetermined number of turns to move said valve between the open and shut positions thereof, said position indicator including a housing mounted on the upper end of said extended operator shaft and having a transparent wall, an interior indicating member disposed in said housing so as to be visible through said transparent wall and operatively connected to said operating shaft and being incremental angularly displaced upon turning of said operator shaft to indicate the position of said valve relative to an open and closed position, the improvement comprising

an annular first indicia bearing plate means coaxially disposed about said operator shaft and fixed to said transparent wall of said gear box unit, said first indicia means having a first reference tab means located relative to said interior indicating member to indicate one of said open or shut positions,

an annular second indicia bearing plate means superimposed on said first member having a second reference tab means selectively angularly spaced from said first reference means of said first indicia bearing plate to indicate the other of said open or shut positions,

said second indicia bearing plate means being disposed on said first indicia bearing plate means so that the angular spacing first reference tab means and said second tab means corresponds to the aggregate angular displacement of said interior indicating member between the open and closed positions of said valves upon turning said operator shaft the predetermined number of turns.

4,411,289

HYDRAULIC VALVE

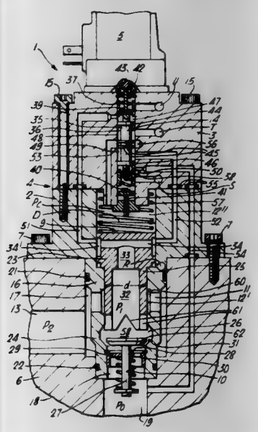
Ronald B. Walters, Wembley, England, assignor to Sperry Limited, Cobham, England

Filed Jul. 24, 1980, Ser. No. 171,893

Claims priority, application United Kingdom, Jul. 26, 1979, 792162

Int. Cl.³ F16K *31/06, 31/143*; F15B *13/16*

U.S. Cl. 137—486 **10 Claims**



1. A hydraulic control valve comprising a main valve having a main valve inlet port and a main valve outlet port incorporating a fluid pressure actuated stepped valve piston located in a matching valve cavity and having a first and second ends of first and second effective end areas respectively with the second end area being smaller than the first end area, and a variable metering orifice provided by cooperation of the second end with said main valve outlet port; a pilot valve provided with flow setting means acting on pilot valve fluid control means through which a controlled proportion of fluid pressure acting in operation of the valve on said second area is applied to said first end area of the valve piston, thereby to control the metering orifice, said pilot valve being a spool valve incorporating a valve spool which comprises two end lands and at least one central land, the central land cooperating with an associated control port to control the proportion of the fluid pressure applied to the first end area of the valve piston; flow sensing means between the inlet port and the outlet port providing a flow sensing orifice; and feedback transmission means comprising first and second internal fluid ducts through which a feedback pressure differential developed in operation across the flow sensing orifice is transmitted to respective ones of the two end lands of the valve spool, said pressure differential making the pilot stage responsive to flow feedback derived from said flow sensing means and applied via said feedback transmission means.

4,411,290

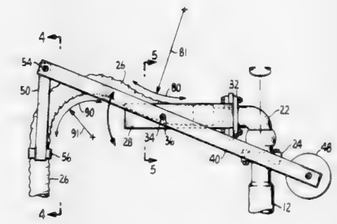
BOTTOM LOADING ARM FOR BULK LIQUID CARRIERS

Warren A. Heath, Sunnyvale, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jun. 15, 1981, Ser. No. 273,309

Int. Cl.³ B65B *3/04*

U.S. Cl. 137—615 **5 Claims**



1. A loading arm for bottom loading or unloading of liquid between a storage tank and a bulk liquid carrier, such as a tank truck, which comprises:

a flexible conductor extending generally horizontally from a vertical supply standpipe adapted to be connected to a liquid storage tank;

elbow means, including a first end, rotatably mounted on said vertical supply standpipe and a second end for connecting one end of said flexible conductor to said standpipe;

flexible conductor support means mounted for horizontal rotational movement coaxial with the axis of rotation of said elbow means, said support means including horizontal arm means secured to said elbow means to extend substantially parallel to the axis of said elbow means second end and outwardly from said standpipe;

pivot arm means, said pivot arm means being mounted for vertically pivotal motion on said horizontal arm means, other pivot arm means for supporting the forwardly extending portion of said flexible conductor in a vertical position, said other pivot arm means being mounted for pivotal motion from one end of the first said pivot arm means, and counterweight means supported by the other end of said first pivot arm means and extending rearwardly of said standpipe to counterbalance said flexible conductor, the opposite end of said first pivot arm means, and said other pivot arm means;

means for securing the upper end of the vertically disposed portion of said flexible conductor to the pendant end of said other pivot arm means, and bulk liquid carrier connector means affixed to the other end of said flexible conductor whereby said liquid connector means may be engaged with, and disengaged from said bulk carrier by horizontal rotation of said loading arm assembly about said vertical standpipe and vertical and horizontal move-

ments of said flexible conduit with said one and said other pivotal arm means, respectively.

4,411,291

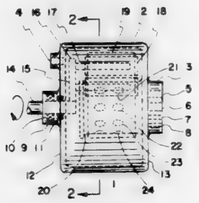
ANGULAR BELT VALVE FOR MANIFOLD CONTROL

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 206,302, Nov. 12, 1980. This application Jul. 2, 1981, Ser. No. 279,678

Int. Cl.³ F16K *13/00, 31/52*

U.S. Cl. 137—624.15 **5 Claims**



1. An angular belt valve comprising a cylindrical enclosure having ports for the fluid passage; a cylindrical manifold core disposed within said cylindrical enclosure, said cylindrical manifold core including a plurality of axial holes, each of which axial holes include first openings disposed on the outside extremity of said cylindrical manifold core and second openings disposed on the cyindrical side wall of said cylindrical manifold core; a planetary roller disposed within said cylindrical enclosure, said planetary roller revolvable about its own axis and rotatable around said cylindrical manifold core; a belt wrapped around said cylindrical manifold core and said planetary roller; means for generating relative rotational motion between said cylindrical manifold core and said planetary roller; a plurality of tightener rollers rotatable around said cylindrical manifold core and means for adjusting the relative positions between said planetary roller and said tightener rollers; whereby, the relative rotational motion between said cylindrical manifold core and said planetary roller opens and closes each of said second openings connected to each of said axial holes wherein said means for adjusting the relative positions between said planetary roller and said tightener rollers is used for adjusting the unwrap angle of said belt around said cylindrical manifold core and for tightening the tension on said belt.

4,411,292

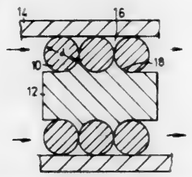
FLUID FLOW RESTRICTOR DEVICE

Arminio Schiller, 15 Hamatmid St., Ramat Gan, Israel

Filed Nov. 30, 1981, Ser. No. 325,732

Int. Cl.³ F15D *1/02*

U.S. Cl. 138—42 **10 Claims**



1. A fluid flow restrictor device including a spiral passageway defined by a closed spiral coil of wire disposed between an inner member contacting the inner face of the coil and an outer member contacting the outer face of the coil, there being a fluid inlet at one end of the spiral passageway and a fluid outlet at the other end of the spiral passageway, characterized in that the spirals of the coil are in contact with each other and are unbonded to each other such that they define with at least one of said members a spiral passageway of precise cross-sectional area, and in that at least one of said members is resiliently deformable to increase said cross-sectional area of the passageway and thereby to permit flushing the device.

4,411,293

DEVICE FOR KEEPING CONSTANT BOTH THE SPEED AND THE TENSION WHEN REELING OFF THE WARP THREAD FROM THE WARP BEAM IN A LOOM

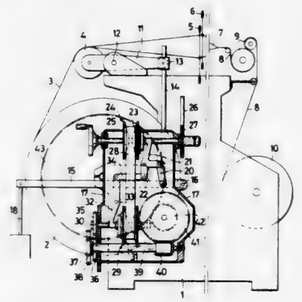
Nicola Santucci, Schio, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Continuation of Ser. No. 882,239, Feb. 28, 1978, which is a continuation of Ser. No. 744,108, Nov. 22, 1976, abandoned. This application Oct. 26, 1981, Ser. No. 315,045

Claims priority, application Italy, Dec. 11, 1975, 30193 A/75

Int. Cl.³ D03D *49/06*

U.S. Cl. 139—110 **1 Claim**



1. A device for keeping constant the speed and the unreeling tension of the warp threads from the warp beam of a loom having a main shaft even when the speed is extremely low comprising:

a first variable-race input sheave mounted on a first rotatable shaft coupled to the loom main shaft and driven thereby,

a second variable-race output sheave mounted on a second rotatable shaft supported by said loom and having one end extending outwardly therefrom,

a V-belt connecting the first and second variable-race sheaves,

a third shaft rotatable mounted on said loom below said second shaft and having one end extending outwardly therefrom having a worm gear located thereon,

interchangeable and readily accessible gear means mounted on the outwardly extending ends of the second and third shafts and connecting the second shaft to the third shaft on the exterior of said loom, said gear means comprising a worm wheel coupled to the warp beam, a set of meshing spur gears, one of said spur gears being mounted on the second shaft with the second variable race sheave and being driven thereby and another spur gear in said set being mounted on a third shaft and having a worm thereon transmitting said drive to the worm wheel to drive said warp beam, and including coupling means engaging the worm gear and the warp beam to drive said warp beam for unreeling of the warp thread at a predetermined constant speed for the particular fabric being woven, a third of said spur gears comprising a pair of integtral, coaxially mounted spur gears drivingly interconnecting said one and said another spur gears and

linkage means directly connected to the two variable-race sheaves and in engagement with the warp threads, said linkage means simultaneously varying the races of the first and second sheaves to maintain the unreeling speed and tension of the warp threads by varying the speed of the warp beam at the output of the second variable sheave, said linkage means comprising a drum onto which the warp threads being unreeled from the warp beam are passed, a rocker supporting the drum at one end, a first bell crank level connected to the second output sheave to vary the races of said sheaves in opposite directions, a counterweight, and connecting means coupled to the other end of the rocker and to the counterweight to permit movement in response to the motion of the drum and wherein the bell-crank levers are connected to said means to vary the races of the sheaves in response to the tension of the warp threads.

4,411,294

METHOD AND APPARATUS FOR INSERTING WEFT FILAMENTS

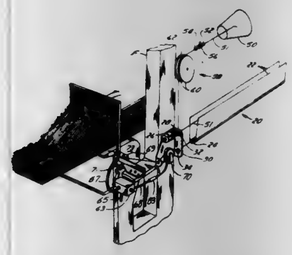
Joseph R. Cornellier, P.O. Box 383, Station K, Montreal, Quebec, Canada

Continuation-in-part of Ser. No. 786,597, Apr. 11, 1977, Pat. No. 4,134,435. This application Jun. 26, 1978, Ser. No. 919,177

Claims priority, application Canada, Mar. 15, 1977, 273991

Int. Cl.³ D03D *47/32*

U.S. Cl. 139—435 **7 Claims**



1. An apparatus for advancing a weft filament, in a weaving apparatus, across warp filaments comprising a source of pressurized liquid, nozzle means for projecting said source of pressurized liquid in a stream across said shed, means for supplying a length of weft filament having a free leading end and in operative relationship to said source of pressurized liquid, whereby said stream of pressurized liquid is adapted to engage said leading end of said filament, means for actuating said source of pressurized liquid to provide a predetermined amount of pressurized liquid in the form of a stream directed across a shed, and means for interrupting the flow of said stream of pressurized liquid before said weft filament traverses the width of the shed, wherein said means for actuating the source of pressurized liquid and the means for interrupting the flow of the stream of pressurized liquid comprises a liquid supply assembly, said liquid supply assembly comprising a conduit leading from said source of pressurized liquid, a valve having a liquid inlet port, first and second liquid outlet ports, and a liquid passageway intermediate said liquid inlet port and said liquid outlet ports, said liquid inlet port being connected to said conduit, and a valve piston mounted in said liquid passageway, said valve piston being adapted to open and close said liquid passageway in conjunction with the motion of the weaving apparatus, said first liquid outlet port being connected to said nozzle, and said second liquid outlet port being in communication with a weft filament gripping means.

4,411,295

DEVICE FOR EQUALLY FILLING A PLURALITY OF CONTAINERS

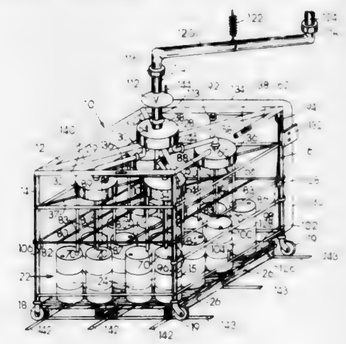
Steven D. Nutter, #4 Cederedge Manor, Imperial, Mo. 63052

Filed Jul. 27, 1981, Ser. No. 287,284

Int. Cl.³ B65B *31/00, 37/18*

U.S. Cl. 141—59 **13 Claims**

1. A device for simultaneously equally filling a plurality of containers from a common source of fluid comprising a primary distributor including a top member having an inlet port positioned centrally thereon for connection to a source of fluid and a bottom member spaced from said top member, said bottom member having a plurality of equally angularly spaced outlet ports each also spaced an equal distance from said central inlet port, first conduit means communicating said inlet port with said common source of fluid, said first conduit means being positioned such that fluid will flow into said primary distributor in a direction substantially equally angularly related to each of said primary outlet ports, a plurality of secondary distributors located in a plane spaced below and parallel to the outlet ports of said primary distributor, each of said secondary distributors including a top member having an inlet port positioned centrally thereon and a bottom member spaced from said top member, each of the bottom members associated with said secondary distributors having a plurality of outlet ports equally spaced both angularly and radially from the inlet port



associated with the top member of each respective secondary distributor, second fluid conduits connecting each of the plurality of the outlet ports of said primary distributor to respective ones of the inlet ports associated with said secondary distributors, said second fluid conduits being of equal length and size and each being connected to respective ones of the inlet ports of said secondary distributors such that fluid will flow from said second fluid conduits into said secondary distributors in a direction substantially equally angulary related to each of the outlet ports of said secondary distributors, and third fluid conduits each having one end portion thereof connected to respective ones of the outlet ports of said secondary distributors for conducting fluid from each of said secondary distributor outlet ports into a respective container to be filled therefrom.

4,411,296

VALVE BAG PLACER

Will G. Durant, Tustin, Calif., assignor to W. G. Durant Corporation, Placentia, Calif.

Continuation-in-part of Ser. No. 155,920, Jun. 3, 1980, Pat. No. 4,334,558. This application Apr. 13, 1981, Ser. No. 253,978

The portion of the term of this patent subsequent to Jun. 15, 1999, has been disclaimed.

Int. Cl.³ B65B *43/18, 43/30*

U.S. Cl. 141—98 **10 Claims**

1. An improved bag placer apparatus for placing a bag or the like having a valve at an end thereof upon a filler spout through which the bag is to be filled with a flowable material, the apparatus of the type having means for withdrawing one such bag at a time from a plurality of such bags and having means for gripping the valve end of the withdrawn bag for opening the valve prior to placement thereof on the filler spout; the improvement comprising:

a bag registration apparatus for receiving each said one bag in a substantially horizontal position from said withdrawing means and for presenting each said one bag to said gripping means, and having means for automatically registering each said one bag for location of said valve end in

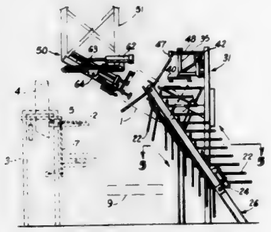
precise position and alignment relative to said gripping means;

wherein said means for automatically registering comprises:

means for utilizing the force of gravity to align a first edge of said bag in a first dimension, and

means for forceably aligning a second edge of said bag in a second dimension, said first and second edges of said bag being perpendicular to one another and lying in the plane of said bag, and

wherein said means for utilizing the force of gravity comprises:



a tiltable table adapted to receive said bag in a sustantially horizontal position and to tilt at an angle with respect to said horizontal position, said angle being sufficient to cause said bag to slide in the direction of said tilt, and

said tiltable table having an indexing means mounted to the top surface of said table for receiving the edge of said sliding bag in substantial alignment therewith, and

means for automatically applying selected indicia to each said bag on said registration apparatus.

4,411,297

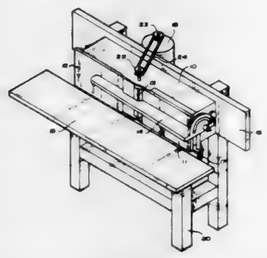
WOOD WORKING JOINTER DEVICE

Armas Veillon, 11925 Mockingbird La., Walker, La. 70785

Filed Oct. 4, 1979, Ser. No. 81,691

Int. Cl.³ B27C *1/02*

U.S. Cl. 144—129 **3 Claims**



1. A workbench for utilizing a small motor driven wood working jointer for the precision planing of edges of wooden workpieces comprising in combination: a support frame having an elongated horizontally disposed table assembly pivotally mounted thereon, at one side of said frame, said table assembly defining means for supporting and guiding a workpiece placed thereon, a vertically disposed upright wall-like member having opposite side faces attached to said support frame at a side opposite said table assembly; power means attached to said upright wall-like member on one side thereof; jointer means mounted on said upright member at an opposite side thereof and being disposed intermediate the length of said table assembly, said jointer means comprising rotatable wood working tool means operatively connected to said power means; and flat jointer face members disposed on opposite sides of said tool, said table assembly and said face members being perpendicularly disposed in non-overlapping relation.

4,411,298

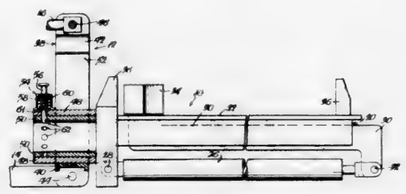
LOG SPLITTER MOUNTING ARRANGEMENT

Raymond L. Ellingsen, Oshkosh, and Dale A. Manteufel, Hortonville, both of Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Oct. 9, 1981, Ser. No. 310,104

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 A **5 Claims**



4. A log splitter arrangement adapted to be mounted on a tractor hitch, comprising:

a log splitter having a linear working action including hydraulic motor means associated with blade means for providing relative linear movement of the blade means and an associated piece of wood to be split,

a hitch adapter adapted to be fixedly mounted on said hitch and supported thereby, and

mounting means for adjustably mounting said log splitter on said hitch adapter including female means on one of said hitch adapter and said log splitter, and male means on the other of said hitch adapter and log splitter, said male means being receivable by said female means, and releasable locking means for releasably locking said male and female means together in one of a plurality of relative dispositions, whereby said log splitter may be repositioned with respect to said hitch adapter about a line generally parallel to the line of working action of the log splitter and then maintained in fixed relation to said hitch adapter by said mounting means.

4,411,299

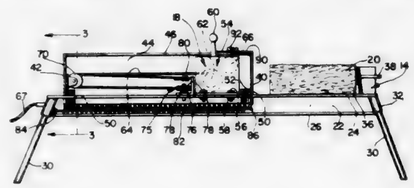
LOG SPLITTER

David K. Alcott, Rehoboth, Mass., assignor to Haulamatic Corporation, East Providence, R.I.

Filed Mar. 8, 1982, Ser. No. 356,194

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—193 R **13 Claims**



1. An apparatus for splitting wood comprising:

a. an elongated track;

b. a wedge mounted on said track;

c. a ram comprising:

(1) an abutment slidingly mounted on said track for movement generally toward and away from said wedge;

(2) a ram drive plate slidingly mounted on said track for movement generally toward and away from said wedge but spaced from said abutment on the opposite side thereof from said wedge; and

(3) connecting means extending between said plate and said abutment communicating movement therebetween; and

d. drive means interposed between said abutment and said plate connected to said plate and to said track at a drive point which is spaced from said plate when said head is spaced from said wedge, said drive means advancing said plate toward said drive point and thereby advancing said head toward said wedge, whereby when a wood log is longitudinally disposed on said track between said head and wedge, the splitting thereof is effected by the advancement of said abutment with said drive means.

4,411,300

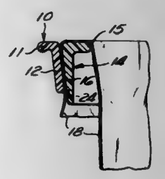
FLEXIBLE BAG WITH FRAME

Ezequiel Rico, 18092 Pamela Pl., Villa Park, Calif. 92667

Filed Jul. 18, 1980, Ser. No. 170,188

Int. Cl.³ B65D *33/14*

U.S. Cl. 150—51 **9 Claims**



1. An article receptacle, comprising: flexible bag;

an inner frame, sized to permit the mouth of said bag to be inserted through and folded over said inner frame;

an outer frame, independent of said inner frame, having a horizontal top leg with a bottom surface adapted to bear against the surface of a support member, said horizontal top leg terminating in a free end and a side surface oriented at an angle relative to said bottom surface, extending below said bottom surface;

said outer frame being sized, and said inner and outer frames being formed to nest together to permit said inner frame to be freely and easily removed from said outer frame by lifting said inner frame out of said outer frame, and permit said inner and outer frames to frictionally engage said bag therebetween by lowering said inner frame into said outer frame, said frames, when nested, positioned exclusively at the mouth of said bag without extending to the bottom of said bag, and

said inner and outer frames separate from and independent of said support member to allow said bag to be moved to a location remote from said support member without disengaging said bag from said frame.

4,411,301

TIRE TRACTION CHAIN

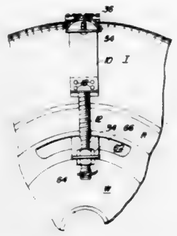
Paul Bindel, 3946 W. North Ave., Chicago, Ill. 60647

Filed Sep. 29, 1982, Ser. No. 428,150

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—213 R **3 Claims**

1. A tire traction chain comprising an arcuate band having an upper face, a pair of spaced permanently set arcuately shaped multiple parallel series of pronged links set cross-wise on said upper face of said band, a third set of multiple series of pronged links anchored flat on said upper face of said band medially between said arcuately shaped multiple parallel series of pronged links and cross-wise on the upper face of said band,



and means to removably anchor said band on an automobile tire.

4,411,302

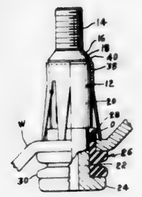
SNAP-IN TIRE VALVE

Harold A. Kuypers, Nashville, Tenn., assignor to Scovill Inc., Waterbury, Conn.

Filed Sep. 28, 1981, Ser. No. 306,286

Int. Cl.³ B60C *29/00*

U.S. Cl. 152—427 **1 Claim**



1. A tire valve comprising a rigid tubular body having an enlarged base and formed with a groove spaced from the base, gasket means having an annular flange portion and a tapered longitudinal extension surrounding the body adjacent the base, and an annular spring C-shaped clip surrounding and engaging the body in the groove and having a plurality of straight tapered spring fingers narrowing as their distal ends are approached extending outward and generally toward the base, whereby the valve can be inserted into a rim hole opening, smaller end first, so that the fingers flex inward toward the center of the valve until they are through the opening and then spring outward to trap the valve in the opening with the gasket in compressive sealing relation to the rim.

4,411,303

SAND MOLD-PRODUCING APPARATUS

Toshiyuki Shioda, Oobu, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Sep. 29, 1980, Ser. No. 191,422

Claims priority, application Japan, Oct. 1, 1979, 54-126964; Oct. 1, 1979, 54-126965; Jul. 10, 1980, 55-98372[U]

Int. Cl.³ B22C *15/28, 17/00*

U.S. Cl. 164—182 **7 Claims**

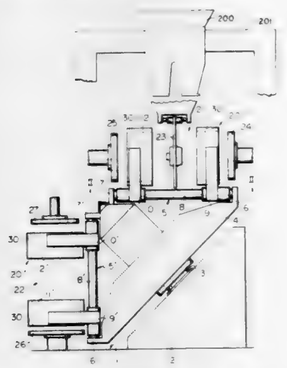
1. A sand mold-producing apparatus having a rigid base to establish therearound a mold-forming station and a mold-removing station, a sand blower means arranged in the mold-forming station for supplying molding sand under a pressure of air, a match plate carrying thereon a pattern or patterns and arranged to be movable in a predetermined direction perpendicular to the match plate, a flask device mounted on the base for holding a flask assembly for molding sand molds in the mold-forming station, and a sand-squeezing means having squeeze plates and actuator means for actuating a squeezing motion of the squeeze plates, wherein one squeeze plate re-

mains stationary during the sand squeezing operation, the sand-squeezing means being arranged in the mold-forming station for cooperating with the match plate and the flask assembly, wherein said flask assembly comprises:

a guide means fixedly held on said flask device and extending in a direction perpendicular to said match plate;

a pair of molding flasks for an upper and lower sand mold, said molding flasks being mounted on said guide means and slidable along said guide means from a predetermined first position in which said molding flasks are spaced apart from one another, toward a predetermined second position in which said molding flasks sandwich therebetween said match plate; and

a flask mover for mechanically interconnecting between said molding flasks while actuating a simultaneous slide motion of said pair of molding flasks, said flask mover being held by said flask device so as to be movable together with said match plate and said pair of molding flasks in said predetermined direction perpendicular to the match plate, wherein said flask mover comprises a single piston rod axially movably held on a bracket provided at one end of said flask device; a portion of the piston rod cooperating to urge piston rod passing through elastic means mounted on a side bracket, said elastic means and said portion of the piston rod cooperating to urge said piston rod toward the side of said bracket having said elastic means mounted thereon; a pair of spaced apart pistons arranged on said piston rod; and a pair of fluid-actuated cylinders slidably mounted on said piston rod, each of said pair of fluid-actuated cylinders housing therein one of said pistons and being connected to one of said molding flasks wherein the flask mover together with the match plate and the molding flasks are movable against the force of the elastic means in direct response to the squeezing movement of the sand-squeezing means, said pistons and cylinders being disposed on a side of said bracket remote from said elastic means.



4,411,304

DRIVING ROLLER STAND FOR CONTINUOUS CASTING PLANTS

Johannes Cordella, Linz, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

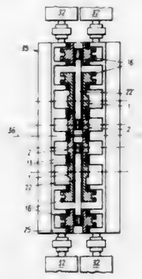
Filed Apr. 6, 1981, Ser. No. 251,246

Claims priority, application Austria, Apr. 15, 1980, 2026/80

Int. Cl.³ B22D *11/12*; B60B *15/16*

U.S. Cl. 164—448 **5 Claims**

1. In a driving roller stand arrangement for continuous casting plants having at least two adjacently arranged strand guides for casting at least two strands and comprising at least one separately driven drive roller for each strand, each driving roller being separately journaled on said driving stand, the arrangement including a first hollow driving roller having a first hollow driving element associated therewith, which first driving roller and first driving element define a hollow construction unit, a second driving roller having a second driving element associated therewith and being arranged coaxially with said first driving roller, and a driving shaft for driving said second driving roller, said driving shaft penetrating through said hollow construction unit, the improvement wherein:



said second driving roller and said second driving element are hollow and said driving shaft extends therethrough, and wherein there are provided within said second driving roller and said second driving element releasable engagement means which engage cooperating means on said driving shaft for rotation therewith, removal of said driving shaft simultaneously disengaging said second driving roller and said second driving element.

4,411,305

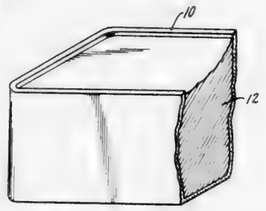
METAL FOUNDING

Robert H. Beetle, Mountain Lakes, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,110

Int. Cl.³ B22C *1/00*

U.S. Cl. 164—529 **7 Claims**



1. A foundry method comprising the step of casting molten metal into a rigid mold cavity represented by metal-confining exterior walls surrounding the mold cavity and substantially uniformly composed of a glass-ceramic in which the predominant microstructure is polycrystalline ceramic converted from the glassy state by devitrification, said polycrystalline ceramic existing as a single phase microstructure, said walls dissipating the heat of the casting in part by radiation, and repeating said step for a second casting of molten metal using the same mold.

5. A foundry mold having metal-confining walls extended entirely about a mold cavity and composed substantially uniformly of a glass-ceramic in which the predominant microstructure is a polycrystalline ceramic converted from a glassy state of devitrification, said polycrystalline ceramic existing as a single phase microstructure, and the interior surface of the mold walls being coated with a mold wash.

4,411,306

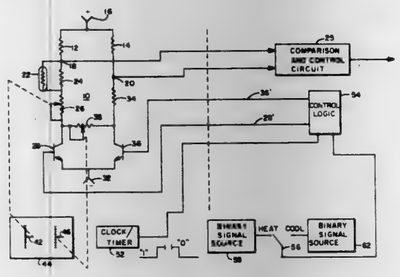
THERMOSTAT WITH IMPROVED TEMPERATURE SENSING CIRCUIT

John L. Kabat, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 29, 1981, Ser. No. 268,530

Int. Cl.³ F28F *27/00*

U.S. Cl. 165—12 **1 Claim**



1. A thermostat with an improved temperature response circuit comprising in combination:

a temperature responsive circuit, said circuit having two power supply terminals with a temperature sensitive impedance in one circuit branch between said terminals and a calibration impedance in another circuit branch between said terminals;

a variable, set point, offset impedance;

a set point, offset control coupled to said offset impedance;

a control logic circuit;

means for selecting heating and cooling operating modes;

first means coupled to said logic circuit for producing an output signal of one binary significance when said heating mode is selected;

second means coupled to said logic circuit for producing an output signal of the other binary significance when a cooling mode is selected;

a timing circuit coupled to said logic circuit and producing a cyclical output signal of one binary significance for part of a cycle and the other binary significance for part of said cycle;

said logic circuit producing, respectively, a first control output, a second control output, or a third control output in response to the binary state of the output of said timing means, and the output of said first means and said second means; and

means responsive to said logic circuit outputs to connect said variable set point offset impedance in series with said temperature sensitive impedance in response to said first output, or in series with said calibration impedance in response to said second output.

4,411,307

WOUND TUBE HEAT EXCHANGER

Amir L. Ecker, Duncanville, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 29, 1981, Ser. No. 229,331

Int. Cl.³ F28D *7/02*

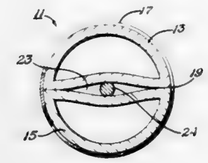
U.S. Cl. 165—70 **2 Claims**

1. A double wall heat exchanger comprising:

a. a plurality of discrete conduits defining separate flow paths for respective fluids; said conduits having thin, heat conductive walls and being disposed contiguous another conduit; said conduits comprising a pair of conduits having respective D-shaped cross-section with the flattened areas of the D being placed back to back and contiguous each other for significant contact area rather than a mere line contact;

b. a plurality of windings per unit length holding said plurality of conduits in a bundle; said plurality of windings reinforcing said thin wall conduit walls and having respective tensile forces compressively holding said plurality of conduits contiguous adjacent conduits with said plurality of windings effecting a plurality of respective effective force vectors per unit length; and

c. a lineal member traversing longitudinally intermediate the contiguous flattened areas.



4,411,308

VAULTED COVER ASSEMBLY TO CLOSE A VERTICAL RECESS IN A PRESSURE VESSEL

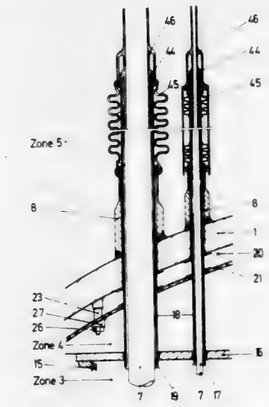
Reinhold Koerdt, Hemsbach; Hans-Georg Schwiers, Ketsch, and Josef Schoening, Hambruecken, all of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 20, 1981, Ser. No. 284,796

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027510

Int. Cl.³ F28F *9/00*; F22B *37/20, 37/24*

U.S. Cl. 165—70 **21 Claims**



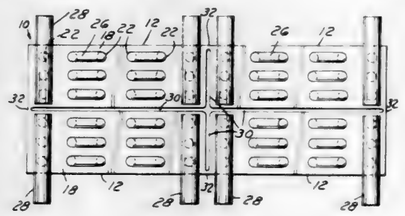
1. Vaulted cover assembly to close a vertical recess in a pressure vessel comprising a plurality of fittings welded to a cover member for the passage of steam pipes and having thermal insulation applied on the inside of the cover member, a support frame placed on a flange located within the recess in the vicinity of the cover member, said support frame consisting of at least one cylindrical section surrounding all of the steam pipes, and a horizontal plate covering the cylindrical section on top and having orifices for the steam pipes, each of said steam pipes being surrounded by a protective tube in the zone defined by said horizontal plate and said cover member, and forming an annular gap wherein said protective tubes are drawn on one side at least into the fittings and guided on the other side through the horizontal plate wherein said annular gaps between the steam pipes and the protective tubes are communicating at their lower ends with the space underneath the horizontal plate of the support frame.

4,411,309

HEAT EXCHANGER ASSEMBLY

Harold E. Kunkel, East Detroit, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Mar. 16, 1981, Ser. No. 244,459
Int. Cl.³ F28F 9/00
U.S. Cl. 165—76 **4 Claims**



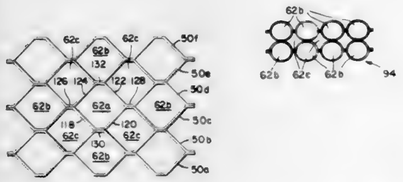
1. A heat exchanger arrangement comprising a plurality of individual heat exchanger assemblies, each including a separate fin pack confined between a pair of unitary end plates, a plurality of openings formed in said end plates, a plurality of tubes extended through said openings, a plurality of end segments interconnecting adjacent pairs of tubes of each heat exchanger assembly, said plurality of individual heat exchanger assemblies being arranged as a predetermined number of adjacent pairs, and connector means integrally interconnecting adjacent end plate outer corners only of each adjacent pair of assemblies.

4,411,310

HEAT EXCHANGE APPARATUS HAVING THIN FILM FLEXIBLE SHEETS

Clifford R. Perry, Renton; Lloyd H. Dietz, Seattle, and Roger L. Shannon, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 894,255, Apr. 7, 1978, abandoned. This application Oct. 24, 1980, Ser. No. 200,510
Int. Cl.³ F28F 3/00
U.S. Cl. 165—166 **16 Claims**



1. A heat exchange apparatus adapted for use either as a counterflow heat exchanger, a coflow heat exchanger or a condenser/evaporator type heat exchanger, said apparatus comprising:

a. a unitized heat exchanger structure, having a longitudinal axis, a lateral axis, and a vertical axis, said apparatus comprising:

1. a plurality of thin film flexible sheets aligned longitudinally and laterally with one another and spaced veritically from one another;

2. alternate pairs of said sheets being bonded one to another along a plurality of first longitudinally extending bond lines, positioned at predetermined laterally spaced first locations across said sheets;

3. intermediate pairs of said sheets being bonded one to another along a plurality of second longitudinally extending bond lines positioned at laterally spaced second locations across said sheets, each of said second bond lines being positioned laterally intermediate each of said first locations, each of said intermediate pairs of sheets being made up of adjacent sheets of adjacent alternate pairs of said sheets;

4. said sheets being arranged in an expanded pattern defining a plurality of generally diamond-shaped passageways arranged in vertical and lateral rows with respect to one another, each of said diamond-shaped passageways which are positioned in an interior location in said unitized structure being defined by four diagonally oriented single thickness sheet portions and two laterally oriented continuously and longitudinally extending double thickness bonded sheet portions;

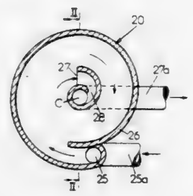
b. means operatively connected to said unitized structure to direct a first heat exchange medium through a first set of alternately spaced rows, and to direct a second heat exchange medium through a second set of intermediate rows positioned alternately with the rows of the first set, whereby heat exchange is able to take place between said heat exchange medium across said diagonally oriented single thickness sheet portions.

4,411,311

HEAT EXCHANGE DEVICES FOR COOLING THE WALL AND REFRACTORY OF A BLAST-FURNACE

Francois Touze, Chateau de Logne, 57310 Guenange, France

Continuation-in-part of Ser. No. 120,912, Feb. 12, 1980, abandoned, which is a division of Ser. No. 906,210, May 15, 1978, Pat. No. 4,210,101. This application Apr. 1, 1981, Ser. No. 249,843
Claims priority, application France, May 25, 1977, 77 15939; Apr. 2, 1980, 80 07506
Int. Cl.³ F28F 3/14
U.S. Cl. 165—170 **17 Claims**



1. A heat exchanger comprising: a body having an inner chamber for the circulation of heat-transfer fluid, said chamber being shaped substantially as a chamber of revolution defined by first and second end walls and a curved peripheral wall extending therebetween, said first and second end walls being spaced from one another such that said chamber is substantially flat in shape, at least the first end wall being a heat-transfer wall; a supply port and a discharge port for the heat-transfer fluid, the ports being spaced-apart radially, the supply port being arranged and positioned to supply the heat-transfer fluid tangentially into the chamber and the discharge port being arranged and positioned to discharge the heat-transfer fluid tangentially from the chamber, so that, in use, the fluid flows between the ports in a spiral path over the inner surface of the first end wall, the chamber being free of internal obstacles to such flow.

4,411,312

WATER-TIGHT CONDUIT WELL CAP

Donald H. English, Mount Herman, N.J., assignor to Hewing Manufacturing Corporation, Columbia, N.J.

Filed Aug. 26, 1980, Ser. No. 181,875
Int. Cl.³ E21B 33/02, 41/00
U.S. Cl. 166—75 R **12 Claims**

11. A pipe cover comprising:

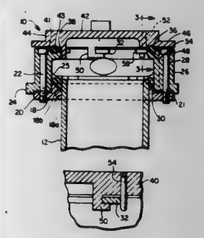
a base member,

means on an outer surface of said base member for attaching said base member to an end of a pipe,

cap means for covering said base member and said end, and having a hole for receiving a pin,

said cap means having means for securing said base to said cap means for one rotational position of said cap means with respect to said base member, and for releasing said base member for another rotational position,

said cap means having means for covering said means for attaching to prevent said means from being removed from



said pipe when said cap means is in said one rotational position, and for uncovering said means for attaching when said cap means is in said another rotational position, and

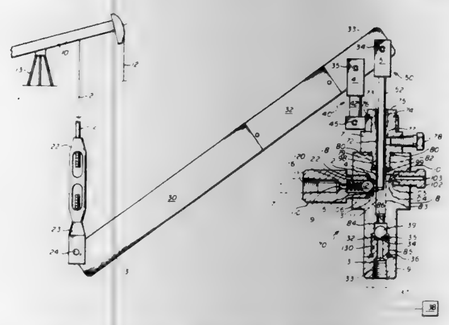
a pin for extending through said hole in said cap means to prevent relative rotation between said cap means and said base member when said cap means is in said one rotational position.

4,411,313

PUMP

J. Wallace Johnson, New Caney, and A. B. M. Abdul Hye, Kingwood, both of Tex., assignors to Liquid Level Lectronics, Inc., Houston, Tex.

Filed Oct. 19, 1981, Ser. No. 312,509
Int. Cl.³ E21B 43/00
U.S. Cl. 166—90 **2 Claims**



1. A device for pumping production enhancing fluids from a fluid source into a well, said device comprising:

housing member having a bore therein forming a fluid reservoir and a fluid entry and a fluid exit port;

plunger means reciprocatingly insertable into one end of said bore;

means for providing production enhancing fluid from a fluid source to said fluid entry port;

means for evacuating said production enhancing fluid from said bore through said exit port, whereby said evacuated fluid subsequently enters said well;

both said means for providing and evacuating said fluid include said plunger means; and

means linking said housing member and said plunger means to a reciprocatable member of a production pump, said linking means comprising;

(1) connector member pivotally connected, near one end, to cable means, said cable means being connected to and reciprocating with said reciprocatable member of said production pump, said connector member also being pivotally connected to one end of said plunger means, and

(2) connecting rod pivoted at one end to said connector member intermediate said connector member's connections with said cable means and said plunger means said connecting rod being secured to said housing member by yoke means, said yoke means including an apertured portion permitting free relative rotation between said housing member and said yoke means; and

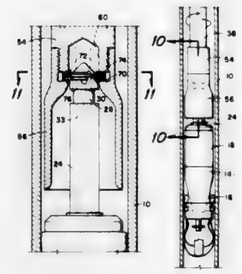
(3) means preventing relative axial movement between said housing member and said yoke means.

4,411,314

ATTACHMENT MEANS FOR USE FOR INSERTION AND RETRIEVAL OF A CASING PACKER

Billy G. Shearhart, Nowata, Okla., assignor to Sooner Oil Tools, Inc., Nowata, Okla.

Filed Jul. 27, 1981, Ser. No. 287,366
Int. Cl.³ E21B 23/00
U.S. Cl. 166—124 **3 Claims**



1. For use with a retrievable packer positionable in a casing in which the packer has a vertical axial member extending upwardly therefrom, the packer being set by the rotation of the axial member in one direction and released from sealed relationship with the casing by rotation in the other direction, a retrieval tool for use on the lower end of a tubing string for releasing and retrieving the packer comprising:

an upstanding male location member having a non-circular peripheral configuration and having spaced from the upper end thereof an external circumferential groove of selected height, the lower end being affixable to the upper end of a packer axial member;

a retrieval tool of external diameter less than the interior diameter of the casing in which it is used and having means at the upper end for attachment to the lower end of a string of tubing extending from the earth's surface, the retrieval tool having an upper internal recess communicating with the tool open bottom, the recess being configured to slidably and non-rotatably receive the upper end of said male location member, the recess being defined in part by an internal, enlarged diameter groove of selected height so that when the upper end of said male location member is received in the recess in the retrieval tool, the grooves are in register; and

a plurality of clips each configured as the segment of a washer having thickness less than the height of said grooves in said location member and said retrieval tool, the clips being positioned in said internal recess in said retrieval tool and expandably outwardly in the groove to permit the upper end portion of said location member to pass and, when said groove on said location member is in register, to enter into the groove thereon whereby each

clip extends partially within both said grooves to axially lock said retrieval tool to said location member; and

means to resiliently inwardly bias said clips.

4,411,315

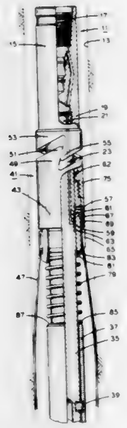
DRAG SPRING UNIT

Randy S. Baker, Long Beach, Calif., and H. R. Price, Calgary, Canada, assignors to Hughes Tool Company, Houston, Tex.

Filed Jun. 29, 1981, Ser. No. 278,915

Int. Cl.³ E21B *23/04, 23/06*

U.S. Cl. 166—187 **6 Claims**



1. An improved drag spring unit for well bore drill stem test tools of the type having an inflatable packer and an integral pump, said pump being activated by rotation of the drill stem in the well bore to inflate said packer, wherein the improvement comprises:

an outer drag spring housing;

an inner mandrel slidably received within said drag spring housing; and

clutch means associated with said outer housing and inner mandrel, said clutch means being positionable by sliding said inner mandrel within said drag spring housing between an engaged position which allows torque transmitted to said drag spring housing to be transmitted through the drill stem to said pump and a disengaged position which prevents transmission of torque.

4,411,316

SUBTERRANEAN WELL VALVE WITH LOCK OPEN MECHANISM

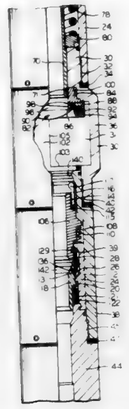
Michael A. Carmody, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Feb. 9, 1981, Ser. No. 232,473

Int. Cl.³ E21B *34/10*

U.S. Cl. 166—323 **12 Claims**

1. A valve assembly adaptable for mounting on a tubular conduit in a subterranean well, comprising, in combination: an annular housing defining a fluid flow path; a valve within said housing including annular valve seat means, and valve head means shiftable between open and closed position cooperating with said valve seat means to close said valve and said fluid flow path; first biasing means for urging said valve head means to closed position; shiftable valve actuating means for opening and holding open said valve against the bias of said biasing means; means for shifting said valve actuating means downwardly to open said valve head mean and means for shifting said valve actuating means upwardly for closing said valve head means; and releasable latch means for locking said valve actuating means in the open valve position, said latch means being shiftably mounted within said housing upstream of said



valve, said latch means being selectively passive to and during shifting of said valve actuating means.

4,411,317

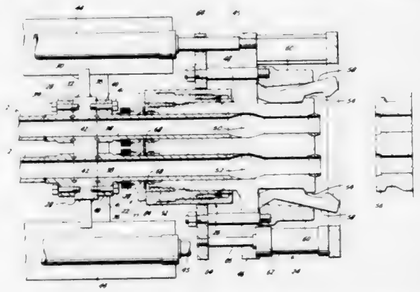
FLOWLINE CONNECTOR

Jimmie T. Gieswein, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Nov. 2, 1981, Ser. No. 317,297

Int. Cl.³ E21B *43/013*

U.S. Cl. 166—347 **13 Claims**



1. A flowline connector for connecting between aligned, fixed, spaced-apart flowlines comprising

a flow tube having means for connecting to one of said flowlines,

a connector member surrounding and being slidably mounted on said flow tube and having a collet flange to mate with a collet flange on the other of said flowlines,

means for extending and retracting said connector member with respect to said flow tube,

means for remotely connecting the collet flange of said connector member to the collet flange on the other of said flowlines after said connector member has been extended into engagement with the other of said flowlines,

a metal seal ring for sealing between said flow tube and said connector member, and

pressure responsive means for actuating said seal ring to a releasable sealing position.

4,411,318

FIRE-EXTINGUISHING WASTE RECEPTACLE

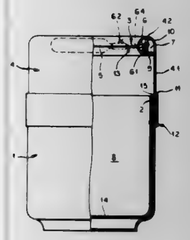
Walter Zeischegg, Turmstr. 43, 7910 Neu-Ulm, and Bernd Brussing, Öschwende 38, 7900 Ulm, Donau, both of Fed. Rep. of Germany

Filed Jul. 22, 1981, Ser. No. 285,750

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1980, 3027813

Int. Cl.³ A62C *35/02*

U.S. Cl. 169—26 **10 Claims**



1. A waste receptacle comprising:

an upwardly open vessel having an upper rim;

an annular head piece fittable over said rim and forming a vertically throughgoing waste-passing mouth;

a container in the form of a gas bottle mounted on said rim and holding a pressurized substance which when released at ambient pressure forms a gas that does not support combustion and that is heavier than air, said head piece forming an annular chamber containing said gas bottle;

a heat-conducting nozzle carried on said rim, connected to said container, and opening into said vessel;

a plug of fusible material blocking said nozzle and having a melting point below 80° C.

4,411,319

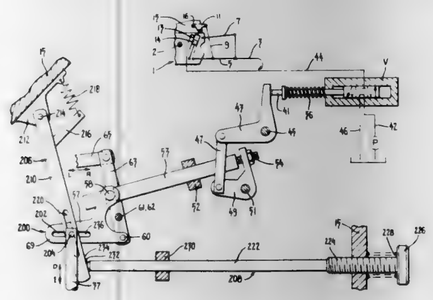
SENSITIVITY ADJUSTING APPARATUS FOR TRACTOR DRAFT SENSING AND CONTROL SYSTEM

Dale A. Wood, Canton, and Lee E. Elfes, Bloomfield Hills, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.

Filed Aug. 2, 1978, Ser. No. 930,486

Int. Cl.² A01B *63/112*

U.S. Cl. 172—10 **12 Claims**



1. A senstivity adjusting apparatus for adjusting the sensitivity of a tractor draft sensing and control system provided with a draft sensing mechanism and a draft control linkage, the draft sensing mechanism including a tractor housing (15) having spaced apart fulcrum supports, an elongated bendable shaft (17) mounted in the spaced apart fulcrum supports, draft members (5) connected to said shaft at points spaced outwardly of said tractor housing and operable to cause said shaft to bend when transmitting forces to said shaft, an elongated sensing arm assembly (27, 28) having a free end (31) and another end which is mounted on said elongated bendable shaft, and means to measure the movement of said free end, said measuring means including an output link (37) shiftable along its length in response to changes in draft; the draft control linkage having an input arm (69) mounted for movement about a pivot (60); wherein the improvement comprises:

interconnecting structure on an upper end portion of said output link (37); and

spaced apart connection locations (234, 236) on said input arm to which said interconnecting structure may be connected to vary the sensitivity of the draft control system.

4,411,320

EDGING TOOL

Richard M. Hass, Portland, Oreg., assignor to Phyllis W. Hass, Tigard, Oreg.

Filed Mar. 8, 1982, Ser. No. 356,119

Int. Cl.³ A01B *3/06, 1/12*

U.S. Cl. 172—13 **1 Claim**



1. An edging tool comprising

(a) a flat blade having upper and lower edges,

(b) a handle secured to said blade centrally of the upper edge thereof,

(c) said lower edge consisting of a pair of cutting edges leading upwardly from a central point at an angle to each other,

(d) said upper edge consisting of a pair of straight stepping edges leading downwardly from said handle at an angle to each other,

(e) said stepping edges being substantially parallel with the opposite cutting edge,

(f) said cutting edges comprising scallop-type serrations formed by a pair of defining edges extending substantially at 90° to each other,

(g) a first of said defining edges leading laterally of said blade in a direction substantially parallel with said stepping edge on the same side thereof and said other defining edge extending at approximately 90° from said first defining edge and also inwardly of said cutting edge.

4,411,321

CULTIVATING IMPLEMENTS

Allan Riach, Ayton Mains, Eyemouth, Berwickshire, Scotland

Continuation of Ser. No. 181,238, Aug. 25, 1980, abandoned. This application May 27, 1982, Ser. No. 382,563

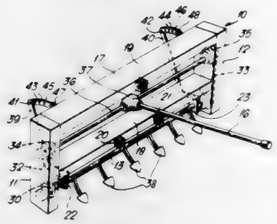
Claims priority, application United Kingdom, Aug. 25, 1979, 7929681; Jan. 30, 1980, 8003169

Int. Cl.³ A01B *33/02, 13/00*

U.S. Cl. 172—40 **7 Claims**

1. A cultivating implement adapted to be mounted from a ground-travelling vehicle, said implement comprising a frame having transversely spaced and opposed members, bearing means carried by said members, stub shafts adapted to be driven from a prime mover and supported in said bearing means in axial alignment along a generally-horizontal trans-

verse axis, a tine-carrying bar supported at opposite ends between said stub shafts for gyrating motion in a cylindrical path about said transverse axis in a direction counter to the direction of forward rotation of the ground wheels of a vehicle mounting the implement, the tines carried by said bar extending generally downward therefrom and having tips to which gyratory movement about a circular path wholly below said transverse axis and concentric with a second axis paralleling said transverse axis is imparted by said gyrating motion, the direction of tip movement below said second axis being the same as the forward direction of travel over the ground of a vehicle mounting the implement and being such as then to cause the tines to effect fast digging motions into the ground.



4,411,322

CULTIVATING MACHINE ROTOR

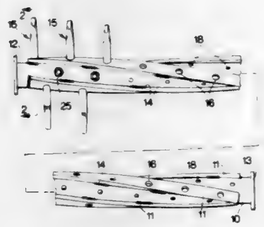
Barry A. Linger, Norfolk, England, assignor to Howard Machinery Limited, Harleston, England

Filed May 22, 1981, Ser. No. 266,154

Claims priority, application United Kingdom, May 29, 1980, 8017639

Int. Cl.³ A01B *33/14*

U.S. Cl. 172—540 **6 Claims**



1. A cultivating machine rotor comprising: a cylindrical wall forming a hollow rotary shaft of circular cross section; a fixing element consisting of a bar wrapped helically around and along the exterior of the shaft and secured to the shaft along its length; bores in and spaced along the fixing element; a first bore and a second bore in said cylindrical wall, each of said first and second bores being aligned with a bore in the fixing element and lying on opposite sides of the shaft; cultivating tools each with a shank arranged to be received in the aligned bores of the fixing element and the shaft so that the shank extends through the fixing element and bores radially of the shaft from one side of the shaft to the other and has an end portion protruding from said other side, and a working portion of each tool extending from the shank outwardly of the fixing element so the tools lie in a helical arrangement around the shaft; and securing means for each cultivating tool engageable with the aforesaid end portion of the shank.

4,411,323

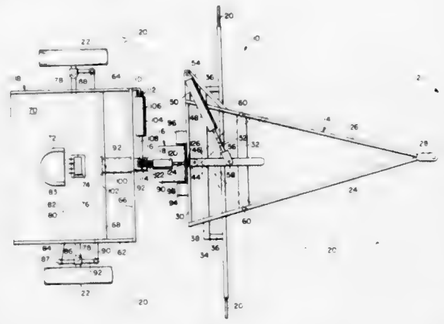
GRADING MACHINE

Harry L. Doss, Hill Church Rd., Tifton, Ga. 31794

Filed Jul. 13, 1981, Ser. No. 282,509

Int. Cl.³ E02F *3/76*

U.S. Cl. 172—799.5 **19 Claims**



1. A grading machine comprising a main blade support frame, a center connecting frame and a rear wheel support frame, said main frame extending longitudinally between a forward and a rearward end and having means for coupling the forward end to a vehicle, said center connecting frame being pivotably coupled to the rearward end of said main frame about a generally horizontal axis extending in a first direction transverse to the longitudinal direction of said main frame, and said center frame being pivotably coupled to said rear frame for motion about a second generally horizontal axis extending in said longitudinal direction whereby said rear wheel support frame is coupled to said main blade support frame for pivotal motion about two generally horizontal axes perpendicular to one another by way of said separate center connecting frame, a grading blade, means for connecting said grading blade to said main frame for pivoting motion about a vertical axis, ground contacting wheels carried by said rear wheel support frame, first powered means coupled between said main and center frames for pivoting said main frame about said first horizontal axis to adjust the vertical height of said grading blade with respect to the ground and said rear frame, and second powered means coupled between said rear and center frames for pivoting said main frame about said second horizontal axis to adjust the tilt of said grading blade.

4,411,324

BORE UNDERCUTTING TOOL

Heinrich Liebig, Wormser Strasse 23, 6102 Pfungstadt, BRD, Fed. Rep. of Germany

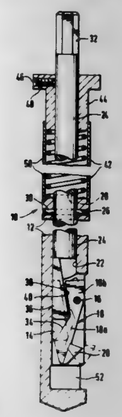
Filed Jun. 29, 1981, Ser. No. 278,558

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024656

Int. Cl.³ E21B *10/32*

U.S. Cl. 175—289 **12 Claims**

1. An undercutting tool for producing an undercut in a pilot bore of relatively small diameter in masonry, concrete, rock and the like; said tool having a tool shaft adapted to be inserted into the pilot bore and adapted to be driven in rotation, a single cutting tool having a cutting edge and so disposed in one end section of the shaft to be inserted into the bore that the cutting edge, after insertion of the tool shaft into the pilot bore, can be displaced gradually radially outwardly into the wall of the pilot bore, said cutting tool being disposed on a cutting tool holder in the form of a two-armed lever pivotingly mounted in a longitudinally disposed, slot-like recess which is open on one side only to the circumferential surface of said end section of the tool shaft, said cutting tool holder being adapted to be pivoted from a retracted position wherein said cutting tool is retracted into the slot-like recess to a protruding position wherein said cutting tool protrudes from the tool shaft, a cutter feed shaft mounted so as to be longitudinally displaceable by a certain amount and co-rotationally in the tool shaft, said feed shaft having an outer end portion extending from the bore-outer end of the tool shaft, and a bore-internal end portion for engagement with said cutting tool holder, said cutting tool holder in the form of a two-armed lever having a backside opposite the cutting tool and a bore-internal first lever arm, a thrust surface on said first lever arm and running at an angle to the direction of displacement of the cutter feed shaft, a cutter



feed cam formed on the bore-internal end of the cutter feed shaft which cam is supported on the closed side opposite said one open side of said slot-like recess and adapted to engage said surface and, which, upon the displacement of the cutter feed shaft relative to the tool shaft into the bore interior, rocks the first lever arm of the cutting tool holder out of the recess of the tool shaft with an increasingly larger lever arm, said cutting tool holder having a second lever arm the backside of which has a thrust surface running at a slant opposite that of said first lever arm, which is engaged by the cutter feed cam upon a displacement of the cutter feed shaft relative to the tool shaft out of the bore interior.

4,411,325

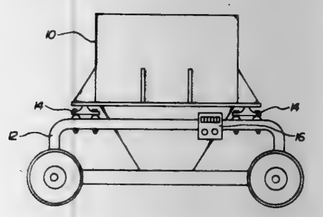
LOAD BAR MOUNTING ASSEMBLY

Martin W. Hamilton, Arlington Heights, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Mar. 8, 1982, Ser. No. 355,706

Int. Cl.³ G01G *21/02*

U.S. Cl. 177—136 **20 Claims**



1. A load bar mounting assembly for mounting end portions of a load bar on a supporting structure which end portions each have a lower surface and define an aperture therethrough, the mounting assembly comprising:

a fulcrum member having a base side which is adapted to engage the supporting structure, a fulcrumming surface which is adapted to engage the end portion lower surface, and defining a fulcrum member aperture extending therethrough;

an elongated connecting means having an elongated central portion which is adapted to extend through the end portion aperture and the fulcrum member aperture, an enlarged portion adjacent one end for constraining separating movement of the end portion lower surface and the fulcrum surface, and a connecting means adjacent the other end which is adapted to be connected with the supporting structure; and,

a resilient interconnecting means which is disposed adjacent at least a part of the elongated central portion and the enlarged portion and which is adapted to engage the load bar end portion adjacent the end portion aperture for resiliently interconnecting the load bar end portion and the elongated connecting means.

4,411,326

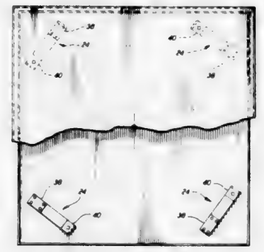
PLATFORM SCALE

Vernon Siegel, 5120 Brookfield La., Clarence, N.Y. 14031

Filed Feb. 4, 1981, Ser. No. 231,471

Int. Cl.³ G01G *3/14, 3/08*

U.S. Cl. 177—211 **3 Claims**



1. A platform scale comprising a base member having a central point; at least three elongated transducers having two ends operatively mounted upon said base member by one of their ends, said transducers being substantially equally spaced apart and having their mounted ends substantially the same radial distance from said central point and being tangentially arrayed with respect to said central point; the other end of said transducers carrying platform mounting means; and a platform mounted upon said platform mounting means.

4,411,327

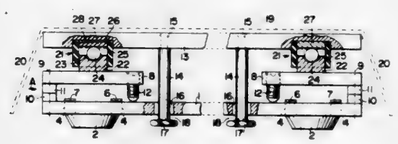
APPARATUS FOR APPLYING A LOAD TO A STRAIN GAGE TRANSDUCER BEAM

Harry E. Lockery, Sudbury, and Eric Laimins, Belmont, both of Mass., assignors to Hottinger Baldwin Measurements, Inc., Framingham, Mass.

Filed May 14, 1981, Ser. No. 263,505

Int. Cl.³ G01G *3/14*; F16C *17/00*

U.S. Cl. 177—211 **8 Claims**



1. An apparatus for applying a load to a strain gage transducer beam in a platform scale, comprising first platform means (1), strain gage transducer beam means (3) forming integral components of said first platform means (1), second platform means (13) arranged above and substantially in paral-

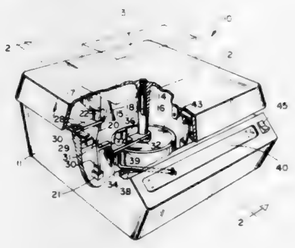
lel to said first platform means (1), force transmitting bar means (8), connecting means located between said first and second platform means for operatively securing said force transmitting bar means to the respective integral transducer beam means (3), first curved surface means (23) including at least one cup having a depression having a given radius of curvature, said cup being arranged between said first and second platform means, second curved surface means (24) including a ball having a radius of curvature smaller than said given radius of curvature of said depression, said second curved surface means (24) also being arranged between said first and second platform means for contacting said depression in said first curved surface means, and means operatively securing said cup to one of said platform means for cooperation with the ball for transmitting vertical force components effective on said second platform means (13) through said force transmitting bar means to said transducer beam means, said first and second curved surface means further cooperating for substantially freely yielding to any horizontal or angular force components effective on said platform means when the platform means shift horizontally due to a reduction in the axial length of the beam due to its deflection to thereby prevent such horizontal or angular force components from affecting the sensing by said integral strain gage transducer beam means while simultaneously transmitting said vertical force components.

4,411,328

LOW RANGE AUTOMATIC WEIGHING DEVICE

David W. Hubbard, Stamford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 24, 1982, Ser. No. 361,310
Int. Cl.³ G01G *1/29*
U.S. Cl. 177—212 **15 Claims**



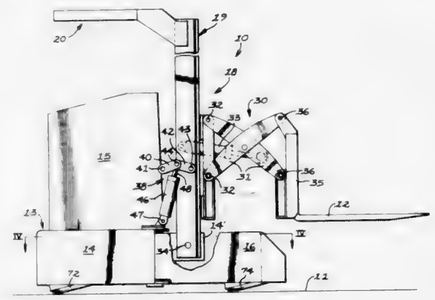
1. A weighing device comprising:
a frame;
a pan element for supporting a load to be weighed;
means connected to said pan for retaining a plurality of weight elements in a vertically movable manner;
a motor supported within said frame;
a shaft member operatively connected to and extending from said motor including means to support said pan element;
a plurality of collapsible support members, each of said support members secured at one end thereof to said frame and each having at their opposite ends means adapted to receive and lift one of said weight elements when said member is in an extended and non-collapsed position;
a camming arm secured to said shaft member and extending in a direction toward said support members; and
switching means for energizing said motor when said pan is depressed by a weighted load said motor turning said shaft member and guiding said camming arm into contact with successive collapsed support members in a step-by-step manner to place a number of said support members in an extended position and lift a corresponding number of said weights substantially equal to the weight of said load.

4,411,329

VEHICLE WITH MULTI-DIRECTIONAL MOVEMENT CAPABILITIES

Robert N. Stedman, Chillicothe, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/00028, § 371 Date Jan. 11, 1982, § 102(e) Date Jan. 11, 1982, PCT Pub. No. WO83/02431, PCT Pub. Date Jul. 21, 1983
PCT Filed Jan. 11, 1982, Ser. No. 355,098
Int. Cl.³ B62D *57/00*; B60B *19/00*
U.S. Cl. 180—7 R **47 Claims**



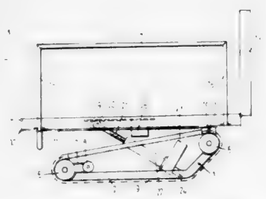
1. A vehicle (10) comprising:
a frame assembly (13);
a plurality of wheels (72,74) rotatably mounted on the frame assembly (13), each wheel (72,74) being mounted for rotation about a central axis (75);
means (109) for mounting each of the wheels (72,74) on the frame assembly (13) for universal adjustment about a pivot point (110);
means (149) for selectively and infinitely adjusting each of the wheels (72,74) about the pivot point (110); and
drive means (160) for selectively rotating at least one of the wheels (72,74),
said frame assembly (13) including a rear frame (14) and a pair of front frames (16) pivotally connected to the rear frame (14), a pair of said wheels (72) being mounted on the rear frame (14) and one of said wheels (74) being mounted on each of the front frames (16).

4,411,330

STAIR-CLIMBING APPARATUS FOR A WHEEL CHAIR OR SIMILAR MOBILE TRANSPORT MEANS

Adriaan Blokland, Breda, Netherlands, assignor to J. de Reus B.V., Netherlands

Filed Aug. 20, 1981, Ser. No. 294,541
Claims priority, application Netherlands, Aug. 21, 1980, 8004743
Int. Cl.³ A61G *5/04*
U.S. Cl. 180—8 A **4 Claims**



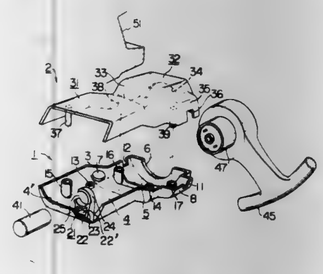
1. A stair-climbing apparatus for a wheel chair or the like mobile transport means, which apparatus is provided with an undercarriage, a plurality of pulleys mounted on the undercarriage, at least one endless track extending along a way defined by at least two of the pulleys, a drive mechanism for driving at least one of the pulleys and a frame for supporting the wheel chair or other mobile transport means, characterized in that the frame comprises a platform, means for adjusting the position of the platform relative to the undercarriage for maintaining the platform in a substantially horizontal position, the adjusting means comprising an elongated element including a counter-element member and a screwed spindle member receivable in the counter-element member and rotatable relative to the counter-element member to adjust the length of said elongated element, one of the members being pivotably connected to the undercarriage and the other of the members being pivotably connected to the platform, a motor for driving the screwed spindle member for varying the length of the elongated element, and means for controlling the drive mechanism to retard the drive mechanism in response to deviation of the platform from the horizontal.

4,411,331

AUTOMOTIVE STEERING COLUMN COVER

Hidekazu Hanada, Shizuoka, Japan, assignor to Nihon Plast Co., Ltd., Shizuoka, Japan

Filed May 19, 1981, Ser. No. 265,079
Claims priority, application Japan, May 21, 1980, 55-69904
Int. Cl.³ B62D *25/14*
U.S. Cl. 180—78 **9 Claims**



1. A steering column cover comprising an upper cover member defining therein a downwardly directed recess, a lower cover member defining therein an upwardly directed recess, said upper and lower cover members being assembled together so that the members abut each other along the edges of said recesses to form a generally hollow assembly having opposite ends defining therein openings for a steering shaft extending through said hollow assembly, at least said lower cover member being formed thereon with at least one integral clip extending radially inwardly to grip said steering column to mechanically connect said one cover member to said column, said clip being generally C-shaped and having an opening of a dimension which is slightly smaller than the diameter of said steering column so that the clip can be snapped onto said steering column by the resiliency of the material from which said lower cover member is made.

4,411,332

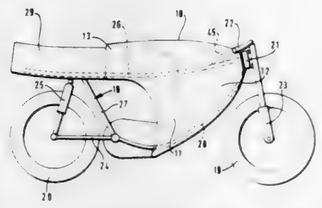
TILTCAB TRUCK WITH A SAFETY LATCH CYLINDER

Alexander V. Eichelsheim, Oldenzaal, Netherlands, assignor to Applied Power Inc., Milwaukee, Wis.

Filed Oct. 29, 1981, Ser. No. 316,369
Int. Cl.³ B62D *23/00*
U.S. Cl. 180—89.14 **15 Claims**

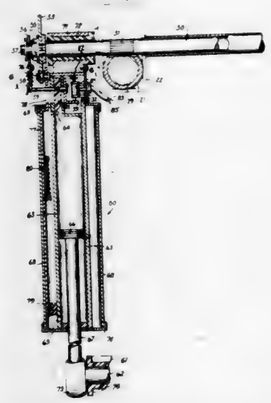
1. In a motor vehicle comprising:
(a) a chassis member;
(b) a cab member mounted on said chassis member for pivotal movement about an axis transverse to the longitudinal axis of said chassis member from a lowered first position to a raised second position;
(c) at least one tilt cylinder operatively connected to said chassis member and to said cab member to pivot said cab member back and forth between its first and second positions;
(d) a pump for supplying hydraulic fluid under pressure to said tilt cylinder;
(e) a reservoir for hydraulic fluid,
(f) a cab latch mechanism for latching said cab member to said chassis member when said cab member is in its first position; and
(g) first means for preventing extension of said tilt cylinder while said cab latch mechanism is latching said cab member to said chassis member,
the improvement wherein said first means comprises a combination hydraulic cylinder and safety valve in hydraulic series with said tilt cylinder, said combination hydraulic cylinder and safety valve comprising:
(h) a housing containing a longitudinal bore open at one end to the exterior of said housing;
(i) a longitudinal member slidably received in said longitudinal bore and projecting to the exterior of said housing, where it is operatively connected to said cab latch mechanism, said longitudinal member being movable between a retracted first position in which said cab latch mechanism is closed and a projecting second position in which said cab latch mechanism is open;
(j) a first path of fluid communication from said pump to a chamber in said longitudinal bore upstream of a reaction surface on said longitudinal member and from said pump to said tilt cylinder;
(k) a second path of fluid communication from said longitudinal bore downstream of said chamber, through said housing, and to said reservoir;
(l) a third path of fluid communication from said chamber, through said longitudinal member, and to the exterior of said longitudinal member at a point where it is in fluid communication with said second path of fluid communication when said longitudinal member is in its first position but is not in fluid communication with said second path of fluid communication when said longitudinal member is in its second position; and
(m) a one-way valve located in said third path of fluid communication, said one-way valve being oriented so that and having a rating such that it will open at a pressure less than the pressure required to extend said tilt cylinder, permitting hydraulic fluid to flow to said reservoir through said first, third, and second paths of fluid communication and preventing said tilt cylinder from extending if said longitudinal member is prevented from moving from its first position to its second position, opening said latch mechanism.

4,411,333
MOTOR CYCLE FAIRING
P. W. Bothwell, "Meoncote", 114 Shipston Rd., Stratford-upon-Avon, Warwickshire, England
Filed Nov. 13, 1981, Ser. No. 321,201
Claims priority, application United Kingdom, Nov. 15, 1980, 8036742
Int. Cl.³ B62D 23/00
U.S. Cl. 180—219 16 Claims



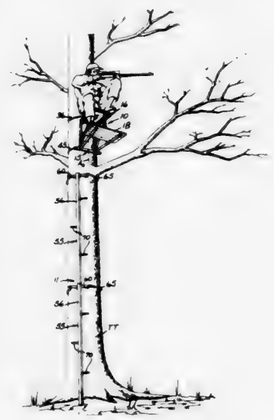
1. A motor cycle including a frame and a fairing mounted on the frame, the fairing comprising a body formed to provide a bridge portion having two depending side portions which define with the bridge portion a cavity of generally inverted U-shape in cross-section, a front portion extending upwardly and forwardly from the side portions and forwardly from the bridge portion, and a rear portion extending rearwardly from the bridge portion, the side portions being formed with rearwardly directed faces disposed in front of the positions to be occupied with a rider's legs and wherein the body comprises a shell filled with a relatively deformable material and completely enclosing the deformable material.

4,411,334
VEHICLE CONTROL SAFETY SYSTEM
Samuel L. Schlanger, Palm Springs, Calif., assignor to Gail B. Mauer, Beverly Hills, Calif. and Ellen R. Cohen, Wayne, N.J., a part interest
Filed Dec. 15, 1980, Ser. No. 216,419
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ B60R 1/18, 21/00
U.S. Cl. 180—274 17 Claims



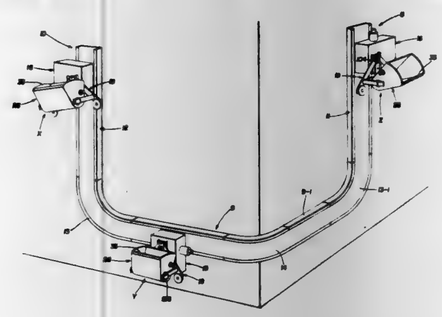
1. A safety system for a vehicle having a chassis, including two parallel spaced-apart legs and an axle assembly for each of the wheels, comprising:
a suspension assembly including at least one air piston arrestor pivotably coupled between said chassis and one of said axle assemblies, including an inner cylindrical jacket having an upper and lower vent opening and a piston rod having a piston secured thereto at one end thereof which is slidably received in said jacket;
means for arresting said air piston arrestor in a relatively rigid, non-compressible state, including a pair of shutters, each of which is movable between an open and closed position relative to one of said vent openings
means for moving said shutters; and
electromechanical means for activating said arresting means.

4,411,335
HUNTER'S TREE STAND
Joseph H. Forrester, 3635 Thompson Mill Rd., Buford, Ga. 30518
Filed Mar. 26, 1981, Ser. No. 247,942
Int. Cl.³ A01M 31/02; A45F 3/26; A47C 9/10; E06C 1/10
U.S. Cl. 182—83 5 Claims



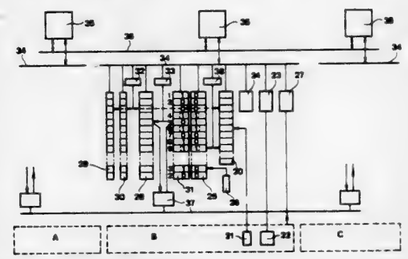
1. A hunting stand for supporting a hunter on a tree trunk comprising:
a frame having a stand axis, an upper end and a lower end, said frame including a pair of spaced apart back side members vertically oriented generally parallel to the stand axis; an upper cross member fixedly connecting the upper ends of said back side members and oriented generally normal to the stand axis; a lower cross member fixedly connecting the lower ends of said back side members and oriented generally normal to the stand axis; a pair of upper seat side members fixedly connected at one end to said upper cross member and projecting horizontally away from said upper cross member generally normal to said stand axis and said upper cross member; a pair of lower foot side members longer than said upper seat side members fixedly connected at one end to said lower cross member and projecting horizontally away from said lower cross member under said upper seat side members generally normal to said stand axis and said lower cross member; a pair of angular brace members fixedly connecting said back side members with said upper seat side members; and a pair of generally vertically extending strap members fixedly connecting the projecting end of each of said upper seat side members with each of said lower foot side members intermediate their ends;
a hunter support seat affixed to said pair of upper seat side members adjacent the projecting ends thereof to maintain the upper seat side members in the spaced apart position;
a planar hunter foot support affixed to said lower foot side members between said strap members and the projecting ends of said lower foot side members to maintain said lower foot side members in the spaced apart position;
a pair of tree penetrating support prongs affixed to said said upper cross member and projecting outwardly therefrom oppositely to said upper seat side members and generally normal to but equidistant from and on opposite sides of the stand axis to engage the tree trunk;
a non-elastic elongate flexible securing member adjustably connected to said frame eccentrically of said support prongs while said securing member extends around the tree trunk to cause said support prongs to penetrate the tree trunk to fixedly yet removably locate said frame both longitudinally of and circumferentially about the tree trunk as the frame is pivoted from an initial tilted position in which the lower end of said frame opposite said support prongs is spaced away from the tree trunk to a final position in which the lower end of said frame opposite said support prongs lies adjacent the tree trunk so that the weight of the hunter on said foot support forces said frame from said initial position toward said final position;
a pair of tree penetrating holding prongs affixed to said lower cross member equidistant from and on opposite sides of said stand axis and projecting from said cross member normal to said stand axis and in the same direction as said support prongs to engage the tree trunk when said frame is pivoted to its final position;
a non-elastic elongate, flexible holding member including length adjustment means adjustably connected to opposite ends of lower cross member for extension around the tree trunk so that said length adjustment means can be manipulated while the hunter is on said foot support to effectively shorten the length of said holding member and maintain said frame in said final position with said holding prongs in penetrating engagement with the tree trunk.

4,411,336
RAILWAY TRANSPORT BANKING SYSTEM
Walter G. Anders, North Canton, Ohio, assignor to Diebold Incorporated, Canton, Ohio
Filed Nov. 9, 1981, Ser. No. 319,441
Int. Cl.³ B61D 15/12
U.S. Cl. 186—37 37 Claims



1. Banking service transport equipment for carrying out banking transactions between a teller station and a remote customer station, including a teller terminal, a customer terminal, and a self-propelled car transport mechanism connecting said teller and customer terminals of a type in which a car travels along a track system having horizontal and vertical track runs with curves between horizontal and vertical runs and a corner curve between horizontal run portions; a container; and multi-axis pivotal mechanism suspending the container from the car for pivotal movement on a first pivot axis at one of said teller and customer terminals and on a second pivot axis oriented at right angles to said first axis at the other of said terminals; said multi-axis mechanism having a cradle pivotally mounted on the car on a horizontally extending axis; and the container being pivotally mounted on the cradle on an axis spaced from and extending at right angles to the axis on which the cradle is pivoted; whereby the car, cradle and container form a car-cradle-container assembly that travels along the track system to and between said teller and customer terminals.

4,411,337
GROUP CONTROL FOR ELEVATORS
Joris Schröder, Lucerne; Hans Boesbard, Würenlos; Jiri Kiml; Miroslav Kostka, both of Ebikon, and Walter Zimmermann, Buochs, all of Switzerland, assignors to Inventio AG, Hergiswil, Switzerland
Continuation-in-part of Ser. No. 210,007, Nov. 24, 1980, Pat. No. 4,355,705. This application Jul. 9, 1981, Ser. No. 281,567
Claims priority, application Switzerland, Dec. 21, 1979, 11396/79
Int. Cl.³ B66B 1/18
U.S. Cl. 187—29 R 9 Claims



1. In a group control for elevators each having an elevator cabin and containing:
at least one storey call storage controllable by means of a storey call transmitter;
cabin call storages for controlling by means of cabin call transmitters each cabin of the group;
selectors operatively correlated with each elevator of the group indicating that storey at which the cabin still could stop;
load measuring devices operatively correlated with each elevator cabin;
a scanner device having at least one position for each storey;
each elevator being provided with a computer device possessing at least one adder which forms from at least the distance between a considered storey and the selector position, from the number of intermediate stops to be expected within such distance based upon the prevailing cabin and allocated storey calls and from the momentary cabin load, a time-proportional sum corresponding to the servicing capability of a cabin of the group with respect to the considered storey;
and
at least one comparison device by means of which the cabin having the lowest servicing costs corresponding to the smallest previously computated loss time and therefore the optimum servicing capability can be allocated to the considered storey;
the improvement which comprises:
each elevator being provided with a computer device for counting the number of allocated storey calls and one of a number of cabin calls between a selector position and the considered storey;
each elevator further being provided with a device which stores the momentary operating state of the elevator cabins;
the computer device being provided with a subtractor unit for forming a difference from the number of said allocated storey calls multiplied by a number of passengers expected to enter the elevator cabin and the number of cabin calls multiplied by a number of passengers expected to exit from the elevator cabin;
said difference and a momentary operating state of the eleva-

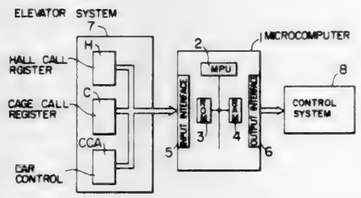
tor cabin being infeedable as a further summand to the adder of the computer device;
the scanner device being connected with the computer device which for each position of the scanner device forms the sum corresponding to the servicing costs of a cabin with respect to a real or imaginary storey call of such position;
a storage device connected with the computer device and the scanner device;
said storage device can be filled by means of said scanner device;
said storage device receiving the correlations of the momentarily most optimumly employable cabin having the lowest servicing costs for the relevant position of the scanner device;
said storage device containing the optimum correlations between the elevator cabin and scanner position contains for each elevator an allocation storage which can be filled during a revolution of the scanner device;
said allocation storage having inputs connected with said comparison device;
comparison of the servicing costs of the elevator cabins occurring at each scanner position; and
the elevator cabin exhibiting the lowest servicing costs having stored in the allocation storage an allocation instruction corresponding to the optimum correlation.

4,411,338

APPARATUS FOR CALCULATING ELEVATOR CAGE CALL FORECAST

Soshiro Kuzunuki, Katsuta; Kotaro Hirasawa, Hitachi; Takeo Yuminaka, and Kanji Yoneda, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1981, Ser. No. 305,713
Claims priority, application Japan, Sep. 27, 1980, 55-135022
Int. Cl.³ B66B *1/18*
U.S. Cl. 187—29 R **9 Claims**



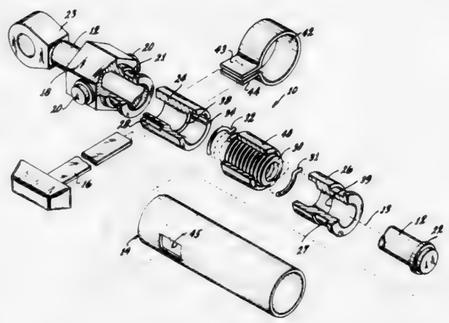
1. An apparatus for calculating cage call foreast of an elevator car in an elevator system including cage call registering means disposed in said elevator car for specifying destination floors among a plurality of floors to be served by said elevator car, hall call registering means disposed at the elevator hall of each of said plurality of floors for calling said elevator car thereto, and means for operating said elevator car so that said elevator car can serve said plurality of floors in response to cage calls registered by said cage call registering means and hall calls registered by said hall call registering means, said apparatus comprising:
hall call counting means for counting the number of hall calls originated from a given one of said fllors;
cage call counting means for counting the number of cage calls, classified by destination floors, registered in the elevator car after the elevator car has served each of the hall calls originated from said given one floor; and
cage call origination probability calculating means for calculating the probabilities of origination of cage calls, classified by destination floors, which will be registered in said elevator car after said elevator car has subsequently served a new hall call which would be originated from said given one floor, on the basis of the number of the hall calls counted by said hall call counting means and the number of the cage calls, classified by destination floors, counted by said cage call counting means.

4,411,339

FRICTION LOCK MECHANISMS

Clyde R. Porter, Los Angeles, Calif., assignor to P. L. Porter Co., Woodland Hills, Calif.

Continuation of Ser. No. 157,458, Jun. 6, 1980, abandoned. This application Sep. 10, 1982, Ser. No. 416,637
Int. Cl.³ B65H *59/10*
U.S. Cl. 188—67 **2 Claims**



1. As an article of manufacture, an infinitely positionable mechanical friction lock comprising:
a housing having a non-rotatable rod positioned therein for axial movement in either direction with respect thereto;
a fixed bushing including an annular inclined cam surface at one end of said housing through which said rod extends;
a rotatable bushing including an inner annular inclined cam surface;
a single coil spring positioned on said rod and located between said bushings and normally operative to grip said rod to prevent axial movement thereof in either direction relative to said housing;
said fixed bushing and said rotatable bushing cooperating with said spring such that one of said bushings and the adjacent portion of the spring locks said rod in compression and the other of said bushings and the adjacent portion of the spring locks said rod in tension;
release means to effect rotation of said rotatable bushing whereby said coil spring is released from said rod by unwinding the coils of the spring adjacent the rotatable bushing to permit movement of the latter in either axial direction relative to said housing; and
means surrounding said spring such that as the spring is unwound to release said rod the slack of the spring will be transmitted to the end held by the fixed bushing rather than being accumulated in the turns nearest the rotatable bushing.

4,411,340

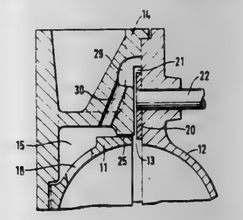
HYDRODYNAMIC BRAKES

Klaus Brosius, Heidenheim-Mergelstetten, and Berthold Herrmann, Heidenheim, both of Fed. Rep. of Germany, assignors to Voith Getriebe KG, Fed. Rep. of Germany

Continuation of Ser. No. 165,388, Jul. 3, 1980, abandoned. This application Oct. 21, 1982, Ser. No. 435,874
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1979, 2927582
Int. Cl.³ F16D *57/02*
U.S. Cl. 188—296 **3 Claims**

1. A hydrodynamic brake, comprising:
a casing;
a rotor bucket wheel;

a stator bucket wheel forming part of said casing;
said rotor bucket wheel and said stator bucket wheel cooperating to define a torus-shaped working chamber that can be filled with working fluid; said rotor bucket wheel and said stator bucket wheel further defining a bucket wheel gap between them; said casing having an outlet duct surrounding the outer circumference of and coaxial with said rotor bucket wheel; apertures connecting said working chamber and said outlet duct; said casing further including an annular, radially extending space coaxial with said bucket wheels and surrounding the perimeter of said bucket wheel gap; said radially extending space having a radially outermost, unobstructed, fluid containable region;
a plurality of baffle type flow obstruction means disposed in said radially extending space; said radially outermost region of said radially extending space being located radially outward of said flow obstruction means; said obstruction means being adapted to be moved into said bucket



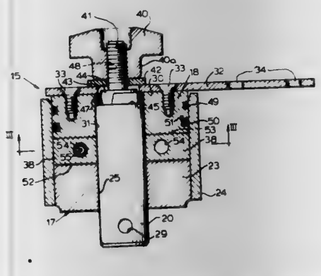
wheel gap at least a portion of the time when the brake is not engaged and being movable out of said bucket wheel gap into said radially extending space when the brake is engaged;
said rotor bucket wheel having an external diameter, a portion of said rotor bucket wheel which defines said external diameter cooperating with said casing to form an annular, axially extending gap communicating between said bucket wheel gap and said outlet duct, and said axially extending gap being sufficiently narrow to define a flow controlling seal between said bucket wheel gap and said outlet duct; and
said casing further including a second open duct separate from said axially extending gap which connects said radially outermost region of said radially extending space to said outlet duct for venting to said outlet duct pressure in said radially outermost region of said radially extending space.

4,411,341

ROTARY HYDRAULIC DAMPER

John C. Schultz, Buffalo, N.Y., assignor to Houdaille Industries, Inc., Fort Lauderdale, Fla.

Filed Mar. 17, 1981, Ser. No. 244,808
Int. Cl.³ F16F *9/14*; F16D *57/02*
U.S. Cl. 188—310 **7 Claims**



1. In a rotary hydraulic damper adapted for connection to and between relatively moveable parts for damping the relative motion of said parts in at least one direction:
a stator structure having means for attachment to one of said parts;
a rotor structure having means for attachment to the other of said parts;
one of said structures being generally cup-shaped and provided with a tubular wall, and the other of said structures being telescopically assembled within said wall in relatively oscillatable and axially adjustable relation;
said stator structure having an axially inwardly facing surface provided with axially inwardly projecting integral radial vane means, and said rotor structure having an opposite axially inwardly facing surface directed toward and substantially axially spaced from said stator structure surface and provided with axially inwardly projecting integral radial vane means;
said surfaces defining with said tubular wall a damping fluid filled working chamber, and said vane means cooperating with one another in interdigitated relation for dividing said working chamber into subchambers which have axially opposite ends at said surfaces;
each of said vane means having an axially facing edge which is in restricted width damping orifice gap relation to the axially inwardly facing structure surface opposite to the surface from which the respective vane means extends, so that in relative rotation of said structures, said damping fluid will be displaced through the damping orifice gaps at each of said surfaces and each of said subchamber ends;
means for effecting axial adjustment of the entire stator structure and the entire rotor structure relative to one another for thereby adjusting the widths of said damping orifice gaps between each of said vane means edges and the confronting axially facing structure surface;
said means for effecting relative axial adjustment comprising an axially projecting pintle rigid with one of said structures and extending through said working chamber and relatively rotatably through the other of said structures and having a portion projecting beyond said other of said structures;
and a manually operable adjustment knob threaded on said projecting portion and thrusting toward said other of said structures;
so that by having the orifice gap widths substantially equal between each of said surfaces and said vane means edges, damping fluid displacement in substantially equally divided stable relation is adapted to be attained at both ends of said subchambers.

4,411,342

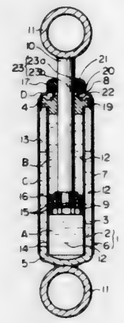
HYDRAULIC DAMPER

Teiji Katsumori; Tetuo Kato, and Miura Ieaki, all of Yokohama, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Continuation of Ser. No. 124,238, Feb. 25, 1980, abandoned. This application Jan. 27, 1982, Ser. No. 343,335
Claims priority, application Japan, Feb. 23, 1979, 54-20349
Int. Cl.³ F16F *9/36*
U.S. Cl. 188—315 **6 Claims**

1. A hydraulic damper comprising:
a dual-tube type housing including inner and outer tubes defining therebetween a reservoir chamber;
a piston slidably mounted within said inner tube and dividing the interior thereof into first and second liquid chambers;
liquid filling said first and second liquid chambers and a portion of said reservoir chamber adjacent said second liquid chamber, and gas filling a portion of said reservoir chamber adjacent said first liquid chamber;
a piston rod secured to said piston and extending through said first liquid chamber to the exterior of said housing;
passage means for connecting said first liquid chamber to said gas filled portion of said reservoir chamber;
a seal member fixedly supported on said housing and sealing said first liquid chamber and said gas filled portion of said

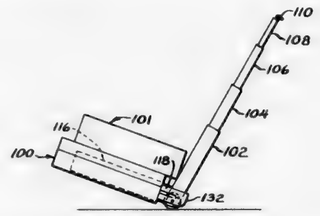
reservoir chamber from the exterior, said piston rod sealingly slidably extending through said seal member;
a rod guide secured to said inner tube for guiding the sliding movement of said piston rod, said passage means including a clearance between said rod guide and said piston rod;
a cover secured to said outer tube and retaining said seal member;
means positioned in said passage means, for allowing fluid flow only from said first liquid chamber to said gas filled portion of said reservoir chamber and for preventing fluid flow in the reverse direction, said means comprising a resilient member having a flange portion, a base portion integral with said flange portion and extending axially therefrom, a lip portion integral with said base portion and extending axially therefrom, said lip portion coacting with a valve seat portion of said rod guide to form a one-way valve for controlling said fluid flow, and a cylindrical portion integral with said flange portion and extending generally axially therefrom at a location radially outwardly spaced from said base portion and said lip portion;



means for radially supporting and retaining said base portion and thereby for preventing excessive radial inward deformation of said lip portion due to pressure from said gas in said gas filled portion of said reservoir chamber, said supporting and retaining means comprising a first rigid annular retainer member including a generally radially extending flange portion positioned between an axially inner surface of said seal member and said flange portion of said resilient member, and an integral axially extending cylindrical portion having a radially outer peripheral surface in engagement with a radially inner peripheral surface of said base portion, and a second annular rigid retainer member including a generally radially extending flange portion abutting with an axially inner surface of said resilient member, and an integral axially extending cylindrical portion having a radially inner surface in engagement with a radially outer peripheral surface of said base portion; and
spring means acting between said rod guide and said second rigid annular retaining member for urging said resilient member and said first and second retainer members toward said inner surface of said seal member.

4,411,343
LUGGAGE TROLLEY
Khalil A. I. Cassimally, 403 Hayes Rd., Fort Pierce, Fla. 33450, and Horace Frommelt, Fort Pierce, Fla., assignors to Khalil Ahmid Ibrahim Cassimally, Fort Pierce, Fla.
Filed Sep. 14, 1981, Ser. No. 301,466
Int. Cl.³ B62B *1/12;* A45C *5/14, 13/28*
U.S. Cl. 190—18 A **31 Claims**

1. A portable case having top and bottom surfaces, two sides, a forward end, and a rear end defining an interior, and capable of being converted into a trolley, comprising:
first and second arm means, each having nesting first and second members, said first members being mounted on opposite sides of said case and each being capable of extending a forward end beyond the forward end of said case;
a handle extending between said second members;
means for mounting said second members for pivoting with respect to said first members when said second members are extended;



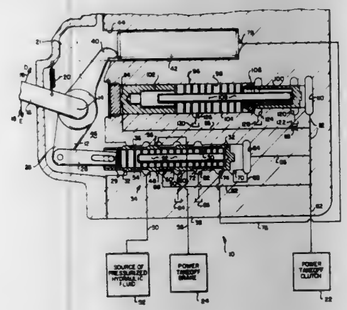
means for locking said second members at an angle greater than 30° to said first members;
wheel means; and
means for supporting said wheel means outside of said case near the forward end of said first members when said second members are pivoted and locked.

4,411,344
CARRIER FOR GARMENT BAGS AND THE LIKE
Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133
Continuation-in-part of Ser. No. 268,901, Jun. 1, 1981, and a continuation-in-part of Ser. No. 293,364, Aug. 17, 1981, Pat. No. 4,354,583, and a continuation-in-part of Ser. No. 310,636, Oct. 13, 1981. This application Jan. 18, 1982, Ser. No. 340,280
Int. Cl.³ A45C *5/14*
U.S. Cl. 190—18 A **9 Claims**



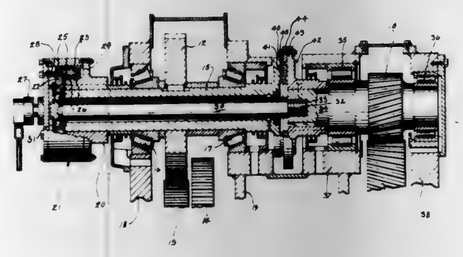
1. In combination with a generally rectangular elongated garment bag adapted to be folded on itself along a transverse fold line, a carrier for said bag comprising:
a frame including a top transverse portion extending substantially along said fold line, and a pair of side members extending longitudinally of said bag and connected to said transverse portion,
means securing said frame to said bag with said side members extending through the bottom of said bag, and
a wheeled axle extending between the projecting ends of said side members.

4,411,345
CLUTCH MODULATING SYSTEM
Robert E. Haight, Waterloo, and Kendall D. Tjepkes, Cedar Falls, both of Iowa, assignors to Deere & Company, Moline, Ill.
Filed Jan. 23, 1981, Ser. No. 227,730
Int. Cl.³ F16D *67/04, 25/00;* F15B *11/10*
U.S. Cl. 192—12 C **11 Claims**



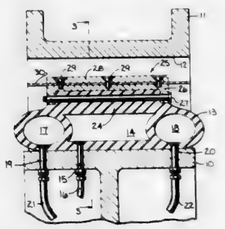
1. A system for modulating the application of fluid pressure to a clutch from a source of pressurized fluid comprising the combination of:
a source of pressurized fluid;
a first conduit coupled to a clutch;
a control;
means responsive to actuation of the control for coupling the source to the first conduit by a variable amount dependent on the position of the control;
a sump for pressurized fluid;
a second conduit coupled to the first conduit; and
means for coupling the second conduit to the sump to an extent directly related to the rate of pressure increase of fluid in the second conduit.

4,411,346
DISC CLUTCH APPARATUS
Ronald A. Witt, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.
Filed Jun. 11, 1981, Ser. No. 272,537
Int. Cl.³ F16D *25/08*
U.S. Cl. 192—85 A **6 Claims**



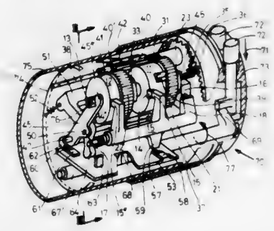
1. A disc clutch assembly, comprising:
a housing;
a driven clutch member journaled in and axially restrained in said housing, said driving clutch member having a clutch face;
a driven clutch member having a clutch face which confronts the clutch face of said driving clutch member, said driven clutch member being journaled in straight roller bearings the rollers of which are held in outer races mounted in said housing, said driven clutch member being free to slide relative to said rollers; and
means for axially shifting said driven clutch member toward and away from said driving clutch member, said shifting means including an axially restrained hydraulic cylinder and a piston operating within said cylinder and connected to said driven clutch member;
said driving clutch member and said hydraulic cylinder being mounted on opposite ends of a quill shaft which also mounts a driving gear, and
said piston is connected to one end of a rod that extends through the hollow interior of said quill shaft and is joined at its other end to said driven clutch member.

4,411,347
PNEUMATIC CLUTCH
Thomas R. Bednar, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.
Filed Jul. 6, 1981, Ser. No. 280,318
Int. Cl.³ F16D *25/04, 19/00*
U.S. Cl. 192—88 B **11 Claims**



1. A flexible inflatable annular gland for a pneumatic clutch, said gland having walls of an elastomer material which define at least three hollow annular chambers arrayed across the width of the gland, a middle chamber bing larger than the two outside chambers, pneumatic fittings extending into the hollow interior of each chamber, and replaceable friction shoes mounted about the other perimeter of the gland.

4,411,348
CONTROL DEVICE FOR ELECTRIC MOTOR-REDUCING UNIT
Pierre Fillion, Ville la Grand, France, assignor to Somfy, Cluses, France
Filed Apr. 30, 1980, Ser. No. 145,326
Claims priority, application France, May 2, 1979, 79 11801
Int. Cl.³ F16D *71/00*
U.S. Cl. 192—139 **10 Claims**



1. A control device for an electric motor-reduction unit adapted to drive a winding tubular member of a rolling shutter, roller-blind or the like, comprising a plurality of cams disposed side-by-side on a common shaft on which they are freely rotatable, each of said cams having in its perimeter a single notch, means controlling a switch in the energizing circuit of the

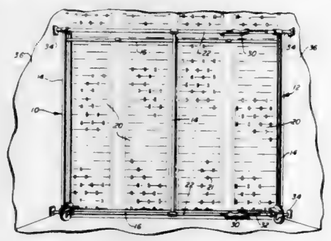
electric motor of said motor-reduction unit, said control means having cam-follower means engagable with the perimeters of said notched cams, means biasing said control means into engagement with said notched cams, a toothed wheel rigidly coupled with each of said notched cams and disposed laterally and coaxially relatively thereto, drive pinions on a pinion shaft parallel to the cam shaft and engageable with said toothed wheels respectively, said pinions being adapted to drive said toothed wheels at different speeds, and means for aligning at will the notches of said notched cams with said cam follower means of said control means, said aligning means comprising a heart-shaped cam rigid with each of said notched cams and means engageable with said heart-shaped cams to align notches of said notched cams with said cam follower means of said control means, said aligning means into engagement with said heart-shaped cams to align notches of said notched cams with said cam follower means of said control means.

4,411,349

CONVEYOR DEVICE USABLE AS BULKHEAD

Thomas R. Stedman, Elk Grove Village, and Ronald A. Voyda, Des Plaines, both of Ill., assignors to Walgreen Co., Deerfield, Ill.

Filed Jul. 6, 1981, Ser. No. 280,909
Int. Cl.³ B65G *67/00*
U.S. Cl. 193—35 R **10 Claims**



1. A conveyor device usable also as a bulkhead in a storage compartment, which comprises: a frame, adjustable bar means carried by said frame to be pressed against the walls of said storage compartment to secure said frame as a bulkhead across a width of said storage compartment, at least one conveyor track member removably carried by said frame and having article conveyor means mounted thereon, said at least one track member and said article conveyor means forming at least one unit that is removable as a unit from said frame.

4,411,350

REVERSING CONVEYER TRACK

Frank Wolfram, 19986 Rollins Rd., Lake Villa, Ill. 60046

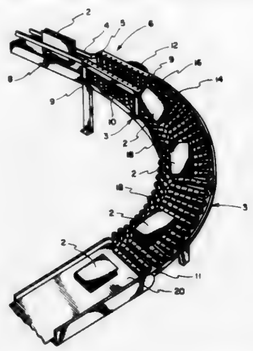
Filed Sep. 4, 1981, Ser. No. 299,392
Int. Cl.³ B65G *13/00*
U.S. Cl. 193—35 A **15 Claims**

1. A reversing conveyer track for simultaneously changing the orientation, direction and spacing of books for use with book construction machinery, said reversing conveyer track comprising:

means for accepting the books attached to one of the book construction machines;

variable means for establishing a predetermined spacing of the books and for outputting the books from said means for accepting with a predetermined velocity, said variable means attached to said means for accepting and in momentary contact with the books;

means for orienting and directing the books attached to said means for accepting the books, said orienting of the books being a change from an edge position to a side position and said direction of said books being a direction of movement



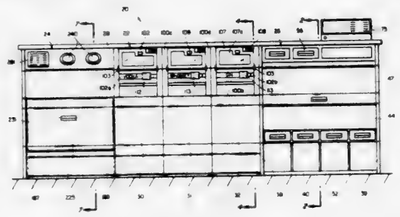
different from the input movement direction of books to the means for accepting the books.

4,411,351

BOTTLE DISPENSING AND CONTROL SYSTEM

Marlene Lowder, 3414 San Pablo, San Jose, Calif. 95127, and Norman B. Johnson, San Jose, Calif., assignors to Marlene Lowder, San Jose, Calif.

Filed Oct. 3, 1980, Ser. No. 193,471
Int. Cl.³ G07F *7/06*
U.S. Cl. 194—4 C **3 Claims**



3. In combination, a bottle dispensing mechanism, adapted to store bottles of selected classifications, bottle disposal apparatus adjacent said dispensing mechanism, a receptacle in said disposal apparatus adapted to receive discarded bottles, a movably-mounted gate in said disposal apparatus controlling access to said receptacle, and control means for identifying a bottle of one of the selected classifications when the bottle is placed in said disposal apparatus and moving said gate to open position to provide access to said receptacle, said disposal apparatus including a guide chute above said gate and arranged to direct a bottle to a position partially supported by said gate whereby when said gate is moved to open position the bottle drops into said receptacle.

4,411,352

RACETRACK ESCALATOR

John L. Kettle, Vernon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

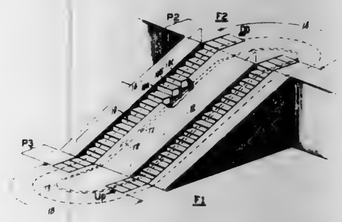
Filed Apr. 15, 1981, Ser. No. 254,360
Int. Cl.³ B66B *9/12*
U.S. Cl. 198—328 **2 Claims**

1. An escalator comprising a plurality of interconnected stairs which are propelled upon tracks by drive means, for transporting passengers between two floors, characterized in that:

the stairs are propelled between two floors in a closed loop racetrack-like pattern having an inner perimeter and an outer perimeter, a plurality of the stairs form moving staircase sections in the pattern for carrying passengers up and down between floors, the stairs pass underneath the floor when changing between those staircase sections and the stairs are substantially level with the floors just before and after passing underneath them;

a biaxis linkage couples each stair to its adjacent stair and is adapted to permit each stair to rotate and elevate relative to adjacent stairs along said inner perimeter about an axis located along the inner perimeter of the pattern and substantially normal to the horizontal direction of stair movement in the pattern, said linkage comprising a hinge bar and a pivot post; the pivot post is attached to the edge of each adjacent step joined by said coupling means, and extends in the direction of said axis which is substantially normal to the horizontal direction of stair movement, and the hinge bar is disposed to rotate on the post and also slide lengthwise along it;

at least three tracks support the stairs, two of these tracks



follow the inner perimeter of the pattern and are inclined relative to the floors and vertically displaced relative to each other between floors to elevate adjacent stairs and are positioned at the floors to be substantially coplanar to the floors, and the third track follows the outer perimeter of the pattern and is positioned relative to the other two tracks;

each stair includes a first flat roller that rides on the third track and a pair of rollers, each roller riding on one of the other two tracks and registering with it;

the first flat roller is connected to one of the other rollers to provide a differential turning force as the stair moves around a curve in the pattern; and

the first flat roller is rotationally coupled to one of the other two rollers, and has, axially disposed relative to each other, a first diameter portion for curved sections of the pattern, and a second portion with a smaller diameter substantially the same diameter as the roller to which the flat roller is coupled, for straight track sections of the pattern.

4,411,353

GLASSWARE TRANSFER

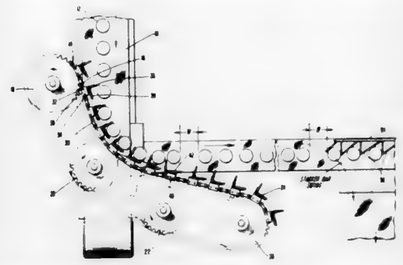
Lawrence K. McDole, Brockway, Pa., assignor to Brockway Glass Co., Inc., Brockway, Pa.

Filed Feb. 10, 1981, Ser. No. 233,164
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—425 **9 Claims**

1. Apparatus for transferring a series of generally equally spaced articles from a first conveyor onto a second conveyor oriented generally perpendicularly to the first conveyor, comprising:

endless carrier means for urging said articles from said first conveyor onto said second conveyor, said endless carrier means including a plurality of equally spaced pusher members, said endless carrier means also including at least two pusher members spaced apart a predetermined distance which is greater than the spacing of said equally spaced pusher members such that two of the generally equally spaced articles are adapted to be arranged on said second conveyor spaced apart a distance which is greater than the spacing of the remaining articles on the second conveyor after transfer; and

said at least two pusher members spaced apart the predetermined distance greater than the spacing of said equally spaced



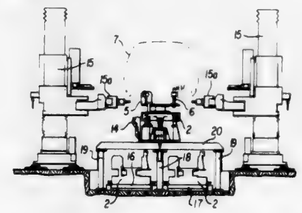
pusher members defining a leading pusher member and a trailing pusher member, said leading pusher member being spaced apart from an adjacent one of said equally spaced pusher members by a predetermined distance which is less than the spacing of said equally spaced pusher members.

4,411,354

TRANSPORT INSTALLATION FOR MANUFACTURED PRODUCTS, PARTICULARLY ELEMENTS OF AUTOMOBILE BODIES

Bernard Thibault, Boulogne Billancourt, and Andre Le Goff, Neauphle-le-Chateau, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Nov. 17, 1980, Ser. No. 207,473
Claims priority, application France, Dec. 6, 1979, 79 29990; Nov. 3, 1980, 80 23450
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **5 Claims**



1. A robot automated assembly line for automobile body elements, comprising:

at least two types of mounting supports for said body elements;

an upper advance line holding a plurality of said mounting supports, wherein said body elements are acted upon by robots;

means for advancing said mounting supports along said upper advance line; and

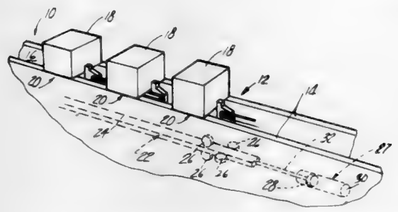
a lower return line extending beneath said upper advance line for accumulating and storing said mounting supports, said return line including at least two parallel side-by-side tracks, each of said tracks being separated by a longitudinal series of central supports, said return line being laterally defined by a longitudinal series of columns, said columns defining supports for the upper advance line, said columns providing a wide foundation for supporting said upper advance line and providing said upper advance line with clearance for the arms of said robots;

wherein said each said return tracks being adapted for returning a selected type of said mounting supports.

4,411,355
AUTOMATIC ACCUMULATING TRANSFER MECHANISM

James L. Furlette, and Donald A. Stadler, both of Fenton, Mich., assignors to Excel Corporation, Fenton, Mich.

Filed Nov. 8, 1978, Ser. No. 959,030
Int. Cl.³ B65G 25/10
U.S. Cl. 198—718 9 Claims



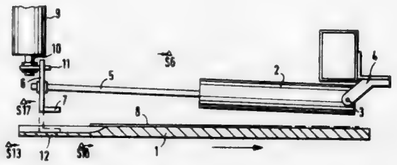
1. A mechanical automatic accumulating transfer mechanism comprising:
- a frame, said frame comprising a pair of spaced and substantially parallel support rails upon which a series of workpieces can be slidably mounted, said workpiece being positioned at work stations defined along the support rails at spaced intervals;
- a shuttle assembly reciprocably mounted with respect to said frame;
- a plurality of pusher dogs mounted to said shuttle assembly wherein one pusher dog is associated with each work station;
- means for longitudinally reciprocally moving said shuttle assembly with respect to said frame and thus said pusher dogs in unison with each other from their respective associated work station and to the next forward work station, said movement of said shuttle assembly being in a forward and in a rearward direction,
- means pivotally mounting said pusher dogs to said shuttle assembly and being pivotal between an upper, workpiece engaging position and a lower, workpiece clearing position;
- knockdown means for pivoting said pusher dogs to their lower position;
- means for detecting the absence of a workpiece at a station;
- means responsive to said detecting means for actuating the pusher dog associated with the vacant work station from the lower to the upper workpiece engaging position and for pivoting all pusher dogs rearwardly of said vacant work station from their lower to their upper, workpiece, engaging position, said last mentioned means being operable upon movement of said shuttle assembly in a rearward direction.

4,411,356
DEVICE FOR TRANSPORTING PRINTING PLATES

Adolf Radas, Frankfurt, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 1, 1981, Ser. No. 298,287
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1980, 3033759
Int. Cl.³ B65G 25/00
U.S. Cl. 198—721 7 Claims

1. A device for transporting printing plates in a processing unit, in which the printing plates are brought from a starting position into a final position on a processing table, comprising:
- a pneumatically operated, swiveling first actuator located above the plane in which the printing plate rests in its starting position on the processing table, said first actuator having an actuating rod capable of extension and retraction in the longitudinal direction of the processing unit;
- at least one pusher-element attached to said actuating rod for transporting the printing plate from the starting position into the final position when said first actuator is operated;
- means for raising said pusher-element from a level beneath the transport plane of the printing plate to a level above the transport plane of the printing plate and for lowering the said pusher-element in the opposite sense;

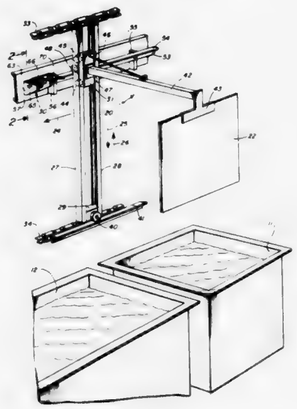


- a front plate fastened to said actuation rod, said front plate carrying said pusher elements on both lateral sides and having an opening into which said means for raising and lowering the pusher rod engages; and
- a switch operated by one end of the printing plate when the final position is reached for initiating the reversal of the movement of said actuating rod.

4,411,357
SAFETY DEVICE FOR USE IN CONVEYOR-TYPE APPARATUS

Samuel N. Caddell, Stoughton, Mass., assignor to Systems Engineering and Manufacturing Corp., Stoughton, Mass.

Filed Oct. 10, 1980, Ser. No. 196,038
Int. Cl.³ B65G 17/00
U.S. Cl. 198—802 6 Claims

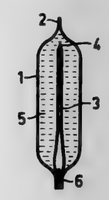


1. A multistation work processing conveyor apparatus comprising,
- a carrier arm assembly mounted for movement along a horizontal path and having a vertically movable slide arm therein,
- an elevator for moving said slide arm vertically in an up or down direction,
- means for advancing the carrier arm assembly horizontally along a defined path of travel through a plurality of work locations, each location corresponding to a work station having a sufficient area to accommodate at least one carrier at a time,
- means for positively holding the slide arm in a predetermined vertical location along said horizontal path and comprising a guide rail defining a support surface,
- a flipper plate mounted on said elevator and defining a portion of said guide rail surface for moving into an open second position out of contact with said slide arm allowing generally relative vertical movement of said slide arm with respect to said elevator when in said second position and supporting said slide arm and preventing unwanted movement in a downward direction when in a first position with said first position of said flipper plate further permitting vertical movement of said slide arm with said slide arm supported by said flipper plate,
- and a safety means comprising a portion of said flipper plate and having a cam surface for responding to direct contact with a portion of said carrier arm assembly and for positively positioning said slide plate in said first position by mechanical contact action.

4,411,358
PACKAGE

Percy Bennwik, Saltsjö-Boo, and Birger Hjertman, Vällingby, both of Sweden, assignors to Vitrum AB, Stockholm, Sweden

PCT No. PCT/SE81/00110, § 371 Date Dec. 7, 1981, § 102(e) Date Dec. 7, 1981, PCT Pub. No. WO81/02876, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 9, 1981, Ser. No. 329,275
Claims priority, application Sweden, Apr. 10, 1980, 8002709
Int. Cl.³ B65D 25/00
U.S. Cl. 206—45.34 9 Claims



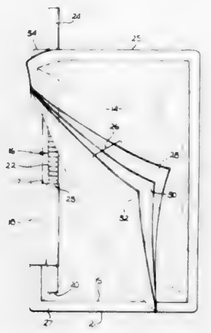
1. A package for protection of a product packed therein against the influence of light and/or gases but making possible a visual control of the contents of the package before said package is opened, characterized in that it comprises a light-proof outer bag and a light-permeable inner bag arranged inside the outer bag, the outer and inner bags each being sealed at one of their ends, and being bonded to each other around their periphery close to their other end and furthermore at the same end, at or beyond the peripheral bonding, viewed from the sealed ends, being connected so that the inner and outer bags are sealed in common, the contents of the package being arranged between the outer bag and the inner bag, such that after removal or opening of the common seal, the inner bag can be turned out of the outer bag at the same time as it is turned inside out, and the contents of the package in this way can be visually observed through the wall of the inner bag.

4,411,359
FLUID POUCH WITH INTEGRAL STRAW

Gino Franco, Canoga Park, Calif., assignor to Magna Technologies, Inc., Woodland Hills, Calif.

Filed Jun. 18, 1981, Ser. No. 274,877
Int. Cl.³ B65D 77/28
U.S. Cl. 206—217 2 Claims

1. A pouch with an integral drinking straw comprising:
- at least two sheets of laminated plastic sealed together along their perimeter;
- an integrally formed unitary drinking straw and mounting flange, said mounting flange being secured along said sealed perimeter such that the drinking end of said straw that aligns with an intended opening in said pouch and such the fluid drawing end of said straw is maintained at least some distance away from the perimeter and walls of said pouch;
- said unitary drinking straw having an integral longitudinally expandable and heat-contractable bellows section, said drinking straw being maintained within said pouch with said bellows section in compression;



whereby said drinking straw may be heat contracted into position during manufacture of said pouch and whereby said drinking straw will alignably expand toward and through said intended opening when said pouch is opened.

4,411,360
STORAGE AND RECORD SYSTEM FOR A LARGE NUMBER OF ASSOCIATED IMAGES

Bayard G. Gardineer, Jr., Skillman, and Charles W. Howlett, Plainfield, both of N.J., assignors to Technicare Corporation, Solon, Ohio

Continuation of Ser. No. 87,849, Oct. 24, 1979. This application May 21, 1981, Ser. No. 265,888
Int. Cl.³ B65D 85/30, 85/57
U.S. Cl. 206—313 1 Claim



1. A system for recording and preserving a plurality of sequentially associated images comprising:
- a. a disc having a center of rotation and consisting of photographic film for at least a portion of an annulus having its outer circumference at a predetermined radius from said center;
- b. first envelope means having an opening on one side, designated "bottom", to accommodate free passage of said disc, said first envelope means being adapted to carry said disc in freely removable, positionally certain relationship adjacent said opening, said first envelope means defining a recess on said one side along said opening, to facilitate removal of said disc;
- c. second envelope means having an opening on one side, designated "top", for receiving said first envelope means in inverted nested relationship therein, with said bottom side of said first envelope means being located generally opposite said top side of said second envelope means, for

optional retention of said disc within said second envelope means upon at least partial withdrawal of said first envelope means, said second envelope means defining a first void therein corresponding to said center of said disc, and a second void located said radius outwardly from said first void;

d. wherein said second envelope means further defines a recess along said top opening to facilitate withdrawal of said first envelope means;

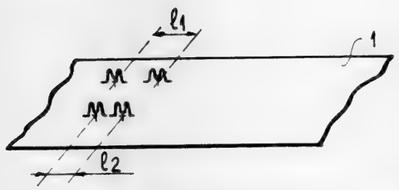
e. and further comprising means associated with said first and second envelope means, for limiting the travel or withdrawal of said first means from said second means, but permitting exposure of said film portion of said disc through said second void as said disc is retained in said second envelope means.

4,411,361

SUPPORTING STRIP FOR CAPACITOR CONNECTIONS, STRIP PROVIDED WITH SUCH CONNECTIONS AND ITS USE FOR THE PRODUCTION OF CAPACITORS

Regis Mentzer, Bagnolet, France, assignor to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques, Bagnolet, France

Filed May 4, 1982, Ser. No. 374,897
Claims priority, application France, May 8, 1981, 81 09230
Int. Cl.³ B65D *73/02*
U.S. Cl. 206—329 **19 Claims**



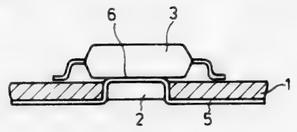
1. A supporting strip to aid in the production of electrical components of the type having a hairpin connector having terminal ends between which the electrical component is grippingly engaged during production thereof, said supporting strip comprising a support member including means defining plural paired upper and lower openings each for receiving a respective one of said hairpin connectors therein in such a manner that said terminal ends are disposed beside their respective lower openings, said paired openings being longitudinally spaced apart relative to adjacent ones thereof along said support member, each of said upper openings including means defining first opposing edge surfaces separated from one another by a first predetermined dimension, and each of said lower openings including means defining second opposing edge surfaces separated from one another by a second predetermined dimension less than said first dimension, said first and second edge surface defining means for convergingly displacing said terminal ends relative to one another as said hairpin connector is advanced through its respective paired upper and lower openings in a direction of movement from said upper opening to said lower opening to increase the gripping engagement exerted by said terminal ends upon said electrical component.

4,411,362

ASSEMBLY DEVICES FOR ELECTRONIC CIRCUIT COMPONENTS

Eiji Itemadani, Sakai; Kazuhiro Mori, Katano; Sobei Tanaka, Neyagawa, and Akira Kabeshita, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 4, 1982, Ser. No. 405,105
Claims priority, application Japan, Aug. 11, 1981, 56-125654
Int. Cl.³ B65D *73/02, 75/22*
U.S. Cl. 206—330 **8 Claims**



1. An assembly device for electronic small components comprising:

a first belt-like long object having a first face and a second face, and provided with a plurality of openings at predetermined intervals, and

a second belt-like long object disposed on said second face of said first belt-like long object,

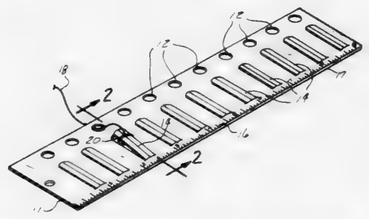
portions of said second belt-like long object at said plurality of openings having adhesive faces which project above the plane of said first face by at least a predetermined height for attaching electronic chip components at said openings.

4,411,363

HOLDER FOR SKEINS OF EMBROIDERY FLOSS

Lois J. Walker, 6708 Blue Spruce Ct., Union Lake, Mich. 48085

Continuation of Ser. No. 159,058, Jun. 13, 1980, abandoned. This application Aug. 23, 1982, Ser. No. 410,425
Int. Cl.³ B65D *85/00*
U.S. Cl. 206—388 **5 Claims**



1. A holder for a skein of embroidery floss comprising:

(a) a planar member,

(b) an aperture formed in the planar member for receiving a color-coded end of a skein of a floss, the color-coded end being projectable through the aperture; and

(c) means for removably retaining the color-coded end of a skein of floss after being projected through the aperture, the retaining means being formed in the planar member and juxtaposed the aperture, the retaining means including:

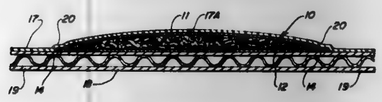
a planar tab formed in the planar member, the tab having a base end integrally formed with the planar member and a free end limitedly rotatable about the longitudinal axis of the planar member for receiving the color-coded end of the skein of floss thereon such that the planar tab removably pinching pinches the color-coded end of skein of floss between itself and the planar member when disposed in the plane of the planar member.

4,411,364

SKIN-PACKAGED POUCHES OF THE RETORT OR LIKE TYPE

Davide R. Friedman, Hanover Park, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Jan. 19, 1982, Ser. No. 340,802
Int. Cl.³ B65D *73/00*
U.S. Cl. 206—466 **7 Claims**



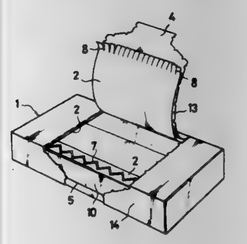
1. A skin package comprising, in combination, a paperboard substrate member capable of permitting passage of air therethrough from opposite surfaces thereof, said member having a medial body portion and marginal edges spaced from said body portion, a product-laden retort or like pouch supported on said medial body portion inwardly of said marginal edges, said pouch formed of a pair of rectilinear sheets of fragile, flexible material thermally sealed together along the perimetric edges othereof, said product capable of generating hydraulic, wave-like forces impinging against said sealed edges internally of the pouch during handling of the package which are capable of rupturing said sealed edges, a plastic film means vacuum-drawn and laminated on said substrate tightly engaged over said pouch and said sealed edges for mounting and immobilizing said pouch on said medial portion, for reinforcing and pressing said sealed edges against said substrate member to prevent rupture of said sealed edges by internal generated forces, and for reducing the effect of such forces against interior surfaces of the pouch sufficient to prevent flex-cracking of the sheets, said member having planar portions extending beyond said sealed edges to provide stacking strength for the package when oriented vertically in a shipping carton.

4,411,365

MOISTURE PROOF CONTAINER WITH AN OUTER BOX AND AN INNER BAG OPENED SIMULTANEOUSLY

Hisao Horikawa, Funabashi, and Mitsuru Kano, Tokyo, both of Japan, assignors to Toppan Printing Co., Ltd., Japan

Continuation of Ser. No. 65,178, Aug. 9, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,457
Claims priority, application Japan, Aug. 17, 1978, 53-112800; Oct. 11, 1978, 53-139485
Int. Cl.³ B65D *5/54, 5/56*
U.S. Cl. 206—607 **8 Claims**



1. A moisture proof container comprising:

an outer closed box formed from a blank of box material, said outer box having a wall section comprised of first and second overlapping panel sections of said blank of box material, said first panel section overlapping said second panel section on the outside of said second panel section, said outer box having a pair of spaced tear away lines through a portion thereof which includes said first panel section to define an openable panel portion;

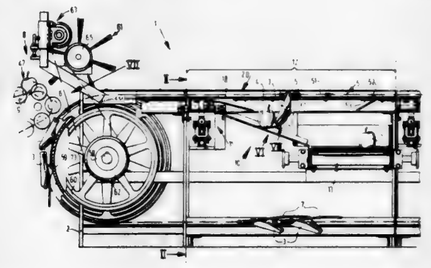
a substantially closed inner bag within said outer box, said inner bag formed from a blank of moisture proof uniaxially oriented sheet material having a uniaxial orientation extending in a first direction, said sheet material having a first portion and a second portion, said first portion of said sheet material prior to formation of said inner bag being spaced along said sheet material in said first direction from said second portion of said sheet material, and said sheet material being arranged to form said inner bag in a manner such that said first portion overlaps and is releasably adhered by releasable adhesive means to said second portion to define an adhered section of said inner bag, said adhered section extending in a second direction which is at right angles to said first direction of said sheet material, said substantially closed inner bag being adhesively secured within said outer box with at least a part of said sheet material adjacent to said first portion adhesively secured to said openable panel portion of said outer box, said substantially closed inner bag being secured within said outer box in a manner (i) such that the orientation of the direction of overlap of said first portion with respect to said second portion of said sheet material forming said inner bag coincides with the direction of overlap of said first panel section with respect to said second panel section of said outer box, (ii) such that said adhered section of said inner bag crosses at right angles to said spaced tear away lines of said outer box, and (iii) such that said adhesively secured part of said sheet material adjacent to said first portion is non-releasable from said openable panel portion relative to said releasably adhered first and second portions of said sheet material, and said first portion being releasably adhered to said second portion and said inner bag being adhesively secured within said outer box such that when said openable panel portion is opened by tearing along said tear away lines, said first portion between said tear away lines is released and separates from said second portion of said sheet material to thereby move with said openable panel portion with said second portion remaining in position in said outer box, whereby said inner bag is opened simultaneously with said openable panel portion.

4,411,366

DEVICE FOR GRADING PRODUCTS

Jan A. De Greef, Tricht, Netherlands, assignor to De Greef's Wagen-, Carrosserie- en Machinebouw B.V., Tricht, Netherlands

Filed Mar. 23, 1981, Ser. No. 246,906
Claims priority, application Netherlands, Mar. 31, 1980, 8001900
Int. Cl.³ B07C *5/24*
U.S. Cl. 209—648 **19 Claims**



19. In a machine for conveying discrete objects and discharging them to a selected station, of the type having an endless conveyor means for receiving the discrete objects and traveling them along a horizontal path which overlies a plural-

ity of discharge stations, said endless conveyor means comprising a series of receptacles pivotally connected at their forward ends to allow their trailing ends to swing downwardly to discharge position at a selected one of said discharge stations, the improvement which comprises:

a downwardly inclined slide underlying said path at an upstream position relative to and leading to each discharge station;

each discharge station presenting a support disposed a predetermined distance below said path; and

means for controlling downward tilting of each receptacle to gently discharge an object and cushion it on a slide and for thereafter controlling the progress of the cushioned object down the slide generally in accord with continued movement of the receptacle until an object reaches and is deposited gently on the support of the discharge station, said means comprising a flexible strip which moves with each receptacle in trailing relation thereto and which is of a length to reach the support when its associated receptacle is above such support.

4,411,367

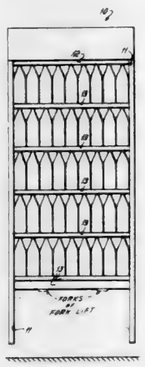
MOBILE DISPLAY RACK

Rafael T. Bustos, Atlanta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Jul. 27, 1981, Ser. No. 287,437

Int. Cl.³ A47F 7/28

U.S. Cl. 211—187 **5 Claims**



1. A mobile display rack for transporting and displaying packaged products which comprises: a frame structure of rectangular configuration comprising four vertically disposed support members; a stationary shelf fixedly supported by the support members at or near their tops; a plurality of slideably adjustable, non-fixedly supported shelves positioned one above the other but below the stationary shelf; means including said four vertically disposed support members for supporting said slideably adjustable shelves for slideable vertical adjustment relative to said four vertically disposed support members; and a shelf stop assembly on which each slideably adjustable shelf rests in its lowest vertically adjusted position; said adjustable shelves being adapted to display product containers and when so used to freely move upwardly when a continuing lifting force is applied to the lowest movable shelf whereby the product containers on the lowest movable shelf will contact the bottom of the next highest movable shelf causing that movable shelf to move upwardly so that its containers contact the bottom of the next highest shelf, and so on, until the containers on the uppermost slideable shelf contact the bottom of the stationary shelf thereby compressing all of the containers immovably between the stationary shelf and the lowest slideable shelf.

5. A process for rendering immovable the containers displayed on a plurality of vertically movable shelves positioned one above the other beneath a stationary shelf thereby rendering the displayed containers transportable, which comprises: applying a lifting force to the bottom of the lowest movable shelf thereby raising it so that the containers displayed thereon contact the bottom of the shelf immediately above it, said latter shelf thereby being raised so that the containers displayed on it contact the bottom of the shelf immediately above it, said latter shelf thereby being raised, and so on, until the containers displayed on the uppermost movable shelf contact the bottom of the stationary shelf, whereby all of the containers are placed under a compressive force rendering them immovable on their respective shelves.

4,411,368

SAFETY SYSTEM FOR HYDRAULICALLY CONTROLLED HOISTING APPARATUS

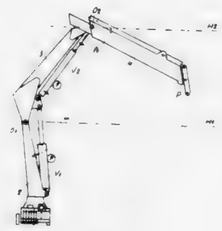
Roger Manjot, La Jonquiere de Maupas, Marennes (Rhone), France

Filed Mar. 9, 1981, Ser. No. 241,664

Claims priority, application France, Mar. 21, 1980, 80 07238; Jun. 6, 1980, 80 13018

Int. Cl.³ B66C 13/48

U.S. Cl. 212—149 **4 Claims**



1. In a crane system comprising:

a hydraulically operated crane having:

a support,

a first arm extending upwardly from said support,

a second arm pivotally connected to said first arm at an upper end thereof,

a first piston-and-cylinder arrangement hingedly connected to said first and second arms for varying an angle between them,

a third arm pivotally connected to said second arm,

a second piston-and-cylinder arrangement pivotally connected to said second and third arms for varying an angle between them, and

a telescoping member on said third arm, extensible therefrom and adapted to support a load, said member being provided with hydraulic means for extending and retracting said member;

distributor valve means connected to said first and second piston-and-cylinder arrangements and to said hydraulic means for controlling the relative movements of said arms and said member to prevent overloading of the crane by limiting certain relative movements while permitting others, said distributor valve means including at least one distributor valve having a linearly shifting valve member; and

circuit means including detectors establishing first and second pressure thresholds for said piston-and-cylinder arrangements for controlling said distributor valve means to establish the conditions under which said first and second piston-and-cylinder arrangements and said hydraulic means can be actuated after said thresholds are exceeded, the improvement which comprises:

means responsive to said detectors for shifting said valve member from either of two selected positions to either side of a central position, into said central position, said shifting means comprising:

a pair of stops formed in axially spaced relationship on said member,

at least one actuator surrounding said member between said stops whereby said member can move relative to said actuator while said actuator is immobilized against one of said stops, and

means for energizing said actuator to displace said actuator and thereby shift said member toward said neutral position.

4,411,369

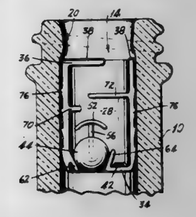
ONE WAY STOPPER PLUG FOR BOTTLES

Allan A. Borows, 1889 Palmer Ave., Larchmont, N.Y. 10538

Filed May 25, 1982, Ser. No. 381,823

Int. Cl.³ B65D 49/02

U.S. Cl. 215—21 **9 Claims**



1. A one-way stopper plug for bottles and the like, to permit pouring out of the liquid content of a bottle while preventing refilling of the bottle, comprising in combination:

(a) a one-piece, resilient plastic molding comprising mating halves joined to each other by an integral living hinge,

(b) each half being constituted of a semi-cylindrical wall having at its ends two transverse walls, all walls being integral,

(c) said semi-cylindrical wall and transverse walls of each said one half having planar edge portions lying in a flat plane and being adapted for engagement with corresponding edge portions of the other half, thereby to form a complete cylinder,

(d) said living hinge connecting together the planar edge portions of two of the said integral walls, one from each of said halves,

(e) said mating halves providing a channel therethrough when they form a complete cylinder, and

(f) back-check valve means including portions of said halves, operable to limit flow of liquid through said channel in one direction.

4,411,370

OPENING ARRANGEMENT FOR CANS

Hans Rausing, Lund, Sweden, assignor to Tetra Pak Developpement SA, Pully, Switzerland

Filed Jun. 17, 1982, Ser. No. 389,496

Claims priority, application Sweden, Jun. 18, 1981, 8103849

Int. Cl.³ B65D 17/34

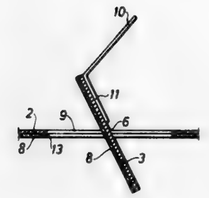
U.S. Cl. 220—269 **12 Claims**

3. An opening arrangement for packing containers having at least one plane end wall made of sheet steel, comprising:

a first U-shaped tongue punched through the end wall;

a second U-shaped tongue punched through the end wall and located adjacent said first tongue, each tongue having a straight base line defined between end points of said respective U-shaped tongue, said base lines paralleling each other and defining between them a relatively narrow intermediate portion of the end wall, both of said tongues and said intermediate portion being pivotable in unison with respect to the end wall around end portions of said intermediate portion; and

a cover strip fixed to the inner surface of the end wall and covering said intermediate strip and said tongues to seal



said intermediate strip and said tongues before they are pivoted to open the container.

4,411,371

HATCH COVER LOCKING MECHANISM

Lyn D. Collier, 7310 Woodland West Dr., Houston, Tex. 77040, and Marvin Stark, 727 Wax Myrtle, Houston, Tex. 77079

Filed Nov. 10, 1980, Ser. No. 205,173

Int. Cl.³ B65D 45/20, 45/28

U.S. Cl. 220—314 **5 Claims**



1. A locking mechanism for hatch covers used on covered hopper cars, the improvement comprising:

a hatch cover movable between an open and a closed position about a hatch opening;

a carrier bar having means attached to the hatch cover;

hinge means located at one end of the carrier bar;

a latch;

means securely mounting the latch to the hopper car;

a locking strip comprising a flexible member having one end attached to the carrier bar for pivotal movement of the strip and having a free end, said locking strip having a locking portion engageable with the latch;

grasping means attached to the flexible member for lifting the free end and moving the flexible member into and from engagement with the latch;

said locking strip having retaining means for holding the strip in position on the carrier bar;

said retaining means including an opening and finger means adapted to fit into said opening for securely holding the flexible member in position; and,

said finger means and opening becoming disengaged upon flexing of the flexible member.

4,411,372

PRESSURE VESSEL CONSTRUCTION

Ernest P. Basterfield, and Parker L. Basterfield, both of Johannesburg, South Africa, assignors to Chern Developments Limited, Transvaal, South Africa

Filed Dec. 3, 1981, Ser. No. 326,666

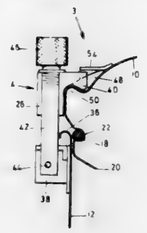
Claims priority, application South Africa, Dec. 4, 1980, 80/7573

Int. Cl.³ B65D 45/00

U.S. Cl. 220—327 **3 Claims**

1. A pressure vessel comprising a container; a seamless lid including a peripheral groove formed in an outer surface

thereof by deforming the material of said lid; sealing means located at least partly in said peripheral groove; and a plurality of fastening fixtures, wherein each of said fastening fixtures comprises a threaded shaft which is secured to said container and pivotal relative thereto in a substantially vertical plane, a



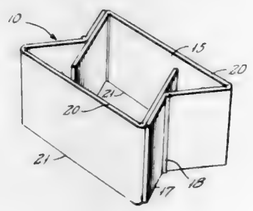
bracket having a hook formation and which is movable along at least a part of said shaft, and which is engageable in a complemental formation on said lid, and a nut which threadedly engages said shaft and is rotatable between a position at which it prevents disengagement and a position at which it permits engagement of said bracket and said lid.

4,411,373

FOLDABLE REINFORCING ELEMENT FOR SHIPPING CONTAINERS

Julius B. Kupersmit, 145-228th St., Springfield Gardens, N.Y. 11413

Filed Oct. 15, 1982, Ser. No. 434,492
Int. Cl.³ B65D *5/36, 5/56*
U.S. Cl. 220—470 **2 Claims**



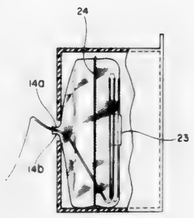
1. An improved foldable reinforcing liner for use with a collapsible reusable shipping container comprising: first and second wall elements, each of said wall elements including a side wall and first and second end walls interconnected to said side wall at opposite ends thereof, said end walls being foldably positioned at substantially a right angle relative to a respective side wall; said first end walls of each of said wall elements having a generally medially positioned transversely extending fold line, said second end walls thereof being rigid; said wall elements being mutually interconnected such that a first end wall of one element is glued to a second end wall of the other element only in an area of said first end wall extending outwardly of said fold line; whereby said liner may be folded when not in use, from a generally rectangular configuration to a generally planar condition without disturbing the planar condition of said second end walls.

4,411,374

TISSUE DISPENSER SYSTEM, PLASTIC OVERWRAP PACKAGE THEREFOR

Harry W. Hotchkiss, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 3, 1981, Ser. No. 289,819
Int. Cl.³ B65H *1/00*
U.S. Cl. 221—63 **5 Claims**



1. An improved facial tissue dispensing system for dispensing a stack of interleaved tissues from a wall mounted type dispensing cabinet, said cabinet including a vertically disposed face plate having a dispensing slot wherethrough a series of interleaved tissues from the stack disposed perpendicular with respect to the face plate may be sequentially dispensed, said system comprising:

a plastic film overwrap package enclosing the stack of tissues, said package being comprised of (1) a rectangular sheet of plastic material so folded as to overlap for the entire length of said sheet along a central region of a last tissue in the stack forming a band, said band being folded, joined and sealed along the overlap and at both ends of the stack, the seals at the ends of the stack providing side walls about the stack of tissues, the overwrap being disposed to provide an air space region between a front face of the package and a first tissue in the stack; (2) means for forming a narrow dispensing opening disposed lengthwise on the front face of said package said opening being such that the edges of the opening partially curl about the edges of the dispensing slot and mechanically adhere to the slot in a manner resisting movement of said package away from the face plate; the surface of the front face of said package being the type which folds and diverges from said opening to form substantially a truncated hip roof shape extending from said opening as each tissue is dispensed from the stack, the forces of the edges of each tissue on the corners of said opening causing tensile forces to extend across the front face of said package causing compressive forces to be applied between the outer extremes of said front face and the back face of said package opposing movement of the stack of tissues away from the back face as the tissues are dispensed from the cabinet, whereby sequential dispensing of said tissues is improved and collapse of said plastic package is minimized.

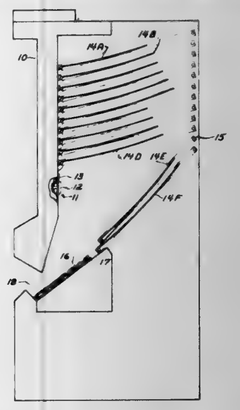
4,411,375

NOVEL SHELF ARRANGEMENT FOR A DROP SHELF VENDING MACHINE

Donald K. Christian, 119 Woodbine Ter., Spartanburg, S.C. 29304

Filed Aug. 13, 1979, Ser. No. 66,481
Int. Cl.³ G07F *11/06*
U.S. Cl. 221—90 **3 Claims**

1. A vending machine including a plurality of varying width dispensing shelves, pivotally mounted at one side and, a shelf support system comprised of a plurality of shelf support means for supporting said shelves at a side other than said one side,



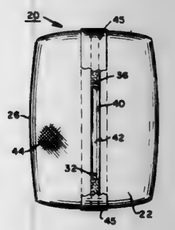
said shelves being so oriented as to facilitate the loading of more than one shelf at a time.

4,411,376

LIQUID SOAP DISPENSER

Robert A. Bennett, 170 Sturbridge Rd., Easton, 06425, and Walter S. Nuckols, 119 Putnam Rd., Bethel, Conn. 06801

Filed Nov. 9, 1981, Ser. No. 319,304
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—212 **6 Claims**



1. A soap dispenser comprising:

a hollow flexible body adapted to contain liquid soap, said body having the general shape of a bar of soap with oppositely disposed spaced apart main front and rear surfaces connected along their edges by a continuous peripheral surface which extends between these main surfaces at right angles thereto, the said body carrying a groove which defines a closed loop and extends across the main surfaces and the peripheral surface, said groove being disposed in the middle of the main surfaces, said body having a discharge port disposed in the peripheral surface and in said groove, said port communicating with the interior of the body, whereby when said body contains soap and is squeezed said soap is discharged through said port, said body having a fill opening in said peripheral surface, spaced apart from said port and much larger than said port, through which said soap can be poured into said body; and

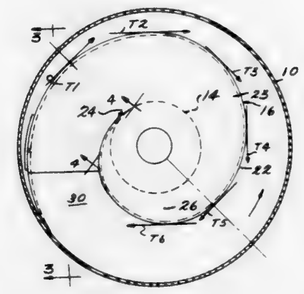
a flexible o-ring disposed in said groove and overlying said opening, said ring having a raised position in said groove when the body is squeezed to dispense soap and otherwise having a lowered position in said groove, said o-ring carrying a sealing plug which is snap fitted into sealing engagement with said opening.

4,411,377

SPIRAL SCOOP ROTARY PLOW FEEDER

Frank J. Miksitz, Phillipsburg, N.J., assignor to UFI Engineering & Manufacturing Co., Inc., Bethlehem, Pa.

Filed Aug. 10, 1981, Ser. No. 291,765
Int. Cl.³ B65G *65/48*
U.S. Cl. 222—342 **5 Claims**



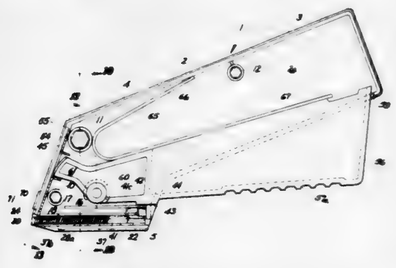
1. A rotary plow feeder for feeding granular material downwardly with gravity assist through a feed aperture in the bottom wall of a container having a generally circular side wall adjacent the bottom, the feeder comprising: a rotary scoop disposed above and close to the aperture, the scoop including a plow blade which is continuously curved in a generally spiral path along essentially its entire length about an axis coinciding with the axis of the aperture and which extends essentially around the whole of the periphery of the aperture, the outer end of the plow blade being disposed close to the container side wall and the inner end of the plow blade being disposed adjacent the aperture; and a shroud plate overlying and connected to the plow blade so that the shroud plate, plow blade and container bottom form a scooping cavity into which granular material flows, during rotation of the scoop about the axis of the spiral, from the container along a path located between the end portions of the plow blade and from which granular material flows uniformly and simultaneously over essentially the whole of the periphery of the feed aperture in the form of an annular stream.

4,411,378

DISPOSABLE SURGICAL STAPLING INSTRUMENT HAVING AN ANVIL WITH COEXTENSIVE LATERAL FLANGES

Thomas E. Warman, Williamsburg, Ohio, assignor to Senco Products, Inc., Cincinnati, Ohio

Filed Jan. 28, 1981, Ser. No. 229,080
Int. Cl.³ B25C *5/02*
U.S. Cl. 227—19 **3 Claims**



1. A surgical stapling instrument for forming and implanting surgical staples in the skin or fascia of a patient, said instrument comprising an elongated body made up of two mating halves

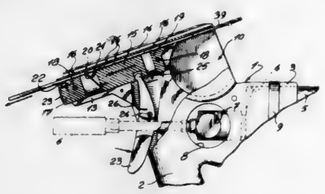
forming a rearward handle portion, a forward portion and a surgical staple magazine portion located beneath said forward portion, an anvil plate mounted within said magazine portion, said anvil plate having forward and rearward ends and comprising an elongated member of inverted U-shaped cross section having a longitudinally extending raised planar central portion, said raised central portion having longitudinal edges terminating in coextensive downwardly depending portions, each of said downwardly depending portions terminating in a coextensive flange portion extending laterally of said downwardly depending portion and said central portion, a coextensive extension on said central portion at said forward end of said anvil plate lying at a slight upward angle to said central portion, said extension having an upper surface comprising an anvil surface, a row of surgical staples slidably mounted on said anvil plate, a feeder assembly mounted in said magazine portion to constantly urge and advance said row of staples along said anvil plate toward said anvil surface to locate the forwardmost staple of said row thereon to be formed and implanted thereabout and to be disengaged therefrom when formed and implanted, said surgical staples of said row each having a crown portion terminating at its ends in downwardly depending legs, said surgical staples of said row straddling said raised central portion and said downwardly depending portions of said anvil plate, the free ends of said legs of said surgical staples being supported by said lateral flange portions of said anvil plate, said lateral flange portions having coplanar extensions at said forward end of said anvil plate, said coplanar extensions extending laterally and along said coextensive extension such that the legs of all of said surgical staples of said row, except the forwardmost staple of said row, are supported by said lateral flange portions and said coplanar extensions as said row of staples is urged and advanced along said anvil plate and said coextensive extension by said feeder assembly, said body having a rectilinear inside surface extending upwardly with respect to said anvil surface, a staple driver located within said forward body portion above said anvil surface, said driver being slidable along said rectilinear surface and shiftable therealong longitudinally between a first retracted position and a second extended staple forming and implanting position, a trigger pivotally mounted within said body and rotatable between unactuated and actuated positions, said staple driver having a pair of spaced rearwardly extending tabs thereon, said trigger having a nose portion abutting said stable driver to maintain said staple driver against said inside body surface and being located between said tabs to shift said staple driver between said first and second positions, a rearward portion of said trigger being partially exposed beneath said rearward handle portion of said body for actuation by a surgeon, and means within said body to bias said trigger to said unactuated position and said staple driver to said first position.

4,411,379

SOLDER FEEDING GUN AND ATTACHMENT

Real Gravel, 9026 de la Montagne St., Valcourt, Canada J0E 2L0

Filed Jul. 10, 1981, Ser. No. 282,072
Claims priority, application Canada, Oct. 30, 1980, 363573
Int. Cl.³ B23K *3/00*
U.S. Cl. 228—52 **3 Claims**



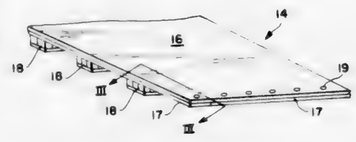
1. A solder feeding gun to be used in combination with a soldering torch, of the type including a combustible gas-containing cylindrical tank and a nozzle protruding from one end of said tank, said gun comprising an elongated body having a front end and a rear end, clamp means to secure said tank to the rear end of said body with said nozzle exposed at the forward end of said body, a pistol type handgrip depending from said body to hold the same and said tank in operative position, said body having a cavity at its rear end for holding a spool of coiled solder wire, said body forming a longitudinally-extending straight piston chamber opened at the front of said body and in full communication with said cavity, an outlet block removably held within the front portion of said piston chamber, a solder-straightening block removably held within the rear portion of said piston chamber adjacent said cavity, a piston slidable within said piston chamber intermediate said two blocks and removable from said piston chamber, said two blocks and said piston each having a longitudinal passage for slidably receiving and guiding said solder wire, means to maintain said blocks and said piston with their respective passages in mutual register, a finger-actuated lever pivotally carried by said body and removably connected to the piston to displace the latter towards said outlet block, spring means connected to said lever and biasing the same to displace said piston towards said solder-straightening block, a resilient pusher blade fixed to said piston and biased against said solder wire to grip and move said wire through said block passages during movement of said piston towards said outlet block and to release the grip on said wire during movement of said piston towards said straightening block, and a resilient means carried by one of said blocks and resting on said wire to bias the same against displacement during movement of said piston towards said solder wire-straightening block, said piston operatively displacing said solder wire outwardly of the front end of said body, thereby feeding said wire to be melted by heat produced by the nozzle of the soldering torch.

4,411,380

METAL MATRIX COMPOSITE STRUCTURAL PANEL CONSTRUCTION

Robert R. McWithey, Newport News; Dick M. Royster, Hampton, and Thomas T. Bales, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 30, 1981, Ser. No. 280,155
Int. Cl.³ B23K *1/04*; B32B *3/12*
U.S. Cl. 228—181 **6 Claims**



1. A method of fabricating lightweight structural panels suitable for use in aerospace vehicular construction comprising:

providing a metal exterior skin for the structural panel,

brazing doublers along the interior periphery of the exterior skin with the doublers being of the same composition and of essentially the same thickness as the exterior skin,

brazing a plurality of equally spaced parallel honeycomb stringers along the interior surface of the exterior skin with one end surface of the honeycomb stringers being confined within the area defined by the doublers and the other end of each honeycomb stringer being capped so as to leave the honeycomb cell sidewalls exposed; and

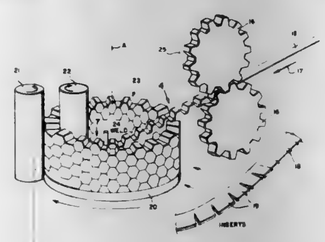
wherein the metal exterior skin is a metal matrix composite laminate sandwich construction having a first layer of titanium, three adjacent layers of silicon carbide coated boron fibers embedded within an aluminum alloy matrix, an intermediate layer of Ti-6Al-4V titanium alloy, three additional layers of silicon coated boron fibers embedded within an aluminum alloy matrix, and a second layer of titanium.

4,411,381

HONEYCOMB MANUFACTURING METHOD

Nelson C. Ittner, P.O. Box 1266, Blue Jay, Calif. 92317, and Gary N. Ittner, Los Angeles, Calif., assignors to Nelson C. Ittner, Los Angeles, Calif.

Filed Apr. 2, 1982, Ser. No. 364,808
Int. Cl.³ B32B *3/12*
U.S. Cl. 228—181 **4 Claims**



2. A honeycomb manufacturing method including the steps of:

(a) corrugating a ribbon of honeycomb core material in a continuous manner as it moves along a path so that one longitudinal edge defines a first truncated triangular wave form when viewing the ribbon from one side and the opposite longitudinal edge defines a second truncated triangular wave form when viewing the ribbon from the opposite side, the height of the first truncated triangular wave form being greater than the height of the second truncated triangular wave form so long as the path is straight;

(b) inserting brazing material on the corrugated ribbon;

(c) guiding the path of movement of the core material with brazing material into an helical stack with the brazing material between successive helical turns; and

(d) welding the helical turns of the core material together so that a cylinder of honeycomb material results, the outside wall of the cylinder being made up of said one longitudinal edge of the core material and the inside wall being made up of said opposite longitudinal edge of the core material, the radius of the cylinder being such that resulting stretching of the one longitudinal edge and compressing of the opposite longitudinal edge equalizes the said heights of the first truncated triangular and second truncated triangular wave forms respectively defined by the edges so that the lateral wall of the cylinder is rectilinear in a direction parallel to the axis of the cylinder and the planes of the nodes of the honeycomb material are normal to said axis.

4,411,382

ERECTABLE DISPLAY ASSEMBLY WITH SELF-CONTAINED PACAKGED PRODUCT

Ronald H. Taub, 154 Sheridan Rd., Highland Park, Ill. 60035

Filed Jun. 21, 1982, Ser. No. 390,257
Int. Cl.³ B65D *5/52, 25/24*
U.S. Cl. 229—16 D **25 Claims**

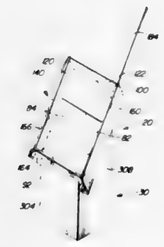
1. A standing, self-supporting display assembly of corrugated paper or the like for displaying articles carried thereby, said display assembly comprising, in combination, a base, and a tray surmounting and supporting on said base, said base including an upstanding generally rectangular perimetric wall including hingedly joined front and rear walls and side walls,

said base being collapsible along prescored fold lines to provide a compact packet for shipment and storage,

said front wall of said base being of a lesser height than said rear wall and said front wall having generally horizontally extending upper edge for supporting said tray,

said tray having a lateral width exceeding that of said base,

each of said side walls of said base defining a pair of upwardly presented intersecting edge means for support of said tray thereon, said pair of intersecting edge means each including first edge means and second edge means disposed to extend substantially at 90° to one another and each pair of said edge means adapted to support respectively a lower end panel and a floor panel of said tray carried by said base,



each of said pair of said intersecting edge means intersecting at a locus generally forwardly in respective opposed said side walls and below said upper edge of said front wall of said base,

said first edge means being angled rearwardly and downwardly from said upper edge of said front wall and said second edge means projecting upwardly and rearwardly from a lower terminus of said first edge means,

said tray as supported on said base being disposed to project generally upwardly and rearwardly from said upper edge of said front wall of said base, and

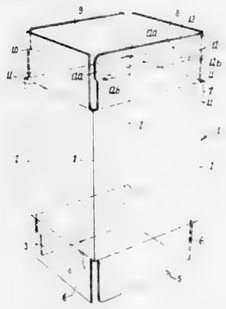
cooperating intercoupling means carried by said base and by said tray for securing said tray to said base.

4,411,383

CARTON AND INTEGRAL HANDLE THEREFOR

Charles K. Morris, Templestowe, Australia, assignor to Pak Pacific Corporation Pty. Limited, Victoria, Australia

Continuation-in-part of Ser. No. 232,046, Jan. 23, 1981, abandoned. This application Dec. 28, 1982, Ser. No. 453,940
Int. Cl.³ B65D *5/46*
U.S. Cl. 229—52 B **4 Claims**



1. A formed carton including at one end a pair of inner closing flaps and a pair of outer covering flaps adhered to said

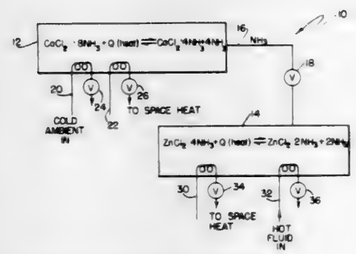
closing flaps, a handle strip connected to the end portion of one covering flap and extending across the carton and joined by a weakened zone to said covering flap; and an adhesive tape extending along said strip and onto the carton wall adjacent each end of said strip thereby to join said strip at its ends to the carton, said strip being severable from the covering flap at said weakened zone, said handle strip generally lying flat across and bisecting the end of the carton, the other covering flap extending under the handle strip to push the handle strip above the level of the outer covering flaps, thereby providing a raised handle strip having an exposed edge along one length thereof to allow access for fingers.

4,411,384

HEAT DRIVEN HEAT PUMP USING PAIRED AMMONIATED SALTS

Richard M. Dunlap, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 29, 1980, Ser. No. 182,367
Int. Cl.³ G05D *23/00*; F25B *13/00*
U.S. Cl. 237—2 B **3 Claims**



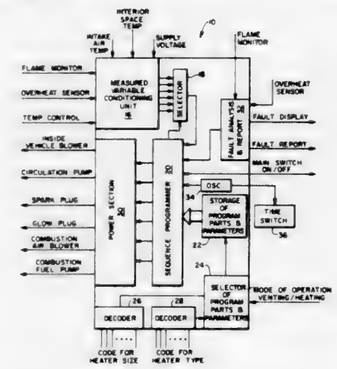
1. A heat driven heat pump comprising:
a first ammoniated salt;
a second ammoniated salt;
a first heating source of ambient winter temperature for heating said first salt;
a second heating source of temperature higher than said first heating source, said second heating source for heating said second salt;
first means for applying heat to said first ammoniated salt from said first heating source for heating, increasing the pressure, and dissociating ammonia from said first ammoniated salt forming a first lower ammoniated salt and transferring the dissociated ammonia to said second ammoniated salt to further ammoniate said second ammoniated salt at a predetermined temperature forming a second higher ammoniated salt with the release of heat at said predetermined temperature and for providing comfort heating; and
second means for applying heat to said second higher ammoniated salt from said second heating source for heating, increasing the pressure and dissociating ammonia from said second higher ammoniated salt, and transferring the dissociated ammonia to said first lower ammoniated salt to ammoniate said first lower ammoniated salt forming said first ammoniated salt at said predetermined temperature with the release of heat at said predetermined temperature and for providing comfort heating.

4,411,385

CONTROLLER FOR THE OPERATION OF HEATERS

Falk Lamkewitz, Munich, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Munich, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,228
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1980, 3031410
Int. Cl.³ G05D *23/00*
U.S. Cl. 237—2 A **16 Claims**



1. A controller for controlling the operation of a heater comprising:
means for storing a plurality of control and regulation programs for the operation of a plurality of different heaters, wherein said storage means includes various preselectable parameters for running of said stored programs;
means for selecting one of said plurality of control and regulation programs for a particular heater from among said plurality of different heaters in accordance with selection instructions identifying said particular heater;
means for providing control and regulation signals to said particular heater in accordance with the selected control and regulation program; and
means for receiving disturbance variables indicative of heater operation and environmental conditions pertaining to heater operation;
wherein said means for providing control and regulation signals includes a programmer for receiving said disturbance variables and providing said control and regulation signals in accordance with said disturbance variables and said selected program, wherein said heater is a vehicle heater and wherein a vehicle supply voltage is input to said programmer as a disturbance variable, said means for providing control and regulation signals providing such signals to preheat said vehicle prior to starting an engine of said vehicle.

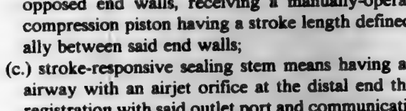
4,411,386

APPARATUS FOR CONTROLLING SPRAY PATTERN

Lynnford E. Disbrow, 1400 W. Bruneau, Kennewick, Wash. 99336

Filed Dec. 28, 1981, Ser. No. 334,556
Int. Cl.³ B05B *3/00*
U.S. Cl. 239—177 R **13 Claims**

1. In a pivot irrigation system having a reciprocating end gun with a reversing mechanism for changing the direction the end gun swings, an apparatus for controlling the spray pattern being delivered by the end gun in response to wind conditions, comprising:
sensing means for delecting wind conditions;
end gun controlling means operably connected to said sensing means and having at least one adjustable stop adjacent to the end gun for engaging the reversing mechanism to change the direction the end gun swings and thereby



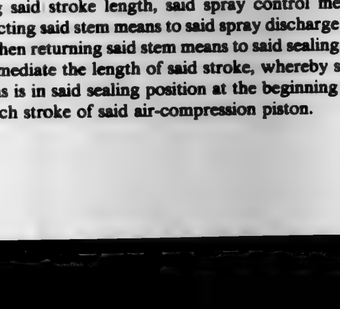
control the spray pattern of the end gun in response to wind conditions.

4,411,387

MANUALLY-OPERATED SPRAY APPLICATOR

Donald J. Stern, 127 Underhill Rd., and Jon I. Allsop, 2317 N. Shore Rd., both of Bellingham, Wash. 98226

Filed Apr. 23, 1982, Ser. No. 371,276
Int. Cl.³ B05B *7/24*
U.S. Cl. 239—345 **26 Claims**



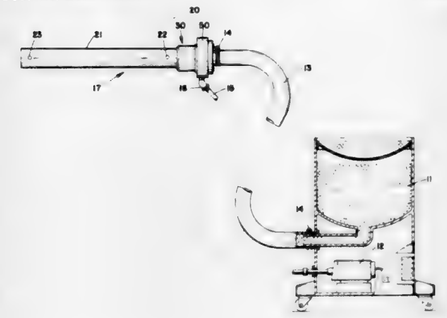
1. A manually-operated spray applicator for discharging a coating fluid residing therein by propelling said fluid as a spray from an outlet port with an airjet issuing slightly upstream thereof and created upon the manual stroke of an air-compression piston, said applicator comprising:
(a.) receiving chamber means wherein a coating fluid is contained, having an inlet port for admitting a quantity of said fluid thereto and an outlet port for discharging a portion thereof;
(b.) a closed compression chamber having sidewalls and opposed end walls, receiving a manually-operated air-compression piston having a stroke length defined generally between said end walls;
(c.) stroke-responsive sealing stem means having a central airway with an airjet orifice at the distal end thereof in registration with said outlet port and communicating at its proximal end with said compression chamber, said stem means being reciprocable in response to the location of said air-compression piston along the stroke length thereof, from a biased sealing position wherein said stem means is in sealing engagement with said outlet port to a spray discharge position wherein said stem is retracted and said airjet orifice is disposed within said receiving chamber slightly upstream of said outlet port; and,
(d.) spray control means for reciprocating said stem means in response to the location of said air-compression piston along said stroke length, said spray control means first retracting said stem means to said spray discharge position and then returning said stem means to said sealing position intermediate the length of said stroke, whereby said stem means is in said sealing position at the beginning and end of each stroke of said air-compression piston.

4,411,388

APPARATUS FOR CONVEYING LIGHTWEIGHT PARTICULATE MATTER

Jack E. Muck, 1511 Clarence Ave., Lakewood, Ohio 44107

Filed Mar. 26, 1981, Ser. No. 247,895
Int. Cl.³ B05B *7/04*
U.S. Cl. 239—419.5 **3 Claims**



1. In an apparatus of the jet suction type for pneumatically conveying lightweight particulate matter and ejecting it at a desired location, said apparatus including a source of said particulate matter, a source of air pressure, a nozzle, transport tubing means for conveying said particulate matter from its said source to said nozzle, and air pressure tubing means for conveying air pressure from its said source to said nozzle, an improved nozzle comprising
a generally tubular housing with rear and front ends, said housing containing therein a central transport duct with an axis passing therethrough from said rear to said front end and being joined at said rear end of said housing with said transport tubing means whereby said particulate matter may pass freely from said transport tubing means into and through said central transport duct, said housing further being provided with a plurality of jet ducts having axes and having openings located peripherally about said front end of said central transport duct, each of which jet ducts is joined with said air pressure tubing means whereby air is forced through said jet ducts, exiting said jet ducts as air jets,
a nozzle tube with a cylindrical interior, an axis, a rear end and a front end, said nozzle tube being joined at its rear end with said front end of said housing, said transport duct and jet ducts opening into said nozzle tube interior, said jet duct axes being inclined forwardly toward the axis of said nozzle tube such that said air jets meet each other at a point on said axis of said nozzle tube, said air jets meeting said axes of said nozzle tube at an angle of between 3 and 30 degrees, and
said nozzle tube being provided with a first and a second set of holes, said first set being a plurality of holes spaced generally evenly about the circumference of said nozzle tube rearwardly of said point where said air jets meet, and said second set being a plurality of holes spaced generally evenly about the circumference of said nozzle tube frontwardly of said point where said air jets meet.

4,411,389

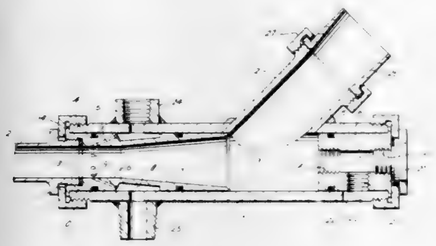
FILLER GUN SUITABLE FOR CAVITY INJECTION

John D. Harrison, Newbury, England, assignor to Shell Internationale Research Maatschappij, B. A., Netherlands

Filed Nov. 27, 1981, Ser. No. 325,181
Claims priority, application United Kingdom, Dec. 2, 1980, 8038646
Int. Cl.³ B05B *7/00*
U.S. Cl. 239—427.5 **7 Claims**

1. A filler gun suitable for injecting a mixture of a granular

or particulate solid and a liquid binder into a cavity, which comprises a hollow body having an outlet at one end, a binder inlet for liquid binder at the other end, and a side inlet for granular or particulate solid, which side inlet is directed towards the outlet at an angle of less than 90° with respect to the direction of flow of liquid binder from the binder inlet to the outlet in operation of the gun, characterized in that an



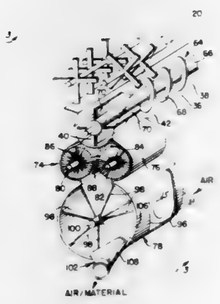
outlet sleeve is releasably located in the body between the side inlet and the said one end, and an inlet sleeve is releasably located in the body between the side inlet and the said other end, the inlet sleeve having an axial bore and a side passage opening into the bore which passage is adapted for attachment of a liquid binder supply line, and the body is slotted to enable withdrawal of the inlet sleeve therefrom without prior detachment of an attached binder supply line.

4,411,390

INSULATION BLOWING AND SPRAYING APPARATUS

Homer G. Woten, 912 Perrin Ave., NW., Winter Haven, Fla. 33880

Filed Apr. 6, 1981, Ser. No. 251,710
Int. Cl.³ B02C *17/16*
U.S. Cl. 241—98 **29 Claims**



1. Apparatus for producing particulate material from compact masses of material such as insulation materials and pneumatically dispensing such materials comprising,

a hopper for containing said compact masses,

an outlet positioned towards the bottom of said hopper,

a shredding zone located within an upper portion of said hopper for receiving said materials and shredding any large compact masses of said material into smaller masses or nodules,

shredding means within said zone and including a plurality of rotating elements for receiving and shredding said compact masses,

conveying means positioned below said shredding means and above said outlet for moving said material along said hopper,

a tearing and separating zone positioned below said outlet and receiving said material passing through said outlet to tear and separate any nodules of said material into particulate material,

said tearing and separating zone including a plurality of rotating brush elements through which said material passes to be torn and separated, and

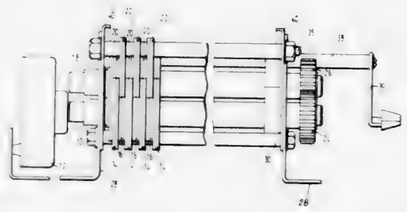
pneumatic transport means positioned below said tearing and separating zone to receive and dispense said particulate material.

4,411,391

DOCUMENT SHREDDING MACHINES

Dennis P. Crane, Olton, England, assignor to Ofrex Group Limited, London, England

Filed May 15, 1981, Ser. No. 263,979
Claims priority, application United Kingdom, May 27, 1980, 8017324
Int. Cl.³ B02C *18/18*
U.S. Cl. 241—232 **6 Claims**



1. A document shredding machine of the kind comprising a machine frame, two cutter assemblies each comprising a shaft mounted on the frame and cutter discs mounted on the shaft at spaced intervals, the shafts being substantially parallel and spaced apart a distance such that the discs on one shaft extend into the spaces between the discs on the other shaft into overlapping relationship and form a nip, the machine comprising drive means mounted on the frame which is operative to rotate the shafts in opposite directions so that documentary material fed into the nip of the machine is cut into strips by the action of the overlapping discs, the improvement wherein one of the cutter assemblies is mounted so as to be capable of separative movement relative to the other cutter assembly against the action of resilient means, the machine including stop means on the machine frame which may be moved between a stop position in which it maintains the two cutter assemblies in prefixed overlapping relationship and prevents such relative separative movement and a release position in which such relative separate movement against the action of the resilient means is permitted, said stop means when in its release position limiting the separative movement to an extent so as to maintain the cutter discs of the two assemblies in said overlapping relationship.

4,411,392

SPEED-COMPENSATING DEVICE FOR THE FEEDING OF THREADS TO A WEAVING OR KNITTING MACHINE

Alfred Boehm, and Eberhard Richter, both of Naila, Fed. Rep. of Germany, assignors to LIBA Maschinenfabrik GmbH, Naila, Fed. Rep. of Germany

Filed Mar. 13, 1981, Ser. No. 243,351
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1980, 3013203
Int. Cl.³ B65H *54/20, 59/38*
U.S. Cl. 242—35.5 R **4 Claims**

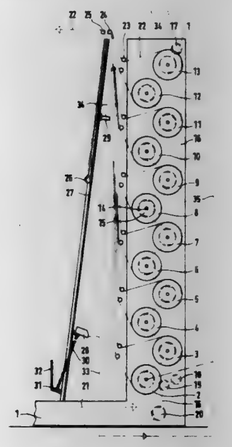
1. An apparatus for feeding threads to a weaving or knitting machine in which the threads are taken up by the machine from spools at different speeds, the apparatus comprising

a common drive system with a plurality of clutch means for drivingly coupling corresponding spools when engaged,

a plurality of compensating pulleys, one for each thread, freely movably within a vertically extending range of travel and biased by gravity for forming variable loops of the threads,

first means for directing the threads tangentially from the spools and downwardly to corresponding compensating pulleys,

second means for directing the threads upwardly from the compensating pulleys and to the machine,



a plurality of first control means, each for detecting the presence of the respective compensating pulley adjacent the lower end of its range of travel to disengage a corresponding clutch means, and

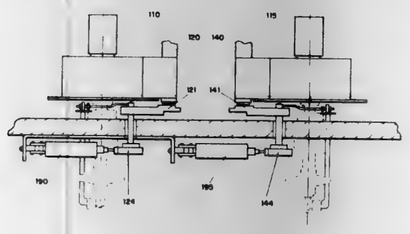
a plurality of second control means, each detecting the presence of a respectively compensating pulley and for operating when the respective compensating pulley is adjacent the upper end of its range of travel to reengage the corresponding clutch means.

4,411,393

WEB TENSION CONTROL APPARATUS

Robert M. Jodrey, Westboro, and Robert J. Scott, Framingham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed Jun. 5, 1981, Ser. No. 270,935
Int. Cl.³ B65H *17/02, 17/38, 23/08, 25/04*
U.S. Cl. 242—75.43 **16 Claims**



1. Improved web transport apparatus, of the type including web dispensing means, means for regulating the web tension at the web dispensing means, web takeup means, means for regulating the web tension at the web takeup means, and a metering device for engaging the web and controlling its advance from the web dispensing means to the web takeup means, wherein the improvement comprises improved tension control apparatus including:

a first pneumatic assembly, for controlling the dispensing tension regulating means in response to a first air pressure;

a second pneumatic assembly, for controlling the takeup tension regulating means in response to a second air pressure;

a web engaging member mounted to said metering device to move in response to a tension differential of the engaged web; and

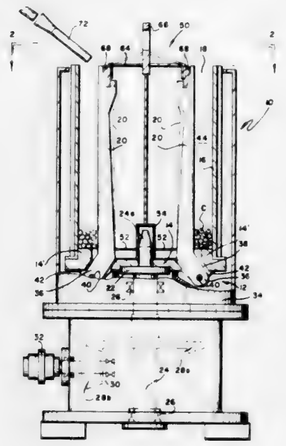
a valve assembly within said metering device actuated by the movement of said web engaging member to vary the air pressure to at least one of said pneumatic assemblies.

4,411,394

POURING REEL

Raymond R. Starvaski, Worcester, and Alfred R. Leger, Grafton, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Sep. 3, 1981, Ser. No. 299,158
Int. Cl.³ B21C *47/30*
U.S. Cl. 242—83 **11 Claims**



1. Apparatus for forming a longitudinally moving product length into an upstanding cylindrical coil, comprising:

a rotatable tub having a bottom, a cylindrical side wall and a circular row of pin members arranged concentrically within said side wall, said pin members protruding upwardly from said bottom and being pivotal between substantially vertical positions cooperating with said side wall to define an annular chamber, and inoperative positions inclined inwardly away from said side wall;

a carrier removably inserted in said tub and arranged for rotation therewith, said carrier having a base defining the lower end of said chamber with a central core protruding vertically from said base and with locating means for engaging and urging said pin members into their operative positions arranged on said core;

means for rotating the combination of said tub and said carrier while receiving the longitudinally moving mill product in said chamber, thus forming said product into an upstanding coil supported on said base and radially confined between said side wall and said operatively positioned pin members;

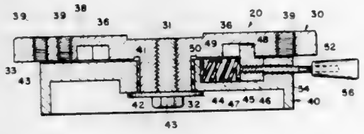
said carrier being adapted for vertical removal from said tub following completion of a coil forming operation, with said coil being supported on said base for removal with said carrier, and with said locating means being disengageable from said pin members during carrier removal to

thereby permit said pin members to pivot to their inoperative positions.

4,411,395
DOWNRIGGER SWIVEL BASE

Charles Steffens, Austin, Tex., assignor to Riviera Marine & Tackle Co., Austin, Tex.

Filed Aug. 14, 1981, Ser. No. 292,877
Int. Cl.³ A01K *89/015*; F16M *11/08*
U.S. Cl. 242—106 **14 Claims**



1. A swivel assembly for mounting a downrigger to a vessel comprising:

a base plate including means for securing said plate to a vessel, said plate having an upper surface and a first recess formed downwardly in said plate through said upper surface, interengaging means movably positioned in said recess and including a portion extending above said upper surface;

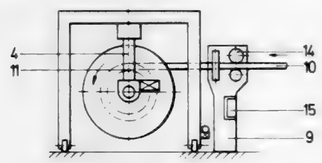
a swivel plate rotatably secured to said base plate and including a lower surface facing said upper surface of said base plate, said swivel plate including a second recess for receiving said portion of said interengaging means to permit relative rotation of said swivel plate with respect to said base plate when said interengaging means is in a first position, said swivel plate including locking means communicating with said second recess; and

means for moving said interengaging means to a second position in which said portion of said interengaging means contacts said locking means to prevent rotation of said swivel plate with respect to said base plate.

4,411,396
WINDING MACHINE FOR WINDING STRAND-SHAPED WINDING MATERIAL ON A SPOOL

Walter Kytir, Mehlführergasse 28, Vienna A-1238, Austria

Filed Jun. 22, 1981, Ser. No. 276,289
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024093
Int. Cl.³ B65H *54/28*
U.S. Cl. 242—158 R **3 Claims**



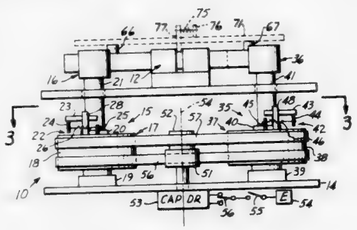
1. In a winding machine for winding strand-shaped winding material on a rotating spool to which the winding material is fed via a strand guide, having a feed drive for effecting a relatively reciprocating traversing movement between the spool and the strand guide axially of the spool, the feed drive being controlled upon the rising of the winding material at a spool flange in accordance with a pre-established control program during the transition into a next higher winding layer, the improvement comprising

a reversing means for reversing the relative movement between the spool and the strand guide, said reversing means including means for detecting a ratio of the speed of rotation of the spool with respect to speed of arrival of the winding material at the spool and means for reacting to a change in the ratio of the speed of rotation of the spool with respect to the speed of arrival of the winding material including the control program for causing the feed drive to change the relative direction of movement between the spool and the strand guide.

4,411,397
BIDIRECTIONAL TAPE DRIVE SYSTEMS

Herbert Karsh, Laguna Beach, and Irving Karsh, Costa Mesa, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jul. 18, 1978, Ser. No. 925,673
Int. Cl.³ G03B *1/04*
U.S. Cl. 242—192 **12 Claims**



1. In a bidirectional tape drive, the improvement comprising in combination:

first tape drive means including a first tape drive capstan, first capstan drive means for rotating said first capstan, means for mounting said first capstan for angular movement relative to said first capstan drive means, first elastic coupling means connected to said first capstan and to said first capstan drive means for elastically restraining relative angular movement between said first capstan and said first capstan drive means, and means connected to at least one of said first capstan and first capstan drive means for stopping angular movement of said first capstan relative to said first capstan drive means in a first sense of rotation;

said first elastic coupling means include first resilient means connected to said first capstan and first capstan drive means for biasing angular movement of said first capstan toward said stopping means; and

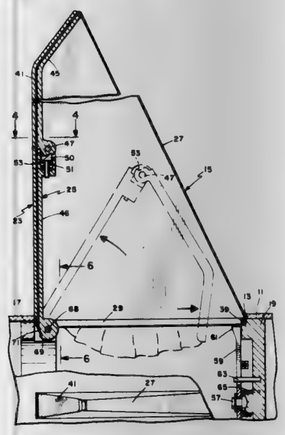
second tape drive means including a second tape drive capstan, second capstan drive means for rotating said second capstan, means for mounting said second capstan for angular movement relative to said second capstan drive means, second elastic coupling means connected to said second capstan and to said second capstan drive means for elastically restraining relative angular movement between said second capstan and said second capstan drive, and means connected to at least one of said second capstan and second capstan drive means for stopping angular movement of said second capstan relative to said second capstan drive means in a second sense of rotation;

said second elastic coupling means include second resilient means connected to said second capstan and second capstan drive means for biasing angular movement of said second capstan toward said stopping means, and said first and second elastic coupling means acting in opposite angular directions in their restraining functions.

4,411,398
DOUBLE FABRIC RETRACTABLE WING CONSTRUCTION

Larry D. Wedertz, Mira Loma; Oakley G. Ross, Upland, and Byron M. Niemeier, Claremont, all of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Apr. 20, 1981, Ser. No. 255,413
Int. Cl.³ F42B *13/32*
U.S. Cl. 244—3.28 **3 Claims**



1. In a missile having an elongated body, the body having an outer wall with a plurality of circumferentially spaced, longitudinally extended slots therein, a retractable self-erecting wing mounted in each slot, each wing comprising:

a single extendable strut member at the leading edge of the wing pivotally mounted in the body at the forward end of the slot and biased to swing outwardly from the body, said strut member including strut sections pivotally connected by pivot means for folding said strut member and said wing cover to the wing stored position and for extending said wing to the operative position;

means on said strut sections for urging said strut sections to the extended position;

a flexible wing cover affixed to said strut member for forming a wing with an internal air pocket in the extended position, said wing cover being movable with said strut member;

means at the bottom of said wing cover to secure the wing cover to the missile body;

retaining means for holding the wing cover in the stored position with said strut member and folded wing cover folded within the slot, said retaining means comprising a substantially U-shaped rod connected to the missile body and the bottom portion of said wing cover, with the legs of said U-shaped member sufficiently spaced apart to pass the folded wing cover and folded strut member therebetween; and

extension means operatively mounted on the body for extending said wing.

4,411,399
RETRACTABLE NOZZLE FAIRING SYSTEM FOR AEROPLANE CENTER BOOST ENGINE

Donald W. Hapke, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1981, Ser. No. 306,906
Int. Cl.³ B64C *1/38*; B64D *29/04*
U.S. Cl. 244—130 **46 Claims**

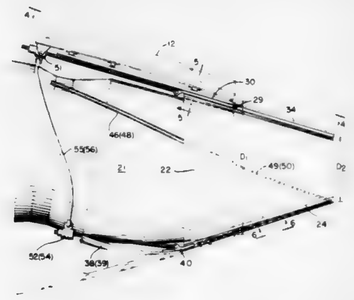
1. A structural assembly having a variable area outlet comprising, in combination:

(a) a fixed tubular member having a truncated conical end portion defining an outlet of fixed predetermined diameter at the apical end thereof;

(b) a fairing member formed of sheet-like flexible material at least partially surrounding said truncated conical end portion of said tubular member, said fairing member being free for relative longitudinal translation with respect to said tubular member;

(c) means for mounting said fairing member on said fixed tubular member with freedom for controlled longitudinal translation relative to said tubular member between: (i) a retracted position partially surrounding said truncated conical end portion of said tubular member; and (ii), a deployed position wherein said fairing member defines a truncated conical extension of said truncated conical end portion of said tubular member with said truncated conical extension having an outlet of substantially reduced diameter at the apical end thereof;

(d) said mounting means including track defining means and



track follower means with one of said track defining means and said track follower means being fixedly secured to said fairing member and the other of said track defining means and said track follower means being fixedly secured to said tubular member so as to permit said sheet-like fairing member to: (i) gradually expand as it translates relative to said tubular member from a fully deployed truncated conical position to a fully retracted position with the opposed longitudinal edges of said fairing member parted with respect to one another; and (ii), gradually contract as it translates relative to said tubular member from a fully retracted position to a fully deployed position with the opposed longitudinal edges of said fairing member being abutted together when in the fully deployed position so as to form said truncated conical extension; and,

(e) actuating means for translating said fairing member between a fully deployed position and a fully retracted position.

4,411,400
SHELVING SYSTEM

Lynn E. Everett, New Philadelphia, Ohio, assignor to Tusco Manufacturing Co., Gnadenhutten, Ohio

Filed Mar. 20, 1981, Ser. No. 245,998
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—216.1 **17 Claims**

1. A shelving system for supporting horizontally disposed shelving adjacent a vertical wall surface having a horizontally extending sill, the system including at least a pair of spaced-apart vertically extending rail members each having a pair of spaced apart, interconnected side walls, said rail member having means for receiving shelving support brackets; and means attached to the upper end of said rail members for releasably securing said rail members to the horizontally extending sill, said securing means including a separate generally vertical plate portion extending outwardly from the upper end portion

of each of said side walls of said rail members, each of said plate portions provided with downwardly extending prong means adapted to securely engage the horizontally extending



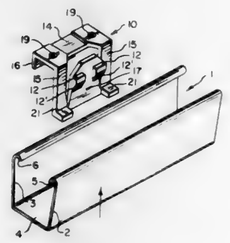
sill for supporting said rail member adjacent the vertical wall beneath the sill and militating against any swinging movement of said rail member along the wall surface.

4,411,401

HEADRAIL MOUNTING BRACKET

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas, Inc., Totowa, N.J.

Filed Feb. 23, 1981, Ser. No. 236,726
Int. Cl.³ A47H *1/14*
U.S. Cl. 248—262 **18 Claims**



1. A headrail bracket for mounting a substantially U-shaped venetian blind headrail where said headrail has oppositely disposed shoulder mounts thereon; characterized in that said bracket has first and second oppositely disposed hanger portions which face away from each other and are movable towards and away from each other adapted to engage and support said shoulder mounts, said bracket has resilient means for normally resiliently urging said first hanger portion away from said second hanger portion to resiliently lock a headrail to the bracket wherein said first hanger portion may be moved against the resilient means and toward the second hanger portion to allow disengagement of a hanger portion from a mounting shoulder.

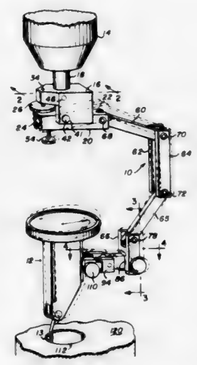
4,411,402

ADJUSTABLE INDICATOR HOLDERS

Max P. Keller, 3330 Ledyard Way, Aptos, Calif. 95003

Filed Nov. 3, 1980, Ser. No. 203,358
Int. Cl.³ E04G *3/00*
U.S. Cl. 248—284 **8 Claims**

1. An adjustable indicator holder comprising:
a body member including
means for engaging a spindle device,
a transversely disposed elongated arm pivotally secured thereto at a point intermediate its ends, and
adjustment means for applying a pivoting force to said lever arm;
articulated linkage means including a plurality of linking elements frictionally engaged to each other and having one extremity thereof pivotally attached to said lever arm, each said element of said linkage means being secured to an adjacent element by means of pivot pins the axes of which all lie in parallel lines; and



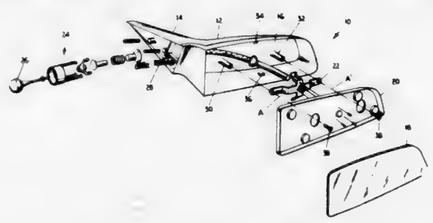
clamping means attached to the other extremity of said linkage means, said clamping means being adapted to clampingly engage a saturated indicator means and being rotatable relative to said linkage means and about an axis normal to planes including the axes of said pivot pins whereby said indicator can be roughly positioned by frictionally deforming said linkage means, and said adjustment means can be used to finely position said indicator means with any desired accuracy.

4,411,403

PIVOT SUPPORT BRACKET FOR MIRROR ASSEMBLY

David L. Tomsu, East Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed Nov. 23, 1981, Ser. No. 323,965
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—575 **9 Claims**



1. A mirror assembly for a vehicle comprising:
a housing;
a mirror;
attachment means in said housing for supporting said mirror in said housing;
support means for pivotably mounting said mirror to said attachment means;
said support means including first and second prestressed arm means for mounting said support means each said arm means having a pair of opposing arms, to said attachment means, said first arm means being mounted in tension and said second arm means being mounted in compression;

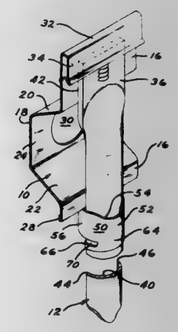
wherein said prestressing of said first and second arm means serves to reduce vibration of the mirror relative to the vehicle and thereby substantially reduce blurring of images on said mirror.

4,411,404

HOLDING CLIPS FOR STAKES SUPPORTING METAL CONCRETE FORMS

Albert P. Weisbach, Louisville, Ky., assignor to Cardinal Manufacturing Co., Louisville, Ky.

Filed Jun. 9, 1982, Ser. No. 386,510
Int. Cl.³ E01C *7/00*
U.S. Cl. 249—3 **5 Claims**



1. The combination of an interlocking metal concrete joint form supported on a plurality of vertical stakes for use in pouring concrete slabs, said combination comprising:
a. a plurality of expendable metal stakes, each stake being a narrow, elongated member having a main body of semi-circular shape in transverse cross section, the top end of each stake being generally flattened to create a generally straight edge on one side of the stake that includes the two vertical parallel sides of the semi-circular shape;
b. and an expendable, relatively rigid, elongated sheet metal form with a transverse cross section having a vertically extending planar portion with an offset protruding key portion adjacent its mid-height, and an inverted hook portion adjacent the top edge of the form on the side that is opposite the said protruding key portion, said hook portion having a downturned flange that is spaced away from the said vertical planar portion and adapted for engaging over the flattened upper end of the said vertical stakes;
c. the invention comprising a separate holding clip for each stake which is made to straddle the main body of the stake after the elongated form is supported on the spaced stakes, the clip having an upper portion with finger means that are adapted to engage the lower edge of the sheet metal form, on the side of the form opposite the stake and the clip having a lower portion with a pair of ear means that are able to snap around the opposite edges of the stake for fastening the lower portion of the sheet metal form against the stake.

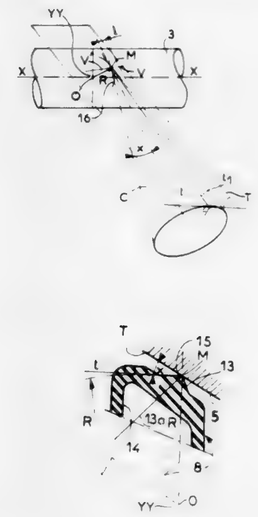
4,411,405

BUTTERFLY-VALVE

Pierre L. C. C. Barbe, Toul, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Jun. 30, 1981, Ser. No. 279,142
Claims priority, application France, Jul. 18, 1980, 80 15925
Int. Cl.³ F16K *1/22*
U.S. Cl. 251—306 **23 Claims**

1. In a butterfly-valve comprising a tubular body which defines a flow passage having a flow axis and a butterfly closure member mounted in said body to rotate about an axis of rotation perpendicular to said flow axis, one of two elements consisting of said body and said closure member carrying an elastically yieldable seal element and the other of said elements carrying a surface providing a seat for said seal element, the seat defining a mean line and the seal element defining a seal line, the seal element being adapted to be crushed against the seat in a completely closed position of said butterfly member after contact between the seal element and the seat with coincidence between the seal line and the mean line throughout the peripheral extent of said lines; the improvement wherein the seal element and the seat each have a closed curved configuration when viewed in a direction parallel to said flow axis with the closure member in the closed position and each have a warped curved configuration when viewed in a direction parallel to said axis of rotation, and, when the seal element is in a position in which it has just encountered the seat without crushing of the seal and the seal line and mean line are coincident, at every point M of the seal line throughout the periphery of the flow passage, a plane T tangent to the seat makes an acute angle x with a tangent t to a circle which has a radius R centered on the intersection O of said flow axis and said axis of rotation Y—Y and passes through the point M, said acute angle being at least substantially constant throughout said periphery.



4,411,406

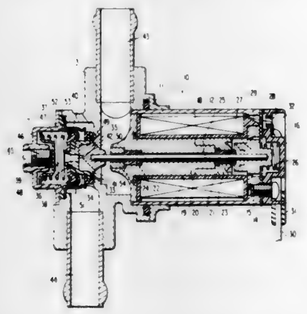
ELECTROMAGNETIC FLOW CONTROL VALVE ASSEMBLY

Masami Inada, Kariya, and Ishi Nomura, Aichi, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 18, 1981, Ser. No. 264,386
Claims priority, application Japan, Jun. 4, 1980, 55-75061
Int. Cl.³ F16K *31/06*
U.S. Cl. 251—129 **4 Claims**

1. An electromagnetic float control valve assembly comprising a body having first and second ports, a wall within said body having an aperture therethrough located between said first and second ports, a valve member sealingly engageable with said wall about said aperture for controlling fluid communication between said ports, a diaphragm connected betwen said valve member and said body and defining with said body first and second chambers on opposite sides of said diaphragm, a first passage extending through said valve member providing communication between said first port and said first chamber and a second passage providing communication between said

second port and said second chamber, the effective area of said diaphragm which is subjected to fluid pressure within said second chamber being the same as that of said valve member which is subjected to fluid pressure within said second chamber to thereby offset the force of fluid pressure acting on said valve member, electromagnetic means operatively associated with said valve member for moving said valve member in proportion to the current applied to said electromagnetic



means for proportionally controling fluid communication between said first and second ports and protective guide means comprised of a cylindrical sleeve disposed within said second chamber with said diaphragm located within said cylindrical sleeve for protecting said diaphragm from foreign matter emanating from said second port into said second chamber, said diaphragm being disposed in rolling contact with said sleeve to guide and accurately position said valve member relative to said aperture.

4,411,407

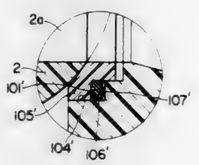
BALL VALVE ASSEMBLY

Youichi Ninomiya, and Kazuhiko Tsuno, both of Nobeoka, Japan, assignors to Asahi Yukizai Kogyo Co., Ltd., Nobeoka, Japan

Continuation-in-part of Ser. No. 253,539, Apr. 13, 1981, abandoned, which is a continuation of Ser. No. 91,807, Nov. 6, 1979, abandoned. This application Jan. 18, 1982, Ser. No. 340,491

Int. Cl.³ F16K 5/06

U.S. Cl. 251—315 **5 Claims**



1. A disposable ball valve assembly comprising:

(a) a ball valve member made of a plastic resin material;

(b) a valve stem made of a plastic resin material and coupled with the said ball valve member;

(c) a valve body having a valve cavity formed therein for movably mounting said ball valve member, said valve body comprising:

(1) a first body element made of a plastic resin material and having a portion thereof shaped to define a female connection;

(2) a second body element made of a plastic resin material and having a portion thereof shaped to define a male connection inserted into said female connection, said first and said second body elements being permanently coupled and rigidly interconnected to each other by said connections with the end of the male connection being spaced from an interior portion of said first body element to define therebetween a valve cavity holding said ball valve member, said first and said second body elements having bores formed therein and said ball valve member being rotatable between a first position in which a bore formed therein permits fluid flow between the bores formed in said body elements and a second position in which said ball valve member blocks fluid flow between the bores formed in said body elements, portions of said body elements defining said valve cavity having ring grooves recessed therein concentric with the bores formed in said body elements, each of said ring grooves having a first circumferential surface extending outwardly from the stepped bore, a first axial surface extending axially inwardly from outer ends of the first circumferential surface towards said valve cavity, a second circumferential surface extending outwardly from an inner end of the first axial surface, and a second axial surface extending axially inward from outer ends of the second circumferential surface; and

(d) sealing ring means positioned in said ring grooves and sealingly coacting with said ball valve member to prevent fluid flow between said ball valve member and portions of said first and said second body elements defining said valve cavity, said sealing ring means comprising:

(1) a first composite seat ring positioned in the ring groove formed in said first body element; and

(2) a second composite seat ring positioned in the ring groove formed in said second body element, each of said composite seat rings having a larger mass portion made of a hard or semi-hard plastic resin material and kept in sealing and direct contact with said ball valve member and a smaller mass portion made of elastomer or rubber and having a hemispherical shaped sealing projection coacting with a surface of the associated ring groove to provide a sealing area that increases as the pressure exerted on the composite seat ring by said ball valve member increases.

4,411,408

JACK-UP PLATFORM APPARATUS

Felix S. Radovan, Cypress; Albert M. Koehler, and Donald R. Ray, both of Houston, all of Tex., assignors to The Offshore Company, Houston, Tex.

Continuation of Ser. No. 134,012, Oct. 27, 1980, abandoned. This application Dec. 3, 1982, Ser. No. 446,574

Int. Cl.³ B66F 1/00

U.S. Cl. 254—108 **14 Claims**

1. Jack-up apparatus operable for effecting relative vertical motion between a leg chord of an offshore platform and a deck of the platform, said jack-up apparatus comprising:

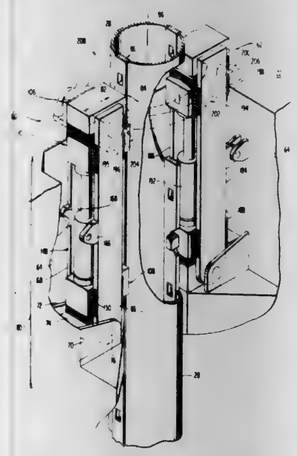
reaction means operable to be connected at one end to the platform deck and operably positioned in a posture contiguous to but spaced from the leg chord of the offshore platform;

abutment means connected to the other end of said reaction means;

first means for engaging with and disengaging from the leg chord of the offshore platform, said first means for engaging being mounted for sliding translation along said reaction means selectively away from and toward the deck of said offshore platform at generally said one end of said reaction means and for operably abutting against the deck portion of said offshore platform;

second means for engaging with and disengaging from the leg chord of the offshore platform, said second means for engaging being mounted for sliding translation along said reaction means selectively away from and toward said abutment means at generally said other end of said reaction means and for operably abutting against said abutment means connected to the other end of said reaction means;

means connected to said reaction means for maintaining the other end of said reaction means in a posture adjacent to the leg chord of the offshore platform; and hydraulic jack means comprising at least one hydraulic piston, piston rod, and cylinder jack assembly mounted between said first and second means for engaging wherein the cylinder of said jack assembly is mounted upon an upper portion of said first means for engaging the leg chord and the free



end of the piston of said jack assembly is mounted upon a lower portion of said second means for engaging the leg chord and being operable for translating both of said first and second means for engaging with and disengaging from the leg chord of the offshore platform along said reaction means and between said abutment means and the deck of the offshore platform, wherein selective actuation of said first and second leg chord engaging means and said jack means will function to effect relative vertical motion between the leg chord and the deck of the offshore platform.

4,411,409

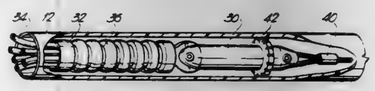
TUBE PULLING AND LUBRICATING SYSTEM

Jackson A. Smith, Box 1058, Aldergrove, B.C., Canada V0X 1A0

Filed Sep. 23, 1980, Ser. No. 190,015

Int. Cl.³ E21C 29/16

U.S. Cl. 254—134.3 FT **3 Claims**



1. Apparatus for drawing a plurality of empty conduits through a single larger tube comprising a single elongated pulling tube having an open end and a closed end with a pulling eye on the exterior of the closed end for connecting the pulling tube to a swivel lead; filler means located in the ends of the empty conduits and being of a length commensurate with that of the pulling tube; said conduits with said filler means being inserted into said pulling tube and a plurality of circumferential crimps spaced along the length of said pulling tube whereby drawing pull applied to said pulling eye is transmitted to the conduits with the filler means.

4,411,410

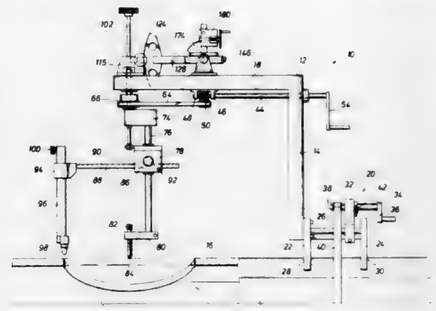
APPARATUS FOR CUTTING OPENINGS IN PIPES

Joe D. Sumner, 105 Larry Lee Dr., Kerrville, Tex. 78028

Filed Dec. 27, 1982, Ser. No. 452,945

Int. Cl.³ B23K 7/04

U.S. Cl. 266—54 **32 Claims**



1. A mechanism for torch cutting openings and pipes comprising:

(a) a frame structure adapted to be secured in immovable relation to the pipe in which the opening is to be cut;

(b) locator means supported by said frame structure and establishing an axis of torch rotation relative to said pipe about which an opening is to be cut;

(c) torch support means being linearly movable in transverse relation to the axis of torch rotation defined by said locator means and being adjustably positionable to position a cutting torch at a selected radius from said locator means to cut a pipe opening of selected dimension;

(d) rotation means for accomplishing 360° revolution of said torch support means about said axis of rotation; and

(e) pipe contour tracking means in common driven relation with said rotation means and inducing two cycle linear oscillation of said torch support means during each 360° revolution of said torch support means about said axis of rotation to maintain the cutting tip of a cutting torch secured to said torch support at a predetermined optimum cutting distance from said pipe during said 360° revolution.

4,411,411

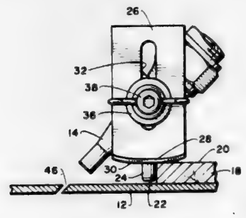
CUTTING TORCH GUIDE ATTACHMENT

Casey E. Barthelmess, 222 Lorraine La., Moorpark, Calif. 93021

Filed Feb. 22, 1983, Ser. No. 468,360

Int. Cl.³ B23K 7/02

U.S. Cl. 266—66 **5 Claims**



1. In combination with a cutting torch, said cutting torch having a cutting torch tip, a cutting torch attachment for supporting said cutting torch tip in a desired relation to a workpiece while using said cutting torch to cut the workpiece, said attachment comprising:

a collar having a through opening, said cutting torch tip to

be located within said through opening in a substantially close fitting manner;

a plate having a substantially planar body, said collar being connected to said plate by a plate fastener assembly, said planar body having a substantially planar guide flange, said guide flange having an outer surface, said guide flange extending substantially perpendicular from said planar body; and

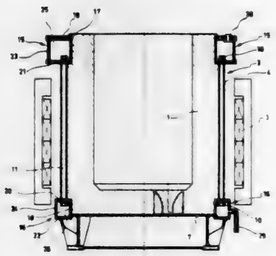
a pin attached to said planar body directly adjacent said guide flange, said pin extending outwardly past said outer surface, whereby said pin is to abut against a side edge of a template with said outer surface resting on the top surface of the template and the user is to move said attachment along the side edge with the cutting torch producing a smoothly contoured cut within the workpiece duplicating the contour of the movement of said pin along said side edge of the template.

4,411,412

METALLURGICAL CONTAINER FOR THE INDUCTIVE TREATMENT OF METAL

Christian Lechevallier, Louverne, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Lay, France

Filed Nov. 23, 1981, Ser. No. 323,907
Claims priority, application France, Nov. 21, 1980, 80 24847
Int. Cl.³ F27B *14/06*
U.S. Cl. 266—242 **8 Claims**



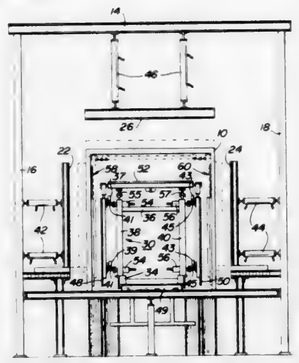
1. A metallurgical container for inductive treatment of metal comprising an inner lining of refractory material having an upper open end and a bottom; a generally tubular enclosure having an upper portion formed as an upper annular casing surrounding said open end of said lining and having a bottom wall and a further portion formed at a median heating zone of the container by a plurality of circumferentially spaced metallic tie rods electrically insulated from each other and extending with upper and lower opposite ends beyond said heating zone, said tie rods being arranged to support said lining and so as to be easily dismountable and being tightly secured at the upper and lower ends of said enclosure, wherein said tie rods being connected by the upper ends beyond said heating zone directly and only to said bottom wall of said upper casing without being connected to other metallic parts of the container; and electrically insulating connecting means which directly connect said upper ends of said tie rods to said bottom wall of said upper casing.

4,411,413

APPARATUS FOR SHORING DURING THE MANUFACTURE OF A REEFER CONTAINER

Robert B. Reidenbach, Honeybrook, Pa., assignor to The Budd Company, Troy, Mich.

Continuation-in-part of Ser. No. 209,545, Nov. 24, 1980, Pat. No. 4,370,795. This application May 7, 1981, Ser. No. 261,464
Int. Cl.³ B23Q *3/14*
U.S. Cl. 269—48.1 **6 Claims**



1. Apparatus for shoring the interior side walls and interior roof surface of a container, comprising:

(a) a pair of vertically disposed side platens;

(b) a horizontally disposed roof platen;

(c) means for selectively expanding or contracting said pair of side platens in horizontal directions to engage or disengage said interior side walls;

(d) means for selectively expanding or contracting said roof platen in a vertical direction to engage or disengage said interior roof surface;

(e) means connecting top edges of said side platens to the side edges of said roof platen to provide shoring of the interior top areas of said interior sidewalls of said container when said side platens and said roof platen are expanded;

(f) said means for connecting comprise means connected to move horizontally and vertically with said side platens and said roof platen in accordance with movements thereof and expandible shoring means connected to the top edges of said side platens to be guided by said means connected to move horizontally and vertically, and

(g) said expandible shoring means including a plurality of slat members secured to each other.

4,411,414

RADIATOR RECORING FIXTURING AND TOOLS

Richard Desiro, 42995 Ambridge, Northville, Mich. 48167

Filed Jun. 1, 1981, Ser. No. 268,551
Int. Cl.³ B25B *1/00*
U.S. Cl. 269—71 **10 Claims**

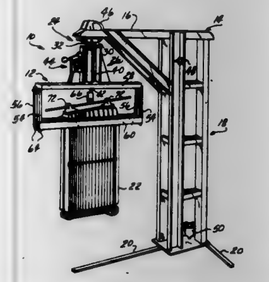
1. Fixturing for recoring of either soldered or crimped tank radiators of the type including a header and a tank either soldered or crimped thereto, said fixture comprising:

a support frame adapted to be positioned upright on a supporting surface;

clamping fixturing supported suspended from a support frame, said clamping fixturing comprising first and second sets of rails alternately assembled on said support frame for conducting recoring of soldered or crimped tank radiators respectively, each of said sets of rails supported extending parallel to each other when assembled on said support frame for swinging adjustment movement towards and away from each other, each of said pair of rails of said first set being configured with a recess extending along each of the adjacent side and top rail surfaces to enable said rails to receive radiator headers within each of said recesses of said rails;

each of said adjacent sides and tops of said pair of rails of said second set being squared off and adapted to receive radiator header edges on the top surface thereof, with said rail sides in close proximity to said radiator;

said fixturing further comprising actuator means including a fluid pressure cylinder having an actuator rod extendable,



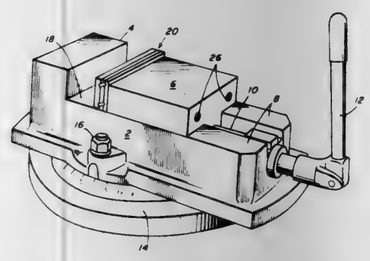
upon pressurization of said fluid pressure cylinder, downwardly into proximity with radiator tanks disposed on said rails, and further including hold down elements drivingly connected to said actuating rod to engage the upper surfaces of said radiator tank and thereby enable the holding pressure to be exerted thereon by pressurization of said cylinder, said actuating means further comprising means for selectively pressurizing said fluid pressure cylinder to extend said actuating rod.

4,411,415

COMPOUND JAW PLATE

James J. Denaro, 543 Bedford St., Concord, Mass. 01742

Filed Jun. 12, 1981, Ser. No. 273,236
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—134 **3 Claims**



1. A compound jaw plate for applying a bedding force to a workpiece in a vise comprising:

a bed;

a jaw attaching plate;

a work engaging plate spaced from and movable relative to the jaw attaching plate in a direction lengthwise of the bed;

at least two links in pivotal engagement with both the work engaging plate and the jaw attaching plate;

elastomeric material between the work engaging plate and the jaw attaching plate;

the links being positioned at acute angles relative to the intended direction of applied force and downwardly toward the bed for gripping a workpiece;

the links are of equal length and positioned non-parallel to each other, the links closest to the bed being inclined at a greater angle relative to the bed than the links farther from the bed;

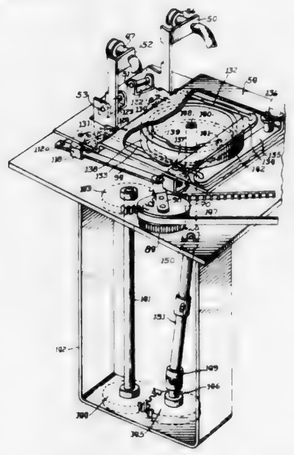
whereby, a surface on the work engaging plate which was initially parallel to a surface on the vise attaching plate will move out of parallelism during their relative movement toward each other to induce a greater relative force during movement to the part of the workpiece farther from the bed than to the part closer to the bed.

4,411,416

VACUUM DOCUMENT FEEDER

Jerry J. Kosner, La Grange, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Nov. 16, 1981, Ser. No. 322,111
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—11 **10 Claims**



1. A vacuum document feeder system comprising:

means for delivering documents from a stack to a document pick up location at one end of the stack,

at least two documents seizing vacuum cups for engaging and removing a document from the one end of the stack,

one of the cups being a leading vacuum cup which engages the document adjacent one edge of the document, and the other cup being a following vacuum cup spaced apart from the leading vacuum cup, the vacuum cups pivotally mounted on a support means to provide the vacuum cups with a pivoting motion toward and away from the one end of the stack,

a first cam with a first cam surface and first follower means operatively connected to the leading vacuum cup to cause the leading vacuum cup to pivot toward and away from the one end of the stack at the same time during each cycle,

a second cam and second follower means operatively connected to the following vacuum cup, the second follower capable of following either a second or third cam surface on the second cam, the second cam surface being identical to the first cam surface and causing the following vacuum cup to pivot away from the one end of the stack at the same time as the leading vacuum cup and the third cam surface permitting the second follower means to allow the following vacuum cup to remain pivoted toward the stack for a time delayed period with respect to the pivoting away from the stack of the leading vacuum cup,

a drive means to provide power to the support means, cams and follower means to cause the support means and vacuum cups to cyclically move toward and away from the one end of the stack in substantially a perpendicular direction relative to the face of the document,

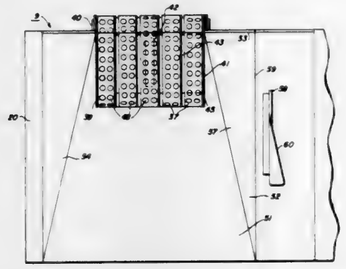
the rigidity of the documents being withdrawn determining the cam surface on the second cam which the second follower will follow with the following vacuum cup pivoting away from the stack in unison with the leading vacuum cup when rigid documents are withdrawn and remaining pivoted toward the stack for the time delayed period when thin, flexible documents are withdrawn resulting in an edge of the document being peeled away from the next adjacent document in the stack when thin documents are withdrawn.

4,411,417

BOTTOM SHEET FEEDING APPARATUS

John M. Browne, Victor, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1981, Ser. No. 317,212
Int. Cl.³ B65H *3/12*
U.S. Cl. 271—94 **11 Claims**



1. A bottom sheet feeding apparatus for separating the bottommost sheet in a stack of sheets and feeding it in a forward direction comprising a bottom sheet separator feeder and a sheet stacking tray having a planar base portion defining a base plane, the front of said base portion having an opening within which said bottom sheet separator feeder may be positioned to feed the bottommost sheet of a stack of sheets when sheets are in said sheet stacking tray, said sheet stacking tray further comprising two sloping planar side wings, one at each side of said opening in said base portion, said sloping planar side wings being angled upward from the base plane and being angled outward from front to rear of said tray, and each sloping planar side wing intersecting said base plane along a line from a point of the rear of the base in the approximate location of the rear corners of a rectangle the size of a sheet to be fed to a point at the front of the tray approximately midway between the front corners of a sheet to be fed and the centerline of a sheet to be fed.

4,411,418

DOCUMENT CORNER REGISTRATION

Raymond E. Poehlein, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 12, 1982, Ser. No. 348,128
Int. Cl.³ B65H *9/00*
U.S. Cl. 271—236 **10 Claims**

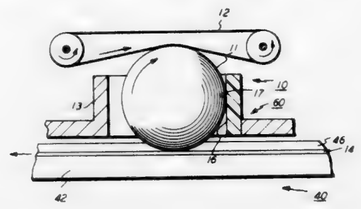
1. In an apparatus for driving a sheet into a corner registration with registration means defining two orthognal registration lines, including a sphere mounted to overly and engage a sheet being so registered, said sphere being rotatable on variable axes and vertically movable relative to the sheet, the improvement comprising:

drive means engaging said sphere for rotatably driving said sphere in an initial direction of rotation towards both said orthogonal registration lines,

said sphere being adapted to drive a sheet with the driving force applied to said sphere by said drive means,

said drive means engagement providing lateral movement of said sphere relative to said driving means and changes in the direction of rotation of said sphere relative to said initial direction of rotation,

retainer means providing for limited variable lateral movement of said sphere thereagainst in response to the driving force from said drive means and to a reaction force on said sphere from a sheet being driven by said sphere,



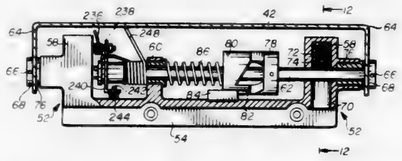
and normal force control means associated with said retainer means for varying the normal force between said sphere and a sheet being driven by said sphere in response to said lateral movement of said sphere and said reaction force.

4,411,419

ARTICULATE BRIDGE ASSEMBLY

Harold Silverman, Norwalk, and Alan B. Hotchkiss, Westport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 11, 1980, Ser. No. 185,855
Int. Cl.³ B65H *7/12, 5/02*
U.S. Cl. 271—263 **8 Claims**



1. In an articulate bridge assembly adapted to overlie an enclosure transport pathway of an envelope inserter having a frame, wherein the bridge assembly comprises a carriage, the carriage including biasing means for engaging the upper surface of successive enclosures traversing the pathway, the bridge assembly including hinge means interconnecting the bridge assembly and the frame, the hinge means extending along an axis parallel to the direction of enclosure transport and the hinge means including means for counterbalancing the weight of the bridge, whereby the bridge assembly may be pivoted about the hinge means from an operative position to open the enclosure transport pathway for servicing and adjustment, an improvement in the counterbalancing means, said improvement comprising:

(a) a pair of cams in mutual engagement,

(b) means fixing one of the cams for rotation unitarily with the bridge assembly,

(c) means fixing the other cam against rotation, and

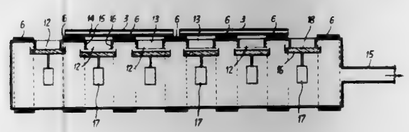
(d) resilient means biasing the cams against one another.

4,411,420

CONVEYOR APPARATUS FOR THE TRANSPORTATION OF PLATES, STRIPS OR SHEETS OF MATERIAL ON CONTINUOUS BELTS

Jacques Louis, Bedarrides, and Jean Gauthier, Soissons, both of France, assignors to La Rochette-Cenpa, Paris, France

Filed Feb. 23, 1981, Ser. No. 236,975
Claims priority, application France, Feb. 27, 1980, 80 04312
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—276 **4 Claims**



1. Apparatus for conveying pieces of material of various widths on a belt in a first direction, said widths being oriented in a direction transverse to said first direction, comprising:

a plurality of substantially parallel endless impervious belts extending over a hollow casing and including openings in the form of slits into the interior of said casing, said slits being coextensive with and extending along and between adjacent belts and having a width slightly less than the spacing between said belts;

means for inducing negative pressure within the interior of said casing; and

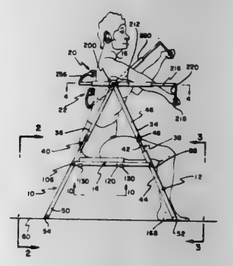
a plurality of shutters mounted within said casing said shutters being associated with a slit and being coextensive therewith and adapted to open and close said associated slit, whereby the number of open slits is selected according to the width dimension of the material conveyed by said belts to conserve said negative pressure.

4,411,421

THERAPEUTIC APPARATUS

Vilas D. Hershberger, R.R. #1, Hesston, Kans. 67062

Filed Sep. 21, 1981, Ser. No. 303,931
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—73 **17 Claims**



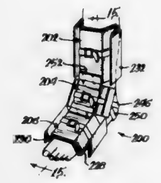
1. Therapeutic apparatus comprising a frame, a pair of laterally spaced guide means pivotally mounted on the frame for vertical swinging movement about aligned horizontal axes, an elongated element operatively associated with each of said guide means to be guided by the latter for longitudinal reciprocation relative thereto, each of said operating elements having forward and rear ends with a handle fixed to the forward end, and each of said operating elements being provided at its rear end with a back massaging means that is laterally offset toward the other operating element, whereby a forwardly facing user positioned between the laterally spaced guide means can manipulate the handles to cause the massaging means to contact his back with a manually controllable force while moving upwardly and downwardly thereagainst.

4,411,422

AQUATIC EXERCISE ASSEMBLY

Daniel S. Solloway, 1315 18th St., Woodward, Okla. 73801

Continuation-in-part of Ser. No. 79,966, Sep. 28, 1979, Pat. No. 4,311,306. This application Oct. 26, 1981, Ser. No. 314,690
Int. Cl.³ A63B *23/04, 31/11*
U.S. Cl. 272—96 **10 Claims**



1. An aquatic exercise assembly for use in water to strengthen muscles, improve muscle tone and enhance muscular coordination, comprising:

an aquatic boot having a leg section for fitting over and generally conforming to the front portion of a lower leg, an ankle section for fitting over and generally conforming to the curved top portion of an ankle, and a foot section for fitting over and generally conforming to a top portion of a foot;

each of said sections having a water-engageable deflector with a water resistant front face and a pair of inner fins extending rearwardly from said front face, an internal pad positioned adjacent said deflector, and a strap for detachably securing said section to said leg, ankle or foot, respectively;

outer fins secured to and extending laterally outwardly from and cooperating with said inner fins of said leg section and said foot section to define forwardly facing, generally V-shaped pockets therewith for cuppingly and resistively engaging the water as said aquatic boot is moved in a forward direction through the water;

each of said fins and said front face being substantially imperforate and water impervious to define water resistive impingement surfaces for hydrodynamically deflecting water and creating a pressure head and fluid resistance to water flow as said aquatic boot is moved through the water; and

each of said fins being positioned an effective distance from said front face for exerting a hydrodynamic torque on said front face and leg to strengthen the muscles of the leg, ankle and foot as said aquatic boot is moved through the water.

4,411,423

EXERCISE DEVICE AND EXERCISE ADAPTER FOR FORMING SAME

Joseph J. Estwanik, III, 1925 Clematis Dr., Charlotte, N.C. 28211

Filed Mar. 29, 1982, Ser. No. 363,036
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—117 **5 Claims**

1. An exercise device for use by a person in exercising of one's upper extremities, said device comprising

(a) an elongate relatively narrow pliable member;

(b) handle means around which said narrow pliable member is adapted to be wound;

(c) weight means connected to one end of said elongate pliable member; and

(d) means connected to the other end of said elongate pliable member and securing the same to said handle means and comprising

(1) a relatively wide flexible band wrapped around the circumference of said handle means and on and around which band said narrow pliable member is wound during use of the exercise device, and

(2) means carried by and cooperating with said flexible band

for releasably securing the same in surrounding relation to said handle means whereby upon rotational movement of the handle means in one direction, the elongate pliable member is wound in wrapping relation on and around the flexible band in aiding in further securement of the flexible



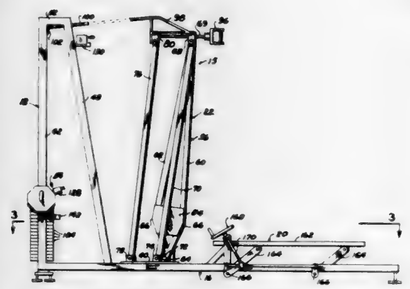
band to the handle means, and upon rotational movement of the handle means in the opposite direction the wound narrow pliable member is unwound and lowered relative to the handle means thus imparting the desired exercise to the upper extremities of the person.

4,411,424

WEIGHT LIFTING EXERCISE APPARATUS

Robert V. Barnett, 904½ N.W. 91, Oklahoma City, Okla. 73114

Filed Feb. 8, 1982, Ser. No. 346,473
Int. Cl.³ A63B *21/12*
U.S. Cl. 272—118 **6 Claims**



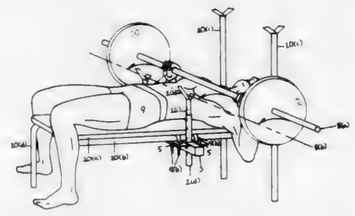
1. A weight raising exercise device, comprising:
horizontal base frame means;
upstanding end frame means at one end of the base frame means;
superposed weight means including a plurality of horizontal vertically bored weights supported by said base frame means for vertical sliding movement within said end frame means;
two separate hand grip equipped laterally spaced upstanding lever means pivotally supported by said base frame means intermediate its ends for movement of their upper end portions toward and away from said end frame means;
fulcrum axle means mounted on said base frame means and pivotally connected with the depending end portion of said lever means for pivoting one said lever means away from said end frame means when the other said lever means is pivoted toward said end frame means and vice versa;
flexible elements secured to the respective upper limit of said lever means and entrained through the bores in said weights and over pulley-like means mounted on respective upper and lower end portions of said end frame means; and,
solenoid means connected with a source of electrical energy and mounted on said weight means for connecting at least one said weight with respective intermediate portions of said flexible elements when said lever means are respectively pivoted a predetermined distance toward said end frame means.

4,411,425

BENCH PRESS SAFETY REST

James B. Milnar, 30255 Champine, St. Clair Shores, Mich. 48082

Continuation of Ser. No. 98,113, Nov. 28, 1979, abandoned. This application Nov. 30, 1981, Ser. No. 326,115
Int. Cl.³ A63B *13/00*
U.S. Cl. 272—123 **7 Claims**



1. A bench press safety rest for use with a weight lifting bench having a seat section with anterior and posterior ends and main barbell support members located immediately adjacent to said anterior end of the seat section, the improvement comprising:
first and second bar supporting members having a height substantially less than the height of the main barbell support members, said first and second bar supporting members being spaced a substantial distance along and toward said posterior end of said seat section from said main barbell support members for supporting a barbell immediately above the chest area of a person occupying a weight lifting bench; and
means adapted for attaching said first and second bar supporting members to opposite sides of said seat section of the weight lifting bench said, attaching means including:
a horizontal member attachable to said seat section of said weight lifting bench; and
means for attaching said first and second bar supporting members to said horizontal member such that said horizontal member supports said first and second bar supporting members along said seat section of said weight lifting bench.

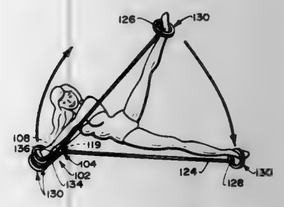
4,411,426

MULTI-PURPOSE EXERCISE IMPLEMENT

Kenneth H. McCoy, Santa Monica, Calif., and John Romain, 1629 Veteran, Los Angeles, Calif. 90074, assignors to John Romain, Los Angeles, Calif.

Continuation-in-part of Ser. No. 145,424, May 1, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,637
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—126 **9 Claims**

1. A multi-purpose exercise implement comprising a pair of flexible hand lines having annular handles at opposite ends; a single double pulley having non-aligned pulley axes for the respective pulleys, the pulleys being of equal size and being mounted in side-by-side relationship and being wholly contained within an annular sheave-like member having round outer walls and an interior rigid separator to maintain said



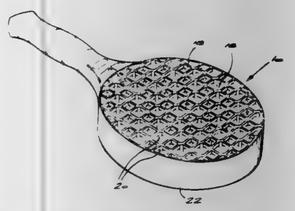
hand lines in separated position, said hand lines respectively passing over respective of said pulleys.

4,411,427

BAT FOR PLAYING GAMES

Alfred Baumgartner, Rainstrasse 10, 8590 Romanshorn, Switzerland

Filed Jun. 19, 1981, Ser. No. 275,283
Claims priority, application United Kingdom, Jun. 23, 1980, 8020545
Int. Cl.³ A63B *51/02*
U.S. Cl. 273—67 R **3 Claims**



1. A bat for games including a handle and a head, the head including a monolithic unstressed perforated structure characterised by having a pair of spaced apart lattices, each comprised of a plurality of intersecting laths, the two outer surfaces of said lattices constituting the striking surfaces of the bat, the inner surfaces of said lattices being interconnected by a plurality of discrete struts spanning corresponding intersections only of the laths comprising said lattices.

4,411,428

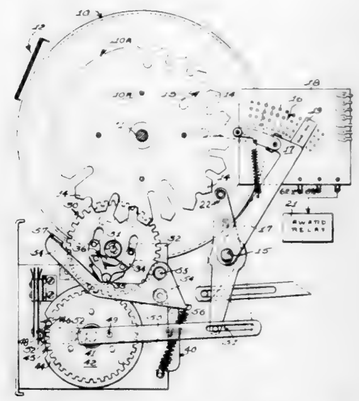
REPOSITIONING MECHANISM FOR GAME REELS

Frank G. Nicolaus, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 29, 1978, Ser. No. 891,310
Int. Cl.³ A63F *5/04*
U.S. Cl. 273—143 R **10 Claims**

1. Reel-repositioning mechanism for use in spinning reel games having a symbol-bearing reel with co-rotatable code disc means and indexing means acting on the disc means to stop the reel in display positions, said mechanism comprising: a stepping gear; motor means operative to rotate said gear; control circuit means operative to initiate and terminate duty cycle operation of said motor means to turn said stepping gear through a uniform angular distance constituting a duty cycle; disc-drive means rotatable with said gear in driving juxtaposition with said disc means to exert a repositioning force on the

disc means by transient engagement therewith in each said duty cycle whereby to step the reel the angular distance necessary to change the symbol which was on display prior to initiation of such duty cycle to display an adjacent symbol.



4,411,429

OFFSET PUTTER

John W. Drew, RR #2 Denmark Rd., and Joe M. Swift, 1227 N. Walnut, both of Danville, Ill. 61832

Filed Dec. 18, 1981, Ser. No. 332,247
Int. Cl.³ A63B *53/04, 53/02*
U.S. Cl. 273—164 **11 Claims**



1. An offset golf putter comprising a shaft portion, an offset portion and a head, said shaft having a grip portion and an elongated shank, said offset portion having an upstanding portion, an intermediate portion and a downward portion, said head having an upper surface, a downwardly depending forward face, a downwardly depending rearward face, a lower face, an outer end portion and an inner end portion, when said golf putter is in an operable position said grip portion is attached to the upper end of the shank, said upstanding portion having one end attached to the lower end of the shank, said upstanding portion terminates at the other end at said intermediate portion which extends substantially horizontally and vertically from said upstanding portion, said intermediate portion terminates at said downward portion which extends substantially downwardly from said intermediate portion, said downward portion terminates at said upper surface and is affixed to said head proximate said outer end, said upper surface is substantially horizontal, whereby when said golf putter is positioned said outer end of the putter is positioned furthermost from a golfer's body so that the shaft passes in front of said head in a plane substantially parallel to the head, thereby, when viewed by a golfer the ball is positioned adjacent said downwardly depending forward face of the head, said intermediate portion of the offset portion and said shaft.

4,411,430

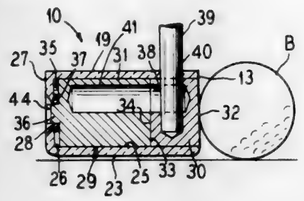
GOLF PUTTER

Walter Dian, Downers Grove, Ill., assignor to Walter Dian, Inc., Downers Grove, Ill.

Continuation-in-part of Ser. No. 151,373, May 19, 1980, Pat. No. 4,324,404. This application Jan. 12, 1982, Ser. No. 338,889

Int. Cl.³ A63B *53/08*

U.S. Cl. 273—171 **11 Claims**



1. In a golf putter having a shaft and a head secured on the end of the shaft with an upstanding front ball impacting face and front-to-rear elongated central axis of mass with a front end providing a sweet spot area on said face, the improvement of an eccentric weight rotatably mounted in said head on said axis to shift the mass for providing a personalized feel to the golfer facilitating impacting of the ball on a sweet spot in said area which will propel the ball on the desired putting line.

4,411,431

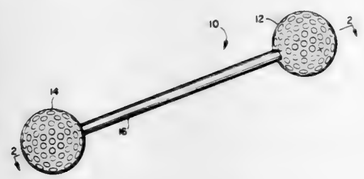
GOLF PUTTING PRACTICE DEVICE

Clay Judice, Lafayette, La., assignor to Strokee Enterprises, Lafayette, La.

Filed Apr. 27, 1982, Ser. No. 372,301

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—183 C **12 Claims**



1. A golf putting device, comprising: a pair of spherical-shaped ball members connected in spaced relationship by a rigid rod member which is aligned between the centers of said ball members, said rigid rod providing for no relative movement between components during a conventional putting stroke, each of said ball members being approximately the size of a standard golf ball; said rod member being of a length of 6 to 10 inches so as to be of sufficient length to allow the rod to serve as a means of alignment of the device between a golf putter and an intended target; at least one of the ball members having the compression characteristics of a standard golf ball; and with the total weight of the device being approximately equal to the weight of a standard golf ball.

4,411,432

TRAVEL GAME

Richard L. Stevens, 301 Harrington, Gower, Mo. 64454

Filed Aug. 10, 1981, Ser. No. 291,566

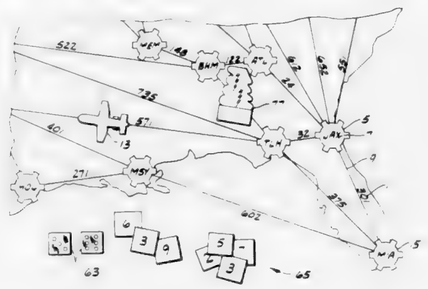
Int. Cl.³ A63F *3/00*

U.S. Cl. 273—251 **10 Claims**

1. A travel game of skill and chance for at least two players comprising:

a game board displaying a geographical area with a plurality of locations linked by travel routes, each route being marked with a travel distance between the two locations linked by the route;

a plurality of position pieces, one for each player, representing travel vehicles for moving along the travel routes beginning at a designated location of origin and passing from location to location to a designated location of destination, the object of the game being to choose a path along the travel routes so as to be the first to arrive at the location of destination;



a plurality of mileage tokens each bearing only a single-digit number and being obtained by the players by chance, each player combining his single-digit number tokens in groups to form combination numbers equal to the travel distances marked on the routes of his chosen path and expending the groups of tokens for the right to move his position piece along those routes; and

chance number indicator means for use by the players in turn for acquiring the numbered tokens.

4,411,433

BOARD GAME APPARATUS

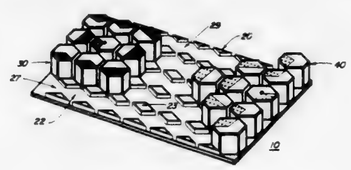
William M. Flynn, Boise, Id., assignor to The Gametree Company, Boise, Id.

Continuation-in-part of Ser. No. 951,350, Oct. 16, 1978, Pat. No. 4,305,585. This application Oct. 1, 1981, Ser. No. 307,584

The portion of the term of this patent subsequent to Dec. 15, 1998, has been disclaimed.

Int. Cl.³ A63F *3/02*

U.S. Cl. 273—260 **2 Claims**



1. Apparatus for playing a game comprising:

a game board formed with a plurality of contiguous and aligned playing spaces; said board being rectangular in shape and having a grid defining five files and eight ranks of hexagonal playing spaces; and

two sets of playing pieces simultaneously placeable on said game board in an adversary relationship; each playing piece of each set adapted to be placed in and selectively rotated within selected playing spaces; each of said sets having nine hexagonal playing pieces; each piece of each set having indicia identifying membership to that set; and each set having five playing pieces having indicia indicating two sides invulnerable from attack and four pieces having indicia indicating three sides invulnerable from attack.

4,411,434

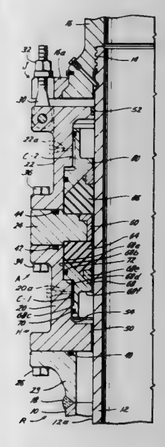
FLUID SEALING ASSEMBLY FOR A MARINE RISER TELESCOPIC SLIP JOINT

George E. Lewis, Los Angeles, Calif., assignor to Hydril Company, Los Angeles, Calif.

Filed May 24, 1982, Ser. No. 381,009

Int. Cl.³ F16J *15/48*; F16L *17/00*

U.S. Cl. 277—27 **5 Claims**



1. A fluid sealing apparatus adapted for use in a slip joint of a marine riser, the slip joint having relative reciprocating inner and outer tubular members which form a portion of the contained fluid flow path provided by the marine riser and which telescopically move relative to the other member to compensate for variations in effective riser length, said fluid sealing apparatus, including:

a seal housing adapted to be secured to one of the tubular members for operably positioning said seal housing relative to the other of the tubular members, said housing have an annular recess disposed adjacent the other of the tubular members;

a resiliently deformable packing disposed in said annular recess for forming a desired fluid seal between said seal housing and the other of the tubular members to prevent undesired leakage of fluid therebetween;

a packing follower movably disposed in said annular recess for urging said packing to operably deform to effect the desired fluid seal, said packing follower responsive to a prearranged fluid pressure urging thereon to urge said packing to operably deform for effecting the desired seal;

said seal housing concentrically surrounding the other tubular members for enabling relative movement therebetween when secured and to one of the tubular members to juxtapose said annular recess and the other tubular member;

said packing follower having substantially a sleeve shape for positioning in said annular recess while concentrically surrounding the other tubular member, said packing follower slidably disposed in said annular recess for movement to operably deform said packing;

said sleeve-shaped packing follower having an outer surface formed by a first constant diameter portion and a second constant diameter portion, said first diameter portion having a greater diameter than said second diameter portion;

a first seal means for slidably sealing said first constant diameter portion to said seal housing; and

second seal means for slidably sealing said second constant diameter portion to said seal housing, said first seal means and said second seal means partially defining an enclosed expansible chamber for urging said packing follower to operably deform said packing in response to the fluid pressure in said enclosed expansible chamber.

4,411,435

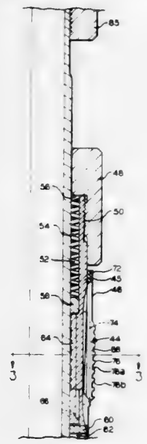
SEAL ASSEMBLY WITH ENERGIZING MECHANISM

David M. McStravick, Houston, Tex., assignor to Baker International Corporation, Orange, Calif.

Filed Jun. 15, 1981, Ser. No. 273,514

Int. Cl.³ F16J *15/18*

U.S. Cl. 277—9.5 **16 Claims**



1. An expansion joint positionable with a subterranean well between upper and lower conduit member secured thereto, comprising: a plurality of telescoping members, including an outer annular housing, and an inner annular mandrel; a nonelastomeric annular sealing member in sealing contact with the outside annular surface of said mandrel and the inside annular surface of said housing; energizing means exerting an axially compressive force on said sealing member; first means for releasably attaching the seal assembly to the mandrel; second means for attaching the seal assembly to the housing and for actuating the energizing means, the mandrel being movable axially relative to the seal assembly with the energizing means biasing the seal assembly relative to the housing, whereby a dynamic seal is maintained relative to the mandrel and a static seal being maintained relative to the housing.

4,411,436

SPRING LOADED PISTON SEAL ASSEMBLY

Peter Durenec, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 5, 1982, Ser. No. 365,219

Int. Cl.³ F16J *9/06, 9/22*

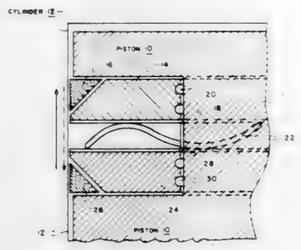
U.S. Cl. 277—53 **19 Claims**

1. A spring loaded piston seal assembly comprising:

a plurality of annular grooves around the upper portion of said piston;

a dry seal means within each of said plurality of annular grooves comprised of two resting rings having at least one beveled edge on the outer periphery and a labyrinth seal on its annular seating region which fits into the base of said plurality of annular grooves and having a free-float-

ing sealing wedge form fitted into each of the beveled edges for sliding along a cylinder wall; and



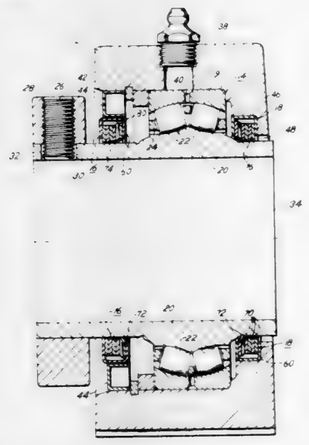
a spring biasing means positioned between said two resting rings which biases said two resting rings against the upper and lower shoulders of said plurality of annular grooves.

4,411,437

SEAL WITH FACE-TO-FACE FLAT METAL SEALING WASHERS

Roger C. Conti, Simpsonville, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed Jul. 14, 1982, Ser. No. 398,105
Int. Cl.³ F16J *15/28*
U.S. Cl. 277—53 **7 Claims**



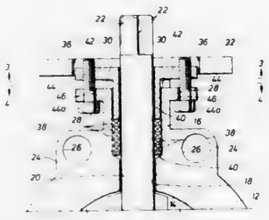
1. A clearance seal for use with pillow blocks or similar devices having a bearing with an inner race and/or other rotatable element, comprising an annular housing of U-shaped cross sectional configuration with an annular peripheral wall and spaced, radially extending side walls joined to said peripheral wall, a plurality of flat metal sealing washers in face-to-face contact disposed in said housing, all having an outside diameter smaller than the diameter of the inner side of said peripheral wall of the housing and normally being spaced from said inner side and moveable radially relative to one another to adjust for misalignment of the shaft, and a resilient washer disposed in said housing and seated against said washers for urging one of said sealing washers into contact with the internal surface of one of said side walls.

4,411,438

PACKING GLAND

William B. Scobie, Houston, Tex., assignor to Keystone International, Inc., Houston, Tex.

Filed Apr. 16, 1981, Ser. No. 254,958
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—105 **21 Claims**



1. A stuffing box assembly comprising:
housing means including
a main body portion,
a generally tubular neck portion extending outwardly from said main body portion,
said housing means having a bore extending through said neck portion and the adjacent part of said main body portion,
and housing flange means extending laterally outwardly from said neck portion and longitudinally spaced along said neck portion from said main body portion;
a shaft received in said bore for movement with respect to said housing means;
annular seal means within said bore surrounding said shaft;
gland means comprising
compression means disposed at least partially within said bore adjacent one end of said seal means,
and gland flange means adjoining said compression means and extending laterally outwardly therefrom generally parallel to said housing flange means externally of said bore,
said gland means being movable in a first longitudinal direction toward said seal means to compress said seal means;
an adjusting screw disposed generally parallel to said shaft, threadedly connected to said gland flange means, and rotatably but non-threadedly received in said housing flange means, and having an engagement portion disposed externally of said housing means and said gland means and longitudinally between said housing flange means and said main body portion, said engagement portion being engageable to rotate said adjusting screw;
and stop means cooperative between said adjusting screw and said housing means to limit movement of said adjusting screw in a second longitudinal direction opposite to said first direction.

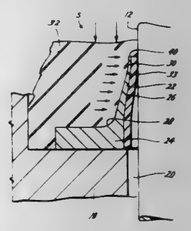
4,411,439

SEALING MEMBER WITH ANTI-EXTRUSION MEANS AND PROTECTIVE COATING

Paul L. Couvillion, and James E. Ray, both of Houston, Tex., assignors to Jim Ray Company, Inc., Houston, Tex.

Filed Apr. 28, 1982, Ser. No. 372,487
Int. Cl.³ F16J *15/18, 15/46*
U.S. Cl. 277—188 A **10 Claims**

1. A sealing member for forming a seal against pressure differentials between a body member and a movable member mounted within the body member in a space formed in the body member adjacent a surface of the body member through which the movable member passes, said sealing member comprising:
(a) a lower shoulder member having a contact surface for insertion into the annular space to engage the surface of the body member in the body member;
(b) a cylindrical anti-extrusion member extending upwardly from said lower shoulder member and having a contact surface adapted for engaging the movable member;
(c) said shoulder member and cylindrical anti-extrusion member having sealing elastomer means mounted there-



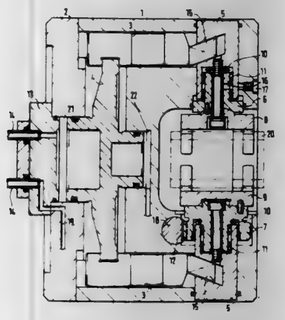
with for transmitting pressure thereto to cause said contact surface of said cylindrical anti-extrusion member to move into sealing engagement with said movable member to prevent movement of said sealing elastomer into said space; and
(d) a coating of low-friction material formed along said contact surface of said cylindrical anti-extrusion member to protect against galling of the movable member.

4,411,440

SWINGING CHUCK FOR TURNING MACHINES

Wolfgang Becker, Grossbettlingen, Fed. Rep. of Germany, assignor to Wilhelm Blessing, Nellingen, Fed. Rep. of Germany

Continuation of Ser. No. 114,738, Jan. 24, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,657
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1979, 2902421
Int. Cl.³ B23B *31/18*
U.S. Cl. 279—5 **22 Claims**



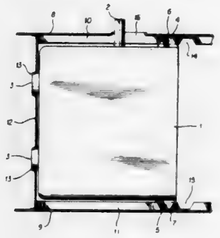
1. A work piece gripping chuck for use on turning machines, comprising:
a. a cup-shaped body having a continuous cylindrical periphery wherein said body is adapted to be mounted on and for co-rotation with a machine spindle and wherein said body includes a pair of diametrically opposed radial bores;
b. a pair of diametrically opposed, radially extending clamping jaws mounted in said body for radial reciprocation towards and away from each other as a means for gripping and releasing a work piece and wherein each of said jaws includes a cylindrical jaw pin slideably guided in said radial bores;
c. a clamping plate centrally positioned in said chuck body and guided for axial translational movement;
d. a pair of parallel accuating bars axially reciprocal in said body and connected to said plate;
e. means for coupling each of said accuating bars to a respective clamping jaw and means for converting common horizontal movement of said accuating bars into radial movement of said jaws, wherein said coupling means and said converting means engage each of said jaw pins respectively intermediate of their end portions guided in said radial bores, and wherein further each of said clamping jaws further comprises jaw bases including a central spindle portion rotatably mounted within a hollow radial inner end of each of said jaw pins respectively; and,
f. drive means for rotating said clamping jaws about an axis of radial reciprocation and means for locking said drive means in position wherein said jaw bases have a peripheral portion surrounding said radial inner end of said jaw pins respectively and in driving engagement with said rotating means.

4,411,441

MOUNTING FOR A FUEL TANK OF SYNTHETIC MATERIAL

Raymond Marcheix, Paris, and Christian Desiage, Rueil Malmaison, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jun. 8, 1981, Ser. No. 271,129
Claims priority, application France, Jun. 6, 1980, 80 12623
Int. Cl.³ B60K *15/02*
U.S. Cl. 280—5 A **6 Claims**



1. A mounting assembly for a fuel tank, having a nozzle extending therefrom, of synthetic material for automobiles comprising:
a first and second L-shaped side rail each including a horizontal end portion, said first side rail having an opening formed therein within which said nozzle is positioned;
a cross member interconnecting said first and second L-shaped side rails and having at least one opening formed therein;
at least one protuberance extending from a front face portion of said tank cooperatively engaging said at least one opening formed in said cross member; and
first and second lateral attachment lugs connected to said tank cooperatively engaging said horizontal end portions of said first and second L-shaped side rails.

4,411,442

FOOT-POWERED WHEELED VEHICLE

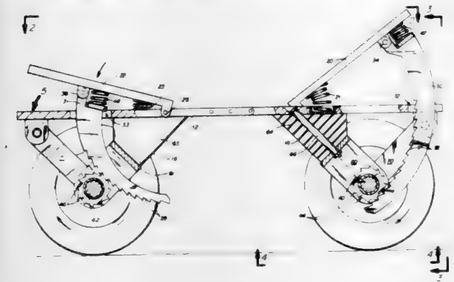
Nolan J. Rills, 836 Mary Ave., Opelousas, La. 70570

Filed Aug. 17, 1981, Ser. No. 293,497
Int. Cl.³ B62M *1/04*
U.S. Cl. 280—221 **6 Claims**

1. A foot-powered, wheeled vehicle comprising:
a. a frame including a platform adapted to accommodate both feet of an operator;
b. a pair of spaced apart front and rear trucks, each truck supporting a shaft and at least two wheels affixed to said

shaft at the outermost end portions thereof and being rotatably mounted with respect to said platform;

c. an independently depressable front and rear foot pedal cooperating with each truck, each pedal being pivotally connected to said frame and movable between upper and lower positions, the forwardmost pedal being connected to the frame so that the free end portion of the pedal faces the front of the vehicle and the rearmost of said pedals being connected to the frame so that the free end portion of that pedal faces the rear of the vehicle;



d. a return spring associated with each of said pedals for independently biasing each of said pedals toward the upper position; and

e. the shaft of each truck and its associated pedal including cooperating gear means for driving the shaft of the associated truck responsive to downward movement of the associated pedal, whereby the vehicle can be propelled by either foot of the operator such as by fore and aft independent foot depression of the operator.

4,411,443

STREAMLINED BICYCLE DESIGN

Christopher A. Pollard, 1060 S. Park Dr., Monument, Colo. 80132

Filed Jun. 13, 1980, Ser. No. 159,214
Int. Cl.³ B62K 3/00
U.S. Cl. 280—281 LP **9 Claims**



1. A streamlined, two-wheeled bicycle, comprising:

a steerable front wheel assembly including a front wheel;

a rear wheel assembly including a rear wheel;

an elongated frame having a front end to which is connected the front wheel assembly and having a rear end to which is connected the rear wheel assembly;

the frame including means for supporting a rider in a head-forward, recumbent position over the frame;

a pedal assembly located at the rear portion of the frame so that the pedals are engaged by the feet or the rider when in said recumbent position;

means for transmitting power from the pedal assembly to the rear wheel assembly to propel the bicycle;

an elongated pod-shaped, streamlined body attached to the frame and substantially completely enclosing the frame, the pedal assembly and a rider when the rider is in said recumbent position wherein the pod-shaped body is substantially symmetrical about an axis parallel to the direction of movement of the cycle;

the body further having a front section which smoothly expands in diameter, smoothly joining with a middle section which is convex with respect to said axis, and a rear section which is concave with respect to said axis and which tapers substantially to a pointed end;

the body having a maximum diameter of D and being mounted to the frame such that the distance from the ground to said axis is approximately D and wherein the maximum diameter D of the body is approximately 15 percent of the total length of the body;

a front wheel fairing attached to the body and substantially enclosing the front wheel in combination with the body;

a rear wheel fairing attached to the body and substantially enclosing the rear wheel in combination with the body;

the front and rear wheel fairings being separate such that an open space beneath the body and between the front and rear wheel fairings is provided; and

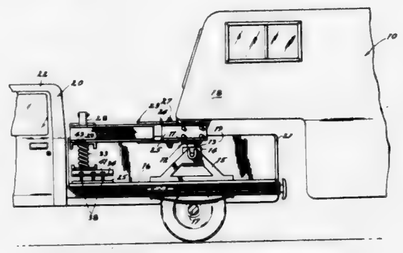
wherein each of the front and wheel fairings are shaped so that horizontal sections thereof are in the form of an elongated, teardrop shape.

4,411,444

LOAD EQUALIZER

Robert W. Holloway, 471 Almond Dr., No. 6, Lodi, Calif. 95240

Filed Feb. 25, 1982, Ser. No. 352,202
Int. Cl.³ B62D 53/08
U.S. Cl. 280—405 A **11 Claims**



7. A load equalizer for attachment on a trailer of the type having an elevated gooseneck which partially overlaps the rear bed of a towing truck where the bed is bounded by side and rear panels and a forward cab, the trailer having a bearing plate and kingpin adapted to be connected to a fifth wheel mounted on the truck bed above a truck rear axle, thereby permitting turning movement between them about the kingpin axis;

a rigid arm having a front end and a rear end, said rigid arm being adapted to be operably mounted to a bearing plate for movement about a first upright axis perpendicular to the rigid arm, said rigid arm being further adapted to extend generally forwardly in a substantially horizontal position from the trailer gooseneck to a location adjacent to the cab of a towing truck;

a vertical post slidably mounted by the front end of said rigid arm along a second upright axis parallel to said first upright axis, said post depending downwardly from the front end of the rigid arm to a lower post end;

spring means connected between said rigid arm and said post for resisting downward motion of said rigid arm relative to said post along the second vertical axis; and

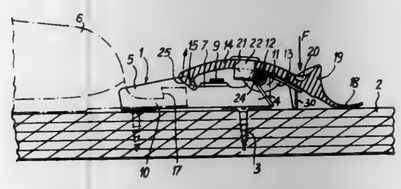
a pad adapted to be fixedly mounted to the bed of a towing truck in slidable abutting engagement with the lower end of said post at a location adjacent to the cab of the towing truck.

4,411,445

SKI BINDING TO SECURE A SHOE TO A SKI

Armand Kreyenbuhl, Samoens, France, assignor to Adidas Fabrique de Chassures de Sport, Landersheim, France

Filed Jun. 15, 1981, Ser. No. 273,937
Claims priority, application France, Jun. 13, 1980, 80 13271
Int. Cl.³ A63C 9/00
U.S. Cl. 280—615 **8 Claims**



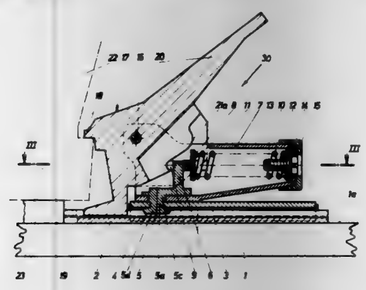
1. In a ski binding for fastening a boot to a ski, especially a cross-country ski or touring ski, said binding being of the type in which the boot is secured to the ski by an extension of the sole located at the front of the boot which engages in an archplate connected to the ski which delimits a space whose shape corresponds in width and height to that of the extension of the sole, locking means for locking the sole extension in the archplate against rearward withdrawal of the extension from the archplate, said locking means comprising, a latch, means connecting said latch to said archplate for pivotal movement about a horizontal axis transverse to the length of the ski, from a locking position in which the latch engages a cooperating surface of the sole extension to prevent rearward withdrawal of the sole extension from the archplate, to an unlocking position in which the latch is disengaged from the sole extension and can be withdrawn from the archplate, said latch comprising a front portion having a flexible extension which engages the ski at a location in front of the horizontal axis of pivotal movement of the latch in both said locking and unlocking positions of the latch, said latch and its front portion having a streamlined exterior profile axially of the ski to minimize accumulation of snow at the front of the binding, and wherein pivoting said locking means from said locking position to said unlocking position will flex said flexible extension.

4,411,446

RELEASE BINDING

Engelbert Spitaler, Wr. Neudorf, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Mar. 11, 1981, Ser. No. 242,819
Claims priority, application Austria, Mar. 19, 1980, 1480/80
Int. Cl.³ A63C 9/08
U.S. Cl. 280—628 **9 Claims**



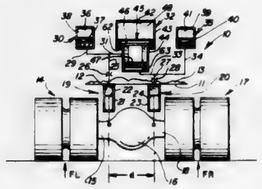
1. In a release binding adapted to be mounted on the upper side of a ski, including a base plate, a swivel element supported on said base plate, a support member supported on said swivel element for pivotal movement about a pivot axis which is substantially normal to the upper side of the ski, a housing having a sole holder thereon and supported on said support member for generally vertical movement between released and downhill skiing positions, first locking means for yieldably resisting upward movement of said housing away from said downhill skiing position, said first locking means including a control surface provided on said housing, a locking member which is supported on said support member for movement in directions generally parallel to the longitudinal axis of said ski in said downhill skiing position and which is engageable with said control surface, and resilient means yieldably urging said locking member toward said control surface, and second locking means for inhibiting pivotal movement of said support member and housing about said pivot axis when said housing is in said downhill skiing position and until said housing thereafter moves upwardly a predetermined distance away from said downhill skiing position, the improvement comprising wherein said second locking means includes a substantially V-shaped notch which is provided on said locking member, extends generally longitudinally of the ski in said downhill skiing position, has at its center a recess having a rounded surface and spaced side surfaces adjacent said rounded surface which extend substantially parallel to the longitudinal axis of the ski in said downhill skiing position, and wherein said second locking means further includes an upright extension on said swivel element which is positioned eccentrically with respect to said pivot axis and has a rounded surface which faces and has a radius substantially equal to that of said rounded surface of said recess of said notch, said locking member being urged toward said extension by said resilient means and said extension engaging said recess in said downhill skiing position.

4,411,447

VEHICLE SUSPENSION SYSTEM

Cullen P. Hart, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1981, Ser. No. 317,709
Int. Cl.³ B60G 11/26
U.S. Cl. 280—714 **14 Claims**



1. In a vehicle (10) having a frame (11), left (14) and right (17) wheels carried respectively on left (15) and right (18) portions of an axle (16), a left suspension strut (19) having fluid cylinder means (21) provided with a movable piston means (22), one of said means (21,22) being fixedly associated with said axle left portion (15) and the other of said means being fixedly associated with same frame, and a right suspension strut (20) having fluid cylinder means (23) provided with a movable piston means (24), one of said right strut means being fixedly associated with said axle right portion (18) and the other of said right strut means being fixedly associated with said frame (11), the improvement comprising:

main pressure accumulator means (32,149) having at least one pressure accumulator having first (46,152) and second (47,154) movable piston means (21,22) defining respectively equal area first (62) and second (63) pressure surfaces, and means (45,157) causing joint movement of said piston means and first resilient means (48,160,161) for resisting said joint movement of the piston means;

a left auxiliary pressure accumulator (30) having a third movable piston means (37) and second resilient means (38) for resisting movement of said third piston means;

a right auxiliary pressure accumulator (35) having a fourth movable piston means (40) and third resilient means (41) for resisting movement of said fourth piston means (40);

means (25,29,31,131) for fluidly connecting the left strut cylinder (21) with said main and left auxiliary pressure accumulator (32,149,30) to direct fluid pressure from said left strut cylinder means (21) against said first (46) and third (37) piston means; and

means (27,33,34,133) fluidly connecting the right strut cylinder (23) with said main (43) and right (39) auxiliary pressure accumulator means (32,149,35) to direct fluid pressure from said right strut cylinder means (23) against said second (47) and fourth (40) piston means, the spring rate of said second (38) and third (41) resilient means being greater than the spring rate of said first (48) resilient means.

4,411,448

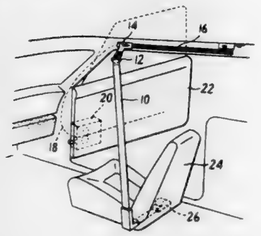
PASSIVE TYPE VEHICLE OCCUPANT RESTRAINT BELT SYSTEM WITH ELECTRICAL BRAKING

Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jun. 17, 1981, Ser. No. 274,533

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **4 Claims**



1. A belt transfer system for transferring a belt guide member of a passive vehicle occupant restraint belt system between a restraint location in which the belt is adapted to engage the occupant and a release location in which the belt is adapted to release the occupant comprising a source of DC electrical power, a reversible DC motor, first circuit means including a first switch for connecting both sides of the motor armature to the power source to brake electrically the motor when the belt guide member reaches the release location at the end of transfer thereto, second circuit means including a second switch for connecting the motor across the power source to energize it for rotation in a direction to transfer the belt guide member from the restraint location to the release location, third circuit means including a third switch for connecting both sides of the motor armature to the power source to brake electrically the motor when the belt transfer member reaches the restraint location at the end of transfer thereto, fourth circuit means including a fourth switch for connecting the motor across the power source to energize it for rotation in a direction to transfer the belt guide member from the release location to the restraint location, and a double-pole, double-throw switch actuated in response to the position of the vehicle door for connecting the first and second switches to the motor when the door is opened and the third and fourth switches to the motor when said door is closed.

4,411,449

CONNECTING MEMBER FOR A DRIVE WIRE CASING IN PASSIVE SEAT BELT SYSTEMS

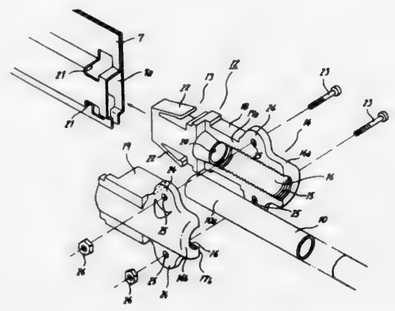
Juichiro Takada, 3-12-1, Shinmachi, Setagayaku, Tokyo, Japan

Filed Jun. 10, 1981, Ser. No. 272,358

Claims priority, application Japan, Jun. 13, 1980, 55-081831[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **8 Claims**



1. In a passive vehicle safety belt system having a transfer member that is moved between restraining and releasing configurations along a guide rail by a drive device that includes a drive wire with an outer casing, a connecting member for joining the guide rail to the outer casing of the drive wire comprising:

first and second parts constituting an elongated retaining portion defining portions of a longitudinally disposed socket having a plurality of closely spaced annular grooves, the parts clamping the outer casing of the drive wire in the socket; and

a clasp portion joined to the retaining portion, disposed in the guide rail, with locking means mating with apertures in the guide rail for releasably locking the retaining portion to the guide rail.

4,411,450

CHROMOGENIC PROPENYLENESULFONE COMPOUNDS

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

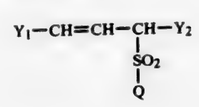
Division of Ser. No. 73,758, Sep. 10, 1979, Pat. No. 4,287,336. This application Apr. 2, 1981, Ser. No. 250,498

Claims priority, application Switzerland, Sep. 22, 1978, 9954/78

Int. Cl.³ B41M *5/16, 5/18, 5/22*

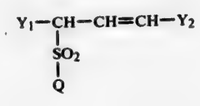
U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive or heat-sensitive recording material which comprises a support which contains or has coated thereon as color former at least one propenylenesulfone compound of the formula



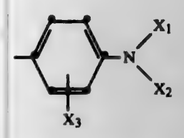
[(1A)]

or



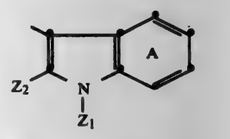
[(1B)]

wherein each of Y_1 and Y_2 independently represent an amino-substituted phenyl radical of the formula

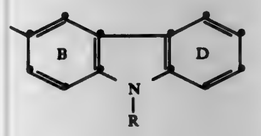


[(1a)]

a 3-indolyl radical of the formula



or a 3-carbazolyl radical of the formula



Q represents alkyl of 1 to 12 carbon atoms or unsubstituted or substituted aryl or aralkyl, each of X_1 and X_2 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or X_1 and X_2 together with the nitrogen atom to which they are attached represent a pyrrolidino, piperidino, piperolino, morpholino, thiomorpholino or piperazino group, X_3 represents hydrogen, halogen, nitro, lower alkyl or lower alkoxy, each of R and Z_1 independently represents hydrogen, alkyl containing not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents alkenyl containing not more than 12 carbon atoms, acyl of 1 to 12 carbon atoms, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl, lower alkoxy or nitro, and Z_2 represents hydrogen, lower alkyl or phenyl, the rings A and B, each independently of the other, are unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy or lower alkoxycarbonyl, and ring D is unsubstituted or substituted by cyano, nitro, halogen, lower alkyl, lower alkoxy, lower alkoxycarbonyl, unsubstituted or substituted phenyl or a fused benzene ring.

4,411,451

PRESSURE SENSITIVE COPYING PAPER

Toshihiko Matsushita, Funabashi; Sadao Morishita, Ibaraki; Eiko Kamimura, Yoshikawamachi, and Shigetoshi Hiraishi, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Aug. 12, 1981, Ser. No. 292,126

Claims priority, application Japan, Aug. 28, 1980, 55-118845

Int. Cl.³ B41M *5/22*

U.S. Cl. 282—27.5 **2 Claims**

1. A pressure sensitive copying paper comprising a color developer coated sheet obtained by coating a color developer on a support and a color former coated sheet obtained by coating on another support an aqueous coating color constituted mainly of (i) microcapsules containing a substantially colorless color former, (ii) a microcapsule-protecting agent and (iii) a binder selected from the group consisting of hydrophilic polymer colloids, starch, oxidized starch, casein, polyvinyl alcohol, carboxymethyl cellulose, water-soluble or dispersable gums and latexes and drying the coated aqueous coating color, wherein a wax in the form of an aqueous emulsion or aqueous suspension is added to said aqueous coating color in an amount of 3–15% by weight based on the solid content of the coating color.

4,411,452

PRESSURE-SENSITIVE RECORDING MATERIAL

Akio Miyamoto, Fujinomiya, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

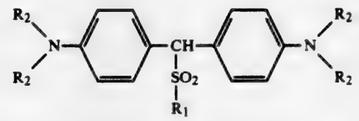
Filed Apr. 16, 1982, Ser. No. 368,929

Claims priority, application Japan, Apr. 16, 1981, 56-57593

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **8 Claims**

1. A pressure-sensitive recording material comprising a base paper having a surface pH of at least 6.0 and having coated thereon microcapsules containing a benzhydrylsulfone type color former solution, wherein the benzhydrylsulfone type color former is represented by the formula (I)



(I)

wherein R_1 represents a monovalent group containing from 5 to 25 carbon atoms and R_2 represents a lower alkyl group containing from about 1 to 5 carbon atoms.

4,411,453

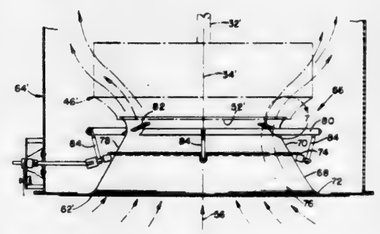
FAN OR BLOWER ASSEMBLY

Donald F. Philipps, Coon Rapids, and Richard D. Williamson, Hugo, both of Minn., assignors to The Marley/Wylain Company, Mission Woods, Kans.

Division of Ser. No. 940,121, Sep. 6, 1978, Pat. No. 4,253,769. This application Sep. 23, 1980, Ser. No. 190,081

Int. Cl.³ F16L *55/00*

U.S. Cl. 285—18 **7 Claims**



1. In combination with an air duct assembly having a first duct formed as a truncated cone-shaped surface of revolution about a principal axis, and a second duct formed as a venturi shaped surface of revolution about said axis, means mounting said second duct in axially shiftable, radially spaced apart, concentric relationship with said first duct, comprising:

a plurality of links operably connecting said first duct and said second duct and maintaining the same radially spaced apart out of surface contacting relationship. each of said links having a first end operably, pivotally connected to said first duct and the opposed ends of said links operably pivotally connected to said second duct; and

means for rotating said second duct about said principal axis relative to said first duct thereby pivoting said links about their pivoting axes to change the effective length of said

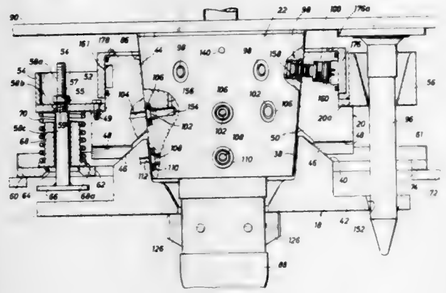
links in the direction of said principal axis for effecting said axial shifting of said second duct without sliding said second duct along the first duct.

4,411,454

UNDERWATER WELLHEAD CONNECTOR

Douglas W. J. Nayler, Kingwood, and John D. Smith, Houston, both of Tex., assignors to NL Industries, Inc., New York, N.Y.

Filed Nov. 3, 1980, Ser. No. 202,942
Int. Cl.³ F16L 35/00
U.S. Cl. 285—26 **29 Claims**



1. Apparatus for connecting to a wellhead structure comprising:
- a first female body defining a first receptacle opening generally upwardly;
- first guide means connected to said first female body and engagable with said wellhead structure for at least gross positioning of said first female body with respect to said wellhead structure;
- a second female body having a bore defining a second receptacle opening generally upwardly and downwardly, and engagable with said first female body with said receptacles in substantial coaxial alignment;
- second guide means connected to said second female body and engagable with said wellhead structure for at least gross positioning of said second female body with respect to said wellhead structure;
- compensator means interconnecting one of said female bodies with the respective one of said guide means for substantial but limited lateral movement of said one female body with respect to said one guide means; and
- fine positioning means cooperative between said female bodies for positioning said female bodies with said receptacles in substantial coaxial alignment.

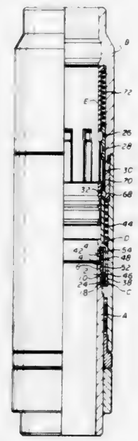
4,411,455

RISER CONNECTOR

Mark A. Schnatzmeyer, 20 Oakbrook Dr., Lewisville, Tex. 75067

Filed Jul. 31, 1980, Ser. No. 173,987
Int. Cl.³ F16L 37/08
U.S. Cl. 285—39 **26 Claims**

1. A riser connector for connecting a first riser member to a second riser member as the second riser member telescopes over the first riser member comprising
- a first connecting means on the first riser member,
- a second connecting means on the second riser member wherein the second connecting means can engage the first connecting means thereby connecting the riser members,
- a locking sleeve in the bore of the second riser member for controlling the first and second connecting means and movable relative to the second riser member from a first position wherein the first and second connecting means are not in engagement to a second position wherein the first and second connecting means are in engagement, the locking sleeve being activated so as to move from its first to its second position by the telescoping movement of the riser members,
- an actuator sleeve movable in the bore of the locking sleeve from a first position to a second position, the direction of movement of the actuator sleeve from its first position to its second position being in a direction opposite the direction of movement of the locking sleeve from its first position to its second position,



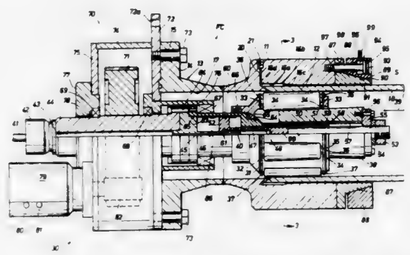
- means for carrying the actuator sleeve with the locking sleeve as the locking sleeve moves to its second position,
- means for preferentially urging the actuator sleeve to its second position, and
- locking means locking the locking sleeve in its second position when the actuator sleeve is in its second position.

4,411,456

APPARATUS, METHODS, AND JOINTS FOR CONNECTING TUBULAR MEMBERS

Charles F. Martin, P.O. Box 197, Porter, Tex. 77365

Continuation of Ser. No. 673,010, Apr. 2, 1976, Pat. No. 4,183,555. This application Jan. 15, 1980, Ser. No. 112,399
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclaimed.
Int. Cl.³ F16L 35/00
U.S. Cl. 285—39 **25 Claims**



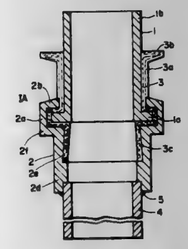
1. An assembly for connecting together tubular bodies to provide a passageway through the connected bodies, comprising:
- first and second tubular bodies, each of which includes at least one end portion having an annular end face and an end opening in communication therewith, the bore of the end portion of the second body being greater than the outside dimensions of the end portion of the first body so that the first body end portion is receivable within the second body end portion to form an overlapping joint area between the said first and second bodies;
- indexing means for limiting axially inward movement of the first body end portion into the second body end portion such that said first body annular end face is completely received in said second body end portion;
- means operatively connected to said first and second bodies and carried by one of said tubular bodies to restrain relative rotational and axial movements of said end portions after said overlapping joint area is formed; and
- forging means releasably mounted on one of said tubular bodies and having a rotatable forging head receivable within the bore of said first body end portion for forging the first body end portion laterally outwardly, in the overlapping joint area, into locking engagement with the second body end portion.

4,411,457

INSULATED PIPE JOINT

Takeo Inoue, and Takashi Shirazawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1981, Ser. No. 250,789
Claims priority, application Japan, Apr. 14, 1980, 55-51152
Int. Cl.³ F16L 55/00
U.S. Cl. 285—52 **8 Claims**



1. An insulated pipe joint comprising:
- a first tubular member formed with a flange portion at one end thereof;
- a second tubular member having one end thereof formed with a cap portion which accommodates said flange portion of said first tubular member with a gap therebetween;
- an insulating member disposed in said gap between said flange portion and said cap portion for hermetically coupling said first and second tubular members and for electrically insulating said first and second tubular members from each other;
- said insulating member comprising a glass-mica molding comprising glass and mica powders, said mica powders comprising mica scale particles having planes arranged substantially parallel to walls of said tubular members at portions of said insulating member adjacent said walls.

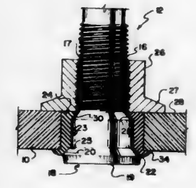
4,411,458

STEM SECURING MEANS FOR CONDUITS

Norman E. Strunk, 401 McMaster Crescent, Saskatoon, Saskatchewan, and Anton P. Poboreski, Box 100, Asquith, Saskatchewan, both of Canada

Filed Apr. 28, 1981, Ser. No. 258,328
Int. Cl.³ F16L 5/02
U.S. Cl. 285—196 **7 Claims**

1. An assembly for securing a cylindrical hollow stem to an aperture in the wall of a conduit, said assembly comprising:
- (a) a deformable sleeve, said sleeve having an outside diameter just slightly smaller than the diameter of said aperture in the wall of said conduit enabling snug insertion of said sleeve through said aperture, and an internal diameter enabling snug passage of a hollow stem therethrough, said sleeve including an internal chamfered upper end and an external chamfered lower end, the length of said sleeve being greater than the thickness of the wall of said conduit;
- (b) a hollow stem, said stem including a frusto-conical bulbous base, provided at the lower end thereof, said bulbous base being of a larger diameter than the external diameter of said hollow stem but being of slightly less diameter than the diameter of said aperture, said base including a first shoulder at the lower end thereof, said first shoulder sloping upwardly and inwardly towards the portion of said stem which is disposed thereabove, and a second frusto-conical shoulder formed thereon spaced above said first frusto-conical shoulder, said second frusto-conical shoulder sloping inwardly and upwardly toward an upper cylindrical stem portion, the diameter of said upper stem portion and said internal diameter of said sleeve being less than the diameter of the stem between said second frusto-



conical shoulder and said first frusto-conical shoulder, a portion of said stem immediately above said second shoulder being screw-threaded; and
- (c) clamping means associated with said hollow stem, said clamping means comprising a screw-threaded cylindrical coupling engageable with the portion of said stem above said frusto-conical base which is screw-threaded, the external diameter of the lower end of said cylindrical coupling being greater than the diameter of said aperture; whereby, when said hollow stem and said sleeve are inserted into said aperture, and when said clamping means are actuated to apply a longitudinal upward force against the base of said sleeve, initial actuation of said clamping means forces the lower end of said sleeve over said second frusto-conical shoulder and down to said frusto-conical base, and said sleeve is expanded radially outwardly into sealing engagement with the wall of said aperture, and simultaneously is forced into longitudinally spaced-apart circumferential sealing engagement with said first and second frusto-conical shoulders.

4,411,459

BRANCH FITTING FOR PROVIDING ACCESS TO THE INTERIOR OF A PIPE

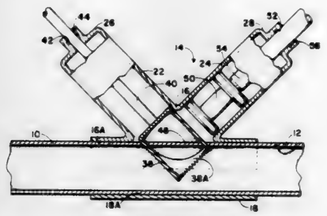
Burton Ver Nooy, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa, Okla.

Filed Jun. 29, 1981, Ser. No. 278,642
Int. Cl.³ F16L 41/06, 55/10, 55/18
U.S. Cl. 285—197 **10 Claims**

1. A branch fitting for providing access to the interior of a pipe comprising:
- a body portion defined in part by a semi-cylindrical surface adapted to sealably engage a pipe including means to secure the body portion to the pipe in pressure retaining relationship;
- a first cylindrical barrel portion extending from said body portion in the plane of the tubular axis of the pipe;
- a second cylindrical barrel portion extending from said body portion in the same plane;

means within said first barrel portion for providing an opening in the pipe, the opening providing access between said second barrel portion and the interior of the pipe;

an operating member positionable in said second barrel portion; and



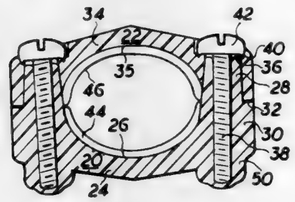
means of moving said operating member from said second barrel through the formed opening into the interior of the pipe.

4,411,460

HOSE COUPLING AND CLAMP

Glenn I. Beal, Somerset, Pa., assignor to R. M. Smith, Inc., Somerset, Pa.

Filed Apr. 21, 1981, Ser. No. 256,149
Int. Cl.³ F16L *33/00*
U.S. Cl. 285—243 **11 Claims**



1. A hose clamp system for use with a soft-walled, garden-variety hose, said system comprising:

a hose end member, said member including at one end thereof a portion which is to extend from said hose and at the other end an elongated sleeve portion dimensions to slidingly fit within the end of said hose, said sleeve portion including at least one upraised ridge about its outer surface spaced from said extending end;

a plastic male clamping member having a clamping portion with a first curved inner surface for engaging the outer surface of said hose end into which said sleeve portion is slidingly fit; said first curved inner surface including a first recessed curved portion and a first curved portion upraised relative to said first recessed curved portion, said plastic male clamping member further including spaced, integrally formed plastic chucks that extend out of said clamping portion such that a portion of the surface of said chucks is adjacent the arcuate ends of said first curved inner surface, said plastic chucks including elongated bores extending therethrough and beyond the rear surface of said male clamping member into closed integral plastic mounds thereon;

a plastic female clamping member having a clamping portion with a second curved inner surface for engaging the outer surface of said hose end, said second curved inner surface including a second recessed curved portion and a second curved portion upraised relative to said second recessed curved portion, said plastic female clamping member further including spaced depression areas in registry with said spaced, integrally formed plastic chucks of said male clamping members and shaped to receive said plastic chucks to secure said male and female clamping members in a fixed relative orientation in which said first and second recessed curved portions are in facing relation spaced from said extending portion of said hose end member and in which said first and second upraised curved portions are in facing relation adjacent said extending portion of said hose end member, said depression areas having orifices axially aligned with said elongated bores of said plastic chucks when said plastic chucks are received into said depression areas; and

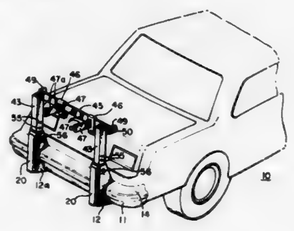
means for fastening said plastic male clamping member to said plastic female clamping member, said fastening means comprising metal self-tapping screw means insertable through said orifices of said plastic female clamping member and self-tappingly engageable into said elongated bores of said plastic chucks, to retain said male and female clamping members together in a fixed clamping position such that said hose end portion adjacent said extending portion of said hose end member is pinched between said sleeve portion and said first and second relatively upraised portions to deform the outer surface thereof to a first degree, and such that said hose end portion in which said at least one upraised ridge is contained is pinched between said sleeve portion and said first and second recessed curved portions to deform the outer surface thereof to a second and lesser degree.

4,411,461

BUMPER GUARDS

Harry Rosenberg, H. R. Packing Equipment and Supplies, 8941 Roosevelt Blvd., Philadelphia, Pa. 19152

Filed Jul. 19, 1982, Ser. No. 399,491
Int. Cl.³ B60R *9/10*
U.S. Cl. 293—108 **7 Claims**



1. Bumper guards for mounting to the bumper of a vehicle, said bumper guards each having opposite side walls and front and rear walls forming an integral socket therebetween,

vertically slidable members engaged in said sockets,

said side walls each having at least one horizontally extending opening,

a horizontal bar connecting said vertically slidable members,

said members having a plurality of vertically spaced, horizontally aligned openings,

members for horizontal insertion through said opening in said side walls of said bumper guards, and said openings in said members for adjusting the heights of said vertically slidable members,

said bumper guards each having a lower connecting plate for restricting rotational movement of said guards and said bumper, and

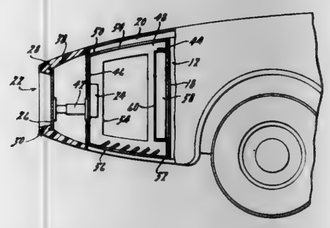
means for securing said connecting plate to said vehicle.

4,411,462

AUTOMOBILE FRONT END CONSTRUCTION INCORPORATING AN AIR-BAG

Gordon M. Buehrig, and Kathryn L. Buehrig, both of Grosse Pointe Woods, Mich., assignors to Richard P. Kughn, Detroit, Mich.

Filed Feb. 1, 1982, Ser. No. 344,738
Int. Cl.³ B60R *19/10*
U.S. Cl. 293—132 **20 Claims**



1. In an automotive vehicle,

a front bumper;

yieldable means associated with said bumper for resisting rearward movement thereof;

a normally folded, explodable air-bag behind said bumper; and

supporting frame means carrying said air-bag and adapted to confine the same in the exploded condition,

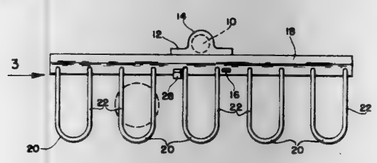
said yieldable means adapted to permit but actively resist rearward movement of said bumper under a relatively light, rearwardly directed impact force, said supporting frame means adapted to collapse under a relatively heavy, rearwardly directed impact force which is less than an impact force capable of significantly damaging or destructing other major parts of the vehicle, and said air-bag adapted to explode under an impact force greater than said relatively light impact force and adapted further in the exploded condition to resist collapse of said supporting frame means.

4,411,463

GOLF BALL RETRIEVING RAKE

Paul Alderman, 381 Shrewsbury St., Holden, Mass. 01520

Filed Jan. 25, 1982, Ser. No. 342,137
Int. Cl.³ A01D *7/06*
U.S. Cl. 294—19 A **4 Claims**



1. A golf ball retriever comprising an elongated head and a series of spaced wire fingers extending from said head in a row,

wherein the fingers are of general U-shape and are spaced apart in a line, the U-shaped fingers having rounded closed ends spaced from the head, said fingers being curved and having their convex aspects facing away from the head to engage the ground, all the fingers facing in the same direction forming a series of open spaced scoops extending from the head,

there being legs forming parts of the U-shaped fingers, said legs being free ended, the free ends being embedded in the head, all legs being spaced apart a distance slightly less than the diameter of a golf ball and the legs of the next adjacent fingers being also spaced apart less than the diameter of a golf ball; the rounded closed ends of the U-shaped fingers being all that engages the ground,

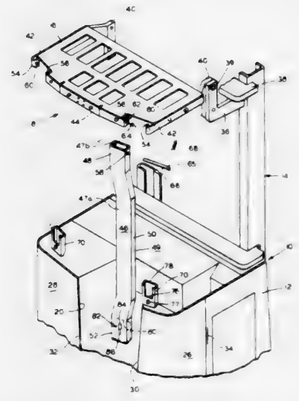
a handle for said head, a generally flat plate on the handle at one end thereof, a pivot offset from the axis of the handle on the plate, said rake head being pivoted with relation to said flat plate whereby the head may be moved into a parallel relationship with respect to the handle or into a transverse relationship with respect thereto.

4,411,464

OPERATOR PROTECTIVE POSTS

James J. Bauer, Richland, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 3, 1981, Ser. No. 289,627
Int. Cl.³ B62D *25/06*
U.S. Cl. 296—102 **6 Claims**



1. An industrial vehicle having an upright structure adjacent its front end, a body portion to the rear of the upright structure, an operator's compartment on the body portion, and a protective canopy rigidly mounted cantilever fashion on the upright structure and extending rearwardly over the operator's compartment, comprising

a first elongated post pivotally mounted on said canopy adjacent the distal end thereof and depending therefrom,

a second elongated post pivotally mounted on said canopy adjacent the distal end thereof and depending therefrom,

said second post being spaced laterally from said first post,

each of said posts having an upper end, a middle section and a lower end,

said middle section of each post having a lateral offset relative to said upper and lower ends thereof,

the said two posts selectively mountable on said canopy so that the distance between their respective middle sections is less than the distance between their respective upper ends, and

means associated with said lower ends of said posts respectively for selectively securing the posts to said body portion.

4,411,465

DOOR ACTUATING MECHANISM

Guy E. Stuart, Jr., 518 Adams St., Owosso, Mich. 48867

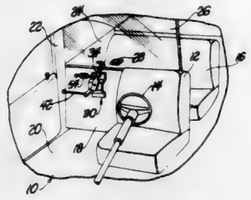
Filed Oct. 19, 1981, Ser. No. 313,336
Int. Cl.³ B60J *5/04*
U.S. Cl. 296—146 **5 Claims**

1. An operating mechanism for selectively closing and opening a vehicle door, and comprising;

a support structure and means for mounting said support structure in a fixed location within a vehicle,

an operative link and means for connecting one end of said

link to a rearwardly opening vehicle door forwardly of the door's hinge axis,
and operative means provided on said support structure, readily accessible from the driver's seat in said vehicle, and operatively connected to said operating link for allowing the driver of the vehicle to selectively pull-closed and push-open said vehicle door,



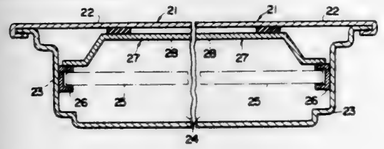
said support structure being provided between the front and back seats of a passenger car vehicle,
a bracket provided on said door and formed to provide a structural extension forwardly of its hinge axis,
and means connecting said operative link to said bracket for transmitting a door actuating force therethrough.

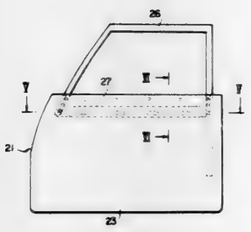
4,411,466

AUTOMOBILE DOOR STRUCTURE

Shoichi Koike, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Continuation of Ser. No. 208,387, Nov. 19, 1980, abandoned. This application Jun. 8, 1982, Ser. No. 386,271
Claims priority, application Japan, Dec. 10, 1979, 54-171368[U]
Int. Cl.³ B60J *1/00*
U.S. Cl. 296—188 **2 Claims**





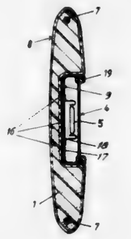
1. An automobile door structure comprising:
a door body including an outer panel and an inner panel forming in combination a door cavity to receive a windowpane therein;
a window sash formed in a generally inverted U-shape to guide and retain said windowpane and having longitudinal front and rear ends respectively secured to the front and rear inner surfaces of said inner panel of the door body;
a reinforcing member housed in said door cavity to extend in a fore-and aft direction of said door body and having front and rear ends respectively secured to the longitudinal front and rear ends of said window sash, said reinforcing member having portions secured to said outer panel of the door body.

4,411,467

FOIL COVERING LAYER FOR SUN VISOR

Kurt Cziptschirsch, Wuppertal; Klaus-Peter Kaiser, Wermelskirchen, and Gerhard Zwirner, Haan, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Feb. 4, 1981, Ser. No. 231,034
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011158
Int. Cl.³ B60J *3/00*
U.S. Cl. 296—97 H **12 Claims**



1. A sun visor, including a sun visor body having sides, a recess defined in a side of the sun visor body and the recess having side walls of a substantial depth in the visor body for defining the recess;
a covering layer of flexible generally less expansible material surrounding the visor body, the material layer including a section thereof which overlaps the recess, which extends into the recess and which is installed in the recess and contacts the walls thereof and means for making the said covering layer more stretchable than the remainder of the covering layer; the overlapping section of the covering layer being therefore more readily expansible than the remainder of the covering layer, for easing the bringing of the layer into contact with the walls of the recess; said layer of material, at least as it extends over the side of the body and including the section extending into the recess in the body, being an integral piece of the material; said visor further comprising means supporting a mirror, the mirror supporting means being shaped with a profile generally corresponding to the profile defined by the recess, and the layer of the material in the recess being between the walls of the recess and the supporting means.

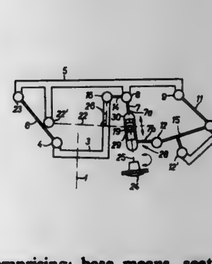
4,411,468

ROCKING CHAIR

Arthur A. Apissomian, Wadena, Minn., assignor to Homecrest Industries Incorporated, Wadena, Minn.

Filed Mar. 5, 1981, Ser. No. 240,772
Int. Cl.³ A47C *3/02*
U.S. Cl. 297—264 **10 Claims**

1. A rocking chair comprising:
a chair base;
a chair;
flexible plastic sheet means connected between the chair base and the chair for supporting the chair and its occupant and permitting rocking of the chair with respect to the base in a plane essentially normal to a major surface of the flexible sheet means by flexing of the flexible plastic sheet means;
first mounting means for connecting one end of the flexible sheet means to the chair,
second mounting means for connecting an opposite end of the flexible sheet means to the chair base, the flexible sheet means extending generally upwardly from the second mounting means to the first mounting means at a slight inclination rearwardly from a vertical position when the chair is unoccupied so that the chair and its occupant initially apply a primarily compressive load to the flexible plastic sheet means,
said second mounting means comprising a support member secured to and above the chair base and having a lower generally flat upwardly extending surface and an aperture extending through said support member above said flat surface, said aperture being of a width at least



equal to that of the flexible sheet means and with the opposed walls of said aperture diverging from the bottom to the top of the aperture, the rear wall of the aperture being curved to provide a controlled decrease in the free length of the sheet means as the chair is rocked rearwardly, and means for fastening the lower end of the sheet means to said flat surface at the slight inclination to the vertical with the sheet means extending upwardly through said aperture towards the first mounting means, and
stop means for stopping the rearward movement of the chair before the sheet means engages the upper end of said curved wall.

4,411,469

CHAIR, PARTICULARLY A DATA DISPLAY CHAIR

Fritz Drabert, Minden, Fed. Rep. of Germany; Oskar Posch, Biberist, Switzerland; Hans-Joachim Edel, Minden, and Bernhard Schroeder, Porta Westfalica, both of Fed. Rep. of Germany, assignors to Drabert Söhne, Minden, Fed. Rep. of Germany

Filed Jul. 17, 1980, Ser. No. 169,615
Claims priority, application Switzerland, Jul. 23, 1979, 6826/79; Jan. 31, 1980, 787/80; Mar. 31, 1980, 2503/80; May 19, 1980, 3892/80
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—300 **3 Claims**

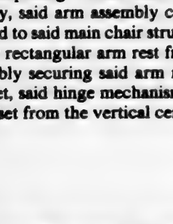
1. A chair comprising: base means, seat means pivotally supported at said base means; back rest means pivotable with respect to said seat means about a substantially horizontal axis, spring means kinematically coupling said seat means and said back rest means, a first pair of links having first ends pivotally connected to said seat means and second ends pivotally connected to said back rest means, a second pair of links having first ends pivotally connected to said seat means and second ends pivotally connected to said base means, one of said pairs of links forming an angle lever pivotally connected at said seat means, said angle lever provided with means for adjustably supporting one end of said spring means, said means for adjustably supporting said spring means comprises a nut journaled on a threaded spindle, said nut supporting a pivot supporting one end of said spring means, and a bar having one end pivotally supported at said pivot and the other end pivotally supported as said angle lever.

4,411,470

SUPPORTING DEVICE OF A HEAD REST FOR A VEHICLE SEAT

Shinichi Nishimura, Zama; Yoshinori Akiyama, and Yoshiaki Hoshika, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Nov. 19, 1980, Ser. No. 208,381
Claims priority, application Japan, Nov. 21, 1979, 54-150940
Int. Cl.³ A47C *1/02*
U.S. Cl. 297—410 **2 Claims**



2. A head rest supporting device of a vehicle seat, in which the head rest is provided with a supporting rod which is in turn supported by a frame forming a seat back such that the height of the supporting rod can be adjusted, comprising in combination:
a guide member secured to the frame of the seat back and having a longitudinally extending bore which guides the vertical adjustable movement of the supporting rod;
a retainer supported by the frame of the seat back and including a friction member which is resiliently urged against the outer surface of the supporting rod so as to vertically retain the head rest at a desired adjusted height; and
releasing means to disengage the friction member from the supporting rod thereby permitting adjustable movement of the supporting rod, said friction member comprising a spring which surrounds the supporting rod in frictional engagement therewith and is expandable radially outwardly to be disengaged from the supporting rod by pushing inwardly the releasing means.

4,411,471

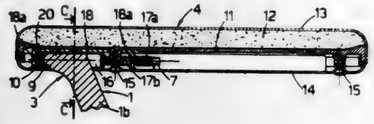
ARM SUPPORT MEMBER FOR SEATS OR CHAIRS, HAVING A VERTICALLY LIFTABLE ARM REST

Giulio Ponzellini, Bologna, Italy, assignor to Castelli S.p.A., Bologna, Italy

Filed Feb. 12, 1981, Ser. No. 233,886
Claims priority, application Italy, Feb. 15, 1980, 35569/80[U]
Int. Cl.³ A47C *7/54*; B60N *1/06*
U.S. Cl. 297—417 **8 Claims**

1. A stack chair comprising a main chair structure and at least one arm assembly, said arm assembly comprising a supporting bracket secured to said main chair structure and having a free end, a generally rectangular arm rest frame and a hinge mechanism for pivotably securing said arm rest frame to the free end of said bracket, said hinge mechanism having a hinge axis parallel to and offset from the vertical center plane of said

arm rest member to allow said frame to be moved from a substantially horizontal use position to a vertical stack position, said hinge mechanism having locking means provided to lock said bracket and frame in both the aforementioned use and



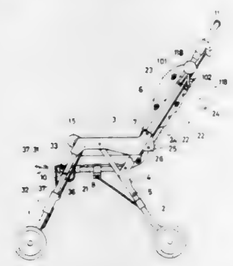
stack positions, first spring means provided to urge said locking means in its engagement position, and second spring for causing the frame to be automatically swung to its vertical position, on moving said arm rest against the bias of said first spring means.

4,411,472

HAMMOCK FOR BABY CARRIAGES

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Mar. 27, 1981, Ser. No. 248,426
Claims priority, application Japan, Apr. 11, 1980, 55-48200
Int. Cl.³ A47C *7/50*
U.S. Cl. 297—430 **5 Claims**



1. A hammock for baby carriages which is provided with a substantially horizontally extending seat and a back rest upwardly extending from the rear end of said seat, said hammock comprising: a pair of tubular slide guide rods longitudinally extending under the lower surface of said seat, a pair of sliders each inserted into the associated slide guide rod from the front so as to be slidably guided by said slide guide rod, and a first reinforcing member connected between the front ends of said pair of sliders, said seat including a flexible seat extension hanging down in a loop (36) from a front end of the seat when said pair of sliders are recessed in said guide rods, said flexible seat extension being operatively connected to said first reinforcing member (33) for extending said seat extension loop by forwardly pulling out said sliders, whereby said seat extension is brought into a substantially horizontally extending position by straightening the loop.

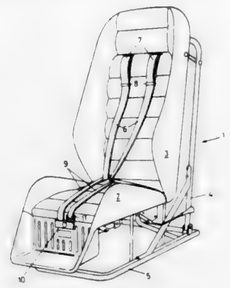
4,411,473

WEBBING HARNESS RESTRAINTS

John P. Ettridge, 235 Diagonal Rd., Warradale, Australia (5046)

PCT No. PCT/AU80/00005, § 371 Date Dec. 26, 1980, § 102(e) Date Dec. 17, 1980, PCT Pub. No. WO80/02379, PCT Pub. Date Nov. 13, 1980
PCT Filed Apr. 24, 1980, Ser. No. 227,084
Claims priority, application Australia, Apr. 9, 1979, PD8329
Int. Cl.³ B60R *21/10*; A47D *13/08*
U.S. Cl. 297—484 **5 Claims**

1. A harness restraint for a person in a seat having a seat portion and a back rest portion, said restraint comprising a pair of shoulder straps, each strap being anchored at its respective upper end above and behind the lower end to enter at the junction of the seat portion and back rest portion generally in parallel relationship in the relaxed state, and a crotch strap anchored at both ends at the front of the seat adapted to pass up



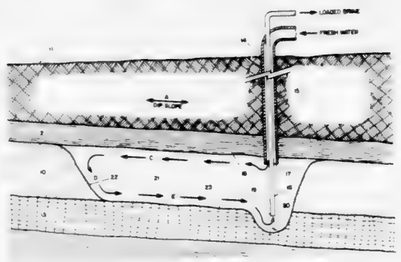
between the legs of the person, around both shoulder straps to draw these together in the area of the crotch, and a single releasable catch on the crotch strap positioned between the legs of the person whereby this single catch controls the release and attachment of the harness.

4,411,474

SOLUTION MINING OF AN INCLINED STRUCTURE

Rudolph S. Higgins, Moab, Utah, assignor to Texasgulf Inc., Stamford, Conn.

Filed May 20, 1981, Ser. No. 265,665
Int. Cl.³ E21B *42/28*
U.S. Cl. 299—4 **6 Claims**



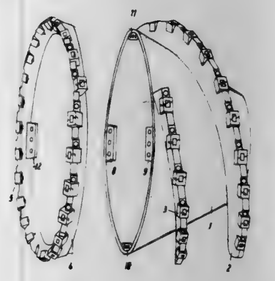
1. A method of solution mining an extractable ore disposed in a sloping subterranean stratum disposed beneath an insoluble stratum comprising the steps of establishing a bore hole communicating with said stratum at a downdip location therein, injecting solvent into said bore hole in such a manner that the solvent will be directed in an updip direction along the upper portion of said stratum to develop a cavity with an expanding mining face remote from said bore hole, and withdrawing solvent with dissolved ore through said bore hole at an exit point disposed vertically from the entrance point at which the incoming water is discharged into the cavity from the bore hole, adjusting such withdrawal to provide for downflow of the water across said mining face and downwardly in a downdip direction along the floor of said cavity to said exit point at a rate sufficient to extract said ore stratum without appreciable mining of vertically adjacent strata.

4,411,475

CUTTING DRUM

Gerd Best, Sprockhoevel, and Norbert B. Welkert, Dortmund, both of Fed. Rep. of Germany, assignors to Krampe & Co. Fertifung in Bergbaubedarf GmbH, Hamm, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,165
Int. Cl.³ E21C *25/10*
U.S. Cl. 299—81 **5 Claims**



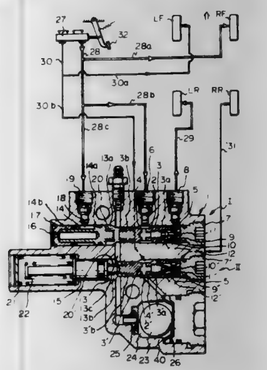
1. A cutting drum for an extracting machine as used in mining, comprising a base body having a conical or frustoconical jacket and a major annular face, at least one spiral member wound about the jacket and projecting away therefrom, a first set of cutting tools secured to said spiral member, an end ring having a frustoconical jacket, a major annular face and a minor annular face, the circumference of said minor annular face corresponding to the circumference of the major annular face of said base body and the slope of the jacket of said end ring corresponding to the slope of the jacket of said base body, a second set of cutting tools secured to said end ring, and means for detachably connecting the minor annular face of said end ring to the major annular face of said base body.

4,411,476

HYDRAULIC PRESSURE CONTROL VALVE

Naganori Koshimizu, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jun. 11, 1982, Ser. No. 387,683
Claims priority, application Japan, Jun. 15, 1981, 56-87651[U]
Int. Cl.³ B60T *8/18, 8/26*
U.S. Cl. 303—6 C **3 Claims**



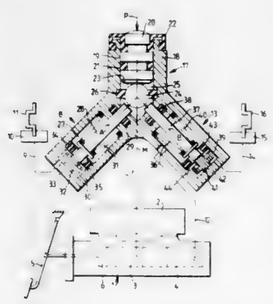
1. A hydraulic pressure control valve comprising a housing, first and second pressure control mechanisms each including a stepped piston slidably disposed in a stepped bore in the housing and defining an inlet liquid chamber and an outlet liquid chamber in the stepped bore, each said piston having therethrough a connecting passage for connecting said two liquid chambers, each of said mechanism having a valve mechanism for closing said connecting passage in response to the displacement of the stepped piston, said pressure control valve further having a control chamber therein to which one ends of said stepped pistons being exposed with the hydraulic pressure in the control chamber biasing the stepped pistons in the direction opening the valve mechanisms, a plunger slidably fitted in the housing with one end thereof being exposed to the control chamber, a pressure control spring acting on the other end of the plunger, a stepped emergency piston with one end having a large pressure area being exposed to said control chamber and being adapted to abut with or separate from said one end of the first stepped piston, an emergency chamber connected to the inlet liquid chamber of the first pressure control mechanism and being exposed to the other end of the emergency piston having a small pressure receiving area, and an inertia valve provided in a passage connecting the control chamber with the inlet liquid chamber of the second pressure control mechanism.

4,411,477

TWO-CIRCUIT PRESSURE CONTROL UNIT FOR HYDRAULIC BRAKE SYSTEMS

Jochen Burgdorf, Offenbach, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 174,769, Aug. 1, 1980, abandoned. This application Nov. 19, 1982, Ser. No. 443,082
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1979, 2936502
Int. Cl.³ B60T *8/00, 8/18*
U.S. Cl. 303—22 R **42 Claims**



1. A two-circuit pressure control unit for a dual-circuit hydraulic brake system comprising:

two control pistons each disposed in a different one of said dual-circuits and operating to close an associated control valve against an associated spring force upon an increase of inlet pressure;

a rigid supporting member having a supporting surface; and

a compensation member disposed to abut said supporting surface and to abut each of said control pistons, said control pistons being disposed symmetrically with respect to a central plane of said compensation member with each of said control pistons being inclined with respect to said plane in opposite directions and at the same angle and said compensation member is a whole rigid solid of revolution selected from one of a whole cylinder and a whole ball, said selected one of said cylinder and said ball having a single continuous curved surface in operative relationship with said supporting surface and each of said control pistons.

4,411,478

ROLLING BEARING FOR LENGTHWISE GUIDING OF A SHAFT OR THE LIKE

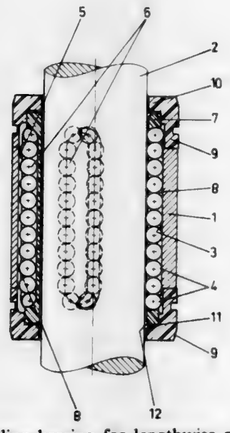
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 317,504

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1980, 3041804

Int. Cl.³ F16C *29/06*; F16J *15/32*

U.S. Cl. 308—6 C **8 Claims**



1. In a rolling bearing for lengthwise movement along a shaft, comprised of an outer sleeve, axially extending races in the bore of the outer sleeve for loaded rolling bodies and return races for unloaded rolling bodies, with at least one endless row of rolling bodies positioned in said races, and a sealing ring mounted on each end of said outer sleeve, the bore surface of the outer sleeve adapted to slide on said shaft; the improvement wherein each said sealing ring has a thin elastically bendable radially inwardly directed sealing lip, the inner diameter of the bore of said sealing lips, when the shaft is not assembled in said rolling bearing, being less than the diameter of said shaft, said bearing having limiting walls defining free spaces on both the axially opposite sides of each sealing lip for limiting the movement, of said lips whereby said sealing lips may be selectively bulged in opposite axial directions into said spaces upon lengthwise movement of the shaft in opposite directions, when the shaft is assembled in the bore of said rolling bearing.

4,411,479

DOUBLE ROW ANGULAR CONTACT BALL BEARING WITH ONE-PIECE OUTER RING AND ONE-PIECE INNER RING

Minoru Hirata, Kosugi, and Tsutae Takeda, Toyama, both of Japan, assignors to Kabushiki Kaisha Fujikoshi, Toyama, Japan

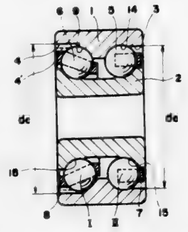
Filed Oct. 7, 1981, Ser. No. 309,456

Claims priority, application Japan, Oct. 17, 1980, 55-144399

Int. Cl.³ F16C *19/08*

U.S. Cl. 308—195 **6 Claims**

1. In a double row angular contact ball bearing comprising a one-piece inner ring, a one-piece outer ring disposed concentric with the inner ring, first and second rows of balls disposed between said inner and outer rings with a predetermined angle of contact, and first and second cages for respectively holding said first and second rows of balls, the number of balls comprising said first row, inserted between a first raceway track of said inner ring and a first raceway track of said outer ring adapted to be subject to a higher load, being greater than the number of balls of said second row, inserted between a second raceway track of said inner ring and a second raceway track of said outer ring, said balls of said first row being inserted in a maximum-type manner, wherein said second raceway track of said outer ring is an angular contact raceway laterally open at one side throughout the circumferential extent of said outer ring, and said first raceway track of said outer ring is cut out from the bottom thereof in a substantially radially outward direction and then laterally toward an end face of said outer ring to form an inner cylinder bore surface, and said bore surface has a



diameter greater than the diameter of the bottom of said first raceway track of said outer ring at least by an amount corresponding to more than 5% of the diameter of said balls, such that during assembly of said bearing, said first row of balls and said inner ring in contact therewith are able to be displaced tiltingly and then radially outwardly with respect to said outer ring to provide a greater space for inserting the balls of said second row without causing excessive axial misalignment between said second raceway track of said inner ring and said second raceway track of said outer ring, thereby enabling a greater number of balls to be included in said second row.

4,411,480

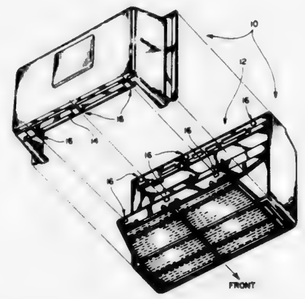
MEANS FOR ATTACHING TELEVISION RECEIVER CABINET BACK PANELS

Kenneth L. Gibson, Chicago, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Apr. 26, 1982, Ser. No. 371,701

Int. Cl.³ A47B *81/06*; H01R *13/44*

U.S. Cl. 312—7.2 **1 Claim**



1. For use in a television receiver having a molded plastic cabinet with an access opening in the back and having a removable back panel for covering said opening, at least one quick-release means for attaching said panel to said cabinet comprising flexible molded extensions of said cabinet, said quick-release means including:

a pair of face-to-face catch means having a projecting flange on each face tapered for sliding and flexing into mutual engagement, said catch means including a first member extending from a flexible edge of said cabinet, and a second member extending from said panel for joining in snap engagement with said first member;

a pair of guide means extending from said panel and spaced on either side of said second member, said guide means having a taper for guiding said panel and said catch means into sliding engagement, and for exerting pressure on said flexible edge for inhibiting disengagement of said catch means;

spring means extending from said cabinet adjacent to the first member for exerting disengaging pressure on said catch means and said panel;

pocket means in said panel leading to said catch means for receiving a parting tool for flexing said first member out of engagement with said second member;

whereby said spring means urges said catch means and said back panel into disengagement from said cabinet when said parting tool is inserted into said pocket means, and said panel can be re-engaged by exerting pressure on said panel against said spring means for snap engagement of said catch means.

4,411,481

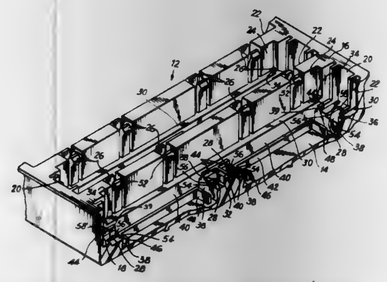
HOLDER FOR AUDIO/VIDEO CASSETTES, GAMES CARTRIDGES AND STORAGE CASES

Joseph L. Berkman, 48 Country Rd., Mamaroneck, N.Y. 10543

Filed Dec. 21, 1981, Ser. No. 332,974

Int. Cl.³ A47B *81/06*

U.S. Cl. 312—8 **21 Claims**



1. A storage unit or holder having at least one bin for video cassettes and video game cartridges, wherein the bin is capable of interchangeably receiving and storing differently sized video cassettes and differently sized video game cartridges; each bin comprising a generally rectangular configuration and is generally bounded by a bottom wall, side walls, and end walls; at least one of the side walls having a plurality of resilient fingers for holding said video cassettes; another bottom wall above said bottom wall and on both sides of each bin transversely extending substantially for the width of said bin, and terminates generally at second end walls extending upwardly from said another bottom wall; additional side walls extending from said bottom wall to said another bottom wall; additional end walls extending from said bottom wall to further bottom walls and being disposed between said bottom wall and said another bottom wall; and at least one channel shaped guide extending upwardly from said bottom wall between said additional end walls; additional bottom walls between said bottom wall and said further bottom walls; secondary side walls and at least two fourth end walls extending between said additional botton walls and said further bottom walls; wherein each bin can hold on said another bottom wall one video cassette of either Beta or VHS configuration, or two video game cartridges on said bottom wall of either the same or different configuration.

4,411,482

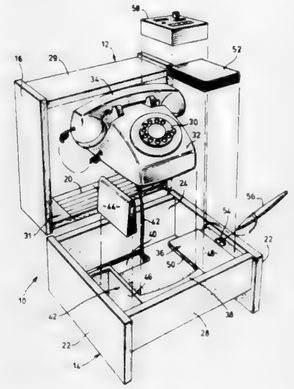
TELEPHONE ORGANIZER

Nikolaus Hoff, 31 Howbert Dr., Weston, Ontario, Canada

Filed Mar. 20, 1981, Ser. No. 245,657

Int. Cl.³ H04M *1/02*; A47B *63/00*

U.S. Cl. 312—233 **4 Claims**



1. A telephone organizer, comprising:

a box-like enclosure having a lower tray-like portion receiving a telephone therein and an upper lid-like portion hingedly mounted to said lower portion for opening said enclosure through hinge means which permits said upper portion to be hingedly moved between a first position wherein said upper and lower portions define said enclosure and a second position wherein said upper portion is perpendicular to said lower portion;

said lower portion having a bottom wall on which said telephone rests and which slopes upwardly from the rear wall to the front wall thereof, said bottom wall having an opening therethrough located adjacent the rear wall of the lower portion and coinciding with the telephone to permit a telephone connecting cable to extend into the enclosure and hook up with the telephone, the front wall of said lower portion extending downwardly a distance less than the vertical height of the side walls and terminating below the vertical position of the adjacent end of the rear wall;

means within said lower portion holding said telephone in a substantially fixed position therein, and

means within said lower portion for locating at least one telephone ancillary item in said enclosure comprising means defining a recess for receiving a personal telephone directory, means defining a plate for receiving a note-pad thereon, and means defining a writing implement holder, said recess-defining means, said plate-defining means and said holder-defining means comprising a one-piece molded insert positioned in said lower portion.

4,411,483

FRAME FOR PC-BOARDS

Rudolf Hübner, and Rolf Grabenhorst, both of Bremen, Fed. Rep. of Germany, assignors to Vereinigte Flugtechnische Werke GmbH, Bremen, Fed. Rep. of Germany

Filed Apr. 13, 1981, Ser. No. 253,873

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 8010147[U]

Int. Cl.³ H05K *5/00*

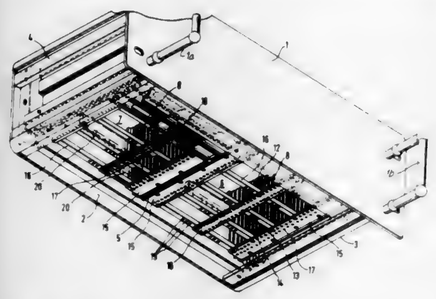
U.S. Cl. 339—17 M **5 Claims**

1. A drawer-like frame for mounting printed circuit boards and terminal elements for such boards and having at least two walls facing each other across a mounting space and additional joining walls completing the frame having an open bottom, a mounting structure, comprising:

mounting bars disposed on the walls and near the open bottom of the frame;

a plurality of transverse bars fastened to the mounting bars, extending across said bottom laterally spaced from the joining walls and having a plurality of bores extending transversely to the bottom of the frame; and

at least one longitudinal mounting plate having bores likewise



extending transversely to the bottom of the frame, said plate having been mounted on said transverse bars while extending parallel to said mounting bars on the walls, said mounting plate being provided for mounting terminal elements in that such a terminal element extends parallel to the transverse bars but is fastened with one end to said mounting plate, and with its other end to one of said mounting bars on one of the walls.

4,411,484

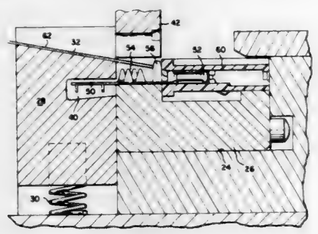
TERMINATIONS FOR FLAT CABLE

Daniel T. Casey, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 122,539, Feb. 19, 1980, Pat. No. 4,335,497. This application Mar. 18, 1981, Ser. No. 244,987

Int. Cl.³ H01R *9/07, 4/24*

U.S. Cl. 339—97 C **2 Claims**



1. In combination with an electrical connector and a flat multi-conductor cable, said connector having an insulating housing with at least one terminal receiving passageway therein, a like number of electrical terminals each having a crimp portion adapted to be crimped to a flat electrical conductor of said cable, a mating portion connected to the crimp portion, and a tine provided on the terminal, said tine forming means for limiting the insertion of the terminal into a respective passageway when the terminal is initially inserted therein with its mating portion leading, so that the crimp portion remains wholly outside the passageway, the tine being subsequently deformable to allow the crimp portion of the terminal to be inserted into the passageway; characterized in that the tine is upstanding from the terminal between the mating portion and the crimp portion thereof so as to engage an external wall of the housing defining an end of the passageway, when the mating portion has been inserted into the passageway through such end, and in that the tine is plastically deformable so as to lie within the cross-section of the passageway, said tine forming means for abutting an edge of said flat cable to limit edgewise advancement of said cable and to correctly position said cable edge with respect to the terminal crimp portion.

4,411,485

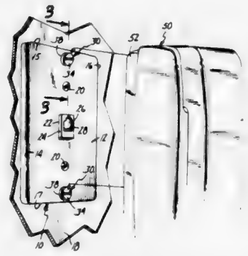
WALL PLATE KIT FOR TELEPHONES

Ronald W. Wiseheart, Hector, and Daniel Meyer, Rochester, both of Minn., assignors to Communications Systems, Inc., Hector, Minn.

Filed Jul. 24, 1981, Ser. No. 286,524

Int. Cl.³ H02B *1/02*

U.S. Cl. 339—125 R **7 Claims**



1. A wall plate for use with a communciation receptacle and a telephone, the wall plate comprising:

a front wall having an aperture for positioning and presenting a communication jack for conductive connection with the telephone;

post means for hanging the telephone proximate the front wall, said post means including shoulder posts, each post having a shoulder which engages a front surface of the plate, said plate having a sleeve through which the posts pass to permit the posts to be tightened as the sleeve is forced against a mounting frame;

means for detachably receiving and retaining the post means for hanging the telephone, said front wall having apertures through which the post means pass, and said means for detachably receiving and retaining the post means comprising said mounting frame having a threaded opening aligned with each aperture for threadably receiving the post means; and

cover plug means for selectively inserting into and covering from view the apertures when the post means are removed from the apertures, said plug means including a pair of plugs, each plug having a top with a coaxial shaft extending therefrom having radially extending resilient vanes for frictional engagement with an interior of the sleeve, the plate having a depression around the apertures so the tops of the plugs are substantially flush with the top surface of the wall plate when inserted into the aperture.

4,411,486

FUSE HOLDER FOR A CARTRIDGE FUSE

Martin Behrendt, Hagen, Fed. Rep. of Germany, assignor to Wickmann-Werke AG, Witten-Annen, Fed. Rep. of Germany

Filed Feb. 19, 1981, Ser. No. 236,117

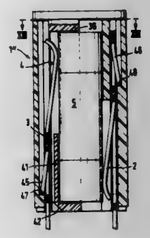
Claims priority, application Austria, Feb. 25, 1980, 1026/80

Int. Cl.³ H01R *19/12*

U.S. Cl. 339—147 R **20 Claims**

1. A fuse holder for removably holding an elongate electrical cartridge fuse having a longitudinal axis and an end cap at each end of the longitudinal axis, said holder comprising: an insulating housing having an elongate mounting recess dimensioned to receive therein said fuse, said mounting recess having a longitudinal axis extending parallel to the longitudinal axis of the fuse when the fuse is disposed in the mounting recess, and

a pair of contacts in said housing for engaging respective ones of said end caps, wherein said housing has means therein defining a pair of slots, said slots being positioned diametrically opposite one another in said housing and extending substantially parallel with said longitudinal axis of said mounting recess, and said contacts being arranged one in each of said



slots, each of said contacts having an elongate spring contact tongue extending lengthwise of and projecting inwardly out of a respective slot for directly engaging a respective end cap on said fuse and having a contact tab projecting out of an end of the housing for electrical connection to other circuitry during use of the fuse holder.

4,411,487

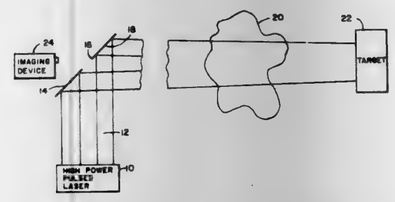
DEVICE FOR SEEING THROUGH BATTLEFIELD SMOKES AND AEROSOLS

Thomas G. Miller, Madison, and Robert G. Polk, Toney, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 2, 1981, Ser. No. 279,647

Int. Cl.³ G02B *17/00, 27/02*

U.S. Cl. 350—1.1 **4 Claims**



1. A device for seeing through an aerosol cloud cover comprising a high power laser source which produces a laser output that is directed to a mirror and reflected off the surface of said mirror and through said aerosol cloud cover to produce a hole therein, and viewing means aligned with a hole in said mirror and viewing through said hole in said mirror and the hole produced in said cloud cover for viewing objects camouflaged by said cloud cover.

4,411,488

AFOCAL ZOOM REFRACTOR TELESCOPES

Iain A. Neil, Bearsden, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

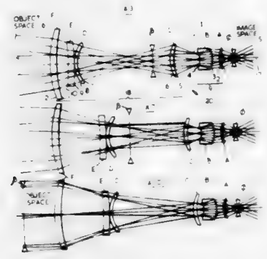
Filed May 7, 1981, Ser. No. 261,689

Claims priority, application United Kingdom, May 30, 1980, 8017264

Int. Cl.³ G02B *1/02, 15/16, 25/00*

U.S. Cl. 350—1.4 **7 Claims**

1. An afocal zoom refractor telescope formed by a variable magnification achromatic objective system and a fixed focus eyepiece system aligned on a common optical axis and arranged to provide an internal real image, said objective system being formed by a primary lens element and three other lens elements and said eyepiece system being formed by two lens elements, each of the six lens elements being made of a material which has a useful spectral bandpass in the infrared wavelength region and having refractive surfaces intercepting said optical axis which are substantially spherical, that one of the other objective system lens elements which is proximal the primary lens element being colour corrective, with a V-value of not less than 120, negatively powered, having a lower refractive index than the remaining objective system lens elements, meniscus in shape and convex towards the real image and is fixedly coupled to the adjacent other objective system lens element which is meniscus in shape and concave towards



the real image, said coupled lens elements having substantially zero separation between their adjoining refractive surfaces on said common optical axis, said separation increasing as distance off-axis increases and being mounted for movement in a first locus along the optical axis, the objective system lens element which is proximal the eyepiece system is mounted for movement in a second locus along the optical axis, and means are provided for simultaneously moving said lens elements non-linearly through said first and second loci whereby the magnification of said afocal zoom refractor telescope can be varied between minimum and maximum values.

4,411,489

SYSTEM FOR SYNTHESIZING STRIP-MULTIPLEXED HOLOGRAMS

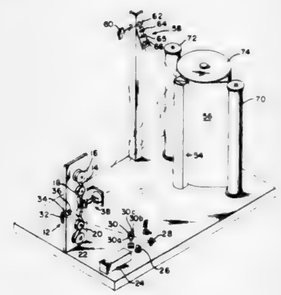
Steve P. McGrew, Postbus 1860, Amsterdam, Netherlands

Continuation of Ser. No. 716,463, Aug. 23, 1976, Pat. No. 4,206,965. This application Mar. 3, 1980, Ser. No. 126,343

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ G03H *1/26*

U.S. Cl. 350—3.76 **60 Claims**



1. A system for synthesizing strip-multiplexed holograms, comprising:

image projection means for sequentially generating a plurality of two-dimensional images in coherent light;

anamorphic projection means for compressing said images in a first direction and expanding said images in a second direction to form an elongated object beam, said second

direction being orthogonal to said first direction, said anamorphic projection means being positioned directly beyond said image projection means before said object beam has significantly diverged;

reference beam generating means for generating an elongated reference beam of coherent light;

holographic recording medium transport means for sequentially advancing a holographic recording medium in a predetermined direction by a predetermined increment for each two-dimensional image generated by said image projection means; and

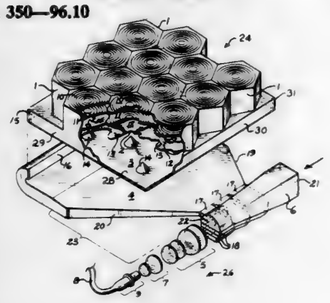
beam combining means spaced apart from said anamorphic projection means for transforming said image beam into a substantially cylindrical wavefront, superimposing said reference beam onto said cylindrical wavefront, and projecting said cylindrical wavefront and said reference beam together onto said holographic recording medium such that at least one strip hologram is recorded on said recording medium for each of said two-dimensional images to form a strip-multiplexed hologram.

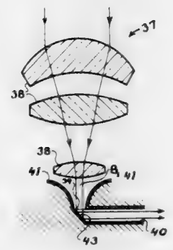
4,411,490

APPARATUS FOR COLLECTING, DISTRIBUTING AND UTILIZING SOLAR RADIATION

Maurice Daniel, 1733 19th St., N.W., Washington, D.C. 20009

Filed Aug. 18, 1980, Ser. No. 178,784
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.10 **20 Claims**





1. A panel structure for collecting and distributing electromagnetic radiation, said panel structure comprising:

(a) a radiation gathering means for gathering electromagnetic radiation incident thereon and for transmitting electromagnetic radiation so gathered;

(b) light collection chamber means positioned to receive the electromagnetic radiation transmitted from said radiation gathering means, said radiation gathering means including a plurality of cell structures each having a focusing means for focusing electromagnetic radiation incident thereon toward said light collection chamber means, the exterior surface of said light collection chamber means including at least one optical window positioned relative to each said cell structure such that the electromagnetic radiation focused by each said focusing means toward said light collection chamber means passes through said optical window to be received by said light collection chamber means;

(c) reflecting means mounted within said light collection chamber means for redirecting the electromagnetic radiation received by said light collecton chamber means; and

(d) light trap means for capturing the electromagnetic radiation redirected by said reflecting means and for conducting the electromagnetic radiation so captured away from said light collection chamber, said light trap means including at least one transparent entrance window means positioned along the interior surface of said light collection chamber means to enable the electromagnetic radiation redirected by said reflecting means to enter said light trap means.

15. A panel structure for collecting and distributing electromagnetic radiation, said panel structure comprising:

(a) a radiation gathering means for gathering electromagnetic radiation incident thereon and for transmitting the electromagnetic energy so gathered; said radiation gathering means including lens means for collecting radiation over a wide angular range and focusing the radiation so collected into a narrow beam and optical window means positioned to receive said narrow beam of radiation, said optical window means including an aperture bounded by curved mirror surfaces diverging outwardly from said aperture toward said lens means;

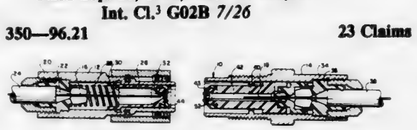
(b) and light transmitting means positioned to receive said beam of radition from said optical window and operating to transmit said radiation as a single beam.

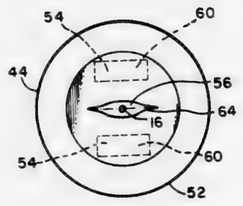
4,411,491

CONNECTOR ASSEMBLY WITH ELASTOMERIC SEALING MEMBRANES HAVING SLITS

Joseph F. Larkin, Holland, and Malcolm H. Hodge, Wyncote, both of Pa., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 10, 1981, Ser. No. 301,113
Int. Cl.³ G02B *7/26*
U.S. Cl. 350—96.21 **23 Claims**





1. A connector for connecting the ends of two optical fibers comprising:

a plug component for matingly engaging with a receptacle component, the plug component having a first means for receiving and retaining a first optical fiber therein and a first elastomeric sealing membrane covering the mating end thereof for enclosing the interior of the plug component, the first sealing membrane having a slit therein;

a receptacle component having a second means for receiving and retaining a second optical fiber therein and a second elastomeric sealing membrane over the mating end thereof for enclosing the interior thereof, the second sealing membrane having a slit therein, said slits in the first and second sealing membranes positioned to register upon mating engagement of said components; and

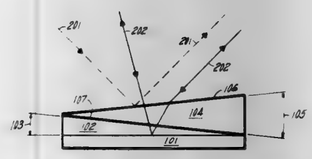
displacement means operable upon the engagement of the plug and receptacle components to stretch the first and second sealing membranes in a direction transverse to said slits to open the slits for the passage of the first fiber therethrough and into engagement with the second fiber and operable upon disengagement of the plug and receptacle components and withdrawal of said first fiber from engagement with the second fiber, to relax the first and second sealing membranes to close the slits.

4,411,492

DISPERSIONLESS REFRACTOR FOR USE WITH HIGH-POWER LASERS

John H. Bluege, Lake Park, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 11, 1981, Ser. No. 233,417
Int. Cl.³ G02B *27/14*
U.S. Cl. 350—173 **5 Claims**



1. Apparatus for manipulating optical beams comprising:

a reflective substrate;

a dichroic coating optically reflective to a first optical beam and transmissive to a second optical beam;

at least two wedge prisms, formed from at least two materials optically transmissive to said second optical beam, each having an index of refraction, material dispersion, wedge angle and entrance and exit surfaces;

in which one of said at least two prisms is mounted on said reflective substrate, the others of said at least two prisms are mounted adjacent said one of said prisms with the exit surface of one prism adjacent the entrance surface of the next prism and said dichroic coating is mounted adjacent that entrance surface furthest from said substrate, whereby radiation in said second optical beam passes through said dichroic coating and said first and second prisms, is reflected from said substrate back through said prisms and coating in such a manner that the material dispersions of said first and second prisms cancel so that said radiation in said second optical beam exits from said dichroic coating having substantially zero chromatic dispersion.

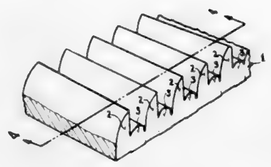
4,411,493

SEASONAL CONTROL SKYLIGHT GLAZING PANEL WITH PASSIVE SOLAR ENERGY SWITCHING

Jack V. Miller, 700 N. Auburn Ave., Sierra Madre, Calif. 91024

Filed Oct. 5, 1981, Ser. No. 308,899
Int. Cl.³ G02B *17/00, 27/00*
U.S. Cl. 350—262 **5 Claims**

1. A substantially transparent one piece glazing panel for generally horizontal mounting in a skylight and comprising a repeated pattern of two alternating and contiguous linear optical elements; a first optical element being an upstanding generally right-triangular linear prism, and a second optical element being an upward-facing plano-cylindrical lens in which the



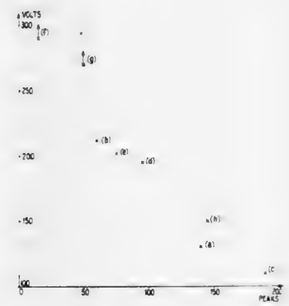
planar surface is reflectively opaque and is generally in the same plane as the base of the right-triangular prism.

4,411,494

ROUGHENING SURFACES FOR HOMEOTROPIC LAYERS OF SMECTIC LCD'S

William A. Crossland, Harlow, and David Coates, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 965,552, Dec. 1, 1978, abandoned. This application Nov. 21, 1980, Ser. No. 209,235
Claims priority, application United Kingdom, Jan. 18, 1978, 2062/78
Int. Cl.³ G02F *1/137, 1/133*
U.S. Cl. 350—339 R **2 Claims**



2. A method of forming a smectic cell having a low switching voltage threshold comprising the steps of:

providing two spaced, parallel glass plates each having an inwardly facing surface;

disposing a transparent electrode on each of said inwardly facing surfaces;

depositing by a chemical vapor reaction a transparent layer of silica on each of said electrodes;

etching each of said layers for a predetermined period of time to provide a roughened inwardly facing surface of a predetermined roughness for each of said electrodes so that said display has said low switching voltage threshold;

assembling said plates to define a cell; filling said cell with a smectic material;

and

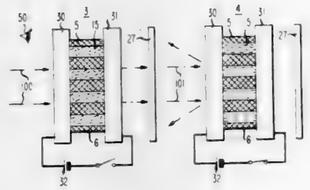
sealing said cell.

4,411,495

REFRACTIVE INDEX SWITCHABLE DISPLAY CELL

Gerardo Beni, Old Bridge; Harold G. Craighead, Fair Haven, and Susan Hackwood, Freehold, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 15, 1981, Ser. No. 254,509
Int. Cl.³ G02F *1/133, 1/07, 1/135, 1/137*
U.S. Cl. 350—347 V 10 Claims



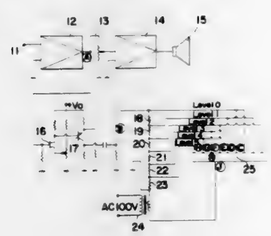
1. A display cell which comprises:
a first optically nonabsorbing material having a first index of refraction;
a second optically nonabsorbing material dispersed within said first material and having a second index of refraction, the difference between said first and said second indices of refraction being variable over a range of values; and
electrode means disposed about a portion of said first optically nonabsorbing material for establishing an electric field in said first and second optically nonabsorbing materials which changes said difference over a portion of said range, so that said display cell has varying degrees of opacity and each degree of opacity is substantially uniform over the visible light spectrum.

4,411,496

DAP, LCD DEVICE WITH A BIAS VOLTAGE

Keisaku Nonomura; Masataka Matsura, both of Tenri, and Tomio Wada, Nara; all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 829,285, Aug. 31, 1977, abandoned.
This application Dec. 12, 1980, Ser. No. 102,931
Claims priority, application Japan, Aug. 31, 1977, 52-105139
Int. Cl.³ G02F *1/133, 1/137*
U.S. Cl. 350—347 E 8 Claims



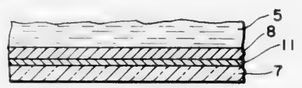
2. A liquid crystal color display cell comprising:
first and second opposed electrode means having liquid crystal material disposed therebetween, said first electrode means comprising a plurality of spaced segment electrodes arranged in a row, said second electrode means being substantially coextensive with said first electrode means along said row;
said liquid crystal material exhibiting a Fredericksz transition effect wherein said material transmits different characteristic colors of light in response to different voltage levels applied across said first and second electrode means in an operating range defined between a minimum threshold voltage and a maximum cut-off voltage, said liquid crystal material blocking the transmission of light therethrough for applied voltages below said minimum threshold voltage and transmitting light with a cloudy appearance for applied voltages above said maximum cut-off voltage;
a signal voltage source means for applying a different voltage level to each of the segment electrodes in stepped incremental levels to exhibit an incremental color change across said cell along said row; and
bias voltage source means for applying a bias voltage substantially corresponding to said minimum threshold voltage level to said second electrode means to thereby assure that at least some color will be visually perceived across the face of said cell in the regions of said segment electrodes regardless of the voltage levels applied thereto by said signal voltage source.

4,411,497

ELECTROCHROMIC DISPLAY ELEMENT

Kazusuke Yamanaka, Shiroyama, and Shouji Mochizuki, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,469
Claims priority, application Japan, Feb. 26, 1980, 55-23077[U]
Int. Cl.³ G02F *1/17*
U.S. Cl. 350—357 24 Claims



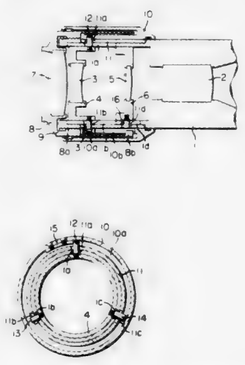
1. An electrochromic display element comprising a display electrode, a counter electrode and a liquid electrolyte disposed intermediately between said display electrode and said counter electrode, wherein the counter electrode is comprised of a sintered material formed by sintering an atomized material comprising a powder of carbon and a powder of one compound selected from the group consisting of $Sn(Fe(CN)_6)$, $MnK(Fe(CN)_6)$, $NiK(Fe(CN)_6)$, amorphous $Fe_2(WO_4)_x$, where $2.5<x\leqq3.0$, amorphous $FeWO_4$, amorphous $Mn_2(WO)_4)_3$ and amorphous $MnWO_4$.

4,411,498

ZOOM LENS BARREL

Takeshi Muryoi, Chigasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,361
Claims priority, application Japan, Mar. 31, 1980, 55-41475[U]
Int. Cl.³ G02B *7/00, 7/11*
U.S. Cl. 350—429 5 Claims



1. In a zoom lens barrel having on the outside of a fixed ring

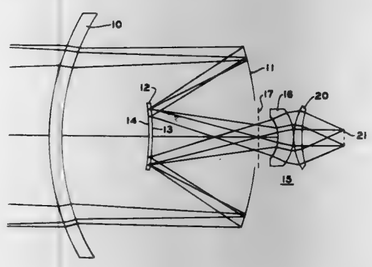
an operating ring rotatable about the optical axis and rectilinearly movable in the direction of the optical axis, and wherein a focusing lens optical system is driven by the rotation of said operating ring for focusing and a zooming lens optical system is driven by the rectilinear movement of the operating ring for zooming, the improvement comprising, said operating ring having in an inner periphery thereof an operating ring groove extending circumferentially of said operating ring, said fixed ring having at least first, second and third fixed ring grooves formed therein substantially equidistantly about the periphery of said fixed ring and extending at a first predetermined angle with respect to the operating ring groove, a cam ring provided inside said operating ring and having at least first, second and third cam ring grooves formed therein substantially equidistantly about the periphery of said cam ring, the first, second and third cam ring grooves each extending at a second predetermined angle with respect to the first, second and third fixed ring grooves, respectively, and at a third predetermined angle with respect to said operating ring groove, and a lens frame member for holding part of said zooming lens optical system provided inside of said fixed ring and having at least first, second and third projecting members thereon formed substantially equidistantly in the circumferential direction of said lens frame member, the first, second and third projecting members respectively extending through the first, second and third fixed ring grooves and through the first, second and third cam ring grooves and being fitted in said operating ring groove.

4,411,499

COMPACT OPTICAL SYSTEM

Irving R. Abel, Lexington, and Marcus R. Hatch, Arlington, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 7, 1980, Ser. No. 204,968
Int. Cl.³ G02B *17/08*
U.S. Cl. 350—442 14 Claims



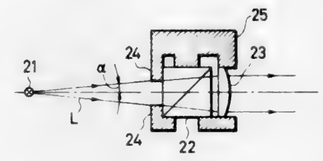
1. An improved, compact optical system comprising:
a concave primary mirror;
a convex secondary mirror;
the primary mirror converging radiation to the secondary mirror;
the secondary mirror comprising a lens having a first and a second surface, the second surface being coated with reflective material, the radiation received from the primary mirror being refracted at the first surface, reflected back from the second surface, and then refracted once again by the first surface, the first and second surfaces having a shape for providing control of field curvature; and
wherein system compactness is measured by the ratio (system physical length)/(system focal length) and wherein the ratio is less than 0.38, the systeem physical length being defined as the distance from the secondary mirror to the focal plane whenever the focal plane is at or behind the primary mirror and as the distance between the primary and secondary mirrors whenever the focal plane is located between the primary and secondary mirrors.

4,411,500

OPTICAL SYSTEM FOR REPRODUCING INFORMATION

Seiji Yonezawa, Hachiouji, and Toshio Sugiyama, Toyokawa, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 6, 1980, Ser. No. 157,254
Claims priority, application Japan, Jun. 25, 1979, 54-85976[U]
Int. Cl.³ G02B *17/00*
U.S. Cl. 350—446 11 Claims



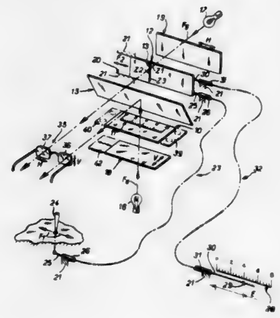
1. An optical system for reproducing information recorded on a disk comprising:
light source means including a semiconductor laser for emitting a laser beam having a substantially-elliptical distribution pattern; and
means for converting the substantially-elliptical distribution pattern of the laser emitted by the light source means into a substantially-circular distribution pattern on said disk, wherein said means for converting comprises:
a plano-convex lens which is disposed along the optical path of said laser beam between said light source means and said disk, the plane part of the plano-convex lens being arranged on the side of said light source means; and
means providing a circular opening which is smaller than the divergence of the laser beam of the light source means and is provided in the optical path between said light source means and said plano-convex lens.

4,411,501

DEVICE FOR CHECKING THE PHORIA OF AN INDIVIDUAL UNDER CONDITIONS OF CLOSE VISION

Luc A. Tagnon, St. Mande, France, assignor to Essilor International, Creteil, France

Filed Aug. 22, 1980, Ser. No. 181,181
Claims priority, application France, Aug. 22, 1979, 79 21133
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—202 8 Claims



1. A phoria testing device comprising a first transparent strip member having a graduated scale thereon and a second transparent strip member having a reference mark thereon, light means capable of generating a light beam which is directed through each of said transparent members towards the eyes of the person to be tested, means for polarizing the beams of light

directed through said first and second transparent members in crossed directions, a first means for analyzing light polarized in said first direction and a second means for analyzing light polarized in said second direction being provided for the respective eyes of the person being tested, means slidably mounting one of said transparent members, and operating means controlled by the person being tested for effecting movement of said one slidably mounted member and causing the displacement of said reference mark along said graduated scale to bring said reference mark into alignment with a particular graduation of said graduated scale as viewed by the person being tested, and means responsive to the sliding movement of said one slidably movable member to assimilate the displacement and alignment of said reference mark along and relative to said graduated scale on a second scale remote from said first scale for remote viewing by an operator.

4,411,502

OPHTHALMOLOGICAL INSTRUMENT FOR EXAMINATION OF ANTERIOR AND POSTERIOR PORTIONS OF THE EYE

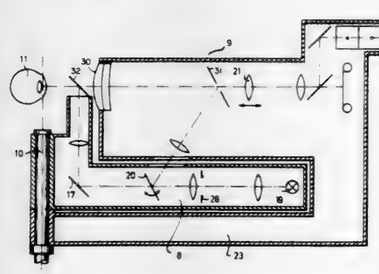
Walter H. Lang; Franz Muchel, both of Konigsbronn; Kurt Schulz, and Gunther Summerer, both of Oberkochen, all of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 12, 1980, Ser. No. 206,066

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1979, 2945744

Int. Cl.³ A61B *3/14*

U.S. Cl. 351—206 **6 Claims**



1. An ophthalmological instrument having selective capability for examining anterior and posterior portions of the eye, comprising a fundus-camera optical system, a slit-lamp optical system, and means mounting both said systems for independent and selective displacement about a single axis of rotation, said fundus-camera optical system having a first optical axis normal to said axis of rotation and including an objective and other optical elements at radial offset from said axis of rotation, said slit-lamp optical system having a light source and optical elements on a second optical axis normal to said axis of rotation and at axial offset from the geometrical plane swept by said first optical axis upon fundus-camera system displacement about said axis of rotation, first mirror elements forming part of said slit-lamp optical system and folding said second optical axis into said geometrical plane and within said radial offset, the mirror element at said geometrical plane being partially reflecting and being forward of the objective, whereby said fundus-camera system may be operative when both said systems are in a single geometrical plane which includes said axis of rotation, and second mirror elements for folding light from said source from said second optical axis to said first optical axis when said first and second optical axes are in said single geometric plane which includes said single axis of rotation, said second mirror elements including (i) a fixed partially reflecting mirror on said first optical axis and behind said objective and (ii) a movable mirror on said second optical axis, said movable mirror being selectively movable into and out of folding relation with light from said source.

4,411,503

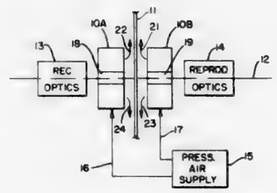
AIR-PLATEN BEARING

David C. Bailey, Cocoa Beach, Fla., and Robert E. Klein, Quincy, Ill., assignors to Harris Corporation, Melbourne, Fla.

Filed May 23, 1978, Ser. No. 908,729

Int. Cl.³ G03B *1/52*

U.S. Cl. 352—222 **16 Claims**



1. An apparatus for supporting a substantially planar-shaped medium in a frictionless manner comprising:

first and second fluid bearing elements, to which a fluid to be directed against respective opposite surfaces of said medium is supplied, disposed adjacent to, but spaced apart from, the opposite surfaces of said medium; and

means for supplying said fluid to said first and second fluid bearing elements; and wherein

each of said fluid bearing elements comprises a material which is thermodynamically non-throttling from the location at which fluid is supplied to said material to the location from which fluid exits said material and is directed against a respective side of said medium.

4,411,504

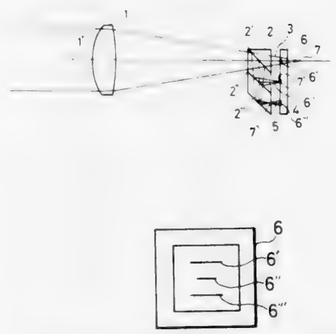
FOCUS DETECTING SYSTEM

Takao Kinoshita, Tokyo; Kazuya Hosoe, Kunitachi, and Masayoshi Yamamichi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,583

Int. Cl.³ G03B *7/08*

U.S. Cl. 354—25 **26 Claims**



1. A focus detecting system for detecting a focusing state of an imaging optical system on an object, comprising:

(A) first, second and third radiation-sensitive sections disposed at positions substantially corresponding to positons on, in front of and behind, respectively, a predetermined focal plane of said imaging optical system to receive an object image formed by said imaging optical system, said first, second and third radiation-sensitive sections having radiation-sensitive surfaces of definite areas and generating electric signals according to an image formation state of the received image; and

(B) processing circuit means for processing the electric signals generated by said first, second and third radiation-sensitive sections to generate an output signal representing the focusing state of said imaging optical system on the object, wherein a substantial field of view for detection of said first radiation-sensitive section is disposed at the position substantially corresponding to the predetermined focal plane to receive the image being narrower than the detecting fields of view of said second and third radiation-sensitive sections.

4,411,505

CAMERA

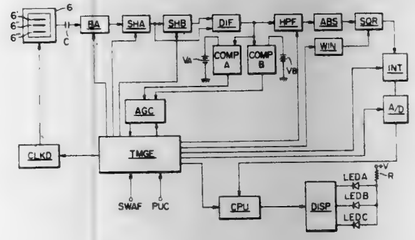
Shinji Sakai; Nobuhiko Shinoda, both of Tokyo; Kazuya Hosoe, Kunitachi, and Takao Kinoshita, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 16, 1982, Ser. No. 358,537

Claims priority, application Japan, Mar. 31, 1981, 56-47613

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—25 **26 Claims**



1. A camera, comprising:

focusing adjustable lens means for forming an image of an object on a predetermined focal plane;

an exposure system for exposing a film disposed at said focal plane to light from said lens means;

a focus detecting system for detecting the focus state of said lens means with respect to the object, said focus detecting system including:

signal integration type image sensing means being arranged to receive light from said lens means, said sensing means having a plurality of sensing elements for producing electrical signals representative of the integration of intensity of respective light distribution portions during a controlled signal integration time;

circuit means for processing the electrical signals provided by said image sensing means to produce an output indicative of the focus state of said lens means with respect to the object; and

signal integration time control means for controlling said signal integration time of said image sensing means; and

inhibit means associated with said exposure system, for inhibiting the change of said signal integration time controlled by said signal integration time control means in response to the film exposure operation of said exposure system.

4,411,506

PHOTOGRAPHIC CAMERA

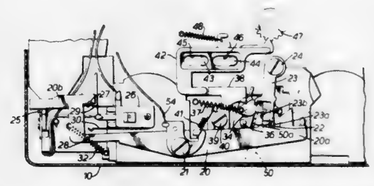
Lian T. Yang, Singapore, Singapore, assignor to Hallmark Camera Mfg. Pte. Ltd., Singapore, Singapore

Filed Nov. 18, 1981, Ser. No. 322,702

Claims priority, application United Kingdom, Nov. 20, 1980, 8037337

Int. Cl.³ G03B *1/12, 15/05*

U.S. Cl. 354—145 **19 Claims**



1. A camera for use with a film cassette containing film having perforations indicative of film position, the camera comprising a shutter, an electric motor arranged to wind on film contained in the film cassette when inserted in the camera, a power supply for said electric motor, a shutter priming means for priming said shutter, said shutter priming means being responsive to the passing of a perforation during wind on of the film to prime said shutter, switch means responsive to said shutter priming means being in a primed state to disconnect power from said power supply to said electric motor, and a trigger means responsive to the absence of a film cassette in the camera to transmit drive from said electric motor to prime said shutter priming means.

4,411,507

POSITION CONTROL DEVICE FOR MOVABLE MEMBER

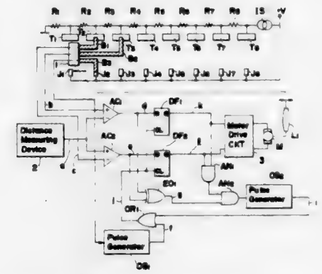
Takashi Kondo, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1982, Ser. No. 398,950

Claims priority, application Japan, Jul. 28, 1981, 56-118797

Int. Cl.³ G03B *3/10, 9/02, 5/01*

U.S. Cl. 354—195 **8 Claims**



1. A position control device comprising:

a movable member movable along a predetermined path;

means for moving said movable member;

signal generating means for generating a first analog signal corresponding to a target position where said movable member is to be stopped;

position conversion means for converting the position of said movable member into second and third analog signals being discrete from one another and corresponding to the position of said movable member; and

control means for comparing said second and third analog signals with said first signal for control of said moving

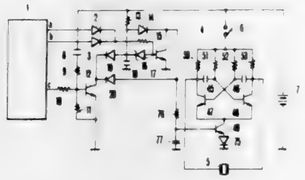
means, said control means generating a stop signal for stopping said moving means when said movable member is driven to a position where said second and third analog signals sandwich said first analog signal.

4,411,508

ANNUNCIATOR FOR A FOCUS ADJUSTING DEVICE

Jiro Kazumi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1981, Ser. No. 291,091
Claims priority, application Japan, Aug. 19, 1980, 55-114198
Int. Cl.³ G03B *13/02*
U.S. Cl. 354—198 **4 Claims**



1. An annunciator for a focus adjusting device for informing an operator of the in-focus state of lens means, said focus adjusting device comprising:

focus detecting means for detecting the focusing condition of the lens means with respect to an object and for producing an output indicative of a focus condition;

a servomechanism for driving said lens means in response to the output of said focus detecting means to bring it into focus;

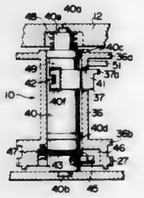
control means responsive to the output of said focus detecting means for actuating said annunciator when said lens means is in the in-focus state, said control means including filter means for eliminating a fluctuation of the output of said focus detecting means produced by the movement of said lens means relative to the object in the vicinity of the in-focus position, whereby a fluctuation of the annunciation of said annunciator is suppressed.

4,411,509

TAKE-UP ASSEMBLY FOR AUTOMATIC FILM LOADING OF CAMERA

Hitoshi Shirai, Sagamihara, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,587
Claims priority, application Japan, Feb. 13, 1981, 56-19422[U]
Int. Cl.³ G03B *1/04*
U.S. Cl. 354—212 **7 Claims**



1. A take-up assembly for automatic film loading of camera, comprising:

a sleeve having a notch window formed therein for receiving a film catch member therein and adapted to rotate to take up a perforated film therearound in response to a rotating drive transmitted thereto;

a spool shaft rotatably fitted inside the spool sleeve and supported within a camera body;

friction means for providing a resistance of a given magnitude to the rotation of the spool shaft with respect to the camera body;

a film catch member mounted on the spool shaft so as to be exposed through the notch window formed in the spool sleeve and having a pawl for fitting engangement with one of perforations formed in the perforated film, the catch member initially having its pawl engaged with one of the perforations and subsequently being received inside the notch window by the action of a tension in the film which is produced as the spool shaft rotates;

a first spring normally urging the catch member in a direction to permit the pawl to move away from the spool shaft and to project through the notch window;

a second spring disposed between the spool sleeve and the spool shaft to provide a connection therebetween, and operative, during times other than a film loading operation, to urge the spool sleeve to rotate through a given angle relative to the spool shaft in a direction opposite from a film take-up direction so that part of the spool sleeve constrains the catch member to maintain it inside the notch window against the resilience of the first spring; and

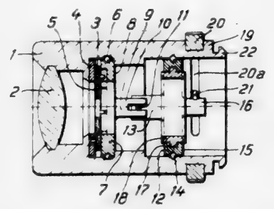
engaging means responsive to a rotating drive applied to the spool sleeve in order to take up the film, by causing the spool sleeve to rotate through the given angle in the film take-up direction against the resilience of the second spring to thereby release the constraint exerted upon the catch member by the spool sleeve and to allow the catch member to rotate under the resilience of the first spring until it reaches a position where it is engageable with one of the perforations, the engaging means subsequently acting to cause an integral rotation of the spool sleeve and the spool shaft.

4,411,510

APPARATUS FOR COMPENSATING FOR THE REBOUNDING OF AN AUTOMATIC DIAPHRAGM IN A PHOTOGRAPHIC OBJECTIVE

Rudi Faatz, Heuchelheim; Siegfrid Moeller, Eichenzell; Friedel Ruehl, and Adolf Steuernagel, both of Wetzlar, all of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,339
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1981, 3100376
Int. Cl.³ G03B *9/07*
U.S. Cl. 354—272 **9 Claims**



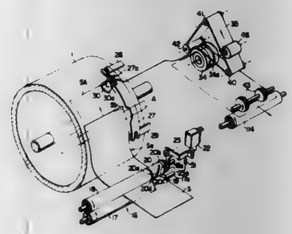
1. Apparatus for at least partially compensating for the rebound impact of an automatic diaphragm in a photographic objective having a diaphragm preselector ring with a stop for preselecting the diaphragm opening and a diaphragm control ring for driving the leaves of the automatic diaphragm, said compensating apparatus comprising at least one movable auxiliary means frictionally engaging an element of said objective and set in motion in response to movement of said diaphragm control ring for counteracting said rebound impact by friction, whereby the energy of movement of said diaphragm control ring is at least partially dissipated by friction.

4,411,511

IMAGE TRANSFER MATERIAL SEPARATION AND TRANSPORTATION APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING APPARATUS

Kenzo Ariyama, Yokohama, and Akira Hirose, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation-in-part of Ser. No. 213,650, Dec. 5, 1980, abandoned. This application Dec. 22, 1980, Ser. No. 219,258
Claims priority, application Japan, Dec. 20, 1979, 54-165920; Jan. 22, 1980, 55-006392[U]; Jan. 25, 1980, 55-007590
Int. Cl.³ G03G *15/14, 15/22*
U.S. Cl. 355—3 TR **71 Claims**



1. An image transfer material separation and transportation apparatus for an electrophotographic copying apparatus, which comprises:

a photoconductor for forming an electrostatic latent image or a visible image thereon, which is transferred to an image transfer material;

a corner bending means for bending only a leading edge corner of said image transfer material,

said corner bending means including a bent-blade roller provided with a bent blade at the peripheral surface thereof for bending said edge corner, and a receiving roller having a peripheral surface into which said bent blade is pressed through said image transfer material when turning up said edge corner, and

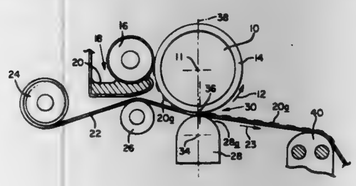
an image transfer material catching and separation apparatus for catching said edge corner after it has been bent so as to be away from the surface of said photoconductor and for separating said image transfer material from the surface of said photoconductor when said image transfer material is moved in uniformly close contact with said photoconductor, except for said leading edge corner, after image transfer to said image transfer material.

4,411,512

MAGNETIC TONER TRANSFER APPARATUS

Gilbert D. Springer, Sunnyvale, Calif., assignor to Ferix Corporation, Sunnyvale, Calif.

Filed May 26, 1982, Ser. No. 381,924
Int. Cl.³ G03G *15/00, 15/16*
U.S. Cl. 355—3 TR **17 Claims**



1. In a toner transfer system of the type useable with a magnetic image-storage medium having a magnetizable facial expanse transportable along a first known path, a magnetically attractable toner and a toner-adherable receiving medium transportable along a second known path, a portion of which is adjacent said first path, apparatus for transferring toner adhering to a magnetic image stored in such an expanse to such a receiving medium comprising

means for pressing the receiving medium against the expanse in the region where such paths are adjacent and establishing thereby at least one line of contact which defines a boundary between a region of contact and a region of noncontact between the receiving medium and the expanse, and

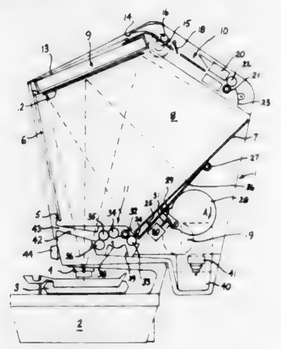
means for producing a magnetic field in the expanse and receiving medium, which field originates from at least one magnetic pole disposed on an opposite side of such a receiving medium relative to such an expanse, in such a manner whereby the field is asymetrical with respect to said line of contact, and the stronger portion of the field exists in the region of noncontact.

4,411,513

READER-PRINTER

Paul M. James, London, England, assignor to Imaging Technology Limited, London, England

Filed Feb. 26, 1981, Ser. No. 238,584
Claims priority, application United Kingdom, Mar. 5, 1980, 8007499
Int. Cl.³ G03G *15/02, 15/22*
U.S. Cl. 355—5 **10 Claims**



1. A reader-printer comprising a housing having a screen on which an image of a film is projected, and an electrophotographic print facility within the housing for producing a print on a copy sheet of an image projected on the screen which print facility comprises a charging station, an exposure station including said screen and a development station with the path for a copy sheet through the housing extending downwardly from the charging station to the exposure station and downwardly from the exposure station to an inlet of the development station, said facility having mechanical means for feeding a copy sheet from a copy sheet inlet of the housing through the charging station to be uniformly electrostatically charged therein and electrically insulated means issuing said sheet into said exposure station, said exposure station having guide means to allow the uniformly charged copy sheet to drop, under the influence of gravity, from the charging station into a desired exposure position on said screen in the exposure station prior to the formation of the charge image thereon, means to displace said sheet from the exposure station to the inlet of the development station after said charge image formation, said inlet being defined by the nip between a pair of normally non-rotating confronting rollers disposed below the lower end of the exposure station, delay means to initiate rotation of the confronting rollers after a time delay to allow the leading end of the copy sheet to drop against the upstream side of said nip, and mechanical means for feeding the displaced sheet from the nip through said development station.

4,411,514

VARIABLE MAGNIFICATION ELECTROPHOTOGRAPHIC COPYING APPARATUS

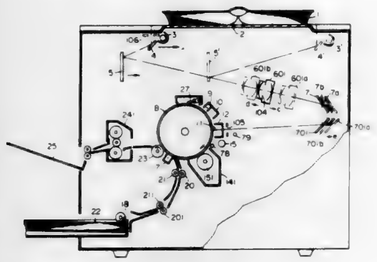
Shigehiro Komori, and Hiroshi Ogawa, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1980, Ser. No. 141,922

Claims priority, application Japan, Apr. 24, 1979, 54/51128; Oct. 23, 1979, 54/136839; Nov. 28, 1979, 54/154076

Int. Cl.³ G03G *15/02*

U.S. Cl. 355—14 CH **55 Claims**



1. An electrophotographic apparatus capable of copying an original selectively at different magnifications, comprising:

a movable electrophotographic photosensitive member;

discharge means for imparting discharge to said photosensitive member to render said photosensitive member into a potential condition capable of forming an electrostatic latent image;

scanning means for scanning said original;

optical means for forming an optical image of said scanned orginal on said photosensitive member at a selected magnification to form an electrostatic latent image, said optical means including at least one optical element which is mounted for movement to change the magnification;

photosensitive member velocity changing means for changing the velocity of movement of said photosensitive member in correspondence with the selected magnification; and

control means for varying the quantity of discharge per unit time of said discharge means to said photosensitive member in correspondence with the selected magnification;

wherein said photosensitive member moves at the speed V_1 when the magnification is m_1, said velocity changing means changes the velocity of said photosensitive member to V_2, which is smaller than V_1, when the magnification is m_2, and said control means decreases the quantity of discharge per unit time when the magnification is m_2, as compared with the quantity when the magnification is m_1.

4,411,515

VERY HIGH SPEED DUPLICATOR WITH LIMITLESS FINISHING FUNCTION

William P. Kukucka, Webster; Frank R. Hynes; Hugh L. Jones, both of Rochester, and David M. Thompson, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 180,073, Aug. 21, 1980, Pat. No. 4,358,197. This application Apr. 30, 1982, Ser. No. 373,779

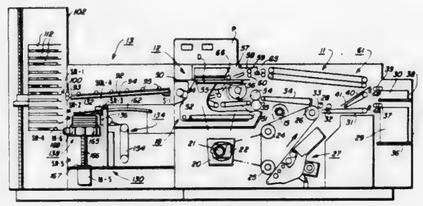
Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **4 Claims**

4. In a reproduction system for producing copies from a set of document sheets of a multi-page document including an image processor for producing copy sheets and a finishing apparatus whereat copy sheets of the document are collected, the improvement comprising,

program means for presetting the number of copies of the document to be made by the processor during a reproduction run and to condition the system for producing selectively the copies in bound copy sets, unbound copy sets or stacking,

a copy set receiving means arranged to collect the copies in a pile either as a plurality of bound copy sets, unbound copy sets or in stacks, until a plurality of copy sets of a predetermined number has been collected, and



control means responsive to said program means and cooperable with said copy set receiving means for arranging said copies in said pile in offset relationship while the apparatus is producing only unbound copy sets or stacks.

4,411,516

ORIGINAL ILLUMINATION APPARATUS

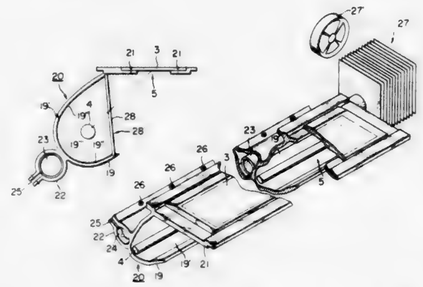
Hiroyuki Adachi, Tokyo, and Shinnosuke Taniishi, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1982, Ser. No. 366,067

Claims priority, application Japan, Apr. 24, 1981, 56-60319[U]; Apr. 24, 1981, 56-60320[U]; Apr. 24, 1981, 56-60321[U]

Int. Cl.³ G03B *27/54, 27/52*

U.S. Cl. 355—67 **14 Claims**



1. Apparatus for illuminating an original whose optical image is to be formed on a photosensitive surface through an image forming optical system, said original illumination apparatus, comprising:

a transparent member through which the original is opposed to said image forming optical system;

light source means for emitting light to illuminate the original, said light source means being fixed relative to said transparent member;

heat transmission means having, as its integral parts, a transparent supporting part for fixedly supporting said transparent member and a light reflecting part for reflecting a portion of the emitted light from said light source means so as to illuminate the original by the reflected light; and

heat pipe means for depriving said heat transmission means of heat thereby cooling it.

4,411,517

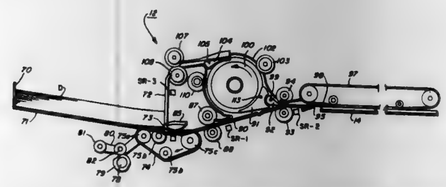
VERY HIGH SPEED DUPLICATOR WITH DOCUMENT HANDLING

William G. Gerken, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 23, 1981, Ser. No. 314,801

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 SH **7 Claims**



1. In a reproduction machine having a document handling apparatus for feeding document sheets individually from a stack to an exposure platen for the machine and return to the stack for selective repeated copying of one side only or both sides of the document sheets, with the sheets in the stack being arranged in sequential order, and wherein the apparatus includes the improvement comprising:

a document support member adjacent to one side of the platen for supporting the stack, said support member having means for feeding each document sheet from the bottom of the stack associated therewith,

means defining a sheet path from the document sheet feed means to the platen without inverting the sheet,

means defining a sheet path from the platen for inverting the sheet and to return the sheet to the platen in an inverted orientation thereby presenting the first side of the sheet for copying,

deflector means being movable to an operative position for directing the document sheet from said support member to the platen or movable to another operative position to return the sheet to the top of the stack in an inverted orientation, and

control means for selectively actuating said deflector means to either of said operative positions.

4,411,518

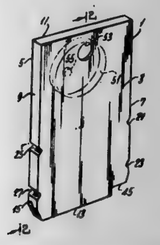
APPARATUS FOR USE IN QUALITATIVE DETERMINATION OF IMMUNOLOGICAL REACTIONS

Peter M. Meserol, Montville, and Jesse L. Acker, Rockaway, both of N.J., assignors to Gamma Biologicals, Inc., Houston, Tex.

Division of Ser. No. 835,996, Sep. 23, 1977, Pat. No. 4,197,088. This application Nov. 26, 1979, Ser. No. 97,195

Int. Cl.³ G01N *21/03, 33/48*

U.S. Cl. 356—39 **30 Claims**



25. An image cell for fluid reactants, said image cell comprising a pair of opposed, parallel planar surfaces bonded to each other, a generally circular indentation in each of said opposed surfaces so as to define a reaction cell, and an aperture in one of said indentations for introducing the fluid reactants into said reaction cell, wherein said indentations are sufficiently recessed so as to permit the fluid reactants to freely move within said cell while said cell is rotated and wherein said reactants remain confined without issuing from said cell during such rotation.

4,411,519

METHOD OF AND SYSTEM FOR MEASURING TEMPERATURE AND SPECTRAL FACTOR

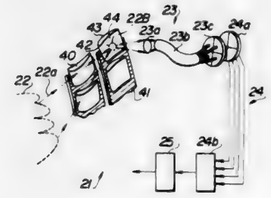
Ichizo Tagami, Hachioji, Japan, assignor to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,745

Claims priority, application Japan, Aug. 28, 1979, 54-109346; Sep. 15, 1979, 54-118330; May 29, 1980, 55-71780; Jun. 2, 1980, 55-73908; Jun. 16, 1980, 55-81057; Jun. 30, 1980, 55-88844

Int. Cl.³ G01J *5/60*; G01N *21/27*

U.S. Cl. 356—45 **10 Claims**



1. A method of measuring the temperature and a spectral factor of a specimen, comprising the steps of:

spectrally separating a radiant flux from said specimen with respect to effective wavelengths for n ($n \geqq 3$) different channels;

converting the intensities of the respective spectrally separated radiant fluxes into corresponding electric detection values;

obtaining electric values for effective wavelengths for m ($n \geqq m \geqq 3$) different channels selected from said electric values for effective wavelengths for n channels;

approximating spectral factors with respect to said effective wavelengths for said m different channels with an $(m-2)$-th order polynomial representing the effective wavelengths, thereby obtaining the temperature of said specimen from said electric detection values for said effective wavelengths for said m different channels; and

obtaining the spectral factor of said specimen from said obtained temperature and said electric detection values for said effective wavelengths for m channels.

4,411,520

LIGHT DISPERSION MEASURING APPARATUS

Kiyofumi Mochizuki, Yokohama; Hiroharu Wakabayashi, Kawasaki, and Yasuhiko Niiro, Yokohama, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 7, 1981, Ser. No. 222,973

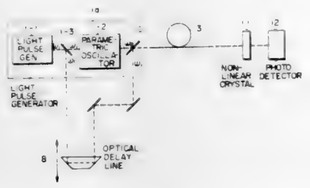
Claims priority, application Japan, Jan. 14, 1980, 55-2872

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—73.1 **3 Claims**

1. A light dispersion measuring apparatus comprising: a light source for generating reference light pulses each having a short duration and at a constant frequency and generating variable-frequency light pulses in synchronization with the reference light pulses and at a different frequency than the reference light pulses, a variable optical delay line for receiving and delaying the reference light pulses, an optical light transmission medium the light dispersion characteristic of which is to be measured and to which the variable-frequency light pulses and delayed reference light pulses from the optical delay line are applied, an optical nonlinear effect element for receiving

the output light pulses from the optical transmission medium disposed so that when timing of the delayed reference light pulses and the variable frequency light pulses coincide with each other, a sum of the light of coincident pulses is at a maximum sum light intensity in in output pulses from the optical nonlinear effect element, a photo detector receptive of the



last-mentioned output pulses for detecting the value of the sum light intensity thereof, and the light dispersion characteristic in the optical transmission medium is measured from the delay of the variable optical delay line when adjusted so that said maximum light intensity occurs with respect to the frequency of the variable-frequency light pulses.

4,411,521

OPTOELECTRIC DETECTION DEVICE ESPECIALLY FOR LASER RADIATION

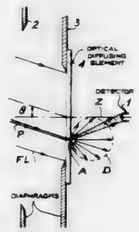
Francis Jourdan; Patrice Marquet, and Francois Ternant, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 3, 1980, Ser. No. 156,087

Claims priority, application France, Jun. 8, 1979, 79 14718

Int. Cl.³ G06J *1/42*

U.S. Cl. 356—225 **6 Claims**



1. An optoelectric incident radiation detection device applicable in particular to detecting a beam of incident laser radiation comprising:

optical means for receiving the incident radiation from the observed field which observed field is centered on the optical axis of said optical means; and

photodetection means comprising at last one photodetector element having a receiving surface for detecting the radiation transmitted via said optical means for receiving to said receiving surface;

said optical means for receiving being formed by a set of two diaphragms for delimiting said field of observation and by means for diffusing the radiation passed by said two diaphragms and incident on said means for diffusing so that a fraction of the light energy transported by any beam of radiation incident on said means for diffusing is directed to the receiving surface of said photodetection means, said means for diffusing being constituted by a diffusing paint applied on a surface of mechanical part, the diaphragms and the receiving surface of the photodetection means being located on the same side of the diffusing means.

4,411,522

APPARATUS FOR THE INSPECTION OF TRANSLUCENT CONTAINERS

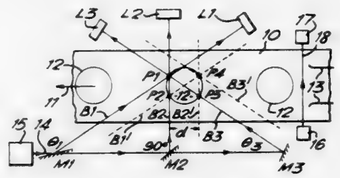
Brendan F. O'Connor, Foxrock; John O. Phillips, Ballyvourney, and Charles M. Webb, Foxrock, all of Ireland, assignors to Udaras Na Gaeltachta, Furbo, Ireland

Filed Mar. 30, 1981, Ser. No. 248,154

Claims priority, application Ireland, Mar. 28, 1980, 650/80; Aug. 6, 1980, 1636/80; Nov. 4, 1980, 2279/80

Int. Cl.³ G01N *21/90*

U.S. Cl. 356—240 **11 Claims**



11. An apparatus for the inspection of translucent containers, the apparatus comprising:

means for transporting successive containers through an inspection zone;

means for directing at least one light beam sideways at each container in the inspection zone;

deflecting means for causing the light beam to repeatedly scan the side of the container in a direction transverse to the direction of motion of the container in the inspection zone;

an opto-electronic light collector for providing a signal representing the amount of light falling thereon from the light beam after transmission through the container;

signal processing circuitry associated with the light collector and adapted to examine the signal therefrom according to a predetermined criterion to generate a fault-indicating signal when such criterion is fulfilled;

means allocating to the light beam a respective area of the container sidewall for which any such fault-indicating signal can be regarded as resulting from an actual fault rather than from a characteristic of an acceptable container, said area allocating means comprising a storage means having stored therein binary information identifying those regions (referred to herein as fault-invalid regions) of an acceptable container, as viewed in the direction of the beam, from which fault-indicating signals may be generated according to the said criterion, the contents of the storage means being the cumulative result of previously scanning a large number of containers which have been determined to be acceptable and storing each fault-indicating signal so generated as a significant bit in the storage means at an address corresponding to the position of the beam relative to the container; and

suppression means responsive to the stored binary information to suppress any fault-indicating signal generated while scanning a fault-invalid region of the container.

4,411,523

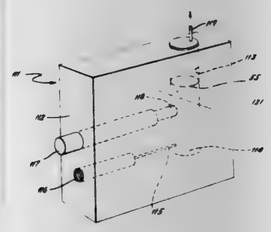
CUVETTE FOR BLOOD OXYGEN ANALYSIS APPARATUS

Horst K. Blume, Huntingdon Valley, and Toshio Asakura, Bala Cynwyd, both of Pa., assignors to Technical Consulting Services, Southampton, Pa.

Continuation-in-part of Ser. No. 28,790, Apr. 11, 1979, Pat. No. 4,304,488, which is a continuation-in-part of Ser. No. 845,686, Oct. 26, 1977, abandoned. This application Dec. 7, 1981, Ser. No. 328,057

Int. Cl.³ G01N *33/48, 21/03*

U.S. Cl. 356—246 **4 Claims**



1. An improved cuvette for use in blood oxygen association analysis comprising:

a generally rectangular block of transparent material having a downwardly-extending cavity therein,

an oxygen partial pressure electrode seated in said block and having its sensitive probe end extending to the interior of the cavity,

a gas inlet formed in said block including a small-bore passage extending substantially horizontally into communication with the wall of said cavity adjacent to the bottom thereof for introduction of an exchange gas into the contents of the cavity and for agitation of its contents, and

gas vent means at the top of said cavity for venting gas therefrom as new gas is being introduced through the gas inlet port in said block.

4,411,524

APPARATUS FOR THE SPECTROMETRIC ANALYSIS OF THE CHEMICAL COMPOSITION OF METALLIC PARTS

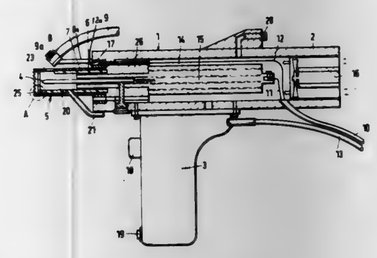
Karl J. Kremer; Jochen Brauner, both of Siegen; Klaus-Dieter Glaubitz, Hilchenbach; Helmut Eckstein, and Josef Bruggemann, both of Wenden, all of Fed. Rep. of Germany, assignors to Krup Stahl, A.G., Bochum, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,681

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1980, 3029038

Int. Cl.³ G01N *21/67*

U.S. Cl. 356—313 **9 Claims**



1. Apparatus for the spectrometric analysis of the chemical composition of metallic parts comprising a probe designed to be placed on the metallic part, said probe having a device for vaporizing said part, means for spacing said device from said part, and means for sensing the radiation of metallic vapor brought to luminescence by said vaporizing device,

characterized in that, said means for spacing said device from said part comprises a chamber containing said device and provided with an open end;

said vaporizing device being a spark electrode coupled to a power source and said chamber as contact bridge for transferring the current of said power source;

said open end of said chamber designed to be placed on said part and provided with a plurality of serrations;

a window formed in said chamber, with said sensing means positioned adjacent said window and on the outside of said chamber;

a tubular member communicating with said chamber for admitting a protective gas into said chamber; and a number of nozzles arranged about the outside of said chamber to direct a coolant thereat.

4,411,525

METHOD OF ANALYZING AN OBJECT BY USE OF SCATTERING LIGHT

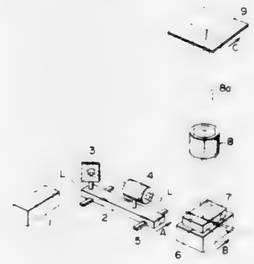
Tomoya Ogawa, Tokyo, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan

Continuation of Ser. No. 9,496, Feb. 5, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 291,935

Claims priority, application Japan, Feb. 8, 1978, 53-13293

Int. Cl.³ G01N *21/49*

U.S. Cl. 356—339 **11 Claims**



1. A method of analyzing the internal structure of an object along a desired cross-section comprising steps of causing a light beam transmitting through a desired cross-section of an object to be analyzed, causing the object to move in a direction intersecting with the direction of the light beam so that the plane including said light beam becomes said desired cross-section, creating scattering light which carries information of the internal structure along the path of the light beam transmitting through the object to scan along said cross-section, consecutively observing the scattering light along an optical axis intersecting with said cross-section, and consecutively recording the observed scattering light on a recording medium which is moved in synchronization with the scanning of the light beam, whereby the internal structure of the object is analyzed along said cross-section by summing all the information of the scattering light obtained by the scanning of the light beam.

4,411,526
MEASUREMENT OF ROTATION RATE USING SAGNAC EFFECT

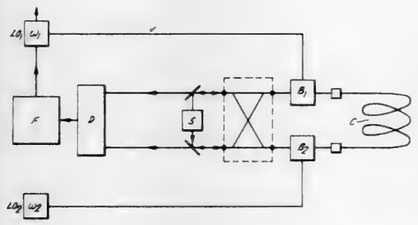
Martin Chown, Harlow, and Jeffrey G. Farrington, Bishop's Stortford, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 219,557, Dec. 23, 1980, abandoned. This application Apr. 29, 1983, Ser. No. 487,997

Claims priority, application United Kingdom, Jan. 17, 1980, 8001512

Int. Cl.³ G01B *9/02;* **G01C** *19/64*

U.S. Cl. 356—350 **2 Claims**



1. An optical fibre coil Sagnac effect rotation rate measuring instrument, comprising an optical commutating switch including a first, and a second pair of ports, said first ports being optically connected with said second ports in such a way that operation of the switch interchanges the connection between the members of the first pair of ports and those of the second pair, an optical fibre Sagnac coil consisting of a plurality of turns of single mode fibre, two controllable optically non-reciprocal elements, a laser source emitting two phase related beams of light, means for individually directing each of the two phase related beams of light in a separate path towards a different one of said first ports and then through said switch and through the respective non-reciprocal element into the coil for the two beams to travel through the latter in opposite directions and to return through the switch, means for mixing the returning beams, means for detecting the interfering beams including a photodetector having an output, a feedback control circuit having an input connected to the output of the photodetector and an output, the paths of the two beams having such different lengths that in the absence of any rotation of the coil the two beams at the photodetector are separated by a phase angle substantially different from 0 and from π, and an oscillator controlling the operation of the switch, said oscillator being operable at a frequency equal to or a multiple of the reciprocal of the propagation time through the Sagnac coil whereby light launched into the coil when the switch is in either one of its two conditions emerges from the coil to return through the switch when once again the switch is in the same condition, and the feedback control circuit being constructed to control the non-reciprocal elements in such a way as to minimize any a.c. component of the output of the photodetector in phase or in antiphase with the switching of the commutating switch.

4,411,527
RING LASER GYROSCOPE WITH COMPENSATION

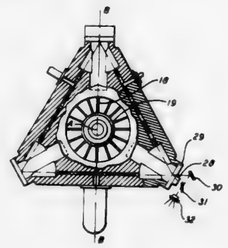
George R. Gamertsfelder, Pleasantville, N.Y., and Bo Hans G. Ljung, Wayne, N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 29, 1981, Ser. No. 278,767

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **3 Claims**

1. A ring laser gyro including:
(a) a block having a triangularly shaped laser cavity;
(b) lasing means integral with said cavity for producing two counter-rotating beams of monochromatic light;
(c) a reflecting surface at the junction of each leg of said cavity, one of said reflecting surfaces being an output mirror;
(d) a base,
(e) means for centrally supporting said laser cavity on said base for pseudorandom dithering of said cavity,
(f) a detector, and
(g) adjustable optical means adjacent said output mirror for intercepting said two beams of monochromatic light emitted from said cavity and for directing said each of said beams along a predetermined path to said detector, said adjustable optical means being attached exteriorly of said output mirror for deflecting the path of said beams, said adjustable optical means being adapted to form an interferometer having a sensitivity equal and opposite to that of said ring laser gyro when said ring laser gyro is dithered, wherein said adjustable optical means comprises:



an optical wedge fixedly attached to said output mirror for deflecting the path of one output beam, said optical wedge having a wedge angle, said wedge angle size being a function of the ratio of gyro frequency difference to gyro input angular rate, and
an adjustable turning mirror intercepting the path of the other beam and redirecting it toward said detector; and
a partly transmissive adjustable beamsplitter between said turning mirror and said detector transmitting a part of said other beam and reflecting a part of said one beam onto said detector, whereby an adjustable interference pattern will be formed on said detector.

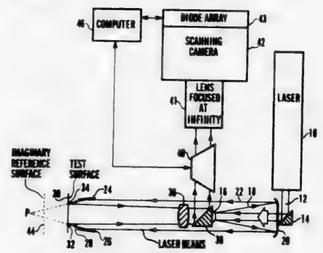
4,411,528
OPTICAL DISPLACEMENT AND CONTOUR MEASURING

James S. Newcomb, St. Paul, and Charles Eumurian, Mahtomedi, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 19, 1981, Ser. No. 226,305

Int. Cl.³ G01B *11/00, 11/14;* **G02B** *5/10*

U.S. Cl. 356—375 **3 Claims**



1. Apparatus for optically measuring the distance and obliquity of a surface from a reference surface comprising:
means for providing a collimated beam of light;
a convex reflecting surface center mounted transverse said collimated beam;

a concave surface partially mirrored at a predetermined radius adapted to project a collimated ring of light;
a conical reflection surface center mounted transverse the collimated ring of light and adapted to reflect the collimated ring of light into a converging ring of light;
a test surface intercepting said converging ring of light;
optical means for observing and projecting the image of said ring on said test surface;
means for rotating the image of said ring through 180°;
linear photo diode means for receiving and detecting the projected and rotated image of said ring; and
means for converting the detected image of said ring rotated through 180° into the displacement and obliquity of the test surface from an imaginary reference surface through 360°.

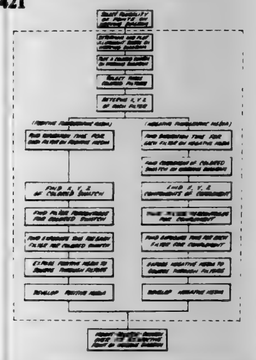
4,411,529
COLOR REFERENCE DATA BASE AND METHOD OF PREPARING SAME

Marjorie D. Ingalls, and Richard D. Ingalls, both of E. 1104 57th, Spokane, Wash. 99203

Division of Ser. No. 76,499, Sep. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 7,702, Jan. 30, 1979, abandoned, which is a continuation-in-part of Ser. No. 794,987, May 9, 1977, abandoned. This application May 21, 1981, Ser. No. 265,995

Int. Cl.³ G01J *3/52*

U.S. Cl. 356—421 **21 Claims**



1. A method of preparing a color reference data base in the form of a CIE type diagram comprising the steps of:
(a) selecting a plurality of color points located in a color data working area of the data base by superimposing a grid on the working area and choosing various intersections of the grid as color points;
(b) preparing a colored swatch on photographic media having primary color components the same as the primary color components of each color point so selected; and
(c) placing each colored swatch at its respective color point within the color data working area.

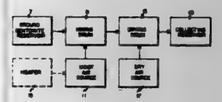
4,411,530
SYSTEM AND METHOD FOR RAPID BENEFICIATION OF BENTONITE CLAY

Philip F. Low, West Lafayette; Charles B. Roth, Battle Ground, both of Ind., and Joseph W. Stucki, Champaign, Ill., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Jan. 13, 1982, Ser. No. 339,098

Int. Cl.³ B01F *3/06*

U.S. Cl. 366—4 **15 Claims**



1. A method for rapid beneficiation of bentonite clay, said method comprising subjecting bentonite clay to moist air while said bentonite clay is being agitated to increase the rate of oxidation of ferrous iron in sand bentonite clay.

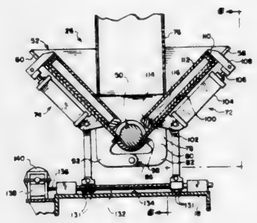
4,411,531
EXTRUDER ASSEMBLY

George Holmes, West Chicago, and Frank Keyser, Streamwood, both of Ill., assignors to Thomas R. Vigil, Barrington, Ill.

Filed Oct. 19, 1981, Ser. No. 312,233

Int. Cl.³ B29B *1/06;* **B01F** *15/02*

U.S. Cl. 366—76 **15 Claims**



1. In an extruder assembly including a barrel, a screw received within said barrel, drive means connected to one end of said screw for driving same, a slot in said barrel, feeding means associated with said slot for feeding material through said slot into said extruder barrel, and extruding means at the other end of said barrel through which material is forced by said screw, the improvement residing in said feeding means comprising at least one ram feed assembly including a ram plate positioned at one side of said slot in said barrel and a ram positioned for movement on the upper surface of said ram plate, means for moving said ram plate between an upper position where said ram plate forms a material feeding plate and where material is forced by said ram into said slot, and a lower position where said upper surface of said ram plate and said ram are exposed for maintenance and repair.

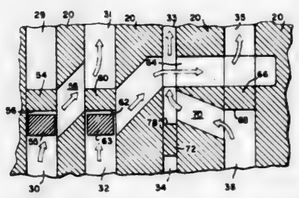
4,411,532
ROTARY PROCESSOR

Lefteris N. Valsamis, West Haven; Jan-Chin Yang, Huntington, and Gary S. Donoian, West Haven, all of Conn., assignors to USM Corporation, Farmington, Conn.

Filed Jan. 4, 1982, Ser. No. 336,607

Int. Cl.³ B01F *7/10*

U.S. Cl. 366—99 **14 Claims**



1. A rotary processor comprising a rotatable element carrying a plurality of processing channels and a stationary element having a coaxial closure surface operationally arranged with said channels to provide enclosed processing passages and where the processing passages provide a plurality of interconnected processing stages including a first processing stage and a second processing stage having inboard and outboard sections separated by a third processing stage, said first processing stage having at least one passage comprising an inlet, a first-stage material transfer groove and a blocking member associ-

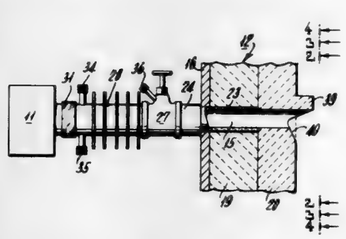
ated with the stationary element and arranged so that material fed to the passage can be blocked and supplied to the transfer groove for transfer to the inboard section of the second processing stage which includes at least one passage adapted to receive material from the first-stage material transfer groove and comprising a blocking member and an inboard section material transfer groove associated with the stationary element and arranged so that material fed to the passage can be blocked and supplied to the inboard section material transfer groove for transfer of material to the outboard section of the second processing stage over an open channel of a third-stage processing passage and where the outboard section includes at least one passage adapted to receive material from the inboard section transfer groove and comprising a blocking member and an outboard section material transfer groove associated with the stationary element and arranged so that material fed to the passage can be blocked and supplied to the outboard section transfer groove for transfer to the third processing stage which includes at least one passage capable of developing discharge pressure and adapted to receive material from the outboard section material transfer groove and comprising a blocking member and an outlet associated with the stationary element and arranged so that material can be blocked and discharged from the passage through the outlet and, means to control discharge of material from the outlet.

4,411,533

SYSTEM FOR MEASURING TEMPERATURE OF HOT GASES LADEN WITH ENTRAINED SOLIDS

Jordan Loftus, and Paul N. Woldy, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1981, Ser. No. 258,090
Int. Cl.³ G01J *5/00*
U.S. Cl. 374—125 **1 Claim**



1. In combination with a stationary vessel having vertical walls and containing high temperature gases laden with molten slag,

said slag flowing down the inside of said vertical walls,

a pyrometer for measuring temperature of said gases by radiation,

a horizontal sight hole through one of said vertical walls and above said slag,

a valve, and

an offset spool for mounting said pyrometer to receive said radiation through said sight hole, said valve and said spool,

the improvement comprising a projecting horizontal shelf integral with said inside of said wall and projecting around the top half of said sight hole for diverting said molten slag around said sight hole to keep said sight hole open, and

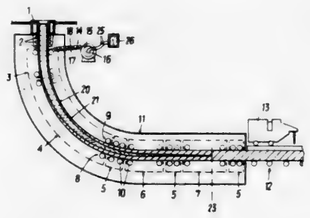
a sloped recess in said wall on said inside thereof and extending from the bottom half of said sight hole for draining said slag away from the bottom edge of said sight hole to keep said sight hole open.

4,411,534

METHOD OF CONTINUOUSLY MEASURING THE TEMPERATURE OF THE SURFACE OF A CONTINUOUSLY CAST STRAND OVER ITS LENGTH

Othmar Kriegner, St. Valentin, and Günther Gruber, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jan. 2, 1981, Ser. No. 222,017
Claims priority, application Austria, Jan. 11, 1980, 131/80
Int. Cl.³ G01K *13/06, 7/08*
U.S. Cl. 374—141 **4 Claims**



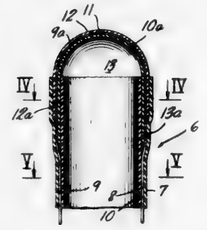
1. In a method of continuously measuring the temperature of the surface of a moving continuously cast strand over its length while the strand is solidifying, in particular a cast strand for steel slabs, in a continuous casting plant including a roller guide, at least one thermoelement having a measuring junction of a thermocouple, conductor means in equalizing conduit means that comprise reference junction means being connected with said measuring junction, which method comprises applying said thermoelement with its measuring junction and thermocouple onto said surface of said strand and moving said thermoelement together with said surface of said strand, the improvement which is characterized in that the measuring junction of said thermoelement is rolled into and substantially flush with said surface of said strand in the longitudinal direction of said strand.

4,411,535

PROBE FOR CLINICAL ELECTRONIC THERMOMETER

Jack Schwarzschild, Stamford, Conn., assignor to Timex Medical Products Corporation, Waterbury, Conn.

Continuation-in-part of Ser. No. 249,779, Apr. 1, 1981, abandoned. This application Oct. 8, 1981, Ser. No. 309,667
Int. Cl.³ G01K *1/18*
U.S. Cl. 374—165 **9 Claims**



1. A probe for an electronic clinical thermometer comprising:

a plastic probe body comprising inner and outer hollow coaxial tubular members of material having a low thermal conductivity and having thin walls of low thermal mass,

a probe tip comprising two plastic cup members each having a substantially hemispherical shape and having a thin wall of low thermal mass, said cup walls not exceeding approximately 0.15 mm in thickness,

a thermistor of low thermal mass,

and a pair of leads of low thermal mass disposed between and supported by the walls of said tubular members and also disposed between and supported by the walls of said cup members and connected to said thermistor at the end of the probe tip between the cup members,

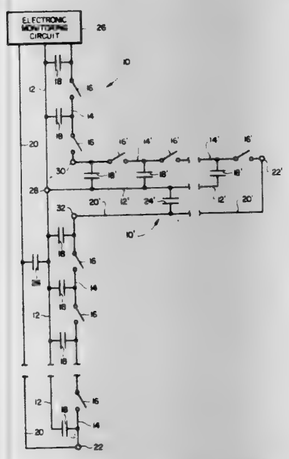
said cup members received between the walls and sealingly connected at the ends of said tubular members and closing off said tubular members at the end of the probe body.

4,411,536

BI-DIRECTIONAL TEMPERATURE EXCURSION SENSING AND LOCATING APPARATUS

Howard B. Kroymann, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed May 29, 1981, Ser. No. 269,933
Int. Cl.³ G01K *13/00*; G01R *31/08*
U.S. Cl. 374—184 **2 Claims**



1. Temperature excursion sensing and locating apparatus, comprising:

a first electrical conductor in a cable;

a second electrical conductor in said cable comprising a plurality of serially connected, normally conductive, thermostatic devices for detecting temperature excursions, said second electrical conductor thereby having first end and a second end, each of the thermostatic devices becoming non-conductive upon detection of a predetermined temperature excursion;

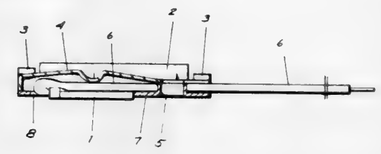
a dielectric member disposed between first and second electrical conductors, said first and second electrical conductors and dielectric member having an original capacitance value while the thermostatic devices are conductive and a reduced capacitance value upon detection of the predetermined temperature excursion by an opening of a thermostatic device in response to said temperature excursion a first end of said first electrical conductor and the first end of said second electrical conductor selectively connectable to a capacitance measuring device which compares the original and reduced capacitance values to determine the presence of a said predetermined temperature excursion and its distance from the first end of said second electrical conductor; and a third electrical conductor in said cable and having first and second ends, said second end connected to the second end of said second electrical conductor, the first end of said third electrical conductor and the first end of said first electrical conductor being alternately connectable to a capacitance measuring device which compares the original and reduced capacitance values to determine the presence of a predetermined temperature excursion and its distance from the second end of said second electrical conductor, the first end of said third electrical conductor and the first end of said second electrical conductor forming a continuous circuit before said excursion and a discontinuous circuit during said excursions defining a positive temperature excursion detection means independent of capacitance measurement.

4,411,537

ELECTRICAL THERMOMETER FOR MEASURING SURFACE TEMPERATURE (I)

Dieter Grimm, Schoneck, Fed. Rep. of Germany, assignor to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 3, 1982, Ser. No. 354,527
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 8108694[U]
Int. Cl.³ G01K *7/04, 7/16*
U.S. Cl. 374—185 **8 Claims**



1. An electrical thermometer suitable for the measurement of surface temperatures comprising in combination, a flat temperature probe having lead wires and a metal housing, said housing having a housing bottom, a recess in said housing bottom, said recess being larger in width and length than said probe, that depending on the size of the temperature probe there is avoided contact between the temperature probe and the housing, said temperature probe being positioned in the recess by means of spring means secured to the housing, whereby the surface of the temperature probe extends beyond the surface of the housing, said spring means being a leaf spring which is secured to the housing by bent over housing corners.

4,411,538

PRINT-HEAD OF A DOT-PRINTER

Kiyomitsu Asano, Musashino; Toshikatsu Kondo, and Shigeru Mizuno, both of Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi and Nippon Telecommunication Eng. Co., Tokyo, both of, Japan

Filed Aug. 5, 1981, Ser. No. 290,300
Claims priority, application Japan, Aug. 11, 1980, 55-113601[U]
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 **10 Claims**

1. A print head adapted to be incorporated into a serial dot-printer comprising:

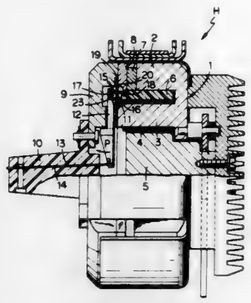
a support member;

a plurality of armatures;

a leaf spring disposed along the longitudinal direction of each of said armatures secured at one end thereof to said support member and at the other end thereof to one end of each respective one of said armatures, each said leaf spring being formed in a middle portion thereof with a perforation;

a wire spring extending through each said perforation at substantially a right angle to each said leaf spring and secured at one end thereof to said support member and at

the other end thereof to said one end of its corresponding one of said armatures;



a print wire secured to the other end of each of said armatures disposed generally perpendicular to the longitudinal direction of its respective one of said armatures; and

drive means selectively driving each of said armatures.

4,411,539

PRINT ELEMENT WITH PLURAL TYPE LAYERS OF VARYING THICKNESS

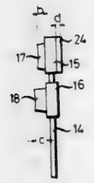
Nobuo Iwata, Sagamihara, and Takashi Hasegawa, Hiratsuka, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Dec. 17, 1981, Ser. No. 331,677

Claims priority, application Japan, Dec. 18, 1980, 55-179482

Int. Cl.³ B41J *1/26*

U.S. Cl. 400—144.2 **3 Claims**



1. A print element for use in a printer which prints on paper and has a hammer member and means to move the print element to a predetermined printing position; the print element having a multiplicity of type members arranged in a plurality of layers with each type member carrying a type character on its front face, wherein the print element is moved to a predetermined printing position at which the back face of one type member is struck by the hammer member to print the character carried on its front face; the improvement in the print element being that the thicknesses of the type members are varied from one another, the thicknesses being taken in relationship to an imaginary common base plane perpendicular to the direction of motion of the hammer, such variance in thickness depending upon the layer in which each type member is arranged, the deviation of the center of each type member from the point at which the type member is struck by the hammer, and the vertical dimension of the character carried by the type member; such variance in thicknesses eliminating ghost printing caused by the undesired touching of the paper by the type member adjacent in layer to the type member struck by the member.

4,411,540

PRINTING APPARATUS

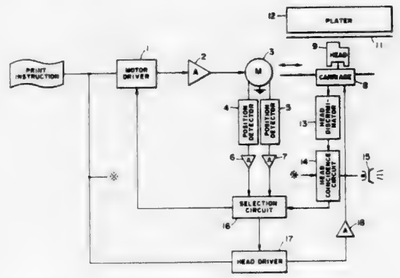
Mineo Nozaki, Kawasaki; Masazumi Nagashima, Yokosuka, and Osamu Asakura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1981, Ser. No. 293,878

Claims priority, application Japan, Aug. 27, 1980, 55/116997; Aug. 27, 1980, 55/116998

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—175 **6 Claims**



1. A printing apparatus comprising:

a printing head detachably mounted on a carriage;

discriminating means for identifying a typefont of said printing head mounted on said carriage;

coincidence detecting means for comparing a result of identification by said discriminating means with the typefont information of characters to be printed;

alarm means for giving an alarm in response to a non-coincidence output signal from said coincidence detecting means; and

selection means adapted for selecting either one of plural position detecting means for detecting carriage position in response to a coincidence output signal from said coincidence detecting means.

4,411,541

RIBBON FEED AND ELEVATING MECHANISM FOR TYPEWRITERS OR SIMILAR MACHINES

Manfred Mansfeld, Frankfurt, and Karl Wenderoth, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Triumph-Adler A.G. fur Buro-und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Jan. 27, 1982, Ser. No. 343,117

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1981, 3105229

Int. Cl.³ B41J *33/18, 35/14*

U.S. Cl. 400—213 **5 Claims**

1. In a typewriter or like machine having a support frame,

a shaft supported on said frame,

lever means rotatably mounted on said shaft for cyclic movement from a rest position to an active position and return to rest position to effect ribbon feed and elevating,

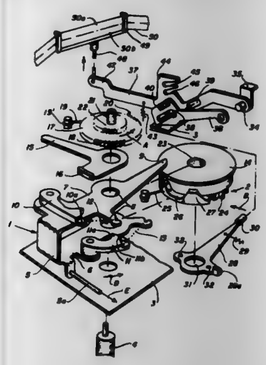
a ribbon feed ratchet mounted on said shaft adapted to be coupled to rotatably drive a ribbon spool,

said lever means including a first pawl for engaging and driving said ribbon feed ratchet incident to cyclic movement of said lever means,

a pivoting lever mounted on said frame and operative to elevate ribbon supported thereby.

a ribbon lift lever rotatably mounted on said shaft coupled to pivot said pivoting lever incident to a cyclic motion of said lever means,

said lever means including a second pawl for driving said ribbon lift lever, and



a control lever pivotally mounted on said frame and coupled to said ribbon lift lever for controlling the movement of said ribbon lift lever imparted to said pivoting lever.

4,411,542

ERROR RIBBON ELEVATION AND TRANSPORT MECHANISM FOR TYPEWRITERS AND SIMILAR MACHINES

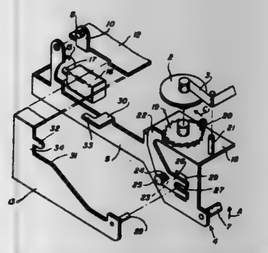
Karl Wenderoth, Bad Vilbel, and Lothar Kuhn, Frankfurt, both of Fed. Rep. of Germany, assignors to Triumph-Adler A. G. fur Buro-und Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed Oct. 21, 1981, Ser. No. 313,457

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1980, 3048810

Int. Cl.³ B41J *29/36, 33/18*

U.S. Cl. 400—697.1 **2 Claims**



1. In a typewriter having print and error correction ribbons,

a frame for supporting said print ribbon,

a bridge pivotally mounted on said frame for supporting error correction ribbon supply and take up spools,

an error correction ribbon take up spool feed ratchet rotatably mounted on said bridge,

an electromagnet connected to pivot said bridge when energized thereby to effect elevation of said error correction ribbon,

a pawl pivotally mounted on said bridge for driving said feed ratchet when pivoted,

said pawl having a forked end, and

a pin on said frame extending through said pawl forked end for causing said pawl to pivot into driving engagement with said feed ratchet as said bridge is pivoted by said electromagnet thereby to effect feed of said error correction ribbon.

4,411,543

SELF-FEEDING MECHANICAL PENCIL

Junichi Hashimoto, and Tadayuki Miyagi, both of Tokyo, Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 198,281

Claims priority, application Japan, Oct. 29, 1979, 54-139645; Dec. 28, 1979, 54-183285[U]; Dec. 28, 1979, 54-183286[U]; Jan. 24, 1980, 55-7356[U]; Jan. 29, 1980, 55-9073[U]; Feb. 28, 1980, 55-25226[U]; Mar. 31, 1980, 55-43037[U]; Apr. 25, 1980, 55-57949[U]; May 31, 1980, 55-75437[U]; Sep. 25, 1980, 55-136270[U]; Sep. 25, 1980, 55-136271[U]

Int. Cl.³ B43K *21/16*

U.S. Cl. 401—53 **16 Claims**



1. A self-feeding mechanical pencil comprising:

a substantially tubular casing having therein a longitudinal lead passage for slidably supporting a lead, a longitudinal space connected to a first end of said lead passage, and abore coaxially aligned with and connected to a second end of said lead passage;

lead holder means, mounted for longitudinal sliding movement with said bore, for frictionally grasping the lead;

lead guide tube means, connected to said lead holder means and mounted for longitudinal sliding movement therewith in said bore and projecting forwardly from an end of said casing, for forming a writing tip with the leading end of the lead;

means, mounted for longitudinal movement within said longitudinal space, operable by its own weight for abutting and feeding the lead through said lead passage, said abutting and feeding means including a portion having a tapered frustoconical outer surface and a longitudinal rod connected to said portion and extending into said lead passage and abutting the rear end of the lead;

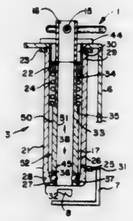
locking means, movably positioned adjacent said tapered frusto-conical outer surface within said longitudinal space, for locking said abutting and feeding means, and thus the lead, in a fixed longitudinal position of said casing upon the application to the lead of an upward thrust due to writing pressure during a writing operation;

said lead guide tube means being operable, during a writing operation when the leading end of the lead is worn down, to move said lead holder means inwardly of said bore while maintaining frictional contact with the lead; and

said locking means being operable, upon the removal of said upward thrust and the lifting of the lead and said lead guide tube means from a writing surface, to unlock said abutting and feeding means from said fixed longitudinal position of said casing, such that said abutting and feeding means moves downwardly by its own weight, thus causing said longitudinal rod to abut the rear end of the lead and move the lead downwardly within said lead passage, and thus causing the lead to move said lead holder means and said lead guide tube means downwardly within said

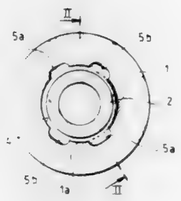
bore until said lead holder means abuts a forward portion of said casing.

4,411,544
POST BINDER BALL LOCK ASSEMBLY
Joseph L. Gallman, St. Louis, Mo., assignor to Loose Leaf Metals Company, Inc., St. Louis, Mo.
Filed Jul. 31, 1981, Ser. No. 288,770
Int. Cl.³ B42F *13/26*; E05C *19/04*
U.S. Cl. 402—69 **10 Claims**



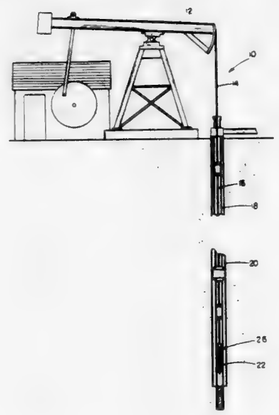
1. A kit for a ball lock assembly for use in conjunction with loose leaf metals, comprising:
a pull ring;
an end cap having an axial opening in it; and
a locking device formed as an assembly and including a lock extension having an axial opening therethrough, said lock extension having a first end adapted to be at least partially closed by said end cap and a second end sized to permit reception of a loose leaf metal post of a binding system, a one-piece ball container having first and second ends, a plurality of ball lock means mounted in one of said first and second ends, means for mounting said pull ring on the other of said first and second ends of said ball container, said ball container having an external surface defining a first large diameter portion and a second small diameter portion along said surface to delimit a first shoulder therebetween, retainer means mounted in said lock extension between said lock extension and said ball container, and a spring compressed between said retainer means and said first shoulder of said ball retainer.

4,411,545
SWIVEL JOINT
Gerard Roberge, Valence, France, assignor to SKF Compagnie d'Applications Mecaniques - ADR, Saint Vallier sur Rhone, France
Filed Mar. 2, 1982, Ser. No. 353,897
Claims priority, application France, Mar. 6, 1981, 81 04797
Int. Cl.³ B65D *59/00*; F16G *11/00*; F16L *35/00*
U.S. Cl. 403—12 **3 Claims**



1. In a swivel joint comprising an outer ring having a cavity in the form of a portion of sphere, and an inner ring whose shape is partly spherical and which is housed in the spherical cavity of the outer ring, the cavity of the outer ring presenting, in part of its thickness, diametrically opposite notches,
the inner ring presents only two diametrically opposite notches, disposed substantially in the median plane perpendicular to the axis of the ring, and
the outer ring presents only two pairs of notches whose width is substantially equal, to the width of the parts of the ring which flank the notches of the inner ring, the two notches of the same pair of outer ring notches being spaced apart from each other by a distance substantially equal, to the width of the notches of the inner ring, the assembly of two notches of a pair of outer ring notches extending over a width substantially equal to the thickness of the inner ring.

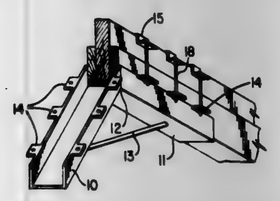
4,411,546
OIL WELL SUCKER ROD SHEAR TOOL
Carlin P. Fischer, Omaha, Nebr., assignor to Technicraft, Inc., Omaha, Nebr.
Filed Sep. 20, 1982, Ser. No. 420,329
Int. Cl.³ F16B *11/00*; F16D *1/00, 3/64*; F16L *11/12*
U.S. Cl. 403—23 **7 Claims**



1. An oil well pump sucker rod shear tool comprising,
an elongated generally cylindrical member having first and second ends, one of said ends being threaded for connection to a threaded member operatively connected to the well pump, the other of said ends being externally threaded for connection to a sucker rod,
said elongated member having a reduced diameter portion formed therein between its ends forming a shear portion which will shear upon predetermined stress,
and a sleeve sealably mounted on said elongated member which protects said shear portion from the corrosive effects of the fluid being pumped.

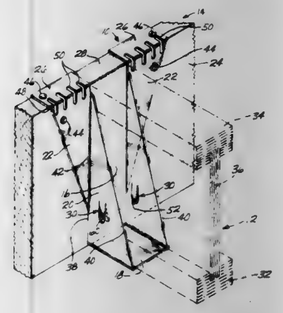
4,411,547
BRACED STRUCTURAL MEMBER
Alfred E. Johnson, P.O. Box 1207, Cardston, Alberta, Canada T0K 0K0
Filed Sep. 23, 1980, Ser. No. 189,578
Claims priority, application Canada, Jul. 18, 1980, 356546
Int. Cl.³ F16B *1/00*
U.S. Cl. 403—205 **3 Claims**

1. A connector for rigidly joining two adjacent structural elements in a truss, with each structural element being constituted by an assembly of face to face wooden elements providing a beam comprising:
a pair of channel members joined together at an angle so that one of said beams can be positioned with the side edges of said wooden elements confined within the channel of each channel member, the channel of said channel members forming three sides of a rectangle to receive said side edges and having outwardly extending elements with bolt-receiving holes;
brace means connected to the channel members for maintaining said angle;
clamping means of channel shape in which the channel forms three sides of a rectangle for clamping the ends of said two adjacent structural elements securely into the channels of said channel members with the other side edge of at least one of said wooden elements confined within the channel of said clamping means, said clamping means



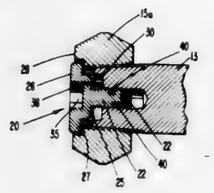
having outwardly extending elements with bolt-receiving holes; and
bolt means for compressing said clamping means toward said channel members, said clamping means comprising axially spaced apart clamping strips, each strip located opposite a pair of holes in the outwardly extending elements of said channel members to receive said bolts in aligned holes in said strips and said channel members, whereby tightening of the bolts compresses the strips against a structural element to clamp the side edges of said wooden elements in the channels of said channel members and oppositely disposed clamping strips.

4,411,548
JOIST HANGER
J. Donald Tschan, Bellevue, Wash., assignor to P. H. Bowman Co., Inc., Seattle, Wash.
Filed Jun. 8, 1981, Ser. No. 271,361
Int. Cl.³ B25G *3/00*; F16B *7/08, 9/00*; F16L *41/00*
U.S. Cl. 403—232.1 **5 Claims**



1. A joist hanger for supporting the end portion of an I-beam shaped joist having a lower chord of a given depth, such joist hanger including:
(a) a laterally disposed seat base;
(b) a pair of seat sidewalls extending upwardly from opposite lateral sides of the seat base that cooperates with the seat base and defines a U-shaped seat portion that receives the end portion of said I-beam shaped joist therein;
(c) header overlapping flanges extending laterally from said seat sidewalls; and
(d) at least one elongate retaining prong extending perpendicular to said base and nominlly laterally inward from each sidewall and into the U-shaped seat portion, said prong terminating at a tip portion spaced from the seat base a distance corresponding to the depth of the lower chord of the I-beam shaped joist, each of said prongs being resiliently interconnected to a corresponding seat sidewall that deflects laterally outward from nominal position into retracted position substantially out of the envelope of said U-shaped seat which allows downward passage of the lower chord of the I-beam shaped joist and then snaps back into its nominal, inward position once the I-beam shaped joist is seated on the seat base so that if the I-beam shaped joist tends to lift upwardly, the tip of the prong bears downwardly against an upper surface of the lower chord of the joist and prevents such upward movement.

4,411,549
INSTALLATION AND RETAINER DEVICE FOR POWER STEERING PITMAN ARM
Peter H. Sheppard, R. H. Sheppard Co., Inc., Hanover, Pa. 17331
Filed Dec. 22, 1980, Ser. No. 219,389
Int. Cl.³ B25G *3/00*; F16B *9/00*
U.S. Cl. 403—258 **12 Claims**

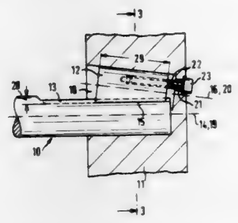


1. In combination with a working shaft having a threaded bore in the one end, an installation and retainer cap assembly mounting and locking an annular collar member on the working shaft comprising:
a body on the said retainer cap;
a threaded shaft extending from the inner side of the body, said shaft being threadably received by said bore and axially advancing the retainer cap into the bore, said body being enlarged relative to said shaft;
said annular collar member and said shaft having internal and external splines, respectively, the cooperating splines of said member and said working shaft being tapered involute splines which lock together, said cap providing full working and locking engagement between said splines;
a recess in the end of the threaded bore substantially matching said body in size and receiving and accommodating at least a portion of said body and stabilizing the retainer cap during the axial advance into the bore; and
an outer cap flange on the opposite axial side of said body from said threaded shaft and extending around the periphery of said body, the inside face of said cap flange selectively engaging the outside face of the annular collar member, the outside face of the cap being substantially flush with said outside face of the annular collar member during the engagement between the inside flange face and the outside collar face, whereby the clearance along the outside face of the annular member is not substantially adversely affected by the presence of said retainer cap.

4,411,550
TORQUE TRANSMITTING COUPLING

Peter Schutt, Lochgau; Martin Bernhardt, Bietigheim; Klaus Nitsche, Erligheim; Horst Grindler, Freudental, and Hans-Joachim Hofmann, Remshalden, all of Fed. Rep. of Germany, assignors to Durr-Dental GmbH & Co., KG, Bietigheim, Fed. Rep. of Germany

Filed Aug. 28, 1981, Ser. No. 297,367
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032537
Int. Cl.³ B25G *3/28*; F16B *3/00, 7/00*; F16D *1/00*
U.S. Cl. 403—358 **7 Claims**

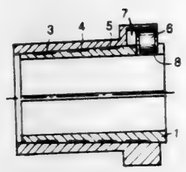


1. A torque transmitting coupling comprising a female member having a central first cylindrical bore to receive a shaft and a second cylindrical bore which receives a fastening bolt, said second cylindrical bore intersecting said first cylindrical bore at an acute angle, a cylindrical shaft received snugly in said first cylindrical bore, and having a secant face parallel to the axis of the shaft, a cylindrical fastening bolt received snugly in said second cylindrical bore and having a secant face parallel to and engaging said secant face of said shaft, and means moving said cylindrical fastening bolt axially in said second cylindrical bore and thereby wedging said secant face of said bolt tightly against said secant face of said shaft.

4,411,551
DEVICE FOR PROVIDING A FRICTION JOINT

Kurt Adelbratt, Gothenburg, Sweden, assignor to Aktiebolaget SKF, Sweden

Filed Mar. 12, 1981, Ser. No. 242,830
Claims priority, application Sweden, Mar. 19, 1980, 8002136
Int. Cl.³ F16D *1/06*
U.S. Cl. 403—370 **7 Claims**

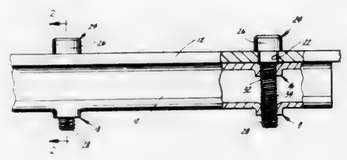


1. A coupling device for providing a friction joint comprising inner and outer elements, said inner element having a tapered outer surface for engagement with a complementary tapered inner surface formed in a bore in the outer element, means for axially displacing said elements in relation to each other parallel to the cone axes of the tapered surfaces for radially deforming at least one element, the tapered surface of one of said elements being continuous and the complementary tapered surface of the other element having at least one circumferential groove formed therein thereby providing only contact between the tapered surfaces at other than the groove location and thereby reducing the active contact surface area between said tapered surfaces, the tapered surface of one of said elements only being provided with a deformable friction reducing material which transfers to the initially uncovered tapered surface of the other element during axial displacement of said elements.

4,411,552
JOINT FOR SECURING A TUBULAR MEMBER TO A SUPPORT MEMBER

Joseph S. Lanham, Lexington, and Neal R. Bruckner, Georgetown, both of Ky., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Filed May 29, 1981, Ser. No. 268,272
Int. Cl.³ F16B *25/00*
U.S. Cl. 403—388 **10 Claims**

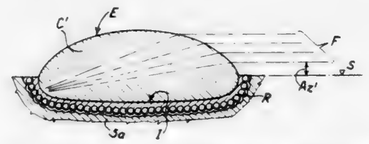


1. A joint for securing a tubular member to a support member comprising a pair of aligned extruded holes in the sidewall of the tubular member opposite each other, a hole in the support member, the support member being disposed against the outside surface of the portion of the sidewall of the tubular member containing one of said pair of extruded holes and with the pair of extruded holes of the tubular member being aligned with the hole in the support member, and fastening means fastening the two members together comprising means engaging the support member and passing through the hole in the support member including a shank having a self-tapping thread which threadedly engages complementary threads in both extruded holes in the tubular member, said self-tapping thread having cut the complementary threads in both extruded holes during the fastening operation, the portion of the tubular member's sidewall containing the other of said extruded holes being slightly displaced toward the portion containing said one extruded hole during the fastening operation to create differential thread action of the two threaded extruded holes on the shank of said fastening means and improve the holding quality of the joint.

4,411,553
RETRO-REFLECTING GLOBULES FOR ROAD SURFACE MARKING

Ludwig Eigenmann, POB 8, CH 6833 Vacallo, Switzerland

Continuation of Ser. No. 54,235, Jul. 2, 1979, abandoned. This application May 19, 1981, Ser. No. 265,231
Claims priority, application Italy, Jul. 5, 1978, 25381 A/78
Int. Cl.³ E01F *9/04*
U.S. Cl. 404—16 **3 Claims**



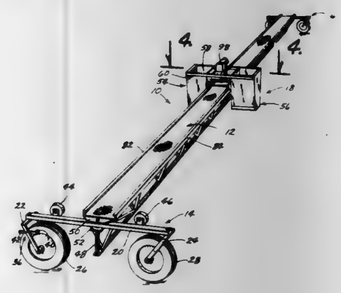
1. A retro-reflecting assembly for traffic regulating surface markings on roadway pavements, comprising a transparent globule having a body of essentially convexly curved irregular shape, said body including an upper portion to be exposed to light impingement and a bottom portion having a bottom surface; and a monolayer of reflecting transparent microspheres for retro-reflecting light beams, said monolayer being

connected to said bottom surface of said bottom portion, said bottom portion being relatively shallower than said upper portion, said upper portion merging into said bottom portion so that a cross-section in a horizontal plane extending between said upper portion and said bottom portion has a configuration with two mutually perpendicular axes which go through a bearing center of said cross-section and of which one axis is of a greater length than the length of the other of said axes, whereby an optimal light response of said body to light beams impinging on said body under different vertical and horizontal angles is obtained.

4,411,554
MATERIAL SPREADER AND BRIDGE

Edward P. Gratzfeld, Rte. 1, Box 259, Yankton, S. Dak. 57078

Filed Oct. 21, 1981, Ser. No. 313,455
Int. Cl.³ E01C *19/18*
U.S. Cl. 404—110 **8 Claims**



1. A material spreader for spreading material onto a surface comprising,

first and second spaced-apart wheeled frames,

an elongated horizontally disposed bridge means secured to and extending between said wheeled frames,

said bridge means including a flat horizontally disposed worker support surface thereon,

a hopper assembly movably mounted on said bridge means, said hopper assembly being removably mounted on said bridge means to permit said worker support surface to be utilized,

said hopper assembly comprising a pair of hoppers positioned on opposite sides of said bridge means,

each of said hoppers having upper and lower ends, the upper end of each of said hoppers adapted to receive the material to be spread, means at the lower end of each of said hoppers adapted to control the flow of material therefrom,

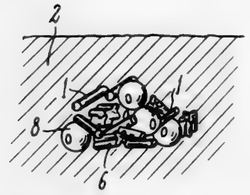
and means for moving said hopper assembly between the ends of said bridge means,

each of said hoppers having elongated discharge openings formed at the lower end thereof, the longitudinal axis of each of said discharge openings being disposed transversely to the length of said bridge means, the distance between the discharge openings in said hoppers being equal to the length of one of said discharge openings.

4,411,555
DRAINING, IRRIGATING AND DISPERSING MASS

Monique L. S. Minvielle, 11, rue Solferino, 75007 Paris; Albert H. F. Mazoin, 24570 Condat sur Vezere, Dordogne; Robert P. Brun, Avenue de la Croix du Sud, 33120 Arcachon; Sylvain V. L. Chevanne, 95450 Themericourt, Val d'Oise, and Jacques L. A. See, 92200 Neuilly-sur-Seine, Hauts de Seine, all of France

Filed Jun. 17, 1980, Ser. No. 169,711
Claims priority, application France, Jul. 17, 1979, 79 18429; Dec. 11, 1979, 79 30298; Jul. 3, 1980, 80 14849
Int. Cl.³ E02B *11/00*
U.S. Cl. 405—50 **3 Claims**



1. A mass for draining, irrigating or lightening of various soils, said mass being composed of hollow elements of various sizes, shapes, wall thicknesses and rigidity, said hollow elements internally defining through open-ended capillary or semi-capillary passages, said mass further being composed of soil in which said hollow elements are dispersed in mutual contact and so oriented relative to one another as to provide between adjacent hollow elements spaces of various shapes and dimensions which combine with the capillary or semi-capillary passages of the hollow elements to form a porous mass for drainage, irrigation or lightening of the soil, the hollow elements including elements that comprise two hollow hemispheres and means for joining said hollow hemispheres to form hollow spheres.

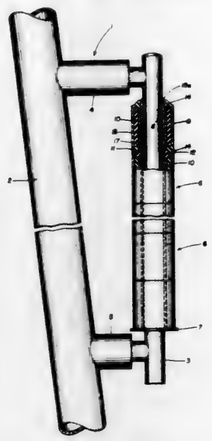
4,411,556
BARGE BUMPER CONSTRUCTION

Raymond F. Leblanc, North Canton, and William T. Cummins, Mogadore, both of Ohio, assignors to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Apr. 29, 1981, Ser. No. 258,567
Int. Cl.³ E02B *3/22*
U.S. Cl. 405—213 **6 Claims**

1. An elastomeric sleeve member for loose telescopic assembly on a fixed vertical metal bumper pipe member of a bumper device for an offshore oil ring structure; comprising a cylindrical sleeve body having upper and lower ends; the body being formed of a plurality of elastomeric materials having different physical properties integrally cross-link bonded together; said plurality of elastomeric materials including an outer annular layer of #60 to #70 Shore A Durometer rubber providing an abrasion resistant annular sleeve outer contact surface, and a load supporting inner layer of cracked friction providing a relatively low friction interior annular sleeve surface rotatable on said fixed vertical metal bumper pipe member; the cylindrical body having a length in excess of two times its inner diameter, having an inner diameter in excess of 18 inches, and having a length of approximately 4 feet; and the upper and lower

annular ends of the cylindrical sleeve body having complementary zigzag shapes in cross section including an annular conical



surface extending between axially spaced flat ring annular surfaces located in planes normal to the axis of the sleeve body.

4,411,557

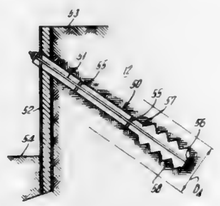
METHOD OF MAKING A HIGH-CAPACITY EARTHBOUND STRUCTURAL REFERENCE

Weldon S. Booth, 750 Rte. 9W, Piermont, N.Y. 10968

Continuation of Ser. No. 959,903, Nov. 13, 1978, abandoned, which is a continuation of Ser. No. 783,316, Mar. 31, 1977, abandoned. This application Nov. 20, 1980, Ser. No. 208,773

Int. Cl.³ E02D *5/44*

U.S. Cl. 405—238 **10 Claims**



1. The method of constructing a high-capacity tension-sustaining earch-anchor reference having an axis of tension-sustaining alignment which is at angular offset from the vertical, which comprises excavating earth material to form an elongate generally cylindrical bore of a first diameter on said axis, then locally expanding the excavation to characterize a selected axial extent of the bore by local cutting to larger diametral extent at longitudinally spaced regions of the bore, each of the expanded excavations being characterized by a wall surface of relatively uniform slope with respect to the longitudinal axis of the bore and extending from said first to a second diameter, whereby the characterized bore is defined in a relatively undisturbed body of earth material, selecting a tension rod of length to span more than the characterized axial extent of the bore, said rod having one or more radially projecting formations for enhanced engagement to cementatious material, placing the rod within the bore in radially spaced relation with the bore wall and in coaxial relation with the characterized axial extent of the bore, and then casting a cementatious filling in the bore by smoothly introducing the filling into the bore, the filling being to an extent filling at least the characterized axial extent of the bore with the rod embedded to an extent short of the outer end of the rod, whereby upon curing, the cast filling is installed in a relatively undisturbed body of earth material, with an end of the rod externally exposed, thereby permitting maximum availability of the confined compressive strength of the earth material to enhance the tension-sustaining capacity of the earth-anchor.

4,411,558

ROOF SUPPORT SUITABLE FOR USE IN MINES

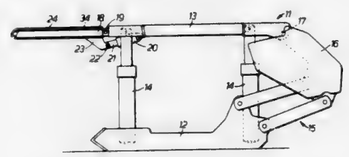
Dennis F. Rutherford, Cheltenham, England, assignor to Dowty Mining Equipment Limited, England

Filed Nov. 4, 1981, Ser. No. 318,218

Claims priority, application United Kingdom, Nov. 26, 1980, 8037937

Int. Cl.³ E21D *15/44, 17/05*

U.S. Cl. 405—294 **9 Claims**



1. A roof support suitable for use in mines including a roof-engageable member and a cantilever member, one of these two members comprising a base, a cover member providing a roof-engageable surface, and a plurality of longitudinal members secured, in parallel manner, both to said base and said cover member, whereby said base, cover member and longitudinal members together form a plurality of parallel elongate compartments extending in the lengthwise direction of the cover member, and the other of said two members including a plurality of parallel and rigid elongate elements slidably fitting into said compartments and joined together at least at their end portions remote from said one member, said other member also including a plate, having a roof-engageable surface, which defines the profile in plan of that member and which is so secured to said elements, in parallel relation therewith, as to be relatively slidable upon and with respect to said roof-engageable surface of said cover member, the transverse widths of said surfaces being such that when said roof-engageable member and said cantilever member are caused by actuator means relatively to slide from a retracted condition to an extended condition, or to a partially-extended condition, one of said roof-engageable surfaces effectively forms a full width extension of the other of said roof-engageable surfaces.

4,411,559

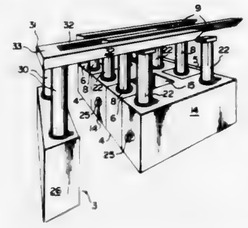
MINING SYSTEM

Aunald Jopling, Coleman, Alberta, Canada

Filed Jun. 18, 1981, Ser. No. 275,019

Int. Cl.³ E21D *23/00*

U.S. Cl. 405—300 **3 Claims**



1. A mine roof support comprising first cradle means including a first pair of spaced apart chocks for slidable mounting on a seam floor, a crossbar interconnecting said first pair of chocks and first prop means extending upwardly from said first cradle means and including roof supporting bars for supporting a section of mine roof; second cradle means including a second pair of spaced apart chocks for slidable mounting on a seam floor, a web interconnecting said second pair of chocks, and second prop means extending upwardly from said second cradle means for supporting a section of mine roof; first coupling means interconnecting said first and second cradle means for moving said first and second cradle means relative to each other and toward or away from a longwall mining face; said first chocks and said web being so shaped that said first and second cradle means are slidably interconnected in overlapping relationship with said first and second pairs of chocks parallel to each other; third cradle means including third chock means for slidable mounting on a seam floor, and third vertically movable props extending upwardly from said third chock means; said third props including roof supporting arms so spaced apart that they are parallel to and between said bars for supporting a section of mine roof; second coupling means for releasably interconnecting said second and third cradle means for moving said third cradle means relative to said first and second cradle means and for providing a working passage beneath said third prop means and between said first and second chock means and said third chock means.

4,411,560

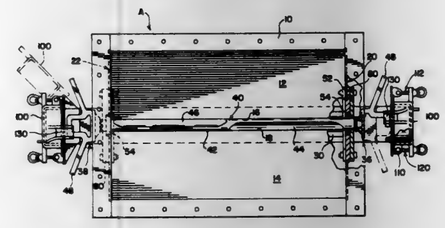
PNEUMATIC HOPPER DISCHARGE OUTLET

Ronald J. McComb, Youngstown, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed Mar. 13, 1981, Ser. No. 243,390

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—128 **13 Claims**



1. A pneumatic hopper discharge outlet comprising:
a valve shaft having a longitudinal axis and mounted for rotational movement about said longitudinal axis;
at least one sloping hopper side wall having a lower edge extending longitudinally of, and adjacent to said valve shaft; and,
adjustable mounting means is mounted for rotation about a mounting means axis for adjustably mounting the valve shaft, said adjustable mounting means having a bore disposed eccentric to the mounting means axis for receiving the valve shaft and being movably mounted for selectively adjusting the position of the valve shaft transversely of the longitudinal axis.

4,411,561

SPRING FEEDING DEVICE

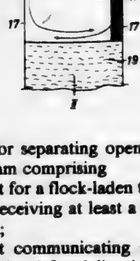
John T. Carnahan, Fairborn, Ohio, assignor to Emerson Electric Company, St. Louis, Mo.

Filed May 22, 1981, Ser. No. 266,566

Int. Cl.³ B65G *51/02*

U.S. Cl. 406—137 **6 Claims**

1. A device for supplying helical wire compression springs in sequence to an output conduit, comprising:
casing means defining a spring supply chamber therein for receiving a plurality of helical wire compression springs of a first diameter,
a delivery tube mounted on top of said casing, defining a spring outlet opening of a diameter slightly larger than said first diameter, said delivery tube communicating through said spring outlet opening between said chamber and said output conduit,



agitator means, including an air inlet communicating with the bottom of said chamber, for supplying air under pressure to said chamber such that springs in said chamber are agitated and pass out of said chamber through said delivery tube and into said output conduit, and
shedder piston means surrounding said spring outlet opening of said delivery tube and movable with respect thereto so as to dislodge springs entangled within or blocking said spring outlet opening.

4,411,562

APPARATUS AND METHOD FOR SEPARATING OPENED END FLOCKS FROM A TRANSPORTING AIR STREAM

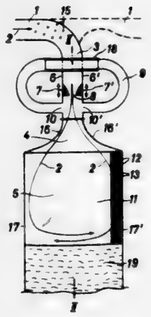
Werner Lattmann, and Robert Moser, both of Winterthur, Switzerland, assignors to Riter Machine Works, Ltd., Winterthur, Switzerland

Continuation of Ser. No. 701,800, Jul. 1, 1976, abandoned. This application Jan. 30, 1979, Ser. No. 8,699

Claims priority, application Switzerland, Jul. 16, 1975, 9296/75

Int. Cl.³ B65G *53/40*

U.S. Cl. 406—157 **21 Claims**



1. An apparatus for separating opened fiber flocks from a transporting air stream comprising
a transporting duct for a flock-laden transporting air stream;
a chute head for receiving at least a part flow of the flock-laden air stream;
a connecting duct communicating said transporting duct with said chute head for delivering said flow from said transporting duct to said chute head;
a restriction within said connecting duct in the flow path of

said flow, said restriction abruptly enlarging to a larger cross-sectional area in said connecting duct downstream of said restriction; and

a closed ring duct connected to two opposite sides of said connecting duct downstream from said restriction to maintain said sides in continuous open communication with each other therethrough for directing air impulses into said connecting duct to move said flow to and fro in rapid sequence across said chute head.

4,411,563

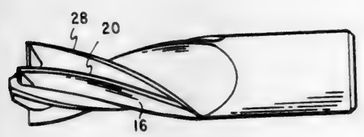
CUTTER DEVICE

Elwood Moon, Cemetery Dr., Watsontown, Pa.

Filed Jul. 31, 1981, Ser. No. 288,904

Int. Cl.³ B23B *51/02*

U.S. Cl. 407—54 **5 Claims**



1. A cutter device for use in end milling or profile cutting or combined end milling and profile cutting operations, said device comprising:

an elongated tool body having an elongated flute section having an exposed end;

a first plurality of cutting flutes which are spiral shaped and which are integral with and extend outwardly from the surface of the section, the flutes in the first plurality being equidistantly spaced apart to define a first uniform outer diameter, the first plurality of flutes extending along said surface from a point intermediate the ends of the body to a first end position on said exposed end, said first plurality of flutes in said first end position defining a first set of cutting blades lying in a first plane of cut for end milling; and

a second plurality of cutting flutes which are spiral shaped and which are integral with and extend outwardly from said surface beyond the first plurality of flutes, the flutes in said second plurality being equidistantly spaced apart to define a second uniform outer diameter which is larger than said first diameter, the flutes in all of said pluralities being interleaved, the second plurality of flutes being usable for profile cutting and extending along said surface from said intermediate point to a second end position on said exposed end, said second plurality of flutes in said second end position defining a second set of cutting blades lying in a second plane of cut for end milling, said first plane of cut lying below said second plane of cut when the body is disposed vertically with the exposed end pointing downward.

4,411,564

INDEXABLE CUTTING INSERT HAVING RADIUSED CUTTING EDGES

William B. Johnson, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Oct. 19, 1981, Ser. No. 312,772

Int. Cl.³ B23B *39/00, 47/00;* **B23P** *15/34;* **B23D** *1/12*

U.S. Cl. 407—113 **6 Claims**

1. An indexable cutting insert comprising a block of cutting material having first and second oppositely facing and generally quadrilateral face surfaces, said block further including first and second oppositely facing edge surfaces extending between two opposite side margins of said face surfaces, said block having third and fourth oppositely facing and substantially flat and planar edge surfaces extending between the remaining two side margins of said face surfaces, there being a first cutting edge defined along the intersection of said first edge surface with said first face surface and with said third edge surface and there being a second cutting edge defined along the intersection of said second edge surface with said first face surface and with said fourth edge surface, the junction between said first face surface and said third edge surface being defined by a convexly curved surface which decreases in area per unit of length as said curved surface progresses from



said first edge surface toward said second edge surface, and the junction between said first face surface and said fourth edge surface being defined by a convexly curved surface which decreases in area per unit of length as the latter curved surface progresses from said second edge surface toward said first edge surface, whereby each of said cutting edges is formed with a convexly curved portion of relatively large radius while each of said third and fourth edge surfaces defines a substantially flat and planar locating face disposed adjacent said second face surface.

4,411,565

FINISHING INSERT WITH IMPROVED CHIP CONTROL

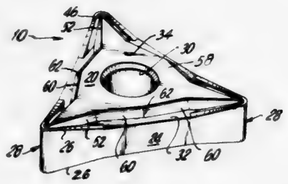
Jayanta Hazra, and Sazzadul Haque, both of Troy, Mich., assignors to General Electric Company, Detroit, Mich.

Filed May 8, 1981, Ser. No. 261,694

The portion of the term of this patent subsequent to Nov. 16, 1999, has been disclaimed.

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—114 **6 Claims**



1. A finishing insert for use with an indexable cutting tool comprising:

a flat wafer of cutting material of generally polygonal plan form, having a pair of opposed faces and a plurality of upstanding side walls extending therebetween with the juncture between each said side wall and a face defining a peripheral cutting edge, wherein each peripheral cutting edge adjacent said one face is generally trough-shaped in configuration, with the distal ends of said trough configuration being defined by said sloping corner portions and with the central portion of said trough configuration being defined by a generally planar undercut area, said planar undercut area being disposed substantially parallel to said opposed insert face, said polygonal wafer further including a plurality of radiused corner portions with at least one

of said insert faces being non-planar with the corner portions thereof sloping inwardly towards the opposed insert face, each of said corner portions of said nonplanar face including a pair of abutting, generally triangular chip groove portions and a central triangular land area disposed between each pair of abutting chip groove portions, each chip groove portion being spaced from the adjacent cutting edge of the insert so as to define a side land area, said central triangular land area being generally planar and disposed parallel to said opposed insert face, each said central triangular land area including a pair of side edges and a vertex, with an imaginary line bisecting said vertex being disposed substantially normal to the radiused corner portion associated therewith, and with said side edges of each said triangular land area being disposed at an angle relative to the adjacent cutting edges of the insert such that the width of each said chip groove portion increases from its end adjacent its respective corner portion to its opposed end, and with the depth of each chip groove portion increasing from its end adjacent its respective corner portion to its opposed end whereby said insert may be utilized to machine finishing cuts through a range of feed rates while simultaneously reducing cutting forces.

4,411,566

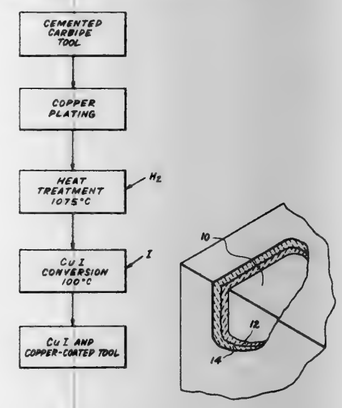
SELF-LUBRICATING CUTTING TOOL AND METHOD

Minyoung Lee; William R. Reed, Jr., both of Schenectady, and Lawrence E. Szala, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,786

Int. Cl.³ B26D *1/00*

U.S. Cl. 407—119 **8 Claims**



1. A self-lubricating cutting tool comprising

(a) a tool body,

(b) a layer of copper metal bonded to surface area of said body at which cutting action occurs in use, and

(c) a film of copper iodide formed integral with the outer surface of said copper layer.

4. A method making a self-lubricating metal cutting tool which comprises the steps of forming a tool body, applying an adherent copper coating to the body, and forming a film on the copper coating of a copper iodide.

4,411,567

TUBULAR KEY CUTTING MACHINE

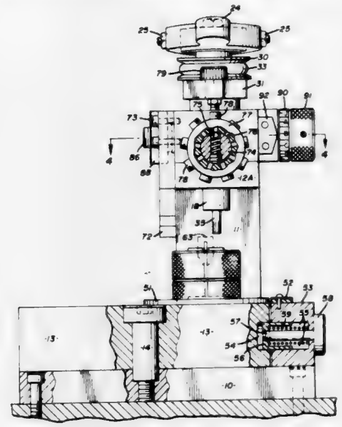
Frank P. Agius, 909 Washington Ave., Alpena, Mich. 49707

Filed Sep. 14, 1981, Ser. No. 301,580

Int. Cl.³ B23C *1/16*

U.S. Cl. 409—82 **11 Claims**

1. A tubular key cutting machine comprising in combination a horizontal turntable, a rotatable chuck positioned off center in said turntable, means in said rotatable chuck for mounting a tubular key blank in any of a plurality of vertically spaced locations, key cutter means arranged for dual movement along a path parallel with the axis of said tubular key blank in said rotatable chuck and transversely of said path for selective engagement with said tubular key blank when said turntable is in a first position, first adjustment means for locating said



cutter means in any of a plurality of transversely disposed locations relative to said path, second adjustment means for locating said cutter means in any of a plurality of vertically spaced locations along said path, means for temporarily positioning said turntable and the rotatable chuck and key blank therein in said first position alongside said path means for rotating said cutter and means for moving said cutter vertically on said path.

4,411,568

COLLET-TYPE CHUCK

Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 20, 1981, Ser. No. 265,466

Claims priority, application Fed. Rep. of Germany, May 24, 1980, 8014064[U]

Int. Cl.³ B23C *5/26;* **B23B** *31/10*

U.S. Cl. 409—233 **10 Claims**

1. A chuck comprising:

means including a chuck body adapted to be rotated about an axis and formed centered on said axis with a forwardly open tool-receiving seat;

means including a holding element mounted in said body for axial displacement therein between a rear holding position securing a tool in said seat and a front releasing position permitting a tool to be inserted backward into and withdrawn forward from said seat;

at least one holding spring braced between said holding element and said body and urging said holding element axially backward into said holding position;

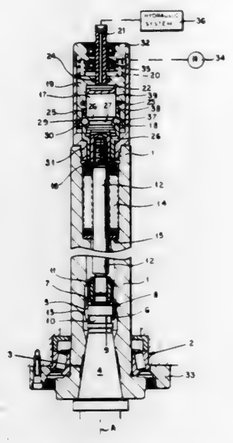
a piston axially coupled to said holding element and having an axially backwardly directed piston face;

means for exerting hydraulic pressure axially forward against said face and thereby urging said holding element axially forward into said releasing position;

at least one locking organ displacable in said holding position of said holding element between a locking position retaining said holding element in said holding position against axial displaceament in said body and a freeing position out of locking engagement with said holding element and permitting axial displacement of said holding element in said body;

means including an actuating member engageable with said

locking organ for displacing same into said freeing position on pressurization at said piston face; and



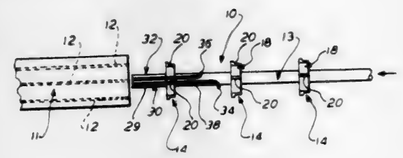
at least one locking spring engaging said actuating member and urging said locking organ into said locking position.

4,411,569

APPARATUS FOR BROACHING RIFLING

Robert M. Pizzola, Stroudsburg, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 22, 1981, Ser. No. 276,410
Int. Cl.³ B23D *37/16*
U.S. Cl. 409—261 **6 Claims**



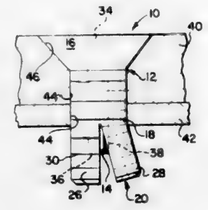
1. A tool for use with a linear prime mover for broaching a gain twist rifling groove in a gun barrel comprising:
a support and drive shaft attachable to said prime mover;
a plurality of cutter assemblies mounted in spaced apart fixed position along said support and drive shaft, and adapted to rotate freely thereabout which includes;
a hub mounted in fixed position on said support and drive shaft;
a shell rotatably mounted on said support and drive shaft axially adjacent said hub;
bearing means located between said shell and said support and drive shaft; wherein said cutters are mounted on said shell and project radially therefrom;
a plurality of cutters projecting radially from each of said cutter assemblies, and adapted for cutting engagement with the rifling groove inscribed in said gun barrel; and
indexing means for aligning said cutters with said rifling groove which includes;
parallel disposed guide bars positioned adjacent said gun barrel, said guide bars defining a slot to receive one of said cutters, and to permit the cutter to slide therethrough into aligned contact with said rifling groove when said tool is brought into position therewith.

4,411,570

TAMPER-PROOF FASTENER

Ilija Juric, c/o William Bayley Company, 1200 Warder St., Springfield, Ohio 45503

Filed Apr. 6, 1981, Ser. No. 251,607
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—271 **8 Claims**



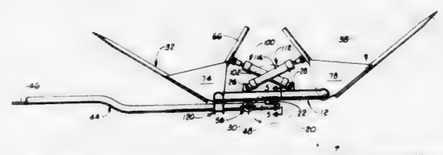
1. A tamper-proof fastener comprising:
a body having a head portion and a shank portion, said shank portion having at least one slit extending along a radius and located in an end of said shank opposite said head portion, said slit forming at least two legs in said end;
said body defining a central bore extending from said head portion and terminating proximate said end such that it intersects said slit at said legs;
said central bore terminating in a squared-off shoulder proximate said end in at least one of said legs;
said central bore terminating in a tapered shoulder proximate said end in at least one other of said legs;
a headless pin sized to fit within said bore such that insertion of said pin into said bore causes an end of said pin to abut said squared-off shoulder and to engage said tapered shoulder thereby deflecting outwardly said other leg adjacent said end of said shank; and
said squared-off shoulder being sized to prevent displacement of said pin therepast when said other leg is deflected outwardly.

4,411,571

HAY BALE RETRIEVING AND TRANSPORTING TRAILER

Troy Gildon, Rte. 3, Box 59, Duncan, Okla. 73533

Filed Apr. 13, 1981, Ser. No. 252,792
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 **9 Claims**



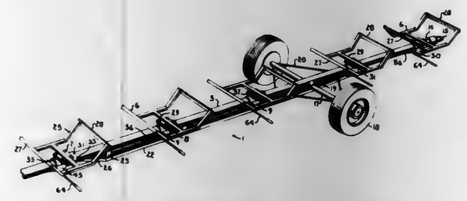
1. A hay bale retrieving and transporting trailer comprising:
a framework;
ground-engaging wheels connected to the framework;
an elongated towing tongue extending outwardly from one side of said framework and pivotally connected to said framework for pivotation about a vertical axis;
a forward bale pickup and supporting cradle subassembly pivotally mounted on said one side of the framework for pivotation about a horizontal axis between a bale pickup position and a bale transporting position, said forward bale pickup and supporting subassembly including;
a pair of bale pickup tines for piercingly engaging a bale spaced from each other and extending substantially horizontally in the bale pickup position of said forward bale pickup and supporting cradle subassembly, one of said tines in said pair of bale pickup tines defining an angulation adjacent the horizontal pivotal axis of said forward bale pickup and supporting cradle assembly for accommodating passage under said one tine in said pair of tines of said towing tongue during the pivotal movement of said towing tongue and when said forward bale pickup and supporting cradle subassembly is pivoted to said bale transporting position; and
a vertically extending member connected at substantially a right angle to at least one of said bale pickup tines to cradle a hay bale with said one bale pickup tine;
a rear bale pickup and supporting cradle subassembly pivotally mounted on said framework on the opposite side of said framework from said forward bale pickup and supporting cradle subassembly for pivotation about a horizontal axis between a bale pickup position and a bale transporting position, said rear bale pickup and cradle subassembly including: p2 at least one additional bale pickup tine for piercingly engaging a bale extending substantially horizontally in the bale pickup position of said rear bale pickup and mounting cradle subassembly; and
whereby the bales are supported on said tines of said pickup and support cradle subassemblies during transport; and
a vertically extending member connected at substantially a right angle to said last-mentioned bale pickup tine to cradle a hay bale with said last-mentioned pickup tine; and
means for pivoting said towing tongue about said vertical axis.

4,411,572

BALE TRANSFER CARRIER

Dewey Hostetler, Harper, Kans., assignor to DewEze Manufacturing, Inc., Harper, Kans.

Filed Aug. 20, 1981, Ser. No. 294,776
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.5 **3 Claims**



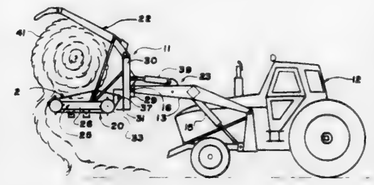
1. A carrier for a cylindrical bale of hay comprising:
(a) an elongate, tubular main body member having a forward end with a hitch means for connection to a drafting vehicle;
(b) an axle and wheels mounted to said main body member for movement over a ground surface;
(c) a bale supporting cradle mounted to said main body member;
(d) a collar rotatably sleeved on said main body member with said cradle affixed to said collar and swingable sidewardly thereon between transport and unloading positions;
(e) a latch means extending between said collar and said main body member and operable to lock said collar in said transport position;
(f) abutment members affixed to said main body on opposite sides of said collar and limiting any tendency toward longitudinal sliding thereof along said main body member; and
(g) said collar having a stop thereon and engageable with one of said abutment members for limiting rotation of said collar on said main body member.

4,411,573

BALE HANDLING APPARATUS

Tod N. Townsend, Box 662, White Sulphur Springs, Mont. 59645

Filed Jul. 27, 1981, Ser. No. 287,287
Int. Cl.³ A01D *87/12*
U.S. Cl. 414—24.6 **3 Claims**



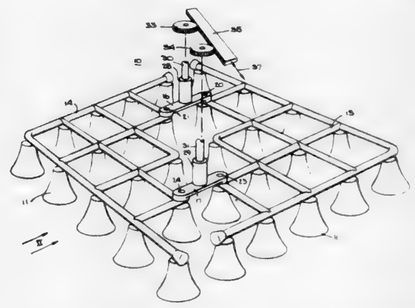
1. Bale handling apparatus including a frame portion, a bale moving portion, a bale engaging portion and a control portion; said frame portion including a base section, said base section including a pair of substantially parallel spaced side members, said frame portion also including means for pivotally connecting said apparatus to a vehicle; said bale moving portion including rotatable means extending between said side members of said base section, said rotatable means being disposed along said side members of said base section, said rotatable means including a plurality of spaced parallel roller means with a plurality of raised portions, the roller means adjacent the free ends of said side members being disposed inside the nip of said bale and the outer layer thereof; said bale engaging portion including a plurality of spaced hook means pivotally connected to said frame portion adjacent one edge thereof, said hook means being oriented substantially parallel to said side members of said base section, said hook means being of a length substantially the same as said side members; said control portion including means for driving said rotatable means, means for pivoting said hook means with respect to said base section and means for changing the position of said base section; whereby when said apparatus is attached to a vehicle, a round bale may be positioned on said apparatus by tilting said base section and grasping said bale between said hook means and said base section, and said bale may be opened and distributed by raising said base section and driving said rotatable means to unroll said bale.

4,411,574

EGG TRANSFER HEAD

Douglas E. Riley, Canton, Mich., assignor to Diamond Automations, Inc., Framington, Mich.

Filed Jul. 13, 1981, Ser. No. 282,754
Int. Cl.³ B65G *59/04*
U.S. Cl. 414—121 **10 Claims**



1. A transfer system having a transfer head for transporting

a predetermined plurality of articles which are disposed in a first array configuration having m columns by n rows at a first station, to a second station, the predetermined plurality of articles being reconfigured from the first array configuration to a second array configuration having n columns by m rows so as to be deposited at the second station in the second array configuration, the transfer head being provided with a predetermined plurality of article holders for engaging respective ones of the predetermined plurality of articles during transportation, the transfer system further comprising:

first and second article holder carrier means, each said article holder carrier means being arranged to retain one-half of the predetermined plurality of article holders in positions corresponding to the first array configuration; and

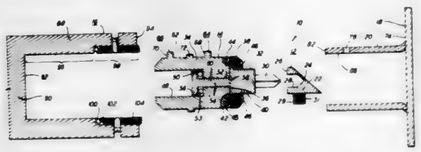
linkage means connected to each of said first and second article carrier means to permit said first and second article carrier means to be moved with respect to one another, said linkage means being rotated by approximately 90° so as to change said arrangement of the article holders from the first array configuration to the second array configuration.

4,411,575

SAMPLE TRANSFER VESSEL

Mark C. Miller, Chanhassen, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 1, 1981, Ser. No. 259,723
Int. Cl.³ B65G *61/00*
U.S. Cl. 414—217 **9 Claims**



1. A sample transport vessel comprising:

a sample mounting block upon one end face of which a sample can be affixed;

a sample block carrier having one end adapted to receive and retain said sample mounting block;

a lid member having a sleeve affixed to one surface thereof and extending therefrom, said sleeve being adapted to accept thereinto said sample block carrier; and

means, carried by said sample block carrier for forming a hermetic seal between said sample block carrier and said sleeve.

7. A sample transfer system comprising in combination:

an analytical instrument having an preanalysis chamber and an entry chamber, said entry chamber and said preanalysis chamber being separated by a means for selectively allowing or blocking communication between said chambers said entry chamber being cooperatively formed to accept a sample transport vessel; said sample transport vessel including a sample mounting block upon one end face of which a sample can be affixed, a sample block carrier having one end adapted to receive and retain said sample mounting block, a lid member having a sleeve affixed to one surface thereof and extending therefrom said sleeve being adapted to accept thereinto said sample block carrier; means, carried by said sample block carrier for forming a hermetic seal between said sample block carrier and said sleeve; and

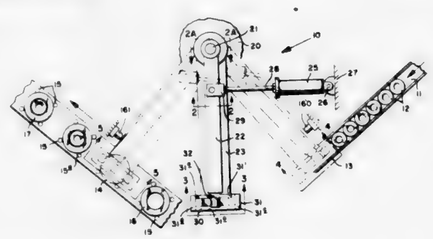
means for controlling the ambient pressure of said entry chamber.

4,411,576

PICK AND PLACE MECHANISM

William I. Smith, 59 Shannon Dr., North Wales, Pa. 19454, and Harold Moyer, Harleysville, Pa., assignors to William I. Smith, Collegeville, Pa.

Filed Aug. 26, 1981, Ser. No. 296,504
Int. Cl.³ B23Q *7/04*
U.S. Cl. 414—226 **33 Claims**



1. A pick and place mechanism for transferring a part from a pick location to a place location, comprising:

a casing,

means for displacing said casing in a predetermined path of movement between said locations,

means at each location for arresting motion of said casing,

cam means mounted in said casing for movement transversely to said path of movement,

follower means disposed in said casing for operating said cam means in response to arrested motion of said casing at said locations,

at least a pair of gripping fingers connected to said cam means and mounted in said casing for extension and retraction relative thereto, and

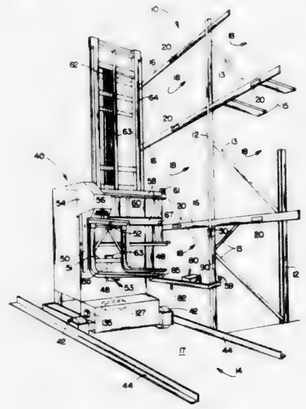
actuating means on said gripping fingers and said casing cooperable upon extension of said fingers through predetermined distances to grip or release a part.

4,411,577

VEHICLE SENSOR MONITORING SYSTEM

James T. Shearer, Jr., Ada, Mich., assignor to Rapistan Division, Lear Siegler, Inc., Grand Rapids, Mich.

Continuation-in-part of Ser. No. 128,261, Mar. 7, 1980, Pat. No. 4,331,417. This application Mar. 3, 1981, Ser. No. 240,172
Int. Cl.³ B65G *65/02*
U.S. Cl. 414—274 **14 Claims**



1. A system for checking the operation of one or more sensors used for controlling a vehicle employed for transferring articles into or out of storage locations of a warehousing system comprising:

first sensing means associated with the vehicle for providing signals employed in controlling the vehicle during a load transferring cycle of operation and which has a predictable operational status when detecting a predetermined condition normally encountered during a selected portion of each load transferring cycle of operation;

monitoring circuit means coupled to said first sensing means for determining the operational status of said first sensing means during said selected portion of each load transferring cycle of operation and for generating a fault control signal in the event the status of said first sensing means indicates that the predetermined condition is not sensed;

control circuit means coupled to said first sensing means and responsive to signals therefrom for providing vehicle controlling signals; and

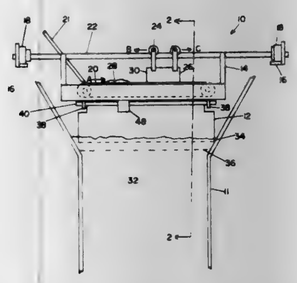
second sensing means which provides a predetermined output signal during said selected portion of each load transferring cycle of operation and logic circuit means coupled to said first sensing means and to said second sensing means to provide a fault control signal in the event that the predictable operational status of said first sensing means does not occur in the desired relationship to said predetermined output signal from said second sensing means.

4,411,578

SHUTTLE SPREADING CONVEYOR

Harold F. Morrow, Jr., Columbia, Pa., assignor to Aggregates Equipment, Inc., Leola, Pa.

Filed Sep. 25, 1981, Ser. No. 306,095
Int. Cl.³ B65G *65/32*
U.S. Cl. 414—300 **4 Claims**



1. In a shuttle conveyor in which a movable trolley supports and transports a conveyor with means for unloading the conveyor at multiple points along its length, the improvement comprising:

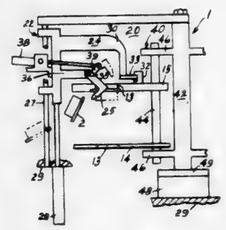
a free swinging drag leveler hung below and attached to the trolley, extending essentially the entire length of the conveyor, and of a weight sufficient so that, as the drag leveler is pulled forward by the shuttle conveyor, its lower edge trails behind that conveyor and when the drag leveler contacts a ridge of the surface of discharged material below the trolley, the drag leveler will pull the ridge of material into an adjacent valley.

4,411,579

EJECTION MEANS FOR REMOVING A HOLLOW ARTICLE FROM MACHINE IN WHICH THE ARTICLE IS MADE

Robert J. Grone, Elsmere, Ky., and Leonard R. Schnell, Okeana, Ohio, assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio

Filed Sep. 14, 1981, Ser. No. 301,775
Int. Cl.³ B29C *3/00*
U.S. Cl. 414—417 **7 Claims**



1. An ejection means for removing a hollow article such as a cup from an upper one of a pair of rings mounted in a carrier plate comprising

a pair of vertically extending guide rods;

a yoke slidably mounted on said guide rods for vertical motion;

first power means to reciprocate said yoke up and down on said guide rods, said power means being located beneath said yoke;

a pair of carrier plates including a lower carrier plate and an upper carrier plate supported on said lower carrier plate, each of said carrier plates having a hole therethrough in register with the hole in the other plate;

a plurality of carrier lifting lugs extending upwardly from the upper surface of said upper carrier plate;

indexing means to move said carrier plates into an eject work station adjacent said yoke for ejection therefrom of cups carried therein;

a plurality of yoke lifting lugs supported from said yoke in position to be engaged by the carrier lifting lugs supported on said carrier plates by the time the indexing means has moved the carrier plates into said ejection position;

said upper ring being mounted on said upper plate surrounding said hole therein and in a position facing said lower carrier plate;

a finger pivotally mounted on said yoke in a position to strike the inside of the article through the hole in the upper carrier plate;

second power means mounted on said yoke to operate said finger; and

a resilient surface on the striking face of said finger.

4,411,580

VEHICLE ATTACHED SUPPORT FOR WHEELCHAIR TRANSPORT

Danny R. Kelly, P.O. Box 772, Nicoma Park, Okla. 73066

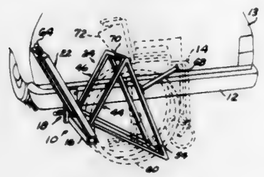
Filed Oct. 19, 1981, Ser. No. 313,059
Int. Cl.³ B60R *9/06*
U.S. Cl. 414—462 **2 Claims**

1. In a wheelchair support for connection with an automotive vehicle bumper or other surface for transporting a folded wheelchair of the type having large rear wheels, the improvement comprising:

a base tube secured to and projecting longitudinally rearward from the vehicle adjacent the horizontal plane of the bumper;

a generally upright inverted U-shaped frame having legs rigidly secured to respective end portions of said base tube;

open framework means including spaced-apart vertically disposed side members projecting laterally of said base tube and pivotally connected at one end portion between the legs of said U-shaped frame for vertical pivoting movement of their laterally remote end portions from a downward earth surface contacting wheelchair loading and unloading position to an upward wheelchair supporting position, and a cross rod extending between the respective end portion of said side members adjacent their



lower limit and defining, in combination with said side members, a framework vertical opening having a length greater than the radius and less than the diameter of a wheelchair large wheels for subtending an arc of the periphery of the large wheels when supported therein and lowering the wheelchair center of gravity toward the plane of the framework opening; and,

spring urged latch means for securing said framework means to said U-shaped frame in a wheelchair lifted and supported position.

4,411,581

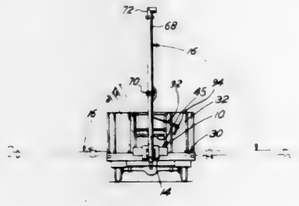
TRUCK AUGER-HOPPER CONSTRUCTIONS

Donald W. Niewold, 149 N. Market St., Paxton, Ill. 60957

Continuation-in-part of Ser. No. 221,293, Dec. 30, 1980. This application Nov. 27, 1981, Ser. No. 325,234

Int. Cl.³ B60P *1/04, 1/40*

U.S. Cl. 414—489 **46 Claims**



1. An auger-hopper construction for mounting to an inclinable body of a truck to receive material from the truck comprising:

first hopper means, said first hopper means having an opening adjacent the bottom thereof,

first hopper mounting means for mounting said first hopper means to the truck in a position to receive the material from the truck and such that no portion of said first hopper means extend substantially beneath a plane defined by the bottom of the inclinable body of the truck,

second hopper means having an opening therein,

pivotal mounting means for pivotally mounting said second hopper means to said first hopper means to receive material from said opening in said first hopper means, said pivotal mounting means permitting said second hopper means to pivot about an axis between upper and lower pivot limits, said pivotal mounting means mounting said second hopper means to said first hopper means such that the lowest portion of said second hopper means when pivoted to extend horizontally does not extend substantially beneath the plane defined by the bottom of the inclinable body of the truck when both hopper means are mounted to the truck,

auger tube means,

swivel mounting means mounting one end of said auger tube means to said second hopper means and overlying the opening therein to receive material from said latter opening,

said pivotal mounting means and swivel mounting means cooperating to permit inclination of said auger tube means in plane substantially perpendicular to the axis of the pivotal movement and also in inclination in a plane substantially parallel to the axis of the pivotal movement at substantially all angles of inclination of the truck body.

4,411,582

ELECTRONICALLY CONTROLLED INDUSTRIAL TRUCKS

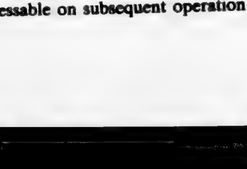
Shoichi Nakada, Matsudo, Japan, assignor to Komatsu Forklift Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1981, Ser. No. 236,191

Claims priority, application Japan, Aug. 20, 1979, 54-104974

Int. Cl.³ B66F *9/06*; B66C *13/16*; B66B *1/24*

U.S. Cl. 414—636 **8 Claims**



1. An electronic controller for controlling movements of a fork and a mast of a fork-lift truck wherein the movement of the fork is effected by a lifting mechanism and that of the mast is effected by a tilting mechanism, comprising:

first sensor means for detecting the movement of the fork and providing first signals denoting increments of that movement;

counter means for receiving said first signals and providing a count denoting the height of the fork along its range of movement;

memory means for storing data denoting the height of the fork and providing said stored data for comparison with said count;

means for effecting storage in said memory means;

first comparator means for comparing said count with the data from said memory means to provide a second signal for controlling the movement of the fork;

first actuator means adapted to receive said second signal and actuate said lifting mechanism in response thereto;

second sensor means for detecting an upright and a tilt-back position of the mast and providing a third signal to stop the mast movement;

second actuator means for actuating said tilt mechanism, said second actuator means being adapted to receive said third signal and to stop in response thereto;

base height switch means for providing a fourth signal indicating a predetermined base height whenever it is actuated by the fork;

second comparator means for comparing the count of said counter means with said fourth signal for correcting any errors of said count; and

a control board means including a plurality of switches for starting and stopping the movements of the fork and the mast, said control board means being operable by a human operator to provide for the storage of said count in a storage location wherein the address is determined by the operation of a particular switch and wherein the memory is addressable on subsequent operation of said particular switch to provide the stored count to the first comparator means.

4,411,583

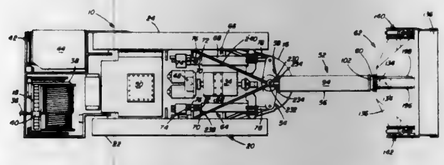
MULTI-PURPOSE MATERIAL HANDLING MACHINE FOR USE IN A MINE

Angelo S. Petitto, Sr.; Angelo A. Petitto, and James L. Petitto, all of Morgantown, W. Va., assignors to Petitto Mine Equipment Repair, Inc., Morgantown, W. Va.

Filed Oct. 27, 1980, Ser. No. 201,277

Int. Cl.³ B60P *1/54*

U.S. Cl. 414—687 **13 Claims**



1. A multi-purpose underground material handling machine comprising,

a mobile body,

a boom assembly extending from said mobile body,

said boom assembly having a first end portion positioned on said mobile body and a second end portion spaced from said first end portion and said mobile body,

said second end portion being extensible and retractable relative to said first end portion to change the length of said boom assembly,

said boom assembly first end portion being pivotally connected to said mobile body for both lateral and vertical pivotal movement of said boom assembly relative to said mobile body,

first actuating means mounted on said mobile body and connected to said boom assembly for pivoting said boom assembly both laterally and vertically relative to said mobile body,

a multi-purpose bucket including a movable portion and a carrier portion,

pivot means for connecting said movable portion to said carrier portion to permit pivotal movement of said movable portion toward and away from said carrier portion,

second actuating means extending between said bucket movable and carrier portions for moving said movable portion to a preselected operating position relative to said carrier portion,

said carrier portion including a pair of laterally spaced side walls secured to both a back wall and a bottom wall to form an enclosure with an open end portion to receive loose material,

said movable portion including a pair of laterally spaced side walls secured to a bottom wall whereby loose material is freely movable through said movable portion,

said movable portion being positioned within said carrier portion such that said movable portion side walls are positioned inboard and closely adjacent to said carrier portion side walls for movement of said movable portion side walls relative thereto,

said movable portion bottom wall being movable in overlying relation with said carrier portion bottom wall,

a bracket extending forwardly from said boom assembly second end portion,

a bracket receiver extending rearwardly from said bucket carrier portion into contact with said bracket with said boom assembly positioned centrally behind said multi-purpose bucket,

quick release pin means for connecting said bracket receiver to said bracket to permit efficient attaching and detaching of said multi-purpose bucket to said boom assembly, and

extensible means for extending and retracting said boom assembly to selectively manuever said multi-purpose bucket into position for conducting material handling operations.

4,411,584

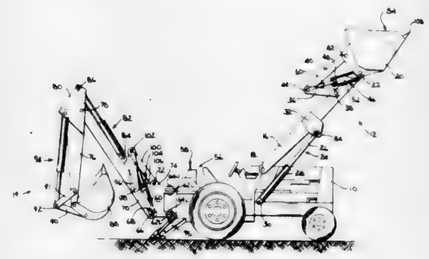
OPTIMIZED EARTHWORKING TOOL OPERATING LINKAGE

John F. Shumaker, Mt. Pleasant, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 26, 1981, Ser. No. 228,606

Int. Cl.³ E02F *3/32*

U.S. Cl. 414—694 **1 Claim**



1. Apparatus for operating a bucket between a loaded and a dumped position, said bucket being pivoted to a lift arm by first pivotal connection means, comprising:

(a) a first link pivotally connected at one of its ends to said lift arm at a spaced distance from said first pivotal connection means;

(b) a second link pivotally connected at one of its ends to said bucket at a spaced distance from said first pivotal connection means and disposed towards said first link;

(c) second pivotal connection means, for pivotally connecting the opposite ends of said first link and said second link; and

(d) extensible means, pivotally connected at one of its ends to said first pivotal connection means and pivotally connected at its opposite end to said second pivotal connection means for moving said second pivotal connection means towards and away from said first pivotal connection means, said extensible means comprising a hydraulic actuator having a cylinder, a piston disposed to move reciprocally within said cylinder and a piston rod connected to said piston, one end of said cylinder being pivotally connected to said first pivotal connection means and the free end of said piston rod being pivotally connected to said second pivotal connection means, whereby the head side of said piston is pressurized to extend said hydraulic actuator and move said bucket from its dumping position to its loaded position, and contraction of said hydraulic actuator pivots said bucket to its dumped position relative to said base member, and thus the available force pivoting said bucket from its dumped to its loaded position is greater than the force used to pivot said bucket from its loaded to its dumped position.

4,411,585

FORK ATTACHMENT FOR LOADER BUCKETS

Russell C. Quinn, Twinsburg, Ohio, assignor to Jos. Dyson and Sons, Inc., Eastlake, Ohio

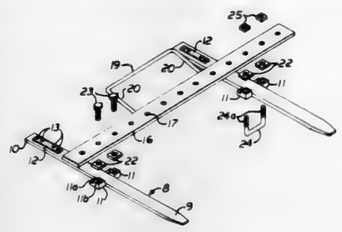
Filed Mar. 16, 1981, Ser. No. 244,298

Int. Cl.³ B66F *9/12*

U.S. Cl. 414—724 **1 Claim**

1. An attachment for a loader bucket comprising a pair of substantially generally flat fork bodies, each said body including a lifting section and a bucket engaging portion, each bucket engaging portion having a stop element connected to the bucket engaging portion to coact with a shoulder form at the underside of such bucket, bucket edge gripping means for

frictionally positioning such means on the upper side at an edge of such bucket, said gripping means extending between said bodies and comprising a transversely elongated member having provisions for receiving fasteners which do not penetrate



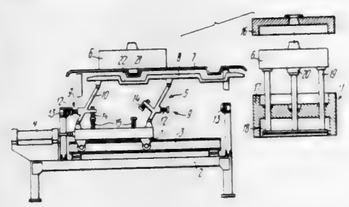
the bucket or bucket edge, and which engage said gripping and fastening means to prevent displacement of the fork bodies from such loader bucket, and fastening means for the fork body positioned in the elongated member to retain the fork bodies in related positions.

4,411,586

DEVICE FOR DELIVERY OF CORES

Vitaly A. Zitser, ulitsa Pervomaiskaya, 9/14, kv. 17, Dolgoprudny, Moskovskaya oblasti; Leonid V. Bachelis, Schelkovskoe shosse, 91, korpus 2, Moscow; Alexandr V. Melnikov, ulitsa Dorozhnaya, 7, korpus 1, kv. 138, Moscow; Igor I. Dreishev, Volgogradsky prospekt, 181, kv. 33, Moscow; Nikolai K. Shishkin, ulitsa Yablochkova, 29, kv. 17, Moscow; Jury E. Morozov, Leninsky prospekt, 39/1, kv. 264, Moscow; Vladimir A. Ivanov, ulitsa Rustaveli, 3, korpus 6, kv. 34, Moscow; Semen A. Olshansky, Dmitrovskoe shosse, 37, kv. 306, Moscow, and July V. Ryabinin, Altufievskoe shosse, 30, kv. 210, Moscow, all of U.S.S.R.

Filed Jul. 15, 1981, Ser. No. 283,787
Claims priority, application U.S.S.R., Jul. 15, 1980, 2944501
Int. Cl.³ B66F *9/02*
U.S. Cl. 414—728 **8 Claims**



1. A core delivery device of a machine for making cores from fluidized sands in hot boxes, comprising:

a support frame;

a trolley mounted for reciprocation on said support frame;

bearing plate bars mounted on said support frame, said bearing plate bars being shaped to correspond to the configuration of the cores and being situated in a substantially fixed horizontal plane;

means for receiving the said cores and delivering them onto said bearing plate bars, said means being constituted by a pantograph mounted on said trolley and having rotatable bars and bars adapted to receive said cores, the core receiving bars being arranged on the pantograph side opposite to the trolley, said core receiving bars being shaped to correspond to the configuration of the cores and being situated in a substantially horizontal plane; and

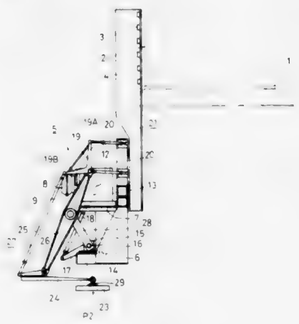
a mechanism for lifting and lowering said core receiving bars between lower and upper positions, said plane in which said core receiving bars are situated being situated below said plane in which said bearing plate bars are situated when said core receiving bars are in said lower position and above said plane in which said bearing plate bars are situated when said core receiving bars are in said upper position.

4,411,587

LOADING APPARATUS

Akira Niki, Toyoake, Japan, assignor to Nagoya Kiko Kabushiki Kaisha, Toyoake, Japan

Filed Jul. 14, 1981, Ser. No. 283,161
Claims priority, application Japan, Jul. 30, 1980, 55-104867; Sep. 17, 1980, 55-129964; Jun. 23, 1981, 56-98009
Int. Cl.³ B30B *15/30*
U.S. Cl. 414—752 **4 Claims**



1. A loading apparatus for use in combination with a working machine comprising:

an L-shaped mounting frame (6) having a vertical side and a horizontal side and fixedly connected to said working machine in vertical alignment and generally above the working position;

a first quadric parallel link (21) having two spaced parallel rods (20), one end of each rod (20) being pivoted to the vertical side of said L-shaped mounting frame (6);

a floating L-shaped parallel travel member (19) having a vertical side (19A) and a horizontal side (19B), said vertical side (19A) being pivoted to the other ends of said rods (20);

a second quadric parallel link (27) having a primary rod (26) and a secondary rod (25) both being pivoted at one end to said horizontal side (19B) of said floating L-shaped parallel travel member (19);

a holder arm assembly (24) pivoted to the other ends of said primary rod (26) and said secondary rod (25) and constituting one side of a said second quadric parallel link (27), said holder arm assembly (24) including a venturi cap (29) operatively connected thereto for holding a workpiece (23);

a coupling shaft (16) rotatably mounted to the horizontal side of said L-shaped mounting frame (6) through a bearing means (15);

a first oscillating arm (28) pivotally connected at one end to said primary rod (26) of said second quadric parallel link (27) intermediate the ends of said primary rod (26) and at the other end to one end of said coupling shaft (16);

an electric motor (10) with a reduction gear (11) fixedly connected to the vertical side of said L-shaped mounting frame (6) through a bracket (7), said reduction gear having an output shaft (12);

a crank arm (13) pivotally connected at one end to said output shaft (12) of said reduction gear (11); and

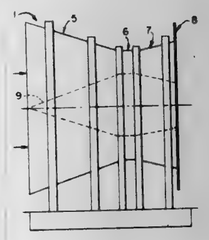
a second oscillating arm (17) pivotally connected at one end to the other end of said coupling shaft (16) and at the other end to the other end of said crank arm (13) through a rod (18).

4,411,588

WIND DRIVEN POWER PLANT

Walter E. Currah, Jr., 4401 S. 64th St., Tacoma, Wash. 98409, assignor to Walter E. Currah, Tacoma, Wash.

Continuation of Ser. No. 900,780, Apr. 28, 1978, abandoned. This application Feb. 20, 1981, Ser. No. 236,269
Int. Cl.³ F03D *1/04*
U.S. Cl. 415—2 A **1 Claim**



1. An apparatus for converting wind energy to electrical energy, said apparatus comprising:

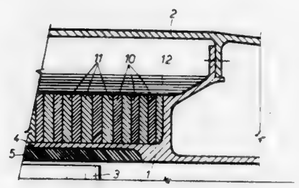
an inner and an outer housing both formed as surfaces of revolution about a common longitudinally extending axis to define therebetween a forwardly facing wind entry opening and entry chamber, an intermediate wind chamber, and a rearwardly facing wind expansion chamber and wind exit opening; said outer housing defined by a frustrum of a first outer right circular cone oriented along said longitudinally extending axis with its larger open end defining said wind entry opening, an outer cylinder connected to the smaller end of said frustrum, and a frustrum of a second outer right circular cone oriented along said longitudinally extending axis with its smaller end connected to said cylinder and its larger end defining said wind exit opening, and a flat radially extending annular plate connected to the rearwardly facing end of the frustrum of said second right circular cone in a plane normal to the longitudinal axis for providing an increased pressure differential between said wind entry and exit openings; said inner housing defined by a first inner right circular cone concentric with and coextensive with said first-mentioned outer right circular cone and oriented along said longitudinally extending axis with its smaller end facing in the direction of said wind entry opening to define said wind entry chamber therebetween, an inner cylinder concentric with and coextensive with said outer cylinder and connected to the larger end of said first inner right circular cone to define said intermediate chamber, and a conically converging member having its larger end connected to said inner cylinder member to define, with said second outer right circular cone, the wind expansion chamber; at least one turbine rotor blade row and hub assembly mounted in said wind expansion chamber at the rearward end of the frustrum of said second right circular cone for rotation about said longitudinally extending axis in a plane normal to the longitudinal axis, said blade row axially positioned so that said flat radially extending annular plate lies in a plane between the forward and rearward edges of said blade row; said blade row and hub assembly connected to an electrical energy generator means mounted within said inner housing for generating electricity in response to rotation of said turbine rotor; and support means connected between said inner and outer housings.

4,411,589

RETAINING DEVICE FOR THE COMPRESSOR CASING OF A TURBINE ENGINE

Raymond J. M. Joubert, Savigny sur Orge, and Marcel R. Soligny, Chevilly-Larue, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.", France

Filed Oct. 21, 1980, Ser. No. 199,192
Claims priority, application France, Oct. 23, 1979, 79 26580
Int. Cl.³ F01D *21/00*
U.S. Cl. 415—9 **7 Claims**



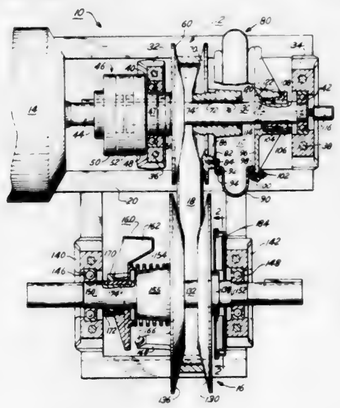
1. A retaining device for the compressor casing of a dual flow turbo-jet engine having a metal ferrule coaxial with the axis of the compressor, the metal ferrule having on its internal surface facing the tips of the blades a material capable of entering into non-destructive contact with the tips of the blades, wherein the retaining device comprises: a plurality of first circular rings disposed about the external surface of the ferrule such that their axes coincide with the axis of the compressor, the first circular rings of material capable of frictionally amortizing the kinetic energy of a blade or blade fragment coming into contact therewith; and, a plurality of second circular rings disposed coaxially with the first circular rings and located between each of the first rings such that the first and second rings alternate in a direction along the axis of the compressor, the second circular rings being formed of a high-strength material different from the material forming the first rings.

4,411,590

CONTROL SYSTEM FOR VARIABLE SPEED BELT DRIVES

Richard L. Meredith, Mishawaka, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.

Filed Dec. 8, 1980, Ser. No. 214,196
Int. Cl.³ F01B *25/02*
U.S. Cl. 415—26 **17 Claims**



13. A control system for a variable speed belt drive having a rotatable input element with a movable flange, a rotatable output element and a speed control element: a control mecha-

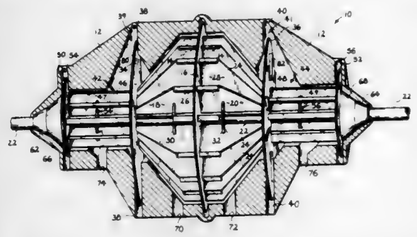
nism, a fluid pressure actuated means connected to said control mechanism for regulating the speed of said input element, a fluid pressure creating means responsive to the speed of said output element connected to said control mechanism, a source of command pressure connected to said control mechanism, a source of operating pressure connected to said control mechanism, and means in said control mechanism for regulating the pressure from said source of operating pressure to said speed control element for controlling the speed of said rotatable input element in response to variations in pressure from the pressure creating means and from said command pressure source.

4,411,591

PADDLE WHEEL TURBINE DEVICE

Daniel O. Hesting, R.R. 2 - Tulakes, Chanute, Kans. 66720

Filed Jun. 15, 1981, Ser. No. 273,748
Int. Cl.³ F01D *5/06*
U.S. Cl. 415—103 **13 Claims**



1. In a turbine having a power shaft for operating apparatus connected thereto, the improvement being means for rotating said shaft comprising:

a plurality of turbine blades mounted about said power shaft in a peripherally spaced-apart relationship and presenting a paddle wheel configuration to said blade array;

at least one inlet port for directing a pressurized fluid into said turbine;

at least one exhaust port for discharging said fluid from said turbine, said inlet port and said exhaust port defining a fluid flow path and positioned in an apex/nadir relationship relative to said paddle wheel blade array for interposition of said blade array in said fluid flow path in a rotating response thereto, whereby to drive said power shaft;

said turbine blades further comprising:

a generally planar surface extending from said shaft, said surface having an edge radially displaced from the axis of said shaft;

a flanged surface normally extending from said edge and in the direction of said rotation, said planar surface responding to said fluid flow with said rotating movement and cooperating with said flanged surface to maintain movement of said fluid between said inlet and exhaust ports; and

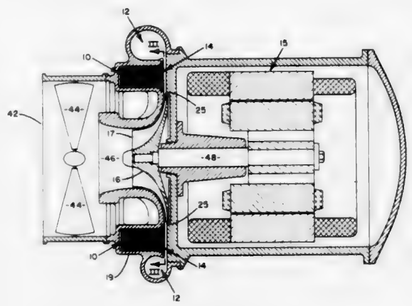
at least one continuous rod passing through each of said blades, said rod made of a material having a greater rate of expansion than said blade material with said relative rate of expansion providing for reinforcement of said blades by said rod during said rotating response.

4,411,592

PRESSURE VARIATION ABSORBER

Darwin G. Traver, DeWitt; Carl M. Anderson, Syracuse, both of N.Y., and Amr N. Abdelhamid, Luzerne, Canada, assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 815,330, Jul. 13, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,525
Int. Cl.³ F04D *29/66*
U.S. Cl. 415—119 **10 Claims**



1. A centrifugal compressor for increasing the pressure of a compressible fluid including

a housing defining a fluid path including an inlet opening, an impeller chamber, and a circumferentially extending discharge opening,

an impeller rotatably mounted within the impeller chamber to accelerate fluid entering through the inlet opening and to discharge fluid through the discharge opening with increased pressure and velocity,

an annular collector spaced from the discharge opening of the housing positioned to receive compressed fluid from the impeller, and

a radial annular diffuser including side walls defining a passageway extending between the discharge opening and the collector to receive fluid of high velocity and low static pressure from the discharge opening and to supply the fluid to the collector at lower velocity and higher static pressure, and

means in the diffuser for absorbing aerodynamic pressure variations in the fluid, said means including a porous material forming a portion of one wall of the diffuser and a resonant cavity in fluid communication with the diffuser through the porous material, whereby pressure variations in the fluid are absorbed in the diffuser to increase the operation flow range of the compressor.

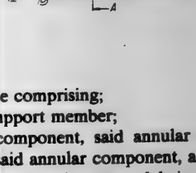
4,411,593

ROTARY TYPE PUMP RESISTANT TO MUDDY WATER

Michihiro Taguchi, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 25, 1980, Ser. No. 162,909
Claims priority, application Japan, Jul. 30, 1979, 54-96961
Int. Cl.³ F04D *29/28*
U.S. Cl. 415—173 R **7 Claims**

1. In a rotary type liquid pump having an axis, a pump chamber surrounding said axis, a pair of chamber faces lying parallel to one another and normal to said axis, a rotary shaft axially mounted in said pump chamber and having a cylindrical periphery in said pump chamber, with a keyway therein, a boss made of elastic material and bearing impeller blades, a tubular bush made of material more rigid than the material of the boss fitted into said boss, having a keyway opposite the keyway on said shaft, a key seated in said keyways and joining said shaft and bush, the improvement comprising said cylindrical periphery being smooth, a flexible annular seal on each end of said boss engaging the said periphery, and extending between said seals, and fitting between said bush and said shaft, a connector



extending between and connecting with said seals, and making a fluid sealing abutting fit against said periphery.

4,411,594

SUPPORT MEMBER AND A COMPONENT SUPPORTED THEREBY

Terence R. Pellow, Watford, and Derek A. Glew, Alveston, both of England, assignors to Rolls-Royce Limited, London, England

Continuation-in-part of Ser. No. 151,886, May 20, 1980, abandoned. This application Jun. 22, 1982, Ser. No. 390,930
Claims priority, application United Kingdom, Jun. 30, 1979, 7922802; Apr. 28, 1980, 8013985
Int. Cl.³ F01D *11/08*
U.S. Cl. 415—174 **14 Claims**

1. A structure comprising;

an annular support member;

an annular component, said annular support membersurrounding said annular component, and said annular component being continuous and being capable of floating radially relative to said support member; and

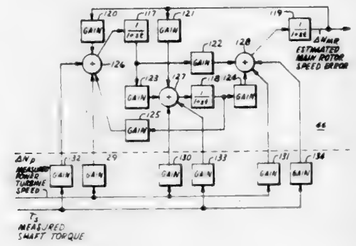
sealing means resiliently supporting said annular component from said support member in spaced relationship therewith while permitting said annular component to have independent floating radial movement relative to said annular support member without any significant load transfer therebetween, said sealing means including an array of upstanding resilient filaments having fixed ends and free ends, said fixed ends of said array of upstanding resilient filaments being fixed to one of said annular support member and said annular component and the free ends of said annular array of filaments engaging the other of said annular support member and said annular component, said array of upstanding resilient filaments defining a brush seal between said annular support member and said annular component.

4,411,595

CONTROL SYSTEM FOR GAS TURBINE ENGINE

Alan D. Pisano, Chelsea, Mass., assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 76,890, Sep. 19, 1979, Pat. No. 4,276,744. This application Feb. 9, 1981, Ser. No. 232,925
Int. Cl.³ F02C *3/10*
U.S. Cl. 416—1 **3 Claims**



1. Estimator means for use in combination with a helicopter powered by a gas turbine engine, the helicopter including a main rotor and a tail rotor coupled to turbine output shaft means, wherein the estimator means comprises:

(a) first signal processing means forming a simplified representation of said main rotor and tail rotor of said helicopter;

(b) second signal processing means coupled to receive a first input signal representative of the difference between a desired rotational speed of said output shaft means and the actual rotational speed of said output shaft means and to receive a second input signal representative of the torque at said output shaft means, said second signal processing means including separate gain means for respectively providing said first and second input signals with predetermined gains;

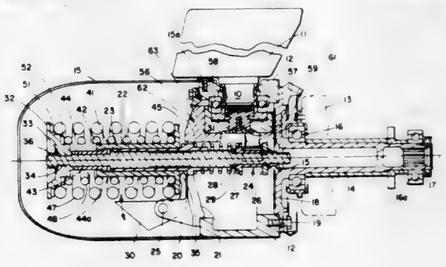
(c) third signal processing means for coupling said second signal processing means to said first signal processing means wherein said first signal processing means is caused to be an actual representation of said main rotor and tail rotor of said helicopter and wherein the output signal of said first signal processing means is representative of the main rotor speed error.

4,411,596

RAM AIR TURBINE CONTROL SYSTEM

John A. Chilman, Gloucester, England, assignor to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 25, 1980, Ser. No. 133,766
Int. Cl.³ F01D *7/02*
U.S. Cl. 416—51 **25 Claims**



1. A blade pitch control mechanism for a ram air driven turbine blade mounted for rotation in a hub assembly, said mechanism including:

a drive member mounted for reciprocation along a central axis, said drive member having a control member and a seat member secured to said drive member;

said blade having operatively coupled thereto a centrifugally responsive means which includes a pin in mating engagement with said control member;

biasing means acting between said hub assembly and said control member to thereby cause said blade to assume a coarse pitch position when said blade and hub assembly are in storage;

a slide member mounted on a portion of the hub assembly for reciprocation along said central axis and having a resilient means between said seat member and said slide member, and

flyweight means supported on said hub assembly and engaging said slide member, rotation of said hub assembly causes said flyweight means to move said slide member and thereby move the blade pitch from coarse pitch to fine pitch, and thereafter allow said centrifugally responsive means to control the blade pitch.

4,411,597

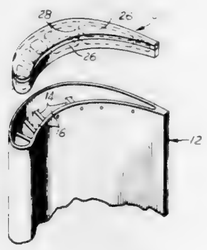
TIP CAP FOR A ROTOR BLADE

William K. Koffel, Cincinnati; Eugene N. Tuley, Hamilton; Charles H. Gay, Jr., Loveland; Raymond E. Troeger, Fairfield, all of Ohio, and Albert P. Sterman, deceased, late of Cincinnati, Ohio by Florence G. Sterman, executrix, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 20, 1981, Ser. No. 245,571

Int. Cl.³ F01D *5/18*

U.S. Cl. 416—92 **17 Claims**



1. A replaceable tip cap for attachment to the radially outer end of a hollow rotor blade, said tip cap comprising:

(a) two curved sidewalls joined at leading and trailing edges thereof and defining an airfoil shape,

(b) a radially outer wall and a pressure maintaining radially inner wall, both joined to the curved sidewalls to form a compartment, the radially inner wall having a plurality of holes extending therethrough, and

(c) a plurality of bulkheads contained within the compartment for defining several subcompartments, each subcompartment for containing air at a different pressure, and each subcompartment communicating with at least one of the holes in the radially inner wall.

4,411,598

FLUID PROPELLER FAN

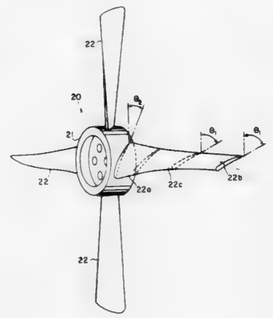
Makoto Okada, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Dec. 3, 1980, Ser. No. 212,430

Claims priority, application Japan, Dec. 12, 1979, 54-171946[U]

Int. Cl.³ F04D *29/38*

U.S. Cl. 416—223 R **1 Claim**



1. A fluid propeller fan including a fan wheel rotor assembly which comprises:

a wheel hub having an axis therethrough and rotatable about the axis; and

a plurality of vanes extending radially outwardly from said wheel hub and angularly spaced apart from each other about said axis of the wheel hub, each of the fan vanes having a predetermined pitch angle with respect to a plane perpendicular to said axis of said wheel hub;

wherein each of said vanes is provided with a radially outer longitudinal portion having, with respect to said plane, a pitch angle which is substantially constant throughout the length of said portion and a radially inner longitudinal portion having, with respect to said plane, a pitch angle which gradually decreases toward said wheel hub from said radially outer longitudinal portion.

4,411,599

DRAIN FITTING WITH BUILT-IN PUMP

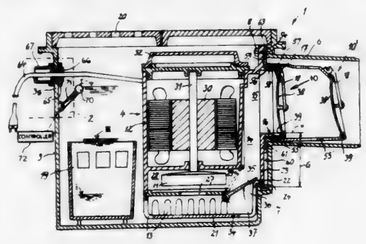
Bernhard Kessel, Bahnhofstr. 31, 8071 Lenting, Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,587

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1980, 3037217

Int. Cl.³ F04B *49/08, 17/00*

U.S. Cl. 417—301 **14 Claims**



1. A drain fitting comprising:

a vessel formed with a laterally open outlet, at least one inlet, and an internal seat at said outlet;

a pump in said vessel and having

a pump housing secured to said seat and having a pump intake and a pump output extending into said outlet above said intake, said pump housing being substantially closed except at said output and intake, whereby said pump housing acts as a gas trap, said pump housing being formed with a pump passage and a bypass passage, said passages forming the only connection between said inlet and said outlet, whereby flow between said inlet and outlet must be through said passages,

an impeller in said pump passage displaceable to move liquid through said pump housing from said intake to said output,

a valve member displaceable between one position blocking said pump passage and permitting flow through said bypass passage and another position blocking said bypass passage and permitting flow through said pump passage and over said impeller, and

means including a motor in said pump housing for driving said impeller and thereby moving said valve member into the other position;

a check valve in said pump output preventing liquid flow back into said pump housing; and

seal means between said pump output and said outlet for preventing flow from said vessel into said outlet except through said pump output;

means releasably securing said pump on said seat in said vessel.

4,411,600

HERMETIC MOTOR COMPRESSOR

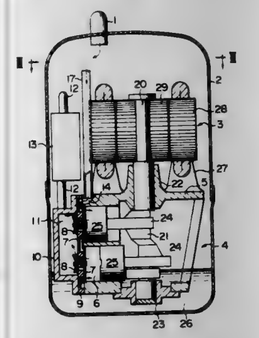
Masato Itagaki; Fumio Harada, and Tetsuya Arata, all of Shimizu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,110

Claims priority, application Japan, Nov. 9, 1979, 54-144392

Int. Cl.³ F04B *39/00*

U.S. Cl. 417—312 **6 Claims**



1. A hermetic motor compressor having a motor compressor unit including an upper motor section and a lower compressor section connected with each other, and a closed housing accommodating said motor compressor unit and having a refrigerant gas return pipe connected to an upper part thereof so that the space in said closed housing is filled with the atmosphere of suction pressure of said refrigerant gas, said compressor section having a suction passage extending upward from an upper portion thereof and opening to an upper part of said space in said closed housing so as to introduce said refrigerant gas into said compressor section, characterized in that a suction valve and a discharge valve are provided on a cylinder head, that only a discharge chamber is in a head cover attached to said cylinder head, while a suction chamber is formed in a frame body having a cylinder, at a corner portion thereof to have a small volume, and that said suction passage is made of a synthetic resin and extends upward from the suction chamber; wherein said suction pipe is constituted by at least one suction pipe, the wall of said suction pipe being cut and removed partially to provide an arcuate pipe portion over a predetermined length from the bottom of said suction pipe, and wherein said suction chamber is constituted by a plurality of suction chamber sections arrayed in the direction of said suction pipe, said arcuate pipe portion of said suction pipe being extended and opened into said suction chamber sections.

4,411,601

PUMP FOR METERING TWO DISTINCT FLUIDS

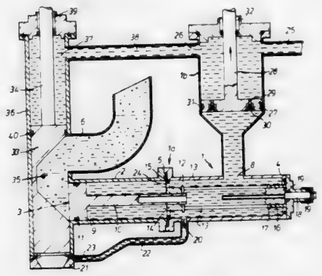
Albert C. Hersom, Beaconsfield, and Kenneth W. Wright, Twyford, both of England, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Feb. 20, 1981, Ser. No. 236,173

Claims priority, application United Kingdom, Dec. 16, 1980, 8040195

Int. Cl.³ F04B *15/02, 21/02*

U.S. Cl. 417—388 **11 Claims**



1. A pump for metering two fluids comprising a cylinder having a first and second inlet conduit and an outlet conduit, means for closing the communication between the cylinder and the first inlet conduit and between the cylinder and the outlet conduit alternately, there being present inside the cylinder a first floating solid piston for drawing in a primary fluid from the first inlet conduit and discharging it into the outlet conduit and a second piston for drawing in a secondary fluid from the second inlet conduit which piston has at least one port provided with one or more valves through which the secondary fluid can flow to occupy the space between the two pistons where it can transmit the motion of the second piston to the first piston, and a by-pass for conveying secondary fluid from the space between the pistons to the outlet conduit said by-pass having means permitting the operation of the by-pass during the entire operating cycle of the pump.

4,411,602

FUEL INJECTION APPARATUS FOR INTERNAL COMBUSTION ENGINES

Earl L. Ray, 113 Chestnut Pl., Rte. 2, Box 393A, Arden, N.C. 28704

Continuation-in-part of Ser. No. 11,425, Feb. 12, 1979, Pat. No. 4,275,689, which is a continuation-in-part of Ser. No. 814,662, Oct. 27, 1977, abandoned. This application Sep. 30, 1980, Ser. No. 192,310

Int. Cl.³ F04B *45/06;* **F01B** *19/00*

U.S. Cl. 417—437 **3 Claims**

1. A fuel injection apparatus for supplying pulsating fuel streams comprising:

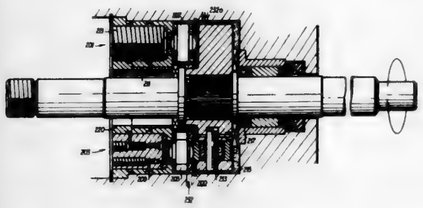
first and second injection pumps mounted on different sides of an axis of a rotating shaft, each of said injector pumps comprising a compartment separated by a steel diaphragm into a fuel receiving compartment and an oil receiving compartment, said diaphragm displaceable in a direction parallel to said axis into said fuel receiving compartment;

a fuel inlet including a spring load valve for emitting fuel to said fuel receiving compartment;

a fuel outlet including a spring loaded ball member for re-

ceiving a stream of fuel from said fuel receiving compartment in response to a displacement of said diaphragm;

first and second actuating members having first and second ends entering said oil receiving compartment in contact with said diaphragm for axially displacing said diaphragms; a rotating disk having an axis of rotation coincident with said rotating shaft axis, said disk including a cam



roller on a radius of said disk facing said actuator members for alternately striking each of said actuating members whereby each diaphragm is alternately displaced to produce pulsating streams from said fuel outlets; and

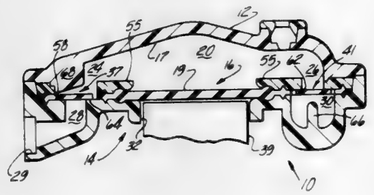
means for supplying oil pressure to said oil receiving compartment whereby said diaphragm is prohibited from blowing outward due to fuel pressure.

4,411,603

DIAPHRAGM TYPE BLOOD PUMP FOR MEDICAL USE

Michael J. Kell, Decatur, Ga., assignor to Cordis Dow Corp., Miami, Fla.

Filed Jun. 24, 1981, Ser. No. 276,752
Int. Cl.³ F04B *43/02*; A61M *5/00*
U.S. Cl. 417—479 **9 Claims**



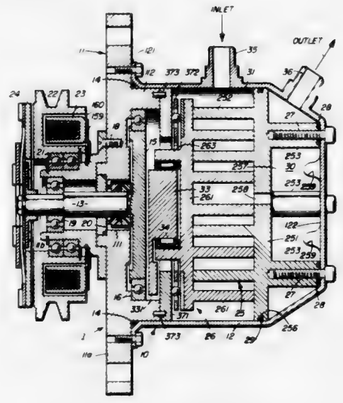
1. A blood pump for medical use comprising body means defining a blood chamber portion, a plunger receiving opening, and inlet and outlet conditions; a diaphragm of resiliently flexible material extending across and sealing said opening from said chamber portion and cooperating with said chamber portion to define a blood chamber, said diaphragm being movable in a pumping action for alternately reducing and increasing the volume of said blood chamber; said inlet and outlet conduits communicating with said blood chamber; inlet and outlet flapper valves or resiliently yieldable flexible material associated with said inlet and outlet conduits respectively for alternately closing and opening the communication between said inlet conduit and chamber and simultaneously opening and closing the communication between said outlet conduit and chamber upon said pumping action of said diaphragm reducing and increasing said volume respectively; each flapper valve comprising a single element of resiliently yieldable flexible material having a disc portion, a fixed portion, and a web portion connecting said disc and fixed portions; the disc portion of each flapper valve overlying the opening of its associated conduit into said blood chamber and being sufficiently thick to resist collapsing into the latter opening in response to fluid pressure changes in said blood chamber during said pumping action, the fixed portion of each flapper valve having a thickness substantially equal to the thickness of the disc portion and being secured to said body means, and the web portion of each flapper valve being reduced in both width and thickness with respect to the disc portion to effect a highly flexible hinge facilitating alternate opening and closing hinge movement of the connected disc portion; and means for limiting opening hinge movement of each disc portion to a predetermined small angle comprising a separate ramp portion of said body means extending at said angle from adjacent to each web portion and in the downstream direction of fluid flow.

4,411,604

SCROLL-TYPE FLUID DISPLACEMENT APPARATUS WITH CUP SHAPED CASING

Kiyoshi Terauchi, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed May 5, 1981, Ser. No. 260,826
Claims priority, application Japan, May 7, 1980, 55-59461
Int. Cl.³ F01C *1/02, 19/00, 21/10*
U.S. Cl. 418—55 **15 Claims**



1. In a scroll-type fluid displacement apparatus including a housing having a front end plate member with an end surface, a fixed scroll member fixedly disposed within said housing and having a first circular end plate from which a first wrap extends, an orbiting scroll member having a second end plate from which a second wrap extends and said first and second wraps interfitting at an angular offset to make a plurality of line contacts to define at least one pair of sealed off fluid pockets, and a driving means including a drive shaft which penetrates said front end plate member and is rotatably supported thereby for effecting the orbital motion of said orbiting scroll member by the rotation of said drive shaft while the rotation of said orbiting scroll member is prevented, whereby said fluid pockets change volume by the orbital motion of said orbiting scroll member, the improvement comprising said housing comprises a cup shaped casing with an inner cylindrical surface and said front end plate member having an annular the improvement comprising said housing comprises a cup shaped casing with an inner cylindrical surface and said front end plate member having an annular projection extending from said end surface thereof and facing an opening in said cup shaped casing, said cup shaped casing being received about said first and second end plates and said annular projection with its inner surface in fitting engagement about the peripheral surface of said first circular end plate and the peripheral surface of said annular projection, and said fixed scroll member fixedly held within the interior of said cup shaped casing by a plurality of screw members screwed from the outside of said cup shaped casing into a fixed member formed integral with said end plate and which is disposed between the end surface of said first end plate which is opposite to the side thereof from which said first wrap extends and the inner surface of said cup shaped casing.

4,411,605

INVOLUTE AND LAMINATED TIP SEAL OF LABYRINTH TYPE FOR USE IN A SCROLL MACHINE

John R. Sauls, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 29, 1981, Ser. No. 316,261
Int. Cl.³ F01C *1/02, 19/08*; F16J *15/16*
U.S. Cl. 418—55 **27 Claims**



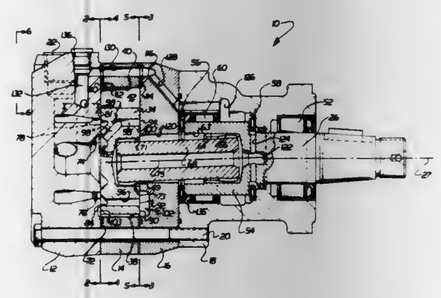
1. For use in a positive fluid displacement apparatus of the scroll type, a tip seal comprising a plurality of material strips, generally coaligned in side-by-side parallal relationship along a common spiral path about an axis, one or more of said strips including a plurality of notches along at least one edge thereof, which in conjunction with one or more other of the strips and an axially adjacent flat surface against which said edge may abut, define a plurality of labyrinth pockets longitudinally spaced apart along the strips.

4,411,606

GEROTOR GEAR SET DEVICE WITH INTEGRAL ROTOR AND COMMUTATOR

Laurence L. Miller, West Lafayette, Ind., assignor to TRW, Inc., Cleveland, Ohio

Filed Dec. 15, 1980, Ser. No. 216,368
Int. Cl.³ F01C *1/02*
U.S. Cl. 418—61 B **14 Claims**



1. A hydraulic device comprising:

(a) a gerotor gear set comprising

(i) a stator with a number of internal teeth equal to N,

(ii) a rotor with a number of external teeth equal to N−1,

(iii) the teeth of the rotor and stator intermeshing and forming a number of expansible and contractible fluid pockets equal to N,

(iv) the rotor having a central axis which is eccentric to the central axis of the stator,

(v) the rotor rotating and orbiting relative to the stator to expand and contract the fluid pockets;

(b) first and second housing portions located adjacent opposite axial sides of said gerotor gear set,

(c) one axial end face of said rotor and the adjacent face of said first housing portion cooperating to form separate pressure areas which are continuously communicated with high and low pressure, respectively, as the rotor rotates and orbits,

characterized in that

(i) the other axial end face of said rotor has a circular array of openings equal to twice the number of teeth on the rotor,

(ii) passages formed in the rotor and extending through the rotor to continuously communicate adjacent openings with pressure areas at different pressures and alternate openings with pressure areas at the same pressure,

(iii) the face of the second housing portion adjacent the other axial end face of the rotor has a number of recesses therein equal to N,

(iv) each of said recesses facing and opening into a respective fluid pocket and extending radially therefrom, said recesses cooperating with portions of the adjacent end face of said rotor to form fluid passages for directing fluid to and from the pockets and

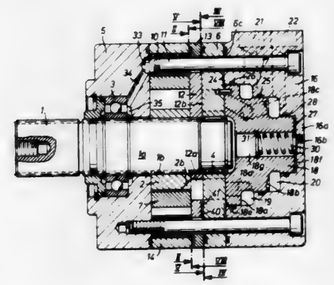
(v) said recesses also having portions which cooperate with said circular array of openings in said other axial end face of the rotor to valve flow as the rotor rotates and orbits, the valved flow being directed to and from the pockets by said fluid passages.

4,411,607

INTERNAL GEAR MACHINE WITH ROTARY PRESSURE BALANCED VALVE DISC

Peter Wüsthof, and Johann Schneider, both of Lohr, Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 84,114, Oct. 12, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,385
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1980, 3015551
Int. Cl.³ F04C *2/113, 15/00*
U.S. Cl. 418—61 B **5 Claims**



1. An internal gear hydraulic machine, comprising a housing defining an intake port and a discharge port; a rotary shaft in said housing; a fluid displacement unit arranged in said housing and including an outer gear supported on said shaft for rotation about a central axis thereof; an inner gear in sliding engagement with said outer gear and supported for performing a wobbling movement in said housing about said central axis; said inner and outer gear defining a plurality of variable chambers therebetween; a flow control means including a rotary disc arranged in said housing and mounted on said shaft for rotation at the same speed as said outer gear and one side of said disc forming a lateral boundary wall for said chambers, said rotary disc having a plurality of first openings communicating with the interstices between the teeth of said outer gear

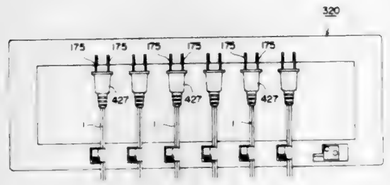
and having control edges at the other side thereof remote from said outer gear; a stationary control plate adjoining said other side of the disc and being provided with a plurality of second openings cooperating with said control edges of the first openings, a part of said second openings communicating with said intake port and another part of said second openings communicating with said discharge port; and a plurality of arcuate recessed sections formed in the interface between said rotary disc and said control plate, said arcuate recessed sections communicating with respective first openings to compensate for tilting moments acting on said rotary disc from said variable chambers.

4,411,608

AUTOMATIC APPARATUS FOR TRANSFERRING ELECTRICAL CORDS WITH TERMINAL BLADES AND FOR THE TESTING THEREOF

Zensuke Yanagisawa, Tokyo, Japan, assignor to Kawasaki Electric Wire Co., Ltd., Kanagawa, Japan

Filed Jun. 16, 1981, Ser. No. 274,223
Int. Cl.³ H01R *43/00*
U.S. Cl. 425—123 **12 Claims**



1. An apparatus for performing an operation on a plurality of electric cords with a pair of terminal blades attached to each cord, said apparatus comprising:

(a) a plurality of carriers for receiving a plurality of electric cords with a pair of terminal blades attached to each cord, each of said carriers comprising a frame member having first and second sides opposed to each other, and said first side having a plurality of pairs of recesses therein, each of said pair of recesses for receiving a pair of said terminal blades and first securing means for securing said terminal blades in said recesses, and said second side having a plurality of cord inserting grooves, each of said grooves for receiving one of said cords therein and cord chuck means for retaining said cords in said grooves, wherein said cord chuck means are automatically operated;

(b) a first side conveyor means having a first position thereon for loading said carriers with said plurality of electric cords with said terminal blades, a second position for placing said plurality of electric cords with said terminal blades into an injection molding device for forming a casing around the end portion of each said cord and said terminal blades, a third position for removing said cord and terminal blades in said casing from said carrier and for placing said cord and terminal blades in said casing into an electric inspection apparatus, and a fourth position for receiving said empty carrier;

(c) a second side conveyor means having a first position at one end thereof coinciding with the fourth position of said first side conveyor means and a second position at the other end thereof, said second side conveyor means transferring said empty carrier from said first position thereof to the second position thereof;

(d) a third side conveyor means having a first position at one end thereof coinciding with the second position of said second side conveyor means and a second position at the other end thereof, said third side conveyor means transferring said empty carrier from the first position thereof to the second position thereof; and

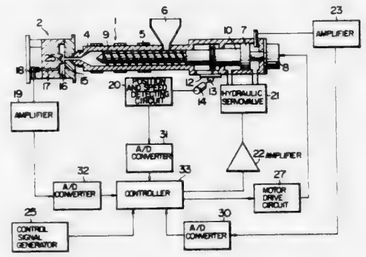
(e) a fourth side conveyor means having a first position at one end thereof coinciding with the second position of said third side conveyor means and a second position at the other end thereof coinciding with the first position of said first side conveyor means, said fourth side conveyor means transferring said empty carrier from said first position thereof to the second position thereof for reloading said carrier with an additional plurality of electric cords with a pair of terminal blades, wherein said first, second, third and fourth side conveyor means are driven independently and are positioned with respect to one another to form a rectangle.

4,411,609

APPARATUS FOR MOLDING PLASTIC

Masaki Yoshii; Hidemi Sato; Aizo Kaneda, all of Yokohama; Masayoshi Aoki, Kamakura; Hitoshi Yokono, Yokohama, and Mitsunori Oka, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 17, 1981, Ser. No. 255,102
Claims priority, application Japan, Apr. 18, 1980, 55-50406
Int. Cl.³ B29C *1/06*
U.S. Cl. 425—149 **10 Claims**



3. Apparatus for molding a plastic, comprising:

an injection mold having a mold cavity;

a pressure sensor for sensing the pressure of plastic injected into the mold cavity to generate a cavity internal pressure signal;

inflection point detecting means for differentiating the cavity internal pressure signal from said pressure sensor by means of a differentiation circuit, to detect an inflection point corresponding to a gate sealing point of the plastic in the mold cavity; and

means for removing a holding pressure which is exerted on plastic in the mold cavity, said holding pressure being removed when the inflection point corresponding to the gate sealing point is detected by said inflection point detecting means.

4,411,610

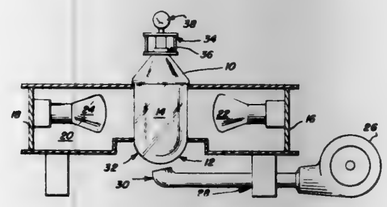
SHRINKAGE REDUCTION OF BLOW MOLDED ORIENTED PET BOTTLE

Wassily Poppe, Lombard; Charles F. Craddock, Glendale Heights, both of Ill.; Robert W. Gutekunst, Dunwoody, Ga.; Robert G. Ladd, Lisle, and Sue A. Mager, Warrenville, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 15,308, Feb. 26, 1979, Pat. No. 4,260,567.
This application Sep. 18, 1980, Ser. No. 188,319
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—174.4 **3 Claims**

1. Apparatus for heat setting selected portions of a biaxially oriented thermoplastic resin container comprising a container supply line, a container takeoff line, a plurality of infrared lamps arranged in a arcuate manner, shields above and below said lamps to concentrate the output of said lamps to a selected area, a hinged arm, the outer end of which is capable of rotation through the arc defined by said lamps and through a

continuation of said arc to said container takeoff means, a container pickup head on the outer end of said arm adapted to rotate said container as it passes through said arc, a source of gas pressure, a conduit extending from said source of gas pressure through said arm adapted to pressurize said container as it passes through said arc, cooling gas supply conduits adapted to supply gas to the portions of the container not exposed to said infrared radiation.



4,411,611

BRIQUETTING MACHINE

Kimiaki Ohtawa, and Yasuo Fukada, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo kabushiki Kaisha, Tokyo, Japan

Filed Apr. 9, 1981, Ser. No. 252,604
Claims priority, application Japan, May 16, 1980, 55-64091
Int. Cl.³ B29C *25/00*
U.S. Cl. 425—237 **3 Claims**

1. An apparatus for forming briquettes from a pulverized and/or granular material, said apparatus comprising:

feeder means for forcibly feeding pulverized and/or granular material;

briquetting means for receiving said material from said feeder means, for compressing and shaping said material into a continuous briquette strip, and for discharging said strip in a direction, said briquetting means comprising a first pair of rolls positioned to receive therebetween said material, said first pair of rolls being rotatable to compress and shape said material and to discharge said strip in said direction;

notching means, positioned downstream of said first pair of rolls with respect to said direction, for receiving said strip from said first pair of rolls, for forming in said strip reduced thickness notches extending parallel to said direction and transverse to said direction, thus defining briquette portions spaced longitudinally and transversely by integral webs at said notches, for further compressing and shaping said briquette portions, and for discharging the thus formed notched strip in said direction, said notching means comprising a second pair of rolls rotatable in synchronization with said first pair of rolls, said second pair of rolls being positioned to receive therebetween said strip, each said roll of said second pair having a cylindrical periphery having extending outwardly therefrom circumferential and axial blades cooperable to form said notches;

guide means, positioned downstream of said second pair of rolls with respect to said direction, for guiding said notched strip discharged from said second pair of rolls; and

divider means, positioned downstream of said guide means with respect to said direction, for separating said briquette portions by fracturing said webs along said notches, said dividing means comprising a divider roll having extending therefrom a plurality of divider blades, said divider roll being rotatable in synchronization with said first and second pairs of rolls and being positioned such that said divider blades impact with said notched strip upon discharge thereof from said guide means.

4,411,612

APPARATUS FOR RECOVERING PRECIOUS METALS FROM THEIR ORES

Larry D. Holland, Dallas, Tex., assignor to NEHA International, Dallas, Tex.

Division of Ser. No. 254,888, Apr. 16, 1981, Pat. No. 4,374,097.
This application Dec. 14, 1981, Ser. No. 330,133
Int. Cl.³ A01J *21/00*; B29F *5/00*; A23G *1/20*; B29D *7/00*
U.S. Cl. 425—365 **4 Claims**

1. Apparatus for processing a paste of ore and binder material comprising:

a conveyor assembly;

an extruder drum supported for rotation above said conveyor assembly at an extruding station, said extruder drum having a chamber for receiving the paste material and having a perforated cylindrical sidewall enclosing said chamber;

a free wheeling cylindrical roller received within said drum for forcing the paste material through the drum sidewall perforations and depositing the paste in the form of pellets onto the conveyor assembly in response to rotation of said drum;

drive means coupled to said drum for rotating said drum;

a spray bar disposed adjacent said conveyor assembly at a spraying station for spraying a lixiviant solution onto pellets transported by said conveyor assembly from the extruding station to the spraying station; and

a dryer assembly disposed adjacent said conveyor assembly at a drying station for drying the lixiviant coated pellets as they are transported by the conveyor assembly from the spraying station.

4,411,613

APPARATUS FOR THE VACUUM CALIBRATION OF PROFILED ARTICLES MADE OF A THERMOPLASTIC SYNTHETIC RESIN

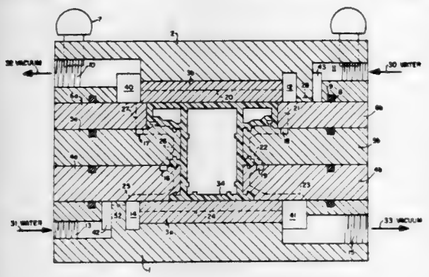
Peter Gauchel, Eltorf-Alzenbach, and Josef Kurth, Troisdorf, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Division of Ser. No. 16,171, Feb. 28, 1979. This application Jun. 11, 1981, Ser. No. 272,575

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809386

Int. Cl.³ B29C *17/00*; B29D *23/00*

U.S. Cl. 425—388 **6 Claims**



1. An apparatus for effecting liquid cooling and calibration of a longitudinal section of a profiled article of thermoplastic synthetic resin which comprises a calibrating tool for applying a vacuum externally to the entire periphery of a longiudinal section of the profiled article, said tool being formed of a plurality of plate-like members that extend parallel to each other and that have internal calibration walls defining an aperture for calibrating the profiled article in contact with said calibrating walls; said members having vacuum slots within said walls that extend at right angles to the longitudinal direction of the tool and that adjoin the entire periphery of the profile surface of a longitudinal section of the profiled article; means for applying a vacuum to said slots; and means for feeding liquid coolant through said calibration members including at least one duct in communication with said vacuum slots whereby said liquid coolant is caused to flow transversely along the profile surface to which vacuum is applied and is discharged from the calibrating tool via said means for applying said vacuum.

4,411,614

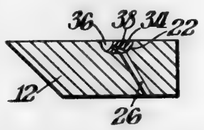
REMOVABLE CONTOURED INSERT FOR AN EXTRUSION DIE

William D. Feathers, Towanda, Pa., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Feb. 18, 1982, Ser. No. 349,988

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—466 **6 Claims**



1. In an extrusion die of the type having a flow distribution channel with a boundary defining a forward edge of an essential land, the channel exhibiting a first predetermined shape and having an inlet passage communicating therewith, the improvement which comprises:

an insert shaped for insertion into a close-fitting relationship with the flow distribution channel, the insert being sized so as to partially fill the flow distribution channel when received therein to define a second flow distribution channel having a second predetermined shape with the boundary of the second flow distribution channel maintaining the same forward edge on the die, the insert having an opening communicating with both the second flow distribution channel and with the inlet passage.

2. In an extrusion die of the type having a receptacle of standardized geometry formed therein, one boundary of the receptacle defining a forward edge of an essential land, an inlet passage for introducing a coating material, the improvement which comprises:

an insert shaped for insertion into a close-fitting relationship with the receptacle, the insert partially filling the receptacle and cooperating with the boundary defining the forward edge of the essential land to define a distribution channel having a predetermined shape, the insert having an opening communicating with both the distribution channel and with the inlet passage.

4,411,615

INJECTION MOULDING MACHINE

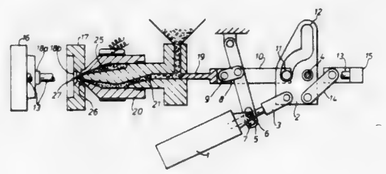
Richard A. Butler, Stourbridge, England, assignor to Mining & Chemical Products Limited, Middlesex, England

Filed Apr. 9, 1981, Ser. No. 252,439

Claims priority, application United Kingdom, Apr. 9, 1980, 8011789

Int. Cl.³ B29F *1/06*

U.S. Cl. 425—591 **9 Claims**



1. A machine for automatically producing a succession of small components by injection moulding, comprising: a mould operable between open and closed positions by a first transmission element, and an injection unit operable by a second transmission element, said transmission elements being individually reciprocable along the longitudinal axis of the machine by a common actuating device and interconnected by means operable in response to operation of said actuating device to prevent operation of said injection unit until said mould has been closed, said interconnecting means comprising a plate connected by a toggle link to said first transmission element and formed with a cam slot which receives a cam follower on said second transmission element and is so shaped as to first permit said plate to be pivoted about its axis by said actuator to a sufficient extent to close said mould through said first transmission element and then to restrain further pivotal movement of said plate while said cam follower moves, relatively thereto, along said slot in a direction to operate said injection unit.

4. A machine for automatically producing a succession of small components by injection moulding, comprising: a mould operable between open and closed positions by a first transmission element, and an injection unit operable by a second transmission element, said transmission elements being individually reciprocable along the longitudinal axis of the machine by a common actuating device which operates in a straight line making an acute angle with the longitudinal axis of the machine and has separate connections to said transmission elements, both said connections including a member pivotable about an axis extending at right angles to the longitudinal axis of the machine and a part of one of said connections also forming a part of means which interconnect said transmission elements and is operable in response to operation of said actuating device to prevent operation of said injection unit until said mould has been closed, said interconnecting means comprising a plate connected by a toggle link to said first transmission element and formed with a cam slot which receives a cam follower on said second transmission element and is so shaped as to first permit said plate to be pivoted about its axis by said actuator to a sufficient extent to close said mould through said first transmission element and then to restrain further pivotal movement of said plate while said cam follower moves, relatively thereto, along said slot in a direction to operate said injection unit.

4,411,616

APPARATUS FOR BURNING OF FUEL GASES AND PROCESS FOR AVOIDANCE OF COMBUSTION CHAMBER OSCILLATIONS

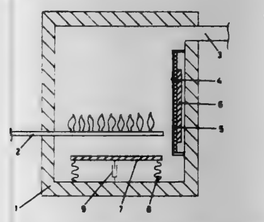
Ernst-Georg Neumann, Wuppertal, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,797

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1978, 2851248

Int. Cl.³ F23D *15/04*

U.S. Cl. 431—114 **8 Claims**



1. In a device for the combustion of fuel gases and liquid, powdered or particulate fuels, comprising a combustion chamber, means for delivering a fuel-air mixture to said combustion chamber for combustion of said fuel therein, and an outlet for the burned gases, the improvement for avoiding sonic and and subsonic oscillation of gases in the combustion chamber which consists in that said combustion chamber comprises a casing having a rigid walls, and that an oscillation plate spaced inwardly of a wall of said casing with its peripheral edge hermetically connected to the casing wall is oscillatable by oscillations occurring in said combustion chamber, and means associated with said plate is provided for damping oscillation of said oscillatable plate.

4,411,617

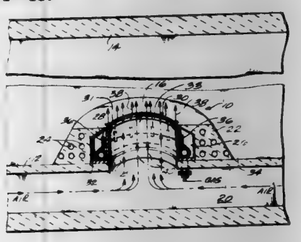
BURNERS FOR SOAKING PIT FURNACES

John Maksim, Jr., 8165 Cornwall Ave., Etiwanda, Calif. 91739

Continuation of Ser. No. 146,469, May 5, 1980, abandoned, which is a continuation of Ser. No. 850,235, Nov. 10, 1977, abandoned. This application Aug. 17, 1981, Ser. No. 293,387

Int. Cl.³ F23C *7/00*

U.S. Cl. 431—187 **21 Claims**



1. A soaking pit comprising:

a furnace having a floor and an enclosed area above a floor for containing metal ingots to be heated;

an air supply pipe having an upper end spaced above the furnace floor;

an exterior housing surrounding the side wall of the air supply pipe and spaced laterally from the air supply pipe to form an annular hollow interior region between the air supply pipe and the housing, the housing having an upper exterior wall spaced above the furnace floor and defining the top of the burner, said upper exterior wall of the housing being spaced closely apart from the upper end of the air supply pipe to form a narrow annular burner opening atop the burner above said hollow interior region, the burner opening being spaced above the furnace floor at substantially the same elevation as the upper end of the air supply pipe and the upper exterior wall of the housing;

means for supplying air in the substantial absence of fuel to the air supply pipe for causing such air to flow through the pipe and upwardly past the burner opening; and

gas supply means for supplying gaseous fuel to said hollow interior region for causing such fuel to flow through said burner opening and into the furnace above the upper end of the air supply pipe and above the upper exterior wall of the housing so that the fuel mixes with the air flowing past said burner opening to form a combustible fuel/air mixture which, when ignited, produces a flame adjacent the upper exterior wall of the housing and the upper end of the air supply pipe.

4,411,618

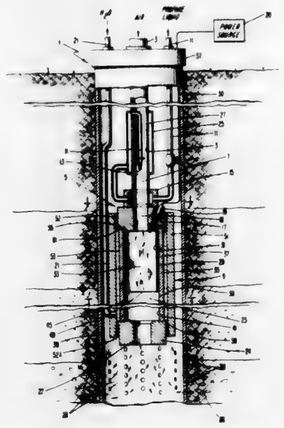
DOWNHOLE STEAM GENERATOR WITH IMPROVED PREHEATING/COOLING FEATURES

A. Burl Donaldson; Donald E. Hoke, both of Albuquerque, and Anthony J. Mulac, Tijeras, all of N. Mex., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Oct. 10, 1980, Ser. No. 195,966

Int. Cl.³ F23L *7/00*; E21B *43/00*

U.S. Cl. 431—190 **3 Claims**



3. An apparatus for downhole steam generation comprising:

a combustor assembly having a fuel/oxidant mixing section and a combustor unit;

an oxidant supply means connected to said fuel/oxidant mixing section;

a fuel supply means connected to said fuel/oxidant mixing section;

an ignitor means connected with said combustor unit;

a water supply means connected to said combustor unit for providing water to be converted to steam by the heat of combustion of the fuel/oxidant;

said combustor unit including an inner combustor sleeve having an inner wall defining a combustion zone;

an intermediate sleeve spaced concentrically with respect to said inner combustor sleeve, the space between said intermediate sleeve and said inner combustor sleeve connected to said water supply means and defining an annular water flow channel for said inner combustor means, said intermediate sleeve having a portion extending below said inner sleeve, said extending portion having an inner wall defining a steam generating zone; and

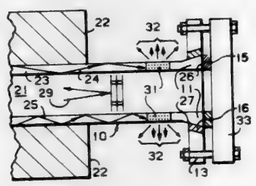
a water ejector means for controlling the flow of water through the annular water flow channel and comprising an annular spray injector member positioned between the lower end of the inner combustor sleeve and the intermediate sleeve said annular spray injector member comprising a plurality of spaced apertures around the outer periphery of said annular spray injector member adjacent the intermediate sleeve for ejecting said water downwardly along the inner wall of said intermediate sleeve, said annular spray injector member being capable of restricting the flow of water therethrough to ensure the continuous and even distribution of water throughout said water flow channel.

4,411,619

FLANGE AND COUPLING COOLING MEANS AND METHOD

Robert D. Darnell, Phoenix; Carl A. Goetz, Scottsdale, and William M. Ingle, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 2, 1981, Ser. No. 250,494
Int. Cl.³ F27D *7/00, 5/00, 1/12;* F27B *14/10*
U.S. Cl. 432—1 **15 Claims**



15. A method for protecting a closure means for a thermal radiation carrying member composed of a predetermined material, from radiation being carried by said member within said material from a portion of said member exposed to a thermal radiation source, comprising:

installing serially in said material of said member a thermal radiation scattering zone between said source and said closure means so as to reduce the thermal radiation reaching said closure means.

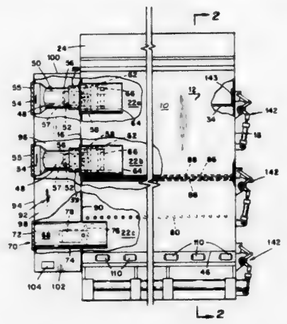
4,411,620

GRAIN DRIER AND METHOD OF DRYING GRAIN

Robert D. Applegate, Attica, Ind., assignor to Driall, Inc., Attica, Ind.

Filed Sep. 29, 1981, Ser. No. 306,666
Int. Cl.³ F24H *1/00;* F27B *9/04;* F26B *17/12*
U.S. Cl. 432—29 **4 Claims**

1. Apparatus for heating air for drying grain which air includes air which has been passed through grain comprising, a generally cylindrical duct, a propeller type fan having a larger diameter than the diameter of said duct, mounted at one end of said duct for moving ambient air through said duct from its other end, a cylindrical housing for said fan, said housing having a diameter larger than said inlet duct to accommodate said fan, said housing and said inlet duct being aligned in end-to-end relation, an open flame type burner in said housing, said burner being centrally located in said housing and positioned downstream of said fan, said burner being proportioned to provide a peripheral space between said burner and said housing, a plurality of stationary vanes in said housing intermediate said propeller type fan and said burner, said vanes being positioned to cause air currents generated by said fan to move axially through said housing, and means for conducting air which has passed through grain into the space between said inlet duct and said housing.

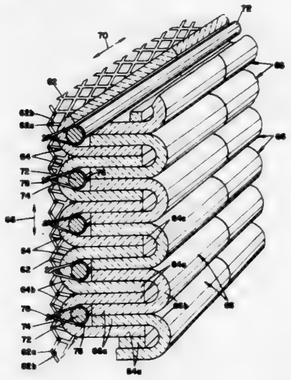


4,411,621

FURNACE WALL CONSTRUCTION

Thomas M. Miller, 26027 Byron Dr., North Olmsted, Ohio 44070

Continuation-in-part of Ser. No. 213,557, Dec. 5, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 320,861
Int. Cl.³ F27D *1/00;* F23M *5/00*
U.S. Cl. 432—247 **24 Claims**



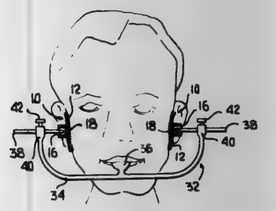
1. A wall construction for a heating chamber comprising, open metal mesh means providing an exposed outer wall surface for said heating chamber and having outer and inner sides said metal mesh means having pairs of parallel spaced apart edges, mat means of fibrous insulating material covering said inner side of said metal mesh means between said pairs of edges, said mat means including U-shaped sections having parallel legs and an integral bridging portion therebetween, said bridging portions facing said inner side of said metal mesh means and said legs extending inwardly from said inner side of said metal mesh means and between one of said pairs of edges thereof in parallel relationship with respect to one another, support rod means extending between said one pair of edges of said metal mesh means and between the legs of said U-shaped sections adjacent said bridging portion therebetween, and a plurality of fastener elements spaced apart along said support rod means and connecting said support rod means to said metal mesh means, each said fastener element having an inner end extending around said support rod means and an outer end interengaged with said metal mesh means.

4,411,622

JAW HINGE-AXIS LOCATOR

Gorm P. Hansen, 1501 SE. 23rd Ave., Pompano Beach, Fla. 33062

Filed Oct. 9, 1981, Ser. No. 310,413
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—73 **9 Claims**



1. A device for securing a dental face-bow of the type having hinge pointers to the face of a dental patient with the hinge pointers of the face-bow in axial alignment with the patient's jaw hinge-axis, said device comprising in combination:

a base member adapted to be adhesively secured to a patient's face over a jaw hinge condyle;

means disposed on said base member for receivingly locating a hinge pointer of a face-bow therewithin in axial alignment with a patient's jaw hinge axis; and

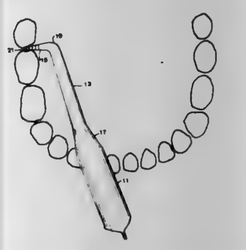
said base member being a generally pliable and planar card having an adhesive disposed on one surface thereof.

4,411,623

DEVICE FOR APPLYING TOOTHPASTE

Per A. T. Axelsson, Drottninggatan 27, S-652 25 Karlstad, Sweden

Filed Oct. 21, 1981, Ser. No. 313,489
Claims priority, application Sweden, Oct. 31, 1980, 8007683
Int. Cl.³ A61G *17/02*
U.S. Cl. 433—80 **4 Claims**



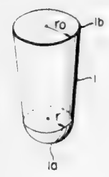
1. A non-refillable applicator device for the application of toothpaste directly upon teeth for cleaning, polishing, or similar surface treatment thereof, comprising: an integrally formed tubular body of plastics material having a handle portion shaped and dimensioned so as to be capable of being grasped by two or more fingers of the hand and also defining interior space means and constituting a container of paste, said handle portion having a non-circular cross-section over the greater part of its length and the wall of said handle portion being thinner along the broad sides than along the narrower sides thereof; a conduit portion extending from said handle portion substantially in the direction of the length of the handle portion and being of tapering cross-section considerably less than the cross-section of said handle portion and of a length approximately corresponding to the distance between the incisors and the back molars of a human; a pointed nozzle portion forming outlet means for paste; a bent portion interconnecting said pointed nozzle portion and said conduit portion so that said nozzle portion is directed at an angle to the direction of extension of said conduit portion; the walls defining the conduit and nozzle portions of the tubular plastics body being comparatively thick in order to provide stiffness thereof, and the wall of the handle portion being comparatively thin in order to enable such to be compressed to permit paste to be expelled; and said nozzle portion having a triangular cross-section gradually decreasing in cross-section from said bent portion to an end thereof for outlet of paste.

4,411,624

DENTAL IMPLANT

Makoto Ogino, Yokohama; Takamitsu Fujiu, Tokyo; Michio Kariya, Yokohama, and Takeo Ichimura, Tokyo, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 7, 1981, Ser. No. 309,513
Claims priority, application Japan, Oct. 29, 1980, 55-151964
Int. Cl.³ A61C *8/00*
U.S. Cl. 433—173 **1 Claim**



1. A dental implant comprising a dental root part to be embedded in a jaw bone alone or in combination with a dental crown or a dental crown supporting part, which dental implant is characterized in that at least a substantial portion of the dental root surface to be placed in contact with the jaw bone is formed of a biologically active glass or glass-ceramic material and the contour of said dental root part is rotationally symmetrical with its diameter being monotonously decreased from one end forming the collum dentis portion of the dental root to the other end forming the root end portion which is in the form of a semi-sphere, approximately, and said dental root part is so designed as to satisfy the condition:

$$0.42 < r/r_0 < 1.0;$$

wherein, r is the radius of curvature of said root end portion; and

r_0 is the radius of said collum dentis portion of said dental root part.

4,411,625

BROAD SPECTRUM LIGHT CURABLE DENTAL COMPOSITIONS

Franics F. Koblitz, York, and Jane L. Reichart, Hanover, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Continuation of Ser. No. 182,624, Aug. 29, 1980, abandoned. This application Jun. 10, 1982, Ser. No. 386,897
Int. Cl.³ A61K *6/08*
U.S. Cl. 433—217 **3 Claims**

1. A process for repairing teeth comprising applying to a prepared tooth a dental restorative composition curable by irradiation by visible and/or ultraviolet light comprising

a major proportion of an inorganic filler, and

a minor proportion of a resin component comprising:

a binder resin, comprising bis-GMA reacted wtih aliphatic diisocyanate,

a polymerizable acrylic diluent monomer, and

a photosensitizing system comprising from about 0.05% to

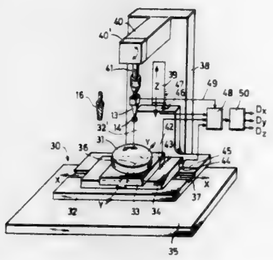
about 0.30% by weight of the restorative of an aliphatic alpha diketone,
from about 0.2% to about 1.0% by weight of the restorative of an amine reducing agent, and
from about 0.1% to about 1.0% by weight of the restorative of a benzoin alkyl ether,
said photosensitizing system being present in an amount sufficient to cause substantial polymerization of said composition upon irradiation with visible and/or ultraviolet light,
said composition retaining good color stability, and exposing said composition to visible and/or ultraviolet light for a time sufficient to cause substantial polymerization of said composition.

4,411,626

PROCESS AND APPARATUS FOR PREPARING A CROWN PORTION TO BE FIXED ON A TOOTH

Günter Becker, Aachen, and Horst Weidea, Stolberg, both of Fed. Rep. of Germany, assignors to Becker Dental-Labor GmbH, Aachen, Fed. Rep. of Germany

Filed Jan. 9, 1981, Ser. No. 223,685
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1980, 3003435
Int. Cl.³ A61C *5/10*
U.S. Cl. 433—223 **10 Claims**



1. In a process for preparing a dental crown portion to be secured to a tooth stump in which a model is made of the tooth stump, molding material is applied to the model and has its outer contour formed by removal of material, said molding material being thereafter removed from the model and used as a casting model for the dental crown portion, the steps of:
scanning with a scanning head for conversion into geometrical data at least part of the contour of the tooth stump;
supplying the geometrical data to a computer memory coupled to the scanning head;
calculating, from the geometrical data, the contour for the casting model, taking into account an allowance for material on the outer surface of the tooth stump and storing said data in the computer memory; and,
guiding, according to the calculated contour for the casting model, a contour tool coupled to the computer memory along the molding material that has been applied to the model of the tooth stump whereby a casting model for a dental crown portion is formed.

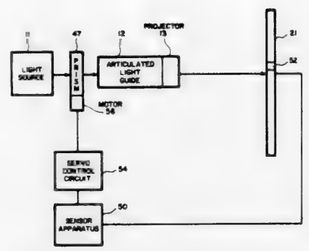
4,411,627

ARTICULATED LIGHT GUIDE

Denis R. Breglia, Altamonte Springs; Frank J. Oharek, Maitland, and Paul D. Grimmer, Winter Park, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 28, 1982, Ser. No. 343,682
Int. Cl.³ G09B *9/08*
U.S. Cl. 434—44 **6 Claims**

1. An improved articulated light guide system for transmitting a plurality of computer generated scan lines onto a screen from a helmet mounted projector in a predetermined orientation, comprising:
means for communicating light from said helmet mounted projector to said screen;



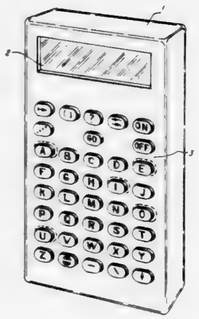
means for sensing the orientation of said light at said screen and outputting a corresponding signal;
means for adjusting the orientation of said light in accordance with a signal received from said sensing means.

4,411,628

ELECTRONIC LEARNING AID WITH PICTURE BOOK

Thomas C. Laughon, and Michael I. Philpott, both of Lubbock, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 44,437, Jun. 1, 1979, Pat. No. 4,308,017.
This application Sep. 11, 1981, Ser. No. 301,250
The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.
Int. Cl.³ G09B *7/02*
U.S. Cl. 434—169 **8 Claims**



1. A learning aid system for teaching and testing associations between pictorial representations and correct responses to said pictorial representations, said system comprising:
a plurality of pictorial representations to which operator responses are desired, each of said pictorial representations having an intended appropriate operator response different from the others;
means for identifying one of said plurality of pictorial representations to which an operator response is desired;
memory means independent of said plurality of pictorial representations and storing respective correct responses associated with each of said pictorial representations;
operator input means for receiving an input from an operator of the learning aid system as a proposed response to the selected one of said plurality of pictorial representations;
comparator means operably associated with said operator input means and said memory means for comparing the input received by said operator input means from the operator with the correct response stored in said memory means for said selected one of said plurality of pictorial representations and for providing an output indicative of the comparison therebetween; and
presentation means responsive to the output of said comparator means for producing a presentation for comprehension by the operator indicative of the appropriateness of the input received by said operator input means with respect to said selected one of said plurality of pictorial representations.

4,411,629

PALPATION AND AUSCULTATION TEACHING METHOD AND APPARATUS

Dora L. Voights, 737 S. 6th Ave., La Grange, Ill. 60525

Filed Mar. 17, 1982, Ser. No. 359,146
Int. Cl.³ G09B *23/34*
U.S. Cl. 434—266 **1 Claim**



1. Apparatus for teaching palpation and auscultation of a fetus in a pregnant female utilizing a female model, comprising:
a fetal doll;
means for simulating fetal heart tones attached to said fetal doll;
a cushion having an opening in which said fetal doll is inserted;
filling material packed into said cushion, surrounding said fetal doll;
an outer cover for said cushion;
a strap attached to said cover for strapping said cover containing said cushion to the female model; and
said outer cover having an opening in which said cushion is removably inserted, said cushion being adjustably movable within said cover for varying the position of said fetal doll relative to the female model to simulate different real-life fetal positions.

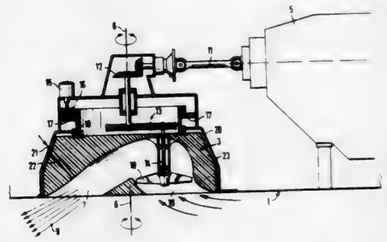
4,411,630

WATER-JET DRIVE MECHANISM FOR THE DRIVING OF WATERCRAFT

Franz Krautkremer, and Siegfried Lais, both of Spay, Fed. Rep. of Germany, assignors to Schottel-Werft, Josef Becker GmbH & Co KG., Spay, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,125
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009671
Int. Cl.³ B63H *11/02*
U.S. Cl. 440—42 **5 Claims**

1. A water-jet drive mechanism for propelling a watercraft having a hull on a body of water, comprising a suction passage communicating with said body of water; a downwardly inclined ejector passage communicating with said body of water; pump means communicating with said suction passage and said ejector passage for drawing water in through said suction passage and ejecting it in a downwardly inclined direction through said downwardly inclined ejector passage as a water jet; means for ensuring said water jet continues in said downwardly inclined direction after leaving said ejector passage, including means for supplying a gas to the water flowing through said ejector passage; housing means defining a recess in said hull; an elbow supported in said recess, said suction passage and said ejector passage being provided in said elbow; said means for supplying said gas including a gas inlet through said housing means and a gas passageway in said elbow which communicates with said gas inlet and with said ejector passage and conveys a gas to said ejector passage from said gas inlet in



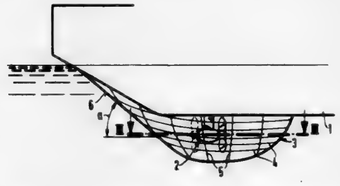
said housing means; said elbow being pivotally supported within said recess for movement about a generally vertical axis; said housing means being separated from said pivotable elbow by an annular space, said gas inlet through said housing means opening into said annular space, said gas passageway through said elbow providing communication from said annular space to said ejector passage; and said housing means and said elbow having cooperating sealing means.

4,411,631

PROPELLER GUARD

Eero Mäkinen, Espoo, and Stefan Gordin, Helsinki, both of Finland, assignors to Oy Wartsila Ab, Helsinki, Finland

Continuation of Ser. No. 79,715, Sep. 28, 1979, abandoned. This application Sep. 8, 1981, Ser. No. 300,201
Claims priority, application Finland, Sep. 29, 1978, 782966
Int. Cl.³ B63H *5/16*
U.S. Cl. 440—72 **14 Claims**



1. An ice guard surrounding the propeller of a vessel, in particular a ferry intended for traffic in ice-filled waters, having a propeller mechanism with at least one propeller unit positioned in the front part of said vessel for propulsion, comprising:
a rigid grid unit with a general outer form free of discontinuous portions and arranged completely to enclose said at least one propeller unit,
said grid unit being attached to and supported by a, at least in the transverse direction of the vessel, substantially horizontal bottom surface of the vessel,
the width of said grid unit at its upper edge at said bottom surface of the vessel, being at least 80 percent of the greatest width of the grid unit and the length of said grid unit being a small part of the length of said vessel,
said grid unit having, at the end thereof closer to said front part of said vessel, an oblique front portion, which at least substantially all over, in a central longitudinal section of the grid, is inclined relative to a horizontal plane at an angle of at the most 50°, and
said grid unit having a plurality of substantially horizontal

constructional grid-forming elements, said elements forming an angle with said oblique front portion, and having, close to said front portion an obliquely downwardly directed position corresponding to the gliding direction of ice blocks passing said ice guard when said vessel is moving through ice-filled waters.

4,411,632

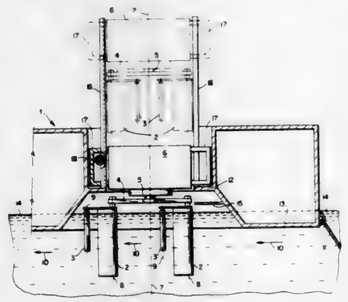
WATERBOUND FACILITY POWERED BY CYCLOIDAL FLUID FLOW ENGINES

Hans F. Wuenscher, deceased, late of Huntsville, Ala., by Hertha A. Wuenscher, administratrix, 2004 Dogwood La., Huntsville, Ala. 35810

Continuation-in-part of Ser. No. 919,811, Jun. 28, 1978, abandoned, which is a continuation of Ser. No. 777,532, Mar. 14, 1977, abandoned. This application May 26, 1981, Ser. No. 266,848

Int. Cl.³ B63H *5/00*

U.S. Cl. 440—93 **5 Claims**



1. A waterbound facility comprising:
a floating facility having its production machinery powered by cycloidal fluid flow engines with impeller blade assemblies of aerodynamic wing and tail configuration, wherein each said cycloidal fluid flow engine comprises:
a vertical mainshaft having disclike radial structure extending from its lower end;
a number of impeller blade assemblies,
each assembly being mounted at equal peripheral spacing to said radial structure,
each blade assembly rotatable freely about its axis, and
each assembly being composed of a wing and a tail, and
each assembly having the axis of rotation parallel to said mainshaft and extending downward from said radial structure, and
each assembly having a tail surface reciprocating once during each revolution of said mainshaft effecting pitch control for said blade assemblies, and
control means effecting said tail surface reciprocation as a function of the relative rotational position between said radial structure and said blade assemblies;
means for mooring said facility in a water current;
means for transmitting the shaft power of said engines to said machinery.

4,411,633

METHOD FOR FORMING ELECTRICAL CONTACTS BETWEEN A CONDUCTOR-CARRYING CABLE AND A DISPLAY CELL

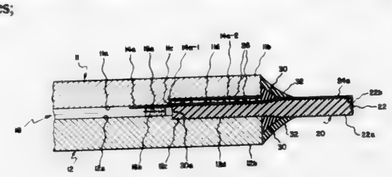
Wesley K. Waldron, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 161,214, Jun. 19, 1980, Pat. No. 4,386,293. This application Oct. 18, 1982, Ser. No. 434,977

Int. Cl.³ H01J *9/36*

U.S. Cl. 445—24 **3 Claims**

1. A method for forming contacts between at least one electrode fabricated upon the interior surface of at least one of a pair of substrates forming the front and rear surfaces of a display cell, and conductors disposed upon at least one surface of a cable, comprising the steps of:
providing said substrates with a gap of predetermined distance therebetween when said substrates are placed in facing relationship;
providing a cable-abutting portion on the interior surface of each of the substrates adjacent to an end thereof to form opposed surfaces of said gap;
fabricating at least one conductive lead portion upon at least one of the cable-abutting portion interior surfaces and each integrally joined to an associated one of said electrodes;



arranging each of the conductive lead portions to be in registration within an associated conductor of the cable when the cable surfaces are positioned with said gap and adjacent to the cable-abutting portions of that substrate having the associated conductive lead portions thereon;
placing the cable within the gap between the interior-facing surfaces of the cable-abutting substrate portions and with the conductive lead portions and associated cable conductor portions in registration each to the other; and
forming a conductive bond between each of the registered conductive lead portions and the associated cable conductor.

4,411,634

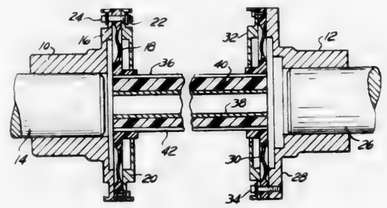
FLEXIBLE COUPLING HAVING MOLDED PLASTIC FLEXIBLE DIAPHRAGMS

Robert W. Hammelmann, Minoa, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Nov. 10, 1980, Ser. No. 205,360

Int. Cl.³ F16D *3/78*

U.S. Cl. 464—91 **16 Claims**



1. A flexible mechanical coupling comprising:
a first member having an axis of rotation, a flange extending radially from said axis of rotation, and means concentric with said axis of rotation for connection with a rotatable shaft;
a structural plastic shaft having a convoluted external surface and an internal metal sleeve; and
a first structural plastic flexible diaphragm interconnecting one end of said shaft to said first member, said flexible diaphragm having a peripheral rim fixedly attached to said radial flange, a hub having a convoluted bore shrunk fit onto the convoluted external surface of said shaft, and a flexible section intermediate said hub and said rim.

4,411,635

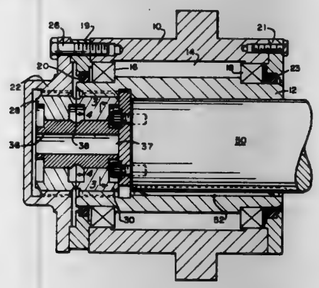
SHEAR OVERLOAD RELEASE COUPLING

Howard W. Boothroyd, and Lawrence A. Carlsmith, both of Amherst, N.H., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 20, 1980, Ser. No. 208,497

Int. Cl.³ F16D *9/00*

U.S. Cl. 464—33 **3 Claims**



1. In combination: an outer rotatable driving member; a coaxial inner rotatable driven member with an outside diameter less than the inside diameter of the outer rotatable driving member thereby providing an annular space between the outer rotatable driving member and the inner rotatable driven member; roller bearing means in said annular space between the rotatable driving member and the rotatable driven member; interconnecting means interconnecting the rotatable driving member and the rotatable driven member and including a single coaxial frangible member adapted to shear at a predetermined torque, a removable drive cap having a bore with internal splines and connected to the outer rotatable member, a first adapter with external splines engaging the splines on the drive cap, a second adapter with external splines engaging splines on the driven member, each adapter having a central bore, said coaxial frangible member extending through the bores of the adapters, the shape and dimension of the adapter bores and the shape and dimension of the outside of the frangible member being such that the frangible member fits in the bores so that rotation of the outer rotatable driving member imparts rotation to the inner rotatable driven member and whereby the frangible member is sheared if said predetermined torque occurs, the rotatable driven member no longer rotates, the outer rotatable driving member rotates about the inner rotatable driven member on the roller bearing means for a short time after the frangible member is sheared, the removable drive cap may be removed and the sheared frangible member replaced.

4,411,636

PROTECTIVE DEVICE FOR A UNIVERSAL JOINT ASSEMBLY

Theo Buthe, Lohmar, and Felix Mikeska, Siegburg, both of Fed. Rep. of Germany, assignors to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

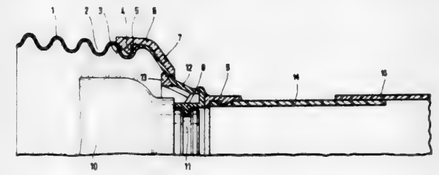
Filed Jul. 9, 1981, Ser. No. 281,643

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1980, 3026135

Int. Cl.³ F16P *1/00*

U.S. Cl. 464—172 **1 Claim**

1. A protective device for a universal joint assembly between two shafts connecting an agricultural implement with a tractor, including a pair of telescopic protective tubes surrounding at least one of said shafts, one of said tubes having an annular bearing member at a respective end of said at least one shaft which engages into an annular groove of a shank of said joint assembly, said protective device comprising, in combination, a protective boot having a bellows-like configuration defining circumferential folds and including a conical connecting portion, a connecting piece having said bearing member connected thereto by means of which a respective protective tube is connected with said protective boot, said connecting piece including a funnel-like extension partially projecting into said conical connecting portion of said protective boot, a rigid supporting ring engaging about said protective boot and including a conical part adapted to extend in embracing engagement over said conical connecting portion of said protective



boot, said conical part extending to partially overlap said funnel-like extension, and a bead directed radially inwardly extending from said supporting ring into engagement within one of said folds of said protective boot, said bead being formed on one side thereof with a conical surface to facilitate insertion of said protective boot into said supporting ring and on the opposite side thereof with a hook-like shape for maintaining engagement within said fold.

4,411,637

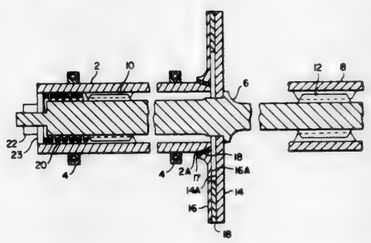
COMPLIANTLY MOUNTED DAMPING MEANS

Burton S. Rauch, Howell, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 17, 1981, Ser. No. 331,502

Int. Cl.³ F16F *15/12*

U.S. Cl. 464—180 **4 Claims**



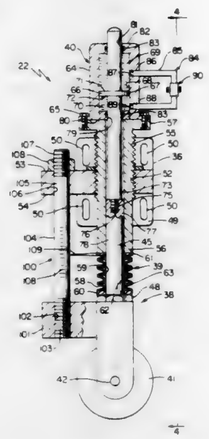
1. Compliantly mounted damping means for rotating equipment of the type including a rotor shaft and a quill shaft coupling the rotor shaft to a driver shaft, characterized by:
a first plate rigidly mounted to the quill shaft;
a second plate having a conical bore;
the rotor shaft having a conical tip which fits snugly into the conical bore;
means for compliantly mounting the second plate to the rotor shaft including an elastomeric member disposed within the conical bore;
means for providing an axial load, whereby the first and second plates are maintained adjacent each other to provide torsional damping; and
the means for compliantly mounting the second plate to the rotor shaft permitting the second plate to follow the angular displacement of the first plate occurring due to misalignment between the respective shafts.

4,411,638

BELT TENSIONER AND METHOD OF MAKING THE SAME

Leslie B. Wilson, Reeds Spring, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Aug. 27, 1981, Ser. No. 296,695
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—138 **16 Claims**



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, said mechanical spring means providing the sole force of said tensioner for tensioning said belt, and dampening means to dampen the movement of said belt engaging means relative to said support means with a restricting force of said dampening means, said dampening means comprising fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, the improvement wherein said dampening means dampens the movement of said belt engaging means with a greater said restricting force when said belt engaging means is being moved in one direction relative to said support means than said restricting force of said dampening means when said belt engaging means is being moved in the opposite direction relative to said support means, said one direction of movement of said belt engaging means relative to said support means that has said greater restricting force imposed thereon by said dampening means being a direction that is opposed to said urging force of said spring means and, thus, being a direction away from said belt.

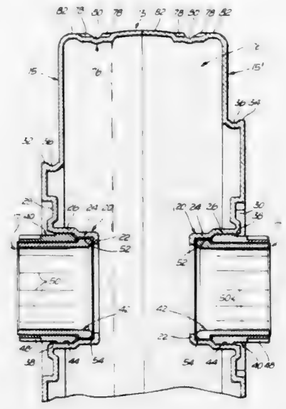
4,411,639

MULTI-PURPOSE WHEEL PARTICULARLY USEFUL FOR GAMES AND DEMONSTRATIONS

Hubert Rüther, Elbring 25, Seevetal 8 bei Hamburg, Fed. Rep. of Germany D-2105

Filed Dec. 30, 1980, Ser. No. 221,466
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1980, 3003698
Int. Cl.³ A63H *17/26*
U.S. Cl. 474—902 **17 Claims**

1. A wheel comprising a tread, at least a rim provided on an outer side thereof with one half of an axially assemblable claw coupling, a wheel hub including a wheel bushing fixed axially with respect to the rim and fixed for rotation with the rim and including an axle bushing positioned generally within the wheel bushing and fixed axially with respect to the rim and rotatable in a free running manner with respect to the rim, and a hub cap provided with the other half of the axially assemblable claw coupling for axial attachment to said rim and adapted to be connected for rotation with said wheel axle such that



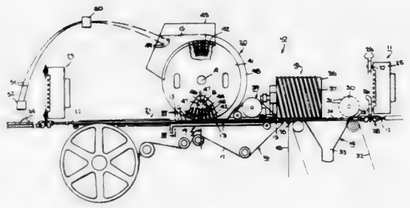
rotation of said wheel axle causes rotation of said hub cap and rotation of said hub cap causes rotation of said rim, and wherein said rim is provided on another side with an axially open, continuous annular groove adapted to be positioned for reception of bosses of said other half of the axially assemblable claw coupling.

4,411,640

APPARATUS FOR THE PRODUCTION OF CIGARETTE FILTER TIPS HAVING MULTI-SECTIONAL CONSTRUCTION

Floyd V. Hall, Durham, N.C., assignor to Liggett Group Inc., Montvale, N.J.

Filed Jan. 8, 1981, Ser. No. 223,392
Int. Cl.³ A24C *5/50*
U.S. Cl. 493—45 **17 Claims**



1. An apparatus for the production of cigarette filter tip assemblies having multi-sectional construction, said apparatus comprising

a flat cutting means for cutting a delivered rod of entrainment type filter material into disparate plugs;

a first conveyor for receiving and conveying the cut plugs from said cutting means;

means for spacing the plugs on said first conveyor relative to each other at predetermined spacings;

a second conveyor having an endless belt for receiving and conveying a strip of mouthpiece paper with the spaced plugs thereon along a predetermined path;

a garniture having a first section in said path for forming said belt and the mouthpiece paper into a U-shape, a following neck-down section for laterally compressing the plugs and a folding section for forming the strip of mouthpiece paper into an overlapped tube;

feed means above said second conveyor and said neck-down section of said garniture for feeding granular absorptive-type filter material into each determinate space between successive plugs on said belt, said feed means including a wheel rotatably mounted on a first axis and having a plurality of circumferentially spaced radial chambers for receiving granular absorptive-type filter material therein, a plurality of plungers, each said plunger being slidably mounted in a respective chamber and a cam wheel rotatably mounted on a second axis parallel to said first axis and having a plurality of circumferentially spaced pins for sequentially engaging said plungers at an initial position spaced before the bottom dead center portion of said plungers to gradually push said plungers into said respective chambers to expel the granular filter material therein at a point above said neck-down section of said garniture;

sealing means for sealing the overlapped strip of mouthpiece paper to form a rod-shaped assembly of alternating sections of plugs and granular filter material; and

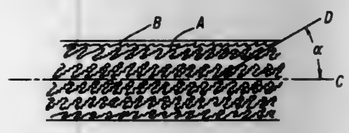
a second cutting means for severing the rod-shaped assembly into filter plugs of determinate length.

4,411,641

METHOD FOR PRODUCING A TOBACCO SMOKE FILTER PLUG

Migaku Suzuki, Kawanoe, and Takashi Sakai, Toyama, both of Japan, assignors to Mitsubishi Rayon Co. Ltd. and Mitsubishi Adetate Co. Ltd., both of Tokyo, Japan

Division of Ser. No. 137,267, Apr. 4, 1980, Pat. No. 4,316,475.
This application Sep. 28, 1981, Ser. No. 306,243
Claims priority, application Japan, Apr. 12, 1979, 54-44647
Int. Cl.³ A24D *3/02, 3/04*
U.S. Cl. 493—46 **8 Claims**



1. A method for producing a tobacco smoke filter plug composed of an inner core phase A and an outer skin layer B different from each other in fibrous arrangement structure thereof, said inner core phase A consisting of fillings in a folded arrangement structure having a folding axis forming an angle of α with respect to the central longitudinal axis the filter plug in cross section, and said outer layer B consisting of fillings in a folded structure substantially parallel to the central longitudinal axis of the filter plug in cross section and surrounding said inner core phase, an improvement comprising the following steps:

feeding a fiber's tow through air jet means having a bill portion so that the tow is folded in the vertical direction to the longitudinal axis of the filter plug within a hollow space in a tongue portion of a filter plug machine;

drawing the outer peripheral portion of the folded fiber's tow in another direction substantially opposite to a plug producing direction of the tongue portion by utilizing air flow escaping from the end portion of the bill portion to thereby forming the outer skin layer B;

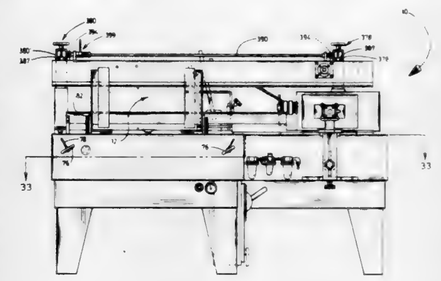
applying sheering stress to the folding fiber's tow between the garniture type and the tongue to thereby form said core phase A having a folded angled fibrous structure.

4,411,642

CARTON-ERECTING MACHINE

Minor E. Gee, Sanger, Calif., assignor to Maxco Supply, Inc., Reedley, Calif.

Filed Nov. 5, 1980, Ser. No. 204,201
Int. Cl.³ B31B *1/80, 5/00*
U.S. Cl. 493—125 **7 Claims**



3. For use in combination with a case-squaring machine having means for erecting cases characterized by trailing flaps adapted to be in-folded about a vertical axis, a trailing flap striker assembly comprising:

A. an elevator arm supported at said case-squaring station beneath said track and having one end mounted for pivotal displacement about a horizontal axis;

B. a pivotal striker mounted on said arm opposite said one end; and

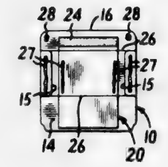
C. elevating means including a normally, substantially relaxed chain for supporting said arm in a vertical plane responsive to a tensioning thereof for imparting upward pivotal displacement to said arm, and means for tensioning said chain for lifting said arm, whereby said pivotal striker is elevated above the plane of said track.

4,411,643

DOUBLE ENVELOPE AND METHOD OF MAKING SAME

Richard L. Higginson, Mahwah, N.J., assignor to Berlin & Jones Company, Inc., East Rutherford, N.J.

Filed Feb. 10, 1981, Ser. No. 233,167
Int. Cl.³ B31B *41/00*
U.S. Cl. 493—188 **16 Claims**



1. A method of making a double envelope comprised of one envelope inside another envelope in one pass on an envelope folding machine, said method comprising the steps of:

providing a pre-cut envelope blank foldable into an envelope and a paper blank of smaller size than the envelope blank;

adhering the paper blank to the envelope blank in superposed relationship with fugitive adheaive;

applying remoistenable seal gum to the upper edge portion of the paper blank adhered to the envelope blank;

drying the seal gum; and

scoring the adhered together envelope and paper blanks at predetermined locations, and folding the scored blanks and applying adhesive to predetermined areas of the

scored blanks to form an outer envelope from said envelope blank and an inner envelope inside said outer envelope from said paper blank.

4,411,644

METHOD AND APPARATUS FOR FORMING RECLOSABLE PACKAGES

Lloyd Tinklenberg, Worthington, Minn., assignor to Bedford Industries, Inc., Worthington, Minn.

Continuation-in-part of Ser. No. 112,542, Jan. 16, 1980, abandoned. This application Jan. 8, 1981, Ser. No. 223,408

Int. Cl.³ B31B *1/90*

U.S. Cl. 493—213 **7 Claims**



1. The method of forming substantially instantly openable and reclosable packages having opposing walls terminating at an openable but flattened mouth at which said opposing walls are in substantially face to face relationship, comprising:

(a) mounting a coil of tape on a shaft for payout of said tape from said coil, said tape having a body mass comprising a layer of non-tacky thermoplastic polymeric material, an elongated tearstrip member embedded in said polymeric layer at a location intermediately between the side edges of said tape and extending as a straight longitudinal member throughout the length of said tape, said tearstrip member having a greater tensile strength than said body mass of said tape, and at least one deadfold strip embedded in said polymeric layer at a location between said tearstrip member and one lateral edge of said tape and extending as a longitudinal strip in said tape,

(b) flattening the mouths of packages and moving the flattened mouths in lengthwise spaced relationship along a line,

(c) drawing said tape from said coil toward said line of flattened mouths,

(d) activating to tackiness a normally non-tacky thermoplastic adhesive in preparation for bonding said tape to said flattened mouths,

(e) then applying and bonding lateral portions of said tape to the outside of opposing walls of said packages adjacent said flattened mouths with said activated thermoplastic adhesive as the bonding material and with said tearstrip structure of said tape aligned along the line of said flattened mouths, and

(f) transversely cutting said tape at locations spaced from portions of said tape bonded to said packages.

4,411,645

SYSTEMS OF SELF-PURGING CENTRIFUGAL SEPARATORS FOR THE SEPARATION AND CLARIFICATION OF LIQUIDS CONTAINING SOLIDS

Aloys Tenthoff, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

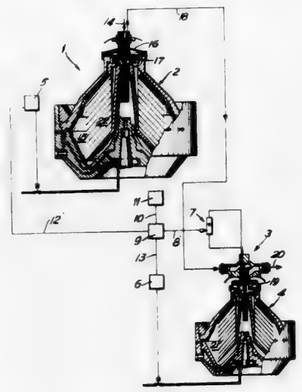
Filed Sep. 9, 1982, Ser. No. 416,539

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136627

Int. Cl.³ B04B *11/04*; B01D *21/26*

U.S. Cl. 494—3 **3 Claims**

1. In a system for the separation and clarification of liquids having at least two self-purging centrifugal separators connected in series wherein preliminary separation is effected in the drum of the first separator and clarification is effected in the drum of the second separator and control means for initiating the purging operations of the drums filled with solids in a periodic manner, the improvement wherein: the solid chamber of the drum of the second separator is smaller than that of the first and includes automatic purge control means for non-periodically, initiating a purge thereof in response to a given solids content therein and the control means comprises evaluating means connected to the automatic purge control means for effecting the simultaneous purging of both drums in response



to the initiation of a non-periodical purge of the second drum and alarm means connected to the evaluating means for effecting an alarm in response to a predetermined number of purges initiated by the evaluating means.

4,411,646

DECANTER CENTRIFUGE HAVING DIFFERENTIAL DRIVE UNIT

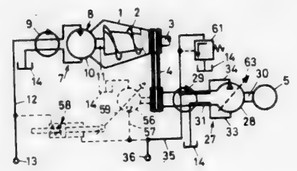
Ivan J. Cyphelly, Neuhaus, 8128 Hinteregg, Switzerland

Filed May 12, 1981, Ser. No. 263,013

Claims priority, application Switzerland, May 16, 1980, 3854/80

Int. Cl.³ B04B *3/04, 9/06*

U.S. Cl. 494—53 **10 Claims**



1. A decanter centrifuge comprising a drum, a drum hydraulic drive motor, means operatively drivingly connecting said drum and said drum drive motor, a worm gear rotatably mounted inside said drum, a differential drive unit comprising a worm gear hydraulic motor for driving said worm gear at a rate of rotation different from that of the drum, a coupling pump operatively arranged in the power train between said worm gear drive motor and said worm gear, and a single pressure feed system feeding both said drum drive motor and said coupling pump of said differential drive unit with pressurized fluid.

4,411,647

TAMPON APPLICATOR

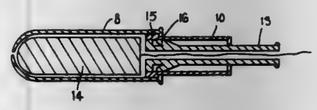
Akira Sakurai, Utsunomiya; Takashi Nakanishi, Mashikomachi, and Akio Nishimura, Ichikaimachi, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 5, 1981, Ser. No. 290,048

Claims priority, application Japan, Aug. 11, 1980, 55-110040

Int. Cl.³ A61F *13/20*

U.S. Cl. 604—16 **9 Claims**



1. A tampon applicator, comprising: an outer cylinder having a front end and a rear end; a tampon contained in said outer cylinder and adapted to be pushed out of the front end of said outer cylinder; pushing means for pushing said tampon out of the front end of said outer cylinder, said pushing means comprising a first inner cylinder mounted for lengthwise sliding movement within said outer cylinder and having a front end and a rear end, the front end of said first inner cylinder being adapted to engage the rearward end of said tampon to push same out of said outer cylinder when said first inner cylinder is pushed forwardly in said outer cylinder, said first inner cylinder having laterally extending wall means longitudinally spaced from the front end thereof, and a second inner cylinder mounted for lengthwise sliding movement within said first inner cylinder and being movable independently of said outer cylinder, said second, inner cylinder having at least one projection received within said first inner cylinder and extending outwardly from the external wall of said second inner cylinder toward the internal wall of said first inner cylinder, said projection being movable past said wall means when said second inner cylinder is moved toward the rear end of said first inner cylinder and then being engageable with the rearward side of said wall means so that subsequent forward movement of said second inner cylinder will move said first inner cylinder forwardly in said outer cylinder.

4,411,648

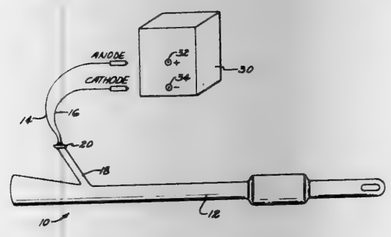
IONTOPHORETIC CATHETER DEVICE

Charles P. Davis; Michael M. Warren, both of Galveston, Tex., and David W. Arnett, Monrovia, Calif., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jun. 11, 1981, Ser. No. 272,484

Int. Cl.³ A61H *1/30*

U.S. Cl. 604—21 **10 Claims**



1. Apparatus adapted for iontophoresis application to provide antibacterial activity which comprises:

a catheter adapted for physiological use comprising an elongated tubular member having an orifice at the distal end for the passage of electrolyte fluid therethrough;

a positive electrode containing a heavy metal, the positive electrode disposed and terminating internally to the tubular member, and having a surface exposed to the lumen of the tubular member proximate the orifice;

a negative electrode disposed and terminating internally to the tubular member, the negative electrode having a surface exposed to the lumen of the tubular member proximate the orifice; and

means for conductive electrical connection to a constant current source from each of the said positive and negative electrodes.

4,411,649

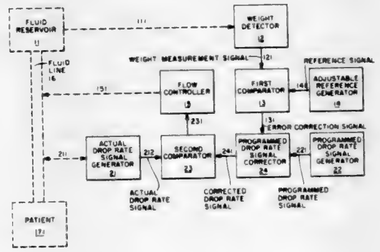
FLUID FLOW CONTROL SYSTEM

Dean L. Kamen, Bedford, N.H., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 56,871, Jul. 12, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,304

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—65 **1 Claim**



1. A system for controlling in a desired manner the flow of fluid in a line from a reservoir through a drip chamber to a patient, such system comprising:

first means, for generating a first electrical signal indicative of the weight of the fluid in the reservoir, such first signal hereinafter called the "weight measurement signal";

second means, for generating a second electrical signal indicative of the desired weight of the fluid in the reservoir, as a function of time and thereby indicative of the desired rate of flow of fluid from the reservoir, such second signal hereinafter called the "weight reference signal";

a first comparator, having two inputs, on one of which is impressed the weight measurement signal and on another of which is impressed the weight reference signal, and also having an output indicative of the dissimilarity between the weight measurement and weight reference signals;

third means, for controlling flow of the fluid from the reservoir at a rate dependent upon an electrical input thereto, such input being connected so as to receive a signal related to that present at the first comparator's output;

fourth means, placed in the line of flow from the reservoir, (i) for determining the rate at which the drops in the drip chamber are flowing, and (ii) for producing a third electrical signal approximately indicative of the rate of fluid flow, such third signal hereinafter called the "actual drop rate signal";

fifth means, for generating a fourth electrical signal indicative of the desired actual drop rate signal, such fourth signal hereinafter called the "programmed drop rate signal;"

sixth means, having one input on which is placed the programmed drop rate signal and another input to which is connected the output from the first comparator, for modifying the programmed drop rate signal in response to an error correction signal input from the output of the first comparator, so as to produce at an output a fifth electrical signal hereinafter called the "corrected drop rate signal";

a second comparator, having two inputs, on one of which is impressed the actual drop rate signal and on the other one of which is impressed the corrected drop rate signal, and

also having an output indicative of the dissimilarity between the actual drop rate signal and the corrected drop rate signal, such output connected to the electrical input of the third means;

whereby the fluid flow rate is directly controlled by the dissimilarity between the drop rate measured by the fourth means and the drop rate specified by the sixth means, and the drop rate specified by the sixth means is corrected by the first comparator's output, so that the flow rate of the fluid is ultimately controlled by the second means.

4,411,650

PISTON PUMP FOR NEEDLE-LESS INJECTION INSTRUMENTS

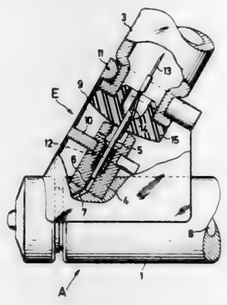
Hans-Jürgen Dettbarn, Marburg, and Josef Zimmermann, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 14, 1982, Ser. No. 368,170

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1981, 3115372

Int. Cl.³ A61M *5/30*

U.S. Cl. 604—72 **4 Claims**



1. A piston pump for needle-less injection instruments, in which the pump housing has a mounting for a vessel for the medium to be injected, this mounting consisting of a pipe end which is provided with a hollow needle for receiving the vessel and which is part of the pump housing and of a connecting element for connecting the vessel to the pipe end, the pump housing having an inlet channel connected to a channel in the pipe end, wherein the connecting element consists of a metal sheet (9) bent in the form of a U, which is provided on its inner side with U-shaped yokes (10, 11), the yoke (10) facing the pump housing (1) engaging into a groove (12) provided in the pipe end (4) and the other yoke (11) serving for surrounding the vessel neck.

4,411,651

DEVICE AND METHOD USEFUL IN MONITORING FLUID FLOW IN A DRUG INJECTOR

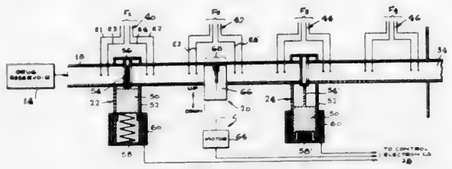
Joseph H. Schulman, Los Angeles, Calif., assignor to Pacesetter Systems, Inc., Sylmar, Calif.

Filed May 26, 1981, Ser. No. 266,835

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—151 **24 Claims**

1. In a peristaltic pump having a conduit and at least one valve means for restricting fluid flow through said conduit, a means for determining the position of said valve means comprising monitoring means for generating a signal related to the electrical resistance of fluid between two points located within said conduit and on opposite sides of said valve means, said electrical resistance being related to the cross-sectional area of a portion of said conduit whose cross-sectional area is altered



by said valve means, said electrical resistance thus being related to the position of said valve means.

4,411,652

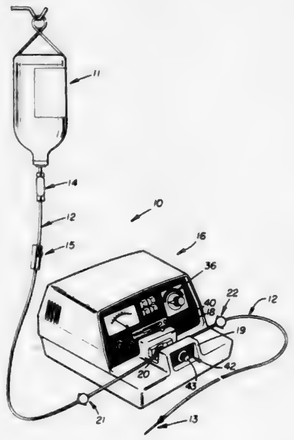
INTERNALLY STERILE PULSATILE INFUSOR SYSTEM

Steven G. Kramer, and Edward Q. Yavitz, both of San Francisco, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 21, 1981, Ser. No. 295,024

Int. Cl.³ A61M *5/00*; F04B *45/06*

U.S. Cl. 604—153 **16 Claims**



1. An internally sterile pulsatile infusor system comprising

a closed, sterile source of a liquid infusion solution,

a conduit having its first end connected to said source to receive said solution therefrom,

a cannula connected to a second end of said conduit,

elastic reservoir means connected in said conduit for receiving and communicating said solution to said cannula,

check valve means in said conduit for continuously permitting solution flow only from said source to said elastic reservoir means and for preventing reflux of said solution therepast,

compression means for intermittently compressing said elastic reservoir means to create a series of pulsating discharges of said solution through said cannula and

rate control means for selectively varying the rate of compression of said compression means, said rate control means including variable means for varying the rate of said compressions within the approximate range of from 0 to 10 compressions per second.

4,411,653

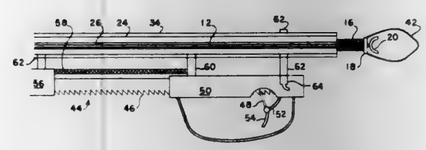
CANNULA INTRODUCER

M. Dean Razi, 5800-49th St. N., St. Petersburg, Fla. 33709

Filed Jan. 28, 1982, Ser. No. 343,408

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—157 **5 Claims**



1. A surgical device for insertion of aortic cannula of the type including an elongate, thin rod member, a blade member integrally formed with said rod member, disposed at the distal end of said rod member, an elongate housing member, an elongate bore formed in said housing member, substantially centrally thereof, wherein said rod member is slideably disposed interiorly of said bore and movably mounted therein between a blade member-extended position and a blade member-retracted position, a bias means disposed at the proximal end of said rod member for retaining said blade member in its retracted position in the absence of external, longitudinally directed forces imparted against said rod member, and an elongate, flexible cannula member having said housing member slideably disposed therein, wherein the improvement comprises:

a trigger-operated means for effecting the longitudinal displacement of said cannula member into an aorta through a cut made by said blade member,

said trigger-operated means comprising a hollow, longitudinally disposed base member,

an elongate rack gear member slideably disposed interiorly of said blade member,

a pawl member operatively disposed relative to said gear member and operable to allow unidirectional movement of said base member when said pawl member engages said gear member,

a trigger member operatively secured to said pawl member,

a longitudinally disposed second bias means having a stationary distal end and a proximal end fixedly secured to said base member so that sliding said base member in a distal-to-proximal direction loads said second bias means,

a clamping member for securing said cannula member to said base member,

a hook member associated with said clamping member,

said trigger member operatively connected to said hook member,

whereby said cannula member is prepared for aortic insertion by manually retracting said base member, thereby retracting said cannula member, said retraction loading said second bias means, and said pawl member, co-acting with said gear member, operable to prevent untimely unloading of said second bias means, and whereby manual activation of said trigger member is operative to disengage said pawl member from said gear member and is further operative to disengage said hook member from said bias member to the end that such trigger activation allows said second bias means to unload, thereby driving said cannula member in a proximal-to-distal direction so that said cannula is thrust through the cut made in said aorta prior to activation of said trigger member.

4,411,654

PEELABLE CATHETER WITH SECURING RING AND SUTURE SLEEVE

Edward J. Boarini, Cary, and Joseph W. Jonker, Round Lake, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 30, 1981, Ser. No. 259,280

Int. Cl.³ A61M *25/00*

U.S. Cl. 604—165 **24 Claims**



1. In a two-step introduction assembly for implanting an introducer catheter within a patient to provide a path for introduction of a primary device, whereby the introducer catheter may be removed and discarded while the primary device remains in operative position, the assembly including a needle for venipuncture and a peelable introducer catheter over the needle having at least one longitudinal rupture means for substantially its entire length along which the catheter may be ruptured, the improvement comprising:

(a) a slidable sleeve snuggly engaging the introducer catheter tube having a proximal end and a distal end and slidably mounted about the proximal end of the catheter to protect the catheter from inadvertent separation along the rutpure means and being slidable to the distal end of said catheter tube under the influence of manual disruption of the catheter tube along the rupture line from the proximal end, whereby the introducer catheter tube may be discarded after disruption along the rupture line while the sleeve remains in position on the primary device as a securing site; and

(b) a securing ring snuggly engaging the introducer catheter and needle at the proximal end of the catheter and needle, said ring being affixed to said catheter and needle so as to prevent rotation of the catheter with respect to the needle during implantation and being sufficiently weak that it may be broken under the influence of manually applied pressure.

4,411,655

APPARATUS AND METHOD FOR PERCUTANEOUS CATHETERIZATION

David M. Schreck, 14 Sylvan Ter., Summit, N.J. 07901

Filed Nov. 30, 1981, Ser. No. 325,848

Int. Cl.³ A61M *5/00, 29/00*

U.S. Cl. 604—165 **10 Claims**



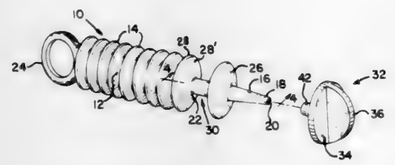
1. A device for introducing a large bore diagnostic or therapeutic catheter into a body compartment or vessel, comprising a thin wall cannula of shape memory alloy having an inner diameter fashioned to embrace the shank of a hypodermic needle, said cannula exhibiting, in its martensitic phase, an outer diameter convenient for percutaneous puncture of a body compartment or vessel and exhibiting, in its austentitic beta-phase, an inner diameter to slidably accomodate the outer diameter of said large bore diagnostic or therapeutic catheter, and a dilatable elastomeric cylindrical sheath deployed over the surface of said cannula.

4,411,656

COMPRESSIBLE SYRINGE

Walter G. Cornett, III, Wheeling, Ill., assignor to Urologic & Enteric Research Associates, Wheeling, Ill.

Filed Jan. 29, 1982, Ser. No. 343,886
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—212 **8 Claims**



1. In a syringe of the type having a hollow body made compressible by bellow structures and a tubular neck wherein one end of the neck is axially mounted to a terminal portion of the body and the other end of the neck tapers inward to form a tip having an opening through which fluid may pass upon compression of the body, the improvement comprising:

a first hollow platform molded into said terminal portion and perpendicular to the longitudinal axis of the syringe so that said neck protrudes from the center of one side of said first platform while the other side of said platform is contiguous with said body, such that the interiors of said body and said first platform are in communication with each other; and

a second hollow platform molded into an intermediate portion of said neck and perpendicular to the longitudinal axis of the syringe and parallel to said first platform so that said neck centrally enters one surface of said second platform and centrally exits from the opposing surface of said second platform so that the interiors of said neck and said second platform are in direct communication with each other and a space is formed between said first and second platforms to provide a gripping region for a user's fingers during operation of the syringe.

4,411,657

HYPODERMIC NEEDLE

Anibal Galindo, 6500 Caballero Blvd., Coral Gables, Fla. 33146

Continuation of Ser. No. 151,378, May 19, 1980, abandoned.
This application Mar. 1, 1982, Ser. No. 353,517
Int. Cl.³ A61M *5/32*
U.S. Cl. 604—274 **5 Claims**



1. A new and improved nerve anesthesia needle for reducing or eliminating trauma to nerve fascicles during the injection of an anesthesia, comprising:

a hub;

an elongated, rigid electrically conductive shaft of predetermined length and diameter, said shaft having one end connected to said hub; said shaft includes a fluid conduit means for transporting anesthesia to a nerve;

said shaft having a smooth pointed cone-shaped tip means connected to said shaft, said smooth tip means for penetrating without cutting nerves and for locating the nerve through electrical conductivity of said shaft and for paraneurally depositing anesthesia at the located nerve;

said smooth tip means including only a penetrating point for preventing cutting of the nerve;

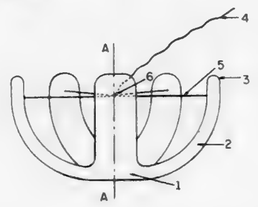
dispensing means connected to said conduit means for allowing fluid to be dispensed from said shaft, said dispensing means for dispensing anesthesia paraneurally, said dispensing means spaced from said point and including exit opening area means for preventing nerve damage.

4,411,658

DEVICE FOR ADMINISTERING

Etienne Godbille, Villemomble; Pierre Escuret, Paris, and Jean-Pierre Scheid, Vaujours, all of France, assignors to Roussel Uclaf, Romainville, France

Filed Feb. 17, 1981, Ser. No. 234,841
Claims priority, application France, Feb. 18, 1980, 8003478
Int. Cl.³ A61M *7/00*
U.S. Cl. 604—285 **6 Claims**



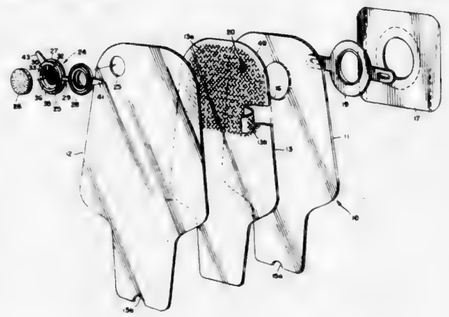
1. A device for the vaginal administration of medicinal substances comprising a flat, supple, elastically deformable biologically inactive material having a constant thickness and shaped in the form of a star having at least three identical arms having constant width and rounded extremities containing at least one biologically active substance incorporated in its mass and having means for imparting a spherical-like form which comprises a flexible manipulating cord fixed to the centre of the star shaped flat piece.

4,411,659

DRAINABLE COLLECTION POUCH AND FILTER ASSEMBLY THEREFOR

Marvin E. Jensen, Niles, and Mahmood Mohiuddin, Lake Zurich, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Mar. 16, 1982, Ser. No. 358,819
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—332 **29 Claims**



19. An ostomy pouch having front and rear walls, and an intermediate barrier wall therebetween, all formed of thermoplastic film; said walls having edges sealed together to provide said pouch with a pair of adjacent chambers separated by said intermediate barrier wall; said rear wall having a stoma opening disposed generally along the vertical midline of said rear wall; adhesive sealing means provided by said rear wall for peristomal sealing engagement with a wearer; a vent aperture in said intermediate wall at a point spaced laterally from said stoma opening and disposed at an elevation no lower than said stoma opening when said pouch is supported vertically; a gas discharge port in said front wall at a point spaced laterally from said aperture; a filter element; and a filter holder externally sealed to said front wall about said gas discharge port and removably supporting said filter element at said port.

4,411,660

ABSORBENT PRODUCT AND ARTICLES MADE THEREFROM

Frederic S. Dawn, Houston, and James V. Correale, Seabrook, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 219,681, Dec. 24, 1981, Pat. No. 4,338,371.
This application Apr. 14, 1982, Ser. No. 368,187
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—396 **1 Claim**



1. A fluid absorbent undergarment such as a panty and the like having a front, rear and opposite sides cooperating to define a lower torso garment having a waist opening, said undergarment including an outer covvering, said inner core being generally encapsulated in said outer covering and extending generally throughout said undergarment, said inner core comprising a multi-layered, absorbent product comprising:

a. a water pervious facing layer for contacting the skin;

b. a first fibrous, wicking layer contiguous said water pervious layer;

c. a first container section having an inner layer and an outer layer forming a first absorbent container therebetween, said container section being comprised of a water pervious material, said inner layer being contiguous said first fibrous, wicking layer;

d. a first absorbent mass disposed in said first absorbent container, said first absorbent mass comprising a super absorbent high molecular weight acrylic polymer containing hydrophilic carboxylate groups said polymer forming a gel upon contact with an aqueous medium;

e. a second container section having an inner layer and said outer layer container therebetween, said second container section being comprised of a water pervious material, said inner layer of said second container section being contiguous said outer layer of said first container section;

f. a second absorbent mass disposed in said second absorbent container, said second absorbent mass comprising a hydrolyzed starch-acrylonitrile graft copolymer, said copolymer forming a gel upon content with an aqueous medium; and

g. a liquid impermeable/gas permeable layer contiguous said outer layer of said second container section.

4,411,661

SPIKE CONNECTOR

Jean Kersten, Villers St. Amand, Belgium, assignor to Travenol European Research and Development Centre, Brussels, Belgium

Continuation of Ser. No. 199,140, Oct. 22, 1980, abandoned.
This application Jul. 19, 1982, Ser. No. 399,511
Int. Cl.³ B67B *7/24*; A61M *5/16*
U.S. Cl. 604—411 **12 Claims**

1. A spike connector having a main body portion and a hollowed spike extending therefrom for insertion into the stopper of a fluid source and for conveyance of the fluid from the source through the spike and main body portion, the improvement comprising:

said main body portion including a pair of wings extending upwardly in the direction of said spike but outwardly therefrom, said pair of wings extending away from each other, the undersides of said wings being arcuately constructed to enable an operator to grab said main body portion at said undersides, and the tops of said wings



serving to space other than said wing tops away from the fluid source stopper when the spike is inserted into the stopper;

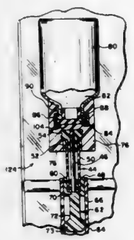
said main body portion having a generally circular cross-sectional configuration perpendicular to said spike and at the end thereof that is distal from said spike, and means adjacent the circular cross-sectional portion for receiving a drip chamber.

4,411,662

STERILE COUPLING

Stephen Pearson, Ingleside, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Apr. 6, 1982, Ser. No. 365,943
Int. Cl.³ A61M *5/00*; A61J *1/00*
U.S. Cl. 604—411 **17 Claims**



1. A sterile coupling enabling the selective establishment of a sterile pathway between two separate receptacles, said coupling comprising:

(a) first means to access one of the receptacles, said first access means including an end portion;

(b) second means to access the other of the rceptacles, said second access means including an end portion;

(c) a junction means permanently affixed about at least said end portions of both of said first and second access means, said junction means maintaining said end portions in sterile, relation;

(d) one of said first and second access means including a piercing element capable of piercing said junction means between said end portions so as to selectively bring the access means into pathway communication and thereby establish a sterile pathway between the receptacles, through said first and second access means.

4,411,663

REACTABLE REAGENTS WITH SUBSTRATES

Alfred E. Lauchenauer, Horn, Switzerland, assignor to Adnovum AG, Horn, Switzerland

Filed Jul. 21, 1981, Ser. No. 285,681

Int. Cl.³ D06L *3/14, 1/00;* **D06B** *1/04;* **D06M** *1/22*

U.S. Cl. 8—107 **12 Claims**

1. In a process for treating a sheet of a web surface material with reagents, which method comprises:

establishing a reagent in a liquid phase;

forming a foam of said liquid phase;

applying said foam to said web surface to be treated;

causing a portion of the foam to collapse and deposit said reagent on said web surface;

the improvement which comprises establishing a temperature gradient through the web surface into said foam applied thereto, thereby causing a collapse of the foam substantially only at the foam/surface interface, at ambient pressure, whereby the reagent application rate to said web surface is determined by the proportion of the foam which collapses, and immediately terminating any interaction between the foam and the web surface.

4,411,664

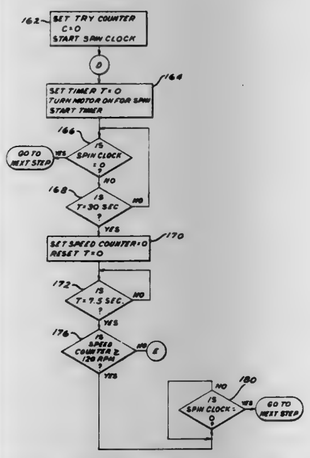
WASHING MACHINE WITH OUT-OF-BALANCE DETECTION AND CORRECTION CAPABILITY

Jimmy R. Rickard, and Robert K. Hollenbeck, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Apr. 30, 1982, Ser. No. 373,591

Int. Cl.³ D06F *23/04, 33/02*

U.S. Cl. 8—158 **13 Claims**



1. A clothes washing appliance of the vertical axis type for a clothes washing operation having a plurality of cycles including wash and spin cycles, said appliance comprising:

a substantially stationary tub;

a clothes receiving basket movably supported in said tub;

means for distributing fill water to the articles received in said basket;

fill valve means for controlling the delivery of fill water from an external supply to said distributing means;

motor means selectively operative in a wash mode and a spin mode to provide wash and spin operating cycles, respectively;

pump means for removing water from said tub;

clutch means to limit the maximum torque value available to the basket in the spin mode; and

control means for detecting an out of balance condition in the spin mode and initiating a rebalancing operation including means for measuring basket rotational speed during the spin mode and means responsive to detection of basket rotational speed being less than a predetermined normal balanced basket rotational speed at a predetermined time in the spin cycle to interrupt the spin cycle and to actuate a rebalance cycle and thereafter to resume the spin cycle.

7. A method for detecting and correcting an out of balance condition in an automatic washing appliance of the vertical axis type having a plurality of cycles including wash and spin cycles and having a substantially stationary tub and a clothes receiving basket movably supported in the tub including means for distributing fill water to the articles received in the basket and fill means for controlling the delivery of fill water from an external source to the distributing means, and having a motor means selectively operative in a wash mode and a spin mode to provide wash and spin operating cycles of predetermined lengths of time and including pump means for removing water from the tub and means to limit the maximum torque available to the basket in the spin mode, the method comprising the steps of;

measuring the basket rotational speed during the spin cycle;

detecting the basket rotational speed being less than a predetermined normal balanced basket rotational speed at a predetermined time in the spin cycle;

interrupting the spin cycle;

actuating a rebalance cycle, and

resuming the spin cycle after completion of the rebalance cycle.

4,411,665

DYEING PROCESS USING ALKOXYLATED FATTY AMINES AND POLYAMINES AS RESERVING AGENTS

Hermann Egli, Basel, and Emil Engeler, Binningen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 117,254, Jan. 31, 1980, Pat. No. 4,285,691. This application Jun. 26, 1981, Ser. No. 277,860

Claims priority, application Switzerland, Feb. 6, 1979, 1149/79

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ D06P *5/12, 5/00, 5/13, 3/87*

U.S. Cl. 8—455 **30 Claims**

1. In a wet-on-wet process for dyeing an anionic dyeable substrate with reserve effects, the improvement which comprises applying to at least one common area of the substrate, in one step, an acid dyeing liquor containing an anionic dye having a K'_{pH6}-value $\geqq 5$, and in a separate step, an alkoxylated fatty amine or polyamine having affinity for anionic dyes with a K'_{pH6}-value $\geqq 5$, there being no rinsing or drying of the substrate between said steps.

4,411,666

PROCESS FOR DYEING POLYOLEFIN FIBER MATERIALS

Shuhei Hashizume, Settsu; Sadaharu Abeta, Toyonaka; Tadayuki Ohmae, and Hajime Nishibara, both of Niihama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

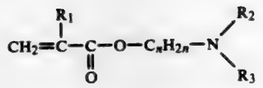
Continuation-in-part of Ser. No. 255,841, Apr. 20, 1981, abandoned. This application Feb. 8, 1982, Ser. No. 346,537

Claims priority, application Japan, Apr. 25, 1980, 55-55690; Feb. 6, 1981, 56-17242

Int. Cl.³ D06P *1/653, 1/39, 3/85*

U.S. Cl. 8—455 **7 Claims**

1. A process for dyeing polyolefin fiber materials, which comprises contacting a polyolefin fiber material obtained by melt-spinning a mixture of crystalline polyolefin and 0.1 to 30% by weight based on the weight of the polyolefin of a copolymer of ethylene and an aminoalkyl acrylate compound represented by the formula



wherein R_1 represents hydrogen atom or methyl group, R_2 and R_3 each represents hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and n represents an integer from 1 to 4, or a blend product of the said polyolefin fiber material and a polyamide fiber material, with a dye bath containing an anionic dye and at least one carboxylic acid selected from the group consisting of benzoic acid, salicylic acid, p-chlorobenzoic acid and 5-chlorosalicylic acid.

4,411,667

TRANSFER PRINTING METAL SHEET COATED WITH THERMOSET LAYER WHILE STILL HOT FROM CURING

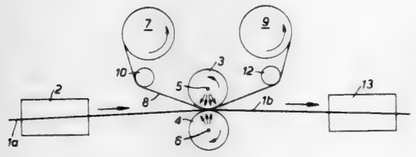
Douglas Meredith, and James A. Cronin, both of Abergavenny, Wales, assignors to British Steel Corporation, London, England

Filed Mar. 2, 1982, Ser. No. 354,074

Claims priority, application United Kingdom, Mar. 10, 1981, 8107541

Int. Cl.³ B41M *5/00*; B44C *1/16*

U.S. Cl. 8—471 **12 Claims**



1. A method of transfer printing in which a continuous length of metal strip is coated with a thermo-setting coating material and cured, in which, immediately after curing at a temperature of between 180° C. and 280° C., the coated surface of the strip is brought into contact with a continuous strip of printed material comprising an ink print containing a sublimable dye, the contact being effected during the passage of both strips between the nip of two opposed resiliently surfaced rollers at a pressure of at least 50 p.s.i., the dye of the ink print being transferred by sublimation utilizing the residual heat of the strip following the curing of the thermosetting coating material.

4,411,668

LIQUID DYESTUFF PREPARATIONS

Suresh C. Agarwal, Bottmingen; Horst Jäger, Bettingen; Nitya G. Podder, Duggingen, and Hans Mollet, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

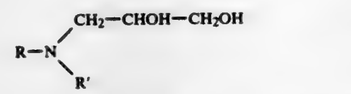
Filed Jan. 20, 1982, Ser. No. 340,685

Claims priority, application Switzerland, Jan. 26, 1981, 473/81

Int. Cl.³ C09B *67/18, 67/40*; D06P *1/645*

U.S. Cl. 8—527 **12 Claims**

1. A liquid dyestuff preparation comprising water, a water-insoluble or sparingly water-soluble dye, a disperstant, a humectant, and optionally further additives, wherein said humectant is a compound of the formula I



(I)

wherein R is a C_1–C_{16}alkyl group which is unsubstituted or substituted by OH, CN, halogen or $—N(C_1–C_4alkyl)_2$, and R' is hydrogen or the $—CH_2—CHOH—CH_2OH$ group.

4,411,669

PROCESSES FOR DYEING PAPER, AND AGENTS CONTAINING AZO DYESTUFFS

Peter Wild, Alten Buseck, and Horst Nickel, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

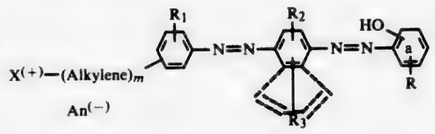
Filed Feb. 26, 1982, Ser. No. 352,722

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1981, 3110223

Int. Cl.³ D06P *1/41*; D21H *3/80, 1/46*

U.S. Cl. 8—654 **12 Claims**

1. Process for dyeing paper, comprising contacting paper or paper pulp with cationic azo dyestuffs of the formula



(I)

wherein

$X^{(+)}$ denotes an ammonium group,

m denotes 0 or 1,

R denotes hydrogen, halogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, hydroxyl, amino, sulphonamido, carboxamido, or acylamino which is unsubstituted or substituted by halogen or a quaternary group,

R^1 denotes hydrogen, C_1- to C_4-alkyl, halogen or C_1- to C_4-alkoxy,

R_2 and R_3 independently of one another denote hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy or acylamino, and

$An^{(-)}$ denotes an anion, and

wherein further carbocyclic or heterocyclic rings are fused to ring a.

4,411,670

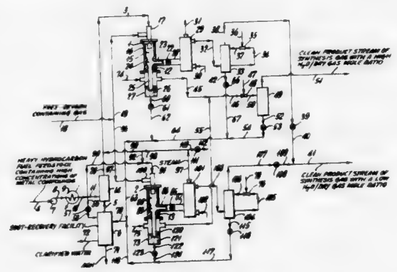
PRODUCTION OF SYNTHESIS GAS FROM HEAVY HYDROCARBON FUELS CONTAINING HIGH METAL CONCENTRATIONS

Charles P. Marion, Mamaroneck, and Frederick C. Jahnke, Rye, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,742

Int. Cl.³ C10J *3/46*

U.S. Cl. 48—197 R **10 Claims**



1. A partial oxidation process comprising:

(1) reacting a reactant fuel feedstream comprising a heavy hydrocarbon fuel feedstock containing high metal concentrations in admixture with a liquid dispersion comprising soot in a liquid carrier with a free-oxygen containing gas in the presence of a temperature moderator at an autogenous temperature in the range of about 1700° to 3500° F. and a pressure in the range of about 5 to 300 atmospheres in the reaction zone of a first free-flow noncatalytic partial oxidation gas generator to produce a hot, raw stream of synthesis gas comprising H_2, CO, CO_2, particulate carbon, ash, and at least one material from the group H_2O, CH_4, H_2S, COS, H_2 and Ar;

(2) quench cooling and scrubbing with water at least a portion of the hot, raw synthesis gas stream from (1), and separating a partially cleaned synthesis gas stream from a stream of liquid dispersion comprising particulate carbon, water, and ash;

(3) simultaneously with (1) reacting a heavy hydrocarbon fuel feedstock containing high metal concentrations with a free-oxygen containing gas in the presence of a temperature moderator at an autogenous temperature in the range of about 1700° F. to 3500° F. and a pressure in the range of about 5 to 300 atmospheres in the reaction zone of a second free-flow noncatalytic partial oxidation gas generator to produce a hot, raw stream of synthesis gas comprising H_2, CO, CO_2, particulate carbon, ash, and at least one material from the group H_2O, CH_4, H_2S, COS, H_2 and Ar;

(4) splitting the hot, raw synthesis gas stream from (3) into first and second hot-split synthesis gas streams;

(5) cooling in a convection-type gas cooler all of the first hot, split gas stream from (4), scrubbing the partially cooled gas stream with water, and separating a clean product stream of synthesis gas with a low H_2O/dry gas mole ratio from a stream of liquid dispersion of particulate carbon, water, and ash;

(6) quench cooling and scrubbing with water all of the second hot, split gas stream from (4), and separating a partially cleaned synthesis gas stream from a stream of liquid dispersion comprising particulate carbon, water, and ash;

(7) mixing together the partially cleaned synthesis gas streams from (2) and (6), scrubbing the combined streams with water, and separating a clean product stream of synthesis gas with a high H_2O/dry gas mole ratio from a stream of liquid dispersion comprising particulate carbon, water, and ash;

(8) combining the streams of liquid dispersion comprising particulate carbon, water, and ash from (2), (5), (6), and (7); and separating in a soot-recovery zone separate streams of clarified water, ash, and a liquid dispersion comprising soot in a liquid carrier; and

(9) mixing all of the liquid dispersion comprising soot in a liquid carrier from (8) with fresh heavy hydrocarbon fuel feedstock containing high metal concentrations, and introducing said mixture into the first partial oxidation gas generator in (1) as said reactant fuel feedstream.

4,411,671

PRODUCTION OF SYNTHESIS GAS FROM HEAVY HYDROCARBON FUELS CONTAINING HIGH METAL CONCENTRATIONS

Charles P. Marion, Mamaroneck, and Frederick C. Jahnke, Rye, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jun. 7, 1982, Ser. No. 385,743

Int. Cl.³ C10J *3/46*

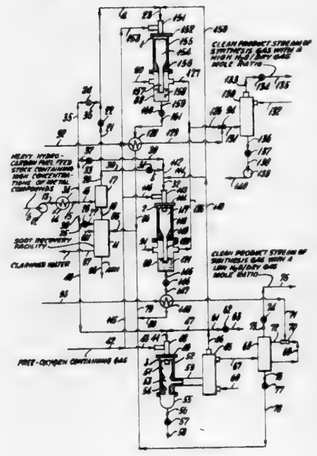
U.S. Cl. 48—197 R **10 Claims**

1. A partial oxidation process comprising:

(1) producing a plurality of separate hot raw streams of synthesis gas comprising H_2, CO, CO_2, particulate carbon, ash, and at least one material from the group H_2O, CH_4, H_2S, COS, N_2 and Ar in a plurality of separate partial oxidation gas generating means by the partial oxidation of heavy liquid hydrocarbon fuel feedstock containing high metal concentrations;

(2) cooling each of the hot raw streams of synthesis gas from (1) in a separate gas cooling zone that is associated with each of said gas generating means; wherein the hot raw synthesis gas stream from at least one gas generating means is cooled in a quench zone with water to produce at least one first clean stream of raw synthesis gas saturated with water and at least one separate stream of liquid dispersion comprising carbon, water and ash; and, wherein the hot raw synthesis gas stream from at least one other gas generating means is cooled in a convection-type gas cooling zone to produce at least one second separate clean stream of raw synthesis gas containing less water than that in said first stream of raw synthesis gas;

(3) scrubbing with water all of the quench cooled synthesis gas from (2) in a scrubbing zone to produce a clean product stream of synthesis gas with a high H_2O/dry gas mole ratio, and a separate stream of liquid dispersion comprising particulate carbon, water, and ash; and in a separate scrubbing zone scrubbing with water all of the synthesis gas from (1) that was cooled in said convection-type gas cooling zone;



(4) introducing the separate streams of liquid dispersion comprising particulate carbon, water and ash from (2) and (3) into a soot-recovery zone to produce separate streams of clarified water, ash and a liquid dispersion comprising soot and water;

(5) recycling separate portions of said clarified water from (4) to the quench zones in (2) and to the separate scrubbing zones in (3); and

(6) mixing the stream of liquid dispersion comprising soot and water from (4) with fresh heavy liquid hydrocarbon fuel feedstock containing high metal concentration and introducing said mixture as the feed to at least one of the gas generating means in (1) that produces a hot raw synthesis gas stream which is cooled with water in a quench zone in (2).

4,411,672

METHOD FOR PRODUCING COMPOSITE OF DIAMOND AND CEMENTED TUNGSTEN CARBIDE

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Jul. 21, 1981, Ser. No. 285,619

Claims priority, application Japan, Aug. 14, 1980, 55-112317

Int. Cl.³ B24D *3/02*

U.S. Cl. 51—309 **10 Claims**

1. A method for producing a composite of diamond and cemented tungsten carbide, which method comprises:

placing a layer consisting of pulverized diamond adjacent to a sintered tungsten carbide-cobalt support, said pulverized diamond and support being separated from each other by a second metallic material, said second metallic material

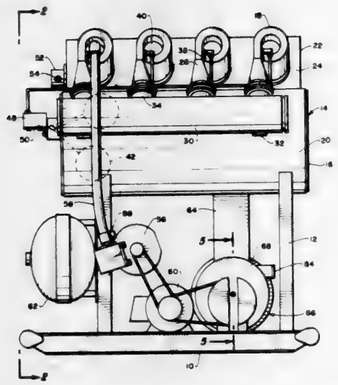
having a melting point, when so utilized, below the eutectic point of said sintered tungsten carbide-cobalt support;
heating said assembly to a temperature sufficiently high to cause the second metal to melt but not high enough to effect co-melting of the tungsten carbide and cobalt, said heating being effected in a pressure-temperature region of the carbon phase diagram where diamond is thermodynamically stable, and maintaining said temperature in said temperature-pressure region to join the diamond particles to each other and to join the diamond particles to said sintered tungsten carbide-cobalt support; and
recovering a composite of diamond and cemented tungsten carbide.

4,411,673

METHOD AND APPARATUS FOR DEGASSING LIQUIDS

Bradley N. Jones, Cerritos; Robert J. Harris, Studio City; Ronald P. Cram, Whittier, and Gene A. Huber, Torrence, all of Calif., assignors to Sweco, Incorporated, Los Angeles, Calif.

Filed Jul. 17, 1980, Ser. No. 169,845
Int. Cl.³ B01D 19/00
U.S. Cl. 55—41 **22 Claims**



8. A process for degassing liquids, comprising the steps of
creating and maintaining a vacuum in a tank having a central container and a plurality of degassing tubes extending thereto, including pumping gas from the tank directly from a central location in at least one of the tubes;
supplying gas cut liquids through nozzle areas to the ends of the tubes;
directing the flow of gas cut liquids to the tubes to induce helical, thin sheet flow therein;
controllably throttling the volumetric rate of flow of gas cut liquids supplied to the ends of the tubes as a function of the amount of liquid in the central container by reducing the nozzle areas;
discharging the liquid from the tubes into the central container;
accumulating the liquid in the central container to establish a head of liquid; and extracting liquid accumulated in the central container.

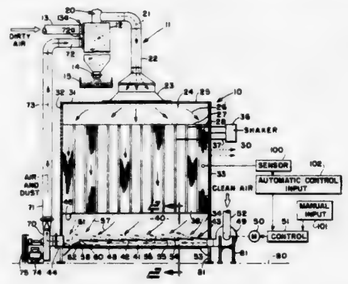
4,411,674

CONTINUOUS CLEAN BAG FILTER APPARATUS AND METHOD

John P. Forgac, Lakewood, Ohio, assignor to Ohio Blow Pipe Co., Cleveland, Ohio

Filed Jun. 2, 1981, Ser. No. 269,631
Int. Cl.³ B01D 46/04, 46/48, 50/00
U.S. Cl. 55—304 **15 Claims**

1. Continuous clean bag filter apparatus for use with a primary separator disposed relatively upstream thereof, comprising inlet means for receiving a fluid carrier and particulate matter carried thereby vertically disposed bag filter means open at opposite ends pressurized by such fluid carrier for filtering particulate matter from such fluid carrier while at least a substantial quantity of such fluid carrier discharges through a wall portion of said bag filter means, fluid conveyor means for continuously conveying from said bag filtemeans that particulate matter filtered from such fluid carrier, and outlet means for discharging particulate matter from said fluid conveyor means, said fluid conveyor means comprising a controlled fluid flow means for delivering a controlled fluid flow to convey to said outlet mean that particulate matter filtered from such fluid carrier by said bag filter means without interfering with and substantially independently of the passage of such fluid carrier through said wall portion of said bag filter



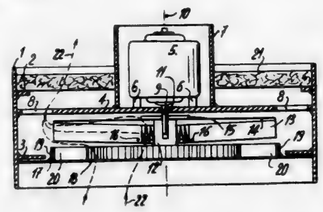
means, and said outlet means comprising further controlled fluid flow means for producing a further controlled fluid flow to convey that particulate matter received from said fluid conveyor means downstream thereof, and balancing means for balancing said further controlled fluid flow means with respect to the fluid pressure in said bag filter means and the fluid pressure of said fluid conveyor means to provide such further controlled fluid flow that does not interfere substantially with operation of said bag filter means and further comprising collecting means for collecting particulate matter from said bag filter means, and wherein said controlled fluid flow means of said fluid conveyor means comprises blower means for establishing an air flow, plenum means for conducting such air flow proximate said collecting means, and flow directing means for directing at least some of such air flow in said collecting means.

4,411,675

APPARATUS FOR THE PURIFICATION OF GASES

Pierre de Castella, La Vuachere, Monnaz, Switzerland 1111

Filed Aug. 3, 1981, Ser. No. 289,797
Int. Cl.³ B01D 50/00
U.S. Cl. 55—316 **6 Claims**



1. Apparatus for the filtering of gases, comprising a duct having imperforate walls, an inlet opening adjacent to one end of the duct for a gas to be purified, and an outlet opening at the opposite end of the duct; a filter extending entirely across said outlet opening through which gas to be discharged from the duct must pass; a gas-motivating rotor disposed across said inlet opening and spaced therefrom inwardly of the duct; a wall extending across the duct inwardly thereof from the rotor, with openings about its peripheral margin for the passage of inflowing gas to the filter, said rotor being formed as a substantially imperforate disc having gas-contacting surfaces adapted to pick up and retain particulate matter carried by the gas; means supported by said wall for rotating the rotor; means disposed peripherally of the inlet opening for substantially preventing flow through the duct peripherally of the inlet opening; and means for providing an aerodynamic block against backflow of gas from the interior of the duct between the filter and the rotor, said means for preventing flow through the duct comprising an imperforate shelf, and said means for producing an aerodynamic block defining the inlet opening and comprising a replaceable ring of material supported by said shelf and having surface area for the removal of particulate matter from the inflowing gas to be filtered, said ring of material being a strip folded transversely of its length to provide flutes.

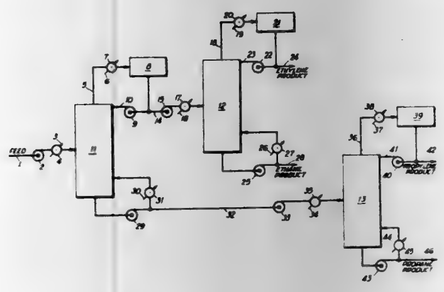
5. Apparatus for the filtering of gases, comprising a duct having imperforate walls, an inlet opening adjacent to one end of the duct for a gas to be purified, and an outlet opening at the opposite end of the duct; a filter extending entirely across said outlet opening through which gas to be discharged from the duct must pass; a gas-motivating rotor disposed across said inlet opening and spaced therefrom inwardly of the duct; a wall extending across the duct inwardly thereof from the rotor, with openings about its peripheral margin for the passage of inflowing gas to the filter, said rotor being formed as a substantially imperforate disc having gas-contacting surfaces adapted to pick up and retain particulate matter carried by the gas; means supported by said wall for rotating the rotor; means disposed peripherally of the inlet opening for substantially preventing flow through the duct peripherally of the inlet opening; and means for providing an aerodynamic block against backflow of gas from the interior of the duct between the filter and the rotor, said duct being in the form of a hood for positioning above a source of gas to be filtered, said means for preventing flow through the duct comprising an imperforate shelf, and said means for providing an aerodynamic block defining the inlet opening and comprising a shelf extension having its inner peripheral margin sloping outwardly of the duct and toward the axis of the inlet opening at an angle of approximately thirty degrees.

4,411,676

FRACTIONAL DISTILLATION OF C_2/C_3 HYDROCARBONS AT OPTIMUM PRESSURES

Daniel W. Tedder, Marietta, Ga., assignor to Georgia Tech Research Institute, Atlanta, Ga.

Division of Ser. No. 299,623, Sep. 4, 1981, abandoned. This application Apr. 14, 1982, Ser. No. 368,385
Int. Cl.³ F25J 3/02
U.S. Cl. 62—24 **3 Claims**



1. Method of optimizing the expense of the recovery of C_2/C_3 hydrocarbons from a fluid mixture consisting essentially of ethane, ethylene propane and propylene through fractional distillation comprising:
(a) operating a system of distillation towers in a distillation system in which each tower receives a single feed and produces two effluents and wherein certain of the towers has a reboiler wherein the pressure of each tower is within ±15 psia of the pressure, calculated from the formulae:

$$\log_e (P^\bullet) = 2.677 - \frac{309.4}{T_{FB}} + \frac{1147.6}{T_{\phi B}} + \frac{1087.4}{T_{BD}}$$

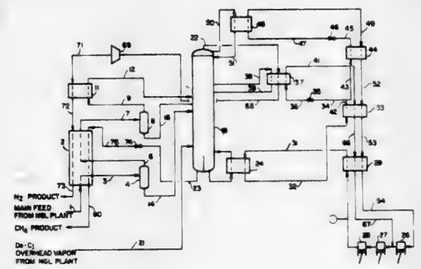
and wherein:
$P^\bullet$ = the pressure of each tower in psia
T_{FB} = tower feed mixture bubble point temperature (°R) evaluated at 485 psia
$T_{\phi B}$ = tower overhead product mixture bubble point temperature (°R) evaluated at 485 psia
T_{BD} = tower bottom product mixture dew point temperature (°R) evaluated at 485 psia
(b) circulating cooling water which has been heated during a heat exchange cooling operation by heat from one of said towers to a temperature of from 80° F. to 130° F., to said reboiler and back to said heat exchanger;
(c) feeding at least a portion of said fluid mixture to the internals of the other of said towers;
(d) discharging said recovering the effluent distillate product from the top of said internals; and
(e) discharging the effluent bottom product from the bottom of said internals.

4,411,677

NITROGEN REJECTION FROM NATURAL GAS

James W. Pervier, West Chester; Harvey L. Vines, Emmaus; Vincent Marano, III, Macungie, and Michael A. Patterson, Whitehall, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 10, 1982, Ser. No. 376,365
Int. Cl.³ F25J 3/02
U.S. Cl. 62—25 **8 Claims**



1. A process for separating nitrogen from a high pressure feed containing natural gas and nitrogen over a wide concentration range of 5–85% by volume in a single distillation column to form high pressure product streams of nitrogen and of natural gas comprising:
(a) cooling said high pressure feed against high pressure product streams to separate multiple feeds to said column and distilling said cooled feeds in said single distillation column to form a high pressure overhead vapor rich in nitrogen and a high pressure bottoms liquid rich in natural gas hydrocarbons;
(b) condensing a head vapor of an upper section of said column by heat exchange with a first closed loop refrigerant to provide reflux to said column;
(c) condensing an intermediate vapor of an intermediate section of said column by heat exchange with a second closed loop refrigerant and by heat exchange with said high pressure overhead vapor rich in nitrogen without expansion to provide an intermediate reflux to said column, wherein said intermediate section vapor condensing

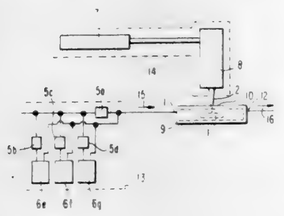
attributable to heat exchange with said high pressure nitrogen overhead increases with increasing nitrogen concentration in said feed.

4,411,678

METHOD FOR FABRICATING AN OPTICAL WAVEGUIDE ON A PLANAR GLASS SUBSTRATE

Motohiro Arai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 31, 1982, Ser. No. 364,048
Claims priority, application Japan, Apr. 2, 1981, 56-48411
Int. Cl.³ C03B *19/00*; C03C *17/02*
U.S. Cl. 65—3.12 **4 Claims**



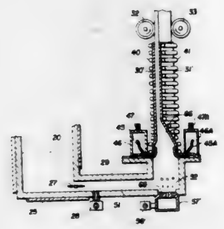
1. A method of fabricating an optical waveguide comprising the steps of:
installing a planar glass substrate within a reaction vessel;
supplying glass raw materials into the reaction vessel;
irradiating a collimated laser beam on a defined region of the planar glass substrate to enhance the temperature high enough for the thermal reaction of the glass raw materials to form on the defined region a transparent glass layer having an index of refraction greater than that of the planar glass substrate, but said temperature being lower than the softening point of the planar glass substrate; and
repeatedly scanning the glass substrate with the laser beam to accumulate a plurality of transparent glass layers which form an optical waveguide.

4,411,679

METHOD OF PRODUCING FOAMED CONSTRUCTION MATERIALS

Robert S. Pelton, 1400 S. Joyce St., Arlington, Va. 22202

Continuation-in-part of Ser. No. 128,887, Mar. 10, 1980, Pat. No. 4,314,835. This application Feb. 8, 1982, Ser. No. 346,590
Int. Cl.³ C03B *19/08*
U.S. Cl. 65—22 **12 Claims**



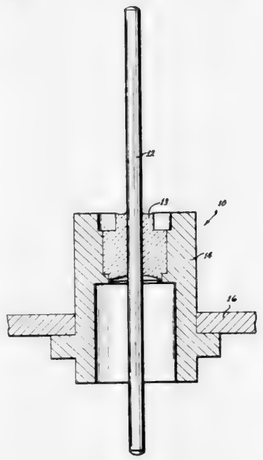
1. The method of making a strong, light-weight weight-bearing structural member with insulating properties having integrally formed exterior surface structure withstanding atmospheric erosion, comprising the steps of,
melting a mass of a refractory material in the group consisting of glass, plastic, ceramic, aluminum and zinc,
introducing into the molten mass a plurality of hollow bodies having shells formed of materials having a melting point higher than that of the molten mass in the group consisting of glass refractory material and titanium thereabout that sustain their shape in the molten mass to form thereby a foamed light-weight product comprising an intermixture of the refractory material and the hollow bodies, and
forming said molten mass into a frozen structural member of predetermined shape.

4,411,680

CERAMIC SEAL BETWEEN SPACED MEMBERS SUCH AS A TERMINAL PIN AND A FERRULE

James C. Kyle, 24335 Via San Clemente, Mission Viejo, Calif. 92675, assignor to James C. Kyle, Roseburg, Oreg.

Division of Ser. No. 836,659, Sep. 26, 1977, Pat. No. 4,352,951. This application Apr. 27, 1982, Ser. No. 372,118
Int. Cl.³ C03C *27/04, 29/00*; C03B *32/00*
U.S. Cl. 65—33 **23 Claims**



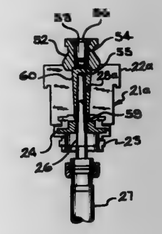
1. A method of providing a hermetic seal between a first member which is a steel and a second member, including the following steps:
providing a mixture of acid and alkali oxides, at least one of the oxides in the mixture having properties of forming a glass,
smelting the mixture at a first elevated temperature above the melting point of the oxides for an extended period of time to melt the oxides and to provide a partially amorphous and partially crystalline state in the mixture,
quenching the smelted fixture in water to produce a frit,
fusing the fritted mixture to the first and second members in an oxygen atmosphere at a second elevated temperature below the first elevated temperature for a minimal period of time, and
rapidly cooling the fused mixture and the first and second members directly to air, thereby providing said first and said second members sealed together by a fused vitreous mixture having a partially crystalline and partially amorphous structure, with the relative amount of the crystalline structure being greater at positions adjacent the first member than at positions displaced from the first member.

4,411,681

METHOD AND APPARATUS FOR MANUFACTURING GLASS BOTTLES

John D. Northup, Toledo, Ohio, assignor to Ruth B. Northup; John D. Northup, Jr.; Nancy N. Lehrkind and Mary E. Northup, all of Toledo, Ohio

Filed Jan. 14, 1983, Ser. No. 458,169
Int. Cl.³ C03B *11/10*
U.S. Cl. 65—77 **9 Claims**



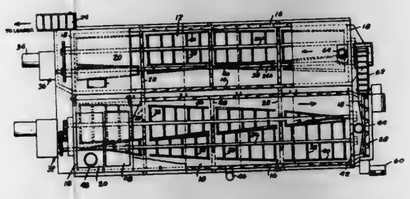
1. The method of forming glass parisons from which glass containers are formed in a machine having at least one blank mold and baffle means, the mold and the baffle means defining a cavity and having a cavity plunger in line with the cavity, the method comprising the steps of:
moving the plunger into the cavity to its completely extended position, introducing a measured gob of molten glass to a loading position above the blank cavity, moving such gob from the loading position to a pressing position within the blank cavity, applying air pressure in excess of 80 p.s.i.g. to create a fluid pressure on the molten glass gob pressing it into conformity with the mold and extended plunger, retracting the cavity plunger; expanding the plunger cavity; cooling the parison; and separating the parison from the baffle means and the blank mold.

4,411,682

PROCESS AND APPARATUS FOR PRODUCING COMPOST

Joseph H. Brill, 4825 W. Sanilac, Snover, Mich. 48472

PCT No. PCT/US80/00069, § 371 Date Sep. 14, 1981, § 102(e) Date Sep. 8, 1981, PCT Pub. No. WO81/02011, PCT Pub. Date Jul. 23, 1981
PCT Filed Jan. 14, 1980, Ser. No. 304,991
Int. Cl.³ C05F *11/08*
U.S. Cl. 71—9 **10 Claims**



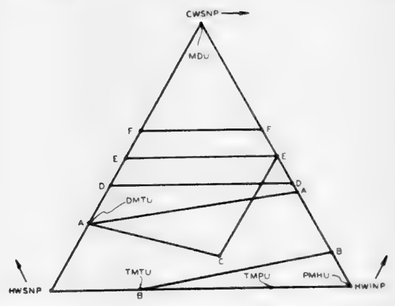
1. The method of producing a fermented product in a horizontally elongated chamber having a pair of rotatable shafts therein journalled on generally horizontally extending parallel axes which are spaced apart in a horizontal plane, each shaft having at least one row of radially projecting fingers thereon spaced along the axis of each shaft, said fingers being located and dimensioned relative to said chamber and the spacing of said shafts so that substantially the entire contents of the chamber are agitated by the churning and lifting action of the fingers when the shafts are rotated, which comprises:
(a) loading into said chamber a batch of organic matter containing bacteria, said batch being of a predetermined volume such as to only partially fill said chamber and thereby provide a substantial air space throughout the length of the chamber above the level of the batch mixture therein;
(b) after loading, isolating said chamber from the surrounding atmosphere except for the hereinafter mentioned air flow;
(c) rotating the two shafts in opposite directions so that the fingers thereon travel through the mixture in a direction which tends to displace it from the opposite longitudinal sides of the chamber laterally inwardly and upwardly toward the longitudinal central portion of the chamber;
(d) rotating the shaft at a rate such that the mixture is progressively agitated by the circumferentially successive rows of fingers on each shaft about once every three minutes but not more than about once every one-half minute to thereby cause substantially all portions of the mixture to progressively come into intimate and relatively prolonged contact with the hereinafter mentioned air;
(e) while said shafts are rotating, conducting fresh air over the mixture through the entire length of said chamber at a rate between about ½ to 2½ cubic feet per minute per hundred cubic feet of the batch mixture in the chamber thereby causing fermentation of the mixture to proceed at such rate as to raise the temperature of the mixture to about 210 degrees Fahrenheit within a period of not more than about 18 hours without the application of external heat;
(f) continuing the flow of air and rotation of said shafts at said rates while and after the temperature thereof levels off at said elevated value to cool the moist fermented product so formed to relatively low temperature approaching room temperature;
(g) drying the cooled moist product so formed using drying air of a temperature not exceeding 120 degrees Fahrenheit to reduce its moisture content to a maximum of not more than about 50% by weight within a reasonably short time after the aerobic reaction is completed and before substantial anaerobic decomposition of the fermented product occurs; and
(h) maintaining substantially the entire batch of said product in said dried condition until it is ready for use.

4,411,683

PROCESS OF PREPARING SOLID CONTROLLED RELEASE FERTILIZER COMPOSITION

Harvey M. Goertz, Marysville, Ohio, assignor to The O. M. Scott & Sons Company, Marysville, Ohio

Filed Jul. 30, 1981, Ser. No. 288,456
Int. Cl.³ C05C *9/02*
U.S. Cl. 71—28 **14 Claims**



1. A process of preparing a solid controlled release urea-formaldehyde fertilizer composition comprising
preparing an aqueous mixture of urea, formaldehyde and ammonia, the molar ratio of urea to formaldehyde ranging

from 1 to 3, the molar ratio of ammonia to formaldehyde ranging from 0.05 to 1.00,

heating said mixture to a temperature of from 140° to 190° F. at an alkaline pH, the heating being stopped prior to the formation methylene urea polymers, said reaction producing a mixture of methylol ureas and an ammonia intermediate reaction product,

acidifying said reaction mixture with from 0.1 to 8% by weight of the mixture of an acid to initiate methylene urea polymerization and

heating said reaction mixture to a temperature of from 180° to 320° F. for a time sufficient to complete said methylene urea polymerization and dry said reaction product, the majority of polymeric nitrogen present in said product consisting of short chain methylene urea polymers selected from the group consisting of methylene diurea, dimethylene triurea and mixtures thereof.

4,411,684

AUXIN COMPOSITIONS OF N-PHENYL AND N-CHLORO PHENYL INDOLYL-3-ALKYLENE AMIDES AND THEIR USE AS AUXIN GROWTH REGULATORS

David A. Boyles; Jack R. Gaines, both of Rapid City, S. Dak., and Bruce E. Haissig, Rhinelander, Wis., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 12, 1982, Ser. No. 367,639
Int. Cl.³ A01N *43/38*; C07D *209/18*
U.S. Cl. 71—77 **4 Claims**

1. A synthetic auxin composition for stimulating adventitious root formation in difficult-root cuttings, comprising an amount sufficient to simulate adventitious root formation of a compound or mixture of compounds selected from the group consisting of phenyl and chlorophenyl indole-3-lower alkylene amides wherein the alkylene amide group has up to 4 carbons; and a volatile or inert non-toxic carrier.

4. A method of stimulating adventitious root formation of plant cuttings comprising

contacting the stem of a plant cutting with a phenyl indole-3-lower alkylene amide wherein the amide group has up to 4 carbon atoms, or a mixture thereof; and

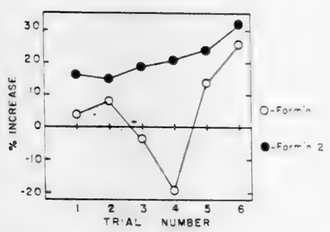
maintaining said cutting in an environment for developing roots on the stem of said cutting until the roots develop to an extent that said cutting is suitable for transplanting.

4,411,685

1-TRIACONTANOL PLANT GROWTH STIMULATOR FORMULATIONS

Andrew J. Welebir, Falls Church, Va., assignor to Biochemical Research Corporation, Falls Church, Va.

Continuation-in-part of Ser. No. 146,005, May 2, 1980, Pat. No. 4,333,758, which is a continuation-in-part of Ser. No. 47,696, Jun. 12, 1979, abandoned. This application Oct. 30, 1980, Ser. No. 202,705
The portion of the term of this patent subsequent to Jun. 8, 1999, has been disclaimed.
Int. Cl.³ A01N *59/00*
U.S. Cl. 71—84 **20 Claims**



1. A plant growth stimulator formulation, consisting essentially of an effective plant growth-stimulating amount of 1-triacontanol; a water-soluble polar organic solvent in which 1-triacontanol is soluble; metal ions having a valence of +2 through +5, inclusive; an auxin; and water, said metal ions and said auxin being present in an amount effective to assist the 1-triacontanol in stimulating plant growth.

4,411,686

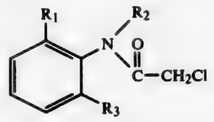
DIHALOPROPYL ESTER ANTIDOTES FOR ACETANILIDE HERBICIDES

Laddie L. Green, San Jose, and Kent E. Matsumoto, Kensington, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 17, 1981, Ser. No. 235,342
Int. Cl.³ A01N *43/00*
U.S. Cl. 71—88 **9 Claims**

1. A composition comprising:

(a) an herbicidally effective amount of an acetanilide compound of the formula

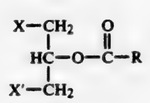


in which

R_1 and R_3 are independently each alkyl having 1–2 carbon atoms, inclusive; and

R_2 is alkoxyalkyl having 1–4 carbon atoms, inclusive; and

(b) a non-phytotoxic antidotally effective amount of a compound of the formula



in which

X and X′ are halogens, independently selected from the group consisting of chlorine, bromine and iodine; and

R is dioxane-substituted alkoxy carbonyl wherein the alkoxy group has 1–4 carbon atoms, inclusive.

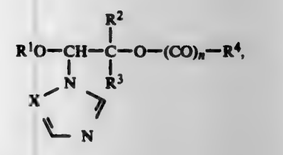
4,411,687

α-AZOLYL-GLYCOL DERIVATIVES, AS FUNGICIDES AND PLANT GROWTH REGULATORS

Bernd Zeeh, Ludwigshafen; Norbert Goetz, Worms; Eberhard Ammermann, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 160,309, Jun. 17, 1980, abandoned. This application Sep. 18, 1981, Ser. No. 303,572
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926280
Int. Cl.³ A01N *43/50, 43/64*; C07D *233/60, 249/08*
U.S. Cl. 71—76 **9 Claims**

1. A process for reducing the growth height of plants which comprises: applying to said plants or to the habitat of such plants an effective amount of a composition comprising a solid or liquid carrier and a compound of the formula I



where R^1 is C_{1-4}-alkyl,

R^2 is C_{1-6}-alkyl or unsubstituted or chlorine-substituted phenyl,

R^3 is hydrogen, C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{2-6}-alkynyl or unsubstituted or chlorine-substituted benzyl,

R^4 is methyl, ethyl, propenyl, propynyl, unsubstituted or chlorine-substituted benzyl or, where n = 1, may also be unsubstituted or chlorine-, trifluoromethyl- or nitro-substituted phenyl,

X is CH or N and

n is 0 or 1 or a plant-tolerated salt or metal complex thereof.

4,411,688

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

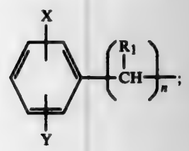
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 170,505, Jul. 21, 1980, Pat. No. 4,321,082, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jan. 21, 1982, Ser. No. 341,432
Int. Cl.³ A01N *43/02, 37/18*
U.S. Cl. 71—90 **39 Claims**

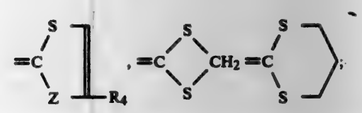
1. A method of reducing injury to rice sorghum and wheat due to the application thereto of alachlor and butachlor which comprises applying to the plant locus a safening effective amount of a compound having the formula

R-N=A

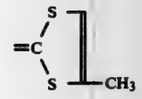
or an agriculturally acceptable acid addition salt thereof, wherein R is hydrogen, or



R_1 is hydrogen or lower alkyl; X and Y independently equal hydrogen, lower alkyl, lower alkoxy or Cl; n is 0, 1, 2 or 3; A is



R_4 is hydrogen, methyl or phenyl; Z is oxygen or sulfur; provided that when n is 1 and A is



R_1 cannot equal n-propyl or isobutyl.

4,411,689

SUBSTITUTED 2-IMINO-1,3-DITHIO AND 1,3-OXATHIO HETEROCYCLIC COMPOUNDS AS HERBICIDAL ANTIDOTES

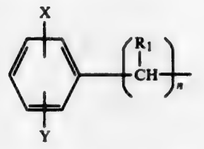
Frederic G. Bollinger, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 170,505, Jul. 21, 1980, Pat. No. 4,321,082, which is a division of Ser. No. 960,987, Nov. 15, 1978, Pat. No. 4,231,783. This application Jan. 21, 1982, Ser. No. 341,434
Int. Cl.³ A01N *43/02, 37/00*
U.S. Cl. 71—90 **9 Claims**

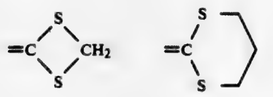
1. A method of reducing injury to rice, sorghum and wheat due to the application thereto of triallate which comprises applying to the plant locus a safening effective amount of a compound having the formula

R-N=A

or an agriculturally acceptable acid addition salt thereof, wherein R is hydrogen, or



R_1 is hydrogen or lower alkyl; X and Y independently equal hydrogen, lower alkyl, lower alkoxy or Cl; n is 0, 1, 2 or 3; A is



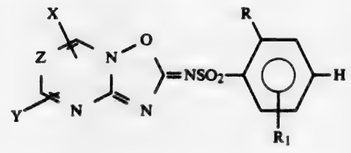
4,411,690

FUSED [1,2,4]OXADIAZOLYLIDENEBENZENESULFONAMIDES AND THEIR USE AS HERBICIDES AND PLANT GROWTH REGULANTS

Chi-Ping Tseng, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Continuation-in-part of Ser. No. 228,705, Jan. 26, 1981, abandoned. This application Dec. 3, 1981, Ser. No. 326,267
Int. Cl.³ A01N *43/90*; C07D *498/04*
U.S. Cl. 71—92 **33 Claims**

1. A compound of the formula:



where

R is C_1–C_4 alkyl, C_1–C_4 alkoxy, F, Cl, Br, NO_2, COR_4, SO_2R_5, $SO_2NR_6R_7$, $SO_2OCH_2CF_3$, $SO_2OCH_2CCl_3$, $SO_2N(OCH_3)(CH_3)$, BR_8, OSO_2R_9 or CH_2P;

R_1 is H, F, Cl, Br, CF_3, NO_2, C_1–C_4 alkyl or C_1–C_4 alkoxy;

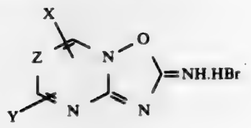
R_4 is C_1–C_6 alkoxy, C_3–C_6 alkenyloxy, C_2–C_6 haloalkoxy substituted with 1–3 atoms selected from F, Cl, or Br, C_5–C_6 cycloalkoxy, $—O(CH_2CH_2O)_nR_{10}$ or $OCH_2CH_2CH_2OR_{10}$;

n is 1 or 2;

R_5 is C_1–C_4 alkyl;

R_6 and R_7 are independently C_1–C_4 alkyl, provided the total number of carbon atoms of R_6 and R_7 does not exceed 5;
B is O or SO_2;
R_8 is CHF_2, CF_3, CH_2CF_3, CF_2CHFG where G is F, Cl, Br or CF_3;
R_9 is C_1–C_4 alkyl or C_1–C_4 alkyl substituted with 1-3 atoms selected from F, Cl or Br;
P is C_1–C_4 alkoxy, C_3–C_4 alkenyloxy or SO_2R_5;
R_{10} is CH_3 or CH_3CH_2;
X is CH_3, CH_3CH_2, CH_3O or CH_3CH_2O;
Y is H, Cl, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy, CH_2OCH_3, $CH_2OCH_2CH_3$, $CH_2CH_2OCH_3$ or $CH_2CH_2OCH_2CH_3$; and
Z is CH and their agriculturally suitable salts.

11. A compound of the formula:



wherein
X is CH_3, CH_3CH_2, CH_3O or CH_3CH_2O;
Y is H, Cl, CF_3, C_1–C_4 alkyl, C_1–C_4 alkoxy, CH_2OCH_3, $CH_2OCH_2CH_3$, $CH_2CH_2OCH_3$ or $CH_2CH_2OCH_2CH_3$; and
Z is CH.

14. A composition suitable for controlling the growth of undesired vegetation consisting essentially of an effective amount of a compound of claim 1 and at least one of a surfactant and a solid or liquid inert diluent.

4,411,691

1-SUBSTITUTED PHENYL-PYRIDAZONE HERBICIDES

Wolfgang Rohr, Mannheim; Hanspeter Hansen, Ludwigshafen; Bruno Wuerzer, Limburgerhof, and Heinz-Guenter Ceser, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 194,439, Oct. 6, 1980, abandoned, which is a continuation of Ser. No. 7,006, Jan. 26, 1979, abandoned. This application Feb. 1, 1982, Ser. No. 344,612
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1978, 2808193
Int. Cl.³ A01N *43/58*; C07D *237/16, 237/14*
U.S. Cl. 71—92 **2 Claims**

1. A substituted pyridazone selected from the group consisting of 1-(3-tetrafluoroethoxyphenyl)-4,5-dimethoxypyridazone-6 and 1-(3-monobromotrifluoroethoxyphenyl)-4,5-dimethoxypyridazone.-6

2. A process for combating the growth of unwanted plants wherein the soil or the plants are treated with a substituted pyridazone selected from the group consisting of 1-(3-tetrafluoroethoxyphenyl)-4,5-dimethoxypyridazone-6 and 1-(3-monobromotrifluoroethoxyphenyl)-4,5-dimethoxypyridazone-6.

4,411,692

FLOWABLE HERBICIDES

Francis J. LeClair, Webster Groves, and John M. Surgant, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 26, 1981, Ser. No. 247,679
The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
Int. Cl.³ A01N *25/02, 25/00*
U.S. Cl. 71—93 **8 Claims**

1. A water-based, flowable herbicide composition which comprises by weight:
(a) 28.0% to 35.0% 2-chloro-N-isopropylacetanilide herbicide;
(b) 7.0% to 16.0% of an s-triazine selected from the group consisting of atrazine, simazine and propazine;
(c) 2.0% to 6.0% of a hydrated amorphous silicon dioxide;
(d) 2.0% to 6.0% of a polyoxypropylene/polyoxyethylene block-copolymer;
(e) 0.5% to 2.0% of a taurate surfactant;
(f) 0.5% to 2.0% of a hydrated aluminum silicate;
(g) 0.5% to 1.0% of a flocculent;
(h) 5.0% to 10.0% of an anti-freeze agent;
(i) 0.5% to 2.0% of a silicon antifoaming agent; and
(j) balance being water; the solid components of said composition having a particle size of no greater than 25 microns.

4,411,693

FLOWABLE HERBICIDES

Francis J. LeClair, Webster Groves, and John M. Surgant, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 26, 1981, Ser. No. 247,680
The portion of the term of this patent subsequent to Feb. 1, 2000, has been disclaimed.
Int. Cl.³ A01N *25/02, 25/00*
U.S. Cl. 71—118 **7 Claims**

1. A water-based, flowable herbicide composition which comprises by weight:
(a) 38.0% to 45.0% 2-chloro-N-isopropylacetanilide herbicide;
(b) 2.0% to 6.0% of a hydrated amorphous silicon dioxide;
(c) 2.0% to 6.0% of a polyoxypropylene/polyoxyethylene block-copolymer;
(d) 0.5% to 2.0% of a taurate surfactant;
(e) 0.5% to 2.0% of a hydrated aluminum silicate;
(f) 0.5% to 1.0% of a flocculent;
(g) 5.0% to 10.0% of an anti-freeze agent;
(h) 0.5% to 2.0% of a silicon antifoaming agent; and
(i) balance being water;
the solid components of said composition having a particle size of no greater than 25 microns.

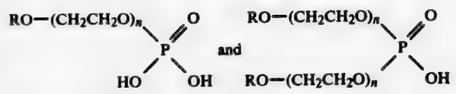
4,411,694

EMULSIFIABLE CONCENTRATES OF 2-CHLORO-N-ISOPROPYL-2',3'-DIMETHYLACETANILIDE WITH IMPROVED RESISTANCE TO CRYSTALLIZATION AND PROCESS FOR PREPARING THE SAME

Frank H. Smith, Jr., Titusville, N.J., and Pradip K. Mookerjee, Martinez, Calif., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 156,010, Jun. 3, 1980, abandoned. This application Nov. 23, 1981, Ser. No. 324,221
Int. Cl.³ A01N *57/00*
U.S. Cl. 71—118 **4 Claims**

1. An emulsifiable liquid composition which comprises in admixture: 50% to 70% by weight of 2-chloro-N-isopropyl-2',3'-dimethylacetanilide, 23.5% to 30% by weight of phenol, with the proviso that the molar ratio of 2-chloro-N-isopropyl-2',3'-dimethylacetanilide to phenol be about 1:0.8 to 1:1.1, 2% to 15% by weight of a pair of surfactants in a 1:1 to 4:1 weight ratio, and wherein the first surfactant is a mixture of dodecylbenzene sulfonate and ethoxylated nonylphenol, and the second surfactant is a mixture of mono and diesters of orthophosphoric acid represented by the formulas:



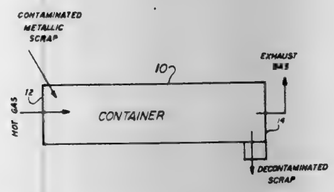
wherein R is C_8–C_{20} alkyl or C_8–C_{20} alkylphenyl and n is an integer of 6 to 10; and the composition is totaled to 100% with an inert aromatic solvent.

4,411,695

METALLIC SCRAP DECONTAMINATION PROCESS

Noel H. Twyman, Canyon Lake, Calif., assignor to Apros Corporation, Tustin, Calif.

Continuation-in-part of Ser. No. 771,846, Feb. 25, 1977, Pat. No. 4,264,060. This application Apr. 16, 1979, Ser. No. 30,151
Int. Cl.³ C22B *1/02*
U.S. Cl. 75—44 S **18 Claims**



1. A process for decontamination of contaminated metallic scrap which comprises:
passing an oxygen bearing hot gas through the interior of a container having an inlet end and an exit end, said hot gas entering said container at said inlet end and exiting said container at said exit end;
locating said contaminated scrap within the interior of said container at said inlet end;
concurrently
(a) moving said scrap from said inlet to said exit end of said container, (b) mixing and agitating said scrap within the interior of said container, and (c) contacting said scrap with said hot gas stream under conditions essentially incapable of sustaining flaming within the interior of said container;
said contacting said scrap with said hot gas transferring heat from said hot gas stream to said scrap lowering the temperature of said hot gas stream, while concurrently raising the temperature of said scrap
(a) through a first temperature phase wherein low boiling hydrocarbons and water are volatilized and decomposed into gases which are diffused into said hot gas stream and (b) to a second temperature phase wherein high boiling contaminants are volatilized or decomposed and other contaminants which are essentially capable of being oxidized below 1200° F. but which are not volatilized, are oxidized and (c) maintaining said scrap within the second temperature phase for a time period sufficient to insure complete removal of said contaminants;
discharging said decontaminated scrap from said container.

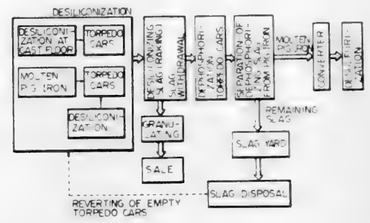
4,411,696

STEELMAKING PROCESS WITH SEPARATE REFINING STEPS

Hiroyuki Nakashima, Kisarazu; Morihiro Sumida, and Hiroki Goto, both of Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Japan

Division of Ser. No. 243,451, Mar. 13, 1981. This application Mar. 29, 1982, Ser. No. 362,839
Claims priority, application Japan, Mar. 21, 1980, 55-34693; Jan. 23, 1981, 56-8855
Int. Cl.³ C21C *7/02*
U.S. Cl. 75—51 **2 Claims**

1. A method for desiliconizing, dephosphorizing and decarburizing molten pig iron, wherein molten pig iron from a blast furnace is first desiliconized, then dephosphorized and the decarburized, which comprises:
(a) desiliconizing molten pig iron to an Si content of 0.20% or less;
(b) dephosphorizing said desiliconized molten pig iron to a P content of 0.040% or less in a vessel while forming a dephosphorization slag and a body of dephosphorized molten pig iron,
(c) withdrawing said dephosphorized molten pig iron from said vessel, whereby dephosphorization slag remains in said vessel and adding new molten pig iron from a blast



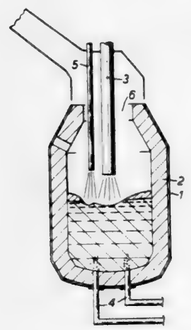
furnace to said vessel containing said dephosphorization slag and then desiliconizing said molten pig iron in said vessel.

4,411,697

METAL REFINING PROCESSES

Gene D. Spenceley, Stokesley, and Brian C. Welbourn, Whitby, both of England, assignors to British Steel Corporation, London, England

Filed Jun. 14, 1982, Ser. No. 388,428
Claims priority, application United Kingdom, Jun. 19, 1981, 8118962
Int. Cl.³ C21C *5/32, 5/34*
U.S. Cl. 75—60 **12 Claims**



1. A process for refining steel comprising the steps of blowing a refining gas at the upper surface of the melt contained in a refining vessel by means of an overhead lance; injecting a stirring or processing gas directly into the vessel below the surface of the melt therein; and introducing solid carbonaceous material from about onto or through the upper surface of the melt in the refining vessel.

4,411,698

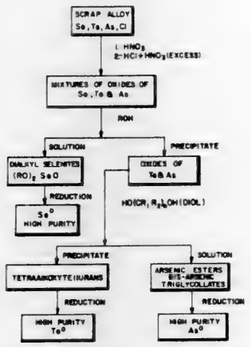
PROCESS FOR RECLAIMATION OF HIGH PURITY SELENIUM, TELLURTUM, AND ARSENIC FROM SCRAP ALLOYS

Santokh S. Badesha, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 2, 1982, Ser. No. 404,258
Int. Cl.³ C01B *19/02*; C22B *3/00*
U.S. Cl. 75—121 **20 Claims**

1. A process for obtaining selenium, tellurium and arsenic in high purity, which comprises providing a source material containing selenium, tellurium and arsenic, treating the source material with a strong acid, reacting the resulting product with an alcohol wherein a solution of a selenium ester is formed, and a precipitate of the oxides of the tellurium and arsenic results,

subjecting the selenium ester solution subsequent to distillation to a reduction reaction, resulting in the formation of substantially pure selenium, reacting the tellurium and arsenic oxides



percipitate with a diol, resulting in the formation of a precipitate of a tellurium ester, and a solution of an arsenic ester, followed by subjecting, subsequent to purification the tellurium ester and the arsenic ester to reduction reactions.

4,411,699

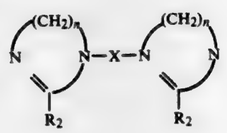
DESENSITIZER COMPOSITIONS

Ken Iwakura; Nobuyoshi Sekikawa, both of Minami-ashigara, and Akio Miyamoto, Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

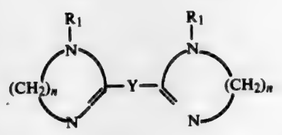
Filed Oct. 16, 1981, Ser. No. 311,812
Claims priority, application Japan, Oct. 22, 1980, 55-148046
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—23 **6 Claims**

1. A desensitizer composition comprising:
(a) a bis-compound of an amidine derivative represented by the formula (III) or (IV):

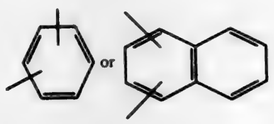
(III)



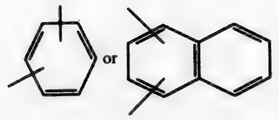
(IV)



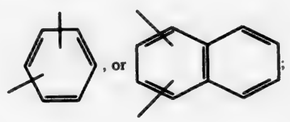
wherein R_1 represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms, or an aryl group having 6 to 20 carbon atoms; R_2 represents a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an amino group, or an alkylthio group; X represents $-(CH_2)_k-A-(CH_2)_l-B-(CH_2)_m-$, $-CH_2-$,



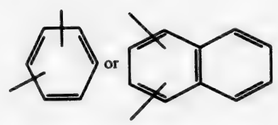
wherein A and B each is >O, >NH, >CH_2,



and k, l, and m each is 0 or an integer of 1 to 4; Y represents $-(CH_2)_k-A-(CH_2)_l-B-(CH_2)_m-$, $-CH_2-$, $-NH(CH_2)_j-NH-$,



wherein A and B each is >O, >NH, >CH_2,



k, l and m each is 0 or an integer of 1 to 4; and j is an inter of 1 to 12; and wherein the ring-forming methylene group may be substituted with an alkyl group having 1 to 4 carbon atoms or a phenyl group;
(b) a synthetic or natural high molecular weight compound as a binder; and
(c) a pigment.

4,411,700

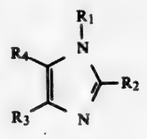
DESENSITIZER COMPOSITIONS

Nobuyoshi Sekikawa; Ken Iwakura, both of Minami-ashigara; Akio Miyamoto, and Masato Satomura, both of Fujinomiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1981, Ser. No. 311,819
Claims priority, application Japan, Oct. 17, 1980, 55/145345
Int. Cl.³ C09D *11/00*
U.S. Cl. 106—23 **5 Claims**

1. A desensitizer composition comprising:
(a) an imidazole derivative represented by following general formula (I) or a bis-compound thereof as the desensitizer:

(I)



wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, or an aryl group having 6 to 20 carbon atoms; R_2 represents a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an amino group, or an alkylthio group having 1 to 20 carbon atoms; and R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or an aryl group having 6 to 20 carbon atoms; and R_1, R_2, R_3 and R_4 each may be substituted;
(b) a natural or synthetic high molecular weight compound useful as a binder; and
(c) a pigment.

4,411,701

WATERPROOF GYPSUM MOLDED PRODUCT

Masumi Saito, Kobe; Eiichi Hirai, Takarazuka, and Masao Endo, Nishinomiya, all of Japan, assignors to Kurashiki Bosiki Kabushiki Kaisha, Kurashiki, Japan

Continuation-in-part of Ser. No. 191,824, Sep. 26, 1980, Pat. No. 4,341,560. This application Jan. 29, 1982, Ser. No. 344,171
Claims priority, application Japan, Oct. 2, 1979, 54-127488
The portion of the term of this patent subsequent to Jul. 27, 1997, has been disclaimed.
Int. Cl.³ C04B *11/14*
U.S. Cl. 106—87 **9 Claims**

1. A molded waterproof gypsum product formed of a mixture of hemihydrate gypsum with 0.25 to 1 part by weight of an alkali metal alkylsiliconate or phenylsiliconate and 0.07 to 3.5 parts by weight (as CaO) of a strengthening additive selected from calcium oxide and calcium hydroxide per 100 parts by weight of gypsum.

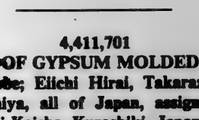
4,411,702

METHOD FOR SHEET FORMING A GYPSUM HARDENED BODY

Yoshio Makino; Yoshihiko Murata; Toshiaki Kakinuma, all of Saitama; Masaharu Yamaguchi, and Naoyuki Fujisawa, both of Chiba, all of Japan, assignors to Mitsubishi Mining & Cement Company Ltd.; Mitsubishi Cement Asbestos Company Ltd. and Toray Silicone Company Ltd., all of Tokyo, Japan

Continuation-in-part of Ser. No. 199,670, Oct. 22, 1980, abandoned. This application Mar. 12, 1982, Ser. No. 357,636
Claims priority, application Japan, Oct. 31, 1979, 54/141115
Int. Cl.³ C04B *11/14*
U.S. Cl. 106—111 **5 Claims**

1. A method for sheet forming a gypsum hardened body from a mixed material composed of a main component consisting of gypsum dihydrate, slag and calcium hydroxide and additives in which said main components are added together and mixed with water to form a slurry, said slurry is molded into the form of a sheet and said sheet is hardened by curing, wherein the improvement comprises adding a part of said main component coated with hydrophobic diorganopolysiloxane fluid of the general formula



in which R represents a nonsubstituted monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical and n represents a positive integral number to said mixed material.

4,411,703

COMPOSITION FOR APPLYING ANTIREFLECTIVE COATING ON SOLAR CELL

Daniel L. Whitehouse, Clarksburg, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 227,929, Jan. 23, 1981, Pat. No. 4,328,260. This application Jan. 20, 1982, Ser. No. 341,128
Int. Cl.³ C08L *1/28;* C07F *7/28;* B05D *1/18*
U.S. Cl. 106—189 **5 Claims**

1. A composition suitable for application onto the light impinging surface of a solar energy cell for forming an antireflective coating thereon, comprising:
(a) a thickening or suspension agent selected from the group consisting of methylcellulose and ethylcellulose;
(b) a liquid alcohol selected from the group consisting of aliphatic alcohols having at least six carbon atoms, terpenes and aromatic alcohols; and
(c) a metal alkoxide, said metal being selected from the group consisting of tantalum, titanium, niobium, yttrium, zirconium, tellurium and mixtures thereof.

4,411,704

PROCESS FOR IMPROVEMENT OF ADHESION BETWEEN MINERAL FILLERS AND THERMOPLASTIC POLYMERS

Andrzej Galeski; Ryszard Kalinski, and Marian Kryszewski, all of Lodz, Poland, assignors to Polska Akademia Nauk, Lodz, Poland

Continuation-in-part of Ser. No. 126,265, Mar. 3, 1980, abandoned. This application Oct. 16, 1981, Ser. No. 312,042
Int. Cl.³ C04B *31/40*
U.S. Cl. 106—308 Q **2 Claims**

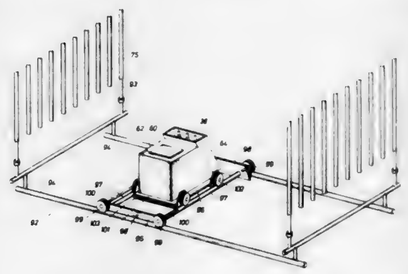
1. A process for improving adhesion between mineral fillers and thermoplastic polymers comprising coating the mineral filler with a thin layer of liquid ethylene oxide oligomer, wherein the mineral filler is a granular mineral filler selected from the group consisting of talc, silica, chalk, quartz, and kaolin, and the ethylene oxide oligomer has a molecular weight of 100–800.

4,411,705

FOR REMOVING PARTICLES FROM A TUBE BY MEANS OF A MISSILE

Othel D. Easley, Jr., Houston, and John T. Wooten, Crosby, both of Tex., assignors to Reactor Services International, Inc., Alvin, Tex.

Filed Nov. 4, 1981, Ser. No. 318,274
Int. Cl.³ B08B *9/02*
U.S. Cl. 134—8 **10 Claims**



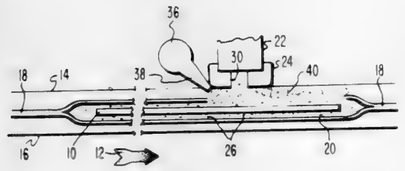
1. A method of removing bridged particles from a tube having a bottom entrance which comprises:
(a) positioning a missle firing means separate from and below the bottom entrance of a tube containing bridged particles so that a missile, when fired, will enter the bottom entrance of the tube and travel up the inside of the tube essentially parallel to the sides of the tube;
(b) activating the missile firing means so that it fires at least one missile into the bottom entrance of the tube with enough force to travel up the tube, strike and dislodge at least some of the particles, causing the dislodged particles to fall down the tube; and
(c) repeating step b until the desired amount of the particles in the tube have fallen down and out of the bottom entrance of the tube.

4,411,706

METHOD AND APPARATUS FOR ELIMINATING DUST FROM INK JET PRINTERS

Harry L. Wallace, Livonia, and John D. Thomas, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 25, 1981, Ser. No. 277,277
Int. Cl.³ B08B 5/00
U.S. Cl. 134—37 **4 Claims**



3. A method for preventing dust from accumulating on and around the jet head of an ink jet printer, where dust from a document processor is entrained in a first air-stream which carries the entrained air to the jet head, the method comprising:

generating a second air-stream;

controlling said second air-stream to cause the second air-stream to travel along a restricted path; and

directing said second air-stream into the path of said first air-stream to produce a turbulent condition tending to disrupt the path of said first air-stream and divert the dust entrained therein away from the ink jet head.

4,411,707

PROCESSES FOR MAKING CAN END STOCK FROM ROLL CAST ALUMINUM AND PRODUCT

Paul Brennecke, and Donald C. McAuliffe, both of Golden, Colo., assignors to Coors Container Company, Golden, Colo.

Filed Mar. 12, 1981, Ser. No. 243,033
Int. Cl.³ C22F 1/04
U.S. Cl. 148—2 **23 Claims**



1. A process for producing an aluminum alloy sheet stock comprising between about 0.4% to about 1% by weight of Manganese and containing an aluminum manganese dispersoid having a size and distribution to render the stock suitable for forming into can ends and can bodies comprising the steps of:

continuously chill roll casting aluminum alloy containing aluminum and manganese at a predetermined slab thickness;

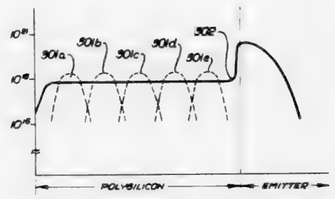
reducing the thickness of the slab by at least 60% to form an aluminum strip; and then annealing the strip at a temperature of about 825° to about 900° F.

4,411,708

METHOD OF MAKING PRECISION DOPED POLYSILICON VERTICAL BALLAST RESISTORS BY MULTIPLE IMPLANTATIONS

Lucien C. Winhan, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 25, 1980, Ser. No. 180,914
Int. Cl.³ H01L 21/263, 21/26, 7/00
U.S. Cl. 148—1.5 **11 Claims**



1. A process for forming a vertical polysilicon resistor directly over and in electrical contact with a portion of the surface of a semiconductor device, comprising the steps of:

providing an electrically nonconductive mask to define the surface portion;

depositing a layer of polysilicon over the surface portion;

ion implanting into the polysilicon at plural discrete energy levels at least one conductivity affecting impurity;

annealing the semiconductor device to form a more uniform effective dopant concentration in the polysilicon in the range 10^{17} to 10^{19} atoms/cm^3; and

forming an electrical connection to the top of the polysilicon, thereby forming a resistor directly over and in electrical contact with the surface portion.

4,411,709

METHOD FOR MANUFACTURING ALUMINUM ALLOY CASTING

Teruo Nakanishi, Higashi, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Feb. 9, 1982, Ser. No. 347,269
Claims priority, application Japan, Feb. 21, 1981, 56-24792
Int. Cl.³ B22D 25/00
U.S. Cl. 148—3 **7 Claims**



1. A method for manufacturing a casting of aluminum alloy by the use of a mold having therein a destructible core made of sands and a resin binder, said casting having defined therein at least one cavity complemental in shape to the core, which method comprises the steps of:

pouring a molten aluminum alloy into the mold to form a casting therein;

removing the casting from the mold together with the core after it has been solidified;

destroying the core in the casting to such as to permit the removal of a portion of the sand used to form the core from the casting;

heating the casting to burn out and weaken the bonding capability of the resin component contained in the remaining sand located inside the casting so as to facilitate a complete removal of the sand therefrom, said casting being during the heating step, simultaneously subjected to a solid solution treatment and quenching treatment of the casting;

rapidly cooling the casting to quench it; and

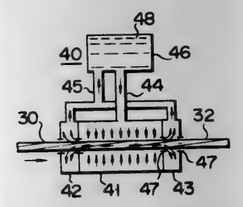
drying said casting.

4,411,710

METHOD FOR MANUFACTURING A STRANDED CONDUCTOR CONSTITUTED OF INSULATED STRANDS

Masataka Mochizuki, Tokyo; Michio Takaoka, Chiba; Tsuneaki Moutai, Yachio; Shotaro Yoshida, and Kazuo Watanabe, both of Tokyo, all of Japan, assignors to The Fujikawa Cable Works, Limited, Tokyo, Japan

PCT No. PCT/JP81/00076, § 371 Date Nov. 23, 1981, § 102(e) Date Nov. 23, 1981, PCT Pub. No. WO81/02944, PCT Pub. Date Oct. 15, 1981
PCT Filed Apr. 2, 1981, Ser. No. 328,592
Claims priority, application Japan, Apr. 3, 1980, 55-43724; Apr. 3, 1980, 55-43725
Int. Cl.³ C23C 1/08
U.S. Cl. 148—6.14 R **25 Claims**



1. A method of manufacturing a stranded conductor (30) comprised of a plurality of insulated strands, comprising:

passing an uninsulated stranded conductor (30) formed of a plurality of uninsulated strands in a stranded state through an oxidation treatment solution (48; 404) in an oxidation chamber (41), while keeping said stranded conductor immersed in said oxidation treatment solution as it passes therethrough; and

maintaining the pressure of said oxidation treatment solution (48; 404) at the outer portion of said stranded conductor greater than the pressure of said oxidation treatment solution (48; 404) at the inner portion of said stranded conductor (30) by a sufficient amount such that said oxidation treatment solution flows to the inner portions of said stranded conductor and flows through the interstices amoung each of the strands of said stranded conductor, thereby causing said oxidation treatment solution to discharge from said oxidation chamber by flowing through the interstices of the twisted strands of said stranded conductor into a discharge chamber adjacent said oxidation chamber.

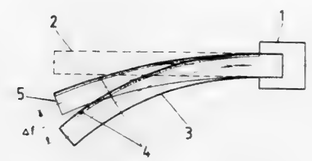
4,411,711

PROCESS TO PRODUCE A REVERSIBLE TWO-WAY SHAPE MEMORY EFFECT IN A COMPONENT MADE FROM A MATERIAL SHOWING A ONE-WAY SHAPE MEMORY EFFECT

Joachim Albrecht, Müilligen; Thomas Duerig, Nussbaumen, and Günther Schroeder, Birmenstorf, all of Switzerland, assignors to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Filed Jul. 27, 1982, Ser. No. 402,273
Claims priority, application Switzerland, Feb. 5, 1982, 705/82
Int. Cl.³ C21D 8/00
U.S. Cl. 148—11.5 A **5 Claims**

1. A process for inducing a reversible two-way shape memory effect in an already existing component made of a shape memory alloy exhibiting, under normal conditions, only a one-way effect comprising first solution treating said component in a temperature range of β-solid solution, subsequently water quenching and deforming inhomogeneously in such a way that a cross-section of said component is deformed to a sufficient degree to act as a counter-spring (due to the residual



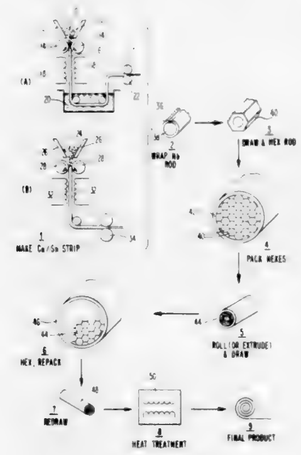
stresses in the component) suppressing the one-way effect in the remainder of the cross-section (either undeformed or deformed to a lesser extent).

4,411,712

METHOD OF MANUFACTURE OF MULTIFILAMENTARY INTERMETALLIC SUPERCONDUCTORS

William G. Marancik, Basking Ridge, N.J., assignor to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 216,475, Dec. 15, 1980, abandoned. This application Sep. 29, 1982, Ser. No. 426,432
Int. Cl.³ H01L 39/24
U.S. Cl. 148—11.5 Q **15 Claims**



1. A method for manufacturing a multifilamentary superconductor having the composition A_3B and the A-15 crystal structure, comprising the following steps:

encasing one or more rods or wires of the A material within a sheath of a material consisting essentially of a compacted composite of Cu and the B material said composite being formed by compaction of Cu powder into a porous matrix, sintering said porous matrix, and dipping said porous matrix into a bath of the B material, whereby said B material is infiltrated into the pores in said sintered porous Cu matrix;

working the sheathed rods to firmly consolidate said composite upon said rods;

packing a plurality of the worked sheathed rods together;

further working the assembled plurality of sheathed rods to a desired final shape and size; and

subjecting the worked assembly to a heat treatment for a time and at a temperature such that the compound A_3B is formed at the interfaces between the rods of the A material and the composite material.

4,411,713

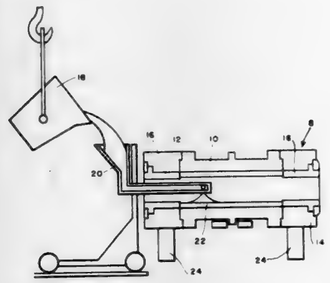
SHELL FOR A COMPOSITE ROLL

William H. Betts, Library, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 57,156, Jul. 12, 1979, abandoned. This application Jun. 25, 1982, Ser. No. 392,098

Int. Cl.³ B22D *13/00*

U.S. Cl. 148—35 **9 Claims**



1. An article of manufacture comprising a centrifugally cast shell of an iron base metal for a composite rolling mill roll, said shell in an as cast state having a desirable microstructure produced by heating a chill mold element employed to rapidly solidify the molten metal upon contact therewith to form said shell, said rapid solidification producing the formation of elongated crystals inwardly of the wall of the mold along the working surface of the roll which crystals are composed of primary carbides and an austenitic matrix, the temperature of said mold element being such that in cooling the molten metal from the liquidus temperature to the solidus temperature there remains substantially unchanged the effect of rapid cooling by said chill mold and said formation of elongated crystals formed in said solidification process which is the same general result as that obtained in a cast shell of the same metal produced in a generally identical non-heated mold, but which differs in that said temperature controls and decreases the cooling rate of the metal after said solidification has occurred for only a time period during a critical temperature range of approximately between 1600° and 2000° F. to cause complex carbide compounds to precipitate from the austenitic matrix before any substantial amount of pearlite can be formed, thereby to obtain said desirable microstructure which consists of a substantially martensitic matrix after cooling said article to room temperature.

4. In a method of casting an alloy metallic object such as the shell of a composite rolling mill roll, the steps comprising:

preparing a mold for reception of molten metal having an iron base with alloying elements that include carbon in the range of 2.5 to 3.5% and chromium in the range of 15 to 20% and which when in a non-equilibrium condition precipitate complex compounds,

said preparation including the employment of a chill mold element to form at least a part of the cast object and designed to rapidly solidify the metal on contact therewith during said solidification and to control at a given preheating temperature the cooling rate of the casting,

said rapid solidification producing the formation of elongated crystals inwardly of the wall of the mold along the working surface of the roll which crystals are composed of a primary carbide and austenitic matrix,

pouring said metal into said mold, and

prior to said pouring, heating said chill mold element to said preheating temperature such that in cooling the molten metal from the liquidus temperature to the solidus temperature there remains substantially unchanged the effect of rapid cooling by said chill mold and said formation of elongated crystals formed in said solidification process which is the same general result as that obtained in a cast shell of the same metal produced in a generally identical non-heated mold, but which differs in that said temperature controls and decreases the cooling rate of said metal after solidification has occurred for only a time period during a critical temperature range of approximately between 1600° and 2000° F. to cause complex carbide compounds to precipitate from the austenitic matrix before any substantial amount of pearlite can be formed, thereby to obtain a substantially martensitic matrix after cooling said casting to room temperature.

4,411,714

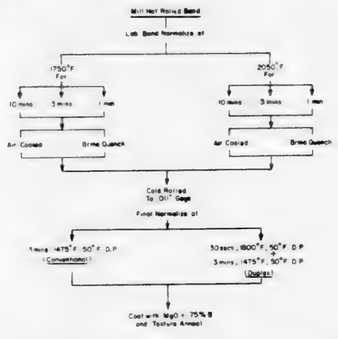
METHOD FOR IMPROVING THE MAGNETIC PROPERTIES OF GRAIN ORIENTED SILICON STEEL

Amitava Datta, Madison, N.J., and Carl P. Stroble, Natrona Heights, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1981, Ser. No. 295,590

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111 **3 Claims**



1. In a method for producing grain oriented silicon steel including the steps of hot-rolling, at least one cold-rolling step with an annealing step prior to each cold-rolling, final normalizing, coating and final texture annealing, the improvement comprising during at least one said annealing step immediately prior to cold-rolling, heating said steel at a time and temperature at which transformation to austenite occurs, then quenching said steel prior to cold-rolling and immediately prior to final normalizing, heating said steel to a temperature above the austenite transformation temperature to provide a combination of good magnetic permeability and reduced core loss.

4,411,715

METHOD OF ENHANCING ROTOR BORE CYCLIC LIFE

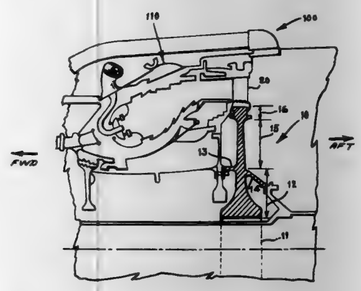
Thomas A. Brisken, Cincinnati, and Alexander G. Maier, Forest Park, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 3, 1981, Ser. No. 270,051

Int. Cl.³ C21D *9/00*

U.S. Cl. 148—131 **9 Claims**

1. A method of enhancing the low cycle fatigue life of the bore area of a rotating disk wherein said disk also has a web/rim area with a rim area portion, comprising the step of prestressing said bore area by heating said web/rim area of said disk, while not heating said bore area of said disk, and while moderately overspeeding said disk, whereby a thermal gradient is applied to said disk rim area portion of said web/rim area, thereby adding a tensile stress in said bore area of said disk and subtracting stress in said rim area portion of said web/rim area of said disk.



4,411,716

AMORPHOUS ALLOYS FOR MAGNETIC HEAD CORE AND VIDEO MAGNETIC HEAD USING SAME

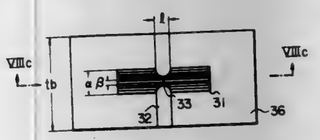
Kazuo Shiiki, Shiroyamamachi; Shigekazu Otomo, Hachioji; Mitsuhiro Kudo, Hamuramachi; Takeshi Kimura, Kokubunji; Noriyuki Kumasaka, Ome, and Hideo Fujiwara, Tachikawa, all of Japan, assignors to Hitachi, Ltd.; Hitachi Metals, Ltd. and Research Development Corporation of Japan, all of Tokyo, Japan

Filed Jul. 13, 1981, Ser. No. 282,805

Claims priority, application Japan, Jul. 11, 1980, 55/93987

Int. Cl.³ C22C *33/00*

U.S. Cl. 148—403 **15 Claims**



1. A magnetic head for video equipment comprising two members of magnetic material of high permeability juxtaposed against each other with a gap existing therebetween and having at least a portion in the vicinity of the gap of at least one of said members formed of an alloy in the form of at least one foil, said alloy foil being essentially amorphous, having a thickness of below 30 μm and having a composition expressed by a general formula $(Co_xFe_{1-x})_aCr_bSi_cB_{1-a-b-c}$ wherein the value of x is in the range between 0.925 and 0.97, the value of a is in the range between 0.74 and 0.76, the value of b is in the range between 0.005 and 0.03, and the value of c is in the range between 0.06 and 0.18, and wherein $a+b+c \leqq 0.94$.

4,411,717

SOLID ROCKET PROPELLANTS COMPRISING GUIGNET'S GREEN PIGMENT

William S. Anderson, Sunnyvale, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 2, 1983, Ser. No. 463,190

Int. Cl.³ C06B *45/06*

U.S. Cl. 149—18 **8 Claims**

1. In a solid rocket propellant formulation comprising a major amount of ammonium perchlorate, a minor amount of aluminum powder, and a minor amount of a binder material, the improvement which comprises an effective burn rate improving amount of Guignet's green pigment.

5. In a solid rocket propellant formulation comprising a major amount of ammonium perchlorate, a minor amount of aluminum powder, and a minor amount of a binder material, the improvement which comprises an effective burn rate improving amount of oxidized Guignet's green pigment, prepared by heating Guignet's green pigment in the presence of oxygen at about 350° C. for about 10–60 minutes.

4,411,718

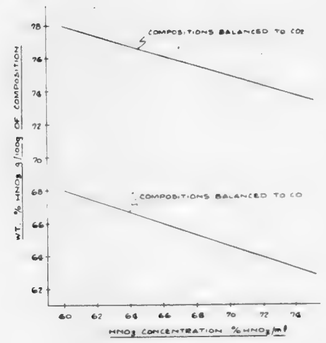
LIQUID EXPLOSIVE COMPOSITIONS FOR FIELD OPERATIONS

Joseph L. Trocino, 15233 Ventura Blvd., P-8, Sherman Oaks, Calif. 91403

Filed Oct. 26, 1981, Ser. No. 314,677

Int. Cl.³ C06B *47/04*

U.S. Cl. 149—74 **6 Claims**



1. A completely liquid explosive composition consisting of 22.0 to 37.1% nitropropane blended with 62.9 to 78.0 nitric acid wherein said acid contains from 25.0 to 40.05% water and wherein said nitropropane is a mixture of 1-nitropropane and 2-nitropropane.

4,411,719

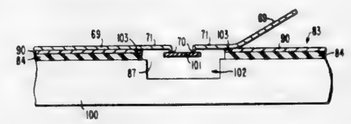
APPARATUS AND METHOD FOR TAPE BONDING AND TESTING OF INTEGRATED CIRCUIT CHIPS

Frank A. Lindberg, Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 119,247, Feb. 7, 1980, Pat. No. 4,308,339. This application May 14, 1981, Ser. No. 263,962

Int. Cl.³ G01R *31/02, 31/22*

U.S. Cl. 156—64 **8 Claims**



6. A process for testing integrated circuit chips with at least a two-layer test tape having one layer constituting an insulative carrier strip with spaced sprocket openings along at least one side thereof and another layer constituting a series of leads overlying the insulative carrier along the length thereof, each frame constituting a plurality of said leads corresponding at least to the number of planar directions that the leads of an integrated circuit chip to be tested may extend, each of said patterns being a plurality of spaced parallel conductive lines corresponding to the maximum number of leads of a chip that extend in a respective one of the planar directions of a set, each of said leads being of a predetermined length and having an inner and an outer end, the outer end of each of said leads

terminating in a coplanar electrical contact pad, each of said frames having a polygonal central opening with a predetermined number of peripheral edges, said central opening having an area such that a selected portion of the lines of each set abut an opposing edge of the opening, said process comprising:

bonding a plurality of chips to be tested to a single layer metallic lead frame tape, said tape having spaced sprocket openings along at least one side thereof of predetermined spacing to register with the sprocket openings of the insulative layer of the test tape when superimposed thereon, said metallic tape having a plurality of lead frames spaced to register with at least a portion of the conductive lines of the test tape abutting the edge of the central opening when the sprocket hole of the metallic lead frame tape and the test tape are in registration,

placing the sprocket holes of the metallic lead frame tape and the test tape in registration, bonding the conductive leads of the test tape to the registering leads of the lead frame a predetermined distance from the peripheral edge of the central opening and the outer end of the leads for each of the frames,

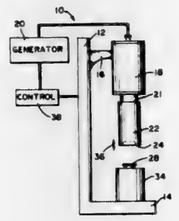
separating the metallic lead frame tape from the test tape while leaving the outer ends of the conductive leads in bonded relationship to the corresponding conductive strips of the test tape.

4,411,720

ULTRASONIC WELDING METHOD FOR SEALING A THERMOPLASTIC CAP TO THE NECK OF A THERMOPLASTIC CONTAINER

Thomas B. Sager, Newtown, Conn., assignor to Branson Ultrasonics Corporation, Newtown, Conn.

Filed Mar. 22, 1982, Ser. No. 360,485
Int. Cl.³ B29C *27/08*; B65B *7/28*
U.S. Cl. 156—69 **2 Claims**



1. A method for ultrasonically welding the neck of a thermoplastic container to a thermoplastic cap, the latter having a flange superposed upon said neck and said flange having a lateral edge extending beyond the periphery of said neck, comprising the steps of:

providing an elongated ultrasonic resonator, dimensioned to be resonant as a half wavelength resonator when energized with ultrasonic energy of predetermined frequency at an input end and adapted to provide ultrasonic vibrations at an opposite output end, said resonator having a domical internal cavity with tapered wall extending from said output end of said resonator axially toward said input end, the maximum opening of said cavity being at least equal to the periphery of said neck;

causing said output end of said resonator while rendered resonant to be in forced engagement with said cap and container for effecting, responsive to the vibrations and the engagement force exerted by said resonator, thermoplastic material from the edge of said flange to be softened and displaced from said flange and to be trapped as a peripheral bead along the wall of said cavity, and

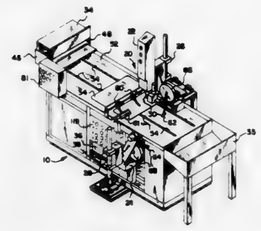
ceasing ultrasonic vibrations when said trapped softened material is disposed as a peripheral bead around the interface between said flange and said neck of the container to permit said bead to solidify and to thereby form a seal between said cap and said neck.

4,411,721

APPARATUS AND METHOD FOR ATTACHING FASTENER TAPES

John G. Wishart, St. Joseph, Mo., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 25, 1982, Ser. No. 352,285
Int. Cl.³ B32B *31/04, 31/16*
U.S. Cl. 156—73.1 **15 Claims**



11. Apparatus for the application of patches of tape having a hook or loop fastener surface opposite a heat-activated adhesive surface to opposite sides of a notebook binder cover comprising:

a work station having at least two means for ultrasonically welding said patches of tape to said binder cover, at least one of said ultrasonic welding means being positioned above said binder cover for application of a patch to the top surface of said binder cover, and at least one of said ultrasonic welding means being positioned below said binder cover for application of a patch to the bottom surface of said binder, each of said ultrasonic welding means comprising a horn having a patch contacting surface substantially about the entire periphery thereof and a recessed central area in communication with a source of vacuum and means for vibrating said horn at a ultrasonic rate,

means for supplying said binder cover to said work station including a hopper having a pair of feed rollers which feed said binder covers sequentially onto a conveyor means for transporting said binder covers from said hopper to said work station, and

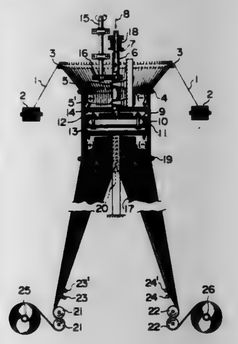
separate means for supplying said patches to each of said ultrasonic welding means at said work station, each supplying means comprising a transport arm, means for feeding a continuous strip of tape to said transport arm, and means for severing said strip of tape into patches of predetermined length, said transport arm being relatively moveable between a first position for receiving said patches and a second position for transferring said patches to respective ones of said horns.

4,411,722

METHOD FOR PRODUCING A NON-WOVEN FABRIC OF CROSS-LAMINATED WARP AND WEFT WEBS OF ELONGATED STOCKS

Masahide Yazawa, deceased, late of Tokyo, Japan; by Hiroshi Yazawa, executor, Kunitachishi; Kazuhiko Kurihara, Tokyo, Japan; Hiroshi Yazawa, Kunitachishi, Japan; Yuki Kuroiwa, Tokyo, Japan, and Shuichi Murakami, Itabashi, Japan, assignors to Polymer Processing Research Institute Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 134,507, Mar. 27, 1980, abandoned, which is a continuation of Ser. No. 767,198, Feb. 9, 1977, abandoned, which is a continuation of Ser. No. 527,920, Nov., 1974, abandoned. This application Jul. 2, 1981, Ser. No. 279,839
Claims priority, application Japan, Nov. 29, 1973, 48-134525
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—167 **8 Claims**



1. In the method for producing a non-woven fabric of cross-laminated warp web as a web in the machine direction and weft webs as webs in the lateral direction thereto,

said warp web and said weft webs both comprising parallel elongated stocks and being bonded only at the crossing points of said parallel elongated stocks of said warp web and said weft webs, and

said weft webs being produced by applying laterally to cylindrically arranged and longitudinally running, preformed, elongated stocks, a number of filaments ejected radially through the orifices furnished on the outer periphery of a rotating vessel wherein a raw material to form said filaments is contained in molten state, provided at the central part of said running stocks,

and cutting open the resulting tubular material,

the improvement which comprises:

(a) employing as said material to form said ejected filaments, an adhesive polymer having both a good affinity for said running stocks and a lower melting point than that of said running stocks;

(b) applying said ejected filaments onto said running stocks in a state where the filaments still have adhesiveness for said running stocks, such application of the ejected filaments being in parallel arrangement and in multiple stages, to thereby fix the arrangement of said running stocks in the lateral direction thereof by means of said filaments themselves;

(c) cutting the resulting weft web into a series of lengths, each length corresponding to the width of the cross-laminated product to be produced;

(d) successively placing said cut weft webs onto said warp web without any gaps therebetween in such a manner that the parallel elongated stocks of said warp web and the parallel elongated stocks of said weft webs cross each other in an overlying relationship, and

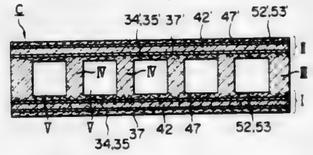
(e) applying heat to said overlying warp and weft webs while guiding the overlay onto a heated drum to thereby pass over the drum, melt said adhesive filaments, and permit the melted adhesive to redistribute on said warp and weft webs at their crossing points, thus obtaining a cross-laminated product having a precise lattice arrangement.

4,411,723

GLASS FIBER-REINFORCED CEMENT PLATES

Shigeru Takeuchi, Osaka, Japan, assignor to Kurimoto Iron Works, Ltd., Osaka, Japan

Division of Ser. No. 191,801, Sep. 29, 1980, Pat. No. 4,335,177.
This application Dec. 10, 1981, Ser. No. 329,456
Claims priority, application Japan, Oct. 3, 1979, 54-129019; Jul. 18, 1980, 55-99041; Jul. 21, 1980, 55-99647
Int. Cl.³ B29B *31/00*
U.S. Cl. 156—242 **12 Claims**



7. A process for the manufacture of a laminated, glass fiber-reinforced, hydraulic cement plate comprising:

forming on an elongated, substantially horizontal conveyor, which is moving substantially horizontally in the lengthwise direction thereof, a laminated bottom layer structure comprising, in successively formed layers, a first layer adjacent to said conveyor and comprising hydraulic cement mortar and chopped glass-fiber strands, a second layer formed on said first layer and comprising continuous glass fibers, a third layer formed on said second layer and comprising regulated set hydraulic cement mortar, a fourth layer formed on said third layer and comprising continuous glass fibers, and a fifth layer formed on said fourth layer and comprising hydraulic cement mortar and chopped glass-fiber strands;

moving said conveyor having said bottom layer structure thereon in a substantially horizontal direction beneath a mold disposed above said bottom layer structure, said mold having a plurality of separate, parallel, elongated bars which are substantially parallel with and flush with the upper surface of said bottom layer structure on said conveyor and extending lengthwise in the direction of travel of said conveyor, said bars being spaced-apart from each other across the width of said conveyor;

in said mold, pouring regulated set hydraulic cement mortar between said bars as said bottom layer structure travels with said conveyor so that the spaces between said bars become filled with regulated set hydraulic cement mortar, whereby an intermediate layer of said regulated set, hydraulic cement mortar is formed on top of said bottom layer structure, said intermediate layer containing said bars;

forming on top of said intermediate layer a laminated top layer structure comprising, in successively formed layers, a sixth layer adjacent to said intermediate layer and comprising hydraulic cement mortar and chopped glass-fiber strands, a seventh layer formed on said sixth layer and comprising continuous glass fibers, an eighth layer formed on said seventh layer and comprising regulated set hydraulic cement mortar, a ninth layer formed on said eighth layer and comprising continuous glass fibers, and a tenth layer formed on said ninth layer and comprising hydraulic cement mortar and chopped glass-fiber strands;

moving said conveyor having the assembly of said bottom layer structure, intermediate layer and top layer structure horizontally through a curing zone while said bars remain

within said intermediate layer and thereby curing said assembly; and

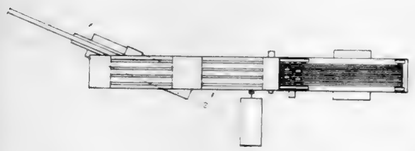
then moving said conveyor having the assembly of said bottom layer structure, intermediate layer and top layer structure thereon horizontally beyond the ends of said bars, so that said bars are no longer within said intermediate layer, thereby forming a laminated, fiber-reinforced, hydraulic cement plate having internal spaces formed by said bars, which spaces extend lengthwise of said plate and parallel with the direction of travel of the upper surface of said conveyor belt.

4,411,724

PROCESS OF AND APPARATUS FOR SPLICING CORD PLY SEGMENTS AT THEIR END FACES

Taizo Ito, Higashimurayama, and Yusuke Araki, Tachikawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,318
Claims priority, application Japan, Sep. 29, 1981, 56-154204
Int. Cl.³ B32B *25/10*
U.S. Cl. 156—304.1 **3 Claims**



1. A splicing process of splicing together the leading end face of one of cord ply segments and the trailing end face of another cord ply segment positioned in front of one of the cord ply segments, comprising the steps of:

preparing a first conveyor having a first surface on which each of the cord ply segments are conveyed by the first conveyor in a first conveyance direction at a first conveyance speed, a second conveyor fixed with respect to said first conveyor and having a second surface spaced apart from and in face-to-face relationship to the first surface of said first conveyor and for conveying the cord ply segments on the second surface thereof in a second conveyance direction substantially in parallel with the first conveyance direction of said first conveyor, magnetic retaining means for retaining the cord ply segments on the first and second surfaces of the first and second conveyors, respectively and transfer means for transferring each of the cord ply segments on the first surface of said first conveyor to the second surface of said second conveyor,

placing a plurality of cord ply segments, severed to have a predetermined length, on a first conveyor at a predetermined interval and at a predetermined angle with respect to the first conveyance direction of the first conveyor,

conveying the cord ply segments on the first conveyor at a predetermined speed, and

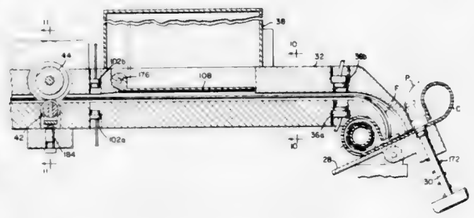
transferring the cord ply segments from the first conveyor to the second conveyor to splice together the leading end face of one of cord ply segments and the trailing end face of another cord ply segment positioned in front of one of the cord ply segments already transferred on said second conveyor in such a manner that the leading end face of one of cord ply segments is brought into contact with the second surface of the second conveyor with the leading end portion of one of the cord ply segments sliding with respect to the second surface of said second conveyor while said second conveyor is operated to move at a speed slower than that of the first conveyor.

4,411,725

DAYLIGHT FILM SPLICER

John H. Siegel, Bellevue, and Gerald L. Edwards, Seattle, both of Wash., assignors to CX Corporation, Seattle, Wash.

Filed Oct. 5, 1977, Ser. No. 839,603
The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.
Int. Cl.³ G03D *15/04*
U.S. Cl. 156—353 **17 Claims**



1. A film strip splicing machine comprising,

guide means for guiding a film strip along a predetermined travel path from a film entry to a spliced film storage container,

reciprocating film cutting means at a cutting station along the travel path for cutting off a lead end portion of the film strip in a first cutting direction and for cutting off a trailing end portion of the film strip in a reverse cutting dirction,

film splicing means at a splicing station further along the travel path than the cutting station for splicing the cut lead end of one film strip to the cut trailing end of another,

first drive means between the entry and the cutting station for advancing each film strip through the cutting station to the splicing station,

second drive means between the splicing station and the storage container for advancing spliced film strips to said container,

control means operatively associated with the cutting means, splicing means, and first and second drive means for automatically activating and deactivating them in a predetermined sequence whereby each film strip has its lead end cut off at the cutting station and the fresh-cut lead end thereof advanced to the splicing station and spliced to the trailing end of a film strip in front thereof, and whereby the two spliced films are then advanced together until the trailing film strip has had a trailing end portion cut off at the cutting station and the fresh-cut trailing end thereof advanced to the splicing station, and

housing means for making said travel path, two drive means, and two stations free of light.

4,411,726

APPARATUS FOR SPIN BONDING ENDS FOR COMPOSITE CONTAINERS

Stephen E. Woerz, Florissant, and Travis K. Canup, Ferguson, both of Mo., assignors to Boise Cascade Corporation, Boise, Id.

Division of Ser. No. 228,344, Jul. 30, 1981, Pat. No. 4,353,761. This application May 6, 1982, Ser. No. 375,706
Int. Cl.³ B29C *27/08*; B65B *7/28*
U.S. Cl. 156—423 **5 Claims**

1. Apparatus for spin bonding to an outwardly flared end of a vertically arranged tubular composite container body member an end closure member formed of thermoplastic synthetic plastic material, said body member including a fibrous body wall layer, an inner liner layer formed of a thermoplastic synthetic plastic material, and an outer label layer, said end closure member including, opposite said body member, annular inner fin and outer chime portions that are concentrically spaced to define an annular groove arranged to receive the adjacent extremity of said body member, said groove having side walls that converge in the direction of the bottom of the groove, the

inner and outer surfaces of said fin portion being vertical and tapered inwardly respectively, said apparatus comprising

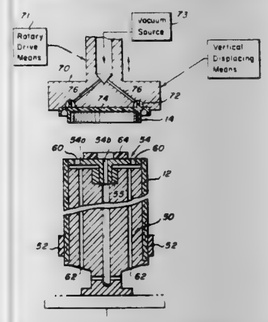
(a) vertically arranged stationary central mandrel means adapted for insertion within the container body member;

(b) means for releasably connecting the container body member with said central mandrel means;

(c) rotary chuck means in vertical alignment with, and axially displaceable relative to, said central mandrel means, said rotary chuck means being rotatably driven at a rotational velocity sufficient to effect friction weld bonding;

(d) means for releasably mounting an end closure member on said rotary chuck means; and

(e) means for rotatably supporting the inner surface of said



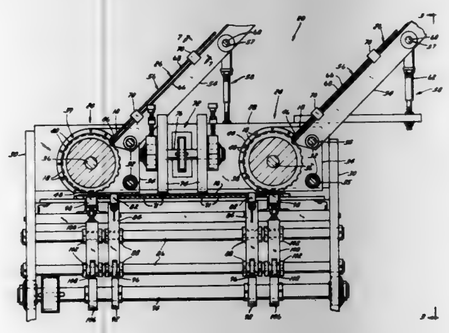
fin portion against radial inward displacement when said rotary chuck means is axially displaced relative to said central mandrel means, said fin support means comprising rotary mandrel means rotatably connected with one end of said central mandrel means, said rotary mandrel means including a vertically arranged substantially cylindrical disk portion having a diameter generally equal to the inner diameter of said fin portion, whereby when the extremity of said body member is wedged within said groove, the tapered fin portion is wedged between the disk portion of said fin support means and the inner surface of the body member to effect frictional engagement between said fin portion and said inner liner layer, thereby to spin bond the contiguous thermoplastic materials.

4,411,727

HANGER ROD TRANSFER ASSEMBLY FOR HANGING-TYPEFILE FOLDERS

Robert Seiy, Milwaukee, Wis., assignor to The Kempsmith Machine Company, Milwaukee, Wis.

Filed Jun. 22, 1981, Ser. No. 275,840
Int. Cl.³ B32B *31/12*; B23Q *7/02*
U.S. Cl. 156—562 **12 Claims**



1. A machine for automatically applying hanger rods to the opposite edges of a file folder blank, said machine including

a conveyor for carrying file folder blanks in succession along a longitudinal path,

a glue applicator for applying strips of glue at a spaced distance from and parallel to the edges of each blank,

the improvement comprising means for depositing hanger rods on the glue strip on each edge of the blank,

said means including a hanger rod magazine and

a hanger rod transfer assembly for transferring hanger rods from the magazine to a position immediately above the glue strip on the blank,

said hanger rod transfer assembly includes two pair of transfer wheels,

one pair of transfer wheels being mounted for rotary motion on each edge of the blank in a direction transverse to the direction of travel of the blanks and having a plurality of grooves for carrying the hanger rods from the magazine to a release point above the blank,

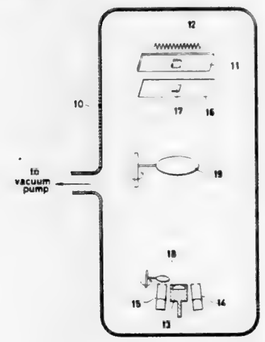
said hanger rod being released from said grooves as the groove is moved to a position above the glue strip.

4,411,728

METHOD FOR MANUFACTURE OF INTERDIGITAL PERIODIC STRUCTURE DEVICE

Tsunenori Sakamoto, Ibaragi, Japan, assignor to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 30, 1981, Ser. No. 248,961
Int. Cl.³ C30B *25/04*
U.S. Cl. 156—606 **4 Claims**



1. In a method for manufacturing an interdigital periodic structure device, comprising the steps of:

(a) disposing a growth substrate and a heater arranged to apply heat to said substrate in an ultra-high vacuum chamber;

(b) disposing a main evaporation source substantially opposite said substrate for evaporating a main semiconductor material so as to form thin semiconductor films on said substrate;

(c) interposing a mask defining a hole between said substrate and said main evaporation source in the vicinity of said substrate;

(d) disposing a p-type impurity evaporation source near one side of, and adjacent said main evaporation source so as to dope said semiconductor films except one side part thereof with said p-type impurity through said hole defined in said mask;

(e) disposing an n-type impurity evaporation source adjacent said main evaporation source and placed substantially symmetrically thereabout with respect to said p-type impurity evaporation source so as to dope the semiconductor films except the other side part thereof with an n-type impurity through said hole defined in said mask;

(f) interposing a main shutter having open and closed states

between said substrate and said main- and said impurity-evaporation sources;

(g) disposing another shutter between at least one of said impurity evaporation sources and said substrate so as to control doping of said semiconductor films from said one of said impurity evaporation sources;

(h) allowing molecular beams of at least one element from said main- and from said impurity-evaporation sources to be evaporated and projected through said hole defined in said mask onto said substrate, while heating said substrate; and

(i) alterately opening and closing said other shutter at time intervals when said main shutter is in said open state.

4,411,729

METHOD FOR A VAPOR PHASE GROWTH OF A COMPOUND SEMICONDUCTOR

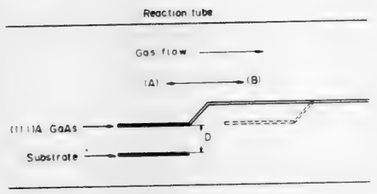
Junji Komeno, Fujisawa, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 26, 1980, Ser. No. 191,296

Claims priority, application Japan, Sep. 29, 1979, 54-124719; Sep. 29, 1979, 54-124720

Int. Cl.³ C30B *25/18*

U.S. Cl. 156—612 **20 Claims**



1. A vapor phase method of growing a compound semiconductor on a semiconductor crystalline substrate having a major surface comprising the steps of:

placing in a reaction chamber said semiconductor crystalline substrate and a dummy crystalline substrate having a crystallographic orientation different from that of said semiconductor crystalline substrate; and

establishing a reaction gas flow in said reaction chamber along the major surface of said semiconductor crystalline substrate to conduct said vapor phase growth, said dummy substrate being placed in a predetermined position opposite to and close to said semiconductor crystalline substrate during at at least a part of the period of said vapor phase growth for affecting in a predetermined manner the impurity concentration of the compound semiconductor grown on said semiconductor crystalline substrate.

4,411,730

SELECTIVE CHEMICAL MILLING OF RECAST SURFACES

Robert E. Fishter, Boca Raton, and Henry Lads, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 192,668, Oct. 1, 1980, abandoned. This application Jan. 11, 1982, Ser. No. 338,739

Int. Cl.³ C23F *1/00*; B23K *9/00*; C09K *13/04*

U.S. Cl. 156—626 **8 Claims**

1. Machining the surface of a nickel-base superalloy workpiece by the process which comprises:

removing workpiece material using a thermal-effect process which causes melting and vaporization of metal, thereby leaving on the workpiece surface a recast layer; and

contacting the surface from which material is removed with an etchant comprised by volume percent of 40–60 HNO_3, 5–20 HCl, balance H_2O, at least 0.016 moles/liter $CuSO_4$ and 0.008–0.025 moles/liter $FeCl_3$, thereby chemically dissolving the recast layer without substantially removing other workpiece surface material.



4,411,731

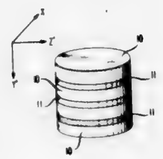
METHOD OF CONTOURING CRYSTAL PLATES

Anton J. Miller, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 27, 1982, Ser. No. 453,348

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—630 **10 Claims**



1. A method of fabricating piezoelectric devices which include crystal plates comprising the steps of providing a stack of such plates separated by a bonding material, and contouring such plates by immersing the stack in an etchant which dissolves the bonding material and etches the exposed portions of the plates.

4,411,732

METHOD OF MANUFACTURING A DETECTOR DEVICE

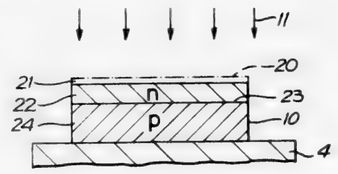
John T. M. Wotherspoon, Southampton, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1982, Ser. No. 355,440

Claims priority, application United Kingdom, Mar. 27, 1981, 8109774

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **8 Claims**



1. A method of manufacturing an infrared radiation detector device of cadmium mercury telluride, comprising the steps of (a) providing a body of cadmium mercury telluride at least a portion of which has conductivity characteristics of p-type material at the operating temperature of the device, and (b) bombarding with ions at least a part of a surface of the body to convert at least a part of said body portion into material having conductivity characteristics of n-type material at the operating temperature of the device, characterized in that the ion bombardment is effected using ion etching to etch away a part of the body at the bombarded surface, and in that the dose, energy and mass of the bombarding ions are such that adjacent the bombarded surface a sufficient excess concentration of mercury is produced from the etched-away part of the body as to act as a dopant source for converting an adjacent part of said body into material having the n-type conductivity characteristics, said ion dose being sufficiently large to convert said adjacent part of the body over a depth greater than twice the penetration depth of said ions in said body, and the energy of the bombarding ions being less than 30 keV.

4,411,733

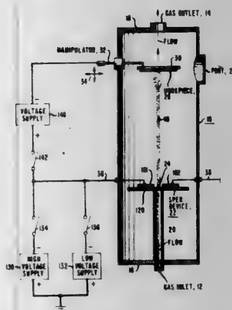
SPER DEVICE FOR MATERIAL WORKING

John J. Macklin, Highlands; William T. Silfvast, Holmdel, both of N.J., and Obert R. Wood, II, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 18, 1982, Ser. No. 389,780

Int. Cl.³ H01L *21/306*; C23F *1/00*; B05D *3/06*; B05B *5/02*

U.S. Cl. 156—643 **12 Claims**



9. A method of etching a layer from a workpiece comprising the steps of:

generating an ion vapor plasma in the gap of a SPER device, flowing gas through said gap so as to cause said plasma to take the shape of a beam which strikes said workpiece, and accelerating the ions in said beam so that they strike said workpiece with sufficient energy to etch away said layer.

4,411,734

ETCHING OF TANTALUM SILICIDE/DOPED POLYSILICON STRUCTURES

Jer-shen Maa, Manville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,279

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*

U.S. Cl. 156—643 **19 Claims**

1. A method of forming a patterned structure on a substrate comprised of a layer of doped polycrystalline silicon having thereover a layer of tantalum silicide, said method comprising:

(a) providing a layer of polycrystalline silicon on the substrate;

(b) doping the silicon layer to render it conductive;

(c) plasma treating the surface of the silicon layer with a mixture of carbon tetrafluoride and oxygen to prepare the surface for deposition of tantalum silicide;

(d) depositing a layer of tantalum silicide onto the silicon layer;

(e) anisotropically plasma etching the tantalum silicide layer and the silicon layer with an etchant mixture of carbon tetrachloride, oxygen and nitrogen; and

(f) heating the resulting structure to a temperature sufficient to anneal the tantalum silicide layer.

4,411,735

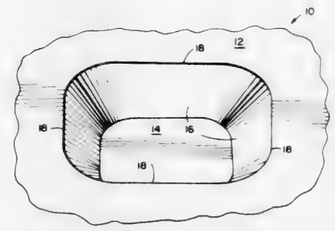
POLYMERIC INSULATION LAYER ETCHING PROCESS AND COMPOSITION

Jagdish G. Belani, Cupertino, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 6, 1982, Ser. No. 375,575

Int. Cl.³ B44C *1/72*; C03C *15/00, 25/06*

U.S. Cl. 156—659.1 **17 Claims**



1. A process for fabricating a semiconductor device having a patterned polyimide or polyimide-iso-indroquinazolinedione insulating layer on said device, comprising applying a layer of uncured polyimide or polyimide-iso-indroquinazolinedione resin on a surface of said device, heating said resin layer to produce a first level of partial curing in said resin layer, applying a photoresist layer to said partially cured resin layer, developing said photoresist layer to uncover said partially cured resin layer where it is to be removed, etching said partially cured resin layer to produce said patterned layer, heating said patterned layer to produce a second level of partial curing which is sufficient to prevent organic photoresist strippers from attacking the patterned layer, stripping the developed photoresist with an organic photoresist stripper, and heating said patterned layer a sufficient extent to complete the curing of said polyimide or polyimide-iso-indroquinazolinedione resin.

4,411,736

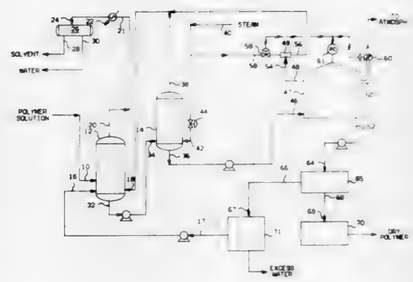
METHOD FOR VAPOR RECOVERY FROM A POLYMER SLURRY

John S. Hubby, Cronulla, Australia, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 177,956, Aug. 14, 1980, Pat. No. 4,347,098. This application Jan. 13, 1982, Ser. No. 339,229

Int. Cl.³ B01D *1/14, 3/00*; C08F *6/10*

U.S. Cl. 159—47.1 **11 Claims**



1. A method comprising:

passing a first polymer slurry comprising water, polymer and liquid solvent to a first polymer recovery zone;

vaporizing at least a portion of the liquid solvent in the first polymer slurry with steam in the first polymer recovery zone to produce water vapor, solvent vapor and a second

polymer slurry comprising water, polymer and liquid solvent;
passing the second polymer slurry from the first polymer recovery zone at a first pressure to a second polymer recovery zone at a second pressure, said second pressure being a lower pressure than said first pressure;
vaporizing at least a portion of the water and liquid solvent in the second polymer slurry in the second polymer recovery zone to produce water vapor, solvent vapor and a third polymer slurry comprising polymer crumb and water;
passing the water vapor and the solvent vapor from the second polymer recovery zone to a vapor recovery zone;
recovering the water vapor and the solvent vapor from the second polymer recovery zone;
combining the water vapor and the solvent vapor from the second polymer recovery zone with water vapor and solvent vapor from the first polymer recovery zone; and
introducing the combined vapors as a stripping vapor in a third polymer recovery zone at a third pressure to produce the first polymer slurry as well as water vapor and solvent vapor.

4,411,737
PULP TREATING PROCESS
Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Continuation of Ser. No. 103,141, Dec. 13, 1979, abandoned.
This application Aug. 4, 1981, Ser. No. 289,944
Int. Cl.³ D21C *5/02, 9/00*
U.S. Cl. 162—7 **7 Claims**

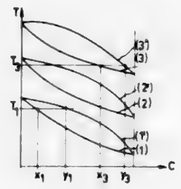
1. In a method for producing paper which includes the steps of preparing a slurry of fibers of high lignin content pulp having a predetermined freeness and containing from 1 to 20 percent by weight of fibers at least 50 percent of which are softwood fibers, and not more than 3.0 percent of residual cooking chemicals, refining the slurry to enable the production therefrom of paper having predetermined properties, forming a web from the slurry and drying the web, the improvement of treating the high lignin content pulp slurry, prior to the refining step, with about 15 to 25 percent by weight based on the oven dried weight of the fibers in the slurry of a sodium sulfite, sodium sulfide and sodium carbonate solution at atmospheric pressure at a temperature of at least 60° C. at a pH of at least 10 for from 10 to 60 minutes, the amount of the sulfite-sulfide-carbonate solution being sufficient that the treatment increases the strength of paper made at the same degree of freeness and without substantial loss in yield, the mole ratio of sodium sulfite to sodium sulfide being about 0.1:1 to 2.0:1.

7. A method as defined in claim 1 for producing paperboard from corrugating board comprising the steps of loosening the fibers from the corrugated board in water with the help of mechanical action to form said slurry having a consistency of about 5 to 10 percent, said refining being to a Canadian Standard Freeness between about 280 to 700.

4,411,738
PRESS CYCLE REDUCTION FOR WET PRESSED HARDBOARD
Bruce A. Wittrup, Hoffman Estates, and Kendall D. White, Jr., Palatine, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.
Filed Apr. 30, 1982, Ser. No. 373,383
Int. Cl.³ D21H *5/14*
U.S. Cl. 162—142 **13 Claims**

1. A method for the manufacture of hardboard which comprises forming an aqueous slurry of a defiberized wood having a TAPPI SFMC freeness of about 10 seconds or less, a thermosetting binder, and from about 2% to about 15%, based on the total fiber weight, of finely divided fibers having a Canadian standard freeness of about 450 mls. or slower; forming a mat by depositing said slurry on a screen and allowing a portion of the slurry water to drain through the screen; placing the wet mat in a hardboard press having one imperforate platen and a screen on the other platen; consolidating the wet mat in the press under a pressure of from about 400 to about 3000 pounds per square inch to the desired thickness and forming a barrier of finely divided fibers in the mat, wherein the press residence time is from about 5 to about 20 minutes for a 7/16" board and is proportionately shorter or longer for a thinner board and a thicker board, respectively; whereby steam pressure is built up in the mat and the setting of the binder is accelerated by heating the wet mat in the press to a core temperature of from about 300° F. to about 350° F.

4,411,739
PROCESS FOR THE RECTIFICATION OF BINARY LIQUID MIXTURES
Jacques Sterlini, Paris, France, assignor to Cie Electro Mecanique, France
Filed Aug. 5, 1981, Ser. No. 290,224
Claims priority, application France, Aug. 5, 1980, 80 17313
Int. Cl.³ B01D *3/14*
U.S. Cl. 203—24 **5 Claims**



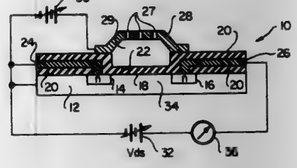
1. In a process for the rectification of a liquid mixture comprised of components A and B which are liquid at ambient conditions, component A being more volatile than component B, wherein said mixture is fed to the intermediate stage of a rectification column comprising in sequence a depletion stage, an intermediate stage, and a rectification stage, a vapor stream and a liquid stream passing between said stages in a countercurrent manner with said vapor steam moving in a direction from said depletion stage toward said rectification stage and said liquid stream moving in a direction from said rectification stage toward said depletion stage, said vapor and liquid being in equilibrium in each stage, component A being recovered as a vapor from said rectification stage and component B being recovered as a liquid from said depletion stage, the temperature-pressure relationship in the column being such that substantially pure component A vapor is present in the rectification stage and substantially pure component B liquid is present in the depletion stage, the improvement whereby the thermodynamic efficiency of the rectification process is increased comprising:
(a) compressing said recovered component A vapor stream to provide a first compressed component A vapor stream;
(b) passing said first compressed component A vapor stream together with a second compressed component A vapor stream from step (g) in an indirect heat exchange relationship with said depletion stage to partially condense said component A vapor stream and supply heat to said depletion stage;
(c) recovering a portion of said condensed component A as product;
(d) recovering a portion of said component B liquid stream as product;
(e) passing the non-condensed portion of said component A vapor stream in indirect heat exchange relationship with the remainder of said component B liquid stream not recovered as product in step (d) to vaporize said component B liquid stream and recycling said vaporized component B stream to said depletion stage;

(f) passing at least a portion of said condensed portion of component A to said rectification stage as a reflux stream;
(g) cooling at least another portion of said condensed portion of component A by passing the same through expansion means and passing it in indirect heat exchange relationship with said rectification stage to vaporize said condensed portion of component A; and
(h) compressing said vaporized portion of component A from step (g) and combining it with said compressed portion of component A from step (a).

4,411,740
SEPARATION OF CHLOROSILANES BY EXTRACTIVE DISTILLATION
Ora L. Flanigan, Midland, Mich., and Roland L. Halm, Madison, Ind., assignors to Dow Corning Corporation, Midland, Mich.
Filed Sep. 20, 1982, Ser. No. 419,854
Int. Cl.³ B01D *3/40;* **C07F** *7/20*
U.S. Cl. 203—58 **6 Claims**

1. A method of separating close-boiling chlorosilanes which comprises removal, by extractive distillation, of the lower-boiling chlorosilane from the close-boiling chlorosilanes by heating a mixture of the close-boiling chlorosilanes with sulfolane to extractively distill the lower-boiling chlorosilane from the mixture and thereafter separating the sulfolane and the higher-boiling chlorosilane.

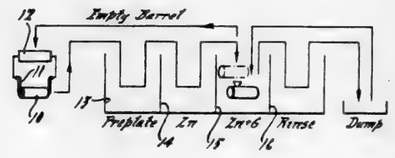
4,411,741
APPARATUS AND METHOD FOR MEASURING THE CONCENTRATION OF COMPONENTS IN FLUIDS
Jiri Janata, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah
Filed Jan. 12, 1982, Ser. No. 338,943
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **22 Claims**



1. An apparatus for detecting a concentration of components in a fluid, comprising:
a semiconductor substrate having a doping polarity;
at least two diffusion regions located at a surface of said substrate;
an electrically insulating layer overlying the surface of said substrate between said diffusion regions;
a bridge member mounted to said insulating layer so as to form a gap therebetween, said bridge member allowing for passage of fluid into said gap and said bridge member being capable of having an electrical charge imposed upon it;
means for imposing an electrical charge on said bridge member; and
means for imposing an electrical potential between said diffusion regions.

20. A method for detecting a concentration of components in a fluid, comprising the steps of:
doping a semiconductor substrate so as to impart a doping polarity to the substrate;
forming at least two diffusion regions at the surface of the substrate;
insulating the surface of the substrate between the diffusion regions by placing an electrical insulating layer adjacent the substrate;
mounting a bridge member to the insulating layer so as to form a gap between the bridge member and the insulating layer;
imposing an electrical charge on the bridge member;
imposing an electrical potential between the diffusion regions;
introducing a fluid through the bridge member and into the gap between the bridge member and the insulating layer; and
detecting current flow between the diffusion regions.

4,411,742
ELECTROLYTIC CODEPOSITION OF ZINC AND GRAPHITE AND RESULTING PRODUCT
William A. Donakowski, Dearborn Heights, and John R. Morgan, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
PCT No. PCT/US82/01689, § 371 Date Dec. 1, 1982, § 102(e) Date Dec. 1, 1982
PCT Filed Dec. 1, 1982, Ser. No. 463,454
Int. Cl.³ C25D *5/48, 7/00, 15/00*
U.S. Cl. 204—16 **20 Claims**



1. An electrolytic codeposit of zinc and graphite useful as a composite coating on parts subject to sliding friction, said codeposit containing uniformly distributed graphite in an amount of 30–48% by weight of the codeposit, a coefficient of friction equal to or less than 0.130, at a plated thickness of about 0.0005", showing (a) no red rust in a salt spray environment for at least 72 hours, and (b) no destruction due to corrosion in an industrial environment containing sulphur dioxide after four months.

4,411,743
ELECTROLYTIC PALLADIUM BATH AND PROCESS
Erika Kreuter, Rodenbach, and Wolfgang Zilske, Hanau, both of Fed. Rep. of Germany, assignors to Degussa, Frankfurt, Fed. Rep. of Germany
Filed Apr. 22, 1982, Ser. No. 370,817
Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118908
Int. Cl.³ C25D *3/50*
U.S. Cl. 204—47 **25 Claims**

1. An electrolytic aqueous palladium nitrate-free bath containing palladium sulfite and an acid wherein the bath contains 80–95% of the palladium as palladium sulfate and the balance as palladium sulfite.

4,411,744
BATH AND PROCESS FOR HIGH SPEED NICKEL ELECTROPLATING

Donald R. Rosegren, Cresskill, and Linda J. Mayer, Denville, both of N.J., assignors to Occidental Chemical Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 199,894, Oct. 23, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 407,662
Int. Cl.³ C25D 3/12
U.S. Cl. 204—49 5 Claims

1. An electroplating bath suitable for use with insoluble anodes in the electrodeposition of semi-bright, ductile and stress-free nickel deposits, said bath comprising a nickel salt; an electrolyte selected from the group consisting of boric acid and citric acid; ortho-formyl benzene sulfonic acid as a brightener; and a wetting agent comprising perfluorocyclohexyl potassium sulfonate.

4,411,745
ELECTROLYTIC INITIATION OF POLYMERIZATION IN AQUEOUS TWO-PHASE SYSTEMS

Lawrence E. Ball, Cuyahoga Falls; Martin A. Pichler, and V. Frances Gaylor, both of Parma, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jan. 4, 1982, Ser. No. 336,534
Int. Cl.³ C25B 3/02, 3/00
U.S. Cl. 204—59 R 22 Claims

1. An indirect process for electrolytically initiating the polymerization of ethylenically unsaturated monomer(s) by passing an electrical current through a two-phase system comprising: (a) a discontinuous organic phase, (b) a continuous aqueous phase capable of carrying an electric current, (c) a free radical source capable of forming a polymerization initiator, and (d) an electron transfer agent.

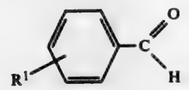
4,411,746
PREPARATION OF ALKYL-SUBSTITUTED BENZALDEHYDES

Dieter Degner, Dannstadt-Schauernheim; Hans Roos, Bad Durkheim, and Heinz Hannebaum, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 22, 1982, Ser. No. 400,699
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132726
Int. Cl.³ C25B 3/02, 11/06
U.S. Cl. 204—59 R 1 Claim

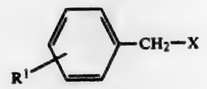
1. In a process for preparing an alkyl-substituted benzaldehyde of the formula

I



wherein R^1 is hydrogen, alkyl or aryl by electrooxidation of an alkylbenzene derivative of the formula

II

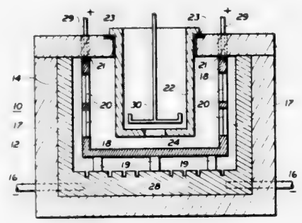


wherein
R^1 is as defined above,
X is hydrogen, hydroxy or R^2COO^-, and
R^2 is hydrogen or alkyl,
in water or an alkanoic acid, the improvement which comprises: conducting the electrooxidation using graphite anodes coated with a metal oxide or carbide selected from the group consisting of ruthenium oxide, titanium dioxide, iron oxide, chromium oxide, cobalt oxide, manganese dioxide, nickel oxide or tungsten carbide.

4,411,747
PROCESS OF ELECTROLYSIS AND FRACTIONAL CRYSTALLIZATION FOR ALUMINUM PURIFICATION

Robert K. Dawless, Monroeville; Kenneth A. Bowman, Leechburg; Robert M. Mazgaj, Lower Burrell, and C. Norman Cochran, Oakmont, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 30, 1982, Ser. No. 412,833
Int. Cl.³ C25C 3/06; C22B 21/02
U.S. Cl. 204—67 10 Claims



1. An improved process for purifying aluminum containing impurities, comprising:
(a) introducing aluminum that contains impurities to a charging chamber associated with an electrolytic cell of the type having a porous diaphragm located in and permeable by the electrolyte of the cell, and impermeable to aluminum;
(b) supplying impure aluminum from the chamber to an anode area of the cell;
(c) electrolytically transferring aluminum from the anode area to the cathode of the cell through said diaphragm while leaving impurities in the anode area, thereby purifying the aluminum introduced into the container;
(d) collecting purified aluminum at the cathode;
(e) lowering the level of eutectic impurities concentrated in the anode area due to said electrolytic transfer by subjecting molten aluminum and impurities in said chamber to a fractional crystallization treatment to concentrate eutectic impurities thereby providing separation of such impurities from aluminum, the aluminum being suited for further purification, as provided in step (c); and
(f) removing the eutectic impurities from the chamber.

4,411,748
ANODE AND PROCESS FOR MAGNESIUM PRODUCTION

Jay A. Harvey, Calcutta, India, assignor to Great Lakes Carbon Corporation, New York, N.Y.

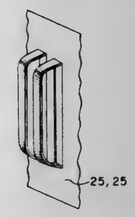
Filed Sep. 18, 1981, Ser. No. 303,635
Int. Cl.³ C25C 3/04, 7/02
U.S. Cl. 204—70 9 Claims

5. A method for the production of magnesium by the Dow process in an electrolytic cell having at least one anode and an essentially air tight seal through which said anode passes, wherein said anode comprises a graphite body having an essentially impermeable coating thereon at least in the region above said seal, said coating being selected from the group consisting of magnesium and magnesium-aluminum alloy.

4,411,749
PROCESS FOR ELECTROLYZING AQUEOUS SOLUTION OF ALKALI METAL CHLORIDE

Kimihiko Sato; Yasuo Sajima; Makoto Nakao, and Takeshi Morimoto, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Aug. 20, 1981, Ser. No. 294,786
Claims priority, application Japan, Aug. 29, 1980, 55-118461
Int. Cl.³ C25B 1/34
U.S. Cl. 204—98 3 Claims



1. A process for electrolyzing an aqueous solution of an alkali metal chloride by feeding said aqueous solution of an alkali metal chloride into the central space of a hollow quadrilateral frame holding an anode therein, defining an anode compartment, and feeding water or a dilute aqueous solution of an alkali metal hydroxide into the central space of a hollow quadrilateral frame holding a cathode therein, defining a cathode compartment, said anode compartment and said cathode compartment being separated by a cation exchange membrane, in a filter-press type electrolytic cell wherein:
(a) each hollow quadrilateral frame is provided with an inlet passage to the central space of said frame for the introduction of an electrolyte and an outlet passage from the central space of said frame for removal of an electrolyzed product;
(b) an anode or a cathode is held in each said frame and electrically connected to a power source or an adjacent counter electrode, each said anode or cathode being respectively made of a metal plate having at the central part thereof notched rectangular portions being alternately bent to project in parallel to said metal plate and displaced therefrom, said notched rectangular portions being defined by adjacent longitudinal parallel cuts through said metal plate; and
(c) a gas and liquid permeable non-electrode porous layer made of inorganic particles is formed on the cation exchange membrane in a thickness thinner than that of the membrane on at least one surface of said membrane, wherein said at least one surface of the cation exchange membrane having the porous layer thereon is separated from the anode or cathode facing said porous layer.

4,411,750
CATION EXCHANGE MEMBRANE WITH HIGH EQUIVALENT WEIGHT COMPONENT

Raimund H. Silva, Hattingen, Fed. Rep. of Germany, and Roger A. Smith, Kennett Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 317,280, Nov. 2, 1981, and a continuation-in-part of Ser. No. 225,652, Jan. 16, 1981, abandoned. This application Sep. 20, 1982, Ser. No. 420,509
Int. Cl.³ C25B 1/34, 9/00, 13/08
U.S. Cl. 204—98 5 Claims

1. In a process for the continuous production of alkali metal hydroxide which comprises continuously providing an aqueous alkali metal halide solution to the anode compartment of an electrolytic cell having an anode, a cathode, and a cation exchange membrane separating the anode and the cathode; electrolyzing the solution; and continuously removing alkali metal hydroxide solution, hydrogen, and halogen from the electrolytic cell, the improvement wherein the cation exchange membrane consists essentially of layers of
(a) fluorinated polymer with pendant side chains containing carboxyl groups,
(b) fluorinated polymer having pendant side chains containing sulfonyl groups and having an equivalent weight of about from 1100 to 1600 and at least about 200 units higher than layer (a), and
(c) fluorinated polymer having pendant side chains containing sulfonyl groups and having an equivalent weight that is about from 1000 to 1500 and at least about 100 units lower than layer (b), the layers being bonded together in the order specified.

4,411,751
METHOD OF ANODICALLY DEBURRING ARTICLES OF STEEL OR ALUMINIUM ALLOYS IN AN ELECTROLYTIC BATH, AND A BATH FOR CARRYING OUT THE METHOD

Karl-Ingemar Blomsterberg, Högtensgatan 60, 423 00 Torslanda, Sweden

PCT No. PCT/SE82/00011, § 371 Date Sep. 14, 1982, § 102(e) Date Sep. 14, 1982, PCT Pub. No. WO82/02407, PCT Pub. Date Jul. 22, 1982
PCT Filed Jan. 15, 1982, Ser. No. 420,252
Int. Cl.³ C25F 3/04, 3/06
U.S. Cl. 204—129.85 10 Claims

1. A method of anodically deburring articles of steel or aluminium alloys in an electrolytic bath containing, in addition to water, alkali sulphamate, at least one polyhydric alcohol and at least one soluble chloride, at a bath voltage of 5 to 30 volts and a current density of 2 to 50 amperes per square decimeter, carried out in an acid solution having a pH not exceeding 6.5 and containing

	grams per liter
water	100 to 300
alkali sulphamate	50 to 150
polyhydric alcohol	400 to 800
alkali nitrate	50 to 150
alkali chloride	50 to 150.

4,411,752
PREPARATION OF 1-MONOCHLOROETHYLCARBAMYL CHLORIDE

Karl-Heinz Koenig, Frankenthal, and Karl-Heinz Feuerherd, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 26, 1981, Ser. No. 247,984
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013270
Int. Cl.³ B01J 19/12
U.S. Cl. 204—158 HA 9 Claims

1. A process for producing 1-monochloroethylcarbamyl chloride as the principal product and in high yields which comprises reacting ethyl isocyanate or ethylcarbamyl chloride with chlorine at from −78° to 0° C., under exposure to light.

4,411,753
SYNTHESIS OF 6-T-ALKYL-3-PYRIDAZINONES

Riaz F. Abdulla, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 8, 1982, Ser. No. 366,882
Int. Cl.³ C07D 237/14
U.S. Cl. 204—158 R 12 Claims

1. A process for preparing a pyridazinone of formula

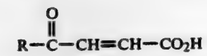


wherein
R is of the formula

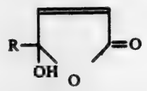


(I)

R^1 is C_1–C_4 alkyl;
R^2 and R^3 are independently C_1–C_{13} alkyl, or halo-C_1–C_{13} alkyl;
n is 0–4;
comprising irradiating a 2-propenoic acid of the formula



to form a furanone of the formula

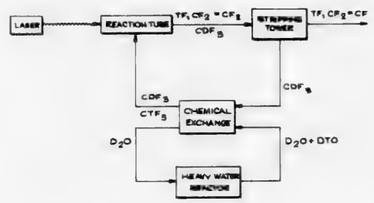


and reacting the furanone with hydrazine.

4,411,754
PROCESS FOR PREPARING A POLYMER COMPOSITION
Isao Kaetsu; Masaru Yoshida, and Minoru Kumakura, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
Continuation of Ser. No. 18,617, Mar. 8, 1979. This application Feb. 13, 1981, Ser. No. 234,839
Claims priority, application Japan, Mar. 9, 1978, 53-27109; Apr. 28, 1978, 53-51239; Aug. 29, 1978, 53-105306; Aug. 30, 1978, 53-106097
The portion of the term of this patent subsequent to Mar. 23, 1999, has been disclaimed.
Int. Cl.³ C08G 2/46; A61K 9/22
U.S. Cl. 204—159.15 **2 Claims**

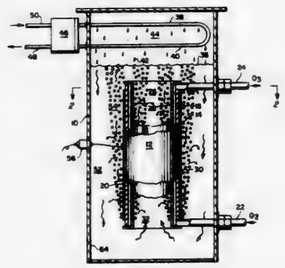
1. A process for preparing a polymer composition containing a physiologically active substance, said composition capable of releasing said physiologically active substance at a controlled rate, characterized by mixing one or more polymerizable monomers and said physiologically active substance in the absence or presence of a crystallizable substance, intended to increase the surface area for elution of said substance, and wherein an adsorbent is added from the group consisting of active carbon, silica-gel, kaolin and ion exchange resins, to adsorb a solution of physiologically active substance when an elution medium permeates into the composition, and irradiating the resulting mixture with light or an ionizing radiation at a temperature below 0° C. to polymerize said polymerizable monomers, to yield said polymer composition.

4,411,755
LASER-ASSISTED ISOTOPE SEPARATION OF TRITIUM
Irving P. Herman, Castro Valley, and Jack B. Marling, Livermore, both of Calif., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.
Filed Nov. 28, 1980, Ser. No. 210,716
The portion of the term of this patent subsequent to Mar. 24, 1998, has been disclaimed.
Int. Cl.³ B01D 59/00
U.S. Cl. 204—163 R **23 Claims**



1. A method for isotope separation of tritium-bearing molecules from heavy water reactor coolants in a molecular mixture, the method comprising the steps of:
providing an initial fluid containing an isotope mixture of deuterium-containing molecules D_2O and tritium-containing molecules DTO;
catalytically reacting the initial fluid with deuterium-containing working molecules XYD, where the working molecule XYD is a doubly-halogenated or triply halogenated methane molecule, in an exchange reaction $DTO+XYD \rightarrow D_2O+XYT$ to obtain product molecules XYT;
irradiating the product molecules XYT and the working molecules XYD with a pulsed infrared laser, tuned to a frequency that is photoselectively absorbed by XYT but not by XYD, so that the XYT molecules absorb a large number $n(\geq 20)$ of laser photons of frequency ν and dissociate according to the reaction $XYT+nh\nu \rightarrow X+YT$; and
chemically separating the molecules YT from the other molecules in the molecular mixture.

4,411,756
BOILING COOLANT OZONE GENERATOR
Douglas L. Bennett, Macungie, and Donald C. Amoss, Quakertown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Filed Mar. 31, 1983, Ser. No. 481,026
Int. Cl.³ C01B 13/11
U.S. Cl. 204—176 **29 Claims**

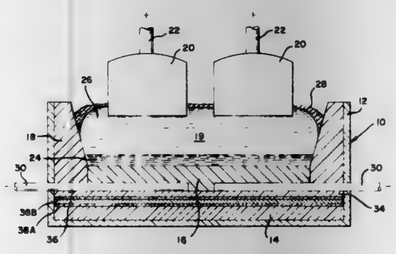


1. In an apparatus for producing ozone from an oxygen-containing gas by corona discharge, comprising two spaced electrodes supplied by a high voltage, and means for cooling the ozone by contacting an electrode with a coolant, the improvement comprising means for effecting the boiling of the coolant utilizing the heat in the generator whereby the resulting boiling coolant fluid contacts at least one electrode in heat exchange communication so as to enhance the heat transfer capability and to extend the life of the apparatus.

4,411,757
FORMATION OF ELECTRODES FOR MAGNETORESISTIVE SENSOR
Masahiro Kitada, Hamuramachi; Masahide Suenaga; Yukihisa Tsukada, both of Odawara; Noboru Shimizu, Tokorozawa, and Hiroshi Yamamoto, Hamuramachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 8, 1982, Ser. No. 386,302
Claims priority, application Japan, Jun. 10, 1981, 56-88148
Int. Cl.³ C23C 15/00
U.S. Cl. 204—192 E **9 Claims**

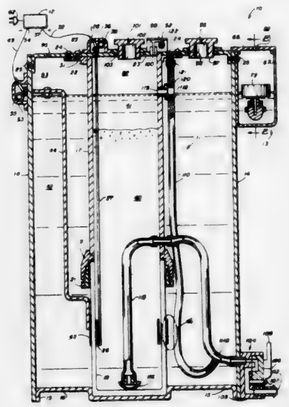
1. A method of forming electrodes for a magnetoresistive sensor comprising the steps of
(a) providing a mask of a predetermined pattern on a double-layer structure comprising a Mo film of which at least a portion is formed on a magnetoresistive film and an Al or Al alloy film deposited on said Mo film;
(b) exposing said Al or Al alloy film to an etching environment to etch at least said Al or Al alloy film into said predetermined pattern; and
(c) processing, after the completion of said step (b), at least said Mo film to have a pattern corresponding to that of said Al or Al alloy film by a plasma etching or reactive sputter etching technique.

4,411,758
ELECTROLYTIC REDUCTION CELL
James B. Hess, Dublin, and Erwin O. Strahl, San Ramon, both of Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Sep. 2, 1981, Ser. No. 298,555
Int. Cl.³ C25C 3/08
U.S. Cl. 204—243 R **8 Claims**



1. In a Hall-Heroult-type electrolytic cell containing a molten salt electrolyte composed primarily of fluoride salts and having dissolved in the molten electrolyte alumina which is electrolytically reduced to aluminum metal during the operation of the electrolytic cell, said cell comprising a steel shell, a layer of insulating material on at least the bottom of the shell and a layer of electrically conducting carbonaceous material disposed on at least the insulating layer on the bottom of the shell, the improvement comprising a composite strata interposed between the layer of insulating material and the layer of carbonaceous material on the bottom of the shell, said strata containing at least one layer of ground glass which melts and forms a high melting point barrier layer during the operation of the cell, the high melting point barrier preventing the penetration of electrolyte components, sodium vapor and gaseous fluorides into the insulating layer beneath the glass layer and at least one layer of a high temperature resistant layer wettable by the molten glass which maintains the molten glass in a continuous layer until the glass forms the high melting point barrier.

4,411,759
ELECTROLYTIC CHLORINE GENERATOR
Paul D. Olivier, 4851 E. Fanfol Dr., Scottsdale, Ariz. 85253
Filed Feb. 4, 1982, Ser. No. 345,566
Int. Cl.³ C25B 9/00, 11/03, 11/04, 13/04
U.S. Cl. 204—260 **11 Claims**



1. An electrolytic cell for the generation of gaseous chlorine comprising:
a cathode chamber,
an anode chamber for receiving therein an aqueous solution of a metallic chloride,
the walls of said anode chamber separating said cathode chamber from said anode chamber being at least partially formed of a porous ceramic material which extends into both cathode chamber and the anode chamber,
an anode mounted in said anode chamber extending into the aqueous solution when it is placed therein,
a cathode in said cathode chamber deposited on said ceramic material in said cathode chamber and being in communication with said anode chamber through pores in said ceramic material,
said cathode comprising a porous metallic coating deposited on said ceramic material and having a porosity greater than the porosity of said ceramic material,
means for supplying a DC voltage across said anode and said cathode to produce gaseous chlorine in said anode chamber; and
an outlet in each chamber.

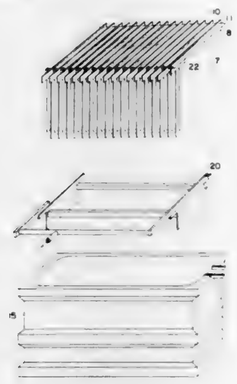
8. An electrolytic cell comprising:
an anode compartment,
a cathode compartment,
an anode positioned in said anode compartment,
a porous separator defining an area between said compartments,
a cathode deposited on the surfaces of said separator within said cathode compartment juxtapositioned to said anode,
said cathode comprising a flame and/or plasma deposited porous metallic coating applied directly to the surface of said area of said porous separator material, and
an outlet in each compartment.

4,411,760

ELECTROLYTIC CELLS

Renato Guerriero, and Italo Vittadini, both of Mestre, Italy, assignors to SAMIM Societa Azionaria Minero Metallurgica S.p.A., Rome, Italy

Filed May 13, 1981, Ser. No. 263,207
Claims priority, application Italy, May 26, 1980, 22313 A/80
Int. Cl.³ C25C *7/00, 1/16, 7/02*
U.S. Cl. 204—270 **5 Claims**



1. An electrochemical cell having an electrolyte-containing container and a set of spaced anodes and cathodes arranged in alternate sequence and serially connected, comprising:

bus bars for the anodes and cathodes, wherein the anodes and cathodes depend directly from said bus bars,

a support structure at the top of the container and about its perimeter upon which said bus bar rest so that said bars are at the top of the container with the anodes and cathodes depending directly therefrom into the electrolyte,

a plurality of shielding baffles which are resilient and which are secured to the top of said bus bars for the anodes,

said baffles extend over and from both sides of the bus bars into the space between anodes to form gaps therebetween in which said cathode bus bars are positioned, and wherein said baffles and cathode bus bars isolate the space immediately above the electrolyte, and said baffles, due to their resiliency and inter anode gaps, allow removal and replacement of the cathode while they remain secured to the anodes,

a suction manifold connected to said tub having a plurality of ports spaced along its length and open to the space between said baffles and electrolyte for drawing gases and mists therefrom, and

suction means connected to said manifold which effect a negative pressure in said manifold relative to the pressure in the room to draw out gases and mists which evolve in the electrochemical reaction from said space and through said ports to prevent their diffusion into the room.

4,411,761

SPINEL-CONTAINING ELECTRODE AND PROCESS FOR ITS PRODUCTION

Hans Roos, Bad Durkheim; Hugo Böehn, Ludwigshafen; Knüt Bittler, Speyer; Volker Kiener, Weisenheim, and Gerd Wunsch, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 24, 1981, Ser. No. 276,985
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1980, 3024611
Int. Cl.³ C25B *1/26, 11/04*
U.S. Cl. 204—290 R **2 Claims**

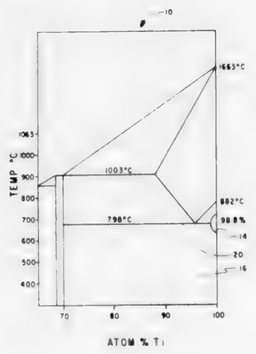
1. An electrode of which at least the outer electrochemically active layer contains spinels, wherein the spinels consist of a mixture of the individual spinels of said iron and said cobalt, Fe_3O_4 and Co_3O_4 spinels being from 30:70 to 90:10.

4,411,762

TITANIUM CLAD COPPER ELECTRODE AND METHOD FOR MAKING

George A. Kline, Madison, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 9, 1981, Ser. No. 319,702
Int. Cl.³ C25B *11/00*; C25D *3/66*
U.S. Cl. 204—290 F **29 Claims**



1. A method for making an electrode for use in an electrochemical cell comprising the steps of:

selecting a substrate metal material and a valve metal material;

immersing the substrate in a fused salt electrolyte bath including the valve metal;

making the substrate metal cathodic whereby the valve metal is caused to electrodeposit upon the substrate;

controlling the temperature of the bath to be at least 550° C. and not greater than the alpha-beta transition temperature for the intermetallic of the substrate metal with the valve metal material;

discontinuing electrodeposition when the thickness of the thereby electrodeposited valve metal coating is not greater than 10 mils;

performing the electrodeposition in an inert atmosphere;

maintaining a current density of not greater than about 100 milliamperes per square centimeter at the substrate during electrodeposition; and

applying an electrocatalyst to the valve coated metal substrate.

27. An electrode for use in an electrochemical cell such as an electrolytic halogen generation cell comprising: an electrically conductive metal substrate, the conductive metal being selected from a group consisting of copper, nickel, iron, silver, gold, platinum and mixtures thereof; an electrodeposited valve metal cladding the substrate, the valve metal being selected from a group consisting of titanium, niobium, zirconium, tungsten, tantalum, bismuth and mixtures thereof; an interdiffused zone of substrate metal and valve metal between the cladding and substrate; and an electrocatalyst applied to surface portions of the cladding; the valve metal cladding being substantially free of the substrate metal and not greater than about 10 mils in thickness, the substrate metal being substantially free of the valve metal.

4,411,763

SPUTTERING APPARATUS

Takeshi Itaba; Akio Nishiyama, both of Tokyo; Noribumi Kikuchi, Ohmiya; Takayuki Shingyoji, Ohmiya, and Yuzo Ohsawa, Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,003
Claims priority, application Japan, Aug. 27, 1981, 56-134502
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—298 **14 Claims**

1. A sputtering apparatus for applying a coating to an article which apparatus comprises:

(a) vacuum chamber;

(b) a holding means disposed within the vacuum chamber for holding the article; and

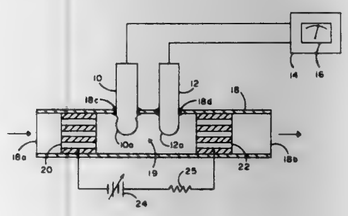
(c) a target cathode disposed within the vacuum chamber, the target cathode being of a tubular skeleton structure disposed in surrounding relation to the article holding means.

4,411,764

HYDROGEN ION INTERFERENT REDUCTION SYSTEM FOR ION SELECTIVE ELECTRODES

John N. Harman, III, Pasadena, and Robert H. Jones, Irvine, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Nov. 13, 1981, Ser. No. 321,297
Int. Cl.³ G01N *27/28*
U.S. Cl. 204—411 **15 Claims**



1. In an analyzer of the type having an ion selective electrode that is adapted to measure the activity of sodium, potassium or ammonium ions and a reference electrode, the improvement comprising:

(a) an anode electrode,

(b) a cathode electrode,

(c) an enclosure for directing a flow of an aqueous sample past the anode and the cathode electrodes,

(d) means for applying between the anode and cathode electrodes a voltage sufficient to cause the generation of hydroxyl ions at the cathode electrode,

(e) means for positioning the ion selective electrode and the reference electrode in a region having a local excess hydroxyl ion concentration.

4,411,765

METHOD FOR LIQUEFYING LOW RANK COAL

Yoshio Matsuura, Funabashi; Michio Kurihara, Mitaka; Takao Kamei, Ashiya; Akira Nakamura; Keiichi Komai, both of Akashi, and Takeshi Wakabayashi, Kobe, all of Japan, assignors to Electric Power Development Co., Tokyo and Kawasaki Kabushiki Kaisha, Kobe, both of, Japan

Filed Feb. 10, 1982, Ser. No. 347,422
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—8 LE **5 Claims**

1. Method for liquefying low rank coal which comprises steps of providing a water-coal slurry by mixing crushed coal with water, heating the slurry under a pressure to a temperature which is lower than the saturation temperature under the pressure to thereby remove water from the coal in the liquid phase, separating liquid in the slurry from the solids, performing heat exchange between the separated liquid and the said pressurized water-coal slurry, then mixing the liquid with crushed coal to provide a further water-coal slurry, mixing the separated solids with a solvent to provide a fluid, evaporating the water content of the fluid, cooling the evaporated water to thereby condense it so as to recover volatile material, heating and pressurizing a residual part of the fluid to a temperature and pressure suitable for liquefaction reaction with addition of hydrogen to obtain a liquefaction reactant, then subjecting the reactant to a heat exchange with the water-coal slurry to cool the reactant to a temperature suitable for distillation, and recirculating at least a part of the liquefaction reactant so that it is used as at least a part of the solvent.

4,411,766

IRON CATALYZED COAL LIQUEFACTION PROCESS

Diwakar Garg, Macungie, and Edwin N. Givens, Bethlehem, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 25, 1982, Ser. No. 352,282
Int. Cl.³ C10G *1/06*
U.S. Cl. 208—10 **10 Claims**

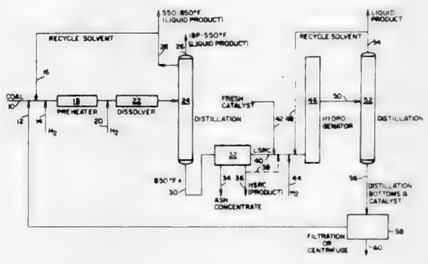
1. A process for the catalytic solvent refining of coal to generate liquid hydrocarbons, hydrocarbon gas and normally solid dissolved coal from the feed coal wherein particulate coal in a suspension of hydrogen donor coal solvent is reacted in a reducing atmosphere in the presence of a combination of co-catalysts of iron oxide and pyrite in which the iron as iron oxide is in a stoichiometric excess of that needed to react with substantially all sulfur available in-situ in the reaction medium so as to product additional iron sulfide catalyst, to eliminate substantially all of the hydrogen sulfide in the reactor effluent and to increase the liquid hydrocarbon content of the product distribution.

4,411,767

INTEGRATED PROCESS FOR THE SOLVENT REFINING OF COAL

Diwakar Garg, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 30, 1982, Ser. No. 429,390
Int. Cl.³ C10G *1/08*
U.S. Cl. 208—10 **7 Claims**



1. A process for the catalytic solvent refining of coal into liquid and solid products with the subsequent catalytic hydrogenation of at least a portion of the solid coal product to produce additional liquid product comprising the steps of:

(a) contacting particulate coal with a normally liquid solvent and a catalyst for the solvent refining of coal to form an unsupported hydrogenation coal slurry;

(b) catalytically solvent refining the coal slurry at elevated temperature and pressure in an initial process stage to form a liquid product containing normally solid refined coal;

(c) separating the liquid product into a lower boiling liquid

product and a normally solid refined coal product containing spent catalyst and ash;
(d) separating the normally solid refined coal from the spent catalyst and ash;
(e) contacting the normally solid refined coal with a fresh unsupported hydrogenation catalyst and introducing the mixture into a hydrogenation zone;
(f) hydrogenating the normally solid refined coal at elevated temperature and pressure to produce additional liquid product;
(g) separating the liquid product of step (f) from a residual product containing the used hydrogenation catalyst;
(h) recycling the used hydrogenation catalyst to the solvent refining contact stage of step (a) as the solvent refining catalyst.

4,411,768

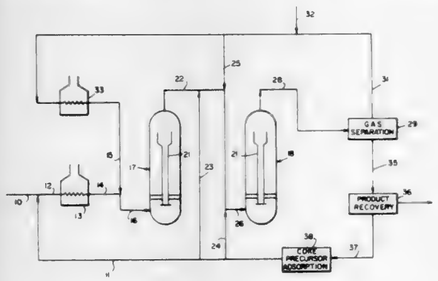
HYDROGENATION OF HIGH BOILING HYDROCARBONS

Harold Unger, Fort Lee, N.J.; Morgan C. Sze, Portsmouth, N.H., and Roger P. Van Driesen, Titusville, N.J., assignors to The Lummus Company, Del.

Continuation-in-part of Ser. No. 272,720, Jun. 11, 1981, abandoned, which is a continuation of Ser. No. 106,274, Dec. 21, 1979, abandoned. This application Apr. 21, 1982, Ser. No. 370,416

Int. Cl.³ C10G *47/26, 47/36*

U.S. Cl. 208—59 **6 Claims**



1. In a process for upgrading high boiling hydrocarbon materials to valuable lower boiling materials is a hydrogenation operation including at least one expanded bed catalytic hydrogenation zone to produce an upgraded hydrogenated product, the improvement comprising:

recovering from the upgraded hydrogenation product a recycle liquid having a 5-volume percent distillation temperature of at least 450° F. with at least 25-volume percent thereof boiling above 950° F.; cooling the liquid recycle to a temperature of at least 350° F. and no greater than 700° F. to separate coke precursors from the liquid recycle; and subsequent to separation of said coke precursors providing the liquid recycle to an expanded bed catalytic hydrogenation zone.

4,411,769

INTEGRATED TWO STAGE COKING AND STEAM CRACKING PROCESS AND APPARATUS THEREFOR

Morey E. Oldweiler, Chester, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 23, 1982, Ser. No. 360,927

Int. Cl.³ C10G *9/32*

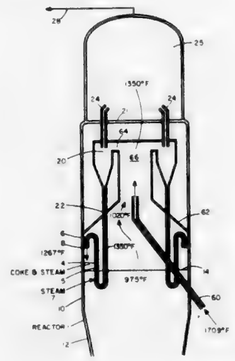
U.S. Cl. 208—54 **9 Claims**

1. In an integrated two stage coking and steam cracking process for the production of products including low molecular weight unsaturated hydrocarbons in which

(a) a carbonaceous material is reacted in a reactor in a first stage coking zone containing a bed of fluidized solids wherein steam is present maintained at fluid coking conditions including a temperature in the range of about 950° F. to about 1150° F. to form a vaporous coking zone conversion product and coke, said coke depositing on said fluidized solids;

(b) said vaporous coking zone conversion product is passed with entrained solids into a dilute phase to a second stage reaction zone;

(c) hot solids at a sufficient temperature and in sufficient amount are introduced into said conversion product entering said second stage reaction zone to raise the conversion product to steam cracking temperatures within the range



of 1200° F. to 1700° F. and supply the endothermic heat of reaction; and

(d) solids are separated from product gas in a gas-solids separation zone, separated solids are passed to the coking zone and separated gas is quenched, the improvement which comprises:

(e) introducing relatively low temperature steam into contact with said separated solids before they enter the coking zone to superheat the steam and cool the solids, discharging the resulting mixture into the dilute phase wherein the cooled solids are passed into the coking zone.

4,411,770

HYDROVISBREAKING PROCESS

Nai Y. Chen, Titusville; Eric J. Scott, Princeton, and David S. Shihabi, Pennington, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,330

Int. Cl.³ C10G *47/20*

U.S. Cl. 208—111 **10 Claims**

1. A process for enhancing the hydroconversion of a heavy hydrocarbon oil having a Conradson Carbon Residue content between about 8–30 weight percent, which process comprises (1) contacting the heavy hydrocarbon oil with hydrogen and a catalyst in a hydrovisbreaking zone at a temperature between about 650°–850° F. and a pressure between about 200–2000 psi and a liquid hourly space velocity between about 0.1–5, wherein said catalyst comprises (a) a crystalline zeolite component having a silica/alumina ratio greater than about 12, and an acid activity less than about 10 on the Alpha Scale, and (b) a metallic hydrogenation component; and (2) recovering and fractionating the visbroken effluent to provide distillate products and a 1000° F.+ fraction which has a Kinematic Viscosity between about 30,000–60,000 centistokes at 100° F.

4,411,771

PROCESS FOR HYDROTREATING HEAVY HYDROCARBONS AND CATALYST USED IN SAID PROCESS

William E. Bambrick, Old Greenwich, and Marvin S. Goldstein, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 209,776, Dec. 24, 1980, abandoned. This application Nov. 30, 1981, Ser. No. 325,699

Int. Cl.³ B01J *21/04, 23/24, 23/85*

U.S. Cl. 208—112 **25 Claims**

1. Hydrotreating catalyst comprising at least one catalytic metal selected from group VI and, optionally, at least one promoter metal selected from Group VIII of the periodic table, on catalyst support particles consisting essentially of spherical alumina beads consisting essentially of 70 to 100% by wt of alumina that has been rehydrated from partially dehydrated alumina in the forming of said beads and has then been calcined to convert the alumina to essentially anhydrous alumina, said beads having average particle diameter in the range from about 0.1 to 1 mm, and total pore volume in the range from 0.75 to 1.3 ml/gm with 0.3 to 0.6 ml/gm of said pore volume in pores having radius less than 105 Angstroms.

4,411,772

FLUID COKING WITH THE ADDITION OF PEROVSKITE-CONTAINING CATALYSTS

Robert C. Schucker, and Kenneth S. Wheelock, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Feb. 24, 1982, Ser. No. 351,968

Int. Cl.³ C10G *11/02, 47/02*

U.S. Cl. 208—121 **8 Claims**

1. In a fluid coking process comprising the steps of: contacting a carbonaceous chargestock having a Conradson carbon content of at least about 5 weight percent with hot fluidized solids in a fluidized coking bed contained in a coking zone maintained in a fluidized state by the introduction of a fluidizing gas and operated at coking conditions, including a temperature ranging from about 850° to about 1,400° F., to produce a vapor phase product and a solid carbonaceous material which deposits on said fluidized solids, the improvement which comprises the presence of a cracking catalyst in said cooking zone in a weight ratio of said catalyst to said carbonaceous feed ranging from about 0.1:1 to about 1:1, said cracking catalyst comprising a perovskite having at least one transition metal cation selected from the group consisting of elements having atomic numbers ranging from 21 through 30, from 39 through 48, from 57 through 80 and from 89 through 92.

4,411,773

HEAT BALANCE IN FCC PROCESS AND APPARATUS WITH DOWNFLOW REACTOR RISER

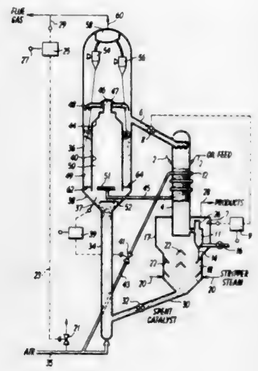
Benjamin Gross, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 217,879, Dec. 18, 1980, Pat. No. 4,356,082. This application Jul. 30, 1982, Ser. No. 403,685

Int. Cl.³ F27B *15/10, 15/14, 15/16*

U.S. Cl. 208—164 **38 Claims**

1. A fluid catalytic cracking process comprising admixing a hydrocarbonaceous feed with a regenerated catalyst in the top section of a downflow reactor riser, passing the hydrocarbonaceous feed and the catalyst admixed therewith through the downstream section of the riser, thereby effecting cracking of the hydrocarbonaceous feed at the process temperature under endothermic process conditions and deactivating the catalyst by deposition of carbonaceous deposits thereon, separating the deactivated catalyst from the cracked hydrocarbonaceous feed, passing the deactivated catalyst to a regenerator vessel wherein the carbonaceous deposits are removed from the deactivated catalyst under exothermic process conditions by means of a regenerating medium introduced into the regenerator vessel by a regenerating medium distribution means, thereby regenerating and heating the catalyst, passing the regenerated hot catalyst to the top section of the downflow reactor riser, and transferring at least a portion of the thermal



energy by heat exchanging means from the downflow riser to the regenerator vessel.

4,411,774

PROCESS FOR REMOVING CONTAMINANTS FROM WASTE LUBRICATING OIL BY CHEMICAL TREATMENT

Conrad B. Johnson, Edmonton, Canada, assignor to Turbo Resources Ltd., Edmonton, Canada

Continuation-in-part of Ser. No. 225,792, Jan. 16, 1981, abandoned. This application Mar. 5, 1982, Ser. No. 354,955

Int. Cl.³ C16M *11/00*

U.S. Cl. 208—179 **6 Claims**

1. A process for removing contaminants from waste lubricating oil, said contaminants arising from detergent dispersant agents and the wear of mechanical parts, comprising the steps of:

contacting the waste lubricating oil in the absence of added water with a pretreatment chemical selected from the group consisting of ammonium sulphate, ammonium bisulphate, ammonium dihydrogen phosphate, phosphoric acid, calcium sulphate, aluminum sulphate, magnesium sulphate, sodium sulphate and mixtures thereof, at a temperature in the range of about 650° F. to 725° F. for a time sufficient to render the greatest part of the contaminants removable by filtration; and then

filtering the oil mixture to obtain a filtrate product reduced in contaminant content.

4,411,775

DEMULSIFICATION OF BITUMEN EMULSIONS USING WATER SOLUBLE EPOXY-CONTAINING POLYETHERS

David R. McCoy; Michael Cuscurida, and George P. Speranza, all of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1981, Ser. No. 326,460

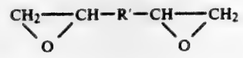
Int. Cl.³ C10G *33/04*

U.S. Cl. 208—188 **5 Claims**

1. A process for recovering petroleum from oil-in-water (O/W) bitumen emulsions by demulsifying said emulsions comprising contacting the emulsions at a temperature of from between about 25° and 160° C. with water soluble polyethers prepared from the acid- or base-catalyzed reaction of poly-(ethyleneoxy) glycols of the structure

$$HO(CH_2CH_2O)_nH$$

where n=40 to 250 with 0.5-10 wt.% diepoxides of ≦600 molecular weight of the general structure



wherein R' is an aromatic group.

4,411,776

METHOD FOR TREATING MERCAPTANS CONTAINED IN A SOUR PETROLEUM DISTILLATE

David H. J. Carlson, Park Ridge, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 255,409, Apr. 4, 1981, Pat. No. 4,364,843, which is a continuation-in-part of Ser. No. 95,748, Nov. 19, 1979, abandoned, and Ser. No. 98,009, Nov. 28, 1979, abandoned. This application Sep. 16, 1982, Ser. No. 418,953

Int. Cl.³ C10G *19/073*

U.S. Cl. 208—206 **11 Claims**

1. A method of treating a mercaptan-containing sour petroleum distillate by contacting said distillate at oxidation conditions with a catalytic composite comprising a catalytically effective amount of a metal phthalocyanine and an alkali metal hydroxide disposed on an adsorptive support, said alkali metal hydroxide comprising at least about 10 wt. % of said catalytic composite, said catalytic composite being prepared by a method which comprises:

(a) preparing an admixture of an adsorptive support, a metal phthalocyanine, an alkali metal hydroxide, and an alcohol having fewer than six carbon atoms, said admixture also containing from 0 wt. % to about 25 wt. % water based on the weight of said alcohol; and

(b) drying said admixture at a temperature of less than about 30° C. to form a catalytic composite.

4,411,777

PRODUCING INCREASED YIELD OF HYDROGEN BY CRACKING PETROLEUM WITH POTASSIUM-CONTAINING CATALYST

Dwight L. McKay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 934,925, Aug. 18, 1978, Pat. No. 4,331,563. This application Feb. 4, 1982, Ser. No. 345,516

Int. Cl.³ C10G *11/05, 11/18*

U.S. Cl. 208—120 **8 Claims**

1. A process for producing hydrogen and a high gasoline yield but without significantly increasing coke production which comprises cracking a petroleum hydrocarbon or oil under cracking conditions suited to produce high gasoline yields by subjecting said hydrocarbon or oils to said cracking conditions in the presence of a petroleum cracking catalyst containing at least one of the metals iron, nickel and vanadium and also containing potassium in the range of from about 0.01 to about 0.05 weight percent of the catalyst, calculated as the element.

4,411,778

APPARATUS FOR SCREENING GRAIN OR THE LIKE

D. L. Venable, 4110 11th Ave., Kearney, Nebr. 68847

Filed Oct. 2, 1981, Ser. No. 307,967

Int. Cl.³ B07B *1/40*

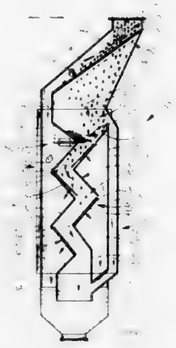
U.S. Cl. 209—246 **8 Claims**

1. An apparatus for screening grain or the like comprising:

a casing;

means for forming a vertical zig-zag chute within the casing for receiving gravity fed material to be screened, the underside of each zig and each zag having an opening for the passage of material therethrough to the bottom of the casing and the upperside thereof being of fixed angular relationship with respect to the walls of the casing;

means for hingedly connecting to the interior of said chute forming means, above each opening therein, a screen covering the opening whereby clean elements of the material to be screened will follow a zig-zag path through said chute forming means and cause each screen to resonate with respect to said hingedly connecting means, thereby further separating the fines therefrom, and whereby the clean elements will be discharged from said chute forming means and the fines from said casing.



4,411,779

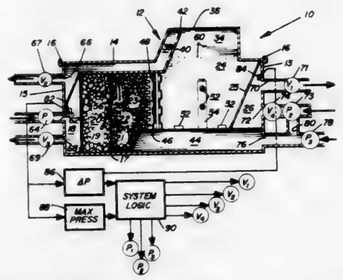
FLUID TREATMENT SYSTEM

Frank G. McConnell, III, 1440 Dineen Ave., Orlando, Fla.

Filed Apr. 24, 1978, Ser. No. 899,553

Int. Cl.³ B01D *23/24*

U.S. Cl. 210—108 **28 Claims**



1. A fluid treatment system, comprising:

an enclosed housing having an inlet at one end and an outlet at another end;

a filtration medium disposed in said housing for removing undesirable constituents in said fluid during passage between said inlet and said outlet;

means coupled to said inlet for pumping said fluid to be treated into said inlet and in a flow path between said inlet and said outlet;

backwashing means for introducing a cleansing fluid into said filtration medium;

first means disposed in said housing for measuring fluid pressure adjacent said inlet;

second means disposed in said housing for measuring fluid pressure adjacent said outlet;

means for detecting the pressure differential between said first and second pressure measuring means and providing an output when the pressure differential exceeds the selected level;

means for energizing said backwashing means responsive to said output from said pressure differential means;

a plurality of perforated partitions in said housing spaced between said inlet and said outlet and separating said housing into plural chambers, with said medium disposed in the first one of said chambers;

an expansion chamber above said first chamber;

means coupling said backwashing means with said housing and in communication with said first chamber, whereby said cleansing fluid expands said filtration medium upward in said first chamber and into a portion of said expansion chamber; and

a weir in said expansion chamber for removing said cleansing fluid therefrom.

4,411,780

SEWAGE DISPOSAL PLANT

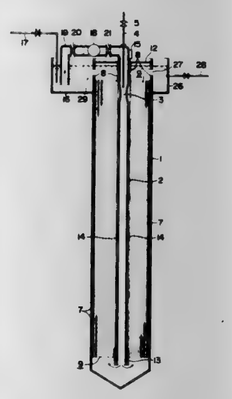
Kensuke Suzuki, Tokyo, and Sunao Okada, Nishinomiya, both of Japan, assignors to Nipon Sangyo Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1982, Ser. No. 347,436

Claims priority, application Japan, Feb. 19, 1981, 56/22382[U]

Int. Cl.³ C02F *3/04*

U.S. Cl. 210—150 **1 Claim**



1. A sewage disposal plant comprising a deep well type sewage treatment tank, a circulator pipe inserted vertically into the central portion of said sewage treatment tank and having a venturi portion at an intermediate section thereof, an air suction pipe inserted into said circulator pipe so as to open in said venturi portion thereof, an extension pipe fitted slidably up and down on a lower portion of said circulator pipe and connected to a winding pulley secured to an upper portion of said circulator pipe, a plurality of string-shaped contact members having therearound a number of ring type fuzzy hairs and provided in said sewage treatment tank in such a manner that said contact members are extended vertically in a tensile state between a pair of support frames fixed on upper and lower portions of the interior of said sewage treatment tank, a circulating water receiving tank for receiving therein untreated water so formed so as to be communicated with said sewage treatment tank at one side of an upper portion thereof, a water suction pipe extended outward from the interior of said circulating water receiving tank and communicated via a circulating pump provided at an intermediate portion thereof, with said circulator pipe at an upper portion thereof, first and second change-over valves inserted in said water suction pipe at both sides of said circulating pump, respectively, a by-pass pipe communicated via a third change-over valve with said water suction pipe at the downstream sides of said first and second change-over valves, a sludge discharge pipe having a fourth change-over valve at an intermediate portion thereof extending from a portion of said water suction pipe between said circulating pump and said second change-over valve, and a treated water receiving tank so formed as to be communicated with said sewage treatment tank at the other side of an upper portion thereof.

4,411,781

HIGH PRESSURE ULTRA-FILTRATION SYSTEM

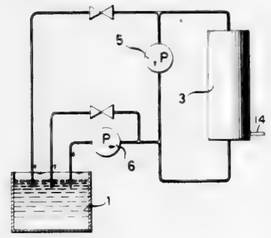
Roland Schnabel, Hofheim; Alexander Hoelzel, and Winfrid Vaulont, both of Mainz, all of Fed. Rep. of Germany, assignors to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed Jan. 10, 1979, Ser. No. 2,371

Claims priority, application Fed. Rep. of Germany, Jan. 11, 1978, 2801018

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—195.2 **8 Claims**



1. An apparatus for a high pressure ultra-filtration of a permeate from a crude solution at a pressure of 100 bars comprising a module; a plurality of pressure stable porous glass capillary diaphragms being stable at a pressure of 100 bars as a main filtration element; means for holding the glass capillary diaphragms in said module to extend parallel to one another, said means for holding including a pressure stable encapsulated holder having a pressure tight connection with said capillary diaphragms at one end and including an outlet in communication with the interior of each of the capillary diaphragms, said module having an inlet for the crude solution and an outlet for the crude solution being arranged on the module with the flow of the crude solution being a turbulent flow parallel to and along the outside of each of the porous glass capillary diaphragms with the permeate passing from the exterior to the interior of each of the capillary diaphragms and to the outlet in communication therewith; and means for creating a flow pressure gradient on the crude material being supplied to the module.

4,411,782

MECHANICAL MEANS FOR SECURING A SCREEN HOLDING CAULKING IN A GROOVE AND METHODS

David L. Auld, Port Neches, and Herbert W. Miller, Beaumont, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Division of Ser. No. 106,785, Dec. 26, 1979, Pat. No. 4,307,503. This application Sep. 21, 1981, Ser. No. 303,736

Int. Cl.³ B01D *25/00*

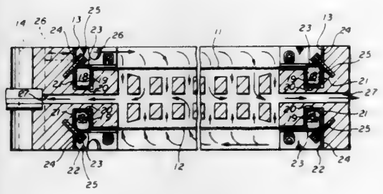
U.S. Cl. 210—230 **6 Claims**

1. Mechanical means for securing a flexible sheet splined into a peripherally grooved flexible sheet holder, said mechanical means being positioned over said spline about a peripheral edge, said groove having one side substantially longer than the other side thereof, wherein

(a) a flexible sheet holder has a groove formed in the end face thereof for securing a flexible sheet therein,

(b) clip means of a predetermined length having legs angled to each other with one leg in direct contact with the outer surface of the spline,

(c) the other leg of said clip means being positioned against and in direct contact with the longer side of said groove, and



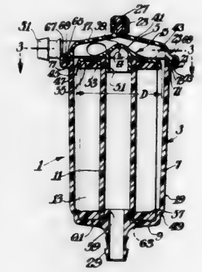
(d) screw means inserted transversely of said groove through said clip means and obliquely to each clip leg for securely fastening said clip means to the longer side of said groove in the end face of said flexible sheet holder for fastening the spline to the flexible sheet holder for resisting environmental conditions of continually changing temperatures to thus increase the service life of said flexible sheet by decreasing flexible sheet maintenance.

4,411,783

ARTERIAL BLOOD FILTER WITH IMPROVED GAS VENTING

Duane D. Dickens, Irvine, and Francis M. Servas, San Juan Capistrano, both of Calif., assignors to Shiley Incorporated, Irvine, Calif.

Filed Dec. 23, 1981, Ser. No. 333,832
Int. Cl.³ B01D *19/00, 27/06, 35/02*
U.S. Cl. 210—304 **13 Claims**



1. A liquid filter suitable for use in an extracorporeal blood flow circuit comprising

a hollow tubular housing having a side wall, a top wall having a highest point at the center thereof and a bottom wall,

a gas vent in said top wall at said highest point,

a perforated tubular core concentrically disposed within said housing,

a cylindrical filter element surrounding said core and displaced from said side wall,

a filter element cap covering the upper ends of said core and said filter element and displaced from said top wall,

a substantially horizontal liquid inlet in said side wall adjacent said top wall, and

a filtrate outlet in said bottom wall of said housing in communication with the space within said core,

with the upper surface of said filter element cap being symmetrical about the longitudinal axis of said housing, having a highest point at its center, and being without any points of localized minimum height, and with said inlet being adapted to direct the incoming flow of liquid in a non-perpendicular manner against the side wall of said housing,

whereby a swirling flow of liquid is established outside said filter element and above said filter element cap.

11. In a hollow tubular housing comprising a plastic upper cup-like portion having a top wall, a downwardly-extending side wall and an open bottom end, secured to a plastic lower cup-like portion having a bottom wall, an upwardly-extending side wall and an open top end, the improvement wherein the lowermost portion of said upper portion includes inner and outer downwardly-extending annular rims defining a first annular groove between them, the uppermost portion of said lower portion includes inner and outer upwardly-extending annular rims defining a second annular groove between them, with said outer annular rim of said lower portion received within said first annular groove so as to leave a gap between said outer annular rim and the base of said first annular groove and with said inner annular rim of said upper portion received within said second annular groove so as to leave a gap between said inner annular rim and the base of said second annular groove, said two outer annular rims are bonded together by ultrasonic bonding and said outer upwardly-extending annular rim is bonded to said inner downwardly-extending annular rim by ultrasonic bonding,

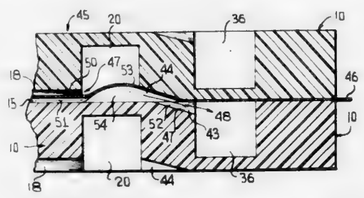
whereby a double shear seal capable of withstanding elevated pressure is obtained.

4,411,784

STACKED PLATE TRANSFER DEVICE

William G. Esmond, 8000 Country Club Rd., Havre de Grace, Md. 21078

Continuation of Ser. No. 596,460, Jul. 16, 1975, abandoned. This application Aug. 10, 1979, Ser. No. 65,727
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—321.1 **18 Claims**



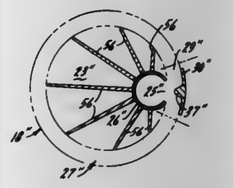
1. A transfer assembly comprising a plurality of generally flat plates arranged in stacked relation, and a membrane extending between each pair of adjacent ones of said plates in sealed relationship with peripheral portions of said plates, each of said plates having a grooved side and a planar side, a central portion of said grooved side having a plurality of adjacent grooves formed therein and defining first flow paths, a central portion of said planar side aligned with said grooved side central portion being planar, a first distribution channel and a first collection channel for a first fluid in said grooved side extending transversely of said grooves at opposite ends of said grooves and in direct communication with said first flow paths, a similar second distribution channel and second collection channel for a second fluid in said planar side in spaced relation to said planar central portion with said membrane being deformable into said grooved side of a next adjacent plate to place said second distribution channel and said second collection channel in communication with said planar central portion across those portions of said planar side between said second distribution channel and said second collection channel and said planar central portion for urging said membrane partially into said grooves to define second flow paths for the second fluid.

4,411,785

REVERSE OSMOSIS HOLLOW FIBER FILTER ELEMENT

Steven P. Yu, Elizabeth; Frank C. Matunas, Point Pleasant, and Nikolaus Zwetkow, Maplewood, all of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Sep. 29, 1982, Ser. No. 427,864
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.1 **6 Claims**



1. A filter element to be vertically supported in a pressure vessel which receives a feedstream of liquid to be treated, comprising:

(a) a vertically extending permeate collection channel means for receipt of a permeate stream thereinto defining an outer surface and a vertically extending length and a longitudinally extending opening formed therein, said permeate collection channel means having a plurality of spaced apart plates defining outer ends remote from said permeate collection channel means and extending radially outwardly from said outer surface of said permeate collection channel and each said plate extending substantially the entire length of said permeate collection channel means;

(b) an annular layer of hollow RO fiber means wound around said outer ends of said plates and said permeate collection channel for separating said feedstream of liquid passing therethrough into a permeate stream and a concentrate stream and for directing said permeate stream into center bores formed by said annular layer of hollow RO fiber means and for directing said concentrate stream within a center core area defined between said plates;

(c) said annular layer of hollow RO fiber means having a section in radial alignment with said opening in said permeate collection channel which is embedded in a bonding material and faced to reveal a plurality of said center bores in communication through said opening with said permeate collection channel for directing said permeate stream from said center bores into said permeate collection channel; and

(d) a permeate collection baffle plate means for closing off the outer surface of the said faced section of said layer of hollow RO fiber means.

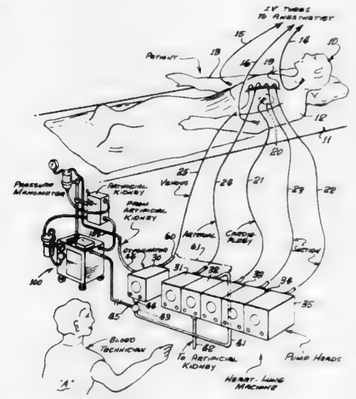
4,411,786

METHOD AND APPARATUS FOR SEPARATING BLOOD FROM OTHER FLUIDS DURING OPERATIVE PROCEDURES

Richard T. Russell, 1180 Akard Dr., Reno, Nev. 89503

Continuation-in-part of Ser. No. 73,189, Sep. 7, 1979, Pat. No. 4,299,705. This application Oct. 5, 1981, Ser. No. 308,102
The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.3 **4 Claims**

1. The combination with a heart-lung machine used in open heart surgery of: blood removal conduit means insertable into a patient at a point adjacent the blood inlet to the heart; means to prime the heartlung machine with fluids other than blood prior to an operation; means to cause blood from a patient to flow from the patient via the blood removal conduit means into the heart lung machine to mix with the priming fluid; means to carry the blood mixed with priming fluid to the oxygenator of the heart lung machine; dual conduit means to remove the blood mixed with priming fluid from the oxygenator and deliver a first portion of the mixture to the patient via a fluid carrying conduit insertable into the patient's body and to deliver a second portion of the mixture to an artificial kidney means; means to cause the said mixture to be treated in an



artificial kidney so as to separate a portion of the priming fluid from the blood; conduit means to remove the blood from which a portion of the priming fluid has been removed from the artificial kidney means and return it into the inlet of the oxygenator; and drain means to remove the priming fluid from the artificial kidney means.

4,411,787

REVERSE OSMOSIS APPARATUS

Robert L. Riley, San Diego, Calif., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 22, 1982, Ser. No. 400,786
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.5 **5 Claims**

1. An apparatus for recovery by reverse osmosis of a desired product from an aqueous solution which comprises a hollow mandrel having axial passageway means provided therein, a layer of first porous backing material adjacent to and surrounding said mandrel, a plurality of generally laterally coextensive leaves of porous backing material in contact with and extending generally radially outward from said first backing material, said leaves having at least one edge thereof in a generally parallel relationship to the longitudinal axis of said mandrel, a plurality of semipermeable membrane sheets each having a fold line therein, said fold line being positioned in contact with said first porous backing material in a generally parallel relationship to the longitudinal axis of said mandrel, and each positioned between two of said leaves of porous backing material, a plurality of separator grid sheets each positioned within the folds of said membranes to form a fluid-conducting passageway within each of said folds, said pluralities of porous backing material, membranes and separator grids being spirally wound around said first backing material in overlapping relationship upon one another to form a roll comprising multiple layers of porous backing material-membrane-fluid-conducting passageways-membranes groupings, means to supply said fluid to one end of said fluid-conducting passageway, means to withdraw fluid from the opposite end of said passageway, and means to withdraw fluid from said hollow mandrel, wherein a backing material for said semipermeable membranes composite consists of a film of a polyethylene terephthalate having a thickness in the range of about 1 mil to about 10 mil and which is positioned between two layers of an epoxy-impregnated

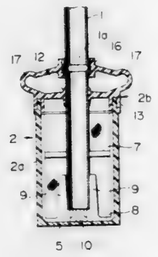
polyester, said composite forming a product-water carrying channel.

4,411,788

FILTER FOR GASOLINE TANK

Shigeru Kimura, Kamakura, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed May 12, 1982, Ser. No. 377,481
Int. Cl.³ B01D *25/00*
U.S. Cl. 210—439 **5 Claims**



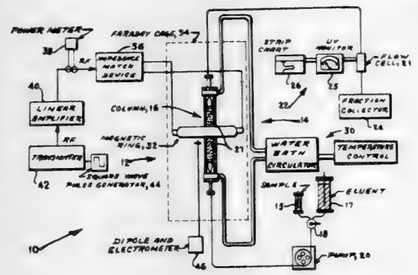
1. In a filter for a gasoline tank, comprising a generally cup shaped filter body having a base and sidewalls containing a net stretched along the periphery thereof and a lid formed to cover the open end of said filter body and provided with an insertion hole for permitting a suction pipe to be inserted into the interior of said filter body and fastened therein, said suction pipe being provided intermediate the length thereof with an engaging portion; said lid further including a retaining member disposed substantially coaxially above said insertion hole and spaced from said lid, and at least a pair of resilient arms integrally attached to said lid and said retaining member for supporting in position said retaining member in spaced relation from said lid, said retaining member being adapted to resin said suction pipe when the free end of said suction pipe is telescoped through said retaining member and said insertion hole until said engaging portion of said suction pipe is moved into fast engagement with said retaining member; and means positioned within said filter body for moveably locating said suction pipe free end.

4,411,789

MAGNETIC RESONANCE CHROMATOGRAPHY

Robert P. Liburdy, 1245 Park Ave., Apt. 16A, New York, N.Y. 10028

Filed Aug. 21, 1981, Ser. No. 295,035
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—635 **6 Claims**



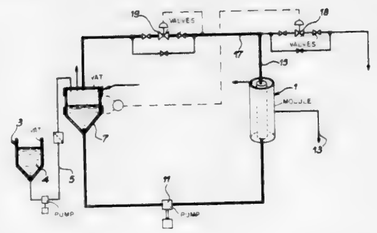
1. In a liquid gel chromatography apparatus having a gel media for partitioning molecules possessing a net positive or negative charge, the improvement therein comprising means operably associated with said chromatography apparatus for generating an oscillating magnetic field which produces eddy currents within said gel media, whereby said eddy currents effect separation patterns for said molecules.

4,411,790

PROCESS FOR THE TREATMENT OF A HYDROCARBON CHARGE BY HIGH TEMPERATURE ULTRAFILTRATION

Jean Arod, Pierrevert; Bernard Bartoli, Jouques; Pierre Bergez, Paris; Jean Biedermann, Montivilliers; Philippe Caminade, Pierrelatte; Jean-Marie Martinet, Montelimar; Jean Maurin, Montivilliers, and Jean Rossarie, Le Havre, all of France, assignors to Commissariat a l'Energie Atomique and Compagnie Francaise de Raffinage, both of Paris, France

Filed May 20, 1981, Ser. No. 265,660
Claims priority, application France, May 22, 1980, 80 11442
Int. Cl.³ B01D *13/00*
U.S. Cl. 210—637 **14 Claims**



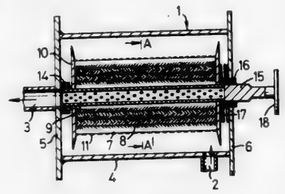
1. A process for the treatment of a liquid hydrocarbon charge by ultrafiltration to remove unwanted impurities from said liquid hydrocarbon, said process consisting essentially of circulating said charge at a temperature greater than 100° C. in at least one module comprising at least one mineral ultrafiltration barrier coated with a sensitive layer of mixed oxide of magnesium and aluminum mixed with silica the direction of said circulation being such that said liquid hydrocarbon charge initially contacts an outer surface of said coating whereby said impurities are removed from said liquid hydrocarbon charge by said coated barrier to produce an ultra-filtrate essentially free of impurities, said barrier having a radius of permeametry between 50 Å and 250 Å and being adapted to support a counter pressure of between 1 and 30 relative bars.

4,411,791

SEPARATION EQUIPMENT

Denis S. Ward, Walton-on-Thames, England, assignor to The British Petroleum Company, p.l.c., London, England

Filed Jan. 20, 1982, Ser. No. 341,136
Claims priority, application United Kingdom, Jan. 21, 1981, 8101786
Int. Cl.³ B01D *17/02, 27/12*
U.S. Cl. 210—649 **4 Claims**



1. A cartridge for removing contaminants from a liquid, which cartridge comprises (a) a casing having a central port and a circumferential port, (b) a perforated rigid hollow tube, the interior of which is in communication with the central port, (c) a perforated cylinder, the exterior of which is in communication with said circumferential port, (d) a roll of liquid permeable material disposed within the perforated cylinder such that any flow of liquid between the ports passes radially through the roll characterized in that

(i) the roll is formed from a resilient sheet having a layer of fibers attached thereto,

(ii) the sheet is attached at its outer end to the perforated cylinder and at its inner end to the perforated tube

(iii) means are provided to rotate the perforated tube, which means are operable to vary the tension of the resilient sheet during use, to compress the fibres into a network of fine channels, and to open up the network into a series of relatively wide channels.

4. A method for treating a mixture of a first immiscible liquid finely dispersed in a second immiscible liquid so as to coalesce the first immiscible liquid comprises passing the mixture radially through a cartridge containing a roll of fibrous coalescing material said cartridge comprising (a) a casing having a central port and a circumferential port, (b) a perforated rotatable rigid hollow tube, the interior of which is in communication with said central port, (c) a perforated cylinder, the exterior of which is in communication with said circumferential port, characterized in that

(i) the fibrous material comprises a mass of fibers held in compression by a coiled liquid permeable resilient sheet supporting said fibers, said sheet being attached at its outer end to the perforated cylinder and at its inner end to the perforated tube to releasably maintain said sheet under tension and compress the fibers into a network of fine channels and

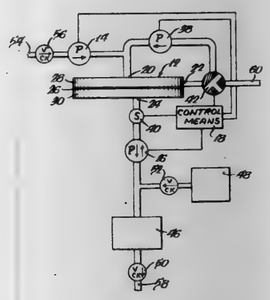
(ii) after a quantity of the mixture has been passed through the fibrous coalescing material, the rotatable member is rotated so as to reduce the tension on the sheet and the compression of the fibers to open up the network into a series of relatively wide channels and the fibers are then washed by passing a washing liquid through the roll of fibrous material.

4,411,792

LYMPH FILTRATION SYSTEM

Albert L. Babb, Seattle, Wash., assignor to Trimedyne, Inc., Arlington Heights, Ill.

Filed Aug. 10, 1981, Ser. No. 291,175
Int. Cl.³ B01D *31/00, 13/00*
U.S. Cl. 210—651 **27 Claims**



19. A lymph filtration system for removing lymph from a patient, separating the lymph into a liquid fraction and a cellular component fraction and returning the liquid fraction to the patient, the system comprising:

(a) a filtration cell having an inlet, a cellular component outlet and a filtrate outlet, the filtration cell also having a membrane filter dividing the cell into a filtering chamber and a filtrate chamber, the inlet and cellular components outlet in fluid communication with the filtering chamber and the filtrate outlet in fluid communication with the filtrate chamber, the filtrate chamber defining a spiral flow path between the inlet and the cellular component outlet, the spiral flow path being substantially coplanar with the membrane filter;

(b) an input pump for pumping lymph from the patient to the inlet of the filtration cell;

(c) an inlet check valve between the patient and the pump.

(d) a hydraulic sensing means operably associated with the filtrate outlet;

(e) a reversible filtrate pump in fluid communication with the filtrate outlet for pumping fluid to and from the filtrate chamber, the filtrate pump when in the operating mode to pump liquid from the filtrate chamber to the patient, and when in a backflush mode, to pump fluid into the filtrate chamber to produce a positive transmembrane pressure from the filtrate chamber to the filtering chamber to backflush the membrane filter;

(f) a control means operably associated with the hydraulic sensor for controlling the outlet pumping means;

(g) a recirculation loop in fluid communication between the cellular component outlet and the inlet of the filtration cell, the recirculation loop having a recirculation pump to pump fluid from the outlet to the inlet to increase fluid flow through the filtering chamber;

(h) an outlet check valve between the filtrate pump and the patient;

(i) a backflush fluid source in fluid communication with the filtrate pump between the filtrate pump and the outlet check valve; and

(j) a backflush check valve between the backflush fluid source and the filtrate pump such that when the filtrate pump is in the operating mode, liquid fraction is pumped from the filtrate chamber to the patient and when the filtrate pump is in the backflush mode, backflushing fluid is pumped from the backflush fluid source into the filtrate chamber.

4,411,793

PROCESS FOR THE SEPARATION OF ELEMENTS BY CHROMATOGRAPHY

Michio Kato; Toshiyuki Endo, and Junji Nomura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1981, Ser. No. 333,696
Claims priority, application Japan, Dec. 24, 1980, 55-181833; Dec. 27, 1980, 55-185088
Int. Cl.³ B01D *15/08*
U.S. Cl. 210—656 **21 Claims**

1. In a process for the separation of elements selected from the group consisting of Li, Be, Na, Mg, Al, Si, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pb, Ag, Cd, In, Sn, Sb, Te, Cs, Ba, lanthanide elements, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, Fr, Ra and actinide elements, by chromatography which comprises supplying an original aqueous solution of a mixture of elements to be separated to a column packed with an adsorbent to form an adsorption band of elements on the adsorbent while forming a front zone left in front of the adsorption band and feeding an eluent to the column to develop the adsorption band while forming a rear zone in rear of the adsorption band, the improvement wherein when the length of the front zone becomes

$$\frac{V}{A} \times \frac{R}{1-R} \text{ (cm) or less}$$

wherein V is the void volume of the column which includes the pore volume of the adsorbent packed in the column, cm^3; A is the sectional area of the column, cm^2 and R is the molar fraction of the elements to be separated which is present in the liquid phase of the adsorption band, the adsorption band of elements formed on the adsorbent packed in a column is developed using a main eluent having a relatively high concentration, whereby the adsorption band of elements is developed

without causing the entry of said main eluent into the front zone.

4,411,794

PROCESS FOR THE PURIFICATION OF THE BLOOD CLOTTING FACTORS, II, VII, IX AND/OR X

Horst Schwinn; Norbert Heimburger, both of Marburg; Gerhardt Kumpe, Wetter, and Heinz H. Drescher, Neustadt, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Jan. 19, 1982, Ser. No. 340,896

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1981, 3101752

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—670 **6 Claims**

1. A method for purifying a blood clotting factor selected from the group consisting of Factors II, VII, IX, and X, which method comprises adsorbing said blood clotting factor on a mineral adsorbent from a solution containing at least one such blood clotting factor together with calcium ions contributed by a calcium salt dissolved in said solution, and then eluting adsorbed blood clotting factor from said mineral adsorbent with a buffer of high ionic strength.

4,411,795

PARTICLE ADSORPTION

Wayne P. Olson, Valencia, Calif., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 128,617, Mar. 10, 1980, abandoned. This application Feb. 26, 1981, Ser. No. 238,410

Int. Cl.³ B01D *15/00*

U.S. Cl. 210—679 **21 Claims**

1. A method for removing lipin particles from suspension in a fluid, comprising contacting the suspension with an adsorbent composition having the formula

$$[(Y)_eB]_dZ$$

wherein Y is a hydrophobic ligand, B is a strong ionogenic group, Z is a water insoluble carrier, e is an integer and d is greater than 2 under conditions to adsorb the particles, followed by separating the compositions from the fluid.

4,411,796

POLYAMINIC RESIN FOR THE SELECTIVE SEPARATION OF HEPARIN FROM OTHER GLUCOSAMINOGLYCANES AND METHOD FOR THE PREPARATION THEREOF

Benito Casu, Milan; Giangiacomo Torri, Bergamo, and Giorgio Zoppetti, Milan, all of Italy, assignors to Crinos Industria Farmabiologica, S.p.A., Villa Guardia, Italy

Division of Ser. No. 251,874, Apr. 6, 1981, Pat. No. 4,369,256. This application Sep. 29, 1982, Ser. No. 431,732

Claims priority, application Italy, Apr. 18, 1980, 21499 A/80

Int. Cl.³ C13D *3/14*

U.S. Cl. 210—692 **4 Claims**

1. A method for selectively adsorbing a single mucopolysaccharidic compound from a mixture of glucosaminoglycanes in an aqueous solution, wherein said solution is contacted under stirring with a polyalkyleneamine crosslinked by means of a diisocyanate, the crosslinking degree, based on the molar ratio between said diisocyanate regarded as monofunctional and said polyalkyleneamines regarded as monomeric units, ranging from 0.1 to 1.0.

4,411,797

DEWATERING OF SEWAGE SLUDGES ON CHAMBER FILTER PRESSES

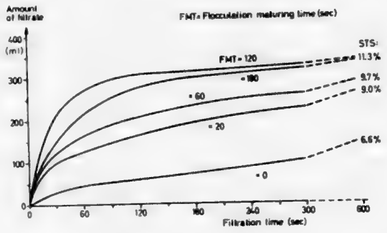
Bruno Sander, Ludwigshafen; Klaus Hess, Bad Duerkheim; Peter Lintz, Heidelberg, and Walter Goesele, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 149,964, May 15, 1980, abandoned. This application Oct. 2, 1981, Ser. No. 308,129

Claims priority, application Fed. Rep. of Germany, May 19, 1979, 2920350

Int. Cl.³ C02F *1/54, 11/14*

U.S. Cl. 210—727 **6 Claims**



1. A process for dewatering sewage sludges with a chamber filter press without adding lime, ash or sand wherein the flocculated flake structure of the sludge remains stable in the filter press, which comprises:

a. adding an organic flocculant to the sewage sludge in the amount of from 100 to 400 g/m³ of sewage sludge;
b. mixing the organic flocculant with the sewage sludge;
c. holding the flocculant and sludge mixture for from 0.5 to 5 minutes for the formation of flocculated sewage sludge particles;
d. passing the flocculated sewage sludge to a gravity filtration stage without pumping, thereby preventing the break-up of flocculated sewage sludge particles;
e. gravity filtering the flocculated sewage sludge using a gravity filtration means to a sludge solids content of from 10 to 20% by weight;
f. passing the gravity filtered flocculated sewage sludge particles to a chamber filter press without using shear forces by conveying using reciprocating diaphragm pumps or eccentric screw pumps, thereby preventing the break-up of the flocculated sewage sludge particles; and then
g. pressure filtering the gravity filtered flocculated sewage sludge at a pressure of about 10 to 15 bar using a chamber filter press to a sludge layer thickness of from 15 to 30 mm, the sludge layer thickness being selected to suit the particular sludge to achieve a particularly high dewatered sludge solids content.

3. A process as claimed in claim 1, wherein the sewage sludge is mixed homogeneously with coal sludge, sewage sludge ash, or a combination thereof before being flocculated and subjected to the two-stage dewatering treatment.

4,411,798

PROCESS FOR SEPARATING D_2O FROM H_2O USING SURFACTANT SYSTEMS

Keng S. Chan, South Euclid, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 153,490, May 27, 1980, abandoned. This application Oct. 9, 1981, Ser. No. 309,948

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—727 **9 Claims**

1. A process for separating D_2O from solutions of D_2O in H_2O, the process comprising:

(i) adding an anionic surfactant system to a solution of D_2O in H_2O in an amount capable of forming micelles of the surfactant;
(ii) providing a separating agent in the solution in an amount sufficient to form a flocculated micellar first phase containing a majority of the surfactant system with an increased concentration of D_2O and a second phase containing excess water with a decreased concentration of D_2O;
(iii) separating the first phase from the second phase;
(iv) introducing an additional solution of D_2O in H_2O to the first phase; and
(v) repeating steps (i)-(iii) to separate said D_2O from said additional solution.

4,411,799

METHOD FOR STABILIZING AN AQUEOUS SOLUTION CONTAINING A CHLORINE-BASED OXIDANT

Tomohisa Ito, Funabashi, and Akira Hongo, Machida, both of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Jan. 19, 1982, Ser. No. 340,595

Claims priority, application Japan, Jan. 19, 1981, 56/5063

Int. Cl.³ C02F *5/08, 1/76*

U.S. Cl. 210—753 **10 Claims**

1. A method for stabilizing an aqueous solution containing a chlorine-based oxidant comprising both glycine and at least one halide in a weight ratio of 1:9 to 9:1 with the halide selected from bromide and iodide in the solution.

4,411,800

HIGH TEMPERATURE STABLE FLUID LOSS CONTROL SYSTEM

Peter C. Green, Ellicott City, and Jacob Block, Rockville, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Apr. 24, 1981, Ser. No. 257,091

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 A **7 Claims**

1. A composition capable of imparting fluid loss control to aqueous systems comprising a mixture of:

(a) a substantially water insoluble, solid, particulate silicate or alumino-silicate material which contains a major amount of kaolinite, halloysite, montmorillonite or illite or mixtures thereof, or attapulgite or sepiolite and being of a particle size such that at least about 90 percent by weight is capable of passing through a No. 20 U.S. Standard Sieve; in combination with
(b) a chemical compound capable of converting to a higher oxidation state under alkaline conditions selected from the group consisting of C_1–C_5 alkanols, unsubstituted or C_1–C_3 alkyl, aryl or alkaryl substituted phenols, hydroquinone, tert-butyl catechol catechol, C_1–C_{15} alkanethiol, alkali metal, alkaline earth metal or ammonium salt of sulfite, bisulfite and nitrite, ferrous metal salts of chloride and sulfate and cuprous metal salts of chloride and sulfate; in combination with
(c) a reaction product formed between a polymeric material having a weight average molecular weight of at least about 20,000 selected from the group consisting of polyvinyl alcohol and hydroxy C_1–C_3 alkyl cellulose and at least from about 1 to 200 percent of stoichiometry of a crosslinking agent selected from the group consisting of a compound containing at least one aldehyde group therein or a compound capable of generating in situ at least one aldehyde or an epihalohydrin; the reaction between said polymeric material and said aldehyde carried out in an aqueous acidic medium having a pH of 5.5 or less and the reaction between said polymer and said epihalohydrin being carried out in an aqueous basic medium having a pH of at least about 9.5;

wherein the weight ratio of component (a) to (c) is at least from about 0.75:1 to 3:1 and of component (b) to (c) is at least from about 0.2:1 to 1:1.

4,411,801

LOW SOLIDS WELL SERVICING FLUIDS

Daniel G. Pomerleau, Calgary; Douglas E. Slocombe, Millarville, and Kenneth H. Watts, Calgary, all of Canada, assignors to NL Industries, Inc., New York, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,154

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 P **17 Claims**

1. An emuslifying composition comprised of a mixture of approximately equal amounts of (a) polyoxyethylene glycol 500 monotallate, (b) nonyl phenol ethoxylate containing approximately 43% by weight of oxyethylene groups and (c) nonyl phenol ethoxylate containing approximately 65% by weight of oxyethylene groups, for use in preparing low solids drilling fluids.

2. A low solids oil-in-water emulsion well servicing fluid, substantially free of added clay-type viscosifying agents, comprising an aqueous medium, at least 5% by volume of a liquid hydrocarbon coating agent and an emulsifying amount of the emulsifying composition of claim 1.

4,411,802

ENHANCED OIL RECOVERY

George W. Lester, Hoffman Estates, and Thomas P. Malloy, Lake Zurich, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Sep. 8, 1981, Ser. No. 299,708

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **9 Claims**

1. A process for enhanced oil recovery from a subterranean reservoir of oil by injecting into said reservoir an aqueous surfactant slug to enhance displacement of said oil from said reservoir, said aqueous surfactant slug comprising from about 1 to about 10 weight percent of a neutralized sulfonate of powdered coal prepared by:

(a) grinding a coal source to a particle size in the range of from about 5 to about 200 Tyler standard mesh;
(b) treating said ground coal of step (a) with a sulfonating agent selected from the group consisting of sulfur trioxide and sulfuricacid at a temperature in the range of from about ambient to about 50° C. to produce a sulfonated powdered coal;
(c) neutralizing said sulfonated powdered coal by adding an alkaline component at a temperature in the range of from about 50° C. to about 75° C. for a period of time to raise the pH of said sulfonated powdered coal to in excess of 7 to produce a neutralized sulfonated powdered coal;
(d) recovering said neutralized sulfonated powdered coal for injection to said subterranean reservoir in oil.

4,411,803

DETERGENT SOFTENER COMPOSITIONS

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 201,168, Oct. 27, 1980, Pat. No. 4,329,237, which is a continuation-in-part of Ser. No. 96,370, Nov. 21, 1979, Pat. No. 4,298,480, which is a continuation-in-part of Ser. No. 968,532, Dec. 11, 1978, Pat. No. 4,230,590. This application Mar. 22, 1982, Ser. No. 360,642

The portion of the term of this patent subsequent to May 11, 1999, has been disclaimed.

Int. Cl.³ C11D *1/86, 10/04, 17/06;* **D06M** *13/48*

U.S. Cl. 252—8.75 **5 Claims**

1. A detergent softener composition capable of imparting improved softness, detergency, antistatic and soil antiredeposition properties to fabrics treated therewith in the wash cycle of a laundering process comprising a particulate detergent base containing from about 5–40% by weight relative to the composition of a water soluble non-soap organic surfactant, at least about 90% thereof being of the anionic type, and from about 10–60% by weight relative to the composition of a water soluble, neutral to alkaline builder salt selected from the group

consisting of sodium tripolyphosphate, sodium silicate, sodium carbonate and sodium bicarbonate or mixtures thereof; said detergent base being (I) in admixture with discrete particles of cationic amine softener, said softener being selected from the group consisting of (a) aliphatic di-(lower) C_1–C_4 alkyl, di(-higher) C_{14}–C_{24} alkyl quaternary ammonium salts (b) heterocyclic compounds, and mixtures of (a) and (b), and (II) in admixture with discrete particles of from about 2–20% by weight of the composition a mixture of water soluble or dispersable fatty acid soap and nonionic organic surfactant, the weight ratios of soap to softener being from about 8:1 to 1:3, the percent concentration of anionic surfactant being at least about $1.5x+5$, wherein x represents the percent concentration of softener, said softener particles comprising from about 2 to 20% by weight of the composition and being free of the soap-nonionic mixture, said soap-nonionic mixture particles being free of the cationic softener, and said detergent base being free of cationic softener.

4,411,804

SOLID PARTICLES CONTAINING LUBRICATING OIL COMPOSITION

Donald L. DeVries, South Holland, and James M. DeJovine, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 752,225, Dec. 20, 1976, Pat. No. 4,094,799, Ser. No. 893,098, Apr. 3, 1978, Pat. No. 4,134,844, Ser. No. 893,100, Apr. 3, 1978, Pat. No. 4,132,656, and Ser. No. 893,101, Apr. 3, 1978, Pat. No. 4,136,040. This application Jun. 6, 1978, Ser. No. 913,183

The portion of the term of this patent subsequent to Jun. 13, 1995, has been disclaimed.

Int. Cl.³ C10M *1/12*

U.S. Cl. 252—29 **3 Claims**

1. A lubricating oil composition of matter comprising: a major amount by weight of oil of lubricating viscosity; from about 0.1% to about 2% by weight of the total composition of solid particles effective to improve the lubricating properties of said composition; and from about 3% to about 10% by weight of the total composition of at least one dispersant-VI improver compound which acts to improve the dispersant properties of said lubricating oil composition and also acts to improve the viscosity index of said lubricating oil composition, said solid particles being selected from the group consisting of graphite, molybdenum disulfide, zinc oxide, and mixtures thereof, said composition of matter characterized by its ability to reduce friction in an internal combustion engine without exhibiting unacceptable deposit forming tendencies.

4,411,805

N,N',N''-TRISUBSTITUTED-BIS-(P-AMINOBENZYL) ANILINES AS ANTIOXIDANTS

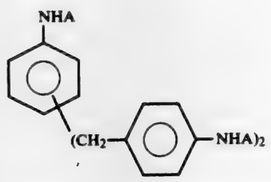
John T. Roberts, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 8, 1982, Ser. No. 338,444

Int. Cl.³ C10M *1/38*

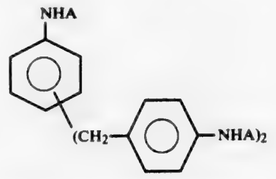
U.S. Cl. 252—47 **21 Claims**

1. A method of inhibiting oxidation in lubricating oils and greases comprising adding to said products an amount effective to inhibit oxidation of a bis-(p-aminobenzyl)aniline with the structure



where A is selected from the group consisting of arylmethyl or heteroarylmethyl moieties of the formula $—CH_2X$, where X is a monovalent radical whose parent is an aromatic or heteroaromatic ring.

12. A composition comprising a major amount of a lubricating oil or grease and a minor amount sufficient to inhibit oxidation of a bis-(p-aminobenzyl)aniline with the structure



where A is selected from the group consisting of arylmethyl or heteroarylmethyl moieties of the formula $—CH_2X$, where X is a monovalent radical whose parent is an aromatic or heteroaromatic ring.

4,411,806

ANTIFOAM ADDITIVES

Robert Tirtiaux, and Alain L. P. Lenack, both of Mont Saint Aignan, France, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 13, 1981, Ser. No. 243,594

Claims priority, application United Kingdom, Mar. 26, 1980, 8010189

Int. Cl.³ C10M *1/22*

U.S. Cl. 252—49.6 **7 Claims**

1. An improved silicone antifoam composition for lubricating oils which comprises a solution of about 1 to 10% by weight of polydimethylsiloxane of the formula $(CH_3)_3Si(SiO(CH_3)_2)_nOSi(CH_3)_3$ wherein n is an integer to provide a viscosity of about 1,000 to 60,000 cSt at 25° C. in an alkylaromatic hydrocarbon solvent, said solvent being a mono- or polyalkylated benzene having a molecular weight of about 220 to 330; a Cleveland Open Cup flash point of about 140° C. to about 180° C., and boiling between about 290° to about 330° C., said composition exhibiting improved solubility in a lubricating oil composition.

4,411,807

DRY PROCESS FOR THE PRODUCTION OF HEXAGONAL-SYSTEM FERRITE

Yasuo Watanabe; Seiji Isoyama, and Masahiko Bannou, all of Okayama, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 152,428, May 22, 1980, abandoned. This application Jun. 11, 1982, Ser. No. 387,654

Claims priority, application Japan, Jun. 8, 1979, 54-72098

Int. Cl.³ C04B *35/26*

U.S. Cl. 252—62.58 **10 Claims**

1. A dry process for the production of hexagonal-system ferrite having the generic formula:

$$M.nFe_2O_3$$

wherein n represents a number in the range of 5.1–5.8 inclusive; and M represents at least one metallic element selected from the group consisting of Ba, Sr and Pb, said process consisting essentially of the steps of:

(a) forming a mixed additive of X-agent and Y-agent, wherein said X-agent is at least one chloride of alkaline metal selected from the group consisting of KCl, NACl and LiCl, and said Y-agent is at least one metaborate of alkali metal selected from the group consisting of KBO_2, $NaBO_2$, and $LiBO_2$ or at least one carbonate of alkali metal selected from the group consisting of K_2CO_3, Na_2CO_3 and Li_2CO_3 or a mixture of at least one of said metaborate and at least one of said carbonate, the ratio of X-agent to Y-agent depending on the desired axial ratio of A-axis to C-axis of the intended ferrite and being 1:02--about 1;

(b) adding the mixed additive of said X- and Y-agents prepared according to said predetermined ratio to a ferrite-forming unbaked raw material composition comprising an iron oxide powder and a metal compound powder, said metal being at least one of Ba, Sr and Pb, in a manner such that the total amount of said mixed additive comprised 5–20% by weight of the final ferrite product;

(c) baking within a temperature range of 900°–1300° C. the mixture of said mixed additive and unbaked raw material composition so as to form a ferrite; and

removing substantially all of said mixed additive from the resulting ferrite by treating it with wet-process disintegration, which consists of disintegrating the ferrite in water and dewatering the disintegrating ferrite, or, alternatively, with dry-process disintegration and washing with water followed by drying.

4,411,808

MULTIFUNCTIONAL ADDITIVE FOR POWER TRANSMISSION SHIFT FLUIDS

Antonio Gutierrez, Mercerville; Stanley J. Brois, Westfield; Jack Ryer, East Brunswick, and Harold E. Deen, Cranford, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 4, 1982, Ser. No. 405,297

Int. Cl.³ C10M *1/00, 3/32*

U.S. Cl. 252—78.1 **7 Claims**

1. A power shift transmission fluid composition comprising a major amount of a hydrocarbon mineral oil of lubricating viscosity containing an oil soluble additive in an amount effective to provide oxidation inhibition, copper and brass corrosion inhibition and friction modification to said fluid, said additive being an ester formed by esterifying equimolar proportions of a straight chain C_1–C_{30} alkenyl, alkyl, thioalkyl or thioalkenyl succinic acid or anhydride with an ethoxylated or propoxylated alkyl mercaptan having 8 to 20 carbon atoms and containing 1–6 moles of ethylene oxide or propylene oxide per mole of said alkyl mercaptan.

4,411,809

CONCENTRATED HEAVY DUTY PARTICULATE LAUNDRY DETERGENT

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Company, New York, N.Y.

Division of Ser. No. 746,900, Dec. 2, 1976, Pat. No. 4,248,911. This application Sep. 2, 1980, Ser. No. 183,022

Int. Cl.³ C11D *3/075, 3/12, 11/00, 17/06*

U.S. Cl. 252—91 **5 Claims**

1. A free flowing particulate heavy duty laundry detergent of bulk density of at least 0.6 g/cc. and particle sizes in the range of 4 to 140 mesh which comprises substantially globular sodium tripolyphosphate particles, zeolite particles and nonionic detergent,

with the tripolyphosphate particles being of sizes in the 8 to 140 mesh range, U.S. Standard Sieve Series and containing about 5–15% water and about 10–20% of sodium silicate having an $Na_20:SiO_2$ ratio in the range of about 1:1.6 to about 3.0,

wherein said nonionic detergent is in the interior and coats the surfaces of the tripolyphosphate particles, said nonionic detergent coat adhering zeolite particles to the tripolyphosphate particles so as to produce a first layer of non-ionic detergent and zeolite particles;

and wherein said nonionic detergent is also present as a second coating on the surface of said first layer and zeolite particles are also adhered to said second nonionic detergent coating to render said product free flowing;

the zeolite particles of the first and second layers being of ultimate particle diameters in the range of 0.01 to 20 microns, said zeolite being a crystalline, amorphous or mixed crystalline and amorphous zeolite, the exchange rate and capacity of said zeolite being such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at about 45° C. containing about 40 ppm of dissolved calcium ion while vigorously stirring the dissolved calcium ion content is reduced to below about 8 ppm in about 5 minutes,

and said nonionic detergent being a higher fatty alcohol polyethylene oxide condensate wherein the higher fatty alcohol is of about 10 to 18 carbons and the polyethylene oxide is of about 3 to 15 moles of ethylene oxide per mole of higher fatty alcohol.

4,411,810

LOW-FOAMING NONIONIC SURFACTANT FOR MACHINE DISHWASHING DETERGENT

Daniel R. Dutton, Grosse Ile; Edward J. Parker, Trenton; Roger A. Ott, New Boston, and Jay G. Otten, Flat Rock, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 6, 1981, Ser. No. 318,751

Int. Cl.³ C11D *7/18*

U.S. Cl. 252—99 **12 Claims**

1. A low-foaming alkaline machine dishwashing detergent composition devoid of alkyl phosphate ester consisting essentially of:

A. about 1 to about 10 percent by weight of a nonionic surfactant consisting essentially of

(1) a nonionic surfactant characterized as a block or heteric/block polyoxyalkylene having a cloud point in a 1 weight percent aqueous solution of about 15° C. to about 25° C. selected from the group consisting of at least one of the polyoxyalkylenes having the formulas:

$$Y[(EO/A)_m(A)_nH]_x \quad \text{I}$$

$$Y[(A)_o(EO)_m(A)_nH]_x \quad \text{II}$$

$$Y[(A)_o(EO/A)_m(A)_nH]_x \quad \text{III}$$

$$Y[(EO/A)_m(EO/A)_nH]_x \quad \text{IV}$$

wherein EO represents ethylene oxide which is present in the polymer in the proportion of about 5 to about 60 percent by weight; Y represents the nucleus of an active hydrogen-containing organic compound having a functionality of x and (1) about 2 to about 6 carbon atoms and 2 to 3 reactive hydrogen atoms or (2) about 6 to about 18 carbon atoms and 1 to 3 reactive hydrogen atoms; A represents a lower alkylene oxide selected from the group consisting of propylene oxide, butylene oxide, tetrahydrofuran or mixtures thereof wherein up to 25 percent by weight of A is reacted directly with said oganic compound either alone in formulas II and III or in admixture with ethylene oxide in formulas I and IV and 75 percent by weight or more of A is subsequently reacted to produce said polymer; m, n and o are integers individually selected such that the average total molecular weight of the polymer is about 2500 to about 10,000 or

(2) a nonionic surfactant characterized as a block polyoxyalkylene having a cloud point of about 18° C. to about 22° C. selected from the group consisting of at least one of the polyoxyalkylenes having the formula:

$$Y[(EO)_m(A)_nH]_x \quad \text{V}$$

wherein Y, EO, A, m, n, x, molecular weight and useful proportions are as defined above;

B. about 20 to about 80 percent by weight of an alkaline detergent builder salt selected from at least one of the group consisting of sodium carbonate, sodium bicarbonate, disodium orthophosphate, trisodium orthophosphate, sodium metasilicate, sodum sesquisilicate, sodium borate,

sodium tetraborate, sodium aluminum silicate, and sodium bisulfate;

C. about 20 to about 80 percent by weight of (1) a water-soluble metallic salt of citric acid or an organic sequestering agent selected from the group consisting of at least one of tetrasodium ethylene diamine tetraacetate and nitrilotriacetic acid or (2) alternatively, an alkaline condensed phosphate salt selected from the group consisting of at least one of tetrasodium pyrophosphate and those polyphosphates of the calcium and magnesium ion sequestering type having Na_2O/P_2O_5 weight ratios ranging from 1:1 to 1.67:1 or alternatively (3) mixtures of (1) and (2); and

D. about 5 to about 50 percent by weight of a compound containing active chlorine or available oxygen.

4,411,811

CLARIFICATION OF BLACK PHOSPHORIC ACID WITH PHOSPHORIC ACID RINSE WATER

Mark D. LaVanture, and George L. Walker, both of Richmond, Va., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 288,611, Jul. 30, 1981, Pat. No. 4,377,561, which is a continuation-in-part of Ser. No. 177,037, Aug. 11, 1980, abandoned. This application Sep. 22, 1982, Ser. No. 421,593

Int. Cl.³ C01B *25/16;* C05B *11/00*

U.S. Cl. 252—182 **6 Claims**

1. A clarified phosphoric acid composition comprising a mixture of black wet process phosphoric acid with phosphoric acid rinse water in a weight ratio of rinse water black phosphoric acid between about 0.5 and about 5, said phosphoric acid rinse water being the water collected from aluminum bright dipping water rinsing and containing, by weight, about 10–45% P_2O_5 and impurities including about 0.5–3% HNO_3 and about 0.2–3% Al.

4,411,812

DICHROIC LIQUID CRYSTAL COMPOSITIONS MADE WITH ASYMMETRIC TRIS-AZO DYES

Siegfried Aftergut, Schenectady, and Herbert S. Cole, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,281

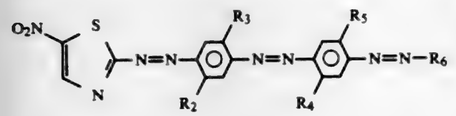
Int. Cl.³ G02F *1/13;* C09K *3/34*

U.S. Cl. 252—299.1 **7 Claims**

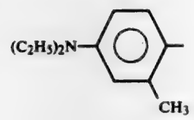
1. A liquid crystal composition for use in a liquid crystal display, comprising:

a host liquid crystal material; and

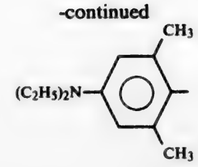
a guest tris-azo dichroic dye dissolved in said host liquid crystal material, said dichroic dye having a 5-nitrothiazolyl terminal group and the general formula,

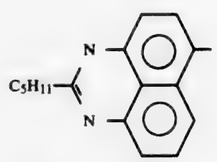


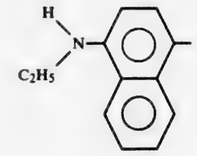
wherein R_2, R_3, R_4 and R_5, are selected from the group consisting of hydrogen, alkyl halogen and alkoxy, and R_6 is selected from the group consisting of



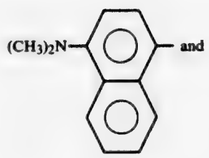
-continued

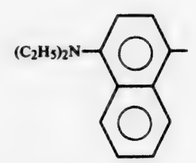






and





4,411,813

PROCESS FOR EMULSIFYING AND STABILIZING ANISE ESSENCES, ANETHOLE AND ESSENTIAL OILS OR FATS IN THE AQUEOUS PHASE

Max Voisin, 23, Rue Fourcroy, 75017 Paris, France

Filed May 28, 1981, Ser. No. 268,023

Claims priority, application Luxembourg, May 30, 1980, 82495

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—312 **15 Claims**

1. Stable essential oil emulsions, characterized in that they contain at least:

50 to 100 parts of essential oils,

0.5 to 10 parts at least of an emulsifying agent and water.

4,411,814

USE OF POLYAMINES AS DEMULSIFIERS

Charles W. Burkhardt, Florissant, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 836,123, Sep. 23, 1977, abandoned, which is a continuation-in-part of Ser. No. 814,514, Jul. 11, 1977, abandoned. This application Feb. 10, 1981, Ser. No. 233,272

Int. Cl.³ B01D *17/04*

U.S. Cl. 252—344 **15 Claims**

1. A process for the resolving of emulsions and the destabilization of entrapped water in the form of micells or solubilized by petroleum sulfonates during the tertiary recovery of crude oil by sulfonate floods, said emulsion containing a petroleum sulfonate, a mobility control agent and a viscosity treating agent which comprises treating said emulsion with 160 ppm to 600 ppm of a polyamine, a polyamine salt or a polyamine and a polyamine salt at a pH of below about 7, said polyamines having the general formula



where R is hydrogen, alkyl, alkanol or alkanol ether and A is alkylene having from 2 to 10 carbon atoms, where n is greater than 1 and up to 19 and have a molecular weight of 60 to 600, said polyamines being water soluble or water dispersible and having a hydrophilic portion sufficiently large to couple with the oil soluble petroleum sulfonate to form a salt.

4,411,815

PROCESS FOR PREPARING ODORLESS ALKYL ETHER SULFATE CONCENTRATES

Hideo Ando, Tokyo; Akira Hayashi, Yachiyo, and Kyozo Kitano, Narashino, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jun. 24, 1981, Ser. No. 276,734

Claims priority, application Japan, Jul. 4, 1980, 55-90730

Int. Cl.³ B01F *17/02*

U.S. Cl. 252—353 **8 Claims**

1. A process for deodorizing a polyoxyethylene alkyl ether sulfate aqueous concentrate, said aqueous concentrate containing from 60 to 80 wt.% of polyoxyethylene alkyl ether sulfate having the formula $RO(CH_2CH_2O)_nSO_3M$, wherein R is alkyl having 8 to 18 carbon atoms, n is a number from 2 to 10 and M is a cation providing a water-soluble salt, the balance of said aqueous concentrate consisting essentially of water and the odorous components of unreacted alcohol and cyclic ether by-produced in the sulfation reaction for forming said polyoxyethylene alkyl ether sulfate, said process consisting essentially of the step of: subjecting said aqueous concentrate to a pressure in the range of from 50 to 400 mmHg, at a temperature of from 50° to 130° C., effective to evaporate said odorous components (and some of the water) from said aqueous concentrate, the treatment being carried out for a short period of time effective to prevent hydrolysis and coloration of said polyoxyethylene alkyl ether sulfate.

4,411,816

NATIVE PETROLEUM SURFACTANTS

Teh F. Yen, Altadena, and Paul A. Farmanian, Glendale, both of Calif., assignors to The University of Southern California, Los Angeles, Calif.

Division of Ser. No. 958,291, Nov. 6, 1978, Pat. No. 4,232,738. This application Apr. 21, 1980, Ser. No. 141,760

Int. Cl.³ B01F *17/00, 17/16, 17/38*

U.S. Cl. 252—356 **10 Claims**

1. A method for preparing a surfactant, comprising:

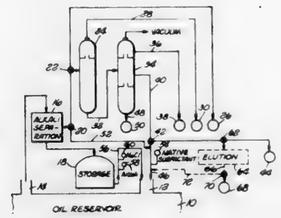
providing petroleum of the type having an interfacial tension with water of less than 30 dynes/cm. at high pH;

subjecting said petroleum to fractionation by distillation including distillation under conditions equivalent to vacuum of about 1 Torr in the temperature range of 100°–200° C.;

recovering and combining substantially all of the distillate in said temperature range, separated from lower boiling distillate, to obtain said surfactant; and

adding said surfactant to petroleum.

4. A mixture formed of (a) a composition comprising a combined fraction distilled under conditions equivalent to vacuum at about 1 Torr in the temperature range of 100°–200° C., separated from lower boiling distillate, from, and (b), whereby



there is at least one part of said composition mixed with 10^4 parts of petroleum.

4,411,817

PRODUCTION OF SYNTHESIS GAS

James F. Elliott, Los Angeles; George N. Richter, San Marino, and Lawrence E. Estabrook, Long Beach, all of Calif., assignors to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 117,896, Feb. 1, 1980, abandoned. This application Sep. 11, 1981, Ser. No. 301,348

Int. Cl.³ C10J *3/46*

U.S. Cl. 252—373 **11 Claims**

1. In a process for the production of synthesis gas from an ash-containing carbonaceous fuel wherein said fuel in finely divided form is subjected to partial oxidation in a gasification zone at super atmospheric pressure to produce a product comprising the gases, hydrogen and carbon monoxide, and particles of ash and unconverted fuel, and wherein said particles of ash and unconverted fuel are directed into water contained in a settling zone and in a lock hopper having a narrow valved connecting passageway therebetween, said lock hopper being located below said settling zone, and wherein said ash and unconverted fuel during settling tends to form a bridge above the valve in the connecting passageway to block the passageway and prevent the settling of said particles of ash and unconverted fuel into said lock hopper, the improved method of preventing the formation of a bridge or breaking up a bridge if one has formed which comprises introducing a gas from an external source upwardly into said connecting passageway and said settling zone at a pressure higher than that in the settling zone in order to effectively agitate the water contained therein and prevent the formation of or break up a bridge of ash and unconverted fuel particles.

4,411,818

REACTIVATION OF VANADIUM-CONTAINING OXIDATION CATALYSTS

Peter Reuter, Ludwigshafen; Kurt Blechschmitt, Schifferstadt, and Friedrich Wirth, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 12, 1982, Ser. No. 348,198

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1981, 3108101

Int. Cl.³ B01J *23/92, 21/20, 27/28;* C07D *307/89*

U.S. Cl. 502—35 **4 Claims**

1. A process for reactivating a supported catalyst used for the preparation of phthalic anhydride by the oxidation of o-xylene or naphthalene, said catalyst including an inert carrier and active material applied to the carrier, said active material consisting essentially of from 1 to 30% by weight of vanadium pentoxide, from 70 to 99% by weight of titanium dioxide and up to 5% by weight of oxides of rubidium, cesium, phosphorus or antimony, which process comprises: treating the catalyst in a first stage at from 100° to 600° C. with a phosphorus compound that is volatile at the reactivation temperature in the

presence of an oxygen-containing gas, said phosphorus compound being a phosphine, phosphine oxide, hydrogen phosphide, phosphorus oxide, phosphate, phosphite, phosphorus halide, phosphorus oxyhalide or phosphorus sulfohalide; and thereafter treating the catalyst at from 50° to 600° C. with sulfur trioxide or a mixture of an oxygen-containing gas and at least one of sulfur dioxide, hydrogen sulfide, a mercaptan, carbon disulfide, sulfur, a sulfur halide or a sulfur oxyhalide, said sulfur compound being volatile at the reactivating temperature.

2. The process of claim 1, wherein triphenylphosphine is used as the volatile phosphorus compound.

4. The process of claim 1, wherein, in the preparation of phthalic anhydride by the oxidation of o-xylene over said vanadium-containing catalyst at from 300° to 500° C., the volatile phosphorus compound is passed, together with the o-xylene and the oxygen-containing gas, over the catalyst.

4,411,819

THICKENING AQUEOUS COMPOSITIONS WITH POLYETHERS MODIFIED WITH ALPHA-OLEFIN OXIDES

Edward J. Panek, Trenton, and Pauls Davis, Gibraltar, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 86,840, Oct. 22, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 209,437

The portion of the term of this patent subsequent to Jan. 26, 1999, has been disclaimed.

Int. Cl.³ B01J *13/00*

U.S. Cl. 252—315.1 **23 Claims**

1. A thickened aqueous composition comprising water and the polyether polyol prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen compound containing at least two active hydrogens to prepare a heteric or block copolymer and further reacting said copolymer with at least one aliphatic glycidyl ether having about 12 to about 18 aliphatic carbon atoms and wherein said glycidyl ether is present in the amount of about 1 percent to about 20 percent by weight based upon the total weight of said thickener.

7. The process of thickening aqueous systems comprising the addition of an effective thickening amount of a polyether having a molecular weight of about 1000 to about 75,000 prepared by reacting ethylene oxide and at least one lower alkylene oxide having 3 to 4 carbon atoms with at least one active hydrogen aliphatic compound containing at least two active hydrogens to prepare a heteric or block copolymer and further reacting said copolymer with at least one alpha-olefin oxide having a carbon chain length of about 12 to about 18 aliphatic carbon atoms and wherein said alpha-olefin oxide is present in the amount of about 1 percent to about 20 percent by weight based upon the total weight of said polyether.

4,411,820

CATALYST AND PROCESS FOR PREPARING ORGANIC URETHANES

Wayne R. Pretzer, Gibsonia, and Richard B. Pannell, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 20, 1981, Ser. No. 255,695

The portion of the term of this patent subsequent to May 18, 1999, has been disclaimed.

Int. Cl.³ B01J *31/28, 31/30*

U.S. Cl. 502—167 **6 Claims**

1. A catalyst system useful in the preparation of organic urethanes from the corresponding organic nitro compounds and organic hydroxy compounds which comprises in combination:

(a) a noble metal compound,

(b) a heteroaromatic nitrogen compound having a ring with,

(1) between five and six members in the ring,

(2) only nitrogen and carbon in the ring,

(3) no more than two nitrogens in the ring,

(4) at least two double bonds in the ring,

wherein the molar ratio of the heteroaromatic nitrogen compound to the noble metal compound lies between about 0.1 to 1 and 20 to 1,

(c) an actinide oxide selected from the group consisting of UO_2, U_2O_5, $U_2O_7^{-2}$, U_3O_8 and ThO_2, wherein the weight ratio of the noble metal compound to the actinide oxide lies between about 0.001 to 1 and 50 to 1.

4,411,821

1-OLEFIN POLYMERIZATION CATALYST

Edward G. Howard, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 237,459, Feb. 23, 1981, abandoned. This application Feb. 17, 1982, Ser. No. 348,167

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—117 **10 Claims**

1. Improved 1-olefin polymerization catalyst system comprising a reaction product of alumina and an organometallic compound of the formula $(RCH_2)_4M$ wherein M is Ti, Zr or Hf and R is a group which is such that there is no hydrogen atom attached to an atom which is in the β-position to M, the improvement characterized in that the preformed catalyst system is combined with an oxide, hydroxide, or carbonate of magnesium, calcium, strontium, or barium.

4,411,822

INITIATOR SYSTEM FOR RADIATION CURABLE COMPOSITIONS, RADIATION CURABLE COMPOSITIONS CONTAINING SUCH AN INITIATOR SYSTEM, A PROCESS FOR CURING SAID COMPOSITIONS AND PRODUCTS COVERED THEREWITH

Hendrik J. Hageman, Rozendaal; Egenius A. Giezen, Rheden, and Leonardus G. J. Jansen, Zevenaar, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Mar. 23, 1981, Ser. No. 246,423

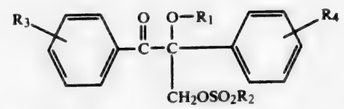
Claims priority, application Netherlands, Mar. 31, 1980, 8001884

Int. Cl.³ B01J *31/02, 31/04*

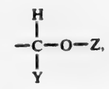
U.S. Cl. 502—168 **12 Claims**

1. An initiator system for radiation curable compositions said initiator system comprising:

(a) a photoinitiator, with the exception of a compound of the formula:



where R_1 = H or a substituted or unsubstituted alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 18 carbon atoms, a cycloalkyl or cycloalkenyl group having 5 to 8 carbon atoms, a substituted or unsubstituted aryl group having 6 to 20 carbon atoms, a furfuryl group or the group



where Y represents a methyl group and Z an alkyl group having 2 to 4 carbon atoms or Y and Z together form a 1,3- or 1,4- alkylene group having 3 or 4 carbon atoms, which is substituted or not with an alkoxy group having 1 to 4 carbon atoms; R_2 = a substituted or unsubstituted

alkyl group or alkenyl group having 4 to 20 carbon atoms, a cycloalkyl group or cycloalkenyl group having 5 to 8 carbon atoms, an alkaryl group having 4 to 16 carbon atoms in the alkyl group or a furfuryl group; R_3 and R_4 may be the same or different and represent a hydrogen, a chlorine or a bromine atom or a phenyl group, a substituted or unsubstituted alkyl group or alkoxy group having 1 to 4 carbon atoms, or a dialkyl amino group of which the alkyl groups have 1 to 4 carbon atoms and may be substituted or not with a hydroxyl group;

(b) a synergistic amount of a Na, K and/or Li-salt of an organic acid having at least 4 carbon atoms which is compatible with the curable compositions, and

(c) a solvent for component b in such an amount that the solution of salt b in the curable compositions is just about saturated or nearly saturated.

4,411,823

INITIATOR SYSTEM FOR RADIATION CURABLE COMPOSITIONS, RADIATION CURABLE COMPOSITIONS CONTAINING SUCH AN INITIATOR SYSTEM, A PROCESS FOR CURING SAID COMPOSITIONS AND PRODUCTS COVERED THEREWITH

Hendrik J. Hageman, Rozendaal; Willem J. de Klein, Dieren, and Egenius A. Giezen, Rheden, all of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Mar. 23, 1981, Ser. No. 246,424

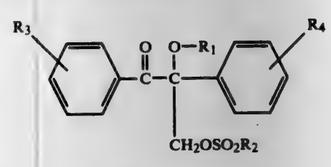
Claims priority, application Netherlands, Mar. 31, 1980, 8001885

Int. Cl.³ B01J *31/02, 31/04*

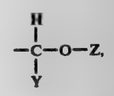
U.S. Cl. 502—168 **10 Claims**

1. An initiator system for radiation curable compositions, comprising

(a) a compound of the formula:



where R_1 = H or a substituted or unsubstituted alkyl group having 1 to 18 carbon atoms, an alkenyl group having 2 to 18 carbon atoms, a cycloalkyl or cycloalkenyl group having 5 to 8 carbon atoms, a substituted or unsubstituted aryl group having 6 to 20 carbon atoms, a furfuryl group or the group



where Y represents a methyl group and Z an alkyl group having 2 to 4 carbon atoms or Y and Z together form a 1,3- or 1,4-alkylene group having 3 or 4 carbon atoms which is substituted or not with an alkoxy group having 1 to 4 carbon atoms; R_2 = a substituted or unsubstituted alkyl group or alkenyl group having 4 to 20 carbon atoms, a cycloalkyl group or cycloalkenyl group having 5 to 8 carbon atoms, an alkaryl group having 4 to 16 carbon atoms in the alkyl group or a furfuryl group; R_3 and R_4 may be the same or different and represent a hydrogen, a chlorine or a bromine atom or a phenyl group, a substituted or unsubstituted alkyl group or alkoxy group having 1 to 4 carbon atoms, or a dialkyl amino group of which the alkyl groups have 1 to 4 carbon atoms and may be substituted with a hydroxyl group, and

(b) a synergistic amount of a Na, K and/or Li-salt of an organic acid that is compatible with the curable compositions.

4,411,824

METHOD OF MAKING A CATALYST SUITABLE FOR HYDROMETALATION OF HYDROCARBONACEOUS FEEDSTOCKS

H. Chiu Chen, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 262,858, May 12, 1981, abandoned. This application Aug. 11, 1982, Ser. No. 407,207

Int. Cl.³ B01J *21/04, 23/24*

U.S. Cl. 502—323 **12 Claims**

1. A method for making a catalyst for hydroprocessing hydrocarbonaceous feedstocks comprising:

adding peptizing agent to alumina at a temperature of between about 20° to 100° C. to create a slurry having a pH of between 3 and 6;

neutralizing the peptized alumina with aqueous solution of a nitrogen-containing base and a soluble Group VIB transition metal compound to create a shapable plastic mass;

shaping the plastic mass;

drying the mass at 100°–260° C. for between about 1 to 5 hours;

calcining the dried mass at 450°–825° C. for between about 1 to 6 hours.

4,411,825

CURRENT COLLECTOR MANUFACTURING PROCESS FOR AN ELECTROCHEMICAL CELL

Michael Domeniconi, Santa Clara, Calif., assignor to Altus Corporation, San Jose, Calif.

Filed Oct. 5, 1981, Ser. No. 308,258

Int. Cl.³ H01B *1/04*

U.S. Cl. 252—503 **16 Claims**

1. In a method of manufacturing a solid nonconsummable current collector consisting of carbon and a metal for use in an electrochemical cell comprising an oxidizable anode, a liquid cathode and a said current collector; the improvement comprising the steps of:

providing a solution of a salt of said metal;

wetting said carbon with said solution;

removing the solvent from said wetted carbon to form a solid composition of carbon and metal salt; and

exposing said composition of carbon and metal salt to a reducing atmosphere thereby reducing the metal ions of said metal salt to elemental metal.

4,411,826

PREPARATION OF STABLE ELECTRICALLY CONDUCTIVE POLYMERS

Herbert Naarmann, Wattenheim; Klaus Penzien, Frankenthal; Johannes Schlag, and Petr Simak, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 29, 1982, Ser. No. 344,013

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1981, 3105948

Int. Cl.³ H01B *1/06*

U.S. Cl. 252—518 **3 Claims**

1. A process for the preparation of electrically conductive polymers of improved stability with conductivities greater than 10^{-2} S/cm which comprises:

doping a polyacetylene with from 15 to 66% by weight, based on the polyacetylene, of an electron acceptor dopant to give p-type conductors having conductivities greater than 10^{-2} S/cm, wherein the improvement comprises

heating the p-doped polyacetylene in the absence of oxygen and moisture for from 0.1 to 3 hours at from 500° to 1,100° C.

4,411,827
COPRECIPITATION PROCESS FOR THERMIONIC CATHODE TYPE MATERIALS

David M. Corneille, 311 Granger, Dayton, Ohio 45433

Division of Ser. No. 244,853, Mar. 18, 1981, Pat. No. 4,359,489.
This application Jun. 23, 1982, Ser. No. 391,325
Int. Cl.³ H01B 1/06
U.S. Cl. 252—521 1 Claim

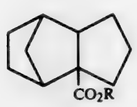
1. A method for producing a homogeneous mixture of uniformly sized, ultrafine, alkaline earth metal carbonates for use as a thermionic emission type coating material which comprises the steps of (1) forming a mixture of alkaline earth metal carbonates composed of about 2 to 10 weight percent calcium carbonate, 10 to 60 weight percent strontium carbonate and the balance barium carbonate; (2) dissolving said mixture in trifluoroethanol to form a solvent mixture; (3) heating said solvent mixture to a temperature of about 60° C. for a period of about five minutes to extract said solvent from said solvent mixture; and (4) recovering the resulting precipitate as a homogeneous, ultrafine mixture of alkaline earth metal carbonates of uniform size and distribution.

4,411,828
FRAGRANT TRICYCLIC CARBOXYLATES

Yoshiaki Fujikura, Ichikai; Yoshiaki Inamoto; Naotake Takaishi, both of Utsunomiya, and Motoki Nakajima, Miyashiro, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,896
Claims priority, application Japan, Mar. 14, 1980, 55-32434; Dec. 10, 1980, 55-174247
Int. Cl.³ C07C 69/753; A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R 2 Claims

1. A perfume composition comprising a tricyclo[5.2.1.0^{2,6}]-decane-2-carboxylic acid ester of the formula (I):



(I)

wherein R is an alkyl group of 2 or 3 carbon atoms, in an amount sufficient to give a woody note thereto.

4,411,829
PERFUMING INGREDIENT

Karl H. Schulte-Elte, Onex, and Dietrich Kastner, Givrins, both of Switzerland, assignors to Firmenich SA, Switzerland

Filed Dec. 15, 1981, Ser. No. 331,013
Claims priority, application Switzerland, Jan. 13, 1981, 177/81
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R 7 Claims

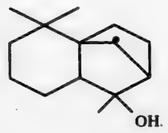
1. A method for modifying, enhancing or improving the odour properties of perfumes or perfumed articles, which comprises adding thereto a small but olfactively effective amount of methyl 2,6,6-trimethyl-cyclohex-2-en-1-yl carboxylate, said compound exhibiting an original fruity-floral odour characterized by nuances of citrus type.

4,411,830
BRIDGED TRICYCLIC ALCOHOL, PROCESS FOR PREPARING SAME AND PERFUMERY USE THEREOF

Kenneth K. Light, North Ogden, Utah; Joseph A. McGhie, Montclair, N.J.; Futoshi Fujioka, Wanamassa, N.J., and Takao Yoshida, West Long Branch, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 287,939, Jul. 29, 1981, Pat. No. 4,373,108, which is a continuation-in-part of Ser. No. 206,649, Nov. 13, 1980. This application Jul. 8, 1982, Ser. No. 396,258
The portion of the term of this patent subsequent to Nov. 2, 1999, has been disclaimed.
Int. Cl.³ A61K 7/46; C11B 9/00
U.S. Cl. 252—522 R 1 Claim

1. A process for augmenting or enhancing the aroma of a perfume composition, cologne or perfumed article comprising the step of adding to a perfume base, a cologne base or a perfumed artilce base an aroma augmenting or enhancing quantity of the compound having the structure:



4,411,831
STABLE LIQUID ANIONIC DETERGENT COMPOSITIONS HAVING SOIL, RELEASE PROPERTIES

Ronald A. Robinson, and John O. Hudson, both of Garden Grove, Calif., assignors to Purex Industries, Inc., Lakewood, Calif.

Filed Dec. 2, 1981, Ser. No. 326,439
Int. Cl.³ C11D 1/83, 3/20
U.S. Cl. 252—554 7 Claims

1. A stable aqueous detergent composition having enhanced soil release properties and consisting essentially of:

(a) 0.2 to 20.0% of an ethylene terephthalate/polyethylene oxide terephthalate copolymer having a ETP/PEOTP ratio of 1:1 to 9:1 and a total molecular weight from about 9,000 and 60,000, the molecular weight of the polyethylene oxide terephthalate being from about 500 to about 6,000;

(b) 5 to 40% of an anionic detergent selected from the group consisting of linear benzene sulfonates having from 10 to 73 carbon atoms, alkane sulfonates having from 14 to 18 carbon atoms, alpha olefine sulfonates having from 14 to 18 carbon atoms, sulfosuccinates, and sulfonated alkyl diphenyloxide;

(c) up to 40% of a nonionic detergent selected from the group consisting of ethoxylated linear alcohols, ethoxylated alkylphenols, ethoxylated mono- and diglycerides and ethoxylated secondary alcohols; and

(d) a buffer sufficient to maintain the pH of the aqueous composition within the range of 5.0 to 9.0.

4,411,832
POLYSACCHARIDE MATRICES COMPRISING MACROMOLECULAR SPACER ARMS FOR USE AS ADSORBENTS IN AFFINITY CHROMATOGRAPHY TECHNIQUES

Pedro Cuatrecasas, 10 Hillside Rd., and Indu Parikh, 4404 Keswick Rd., both of Baltimore, Md. 21210

Continuation of Ser. No. 97,889, Nov. 26, 1979, abandoned, which is a continuation of Ser. No. 6,175, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 876,126, Feb. 8, 1978, abandoned, which is a continuation of Ser. No. 713,108, Aug. 10, 1976, abandoned, which is a continuation of Ser. No. 475,314, May 31, 1974, abandoned. This application Jul. 27, 1981, Ser. No. 286,763
The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.
Int. Cl.³ C07G 7/00
U.S. Cl. 260—121 25 Claims

1. In a polysaccharide matrix useful as an adsorbent for affinity chromatography techniques, the improvement which comprises a plurality of polyfunctional, water-soluble macromolecular spacers individually covalently bonded to the backbone of said polysaccharide matrix in direct multipoint covalent attachment thereto, the said polyfunctional macromolecular spacers being selected from the group consisting of (1) poly-L-lysine, (2) the graft copolymer, poly(L-lysyl-DL-alanine), (3) native albumin and (4) denatured albumin and the endstanding functional groups of said polyfunctional macromolecular spacers being essentially sterically unhindered with respect to said polysaccharide matrix.

4,411,833
METHOD FOR PREPARING 26,26,26,27,27,27-HEXAFLUORO-1α,25-DIHYDROXY-CHOLESTEROL

Hector F. DeLuca; Yoko Tanaka, both of Madison, Wis.; Nobuo Ikekawa, Musashinoshi, and Yoshiro Kobayashi, Tokyo, both of Japan, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 26, 1982, Ser. No. 382,055
Int. Cl.³ C07J 17/00
U.S. Cl. 260—239.55 R 3 Claims

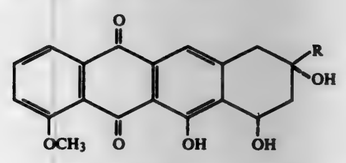
2. 25,26,27-trinor-1α,2β-epoxy-cholesta-4,6-dien-3-on-24 oic acid methyl ester.

4,411,834
PREPARATION OF 11-DEOXY ANTHRACYCLINE ANTIBIOTICS

Giuseppe Cassinelli, Pavia; Arpad Grein, Milan; Sergio Merli, Milan, and Giovanni Rivola, Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Division of Ser. No. 82,294, Oct. 5, 1979, Pat. No. 4,309,503, which is a division of Ser. No. 9,650, Feb. 5, 1979, Pat. No. 4,247,545. This application Sep. 2, 1981, Ser. No. 298,627
Claims priority, application United Kingdom, Feb. 9, 1978, 5246/78
Int. Cl.³ C07C 49/72, 49/84
U.S. Cl. 260—365 5 Claims

1. An aglycone having the formula:



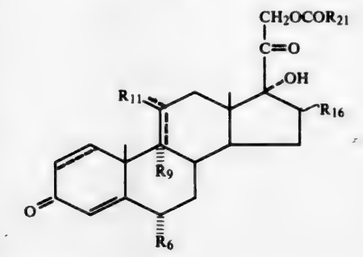
wherein R is —CO—CH_2OH, —CHOH—CH_3, —CO—CH_3 or —CH_2CH_3.

4,411,835
PREPARATION OF CORTICOIDS FROM 17-KETO STEROIDS

Jerry A. Walker, Oshtemo Township, Kalamazoo County, and Edward J. Hessler, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 264,593, May 18, 1981, Pat. No. 4,357,279.
This application May 17, 1982, Ser. No. 378,939
Int. Cl.³ C07J 7/00
U.S. Cl. 260—397.45 18 Claims

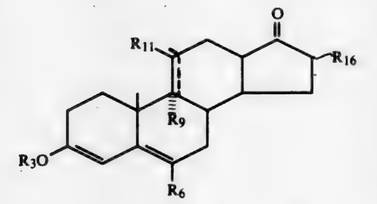
1. A process for the preparation of a corticoid of the formula



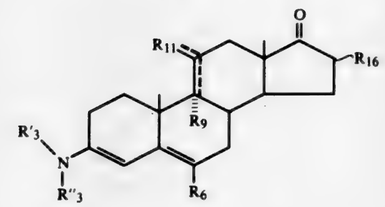
(XI)

which comprises

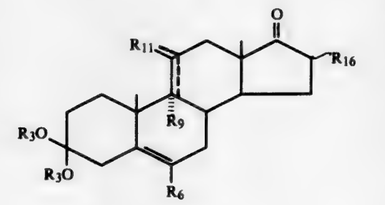
(1) contacting a protected 17-keto steroid selected from the group consisting of compounds of the formula



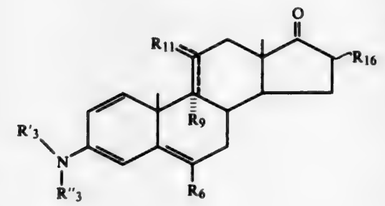
(IIa)



(IIb)

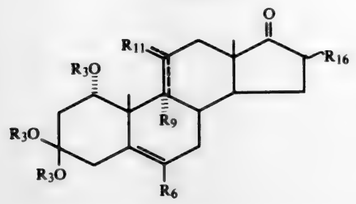


(IIc)



(IId)

-continued



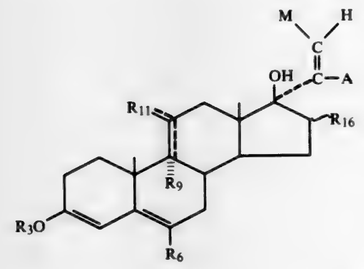
(IIe)

with a metallated 1,2-dihalogenated ethene of the formula

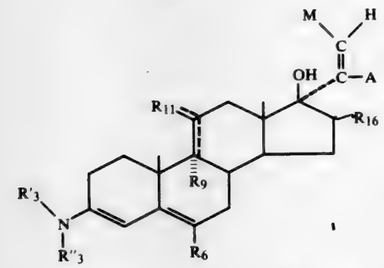


(III)

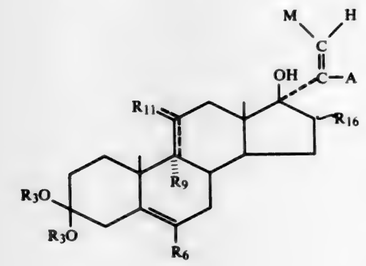
to form the corresponding protected C_{21}-steroid selected from the group consisting of compounds of the formula



(IVa)

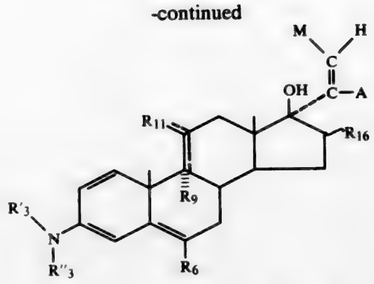


(IVb)

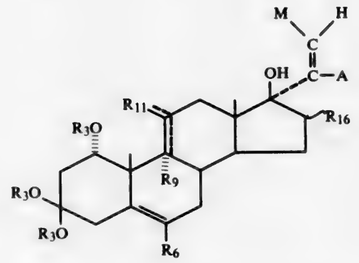


(IVc)

-continued



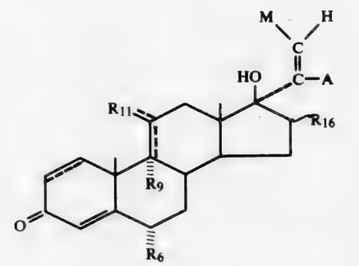
(IVd)



(IVe)

respectively;

(2) hydrolyzing the protected C_{21}-steroid (IVa-IVe) with acid to remove the protecting group and give a C_{21}-steroid of the formula

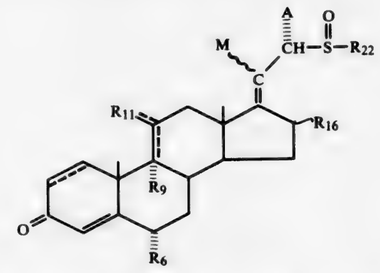


(V)

(3) contacting the C_{21}-steroid (V) with a sulfenylating agent of the formula

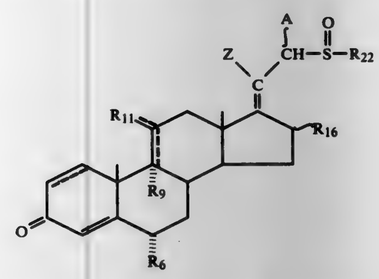
$$R_{22}—S—X \qquad \text{(VI)}$$

to give a 20,21-dihalo steroid of the formula



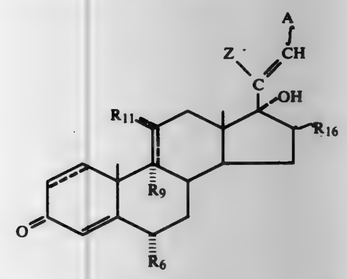
(VII)

(4) contacting the 20,21-dihalo steroid (VII) with a base selected from the group consisting of an alkoxide or mercaptide of the formula OR_{20}^-, or SR_{20}^-, respectively, to give a sulfoxide of the formula



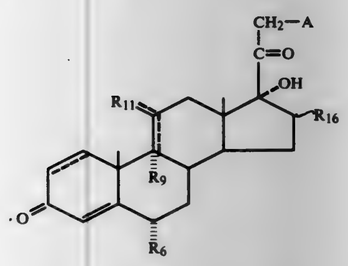
(VIII)

(5) contacting the sulfoxide (VIII) with a thiophile to give a 20-unsaturated steroid of the formula



(IX)

(6) hydrolyzing the 20-unsaturated steroid (IX) with acid to give a 21-halo steroid of the formula



(X)

and

(7) contacting the 21-halo steroid (X) with an anion of the formula $R_{21}CO^{\ominus}$ where A is a fluorine, chlorine or bromine atom; M is a fluorine, chlorine or bromine atom; R_3 is alkyl of 1 thru 5 carbon atoms with the proviso that with the ketal (IIIc and IIIe), the R_3 groups can be connected to form the ethylene ketal; R_3' is alkyl of 1 thru 5 carbon atoms; R_3'' is alkyl of 1 thru 5 carbon atoms; R_6 is a hydrogen or fluorine atom or methyl group; R_9 is a hydrogen or fluorine atom, hydroxyl group, —OSi(R)$_3$ or nothing; R_{11} is H, H,H, H, β-OH, H, β-OSi(R)$_3$, or O; R_{16} is hydrogen atom or methyl group; R_{20} is alkyl of 1 thru 4 carbon atoms or phenyl; R_{21} is alkyl of 1 thru 4 carbon atoms or phenyl; R_{22} is alkyl of 1 thru 5 carbon atoms, trichloromethyl, phenyl, phenyl substituted with 1–4 carbon atoms or substituted with 1 thru 3 nitro or trifluoromethyl groups, aralkyl of 7 thru 12 carbon atoms or —N—(R_{122})$_2$ or phthalimide; X is a chlorine or bromine atom, phenylsulfone, phthalimide or imidazole group; Z is —OR_{20} or —SR_{20}; metal is lithium, sodium or potassium; ∞ indicates the attached group can be in either the α or β configuration; ---- is a single or double bond.

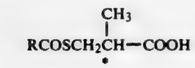
4,411,836

RACEMIZATION OF AN α-METHYL-β-ACYLTHIOPROPIONIC ACID

Naohito Ohashi, Nishinomiya; Shoji Nagata, and Junki Katsube, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 90,857, Nov. 2, 1979, Pat. No. 4,297,282. This application Jul. 2, 1981, Ser. No. 279,706
Claims priority, application Japan, Mar. 13, 1979, 54-29548
Int. Cl.³ C07C *153/023*
U.S. Cl. 260—455 R **3 Claims**

1. A method for racemizing an optically active α-methyl-β-acylthiopropionic acid of the formula,



wherein R is a lower alkyl, phenyl or substituted phenyl bearing methyl or chloro radical, which comprises heating an optically active α-methyl-β-acylthio-propionic acid of the above mentioned formula at 100° C.–200° C., in the presence of 0.05–1 equivalent of a sodium, potassium, or calcium salt of a lower fatty or aromatic acid or a tertiary amine salt.

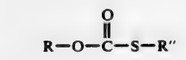
4,411,837

HALO, NITRO, AND HALONITRO S-ALKYL THIOCARBONATES

William H. Gilligan, Ft. Washington, Md., and Scott L. Stafford, Petersburg, Ak., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 224,776, Jan. 13, 1981, Pat. No. 4,332,744. This application Mar. 3, 1982, Ser. No. 354,261
Int. Cl.³ C07C *154/00*
U.S. Cl. 260—455 B **13 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of —$CH_2C(NO_2)_3$, —$CH_2CF(NO_2)_2$, —$CH_2CF_2(NO_2)$, —$CH_2CCl(NO_2)_2$, —CH_2CF_3, —CH_2CCl_3, —$CH_2C(NO_2)_2CH_3$, and —$CH_2CF_2CF_2H$, and wherein R'' is a lower alkyl group of from 1 to 6 carbon atoms.

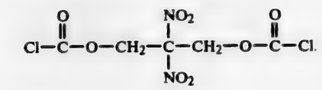
4,411,838

UNSYMMETRICAL POLYNITROCARBONATES AND SYMMETRICAL 1,3-BIS(HALO- AND NITROALKYL CARBONYLDIOXY)-2,2-DINITROPROPANES AND METHODS OF PREPARATION

William H. Gilligan, Ft. Washington, Md., and Scott L. Stafford, Petersburg, Ak., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 224,776, Jan. 13, 1981, Pat. No. 4,332,744. This application Mar. 3, 1982, Ser. No. 354,260
Int. Cl.³ C07C *69/96*
U.S. Cl. 260—463 **1 Claim**

1. A compound of the formula



4,411,839

α-CYANO-β-(TRISUBSTITUTED PHENYLHYDRAZINO)-N-ETHOXYCARBONYLACRYLAMIDES

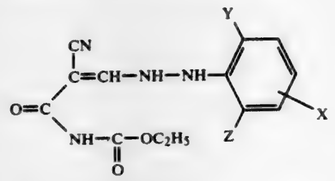
George R. Lindahl, III, Mountain View, and Clive A. Henrick, Palo Alto, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 187,001, Sep. 15, 1980, abandoned. This application May 27, 1982, Ser. No. 382,527

Int. Cl.³ C07C *121/78*

U.S. Cl. 260—465 D 2 Claims

1. A compound of the following formula:



wherein each of X, Y and Z is independently selected from methyl, methoxy, chloro, fluoro, trifluoromethyl and methylthio.

4,411,840

PROCESS FOR THE RESOLUTION OF THE RACEMATE S-(CARBOXYMETHYL)-(RS)-CYSTEINE (B)

Horst Bethge; Axel Kleemann, both of Hanau, and Jürgen Martens, Alzenau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,326

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1981, 3134106

Int. Cl.³ C07C *99/12*

U.S. Cl. 260—501.12 13 Claims

1. A process of resolving the racemate S-(carboxymethyl)-(RS)-cysteine comprising dissolving the racemate together with an optical isomer of 1-phenyl-ethylamine in a solvent in which the salt of said optical isomer with one of the isomer present, said racemate is less soluble than the salt of said optical isomer with the other one of the isomers present in said racemate and precipitating the less soluble salt.

9. A compound which is either (1) a salt of S-(carboxymethyl)-(R)-cysteine and (R)-1-phenylethylamine or (2) a salt of S-(carboxymethyl)-(S)-cysteine and (S)-1-phenyl-ethylamine.

4,411,841

PREPARATION OF NOVEL PERFLUORINATED SULPHONIC ACID FLUORIDES

Klaus Geisler, Bonn, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 28, 1981, Ser. No. 315,766

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043427

Int. Cl.³ C07C *143/70*

U.S. Cl. 260—543 F 12 Claims

1. A compound selected from the group consisting of 4-oxa-3-trifluoromethyl-perfluoropentyl-1-sulphofluoride, 3-oxa-2-pentafluoroethyl-perfluorobutyl-1-sulphofluoride, 4-oxa-3-trifluoromethyl-perfluorohexyl-1-sulphofluoride, 3-oxa-2-pentafluoroethyl-perfluoropentyl-1-sulphofluoride, 4-oxa-3,5-bis-trifluoromethyl-perfluorohexyl-1-sulphofluoride, 3-oxa-2-pentafluoroethyl-4-trifluoromethylperfluoropentyl-1-sulphofluoride, 4-oxa-3-trifluoromethyl-6-pentafluoroethyl-perfluorodecyl-1-sulphofluoride, 3-oxa-2,5-bis-pentafluoroethyl-perfluorononyl-1-sulphofluoride, 4,7-dioxa-3-trifluoromethyl-perfluorooctyl-1-sulphofluoride, 3,6-dioxa-2-pentafluoroethyl-perfluoroheptyl-1-sulphofluoride, 4-oxa-3-trifluoromethyl-4-perfluorocyclohexyl-perfluorobutyl-1-sulphofluoride, 3-oxa-2-pentafluoroethyl-3-perfluorocyclohexyl-perfluoropropyl-1-sulphofluoride, 4-oxa-3-pentafluoroethyl-perfluoropentyl-1-sulphofluoride and 3-oxa-1-trifluoromethyl-2-pentafluoroethyl-perfluorobutyl-1-sulphofluoride.

4,411,842

OXIDATION OF ALKYL PHOSPHONOUS DICHLORIDES

Ingenuin Hechenbleikner, West Cornwall, and William P. Enlow, Falls Village, both of Conn., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Filed Nov. 16, 1981, Ser. No. 321,857

Int. Cl.³ C07F *9/42*

U.S. Cl. 260—543 P 4 Claims

1. A method for preparing methylphosphonyl dichloride comprising contacting a mixture of from about 5% to about 25% of methylphosphonous dichloride and from about 75% to about 90% of phosphorus trichloride, at a temperature of from about −10° C. to about 60° C., with oxygen so as to oxidize the methylphosphonous dichloride but leave substantially all of the phosphorus trichloride unoxidized, and distilling the resulting product mixture to obtain the desired methylphosphonyl dichloride.

4,411,843

CONVERSION OF 1,1,1-TRICHLOROPERHALOALKANES INTO PERHALOALKANOYL CHLORIDES

Louis G. Anello, Hamburg; Richard E. Eibeck, Orchard Park, and Martin A. Robinson, East Amherst, all of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 216,033, Dec. 15, 1980, Pat. No. 4,340,548. This application Apr. 29, 1982, Ser. No. 372,576

The portion of the term of this patent subsequent to Jul. 20, 1999, has been disclaimed.

Int. Cl.³ C07C *51/58*

U.S. Cl. 260—544 Y 9 Claims

1. A process for preparation of perhaloalkanoyl chloride, which comprises contacting a 1,1,1-trichloroperhaloalkane wherein the 1,1,1-trichloroperhaloalkane is a straight or branched chain acyclic organic compound having 2 to 8 carbon atoms and having at least one trihalomethyl group wherein at least one halo atom is fluorine and having the remaining carbon atoms substituted by F, Br Cl or I atoms with an effective amount of a sulfur trioxide-containing substance selected from the group consisting of oleum, SO_3 and stabilized SO_3 in the presence of a catalytic amount of a halogen catalyst.

4,411,844

PRIMING SYSTEM FOR A VENTED BOWL CARBURETOR

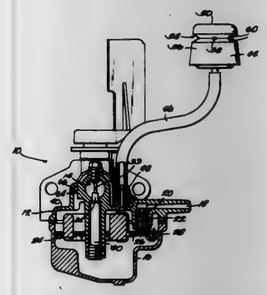
Richard L. Morris, Galesburg, and Ronald B. Lloyd, Gilson, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 11, 1982, Ser. No. 347,909

Int. Cl.³ F02M *1/16*

U.S. Cl. 261—34 R 5 Claims

1. An internal combustion engine including a carburetor for supplying the engine with a rich fuel-air mixture during priming and with a leaner mixture during normal operation, said carburetor including a body with a fuel-air mixture passage, a float bowl adapted to contain a quantity of liquid fuel and having an air space above the liquid fuel, said float bowl including an air inlet, a fuel nozzle for conducting fuel from the float bowl to the fuel-air mixture passage, a primer for aiding in starting the engine, the primer including means for selectively forcing air into said air space to cause the air pressure in said air space to be greater than atmospheric pressure and to cause liquid fuel to be forced through said nozzle and into said fuel-air mixture passage, said means for forcing including a flexible priming bulb adapted to be compressed to cause air to be forced into said air space and including a flexible wall portion



including a groove and said priming bulb including a vent opening located in said groove so as to close as said priming bulb is compressed and as air is forced into the air space of the float bowl, and a conduit between the priming bulb and the air inlet.

4,411,845

THROTTLE VALVE ASSEMBLY

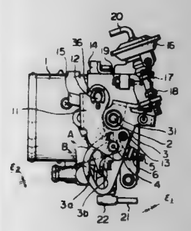
Toshio Tanahashi, Toyota; Sinya Sumitani, Kariya; Takeo Matuura, Kariya; Shinji Ichikawa, Kariya, and Takao Okuno, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed May 24, 1982, Ser. No. 381,509

Claims priority, application Japan, May 30, 1981, 56-81836

Int. Cl.³ F02M *19/12*

U.S. Cl. 261—65 8 Claims



1. An improved throttle valve assembly of the type which includes a throttle body having an intake passage therein, a throttle shaft journalled on said throttle body across said intake passage, a throttle lever secured to said throttle shaft, a throttle valve mounted on said throttle shaft for regulating the flow rate of the intake air flowing through said passage, and a second, intermediate lever pivoted on said throttle body and adapted to be moved via a throttle linkage by an accelerator, one of said throttle lever and second lever having an arcuated cam slot engaging with a roller mounted rotatably on the other lever for interconnecting said levers with each other, and in which the cam profile of said cam slot is arranged so that when the accelerator is stepped on, the angular position of the throttle valve varies in response to the travel of the accelerator according to a predetermined functional relationship, wherein the improvement comprises: means disposed between sai throttle lever and second lever for adjusting a clearance existing between said cam slot and roller at the idle position of said throttle valve to below the tolerable value.

4,411,846

APPARATUS FOR ABSORBING GASES

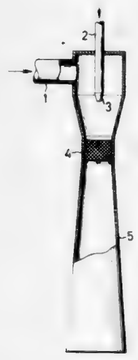
Michael Ulrich, Kelkheim; Manfred Trautmann, Frankfurt am Main; Günter Heck, Wiesbaden, and Egon Malow, Hochheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 125,882

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908263

Int. Cl.³ B01D *47/16*

U.S. Cl. 261—98 3 Claims



1. Jet Venturi apparatus for absorbing a gas by a washing liquid comprising

gas conduit means for injecting said gas;

atomizing means for injecting said liquid as a spray into the injected gas;

a tube coupled to said gas conduit means for carrying the gas and liquid spray and having a length and a diameter whose ratio is in the range of from 5:1 to 50:1; and

diffuser means disposed in the tube and having a throat in the tube at the end thereof adjacent said gas conduit means for disrupting the flow of said gas and liquid spray as the same pass through said tube so at to disperse droplets of said liquid spray to increase the specific surface area of said liquid spray, said diffuser means including a stack of packings extending across the cross-sectional area of said tube at said throat, the stack having a length not in excess of the diameter of the tube.

4,411,847

PROCESS FOR SURFACE MODIFIED HOLLOW MICROSPHERES

David I. Netting, Springfield; Bruce D. Spivack, Norristown, and James P. Cunnion, Jr., Bridgeport, all of Pa., assignors to PQ Corporation, Valley Forge, Pa.

Division of Ser. No. 161,473, Jun. 20, 1980, Pat. No. 4,340,642. This application May 27, 1982, Ser. No. 382,826

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—7 12 Claims

1. A process for preparing water resistant hollow microspheres being characterized by:

a. preparing a slurry of hollow microspheres in sufficient water to prevent shearing stress, said microspheres having 0.02 to 2.0 parts by weight of polysalt solids for each part by weight of sodium silicate solids, said sodium silicate having 1.5 to 4.0 moles of SiO_2 per mole of Na_2O, a particle size of 35 to 2000 microns, a bulk density of 2 to 20 lbs/cu.ft. and less than 7% moisture;

b. stirring said slurry while adding a solution of a salt of a multivalent metal and a strong acid, said multivalent metal being one that decreases the solubility of the microspheres

in water, the rate of addition of said solution being controlled in a pH range that promotes the yield of intact microspheres with the desired decreased water solubility;

c. stirring after the addition of the multivalent metal salt solution is complete;

d. separating the floating microspheres from the slurry; and

e. washing, drying and recovering the desired product.

4,411,848

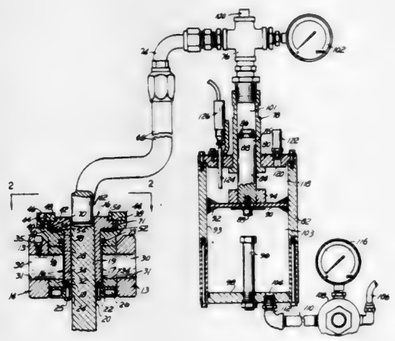
METHOD FOR COMPACTING ARTICLES MADE OF POWDER MATERIAL AT A PREDETERMINED DENSITY

Raymond P. DeSantis, Troy, Mich., assignor to PTX-Pentronix, Inc., Lincoln Park, Mich.

Division of Ser. No. 269,512, May 28, 1981, Pat. No. 4,362,483. This application Nov. 9, 1981, Ser. No. 319,246

Int. Cl.³ B29F *3/04*

U.S. Cl. 264—40.5 **21 Claims**



1. A method for compacting powder material into an article of a predetermined density in a powder compacting apparatus having a reciprocable ram supporting a punch for compacting said powder material in a die cavity against a die cavity closure wall, and means for reciprocating said ram, said method comprising coupling said means reciprocating said ram to the ram by way of a variable volume chamber whose volume varies between a maximum and a minimum, introducing a pressurized fluid in said variable volume chamber such as to expand said chamber to its maximum volume, adjusting the pressure of said pressurized fluid at a predetermined value, adjusting the stroke of said ram such that compacting of said article by said punch in said die cavity at maximum stroke of said ram causes said variable volume chamber to be contracted by the force of compaction to a volume intermediary between its maximum and minimum volumes, and compacting said article by reciprocation of said punch-supporting ram by said reciprocating means while maintaining said variable volume chamber at said volume intermediary between its maximum volume and its minimum volume.

4,411,849

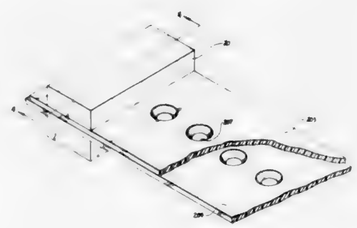
METHOD FOR FORMING A PLURALITY OF OBJECTS FROM A PLURALITY OF SUPERIMPOSED SHEETS

Lou Kohl, Palatine; John R. Peschke, Woodstock, and Sheldon M. Wecker, Libertyville, all of Ill., assignors to James River-Dixie/Northern, Inc., Greenwich, Conn.

Filed Aug. 3, 1981, Ser. No. 289,388

Int. Cl.³ B29D *27/00*; B29H *21/04*

U.S. Cl. 264—45.5 **18 Claims**



1. A process for forming a plurality of stacked objects simultaneously from a plurality of separable superimposed sheets of deformable and fusible material comprising the steps of heating said plurality of separable superimposed sheets until said material in said sheets reaches a temperature sufficient to allow plastic deformation while maintaining molding conditions at the contiguous surfaces thereof below those resulting in fusing of portions of said contiguous surfaces and forming said plurality of separable superimposed sheets simultaneously to form a plurality of stacked objects.

4. The process of claim 1 further comprising the step of first forming a roll of interleaved separable sheet material having a plurality of separable sheet material interleaved therein by superimposing multiple sheets of separable material in aligned registration and rolling same about a common axis, and feeding said separable interleaved sheet material from said roll for said heating and forming steps.

5. The process of claim 4 further comprising the steps of extruding a tubular foamed plastic cylinder, slitting said extruded cylinder to form separable multiple sheets thereof, superimposing said separable multiple sheets, and winding said separable multiple sheets onto a single core to produce an interleaved roll of separable foamed plastic sheets for continuous feed to said heating and forming steps.

9. The process of claim 5 further comprising the step of extruding foamed polystyrene sheet and forming skins on the surface of the foam sheet by means of cooling said surface with a cooled gas flow, and coating the surface of said extruded foamed polystyrene sheet with releasing agent by injecting said releasing agent with said gas flow.

4,411,850

Patent Not Issued For This Number

4,411,851

METHOD FOR MAKING FRICTION MATERIAL WITHOUT ASBESTOS FIBERS INCLUDING REPEATED PRESSING AND DEGASSING STEPS

Toshiaki Sakabe; Yasuhiro Matsumoto, and Hisami Tsujio, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Aisin Kako Kabushiki Kaisha, both of Kariya, Japan

Filed Oct. 20, 1981, Ser. No. 312,966

Claims priority, application Japan, Oct. 29, 1980, 55-151628

Int. Cl.³ B29D *3/02*; B29G *1/00*

U.S. Cl. 264—137 **9 Claims**

1. A method of producing a friction material, comprising the steps of:

(a) impregnating a fiber base material with a binder, said fiber being other than asbestos fiber and being stable to heat without reduction in weight and in volume in an atmosphere at 300° C.;

(b) shaping the impregnated fiber into the predetermined shape of a crude friction material;

(c) inserting said shaped material into the cavity of a mold which has been heated to a predetermined temperature;

(d) pressure/heat treating said shaped material by compressing the shaped material for 2 to 10 seconds at a predetermined pressure and at a predetermined temperature in a closed mold and degassing the compressed shaped material for 0.5 to 2 seconds in an open mold; and

(e) repeating the cycle of the two steps of step (d) 10 to 20 times.

4,411,852

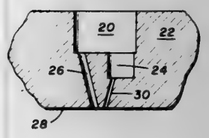
SPINNING PROCESS WITH A DESENSITIZED SPINNERET DESIGN

James E. Bromley, Pensacola, Fla., and John R. Dees, Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed Feb. 18, 1982, Ser. No. 349,794

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—171 **2 Claims**



1. A process for melt-spinning through a spinneret having at least one combined orifice comprising first and second capillaries having different cross-sectional areas, said process comprising:

(a) separately metering a first polymer stream to said first capillary through a first metering passageway; and

(b) separately metering a second polymer stream to said second capillary through a second metering passageway, each of said passageways having dimensions to provide a pressure drop thereacross at least twice as large as the pressure drop across the capillary with which each passageway is associated whereby the polymer volumetric flows through said first and second capillaries are substantially insensitive to the dimensions of said capillaries.

4,411,853

POLYMER STABILIZATION

Jerry O. Reed, and Ronald D. Mathis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 11, 1982, Ser. No. 377,212

Int. Cl.³ C08K *5/58, 5/57*

U.S. Cl. 264—176 F **18 Claims**

1. A resin composition exhibiting improved heat stability comprising a poly(arylene sulfide) resin containing an effective stabilizing amount sufficient to retard resin curing and cross-linking of at least one of the group consisting of dialkyltin dicarboxylates, dibutyltin-S,S'-bis(isooctyl thioacetate) and di-n-butyl tin S,S[1]-bis(isooctyl 3-thiopropionate).

14. In a process for melt extruding a poly(arylene sulfide) resin, the improvement for reducing gel formation during melt extrusion which comprises incorporating into said resin an effective heat stabilizing amount of at least one of the group consisting of dialkyltin dicarboxylates dibutyltin-S,S'-bis-(isooctyl thioacetate) and di-n-butyl tin S,S[1]-bis(isooctyl 3-thiopropionate, which amount is sufficient to retard curing and cross-linking of said resin during melt extrusion and thereby minimizing plugging of filters and spinnerets with gel.

4,411,854

PROCESS FOR THE PRODUCTION OF FILAMENTS WITH HIGH TENSILE STRENGTH AND MODULUS

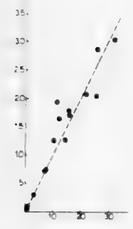
Franciscus H. J. Maurer, Voerendaal; Jacques P. L. Pijpers, Limbricht, both of Netherlands, and Paul Smith, Grenoble, France, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Dec. 15, 1981, Ser. No. 331,080

Claims priority, application Netherlands, Dec. 23, 1980, 8006994

Int. Cl.³ D01F *6/00*

U.S. Cl. 264—205 **5 Claims**



1. Process for the production of filaments with a high modulus and high tensile strength comprising the steps of,

(a) preparing a filler containing solution of a linear polyethylene with a weight-average molecular weight of at least about 400,000,

(b) spinning said filler containing solution of step (a) to form a filament by cooling without substantial evaporation of solvent to form a gel, and

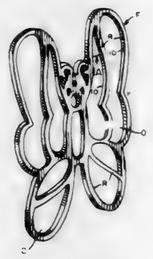
(c) stretching said filament at a stretching ratio of at least about $12\times10^6/M_w+1$.

4,411,855

METHOD FOR MAKING PERFUME-RELEASE PLASTIC DECORATIONS

August E. Fiebig, Jr.; Glenn A. Shurney, both of Chicago, and Anton J. Nagy, Crestwood, all of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Aug. 31, 1981, Ser. No. 296,580
Int. Cl.³ B29C *5/10, 9/00*
U.S. Cl. 264—219 **4 Claims**



1. The method of manufacturing a perfume releasing plastic decoration having the appearance of a stained glass miniature comprising:

(a) positioning a flat shallow frame on the upper surface of a horizontally-disposed plate, said plate being formed of heat conductive metal, said frame providing multiple openings therethrough enclosed on their sides by ribs of said frames and on their bottoms by said plate, said frame being positioned on said plate with the bottom sides of said frame ribs in smooth contacting engagement with the upper surface of said plate;

(b) applying radiant heat to the underside of said plate for transfer therethrough to preheat the upper surface of said plate and said frame thereon;

(c) while applying heat to said plate filling a plurality of said frame openings with predetermined quantities of one or more flowable thermoplastic compositions containing thermoplastic resin as a principal ingredient, said filled compositions being in contact with the upper surface of said plate, at least one of said compositions being colored and light-transmitting, and at least one of said compositions containing a volatile perfume oil which is capable of being slowly released at ordinary room temperatures from its composition, said perfume-releasing compositions containing from 5 to 35 parts by weight of said volatile perfume oil per each 50 to 95 parts of said thermoplastic resin;

(d) causing said filled quantities of said compositions to spread outwardly on said plate upper surface into conforming engagement with the enclosing frame ribs;

(e) applying a cooling fluid to the underside of said plate to remove heat from said plate and said filled frame thereon to set said compositions within said frame openings in interlocking engagement with said frame ribs; and

(f) removing said filled frame from said plate.

4,411,856

METHOD AND APPARATUS FOR HIGH SPEED MANIFOLDING OF HONEYCOMB STRUCTURES

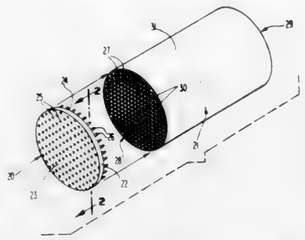
Max R. Montierth, Elmira, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jul. 15, 1981, Ser. No. 283,734
Int. Cl.³ B29D *3/00*
U.S. Cl. 264—267 **13 Claims**

1. A method of manifolding a subset of cells of a honeycomb structure having a multiplicity of open end cells extending therethrough from a honeycomb surface thereof comprising the steps of:

providing a flexible mask having a first plurality of flexible protrusions extending from an outer surface thereof, and a second plurality of openings extending completely therethrough from said outer surface to an opposing surface thereof;

fitting said outer surface of said mask against said honeycomb surface of said structure with said first plurality of



protrusions extending into an equal plurality of said cells and said second plurality of openings aligned opposite said subset of cells; and

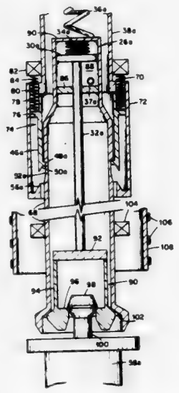
charging a plugging material through said plurality of openings into the open ends of said subset of cells.

4,411,857

NUCLEAR REACTOR CONTROL APPARATUS

Bettadapur N. Sridhar, Cupertino, Calif., assignor to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Apr. 16, 1981, Ser. No. 254,709
Int. Cl.³ G21C *7/08*
U.S. Cl. 376—233 **8 Claims**



2. Apparatus for controlling fission in a nuclear reactor core, comprising:

a vertically disposed shaft carrying a neutron absorber and mounted for longitudinal reciprocation between a raised position wherein it holds the absorber above the reactor core and a lowered position wherein it locates the absorber within the reactor core, said shaft having a recess in its outer side surface;

a latch disposed adjacent the outer side of said shaft and movable between a raised shaft holding position and a lowered shaft releasing position, said latch comprising (1) a detent element movable toward and away from said shaft, said detent element being positioned in the recess in said shaft when said latch is in its shaft-holding position to thereby prevent movement of the shaft to its lowered position, and (2) a first cam element projecting below said detent element; and

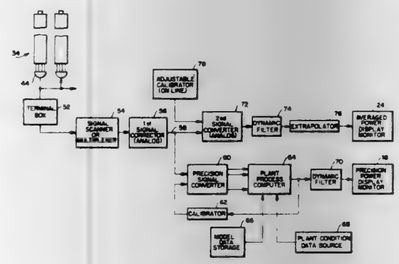
a second cam element spaced below said latch when the latter is in its shaft-holding position, said second cam element being arranged so that when said latch moves to its shaft-releasing position, it engages said first cam element and moves said detent element out of the recess in said shaft, whereby the shaft is allowed to move to its lowered position.

4,411,858

POWER PERFORMANCE MONITORING SYSTEM FOR NUCLEAR REACTOR FUEL CORE

Robert D. Smith, Bethesda, Md., assignor to Scandpower, Inc., Bethesda, Md.

Filed Jan. 30, 1981, Ser. No. 229,797
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **6 Claims**



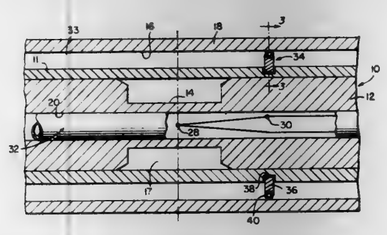
1. In a method of monitoring power developed in a nuclear reactor by generating power measurement signals in response to fission products produced by groups of fuel rods and processing said signals together with data relating to a plurality of parameters associated with the nuclear reactor to produce a precision power shape readout that is intermittantly interrupted, the improvement residing in the selection of sensors which internally generate heat in response to gamma radiation resulting from said fission products whereby the measurement signals are directly related to linear power generation rate of the fuel rods; separately processing said signals without said data to produce a second but continuous power shape readout that is available during the interruptions in the first mentioned precision power shape readout; and calibrating the separately processed signals in accordance with the precision power shape readout to correct the second continuous power shape readout.

4,411,859

GAMMA SENSOR HAVING COMBINED THERMAL BRIDGE AND CENTERING MEANS

Robert D. Smith, Bethesda, Md., and Pierre Regazzoni, Boulonge-Billancourt, France, assignors to Scandpower, Inc., Bethesda, Md.

Continuation-in-part of Ser. No. 48,033, Jun. 13, 1979, Pat. No. 4,356,061. This application May 28, 1981, Ser. No. 267,912
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **10 Claims**



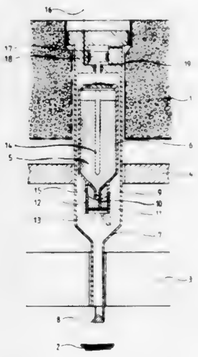
9. In combination with a gamma sensor positioned within a tubular guide of a fuel assembly in a nuclear reactor, said sensor having an elongated gamma radiation heated body provided with relatively hot and cold regions and an outer sheath in thermal contact with said body along the cold regions thereof to establish axially symmetrical heat distribution therein in response to uniform external cooling of the outer sheath within an annular gap between said outer sheath and the tubular guide, the improvement residing in thermal bridge means engageable with the tubular guide within the annular gap for establishing a thermally conductive path between the outer sheath and the tubular guide, said thermal bridge means being formed by portions of the outer sheath radially deformed into thermal contact with the tubular guide at a location in axially spaced adjacency to the hot region of the body for preventing disturbance of said symmetrical heat distribution.

4,411,860

PEBBLE BED REACTOR WITH FEEDING DEVICE FOR ABSORBER MATERIAL AND METHOD FOR ITS OPERATION

Herbert Reutler, Cologne; Ulrich Müller-Frank, Bergisch-Gladbach; Manfred Ullrich, Bergisch-Gladbach, and Hubert Schepers, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to GHT, Gesellschaft für Hochtemperaturreaktor-Technik mbH, Bergisch-Gladbach, Fed. Rep. of Germany

Filed Mar. 12, 1981, Ser. No. 242,919
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1980, 3011218
Int. Cl.³ G21C *7/14*
U.S. Cl. 376—338 **4 Claims**



1. Pebble-bed nuclear reactor capable of being shut down by a fluidized mass of bodies containing neutron-absorbing material, the fluidized mass of bodies being received in a storage container disposed above the pebble bed during normal operation of the reactor, the storage container being formed with a closable discharge opening, comprising a piston rigidly connected to the storage container and disposed below the discharge opening thereof, said piston being guided in a cylinder stationary relative to the reactor and being open at the top thereof, the storage container being displaceable in vertical direction between upper and lower end positions thereof, said piston, in said upper end position of the storage container, closing off said cylinder at the upper edge located at said open top of said cylinder and, in said lower end position of the storage container, the fluidized mass of bodies discharged from the discharge opening of the storage container being formed on top of said piston into a discharge cone having a height greater than the distance between said piston and the discharge opening.

4,411,861
METHOD FOR PROTECTING THE CASING TUBES OF NUCLEAR REACTOR FUEL RODS

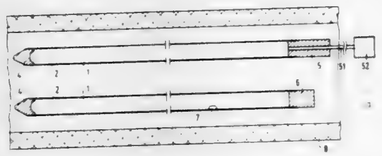
Eckard Steinberg, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Continuation of Ser. No. 934,358, Aug. 17, 1978, abandoned. This application Apr. 1, 1981, Ser. No. 250,047

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737532

Int. Cl.³ G21C *3/06*

U.S. Cl. 376—417 **9 Claims**



1. Method for protecting a zirconium-alloy cladding tube of a nuclear-reactor fuel rod against attack by radioactive fission products, such as iodine especially, which comprises applying an excess pressure to the interior of the cladding tube above the pressure existing outside the cladding tube at a temperature of from 300° to 500° C. so as to widen the cladding tube, depending upon the geometric dimensioning thereof, in the elastic range and up to nearly the yield point thereof beyond the normal expansion during reactor operation, while this condition exists, reacting a medium previously introduced into the interior of the cladding tube with the inner surface of the cladding tube to form a protective layer, and thereafter reducing the temperature and excess pressure so that the cladding tube returns to its original shape.

4,411,862
SPACER GRATING FOR FUEL ELEMENT IN A NUCLEAR REACTOR

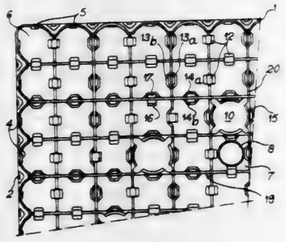
Joseph Leclercq, St. Didier; Jacques Le Pargneux, Lyons; Claude Feutrel, Vauhallan; Guy Lestiboudois, Paris, and Michel Chantant, Bois d'Arcy, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 21, 1981, Ser. No. 226,895

Claims priority, application France, Jan. 22, 1980, 80 01304

Int. Cl.³ G21C *3/34*

U.S. Cl. 376—442 **18 Claims**



1. Spacer grating for a fuel assembly used in a nuclear reactor constituted by intersecting plates in square-mesh lattice form, in the cells of which pass the fuel pencils for transverse holding thereof, these pencils constituting a bundle where certain pencils are replaced by guide tubes, the plates which constitute the walls of the cells bearing elements for holding the fuel pencils projecting inside the cells, of two types, namely, on the one hand, rigid stops and, on the other hand, springs adapted to exert transverse forces on the fuel pencils, added to the grating and disposed around the plates so that each of the faces of each cell containing a pencil bears an element of type different from that borne by the opposite face, wherein said grating comprises:

on the greater part of the walls equipped with springs, double springs comprising two active parts on either side of the wall on which the double spring is placed, allowing the symmetrical action of this spring on two different pencils inside two adjacent cells;

on the other walls equipped with springs, single springs comprising one active part only disposed in one of the two cells separated by the wall on which is placed the spring of which the other part is not capable of coming into contact with a fuel pencil;

rigid stops made on the plates of the grating independently of the springs.

4,411,863
LOW-CARAT CORROSION-RESISTANT GOLD ALLOY WITH THE SKIN OF THE ALLOY NOT BEING BLACKED UPON CASTING

Masasuke Otsuka, 14-8, Okusawa 5-Chome, Setagaya-ku, Tokyo; Hideyo Maniwa, 76, Matsugaoka, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, Tokyo, and Shinya Nishina, Naka-so 201, 19-7, Sakura 2-Chome, Setagaya-ku, Tokyo, all of Japan

Filed Jun. 24, 1982, Ser. No. 391,941

Claims priority, application Japan, Jun. 23, 1981, 56-95969

Int. Cl.³ C22C *5/06*

U.S. Cl. 420—580 **1 Claim**

1. A low-carat corrosion-resistant gold alloy, with the skin of the alloy not being blacked upon casting, characterized by the contents of gold in the range from 0.5 to 35 weight percent, palladium in the range from 15 to 35 weight percent, indium in the range from 7 to 18 weight percent, zinc in the range from 0 to 10 weight percent, tin in the range of 0 to 10 weight percent, the balance being silver.

4,411,864
CU-AG-SI BASE ALLOY BRAZING FILLER MATERIAL

Masaki Morikawa; Hideaki Yoshida, both of Kasukabe; Kunio Kishida, Ohmiya, and Chuji Tanaka, Ageo, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00338, § 371 Date Jul. 30, 1982, § 102(e) Date Jul. 30, 1982, PCT Pub. No. WO82/02013, PCT Pub. Date Jun. 24, 1982

PCT Filed Nov. 18, 1981, Ser. No. 406,236

Claims priority, application Japan, Dec. 8, 1980, 55/172965

Int. Cl.³ C22C *30/02*

U.S. Cl. 420—587 **8 Claims**

1. A Cu-Ag alloy brazing filler material having excellent cold workability and brazability and a low vapor pressure comprising from more than 35 to 50% by weight of Ag, 2.2 to 6% by weight of Si, with the balance being Cu and incidental impurities.

4,411,865
METHOD OF CORROSION INHIBITION IN AQUEOUS MEDIUMS

Gary E. Geiger, Philadelphia, and Roger C. May, Glenside, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 131,593, Mar. 19, 1980, abandoned, which is a continuation-in-part of Ser. No. 27,346, Apr. 5, 1979, abandoned. This application May 28, 1981, Ser. No. 267,840

Int. Cl.³ C23F *11/04*

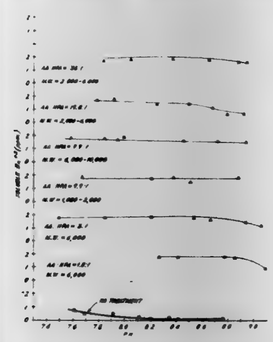
U.S. Cl. 422—16 **23 Claims**

1. A method for reducing the amount of corrosion of metal surfaces in contact with an aqueous medium prone to zinc precipitation comprising adding to said aqueous medium an effective amount for the purpose of effective:

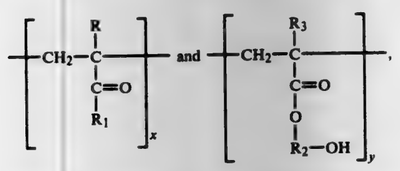
(i) water-soluble zinc compound,

(ii) water-soluble chromate compound, and

(iii) water-soluble polymer comprising moieties derived



from acrylic acid or water-soluble salt thereof and moieties of hydroxylated lower alkyl acrylate, wherein the moieties of said polymer have the following formulas:



wherein R is hydrogen or a lower alkyl of from 1 to 3 carbon atoms; R_1 is OH, NH_2 or OM where M is a water-soluble cation; R_2 is a lower alkyl of from about 2 to 6 carbon atoms, R_3 is H or lower alkyl of from 1 to 3 carbon atoms and the mole ratio of x:y is 1:4 to 36:1, said polymer being capable of retaining a corrosion inhibiting amount of said zinc compound in soluble form in said aqueous medium.

4,411,866
STEAM STERILIZATION METHOD FOR ARTIFICIAL ORGAN ASSEMBLIES AND RESULTANT STERILIZED PRODUCT

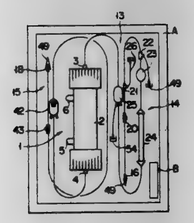
Michio Kanno, Higashikurume, Japan, assignor to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 133,815, Mar. 25, 1980, abandoned. This application Dec. 30, 1981, Ser. No. 335,862

Claims priority, application Japan, Mar. 28, 1979, 54-36728

Int. Cl.³ A61L *2/06*; B65D *81/20*

U.S. Cl. 422—25 **2 Claims**



1. A steam sterilization method for an artificial organ assembly which includes an artificial organ having a built-in body fluid treatment mechanism which has a body fluid inlet port and a body fluid outlet port, comprising:

connecting a body fluid inlet line of an extracorporeal body fluid circulation mechanism to said body fluid inlet port;

connecting a body fluid outlet line of said extracorporeal body fluid circulation mechanism to said body fluid outlet port;

said extracorporeal body fluid circulation mechanism including a drip chamber and a pump tube coupled between said inlet and outlet lines;

filling said artificial organ and said extracorporeal body fluid circulation mechanism with a liquid harmless to the human body, and sealing said artificial organ and extracorporeal body fluid circulation mechanism;

at least one of said artificial organ and said extracorporeal body fluid circulation mechanism having an expandable member;

hermetically accommodating, enclosing and vacuum-packing said artificial organ and extracorporeal body fluid circulation mechanism in a sealed steam permeable package in a vacuum-packed state without water disposed between said package and said organ and extracorporeal body fluid circulation mechanism;

said package, artificial organ and extracorporeal body fluid circulation mechanism comprising said artificial organ assembly; and

steam sterilizing said artificial organ assembly in the sealed vacuum-packaged state at a temperature ranging from 100° to 130° C. and under a pressure ranging from 1 to 3 kg/cm^2 of pressure (gauge pressure), wherein any expansion of said harmless liquid during the steam-sterilization is absorbed by said expandable member and any gas generated by the steam-sterilization can be trapped in said drip chamber of said extracorporeal body fluid circulation mechanism.

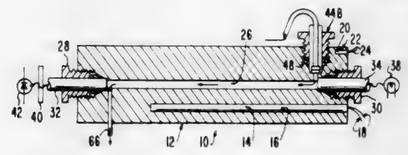
4,411,867
REDUCTION GAS DETECTOR

Clinton R. Ostrander, 140 Stanford Ave., Menlo Park, Calif. 94025

Continuation-in-part of Ser. No. 129,938, Mar. 13, 1980, abandoned. This application Aug. 10, 1981, Ser. No. 291,212

Int. Cl.³ G01N *21/75*

U.S. Cl. 422—91 **7 Claims**



1. Apparatus for detecting gases by measuring the spectral absorption of mercury vapor in ultraviolet radiation comprising: an elongated body of metallic material, said body having a bore therein defining a sample cell; means connected to said body and in heat exchange relationship thereto for heating the body; means including a first quartz rod extending into one end of the bore for directing ultraviolet radiation from a source into and through the sample cell; means including a second quartz rod extending into the opposite end of the bore for directing ultraviolet radiation out of the sample cell and to a photodetector, said body having a fluid passage extending transversely of and communicating with said bore near the inner end of the first quartz rod, the fluid passage having an open outer end, said body further having an outlet line communicating with said bore near the inner end of the second quartz rod; a fitting removably coupled to said body and extending into said fluid passage, said fitting having an inner end provided with a recess; means in said recess for defining a mercuric oxide bed in intersecting relationship to the path of fluid flow through said fluid passage, said bed defining means including a pair of perforate, planar screens, a tubular spacer

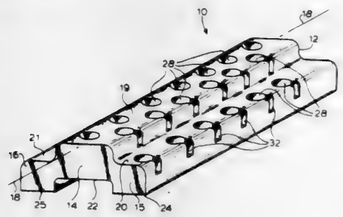
between the screens, a mass of mercuric oxide in the spacer and between the screens, and a tubular retained for holding the screens and spacer in the recess, whereby a gas may enter the passage and flow through said bed to generate mercury vapor for flow into said sample cell.

4,411,868

MULTIPLE TUBE RACK

W. L. Noack, Camarillo, Calif., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Dec. 11, 1981, Ser. No. 329,779
Int. Cl.³ B01L 9/06
U.S. Cl. 422—104 **5 Claims**



1. A rack for holding a plurality of tubes comprising:
a substantially planar, relatively thick, one-piece support member made of thermoformed material having a center portion and a side portion along each side of the center portion, all of said portions extending substantially parallel to each other along the longitudinal axis of said support member, said center portion having an upper surface raised above the upper surfaces of said side portions and having a lower surface raised above the lower surfaces of said side portions;
a plurality of holes for receiving tubes therein in each of the aforementioned portions, said holes extending partially through said respective portions thereby forming closed bottoms thereof, said holes being tapered toward said bottom surfaces within the respective portions, all of said holes arranged in staggered fashion in said portions so that no adjacently lying holes are aligned on an axis substantially perpendicular to said longitudinal axis of said support member, all of said holes extending sufficiently deep into said respective portions to permit tubes positioned therein to stand upright without further support; and
a slot adjacent each hole and communicating therewith, each of said slots extending partially through said respective portions to provide a view into the interior of its associated hole.

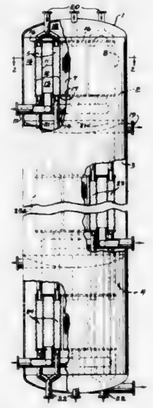
4,411,869

MULTIPLE STAGE REACTOR SYSTEM

Joseph A. Kroushl, Westchester, and Arthur R. Greenwood, Niles, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 334,502, Dec. 28, 1981. This application Feb. 28, 1983, Ser. No. 470,428
Int. Cl.³ B01J 8/12
U.S. Cl. 422—188 **20 Claims**

1. A multiple stage reactor system which comprises, in combination:
(a) a vertically elongated confined reactor vessel;
(b) at least two vertically spaced reaction chambers within said vessel, each having upper and lower extremities;
(c) a first port and a second port associated with each chamber, both located in one of said extremities;
(d) each of said chambers containing a plurality of side-by-side annular-form vertically aligned catalyst-retaining sections positioned therein;
(e) each of said catalyst-retaining sections being defined by an inner tubular-form catalyst-retaining screen coaxially disposed within an outer vertically positioned tubular-form catalyst-retaining screen, said inner catalyst-retaining screen further defining a fluid flow conduit within the inner space thereof;
(f) each of said chambers containing a first flow manifold connecting said first port to one extremity of each of said fluid flow conduits;
(g) each of said catalyst-retaining sections being further defined by two transverse partitions, one connected to the upper extremity of said fluid flow conduit and to the upper perimeter of said outer catalyst-retaining screen, and the other connected to the lower extremity of said fluid flow conduit and to the lower perimeter of said outer catalyst-retaining screen;
(h) each of said chambers having a void space in open communication with said second port, and defined by the inner walls of said chamber and the outer surfaces of the plurality of catalyst-retaining sections contained therein, said void space serving as a second flow manifold connecting the outer surface of said plurality of catalyst-retaining sections to said second port;
(i) catalyst inlet conduits extending through the upper extremity of the uppermost chamber and connected in open communication with the upper extremity of each of the catalyst-retaining sections contained therein;



(j) inter-chamber catalyst conduits connecting the lower extremity of each catalyst-retaining section in each reaction chamber, except the catalyst-retaining sections in the lowermost chamber, in open communication with the upper extremity of a catalyst-retaining section in the next lower chamber; and,
(k) catalyst withdrawal conduits connected in open communication with the lower extremity of each of the catalyst-retaining sections contained in the lowermost chamber and extending through the lower extremity thereof, whereby catalyst particles are gravitated through said vertically spaced reaction chambers via the plurality of catalyst-retaining sections contained therein.

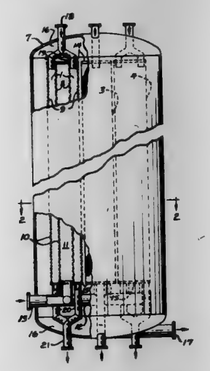
10. A process for the conversion of a hydrocarbon charge stock characterized in that the hydrocarbon charge stock is passed in vapor phase to a multiple stage reactor system comprising, in combination:
(a) a vertically elongated confined reactor vessel;
(b) at least two vertically spaced reaction chambers within said vessel, each having upper and lower extremities;
(c) a first port and a second port associated with each chamber, both located in one of said extremities;
(d) each of said chambers containing a plurality of side-by-side annular-form vertically aligned catalyst-retaining sections positioned therein;
(e) each of said catalyst-retaining sections being defined by an inner tubular-form catalyst-retaining screen coaxially disposed within an outer vertically positioned tubular-form catalyst-retaining screen, said inner catalyst-retaining screen further defining a fluid flow conduit within the inner space thereof;
(f) each of said chambers containing a first flow manifold connecting said first port to one extremity of each of said fluid flow conduits;
(g) each of said catalyst-retaining sections being further defined by two transverse partitions, one connected to the upper extremity of said fluid flow conduit and to the upper perimeter of said outer catalyst-retaining screen, and the other connected to the lower extremity of said fluid flow conduit and to the lower perimeter of said outer catalyst-retaining screen;
(h) each of said chambers having a void space in open communication with said second port, and defined by the inner walls of said chamber and the outer surface of the plurality of catalyst-retaining sections contained therein, said void space serving as a second flow manifold connecting the outer surface of said plurality of catalyst-retaining sections to said second port;
(i) catalyst inlet conduits extending through the upper extremity of the uppermost chamber and connected in open communication with the upper extremity of each of the catalyst-retaining sections contained therein;
(j) inter-chamber catalyst conduits connecting the lower extremity of each catalyst-retaining section in each reaction chamber, except the catalyst-retaining sections in the lowermost chamber, in open communication with the upper extremity of a catalyst-retaining section in the next lower chamber; and,
(k) catalyst withdrawal conduits connected in open communication with the lower extremity of each of the catalyst-retaining sections contained in the lowermost chamber and extending through the lower extremity thereof, whereby catalyst particles are gravitated through said vertically spaced reaction chambers via the plurality of catalyst-retaining sections contained therein.

4,411,870

REACTOR SYSTEM

Joseph A. Kroushl, Westchester, and Arthur R. Greenwood, Niles, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 334,503, Dec. 28, 1981. This application Feb. 28, 1983, Ser. No. 470,429
Int. Cl.³ B01J 8/12
U.S. Cl. 422—188 **20 Claims**



1. A reactor system comprising, in combination:
(a) a vertically elongated confined reaction chamber having upper and lower extremities;
(b) a first port and a second port associated with the chamber, both located in one of said extremities;
(c) said chamber containing a plurality of side-by-side annular-form vertically aligned catalyst-retaining sections positioned therein;
(d) each of said catalyst-retaining sections being defined by an inner tubular-form catalyst-retaining screen coaxially disposed within an outer vertically positioned tubular-form catalyst-retaining screen, said inner catalyst-retaining screen further defining a fluid flow conduit within the inner space thereof;
(e) said chamber containing a first flow manifold connecting said first port to one extremity of each of said fluid flow conduits;
(f) each of said catalyst-retaining sections being further defined by two transverse partitions, one connected to the upper extremity of said fluid flow conduit and to the upper perimeter of said outer catalyst-retaining screen, and the other connected to the lower extremity of said fluid flow conduit and to the lower perimeter of said outer catalyst-retaining screen; and,
(g) said chamber having a void space in open communication with said second port, and defined by the inner walls of the chamber and the outer surface of the plurality of catalyst-retaining sections contained therein, said void space serving as a second flow manifold connecting the outer surface of the plurality of catalyst-retaining sections to the second port.

11. A process for the conversion of a hydrocarbon charge stock characterized in that the hydrocarbon charge stock is passed in vapor phase to a reactor system comprising, in combination:
(a) a vertically elongated confined reaction chamber having upper and lower extremities;
(b) a first port and a second port associated with the chamber, both located in one of said extremities;
(c) said chamber containing a plurality of side-by-side annular-form vertically aligned catalyst-retaining sections positioned therein;
(d) each of said catalyst-retaining sections being defined by an inner tubular-form catalyst-retaining screen coaxially disposed within an outer vertically positioned tubular-form catalyst-retaining screen, said inner catalyst-retaining screen further defining a fluid flow conduit the inner space thereof;
(e) said chamber containing a first flow manifold connecting said first port to one extremity of each of said fluid flow conduits;
(f) each of said catalyst-retaining sections being further defined by two transverse partitions, one connected to the upper extremity of said fluid flow conduit and to the upper perimeter of said outer catalyst-retaining screen, and the other connected to the lower extremity of said fluid flow conduit and to the lower perimeter of said outer catalyst-retaining screen; and,
(g) said chamber having a void space in open communication with said second port, and defined by the inner walls of the chamber and the outer surface of the plurality of catalyst-retaining sections contained therein, said void space serving as a second flow manifold connecting the outer surface of the plurality of catalyst-retaining sections to the second port.

4,411,871

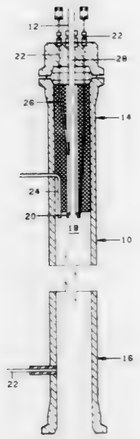
APPARATUS FOR CONVERTING COAL

Arthur F. Galbrandsen, Claremore, and Uriel M. Oko, Tulsa, both of Okla., assignors to Cities Service Company, Tulsa, Okla.

Filed Oct. 19, 1981, Ser. No. 313,044
Int. Cl.³ B01J 8/08
U.S. Cl. 422—232 **8 Claims**

1. A reactor for the rapid heating of carbonaceous materials and hydrogen and the subsequent reaction thereof, comprising:
(a) a generally cylindrical reactor shell including a distal bottom, a proximal top, and a longitudinal axis;
(b) a first inlet conduit extending through the proximal top,

and having a longitudinal axis which is common to the longitudinal axis of said reactor and having an inlet end terminating on the outside of said reactor shell and a discharge end terminating on the inside of said reactor shell, said discharge end of said first inlet conduit including a metallic covering that is relatively inert to carbon, resists forming a metal carbide with carbonaceous materials flowing through the first inlet conduit and resists adhesion of cracked carbonaceous materials flowing through the same;



(c) a second inlet conduit having an inlet end terminating on the outside of said reactor shell and a discharge end terminating on the inside of said reactor shell in proximity to said discharge end of said first inlet conduit;

(d) insulation means circumscribing said first inlet conduit on the inside of said reactor shell and lodging between the first inlet conduit and the second inlet conduit such that said insulation extends substantially to the discharge ends of said first and second conduits.

4,411,872

WATER UNIT FOR USE WITH A MEMBRANE BLOOD OXYGENATOR

Mogens L. Bramson, 35-21st Ave., San Francisco, Calif. 94121

Division of Ser. No. 774,675, Mar. 7, 1977, Pat. No. 4,168,293, and Ser. No. 42,923, May 29, 1979, Pat. No. 4,308,230. This application Dec. 16, 1981, Ser. No. 331,204

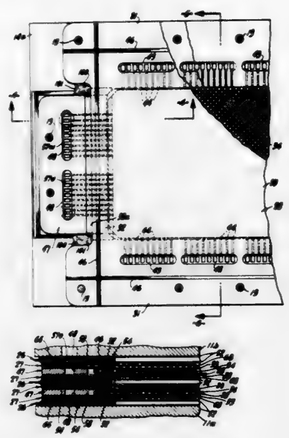
Int. Cl.³ A61M *1/03*

U.S. Cl. 422—310 **7 Claims**

1. A water unit suitable for use in a blood oxygenator of the membrane type, said water unit comprising an envelope of generally rectangular configuration having opposing sides and opposing ends and formed of flexible, water- and gas-impermeable material,

an insert at each end and within the envelope, at least one of said inserts being formed with water flow-through passage means and with lateral passage means for flow of water through the inserts and for flow of a portion of the water into, through and out of the envelope,

at least one said inserts being also formed with oxygen flow-through passage means which is so configured that it is isolated from the interior of said envelope and permits



flow of oxygen through the water unit without access to the interior of the envelope.

4,411,873

IN-LINE REGENERATION OF POLYTHIONATE POISONED ION EXCHANGE RESINS

Tsoung-Yuan Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 221,554, Dec. 31, 1980, abandoned. This application Jun. 4, 1981, Ser. No. 270,302

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—7 **3 Claims**

1. In a process for recovering uranium values from a uranium-containing ore which also contains sulfides comprising leaching said ore to form uranyl complexes and by-product polythionates, passing the leachate over an anion exchange resin, and eluting uranium from said resin, the improvement comprising

adding sulfite directly to said leachate or eluant before being passed over said resin.

4,411,874

DETOXIFICATION OF SPENT ANTIMONY HALIDE CATALYST AND RECOVERY OF ANTIMONY VALUES

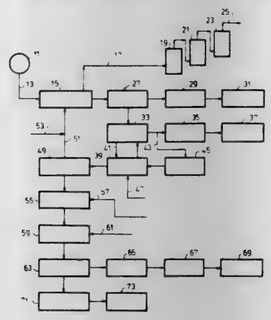
Sung K. Lee, East Amherst, N.Y., assignor to SCA Services, Inc., Boston, Mass.

Filed Apr. 29, 1982, Ser. No. 372,996

Int. Cl.³ C01B *29/00*

U.S. Cl. 423—87 **27 Claims**

19. A process for hydrolyzing to an insoluble antimony compound an antimony halide which is in a non-aqueous medium containing hydrogen fluoride, by treating the antimony



halide, in non-aqueous medium containing hydrogen fluoride, with an aqueous solution of calcium chloride.

4,411,875

DUAL ALKALI PROCESS FOR COMBUSTION GAS CLEANING

Robert S. Butler; Paul F. Claerbout, both of Effingham; Louis P. Kent, Mattoon; Randy S. Cleland, Hillsboro, all of Ill.; James H. Wilhelm, Sandy, Utah, and Richard E. Micko, Spokane, Wash., assignors to Central Illinois Public Service Company, Springfield, Ill.

Filed Mar. 25, 1982, Ser. No. 362,173

Int. Cl.³ C01B *17/00*

U.S. Cl. 423—242 **6 Claims**

1. A process for removing sulfur oxides from a sulfur oxides-containing gas stream, said process including contacting said gas stream with an aqueous alkali-metal sulfite solution reactable with said sulfur oxides thereby forming an alkali-metal bisulfite solution, contacting said alkali-metal bisulfite solution with an alkaline-earth metal hydroxide solution reactable with said alkali-metal bisulfite solution thereby reacting at least a portion of said alkali-metal bisulfite solution and forming a reaction solution including a plurality of forming precipitate crystals, said precipitate crystals including an alkaline-earth metal sulfite, said process comprising: maintaining said reaction solution at a pH of between about 11 and 13.5; and effectively agitating said reaction solution with an impeller having a tip speed between about 5 to about 15 feet per second for causing said precipitate crystals to grow to a crystal size from about 20 to about 40 microns for facilitating dewatering of said crystals.

4,411,876

PROCESS FOR THE MANUFACTURE OF TRIMAGNESIUM PHOSPHATE OCTAHYDRATE OF HIGH PURITY

Fawzy G. Sherif, Stony Point, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 30, 1982, Ser. No. 454,395

Int. Cl.³ C01B *25/26*

U.S. Cl. 423—311 **9 Claims**

1. A process for producing trimagnesium phosphate octahydrate having perfect crystal shapes, comprising adding a monobasic monomagnesium phosphate solution to a magnesium hydroxide slurry at a temperature of from about 35° C. to about 70° C. while maintaining the pH at from about 6.7 to about 6.9.

4,411,877

SYNTHESIS PROCESSES

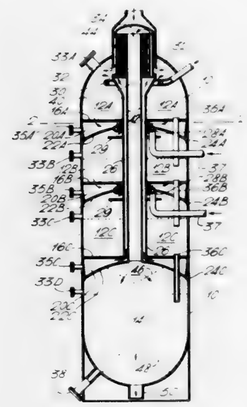
Alan Notman, Stockton-on-Tees, England, assignor to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 185,440, Sep. 9, 1980, Pat. No. 4,311,671. This application Aug. 14, 1981, Ser. No. 293,014

Claims priority, application United Kingdom, Sep. 14, 1979, 7931877

Int. Cl.³ C01C *1/04*

U.S. Cl. 423—359 **7 Claims**



2. A process of methanol synthesis utilizing a reactor, comprising the steps of:

reacting carbon oxides with hydrogen over a catalyst in the reactor at a pressure and range of 30–100 bars absolute, and a temperature and range of 160°–300° C.;

controlling the temperature by practicing said reacting step over a copper-containing catalyst in at least one catalyst bed in the reactor, the bed in the form exteriorly of a cylinder having a vertical axis and a height not greater than its overall diameter, the bed being defined on its underside by a substantially flat grid supported by a dished plate having peripheral mechanical connection to a downward extension of the cylinder walls, the disked plate being convex upwards, and the cylinder being part of the external shell of the reactor; and

producing an output from the reactor of at least about 1500 metric tons of methanol per day.

3. A process of ammonia synthesis utilizing a reactor, comprising the steps of:

reacting nitrogen and hydrogen in the reactor at a pressure in the range of 30–120 bars absolute and a temperature in the range of 350°–450° C.;

controlling the temperature while practicing said reacting step by reacting nitrogen with hydrogen in the reactor over at least one catalyst bed in the form exteriorly of a cylinder having a vertical axis and a height not greater than its overall diameter, the bed being defined on its underside by a substantially flat grid supported by a dished plate having peripheral mechanical connection to a downward extension of the cylinder walls, the disked plate being convex upwards, and the cylinder comprising a part of an internal shell separated from an external pressure-resisting shell of the reactor by a space;

circulating a relatively cold gas in the space between the reactor external pressure-resisting shell and internal shell; and

producing an ammonia output from said reactor of at least about 1500 metric tons per day.

4,411,878

PREPARATION OF MN_3O_4

Jay Y. Welsh, Catonsville, Md., assignor to Chemetals Incorporated, Glen Burnie, Md.

Filed Sep. 30, 1982, Ser. No. 430,525
Int. Cl.³ C01G 45/02
U.S. Cl. 423—605 **9 Claims**

1. A process of perparing Mn_3O_4 from a higher manganese oxide, comprising the steps of:

immersing a higher manganese oxide in a flow of a reducing gas containing methane,

heating said higher manganese oxide in said flowing reducing gas containing methane to a temperature from about 250° C. to about 550° C., and

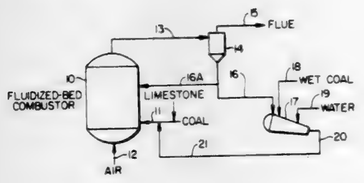
recovering Mn_3O_4.

4,411,879

METHOD FOR ENHANCING THE SULFUR CAPTURE POTENTIAL OF LIME USING A FILTER MEANS IN THE FLUE GAS

Shelton Ehrlich, Palo Alto, and Callixtus Aulisio, El Granada, both of Calif., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Aug. 13, 1981, Ser. No. 292,646
Int. Cl.³ C01F 11/02
U.S. Cl. 423—640 **11 Claims**



1. A method for improving the sulfur capture potential of lime in the fluidized bed combustion of coal and for improving the flow characteristics of the feed coal thereto comprising:

(a) introducing the gas from fluidized bed combustion of coal which contains particles comprising calcium oxide into a filtering means whereby said particles are collected;

(b) mixing said particles with wet coal at a temperature from about 200° F. to about 400° F., thereby drying said coal and hydrating said calcium oxide to form calcium hydroxide;

(c) introducing the mixture from step (b) into said fluidized bed combustor.

4. A method for improving the sulfur capture potential of lime in the fluidized bed combustion of coal and for improving the flow characteristics of the coal feed therefor comprising:

(a) contacting wet coal with gas from fluidized bed combustion of coal thereby drying said coal;

(b) conducting the moisture-containing gas resulting from step (a) into a filtering means whereby particles in said gas comprising calcium oxide are collected;

(c) exposing said collected particles to said moisture containing gas at a temperature from about 200° F. to 400° F., thereby hydrating said calcium oxide to form calcium hydroxide;

(d) introducing the particles from step (c) and the coal from step (a) into said fluidized bed combustor.

10. A method for improving the sulfur capture potential of lime in the fluidized bed combustion of coal comprising:

(a) introducing moisture-containing gas from fluidized bed combustion of coal which contains particles comprising calcium oxide into a filtering means whereby said particles are collected;

(b) retaining said collected particles on said filtering means at a temperature from about 200° F. to 400° F. for a period of time sufficient to substantially hydrate said calcium oxide to form calcium hydroxide;

(c) introducing the product from step (b) into said fluidized bed combustor.

4,411,880

PROCESS FOR DISPOSING OF CARBON FIBERS

Christopher B. Brogna, Maplewood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed May 17, 1982, Ser. No. 378,980
Int. Cl.³ D01F 11/10, 13/00
U.S. Cl. 423—659 **6 Claims**

1. A process for disposing of carbon fibers comprising subjecting said fibers to an aqueous solution of a metal hypohalogenite wherein the metal is selected from the group consisting of alkali metals, alkaline earth metals, and mixtures of the foregoing, at an elevated temperature for a period of time sufficient to substantially destroy the fibrous configuration of said fibers wherein the concentration of said metal hypohalogenite is provided in said solution in an amount sufficient to produce between about 3 and about 30 percent by weight active halogen based on the weight of the solution, wherein said aqueous solution is provided at a temperature between about 50° C. and about 150° C. and wherein said process is performed at a pressure of between about 1 atmosphere and about 6 atmospheres.

4,411,881

COMPOSITION AND METHOD FOR STABILIZING RADIOLABELED COMPOUNDS USING THIOCARBONYLATED DIETHYLENETRIAMINES

Nathan R. Tzodikov, Marshfield, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed Jul. 12, 1982, Ser. No. 397,501
Int. Cl.³ A61K 43/00, 49/00
U.S. Cl. 424—1.1 **23 Claims**

14. A method for stabilizing a radiolabeled compound said method comprising admixing with said compound a thiocarbonylated diethylenetriamine stabilizing agent.

4,411,882

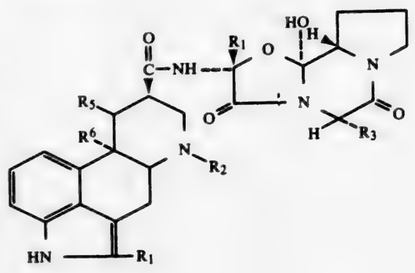
GALENICAL COMPOSITIONS

Joachim Franz, Riehen, Switzerland, and Ludwig Patt, Nuremberg, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 105,831, Dec. 20, 1979, abandoned. This application Jun. 17, 1981, Ser. No. 274,603
Claims priority, application Switzerland, Dec. 21, 1978, 13019/78; Dec. 21, 1978, 13021/79; Jan. 19, 1979, 566/79; Jan. 19, 1979, 567/79; United Kingdom, Jun. 16, 1981, 8118491
Int. Cl.³ A61K 9/32, 9/36, 9/58, 9/62
U.S. Cl. 424—33 **29 Claims**

1. A solid eneric-coated composition in unit dosage form for oral application, the core of the composition containing a therapeutically effective amount of an ergot alkaloid compound of formula I,

I



wherein

R_1 is hydrogen or halogen,

R_2 is hydrogen or C_{1-4} alkyl,

R_3 is isopropyl, sec.-butyl, isobutyl or benzyl,

R_4 is methyl, ethyl or isopropyl, and

either

R_5 is hydrogen and

R_6 is hydrogen or methoxy

or R_5 and R_6 together are an additional bond

or mixtures thereof.

and a polyalkoxyalkylene sterol ether wherein the sterol part of the polyalkoxyalkylene sterol ether is chosen from the group consisting of lanosterol, dihydrochlolesterine, cholesterine and sitosterol, campesterol and stigmasterol, and wherein the enteric coating is selected from a cellulose ester derivative, a cellulose ether, an acrylic resin or a copolymer of maleic acid and phthalic acid derivatives.

4,411,883

ANTIPERSPIRANT

Divaker B. Kenkare, South Plainfield, and Durland K. Shumway, Piscataway, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 329,429, Feb. 5, 1973, abandoned. This application Jun. 6, 1975, Ser. No. 584,324
Int. Cl.³ A61K 7/34, 9/00
U.S. Cl. 424—47 **10 Claims**

1. A dry anhydrous aerosol antiperspirant composition in a valved, normally closed pressurized dispensing container which comprises 0.2 to 12% by weight of an astringent powder comprising at least one astringent, antiperspirant acid-reacting salt of a member of the group cohaving a particle size of less than about 100microns 0.3 to 50% of Propylene-1,2-dipelargonate, and from about 60 to 98% of a non-toxic gas-forming liquid propellant.

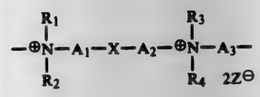
4,411,884

COSMETIC AGENTS BASED ON POLYCATIONIC POLYMERS, AND THEIR USE IN COSMETIC COMPOSITIONS

Bernard Jacquet, Antony; Gérard Lang, Epinay-sur-Seine; Alain Malaval, Aulnay-sous-Bois; Serge Forestier, Claye Souilly, and Do Le Trung, Drancy, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Dec. 17, 1980, Ser. No. 217,411
Claims priority, application France, Dec. 21, 1979, 79 31431
Int. Cl.³ A61K 7/06, 7/09, 7/11
U.S. Cl. 424—47 **39 Claims**

1. A hair-shaping cosmetic composition comprising a solution in an aqueous, alcoholic or hydroalcoholic carrier of a hair-shaping amount of a quaternized polymer containing units of the formula

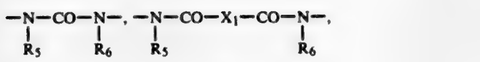


wherein

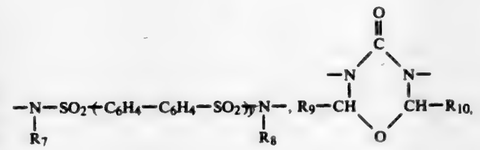
R_1, R_2, R_3 and R_4 each independently represent a hydrocarbon group, or at least one of the pairs R_1, R_2 and R_3, R_4 represent together with the nitrogen atom to which it is attached a heterocycle optionally containing an oxygen or sulfur heteroatom;

A_1 and A_2, each independently, represent linear or branched alkylene or arylene, substituted or not, containing up to 20 carbon atoms;

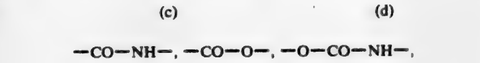
X represents a bivalent group of the formula



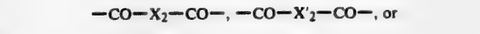
(a) (b)



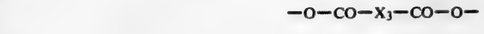
(c) (d)



(e) (f) (g)



(h) (i)



(j)

wherein

y is equal to 0 or 1,

R_5, R_6, R_7, R_8, R_9 and R_{10} represent hydrogen or lower alkyl,

X_1 represents alkylene, alkylene including an —S—S— group, alkenylene, arylene, diaminoalkylene, diaminoarylene, dioxyyalkylene, dioxyarylene or polyoxyalkylene, or X_1 represents a direct covalent bond,

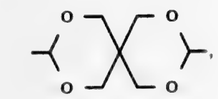
X_2 represents diaminoalkylene, dioxylkylene or polyoxyalkylene bivalent group,

X_2' represents dithioalkylene,

X_3 represents alkylene, cycloalkylene, arylene, diaminoalkylene, diaminocycloalkylene or diaminoarylene,

A_3 represents $—B_1—Y—B_2—$, wherein B_1 and B_2 represent alkylene or arylene and Y has the same meaning as X above, or

Y represents



or

A_3represents linear or branched alkylene, substituted by one or more =O groups, or linear or branched alkylene interrupted by at least one heteroatom selected from oxygen, sulfur or nitrogen, or arylene, or

A_3 represents

$$—B_3—Y_1—B_4$$

wherein B_3 and B_4 represent arylene and Y_1 represents linear or branched alkylene, or linear or branched alkylene substituted by at least one —OH or =O group, or Y_1 represents a heteroatom selected from oxygen, sulfur or nitrogen, or

A_3 represents

(a) $—E—O—D)_{z'}O—E—$ or

(b) $—E—O—G—O—E—$, wherein

z' is a number ranging from 2 to 600,

E represents alkylene having 1-4 carbon atoms or $—CH_2—CHOH—CH_2—$,

D represents a bivalent hydrocarbon group containing 1-5 carbon atoms, and

G represents alkylene, cycloalkylene, arylene or aralkylene, or

when X is other than —CO—X_2—CO—, A_3 represents linear or branched alkylene or hydroxyalkylene, alkenylene or hydroxyalkenylene, cycloalkylene, or cycloalkenylene, containing up to 20 carbon atoms;

and $z^{\ominus}$ represents a halide anion;

with the proviso that when X represents —NH—CO—NH, A_3 represents —E—(O—D)$_z$—O—E— or —B_1—Y—B_2, wherein Y has the meaning given for X above except for the value —NH—CO—NH, or A_3 represents —E—O—G—O—E— wherein E and G have the meanings given above with the proviso that E and G are not simultaneously alkylene.

4,411,885

VITAMIN E OIL BASED DENTIFRICE

Ronald R. Barels, 1755 Kennington, Leucadia, Calif. 92024, and Daniel J. Ghinazzi, 1374 Mossy Ct., Concord, Calif. 94521

Continuation-in-part of Ser. No. 242,129, Mar. 9, 1981, abandoned, which is a division of Ser. No. 192,465, Sep. 30, 1980, Pat. No. 4,292,304. This application Mar. 22, 1982, Ser. No. 360,140

Int. Cl.³ A61K *7/18, 31/355*

U.S. Cl. 424—52 **11 Claims**

1. A vitamin E oil based dentifrice composition formed as an edible tablet adapted to be placed in a user's mouth and readily crushed, said tablet having

an abrasive agent in an amount of from about 3 weight percent to about 35 weight percent with respect to said tablet,

a quantity of vitamin E, said plurality of vitamin E in an amount of about 10 weight percent to about 85 weight percent with respect to said tablet,

a surfactant agent in a sufficient amount of said tablet to provide sudsing when said tablet is crushed and then agitated in the presence of an aqueous solution, and,

at least one excipient component.

4,411,886

STABILIZED COSMETIC COMPOSITIONS

Hans U. Hostettler, Arlesheim, and Horst Beyer, Basel, both of Switzerland, assignors to Richardson-Vicks Inc., Wilton, Conn.

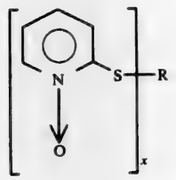
Continuation of Ser. No. 965,003, Nov. 30, 1978, abandoned. This application Feb. 11, 1980, Ser. No. 120,208

Claims priority, application Switzerland, Dec. 9, 1977, 1511277

Int. Cl.³ A61K *7/06, 31/44, 31/00*

U.S. Cl. 424—70 **10 Claims**

1. A cosmetic preparation containing, as an active ingredient, an effective amount of a compound represented by the formula



wherein R is sodium, potassium or ammonium and x is 1 or R is aluminum and x is 3 said preparation containing an amount of N-acetylcysteine sufficient to stabilize said compound against photochemical oxidation or decomposition, said N-acetylcysteine being present in from about 0.5 to about 8 times the amount of said compound.

4,411,887

USE OF ALKYLENE OXIDE COPOLYMERS AS EMOLLIENTS IN COSMETIC PREPARATIONS

Karl Seibert, Duren; Heinz Praetorius, Lendersdorf, and Gunter Poppel, Duren-Niederau, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 37,980, May 11, 1979, abandoned. This application Aug. 27, 1981, Ser. No. 296,688

Claims priority, application Fed. Rep. of Germany, May 18, 1978, 2821654

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 **16 Claims**

1. A skin contacting composition which is a water-in-oil emulsion comprising, in addition to an active ingredient or decorative cosmetic material, an emollient which is a copolymer of short-chain alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and a mixture of ethylene oxide and propylene oxide with a long-chain alkylene oxide containing 6 to about 30 carbon atoms, said copolymer containing a weight ratio of short-chain alkylene oxide moieties to long-chain alkylene oxide moieties in the copolymer of about 5:95 to about 70:30.

4,411,888

COMPOSITION OF A NOVEL IMMUNOGEN FOR PROTECTION AGAINST DIARRHEAL DISEASE CAUSED BY ENTEROTOXIGENIC *ESCHERICHIA COLI*

Frederick A. Klipstein, Rochester; Richard E. Engert, Webster, and John D. Clements, Pittsford, all of N.Y., assignors to The University of Rochester, Rochester, N.Y.

PCT No. PCT/US82/00763, § 371 Date Jun. 3, 1982, § 102(e) Date Jun. 3, 1982, PCT Pub. No. WO83/00018, PCT Pub. Date Jan. 6, 1983

Continuation-in-part of Ser. No. 276,409, Jun. 22, 1981, abandoned. This PCT application Jun. 3, 1982, Ser. No. 403,751

Int. Cl.³ A61K *39/108, 39/106*

U.S. Cl. 424—92 **18 Claims**

1. A composition for immunization of mammals against diarrheal disease comprising the product provided by the process which comprises reacting heat-stable (ST) enterotoxin of *Escherichia coli* with a reactant selected from the group consisting of heat-labile (LT) enterotoxin of *Escherichia coli*, the B subunit of said heat labile (LT) enterotoxin, cholera toxin (CT) holotoxin of *Vibrio cholerae*, and the B subunit of said cholera toxin (CT) holotoxin at a molar ratio of ST to reactant of at least 1 to 1 in the presence of a conjugating reagent.

4,411,889

SELF-GELLING LIQUID COMPOSITION FOR TOPICAL APPLICATION IN THE ORAL CAVITY

Vera B. Caslavsky, Lexington; Poul Gron, Needham, both of Mass., and Howard Fine, Montreal, Canada, assignors to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed May 24, 1982, Ser. No. 381,530

Int. Cl.³ A61K *7/18, 33/16*

U.S. Cl. 424—151 **25 Claims**

1. A fluoride-containing, self-gelling aqueous composition for topical application on tooth surfaces in the oral cavity for the prevention of dental caries, which composition comprises in combination:

(a) a low-viscosity, liquid, aqueous solution of a monomer or prepolymer ethyl orthosilicate in an amount to provide for the conversion of the liquid to a gel state;

(b) a water-soluble fluoride compound in an amount to inhibit or prevent dental caries on topical application of the composition; and

(c) a gelation agent in an amount to provide in situ self-gelation of the composition from a low-viscosity liquid composition to a gel state, on topical application of the liquid composition onto the surface of the teeth in a patient, the gelation from a liquid to a gel state occurring in a time period of about 1 hour or less after mixing by hydrolysis of the silicate.

4,411,890

SYNTHETIC PEPTIDES HAVING PITUITARY GROWTH HORMONE RELEASING ACTIVITY

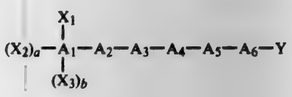
Frank A. Momany, Memphis, Tenn., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 254,035, Apr. 14, 1981, abandoned, which is a continuation of Ser. No. 165,163, Jul. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 85,824, Oct. 17, 1970, abandoned. This application Dec. 28, 1981, Ser. No. 335,011

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **48 Claims**

1. A peptide having a formula



(I)

wherein

X_1, X_2, and X_3 are selected from a group consisting of —R, —OR, RC(O)— wherein R is selected from a group consisting of hydrogen and straight chain and branched chain alkyl groups containing 1–6 carbon atoms;

a and b are 0 or 1, provided that a and b are 0 when A_1 is a desamino residue;

A_1 and A_4 are selected from a group consisting of His, Arg, Lys, α-Naphth, β-Naphth, IQl, Tyr, Trp, Phe, homologues and analogues thereof, and, with respect to A_1, the desamino forms thereof;

A_2 and A_5 are selected from a group consisting of D-His, D-Arg, D-Lys, D-α-Naphth, D-β-Naphth, D-Iql, D-Tyr, D-Trp, D-Phe, and homologues and analogues thereof;

A_3 is selected from a group consisting of Gly, Ala, Val, Leu, Ile, Pro, Ser, Thr, Met, Asp, Glu, Asn, Gln, His, D-Ala, D-Val, D-Leu, D-Ile, D-Pro, D-Ser, D-Thr, D-Met, D-Asp, D-Glu, D-Asn, D-Gln, D-His, and homologues and analogues thereof;

A_6 is selected from a group consisting of amino acids of the L- and D-configuration, homologues and analogues thereof, and the descarboxy forms thereof; and

Y is selected from a group consisting of C-terminal and descarboxy alpha-carbon substitutions;

and the pharmaceutically acceptable salts thereof.

4,411,891

CATIONIZED DEXTRAN AND SALTS THEREOF AND MANUFACTURING PROCESS AND UTILIZATION THEREOF

Akihiro Mizutani, Nagoya, and Kimio Hirose, Gifu, both of Japan, assignors to Meito Sangyo Kabushiki Kaisha, Aichi, Japan

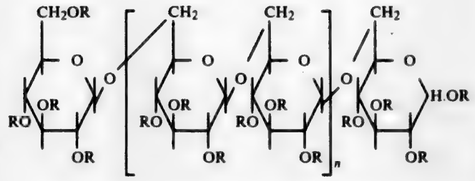
Filed Jun. 16, 1981, Ser. No. 274,067

Claims priority, application Japan, Jun. 16, 1980, 55-80280; Oct. 20, 1980, 55-145714

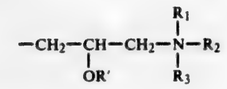
Int. Cl.³ A61K *31/70, 31/715;* **C08B** *37/02*

U.S. Cl. 424—180 **8 Claims**

6. A hair or skin cosmetic composition comprising (1) a hair or skin cosmetic base and (2) a cationized dextran of the formula



wherein R represents a group selected from the class consisting of a hydrogen atom, hydroxy lower alkyl groups, and quaternary nitrogen-containing groups of the formula



in which R_1, R_2 and R_3 each represent a lower alkyl group, and R′ represents a hydrogen atom or a hydroxy lower alkyl group, and n is a positive number of from 1 to 8,000; two or more R groups may be identical or different provided that at a least one of R groups is the quaternary nitrogen-containing group of the above formula;

or its salt acceptable for hair or skin cosmetics.

4,411,892

TYLOSIN MACROLIDE ANTIBIOTICS FROM STREPTOMYCES

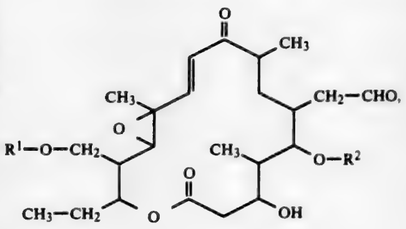
Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

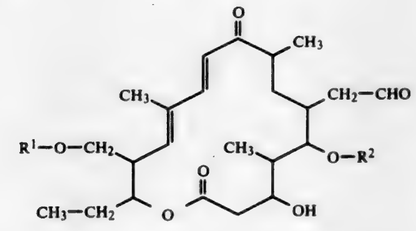
Filed May 3, 1982, Ser. No. 374,223

Int. Cl.³ A61K *31/71;* **C07H** *17/08;* **C12P** *19/62*

U.S. Cl. 424—181 **5 Claims**

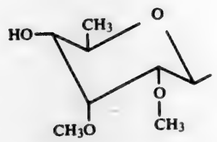
1. A compound selected from the group consisting of:



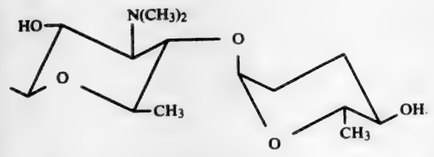


and the pharmaceutically-acceptable acid addition salts thereof;

wherein R^1 is the group of the formula



and R^2 is the group of the formula



4. A method of treating a bacterial infection in a mammalian subject, which comprises administering to said subject an antibacterially effective amount of a compound according to claim 1.

4,411,893

TOPICAL MEDICAMENT PREPARATIONS

Dee L. Johnson, Woodbury; Therese A. Senta, Minneapolis, and Larry M. Sirvio, Cottage Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 292,809, Aug. 14, 1981, abandoned, which is a continuation of Ser. No. 187,089, Sep. 15, 1980, abandoned. This application Sep. 24, 1982, Ser. No. 422,891

Int. Cl.³ A61K *31/71, 31/13*

U.S. Cl. 424—181 **8 Claims**

1. A composition for topical application to animal skin comprising:

(1) an effective amount of a therapeutic agent selected from the group consisting of erythromycin, benzoyl peroxide, hydrocortisone, tetracycline, 5-fluorouracil, and propranolol;

(2) about 0.1 to 70 percent by weight of a water-soluble tertiary amine oxide; and

(3) at least 1 molecule of water for every molecule of said amine oxide; said composition exhibiting at least 50 percent greater penetration of said therapeutic agent through mouse skin in 24 hours than a control composition without said amine oxide.

4,411,894

PHARMACEUTICAL PREPARATIONS

Jürg Schrank, Riehen, and Hans Steffen, Arisdorf, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 159,441, Jun. 13, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,587

Claims priority, application Switzerland, Jun. 22, 1979, 5863/79

Int. Cl.³ A61K *31/33, 31/685*

U.S. Cl. 424—199 **8 Claims**

1. A pharmaceutical composition suitable for parenteral administration of fat-soluble pharmaceutically-active materials which comprises pharmaceutical adjuvants, a fat-soluble pharmaceutically-active material selected from the group consisting of a benzodiazepine or quinolinemethanol derivative, a lecithin of vegetable or animal origin and a sugar component selected from the group consisting of monosaccharides and disaccharides.

4,411,895

METHOD FOR CONTROLLING BLUETONGUE DISEASE IN SHEEP

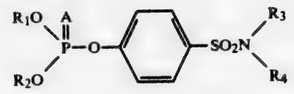
William G. Anderson, Rte. 1, Box 350, Ontario, Oreg. 97914

Filed Mar. 31, 1982, Ser. No. 363,828

Int. Cl.³ A61K *31/66*

U.S. Cl. 424—211 **3 Claims**

1. A method for preventing the transmission of bluetongue virus to sheep from the Culicoides gnat which comprises administering to the animal a chemotherapeutic dosage of a compound of the formula:



wherein R_1 and R_2 are lower alkyl of from 1 to 4 carbon atoms, A is a member of the group consisting of oxygen and sulfur atoms, and R_3 and R_4 are members of the group consisting of hydrogen and lower alkyl, which dosage is administered directly to the skin of the animal.

4,411,896

RIFAMYCINS, THEIR COMPOSITIONS AND USE AS ANTIBIOTICS

Thomas Schupp, Möhlin; Peter Traxler, Allschwil, and Jakob Nüesch, Arlesheim, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 270,184, Jun. 3, 1981, Pat. No. 4,376,166, which is a division of Ser. No. 112,898, Jan. 17, 1980, Pat. No. 4,298,692. This application Jul. 12, 1982, Ser. No. 397,379

Int. Cl.³ A61K *31/395;* C07D *491/08*

U.S. Cl. 424—244 **5 Claims**

5. A method for combating infectious bacterial diseases in warm-blooded animals by administration of an effective amount of 3-hydroxyrifamycin S, 3,31-dihydroxyrifamycin S, 1-desoxy-1-oxarifamycin S, singly or together in any combination, alone or in the form of a pharmaceutical preparation.

4,411,897

CRYSTALLINE SALTS

Riccardo Scartazzini, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,295

Claims priority, application Switzerland, Feb. 1, 1980, 836/80

Int. Cl.³ A61K *31/545;* C07D *501/20*

U.S. Cl. 424—246 **6 Claims**

1. Crystalline 7β-[2-(2-amino-4-thiazolyl)-2-methoxyiminoacetamido]-3-cephem-4-carboxylic acid pivaloyloxymethyl ester hydrochloride in syn-form.

2. Crystalline 7β-[2-(2-amino-4-thiazolyl)-2-methoxyiminoacetamido]-3-cephem-4-carboxylic acid pivaloyloxymethyl ester hydrobromide in syn-form.

4,411,898

7-[2-OXYIMINO-2-(2-AMINOTHIAZOL-4-YL)ACETAMIDO]-3-(1-CARBOXYALKYL-1H-TETRAZOL-5-YL)THIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Kawanishi, and Masayoshi Murata, Mino, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

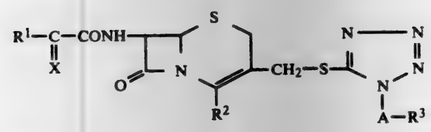
Division of Ser. No. 79,796, Sep. 28, 1979, Pat. No. 4,288,436, which is a continuation-in-part of Ser. No. 891,289, Mar. 29, 1978, abandoned. This application Apr. 29, 1981, Ser. No. 258,612

Claims priority, application Japan, Apr. 13, 1977, 15378/77; United Kingdom, Jan. 23, 1978, 2650/78

Int. Cl.³ A61K *31/545*

U.S. Cl. 424—246 **16 Claims**

1. 3-7-Disubstituted-3-cephem-4-carboxylic compounds of the formula:



wherein

R^1 is thiazol-4-yl having an amino or a protected amino at 2 position;

R^2 and R^3 are each carboxy or protected carboxy;

X is isopropoxyimino, lower alkenyloxyimino, cyclo(lower-)alkoxyimino, phenyl(lower)alkoxyimino or lower alkyl-phenyl(lower)alkoxyimino; and

A is lower alkylene; and,

pharmaceutically acceptable salts thereof.

8. A pharmaceutical antibacterial composition comprising an effective amount of a compound of claim 1 in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,411,899

SUBSTITUTED DERIVATIVES OF AMINO ALKANE DIOLS AS GASTRIC SECRETION INHIBITORS

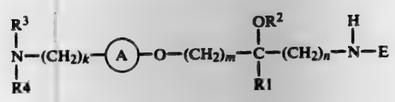
John J. Baldwin, Gwyneed Valley, and William C. Lumma, Jr., Pennsburg, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 21, 1981, Ser. No. 332,691

Int. Cl.³ C07D *285/10;* A61K *31/425, 31/535*

U.S. Cl. 424—246 **12 Claims**

1. A compound having the formula:



wherein

R^1 is hydrogen, loweralkyl;

R^2 is hydrogen, loweralkyl, benzyl, loweralkanoyl, loweralkyoxyloweralkyl, benzyloxyloweralkyl;

R^3 and R^4 are independently hydrogen, loweralkyl, cycloloweralkyl of C_3–C_8, cycloalkylalkyl of C_3–C_8, or R^3 and R^4 may be joined to form, together with the nitrogen to which they are attached, $-(CH_2)_rX(CH_2)_{r'}-$ wherein X can be O, S, CH_2, or NR^5 wherein R^5 is hydrogen, loweralkyl; loweralkanoyl;

r and r' are independently 1, 2, or 3 provided that when r or r' is 1, X is CH_2;

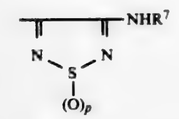
n is 1 or 2;

m is 1 or 2;

k is 0 to 4;

Ⓐ is a substituted phenylene wherein the substituent can be hydrogen, halo, cyano, loweralkoxy, loweralkyl;

E is



wherein

R^7 is hydrogen, loweralkyl, substituted loweralkyl wherein the substituent can be hydroxy, alkoxy; loweralkynyl; loweralkenyl or loweralkanoyl; aryl; substituted aryl wherein the substituent can be halo, loweralkoxy, loweralkyl; heteroaryl;

p is 1 or 2; and,

the physiologically acceptable, non-toxic salts thereof.

10. A method for suppressing gastric acid secretions in an animal with excess gastric acid secretions which comprises administering to said animal an effective antisecretory amount of a compound of claim 1.

4,411,900

BENZHYDRYLPIPEROZINYL THIAZOLE DERIVATIVES AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Ikuo Ueda, Toyonaka; Daizou Morino, Matsubara, and Koichi Takimoto, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 11, 1980, Ser. No. 215,372

Claims priority, application United Kingdom, Jan. 3, 1980, 8000162

Int. Cl.³ C07D *295/02;* A61K *31/495*

U.S. Cl. 424—250 **18 Claims**

1. A compound selected from the group consisting of 2-acetamido-4-(4-benzhydrylpiperazin-1-ylmethyl)thiazole, 2-acetamido-4[2-(4-benzhydrylpiperazin-1-yl)ethyl]thiazole, 2-acetamino-4-[2-(4-(4-chlorobenzhydryl)-piperazin-1-yl)ethyl]-thiazole, 2-acetamido-4-[3-(4-benzyhydrylpiperazin-1-yl)-propyl]thiazole, 2-acetamido-5-[2-(4-benzhydrylpiperazin-1-yl)ethyl]-4-methylthiazole, 4-(4-benzhydrylpiperazin-1-ylmethyl)-2-[N-(N,N-dimethylamino)-methyleneamino]thiazole, 2-amino-4-[4-benzhydrylpiperazin-1-ylmethyl]thiazole, 2-amino-4-[3-(4-benzhydrylpiperazin-1-yl)propyl]thiazole, 4-[4-benzhydrylpiperazin-1-ylmethyl]-2-methanesulfonamido-thiazole, 4-(4-benzhydrylpiperazin-1-ylmethyl)-2-(N,N-dimesylamino)-thiazole, 4-(4-benzhydrylpiperazin-1-ylmethyl)-2-ethanesulfonamido-thiazole, 4-[4-benzhydrylpiperazin-1-ylmethyl]-2-propanesulfonamidothiazole, 4-[2-(4-benzhydrylpiperazin-1-yl)ethyl]-2-methanesulfonamido-thiazole, 4-[3-(4-benzhydrylpiperazin-1-yl)propyl]-2-methanesulfonamido-thiazole, and 4-[3-(4-benzhydrylpiperazin-1-yl)propyl]-2-ethanesulfonamido-thiazole, and pharmaceutically acceptable salts thereof.

4,411,901

BENZISOTHIAZOLE AND BENZISOXAZOLE PIPERAZINE DERIVATIVES

Davis L. Temple, Jr., Evansville, and Joseph P. Yevich, Newburgh, both of Ind., assignors to Mead Johnson & Company, Evansville, Ind.

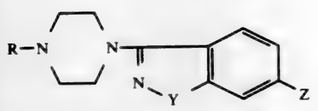
Filed Dec. 23, 1981, Ser. No. 333,830

Int. Cl.³ C07D *401/00, 413/00;* A61K *31/41*

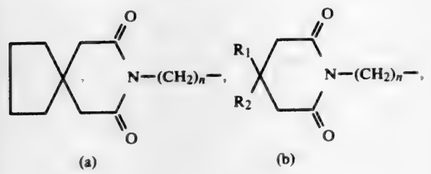
U.S. Cl. 424—250 **12 Claims**

1. A compound of Formula (I)

I



wherein R represents the radical



(a) (b)

wherein

n is 3 or 4,

R_1 and R_2 are independently lower alkyl of 1 to 4 carbon atoms,

Y is oxygen or sulfur,

Z is hydrogen or halogen

or a pharmaceutically acceptable non-toxic acid addition salt thereof.

4,411,902

SALTS OF ENDO-8-METHYL-8-SYN-ALKYL-8-AZONIABICYCLO-[3.2.1]-OCTANE-3-ALKYLCARBOXYLATES, AND THERAPEUTIC COMPOSITIONS CONTAINING THEM

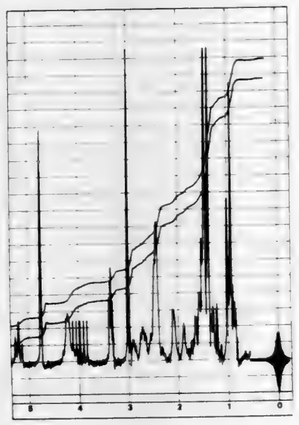
Virgilio Bernareggi, Cologno Monzese; Roberto Margutti, Milan; Fausto Bonifacio, Milan, and Maurizio Fano, Bresso, all of Italy, assignors to Valeas S.p.A., Milan, Italy

Filed Jun. 3, 1981, Ser. No. 270,008

Claims priority, application Italy, Jun. 18, 1980, 22843 A/80

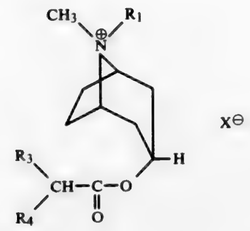
Int. Cl.³ C07D *451/10;* A61K *31/46*

U.S. Cl. 424—265 **5 Claims**



1. Endo-8-methyl-8-syn-alkyl-8-azoniabicyclo-[3.2.1]-octane-3-alkylcarboxylate salts of formula:

(1)



in which:

R_1 is a linear or branched alkyl radical of 2-5 C atoms, a cycloalkyl radical of 3-6 C atoms, or a benzyl radical

R_3 and R_4, which can be the same or different, are alkyl radicals of 1-6 C atoms

X is a halide ion.

5. A method of treating spasms comprising administering to a patient suffering from spasms a spasmolytically effective amount of a pharmaceutically acceptable acid addition salt of an endo-8-methyl-8-syn-alkyl-8-azoniabicyclo-(3.2.1)-octane-3-alkylcarboxylate, wherein the alkyl of 8-syn-alkyl is a linear or branched alkyl radical of 2-5 C atoms, a cycloalkyl radical of 3-6 C atoms, or a benzyl radical.

4,411,903

4-[(MONOSUBSTITUTED-ALKYL)AMINO]BENZOIC ACIDS AND ANALOGS AS HYPOLIPIDEMIC AND ANTIATHEROSCLEROTIC AGENTS

Robert G. Shepherd, Selbyville, Del., assignor to American Cyanamid Company, Stamford, Conn.

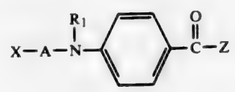
Division of Ser. No. 176,890, Aug. 11, 1980, Pat. No. 4,311,846, which is a division of Ser. No. 881,456, Feb. 27, 1978, Pat. No. 4,245,097. This application Oct. 22, 1981, Ser. No. 313,853

Int. Cl.³ A61K *31/445, 31/40*

U.S. Cl. 424—267 **14 Claims**

1. The method of inhibiting atherosclerotic lesion development in a mammal comprising the administration of an effective lesion-development inhibiting amount of a compound of the formula:

I



wherein

X is selected from the group consisting of chloro, bromo, and iodo;

A is an unbranched or branched saturated alkylene group, represented by the formula C_nH_{2n} with n being an integer from 7 to 18 inclusive;

R_1 is hydrogen; and Z represents the atoms necessary to complete a pyrrolidino or piperidino radical;

and the pharmaceutically acceptable non-toxic acid-addition and cationic salts thereof to said mammal.

4,411,904

DIPHENYLPROPANAMINES, COMPOSITIONS THEREOF AND USE THEREOF

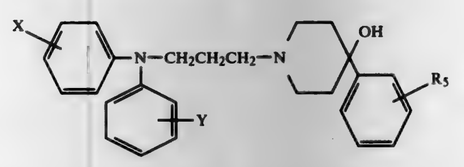
Ian C. Pattison, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 268,502, May 29, 1981, Pat. No. 4,364,954, which is a division of Ser. No. 111,043, Jan. 10, 1980, Pat. No. 4,292,321, which is a continuation of Ser. No. 42,175, May 24, 1979, abandoned. This application Jun. 14, 1982, Ser. No. 388,343

Int. Cl.³ A61K *31/445;* C07D *211/52*

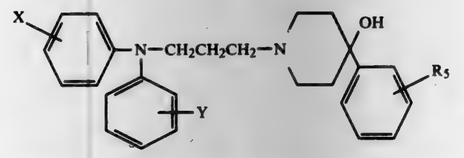
U.S. Cl. 424—267 **5 Claims**

1. A compound of the formula



wherein X and Y are independently hydrogen, halogen, lower alkyl, or nitro; R_5 is hydrogen, halogen, lower alkyl or trifluoromethyl; and the non-toxic, pharmaceutically acceptable salts thereof.

5. A method of treating schizophrenia in mammals comprising the administration of an effective amount of a compound having the formula:



wherein X and Y are independently hydrogen, halogen, lower alkyl, or nitro; R_5 is hydrogen, halogen, lower alkyl or trifluoromethyl; and the non-toxic, pharmaceutically acceptable salts thereof.

4,411,905

ANTISECRETORY 1,2,4-TRIAZOLE-3-THIOLS

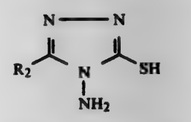
William L. Albrecht, and Winton D. Jones, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., Cincinnati, Ohio

Continuation of Ser. No. 143,456, Apr. 24, 1980, abandoned, which is a division of Ser. No. 71,814, Sep. 4, 1979, Pat. No. 4,230,715. This application Jun. 15, 1981, Ser. No. 273,531

Int. Cl.³ A61K *31/41;* C07D *249/12*

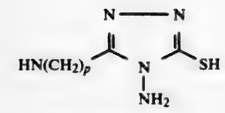
U.S. Cl. 424—269 **2 Claims**

1. A pharmaceutical composition comprising in unit dosage form about 5-300 mg. of a compound of the formula



wherein R_2 is $—CH_2OH$ or $—(CH_2)_pNH_2$; and p is 1-5, or a pharmaceutically acceptable acid addition salt thereof and a significant amount of a pharmaceutically acceptable carrier.

2. A compound having the formula



wherein p is 1-5; and the pharmaceutically acceptable acid addition salts thereof.

4,411,906

(5R,6S,8R)-6-(1-HYDROXYETHYL)-2-(2-FLUOROETHYL-THIO)-PENEM-3-CARBOXYLATES

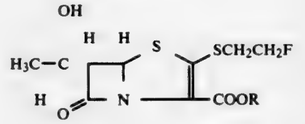
Viyyoor M. Girijavallabhan, Parsippany; Stuart W. McCombie, West Orange, and Ashit K. Ganguly, Upper Montclair, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 25, 1981, Ser. No. 324,931

Int. Cl.³ C07D *499/00;* A61K *31/425*

U.S. Cl. 424—270 **21 Claims**

1. A compound of the formula:



wherein R is a member of the group consisting of hydrogen, a pharmaceutically acceptable cation and a metabolisable ester group.

4,411,907

ANTIINFLAMMATORY 3H-NAPHTHO(1,2-D)IMIDAZOLES

Emilio Toia, Milan, Italy, assignor to Gruppo Lepetit, S.p.A., Milan, Italy

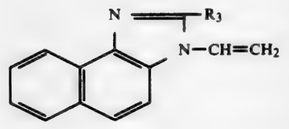
Filed May 22, 1981, Ser. No. 266,228

Claims priority, application Italy, Jun. 6, 1980, 22601 A/80

Int. Cl.³ A61K *31/415;* C07D *235/02, 235/18*

U.S. Cl. 424—273 B **4 Claims**

1. A 3H-naphtho[1,2-]imidazole derivative having the formula



wherein R_3 represents a phenyl radical optionally substituted with 1 to 3 groups independently selected from (C_1-C_4) alkyl and (C_1-C_4) alkoxy; or a salt thereof with a pharmaceutically acceptable acid.

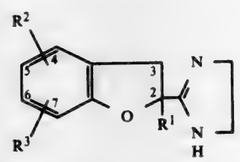
3. An antiinflammatory or analgesic composition in dosage unit form which comprises from about 50 to about 1000 mg of a compound of claim 1, or an acid addition salt thereof, in admixture with a pharmaceutical carrier.

4,411,908
IMIDAZOLINE DERIVATIVES AS PRESYNAPTIC α_2-ADRENORECEPTOR ANTAGONISTS

Christopher B. Chapleo, Swanland, and Peter L. Myers, Princes Risborough, both of England, assignors to Reckitt & Colman Products Limited, London, England

Filed Jul. 13, 1982, Ser. No. 397,686
Claims priority, application United Kingdom, Jul. 28, 1981, 8123271
Int. Cl.³ A61K *31/415*; C07D *405/04*
U.S. Cl. 424—273 R 13 Claims

1. A compound of the formula



(I)

wherein R^1 is hydrogen or alkyl C_{1-6}; R^2 is hydrogen, methyl, chloro, bromo or fluoro; R^3 is hydrogen, methyl, hydroxy, methoxy, fluoro, chloro or bromo; or a non-toxic salt thereof.

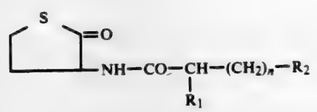
12. A method of treating depression which comprises administering to a human an antidepressant effective amount of a compound as claimed in claim 1 or a non-toxic salt thereof.

4,411,909
[(2-OXO-3-TETRAHYDROTHIENYLCARBAMOYL)-ALKYLTHIO] ACETIC ACIDS, THEIR SALTS AND ESTERS, A PROCESS FOR PREPARATION THEREOF AND THE PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

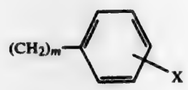
Jacques Gonella, Zollikon, Switzerland, assignor to Refarmed, Recherches Pharmaceutiques et Medicales, S.A., Switzerland

Filed Mar. 15, 1982, Ser. No. 358,370
Claims priority, application France, Mar. 19, 1981, 8105496
Int. Cl.³ A61K *31/38*; *C07D 333/16*
U.S. Cl. 424—275 8 Claims

1. [(2-oxo-3-tetrahydrothienylcarbamoyl)-alkylthio]-acetic acid, salt or ester, fof formula:



in which n represents 0 or 1 and one of the substituents R_1 and R_2 represents a hydrogen atom or a methyl group and the other represents a $-S-CH_2-COOR_3$ group, where R_3 is a hydrogen atom or an alkali metal or a group R_3', R_3' being a lower alkyl or a group:



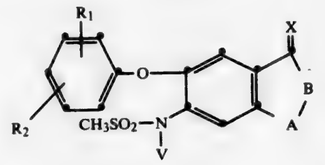
where m represents 0 or 1 and X represents a hydrogen atom, or a lower alkyl, lower alkoxy or nitro group.

4,411,910
BENZOFURAN DERIVATIVES AND THEIR PHARMACEUTICAL USE

Eberhard Schroeder, deceased, late of Berlin, Fed. Rep. of Germany (by Kirsten Schroeder, Christian Schroeder, legal representatives); Manfred Lehman, and Clemens Rufer, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,344
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1981, 3110009
Int. Cl.³ A61K *31/34*, *31/365*; C07D *307/79*, *307/88*
U.S. Cl. 424—279 18 Claims

1. A benzofuran derivative of the formula



wherein

V is hydrogen or acetyl,

X is oxo or two hydrogen atoms,

R_1 and R_2 each independently is hydrogen, fluorine, or chlorine, and

—A—B— is $-O-CH_2-$ or $-CH_2-O-$.

18. A method of treating inflammation in a mammal comprising administering an antiinflammatorily effective amount of a compound of claim 1 to the mammal.

4,411,911
METHOD OF TREATING HYPERLIPIDEMIA AND INFLAMMATION WITH SULFONATE DERIVATIVES

Setsuro Fujii, Tovonaka; Toshihiro Hamakawa, Naruto; Kazuo Ogawa, Tokushima; Yoshiyuki Muranaka, Tokushima, and Sadao Hashimoto, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Limited, Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 225,979
Claims priority, application Japan, Jan. 31, 1980, 55-11214; Jul. 11, 1980, 55-95299; Sep. 30, 1980, 55-137026; Dec. 19, 1980, 55-180852
Int. Cl.³ A61K *31/35*, *31/34*, *31/255*
U.S. Cl. 424—283 4 Claims

1. A method of treating a patient having hyperlipidemia, said method comprising administering to said patient a therapeutically effective amount of a compound of the formula

$$R_1SO_3CH_2CO(CH_2)_nR_2$$

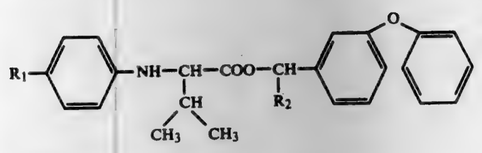
wherein R_1 is alkyl having 1 to 4 carbon atoms, alkoxyalkyl having 2 to 6 carbon atoms, phenylalkyl, cycloalkyl or aryl (which is phenyl or naphthyl) with or without a substituent (which is alkyl having 1 to 12 carbon atoms, lower alkoxy, halogen, hydroxyl, carboxyl, acetamido, nitro or ethylenedioxymethyl), R_2 is alkyl having 1 to 15 carbon atoms, alkenyl having 2 to 15 carbon atoms, halogen, hydroxyl, lower alkoxy, lower alkoxycarbonyl, C_2 to C_6 acyloxy, carbobenzoxyamino, cycloalkyl having 3 to 6 carbon atoms, cyclic alkylether having 2 to 5 carbon atoms or cyclic alkenylether having 2 to 5 carbon atoms, or phenyl or naphthyl with or without lower alkyl substituent(s), and n is 0 or an integer of 1 to 6.

4,411,912
INSECTICIDAL ISOVALERIC ACID ESTERS

Clive A. Henrick, Palo Alto, and Barbara A. Garcia, Boulder Creek, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Division of Ser. No. 878,091, Feb. 16, 1978, Pat. No. 4,243,819, which is a continuation-in-part of Ser. No. 824,947, Aug. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 779,886, Mar. 21, 1977, abandoned. This application Nov. 13, 1979, Ser. No. 93,553
Int. Cl.³ A01N *37/34*, *37/44*; C07C *101/44*, *121/78*
U.S. Cl. 424—304 63 Claims

36. Isovaleric acid ester derivatives expressed by the general formula I:

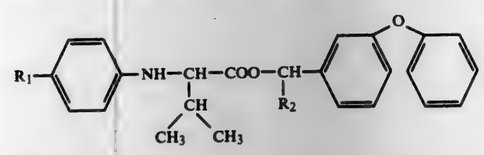


wherein,

R_1 represents hydrogen, methyl group or chlorine atom, and

R_2 represents hydrogen or cyano group.

45. An insecticidal composition comprising a carrier and as its essential ingredient an insecticidally effective amount of an isovaleric acid ester derivative of the general formula:



wherein,

R_1 represents hydrogen, a methyl group, or a chlorine atom and

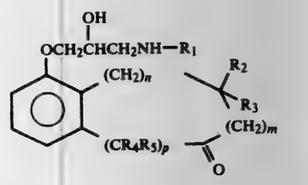
R_2 represents hydrogen or a cyano group.

4,411,913
8'-[(3-AMINO-2-HYDROXY-PROPOXY)]-SPIRO-[CYCLOPENTANE-1,2'(1'H)-(3'H)NAPHTALEN]-4'(3'H)-ONES

Trevor G. Payne, Arlesheim, and Richard Berthold, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 890,656, Mar. 20, 1978, abandoned. This application Mar. 5, 1979, Ser. No. 17,476
Claims priority, application Switzerland, Jan. 17, 1979, 445/79
Int. Cl.³ A01N *33/02*
U.S. Cl. 424—330 10 Claims

1. A compound of formula I



wherein

(i) m is 0, n is 2 and p is 1 or

(ii) m is 0 or 1, n is 1, and p is 1 or

(iii) m is 1, n is 1 or 2 and p is 0,

R_1 is (i) alkyl of 3 to 7 carbon atoms or (ii) phenylalkyl, phenoxyalkyl or phenylthioalkyl of 8 to 11 carbon atoms in the aggregate thereof and wherein the phenyl ring is separated by at least 2 carbon atoms from the nitrogen atom to which R_1 is bound and wherein the phenyl ring is unsubstituted, or mono-substituted by, or independently disubstituted by, alkyl or alkoxy of 1 to 4 carbon atoms, halogen of atomic number from 9 to 35, trifluoromethyl or cyano,

R_2 and R_3 are together straight chain alkylene of 4 to 6 carbon atoms, and

R_4 and R_5 are the same and are hydrogen or alkyl of 1 to 4 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

5. A method of treating, or preventing the further development of, a coronary disorder selected from arterial hypertension; acute cardiac infarct; myocardial infarction; and hyperlipidemia and hyperglycemia and increased appetite induced by emotional stress, which comprises administering a therapeutically effective amount of a compound of claim 1 to an animal in need of such treatment.

4,411,914
PROCESS FOR THE PRODUCTION OF A COLLOIDALLY STABLE BEER

Andre F. O. Devreux, Mons, and Janis Jerumanis, Wavre, both of Belgium, assignors to Compagnie Internationale de Participation et d'Investissement Cipari S.A., Luxembourg, Luxembourg

Continuation of Ser. No. 156,531, Jun. 5, 1980, abandoned. This application Dec. 3, 1981, Ser. No. 326,988
Claims priority, application France, Jun. 7, 1979, 79 14556
Int. Cl.³ C12G *3/00*
U.S. Cl. 426—12 13 Claims

1. In a process for preparing a colloidally stable beer, the improvement which comprises adding to a mixture of malt flour and water during preparation of a brew, while said mixture is maintained in contact with oxygen, a sufficient amount of polyphenoloxidase for precipitating the polymers formed by oxidation of the polyphenols by said polyphenoloxidase jointly with the present proteins and removing the obtained precipitate by filtration after oxidation of the wort.

4,411,915
HEME-IRON-ENRICHED AMINO ACID AND A PROCESS FOR THE PREPARATION OF HEME-IRON-ENRICHED AMINO ACID

Caj Eriksson, Näverlursvägen 1, 435 00 Mölnlycke, Sweden

Filed Apr. 18, 1981, Ser. No. 255,218
Int. Cl.³ A23J *1/06*; C12P *21/06*
U.S. Cl. 426—32 12 Claims

3. A process for the preparation of heme-iron-enriched amino acid preparations from heme-proteins, wherein the heme-protein is first hemolyzed and denaturated and subsequently split up with the aid of proteolytic enzymes and forming one heme-iron-enriched fraction and one fraction which does not contain heme-iron and recovering the heme-iron-enriched fraction by separation and stabilizing it by heat treatment and dewatering.

4,411,916
METHOD OF PRODUCING MILK FACTOR

George V. Mann, Nashville, Tenn., assignor to Vanderbilt University, Nashville, Tenn.

Continuation-in-part of Ser. No. 209,835, Nov. 24, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,309
Int. Cl.³ A23C *9/12*; C12P *1/04*; C12R *1/39*; A61K *35/00*
U.S. Cl. 426—43 7 Claims

1. The method of producing Milk Factor (MF), comprising:

(a) propagating an MF-producing strain of *Pseudomonas fluorescens* to obtain a culture thereof for use as an inoculant;

(b) inoculating an aqueous culture medium with said culture,

said medium containing milk or milk protein as the principal constituent thereof and also containing an effective amount of glutaconic acid or a soluble salt thereof for enhancing the production of MF in said medium; and

(c) propagating said culture in said medium with concomitant production of MF therein.

4,411,917

FABRICATED SHELLFISH PRODUCTS CONTAINING WHEY PROTEIN CONCENTRATE COMPOSITION AND METHOD OF PREPARATION

Pei K. Chang, Montrose, N.Y., assignor to Nutrisearch Company, Cincinnati, Ohio

Filed Nov. 23, 1981, Ser. No. 324,321
Int. Cl.³ A23J *3/00*; A23L *1/33*
U.S. Cl. 426—104 **40 Claims**

1. A fabricated seafood product comprising a major proportion of seafood meat and a binding agent comprising:

(1) a whey protein concentrate composition having at least 30% protein, wherein at least 50% of the protein in the whey protein concentrate composition is whey protein, and

(2) a member selected from the group consisting of: (a) from about 1.25% to about 3% sodium tripolyphosphate, and (b) from about 0.4 to about 1.25% sodium tripolyphosophate in combination with a food grade, nonphosphorus-containing alkalizing agent,

the pH of said fabricated seafood product being within the range of from about 7.0 to about 7.75.

4,411,918

APPARATUS FOR PRESERVING FOOD BY GENERATING PRESERVATIVE GAS

Andrea Cimino, Bologna; Gianni Plicchi, S. Lazzaro di Savena; Luigi Mangiarotti, Bologna; Maurizio Rossi, Badia Polesine; Vittorio Betti, Faenza; Massimo Spighi, and Gabriele Zingaretti, both of Bologna, all of Italy, assignors to Kontek - Tecnologie della Conservazione - S.R.L., Bologna, Italy

Filed Mar. 24, 1981, Ser. No. 247,118
Claims priority, application Italy, Mar. 26, 1980, 12495 A/80
Int. Cl.³ B65D *81/20*
U.S. Cl. 426—124 **1 Claim**



1. An apparatus for the preservation of perishable food products such as fruits and vegetables contained in a storage and/or transport receptacle formed by a stack of superposed crates or trays, comprising:

(a) a gas-tight wrapping comprising a plastic sheet adapted to be pierced and enclosing the said receptacle containing the food products;

(b) a device for the generation of preservative gas or gas mixtures, said device being located at the interior of said receptacle enclosed by said wrapping, said device comprising:

a main container (1) comprising a basin-like, water-impervious container closed at the top by a pierceable cover lid (5) in a non-gas-tight manner, said main container having a solid chemical reagent substance therein;

an auxiliary container (4) supported at the interior of said main container (1) at a pre-determined distance from the bottom thereof by support surfaces (3, 103) in the sides of the main container (1), said auxiliary container (4) being completely sealed in a liquid-tight manner and adapted to be pierced, and containing a liquid chemical reagent substance which upon contact with the solid chemical reagent causes a chemical reaction which generates the preservative gas or gas mixtures;

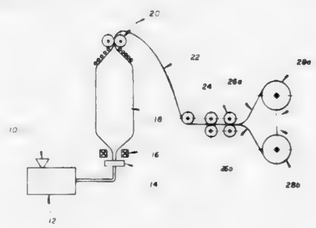
said device for the generation of preservative gas being located at the interior of said receptacle in such a position that the said cover lid (5) of the main container (1) and the said auxiliary container (4) can be pierced, from the outside of the wrapping enclosing the receptacle, by one single piercing operation which allows the liquid chemical reagent to contact the solid chemical reagent.

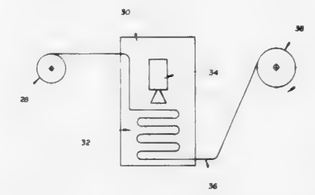
4,411,919

MEAT ADHEARING COOK-IN PACKAGING

Henry B. Thompson, Duncan, S.C., assignor to W. R. Grace & Co., Cryovac Division, Duncan, S.C.

Filed Aug. 16, 1982, Ser. No. 408,550
Int. Cl.³ B65B *29/08*
U.S. Cl. 426—412 **11 Claims**





1. A method for enhancing yield of cook-in packaged meat product, comprising:

(a) providing an adhering cook-in package comprising a flexible plastic container being substantially conformable to a selected meat product and having an inner meat product contacting surface of polymeric olefin having been subjected to an energetic radiation surface treatment in the presence of oxygen sufficient to cause said inner surface to adhere to the meat product during cook-in, said container having been formed from hot blown tubular film;

(b) conforming said package about a selected meat product; and

(c) cooking the packaged product, whereupon said inner surface adheres to said meat product to substantially prevent cook-out of fluids therefrom.

4,411,920

PROCESS FOR BAKING PIES

Bernard F. Fenoglio, 55 Evelyn Ter., South Amboy, N.J. 08879

Continuation-in-part of Ser. No. 128,680, Mar. 10, 1980, Pat. No. 4,305,329. This application Aug. 24, 1981, Ser. No. 295,663
Int. Cl.³ G01N *33/02*; A23L *1/10*
U.S. Cl. 426—233 **12 Claims**

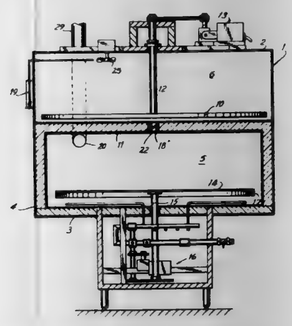
1. A process for baking pies for quick serving in a turntable oven having a constantly rotating turntable, rotating at a speed of one revolution in the time to complete the baking of a fresh pie comprising:

(a) placing fresh pies on the turntable;

(b) prebaking said pies at a temperature from about 400° F. to 600° F. for about four-fifths of a revolution;

(c) removing the partially baked pies from the turntable;

(d) storing the partially baked pies in a holding chamber maintained at a temperature of from about 140° F. to 200°



F. and a humidity of from about 40% to 70%, said humidity being controlled by instant steam injection and shut off in response to a humidity meter monitoring the same;

(e) replacing said stored pies onto the turntable and subjecting the pies to intense heat baking for the remaining about one-fifth of a revolution; and

(f) removing the fully baked pies for serving.

4,411,921

METHOD FOR INHIBITING FUNGAL GROWTH ON FRESH FRUITS AND VEGETABLES

Richard E. Woodruff, Salinas, Calif., assignor to TransFRESH Corporation, Salinas, Calif.

Continuation of Ser. No. 18,934, Jun. 9, 1979, abandoned, which is a continuation of Ser. No. 784,528, Apr. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,619, Dec. 8, 1975, abandoned. This application Mar. 8, 1982, Ser. No. 355,327
The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.
Int. Cl.³ A23B *7/152*
U.S. Cl. 426—263 **23 Claims**

1. A process for inhibiting the growth of fungi on fresh fruits and fresh vegetables other than leafy and head vegetables comprising maintaining said fresh fruits and fresh vegetables in a modified gaseous atmosphere, including carbon dioxide in an amount from zero to about 20% by volume, molecular oxygen in an amount of about 1% to about 20% by volume, carbon monoxide in an amount of about 3% to about 25% by volume, with the remainder being substantially all molecular nitrogen, at a temperature in the range of about 29° F. to about 60° F. for a time sufficient to inhibit growth of fungi on said fresh fruits and fresh vegetables.

4,411,922

PROCESS FOR PREPARING COOKED MEAT HAVING REDUCED LEVELS OF N-NITROSAMINES

Richard F. Theiler, Scottsdale, Ariz., assignor to Armour and Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 286,743, Jul. 27, 1981. This application Dec. 28, 1981, Ser. No. 335,008
Int. Cl.³ A23B *4/02, 4/14*
U.S. Cl. 426—266 **5 Claims**

1. A process for preparing a cured meat product which, when cooked for consumption, contains substantially reduced levels of N-nitrosamines, said process comprising the steps of nitrite-curing, heat processing and slicing the meat product and then applying to the external surfaces of the resulting slices, after completion of said nitrite-curing and before cooking, a treating solution containing a tocopherol, liquid smoke, and reducing sugar.

4,411,923

PROCESS FOR THE EXTRACTION OF CAFFEINE FROM SUPER-CRITICAL SOLUTIONS

Peter Hubert, and Otto Vitzthum, both of Bremen, Fed. Rep. of Germany, assignors to HAG Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 824,128, Aug. 12, 1977, abandoned. This application Feb. 9, 1981, Ser. No. 234,071
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1976, 2637197
Int. Cl.³ A23F *3/36, 5/20*
U.S. Cl. 426—271 **7 Claims**

1. Process for extracting caffeine from caffeine-containing natural substances using super-critical carbon dioxide as extracting agent wherein caffeine and non-caffeine substances are removed from said natural substances by the extracting agent, including the steps of

(a) selectively removing caffeine from the extracting agent with a polystyrene-based cation exchanger with sulfonic acid groups at a pressure between 100 to 300 bars;

(b) adding from 5% to 30% water based on the total weight of the cation exchange resin to moisten the caffeine-filled resin and thereby avoid explosion of the resin particles during and after release of the CO_2 gas; and

(c) regenerating said cation exchange resin by use of aqueous regenerating agents.

4,411,924

CREAM FLAVOR COMPOSITION FOR USE WITH BUTTERY FLAVORED FOOD PRODUCTS

Michael R. Sevenants, Forest Park, Ohio, assignor to The Procter & Gamble Co., Cincinnati, Ohio

Continuation of Ser. No. 299,701, Sep. 8, 1981, abandoned. This application Mar. 18, 1983, Ser. No. 476,650
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—534 **33 Claims**

1. A cream flavor composition, which consists of:

(a) a carboxylic acid component in an amount of from about 0.0025 to about 350 ppm selected from the group consisting of 8-nonenoic acid, 9-decenoic acid, 10-undecenoic acid, and mixtures thereof; and

(b) a higher methyl ketone component selected from the group consisting of 2-undecanone in an amount of from about 0.0014 to about 600 ppm, 2-dodecanone in an amount of from about 0.0014 to about 600 ppm, 2-tridecanone in an amount of from about 0.0085 to about 800 ppm, 2-tetradecanone in an amount of from about 0.0085 to about 800 ppm, 2-pentadecanone in an amount of from about 0.0800 to about 1000 ppm, 2hexadecanone in an amount of from about 0.0080 to about 1000 ppm, and mixtures thereof.

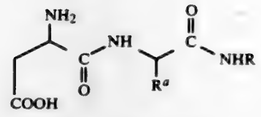
4,411,925

BRANCHED AMIDES OF L-ASPARTYL-D-AMINO ACID DIPEPTIDES

Thomas M. Brennan, Old Lyme, and Michael E. Hendrick, Groton, both of Conn., assignors to Pfizer Inc., New York, N.Y.

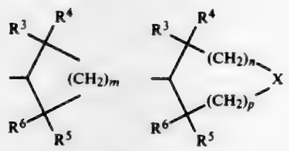
Continuation-in-part of Ser. No. 113,800, Jan. 21, 1980, abandoned. This application Nov. 5, 1980, Ser. No. 201,745
Int. Cl.³ A23L *1/236*
U.S. Cl. 426—548 **94 Claims**

1. An L-aspartyl-D-amino acid dipeptide amide of the formula

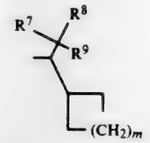


and the physiologically acceptable cationic and acid addition salts thereof, wherein R^a is methyl, ethyl, n-propyl or isopropyl; and

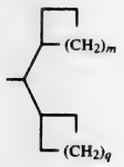
R is a branched member selected from the group consisting of fenchyl, diisopropylcarbinyl, d-methyl-t-butylcarbinyl, d-ethyl-t-butylcarbinyl, di-t-butylcarbinyl, 2-methylthio-2,4-dimethylpentan-3-yl,



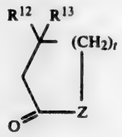
where at least one of R^3, R^4, R^5, R^6 is alkyl having from one to four carbon atoms and the remainder are hydrogen or alkyl having from one to four carbon atoms, X is O, S, SO, SO_2, C=O or CHOH; m is zero, 1, 2, 3 or 4, n and p are each zero, 1, 2 or 3 where the sum of n+p is not greater than 3 and the sum of the carbon atoms in R^3, R^4, R^5 and R^6 is not greater than six, and when both of R^3 and R^4 or R^5 and R^6 are alkyl they are methyl or ethyl,



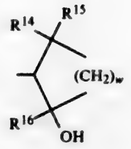
where one of R^7, R^8, R^9 is alkyl having from one to four carbon atoms and the remainder are hydrogen or alkyl having from one to four carbon atoms and the sum of the carbon atoms in R^7, R^8 and R^9 is not greater than six,



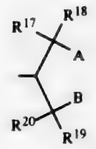
where m and q are the same or different and each have the values previously defined for m,



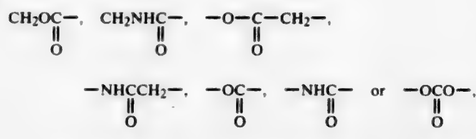
where each of R^{12} and R^{13} are methyl or ethyl, or R^{12} is hydrogen and R^{13} is alkyl having from one to four carbon atoms, Z is 0 or NH and t is 1 or 2,



where w is 1, 2, 3 or 4, R^{14} and R^{16} are each alkyl having from one to four carbon atoms, R^{15} is hydrogen, OH, or alkyl having from one to two carbon atoms, where the sum of the carbon atoms in R^{14}, R^{15} and R^{16} is not greater than six and when both of R^{14} and R^{15} are alkyl they are methyl or ethyl, and



where R^{17} and R^{19} are alkyl having from one to four carbon atoms, R^{18} and R^{20} are hydrogen or alkyl having from one to two carbon atoms, taken separately, A is OH and B is hydrogen, OH or methyl and when taken together A and B are



where the sum of the carbon atoms in R^{17}, R^{18}, R^{19} and R^{20} is not greater than six and when both of R^{17} and R^{18} or R^{19} and R^{20} are alkyl they are methy or ethyl.

4,411,926

STABILIZER FOR FROZEN FOAMED EMULSIONS AND METHOD THEREFORE

Jerome F. Trumbetas, Tarrytown; Rex Sims, Pleasantville, and Joseph A. Fioriti, Hastings-on-Hudson, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,873

Int. Cl.³ A23D *5/00*; A23G *9/02*; A23J *1/14, 1/20*

U.S. Cl. 426—565 **8 Claims**

1. An edible, frozen emulsion foam stabilizer comprising a co-dried, pH adjusted, protein-emulsifier complex having a pH between about 6.0 to about 9.0, wherein the protein is soy isolate, soy concentrate, sodium caseinate, or combinations thereof and the emulsifier is polysorbate 60, sodium stearoyl lactylate, sodium succinoylated glycerol monostearate, or a combination thereof and the ratio of emulsifier to protein is between 0.02 and 2 parts emulsifier per part protein.

4,411,927

METHOD FOR GRINDING CEREAL GRAINS IN THE PRESENCE OF GRINDING AIDS

Mauricio Bermudez, Miami, Fla.; Richard R. Klimpel, and Steven D. Sands, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 195,977, Oct. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 114,036, Jan. 21, 1980, abandoned. This application Jun. 30, 1982, Ser. No. 393,566

Int. Cl.³ A23L *1/00*

U.S. Cl. 426—618 **7 Claims**

1. A method for grinding cereal grains said method comprising grinding the cereal grain in the presence of an aqueous grinding medium, said aqueous grinding medium being employed in amounts from about 10 to about 80 weight percent based on the weight of the cereal grain and aqueous grinding medium, and an amount of a hydrophilic polysaccharide sufficient to increase grinding efficiency.

4,411,928

PROCESS FOR APPLYING A WATER AND ALCOHOL REPELLENT MICROBIOCIDAL FINISH TO A FABRIC AND PRODUCT SO PRODUCED

A. Frank Baldwin, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 310,416, Oct. 9, 1981, and a continuation-in-part of Ser. No. 310,414, Oct. 9, 1981. This application Feb. 24, 1982, Ser. No. 352,057

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—2 **9 Claims**

1. A process for making a bioactive, water and alcohol repellent medical fabric comprising the steps of:

(a) applying a finishing bath composed, in percent by weight of the bath, of:

a C_1–C_4 alcohol	0.5–3.0%
3-(trimethoxysilyl)-propyloctadecyl dimethyl ammonium chloride	0.4–2.4%
a fluoropolymer alcohol repellent	1.25–5.0%
wax/resin fluoropolymer extender	1.0–6.0%
monovalent salt antistat	0.2–0.5%
water	balance

(b) drying the thus coated substrate to fix the coating to the non-woven substrate and provide a bioactive, water and alcohol repellent finished fabric.

4,411,929

METHOD FOR MANUFACTURING SEMICONDUCTOR DEVICE

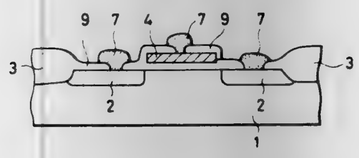
Shinichi Sato; Hiroshi Harada; Takaaki Fukumoto; Hirozo Takano; Hideo Kotani, and Shinpei Kayano, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha LSI Development Laboratory, Itami, Japan

Filed Aug. 18, 1981, Ser. No. 293,793

Claims priority, application Japan, Aug. 19, 1980, 55-114492

Int. Cl.³ H01L *21/28*

U.S. Cl. 427—38 **6 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of: forming an ion bombardment layer having a configuration corresponding to a desired contact aperture configuration on at least one predetermined portion on a surface of a semiconductor substrate by direct ion beam imaging; and subjecting said ion bombardment layer to annealing to convert said ion bombardment layer to an oxidation-resistant layer.

4,411,930

METHOD AND APPARATUS FOR SURFACE-HARDENING TREATMENT OF SYNTHETIC RESIN ARTICLES

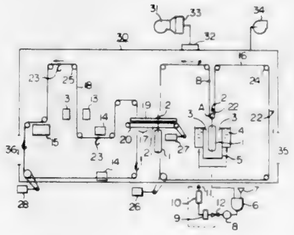
Atushi Nakazima, and Mitisuke Edamatu, both of Otake, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Aug. 2, 1982, Ser. No. 404,486

Claims priority, application Japan, Aug. 3, 1981, 56-121553; Mar. 23, 1982, 57-45982

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—54.1 **5 Claims**



1. A method for coating the surface of a synthetic resin article and hardening said coating, wherein the synthetic resin article is brought into countercurrent contact with a freely falling liquid film of a surface-hardening solution while the synthetic resin article is gradually pulled up, to coat the surface of the synthetic resin article with the surface-hardening solution, and the coated synthetic resin article is irradiated with ultraviolet rays to cure the coating, said method being characterized in that (a) the synthetic resin article is conveyed to a hardening solution tank by a first conveyor where the synthetic resin article is coated with the hardening solution and the coated synthetic resin article is then conveyed to an ultraviolet ray-irradiating step by a second conveyor through an intermediate conveyor; (b) the surface-hardening solution is caused to flow down on liquid film guide plates attached to the hardening solution tank, at a flow rate of 2 to 15 ml per second and per cm of the width of the liquid film guide plate, and the countercurrent contact of the synthetic resin article with the liquid film is initiated at a point 3 to 30 mm apart from the flow-out end of the guide plates; and (c) the hardening solution is circulated to effect the temperature adjustment and filtration.

3. An apparatus for coating the surface of a synthetic resin article and hardening said coating, wherein the synthetic resin article is brought into countercurrent contact with a freshly falling liquid film of a surface-hardening solution while the synthetic resin article is gradually pulled up, to coat the surface of the synthetic resin article with the surface-hardening solution, and the coated synthetic resin article is irradiated with ultraviolet rays to cure the coating, said apparatus comprising (a) a conveyor device comprising a first conveyor for conveying the synthetic resin article to a hardening solution tank to coat the synthetic resin article with the surface-hardening solution, a second conveyor for conveying the synthetic resin article to an ultraviolet ray-irradiating device and an intermediate conveyor for transferring hangers each having the synthetic resin article hung thereon from the first conveyor to the second conveyor; (b) a device comprising guide plates attached to the hardening solution tank in the state inclined downwardly at an angle of 10° to 80° with respect to the

horizontal direction to form a freely falling liquid film of the surface-hardening solution, with which the surface of the synthetic resin article is brought into countercurrent contact; (c) a device comprising a pump for circulating the solution through a pipe line from and to the hardening solution tank, and a filter, a heat exchanger, a flow rate-controlling valve and a flow rate-detecting pressure gauge or flowmeter, which are arranged downstream of the circulating pipe line; and (d) a device comprising a substantially closed treating chamber integrally surrounding said conveyor device, hardening solution tank and ultraviolet ray-irradiating device, an air feed fan for feeding air into said treating chamber, a filter for removing dusts from air and an air conditioner for adjusting the temperature and humidity of air.

4,411,931

MULTIPLE STEP UV CURING PROCESS FOR PROVIDING ACCURATELY CONTROLLED SURFACE TEXTURE

Chau H. Duong, East Lampeter Township, Lancaster County, Pa., assignor to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Sep. 29, 1982, Ser. No. 426,677
Int. Cl.³ B05D *3/06*
U.S. Cl. 427—54.1 **10 Claims**

1. A process for accurately controlling the surface texture of UV-curable substrates, said process comprising the steps of

exposing a UV-curable substrate having a thickness of not less than about two mils to an ultraviolet light source which emits a wave length of from about 3000 to about 4200 angstroms for a period of time which will cause the bottom portion of said substrate to gel but which will have essentially no effect on the upper surface of said substrate;

blanketing the partially gelled substrate with an inert gas and exposing said substrate to a low-pressure mercury ultraviolet light source to gel the upper surface of said substrate and cause development of a desired surface texture; and

exposing the gelled substrate to a strong ultraviolet light source to effect final curing and essentially fix the surface texture.

4,411,932

METHOD FOR THE PREVENTION OF SOILANT DEPOSITS ON CONTACT LENSES

Stephen C. Kwan, Arlington, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Nov. 23, 1981, Ser. No. 324,273
Int. Cl.³ G02B *1/10;* **B08B** *17/02;* **B05D** *1/18*
U.S. Cl. 427—164 **7 Claims**

1. A method for preventing soil encrustation on a soft contact lens comprising exposing the soft contact lens to an aqueous solution which comprises a composition selected from the group consisting of poly(ethylene glycol) having a molecular weight in the range from about 500 to about 15,000, alkyl ethers of polyethylene glycol having a molecular weight in the range from about 550 to about 5,000, polyethylene oxide having a molecular weight in the range from about 100,000 to about 5,000,000, and mixtures thereof.

4,411,933

PROCESS FOR PREPARING ETHYLCELLULOSE MICROCAPSULES

Masayoshi Samejima, Minoh, and Goichi Hirata, Yawata, both of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

Filed Apr. 9, 1981, Ser. No. 252,457
Claims priority, application Japan, Apr. 25, 1980, 55-55808
Int. Cl.³ B01J *13/02;* **A01N** *25/28;* **A61K** *9/62*
U.S. Cl. 427—213.3 **15 Claims**

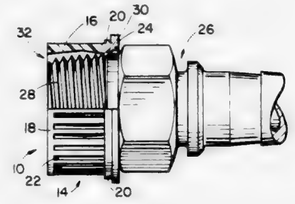
1. In a process for preparing ethylcellulose microcapsules comprising the steps of (i) dissolving ethylcellulose in cyclohexane, (ii) dispersing particles of a core material in said solution, (iii) cooling the dispersion until the ethylcellulose separates out from the dispersion to form coating walls on and around the particles of said core material, and then (iv) recovering the thus-formed ethylcellulose microcapsules therefrom, the improvement wherein an organosilicon polymer is dissolved in said cyclohexane in said step (i) in an amount of 0.1 to 10 w/v %, said organosilicon polymer having a viscosity of 50 to 5 million centistokes at 25° C. and said ethylcellulose being present in an amount of 0.1 to 10 w/v %.

4,411,934

METHOD FOR PLATING A THREADED MEMBER WITH AN IN SITU THREAD PROTECTOR

Thomas C. Steinhagen, Westminster, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 205,847, Nov. 10, 1980. This application Sep. 24, 1982, Ser. No. 423,484
Int. Cl.³ B05D *3/00, 3/12*
U.S. Cl. 427—242 **2 Claims**



1. A method for plating and protecting at least one threaded member comprising the steps of:

positioning a sleeve-like polymeric thread protector having a perforate sidewall over threads of the threaded member and retaining the protector in position over the threads;

placing the threaded member with polymeric protector in a plating solution and exposing the threads to the solution through the perforate sidewall; plating the threaded member and

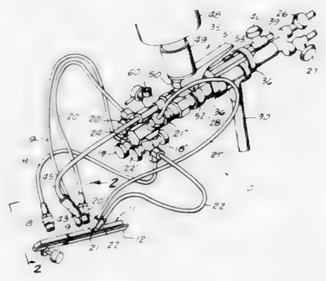
retaining the thread protector over the threads and protecting the threads until the threaded member is ready for use.

4,411,935

POWDER FLAME SPRAYING APPARATUS AND METHOD

James Y. Anderson, 1838 Cliffhill Dr., Monterey Park, Calif. 91754

Filed Nov. 2, 1981, Ser. No. 317,383
Int. Cl.³ B05D *1/08*
U.S. Cl. 427—318 **35 Claims**



31. That method of applying hardfacing directly to an uncoated metallic body which comprises:

progressively heating successive merging areas of said uncoated metallic body by a plurality of flames including a preheater flame and a plurality of final heater flames the latter of which have merging flame envelopes and are spaced upstream from said preheater flame and which plurality of flames cooperate to bring the metal surface to a temperature effective to fuse hardfacing powder thereto; and dispensing hardfacing powder at substantially ambient temperature into the merging flame envelopes of said final heater flames while advancing said flames and said metallic body past one another along substantially the shortest path between said progressively heated areas and at the rate at which said flames cooperate in bringing said progressively heated surface areas of said metallic body to a temperature to fuse said hardfacing powder thereto.

4,411,936

SPRAYED ALLOY LAYER AND METHOD OF MAKING SAME

Nils G. Schrewelius, Hallstahammar, Sweden, assignor to Bulten-Kanthal AB, Hallstahammar, Sweden

Continuation of Ser. No. 54,414, Jul. 3, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,699
Claims priority, application Sweden, Jul. 4, 1978, 7807523
Int. Cl.³ B05D *1/08*
U.S. Cl. 427—367 **5 Claims**

1. A method for producing a metal layer on a substrate which comprises flame spraying an iron, chromium, and aluminum alloy in the form of a wire in a flame spray gun under conditions of mild oxidation to produce a layer consisting essentially of from 10 to 35% by weight chromium, 1 to 12% by weight aluminum, 0.008 to 0.025% by weight nitrogen, 0.01 to 1.25% by weight oxygen predominantly as oxides of aluminum, iron, and chromium, with the balance substantially iron, the oxidation being sufficient to cover the metal particles partially in the form of extremely fine oxide films having thicknesses on the order of 0.1 to 0.5 micron but being sufficiently discontinuous to permit diffusion of aluminum to the surface.

4,411,937

PROCESS AND COMPOSITION FOR COATING METALS

Takao Nishida, and Takashi Hirohata, both of Osaka, Japan, assignors to Amchem Products, Inc., Ambler, Pa.

Division of Ser. No. 150,082, May 15, 1980, Pat. No. 4,347,172, which is a continuation of Ser. No. 797,758, May 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 445,434, Feb. 25, 1974, abandoned, which is a continuation of Ser. No. 232,625, Mar. 7, 1972, abandoned. This application Jun. 14, 1982, Ser. No. 388,420
Claims priority, application Japan, Mar. 10, 1971, 46-012462
Int. Cl.³ B05D *1/18*
U.S. Cl. 427—435 **37 Claims**

1. In a process wherein a resinous coating is applied to a metallic surface by contacting it with an acidic aqueous coating composition which chemically attacks said surface and dissolves metal therefrom, said composition containing dispersed solid particles of resin and dissolved ferric iron, the source of the ferric iron including a source other than said metallic surface, the improvement comprising effecting the formation of said coating with said composition having incorporated therein dissolved fluoride, said composition containing said dissolved fluoride being capable of forming on a metallic surface immersed therein, and in a substantially electrostatic field-free environment, a resinous coating which increases in amount during at least a portion of the time said surface is immersed in said composition.

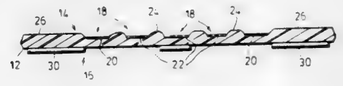
27. In a process wherein a resinous coating is applied to a metallic surface by immersing it in an acidic aqueous coating composition which chemically attacks said surface and dissolves metal therefrom, said composition containing dispersed solid particles of resin and a material which is effective in increasing the rate at which the composition dissolves metal, and wherein said composition is capable of forming on a metallic surface immersed therein a resinous coating which increases in amount during at least a portion of the time said surface is immersed in said composition, said composition being effective to form said resinous coating in a substantially electrostatic field-free environment, the improvement comprising effecting the formation of said coating with said composition having incorporated therein dissolved ferric fluoride which is effective in increasing the rate at which metal is dissolved from said surface, and said composition being substantially free of an oxygen-containing oxidizing agent in an amount which effects a further increase in the rate at which metal is dissolved from said surface.

4,411,938

MULTI-GROOVE TRIM

Ciro Madonia, 1390 Beaufort Dr., Burlington, Ontario; Christopher Hatzikelis, R.R. #1,, Palgrave, Ontario, and Cesare C. Cosentino, 45 Grandview Ave., Thornhill, Ontario, all of Canada

Continuation of Ser. No. 149,468, May 13, 1980, abandoned. This application Nov. 9, 1981, Ser. No. 319,140
Int. Cl.³ B32B *27/06, 3/30*
U.S. Cl. 428—31 **1 Claim**



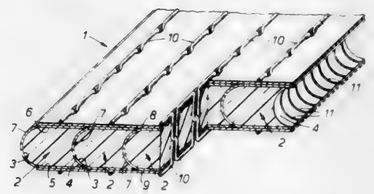
1. A decorative and protective plastic trim, comprising an extruded plastic base of generally rectangular section with a pair of opposed major faces bounded by a pair of minor sides to provide a slim, low profile base section; one said major face having a plurality of spaced apart contact adhesive strips in adherent relation therewith, for attaching the plastic section to the side of a vehicle; the other said major face having a plurality of valley recesses extending along the base, a plurality of shoulder portions and raised edge portions extending in protective relation and serving to define said recesses and metallized laminate decorative strips extending in adherent relation along at least some said recesses having protective overcoatings thereover.

4,411,939

CONFORMABLE REINFORCEMENT BOARD

Robert D. Hawkins, and James A. Hawkins, both of Thrumpton, England, assignors to National Research Development Corporation, London, England

Filed Nov. 26, 1980, Ser. No. 210,794
Claims priority, application United Kingdom, Nov. 28, 1979, 7941054; May 31, 1980, 8017867
Int. Cl.³ B32B *3/04, 3/06*
U.S. Cl. 428—58 **11 Claims**



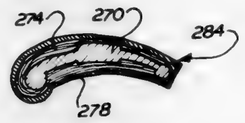
1. A board for use in reinforced synthetic resin constructions comprising: a plurality of core strips arranged in closely spaced side by side relation with facing edge surfaces of complementary shape; fibrous reinforcement material interposed between said facing edge surfaces of the strips and lying flat against the outer faces of the board, and adhesive attaching said fibrous material to the core strips at spaced apart locations to form a

unitary board; the board being in an unprocessed state in which it has yet to be transformed from a relatively weak structure into a relatively strong, rigid structure by the curing of resin impregnated into said fibrous material.

4,411,940
AIRFOIL

Thomas Derkacs, Mayfield; Charles W. Fetheroff, Willowick; Istvan M. Matay, North Royalton, and Istvan J. Toth, Richmond Heights, all of Ohio, assignors to TRW Inc., Cleveland, Ohio

Division of Ser. No. 923,693, Jul. 11, 1978, abandoned. This application Apr. 12, 1982, Ser. No. 367,277
Int. Cl.[3] B64C *1/00*; B32B *3/00, 3/12*
U.S. Cl. 428—73 **3 Claims**

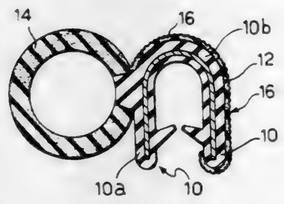


1. An airfoil comprising a root end portion, a tip end portion, a pair of edge portions extending between said tip and root end portions, a pair of major side portions extending between said edge portions, at least one of said portions having a sprayed covering thereon, said covering including a plurality of layers formed of strips which were sequentially sprayed on at least the one portion of the airfoil, said covering as sprayed having a thickness which varies by an amount which is less than 0.003 of an inch measured in the direction of application of the covering.

4,411,941
SEALING STRIP FOR VEHICLE BODIES

Roberto Azzola, Turin, Italy, assignor to Saiag S.p.A. Industria Articoli Gomma, Cirie', Italy

Division of Ser. No. 193,212, Oct. 1, 1980, Pat. No. 4,381,273. This application Sep. 17, 1982, Ser. No. 419,276
Claims priority, application Italy, Dec. 21, 1979, 69460 A/79
Int. Cl.[3] E06B *7/16*
U.S. Cl. 428—122 **4 Claims**

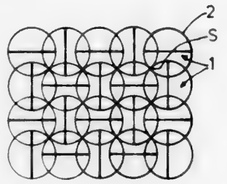


1. A sealing strip for vehicle bodies comprising a channel-shaped attachment profile of solid rubber having embedded therein a metallic reinforcing strip, wherein the attachment profile has on its exposed surface a coating layer of sponge rubber co-extruded and co-vulcanized with the profile so as to be of one piece integral construction therewith and wherein the exposed surface of the coating layer is rendered velvety by abrasion.

4,411,942
PACKING FOR TECHNICAL PROCESSES

Andreas Nickel, Hagen; Karl H. Reissinger, Leverkusen; Hans-Walther Brandt, Odenthal, all of Fed. Rep. of Germany, and Thomas Melin, Berkeley, Calif., assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 27, 1981, Ser. No. 315,382
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1980, 3043420; Dec. 24, 1980, 3048968
Int. Cl.[3] B32B *3/10*
U.S. Cl. 428—137 **9 Claims**



1. In a packing for fluid treatment, the improvement comprising: a plurality of twisted strips stacked parallel to each other in an axially symmetric arrangement, wherein the strips are pleated perpendicular to the axis of the strip and twisted in the same rotational sense and the twisted strips are staggered in relation to each other to form groups of continuous channels, each group extending in a straight line in four axially symmetric directions whose projections in a horizontal plane form an angle of 90° with each other and whose angle α with respect to the longitudinal axis of the packing is $\tan \alpha = b/h \cdot \sqrt{2}$, where h is the pitch and b the width of the twisted strips.

4,411,943
FRICTION SHEET

Mutsuo Akao, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 4, 1981, Ser. No. 299,422
Claims priority, application Japan, Sep. 5, 1980, 55-123068
Int. Cl.[3] B32B *3/00, 23/08*
U.S. Cl. 428—161 **15 Claims**



1. A friction sheet for an inner surface of a case containing a tape roll and a friction sheet which is subject to sliding contact with a tape roll accommodated in the case, said friction sheet comprising a flexible support regularly embossed on the side thereof intended for contact with the tape roll and at least one uniaxially orientated high density polyethylene film composed mainly of a high density polyethylene having a density of at least 0.94 g/cm^3 bonded onto the embossed surface of the flexible support.

4,411,944
SURFACE MOUNTED TRIM PIECE

Ronald D. Moore, Grosse Pointe, Mich., assignor to Chivas Products Limited, Sterling Heights, Mich.

Filed Jun. 1, 1981, Ser. No. 268,794
Int. Cl.[3] B60R *13/02*
U.S. Cl. 428—172 **18 Claims**

1. A trim piece for attachment to a vehicle surface comprising:
a relatively rigid support member, said support member having an unbeveled edge;

a foam padding adjacent said support member; and
a cover exterior of said padding securely bonded to the face side of said support member adjacent said edge of said support member so as to encapsulate said padding and



terminating contiguous and slightly beyond said edge without enveloping said edge so that, upon attachment of said trim piece to said surface, the cover will engage said surface substantially at the termination of said cover.

4,411,945
FRICTION SHEETS

Mutsuo Akao, and Haruo Furuta, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 24, 1981, Ser. No. 247,030
Claims priority, application Japan, Mar. 24, 1980, 55-37320
Int. Cl.[3] B32B *5/16, 27/08*
U.S. Cl. 428—216 **28 Claims**



1. A laminated friction sheet, comprising:
a first layer of a uniaxially oriented high density polyethylene film having a density of at least 0.94 g/cm^3;
a second layer of a uniaxially oriented high density polyethylene film having a density of at least 0.94 g/cm^3, connected to the first layer by an adhesive layer positioned between said first and second layer.

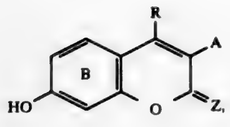
20. A laminated friction sheet, comprising:
a first flexible sheet layer; and
a layer of a uniaxially oriented high density polyethylene film having a density of 0.94 g/cm^3, connected to said first flexible sheet layer by an adhesive layer positioned between said first flexible sheet layer and said uniaxially oriented high density polyethylene film.

4,411,946
IMPREGNATING PAPER WITH 7-HYDROXY-COUMARIN COMPOUNDS

Horst Harnisch, Much, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,517
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1981, 3100295
Int. Cl.[3] B32B *21/04*; D21H *5/10*
U.S. Cl. 428—219 **8 Claims**

1. Security paper having incorporated therein between about 0.01 and about 0.2 grams per meters^2 of a 7-hydroxy-coumarin compound of the general formula



wherein
A represents a heterocyclic radical belonging to the benzthiazole, benzoxazole, benzimidazole, quinazol-4-one, benzo (b) thiophene, benzo (b) furan, 5-phenyl-1,3,4-oxadiazole, 5-phenyl-1,3,4-thiadiazole or pyridine series and the substituents on A are chosen from the series C_1- to C_4-alkyl, C_1- to C_4-alkoxy, phenyl-C_1- to C_3-alkyl, cyclohexyl, phenyl which is unsubstituted, monosubstituted or disubstituted wherein said substitution is by C_1- to C_4-alkyl, C_1- to C_2-alkoxy and/or chlorine, trifluoromethyl, C_1- to C_4-alkoxycarbonyl, carboxyl, carbamoyl groups or sulphamoyl groups which are unsubstituted, monosubstituted or disubstituted wherein said substitution is by C_1- to C_4-alkyl radicals, C_1- to C_4-alkylsulphonyl, phenyl-C_1- to C_3-alkylsulphonyl, phenylsulphonyl, C_1- to C_4-alkylmercapto and phenylmercapto,
R represents hydrogen or cyano and
Z represents oxygen or NH and
the ring B is further unsubstituted or substituted nonionically by a C_1- to C_3-alkyl group or chlorine.

5. A process for impregnating paper which comprises effecting impregnation by means of 7-hydroxy-coumarin compounds of the general formula



wherein
A represents a heterocyclic radical belonging to the benzthiazole, benzoxazole, benzimidazole, quinazol-4-one, benzo (b) thiophene, benzo (b) furan, 5-phenyl-1,3,4-oxadiazole, 5-phenyl-1,3,4-thiadiazole or pyridine series and the substituents on A are chosen from the series C_1- to C_4-alkyl, C_1- to C_4-alkoxy, phenyl-C_1- to C_3-alkyl, cyclohexyl, phenyl which is unsubstituted, monosubstituted or disubstituted wherein said substitution is by C_1- to C_4-alkyl, C_1- to C_2-alkoxy and/or chlorine, trifluoromethyl, C_1- to C_4-alkoxycarbonyl, carboxyl, carbamoyl groups or sulphamoyl groups which are unsubstituted, monosubstituted or disubstituted wherein said substitution is by C_1- to C_4-alkyl radicals, C_1- to C_4-alkylsulphonyl, phenyl-C_1- to C_3-alkylsulphonyl, phenylsulphonyl, C_1- to C_4-alkylmercapto and phenylmercapto, R represents hydrogen or cyano and Z represents oxygen or NH and the ring B is further unsubstituted or substituted non-ionically by a C_1- to C_3-alkyl group or chlorine.

4,411,947
CONVEYOR BELT

Ingo Heynhold, Kalefeld, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Nov. 10, 1981, Ser. No. 320,009
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1980, 3042473
Int. Cl.[3] D03D *3/00*; B32B *7/00*
U.S. Cl. 428—250 **1 Claim**

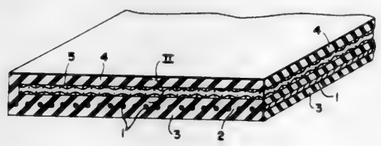
1. A conveyor belt of relatively short length and made of elastomeric material for use as a discharge or feeder belt, the conveyor belt being particularly suitable for absorbing the

heavy impact loads of materials having angular edges falling upon the belt, the conveyor belt comprising:

an upper cover layer of elastomeric, wear-resistant rubber, having an upper surface upon which the material to be conveyed impacts and rests;

an elastically deformable insert of doubleweave cloth disposed beneath the upper cover layer which provides an air space within the upper cover layer; the doubleweave cloth comprising upper and lower webs each having longitudinally extending fabric strands, the upper and lower webs being joined by connecting strands woven between the longitudinally extending fabric strands of the upper and lower webs;

a core layer of readily bondable rubber adjacent to the deformable insert;



an array of parallel steel cables within the core layer and bonded to the core layer for reinforcing the elastomeric conveyor belt;

a lower cover layer of elastomeric, wear-resistant rubber; and

elastomeric material extending longitudinally along the outside edges of the belt and being sealed to the elastomeric layers to completely surround the doubleweave material within the belt and entrap air within the belt, whereby impacts on the upper cover layer are absorbed by the elastically deformable layer and entrapped air prior to being transmitted to the elastomeric layer, steel cables and lower cover layer for which layers the elastically deformable layer and entrapped air form a cushion thereby prolonging the life of the conveyor belt.

4,411,948

AIR FILTER OF THREE-DIMENSIONAL MESH-STRUCTURED WEBS

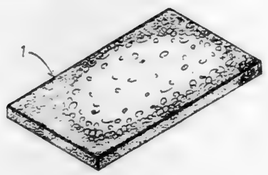
Fumiichi Ogino, Kawanishi, and Koji Nakashima, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 78,718, Sep. 25, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 247,166

Claims priority, application Japan, Apr. 18, 1979, 54/48137

Int. Cl.³ B32B *5/16*

U.S. Cl. 428—283 **7 Claims**



1. Air-cleaning filter element which comprises at least two sheets of three-dimensionally mesh-structured elastic-flexible webs of skeletal structure containing 9 to 31 air spaces per 25 linear mm and having 3 mm to 10 mm thickness as superimposed and activated carbon adsorbent of a grain size of 1 to 5 mm in diameter which is bonded to and between the webs with a pressure-sensitive adhesive, the amount of activated carbon adsorbent deposited being 200 to 2500 g. per m^2 of web.

4,411,949

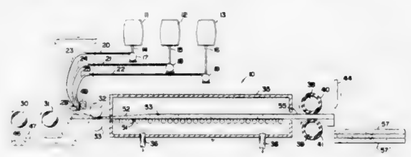
POLYMERIC FOAMS FROM TRANSESTERIFIED BY-PRODUCT DERIVED FROM MANUFACTURE OF DIMETHYL TEREPHTHALATE AND LAMINATES THEREFROM

Scott C. Snider, Pinellas Park, and Alberto DeLeon, Clearwater, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Filed Feb. 1, 1982, Ser. No. 344,459

Int. Cl.³ C08G *18/14;* **B32B** *3/26, 31/14;* **B29C** *23/00*

U.S. Cl. 428—304.4 **31 Claims**



1. A polyisocyanurate foam comprising the reaction product of an organic polyisocyanate, a blowing agent, a trimerization catalyst, and a minor amount of a polyol mixture prepared by the transesterification, with a glycol of molecular weight from about 60 to 400, of a by-product fraction from the manufacture of dimethyl terephthalate, the major portion of said fraction comprising about 15 to 70 weight percent of dimethyl terephthalate, and about 85 to 30 weight percent of a mixture of monomethyl terephthalate, bi-ring esters and polymeric materials.

17. A laminate comprising at least one facing sheet adhered to a polyisocyanurate foam which comprises the reaction product of an organic polyisocyanate, a blowing agent, a trimerization catalyst, and a minor amount of a polyol mixture prepared by the transesterification, with a glycol of molecular weight from about 60 to 400, of a by-product fraction from the manufacture of dimethyl terephthalate, the major portion of said fraction comprising about 15 to 70 weight percent of dimethyl terephthalate, and about 85 to 30 weight percent of a mixture of monomethyl terephthalate, bi-ring esters and polymeric materials.

4,411,950

AUTODEPOSITED COATINGS WITH INCREASED SURFACE SLIP

Timothy J. C. Smith, Hatfield Township, Montgomery County, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 66,858, Aug. 15, 1979, abandoned, which is a division of Ser. No. 917,560, Jun. 21, 1978, Pat. No. 4,186,226. This application May 18, 1981, Ser. No. 264,402

Int. Cl.³ B32B *5/16;* **B05D** *3/04*

U.S. Cl. 428—327 **10 Claims**

1. A metallic surface having thereon a resin coating comprising the fusion product of autodeposited resin particles and fused and concentrated in the surface layer thereof resin particles, which are different than said autodeposited resin particles in having a coefficient of friction lower than that of the resin of said autodeposited resin particles, the amount of said different resin particles in the resin coating being such that said resin coating has a higher degree of surface slip than a resin coating formed from said autodeposited resin particles.

6. A metallic surface having thereon a resin coating comprising the fusion product of autodeposited resin particles, said particles prepared by copolymerizing styrene, butadiene, vinylidene chloride, and methacrylic acid, and fused and concentrated in the surface layer thereof resin particles which are different than said autodeposited resin particles in having a coefficient of friction lower than that of the resin of said autodeposited resin particles, the amount of said different resin particles in the resin coating being such that said resin coating has a higher degree of surface slip than a resin coating formed from said autodeposited resin particles.

4,411,951

HIGH SOLIDS COATING COMPOSITION OF AN ENAMEL CONTAINING A RHEOLOGY CONTROL ADDITIVE OF SILICA AND POLYETHYLENE GLYCOL

Robert J. Barsotti, Franklinville, N.J., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Jul. 30, 1982, Ser. No. 403,304

Int. Cl.³ C08K *3/36, 5/06;* **C08G** *61/28*

U.S. Cl. 428—328 **18 Claims**

1. A coating composition comprising about 40–70% by weight of a binder of film-forming constituents and about 30–60% by weight of a nonaqueous liquid carrier, wherein the binder comprises a film-forming acrylic polymer containing polymerized alkyl methacrylate and alkyl acrylate monomers and having reactive carboxyl groups, hydroxyl groups, amide groups, glycidyl groups or a mixture of any of these groups and an alkylated melamine formaldehyde crosslinking agent; and in addition the composition contains about 0.1–10% by weight, based on the weight of the binder, of a rheology control additive consisting essentially of about

(1) 80–99.5% by weight, based on the weight of the rheology control additive, of colloidal hydrophilic fumed silica having a surface area of about 100–500 square meters per gram and a particle size of about 5–20 millimicrons and

(2) 0.5–20% by weight, based on the weight of the rheology control additive, of polyethylene glycol having a weight average molecular weight of about 6,000–10,000.

4,411,952

AROMATIC IMIDE POLYMER LAMINATE MATERIAL AND METHOD FOR PRODUCING THE SAME

Yoshikazu Sasaki; Hiroshi Inoue; Tadashi Miura; Kazuo Kumamoto, and Sumio Toudou, all of Hirakata, Japan, assignors to UBE Industries, Ltd., Osaka, Japan

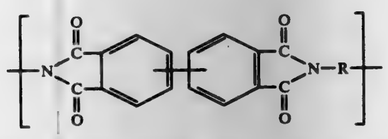
Filed Apr. 20, 1982, Ser. No. 370,048

Claims priority, application Japan, May 6, 1981, 56-66888

Int. Cl.³ B32B *15/08, 7/02*

U.S. Cl. 428—332 **13 Claims**

1. An aromatic imide polymer laminate material comprising at least one aromatic imide polymer film consisting essentially of at least one aromatic imide polymer which comprises at least 80 molar % of at least one type of recurring unit of the formula (1):



wherein R represents a divalent aromatic radical said polymer being characterized by a logarithmic viscosity of from 0.2 to 7 determined in a concentration of 0.5 g per 100 ml of p-chlorophenol at a temperature of 50° C., and a glass transition temperature of from 250° to 400° C.; and at least one metallic foil which is superimposed on and directly bonded to said aromatic imide polymer film without the presence of a bonding agent layer formed therebetween.

2. The laminate material as claimed in claim 1, wherein the thickness of said aromatic imide polymer film is in the range of from 10 to 200 microns.

4,411,953

MAGNETIC RECORDING MEDIUM

Takahito Miyoshi; Nobuo Tsuji; Toshimitu Okutu, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1982, Ser. No. 340,596

Claims priority, application Japan, Jan. 20, 1981, 56-6748

Int. Cl.³ H01F *10/00*

U.S. Cl. 428—336 **8 Claims**

1. A magnetic recording medium, comprising:

a non-magnetic support base;

a magnetic layer provided on a first surface of said support base;

an undercoat formed on a second surface of said support base opposite said first surface, said undercoat having a thickness of 0.4μ or less; and

a back coating on said undercoat, said back coating having a thickness of 0.2–2μ; and comprising a particulate inorganic substance and a binder contained in a weight ratio of 2.5:1 to 0.1:1.

4,411,954

HOT MELT PRESSURE SENSITIVE ADHESIVE AND DIAPER TAPE CLOSURES COATED THEREWITH

Peter J. Butch, III, Valencia, Pa., and Paul P. Puletti, Glen Gardner, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 16, 1982, Ser. No. 408,357

Int. Cl.³ C09J *7/02;* **C08F** *4/00*

U.S. Cl. 428—343 **10 Claims**

1. Pressure sensitive tape comprising a sheet backing coated with a layer of normally tacky and hot melt pressure-sensitive adhesive comprising

(a) 15 to 40% by weight of a mixture of an A-B-A styrene-isoprene-styrene copolymer and a selectively hydrogenated A-B-A type block copolymer wherein the non-elastomeric block A units in both A-B-A copolymers are present in amounts less than about 25% by weight and wherein the weight ratio of the styrene-isoprene-styrene copolymer to the selectively hydrogenated copolymer is within the range of 10:90 to 40:60;

(b) 30 to 70% by weight of a tackifying resin;

(c) 5 to 30% by weight of a plasticizing oil or liquid polyterpene tackifying resin; and

(d) 0.05 to 2.0% by weight of an antioxidant.

4,411,955

REACTIVE HARDENABLE BINDER MIXTURE, PROCESS FOR PREPARING HARDENED PRODUCTS AND USE OF THE MIXTURE FOR THE PREPARATION OF COATINGS

Josef Mondt, Königstein/Taunus; Gerd Walz, Wiesbaden, and Thaddäus Wirth, Heidenrod-Wisper, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 2, 1981, Ser. No. 316,806

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1980, 3041653

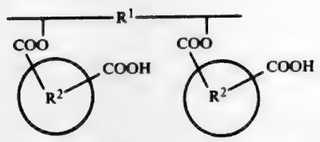
Int. Cl.³ B32B *27/28;* **C08L** *33/02, 63/00*

U.S. Cl. 428—413 **10 Claims**

1. A reactive hardenable binder composition based on

(A) at least one aliphatic, cycloaliphatic or aliphatic-cycloaliphatic polyepoxide with a total epoxy equivalent weight between 80 and 500, wherein at least 2 epoxidized cycloaliphatic radicals are bound via an aliphatic bridge,

(B) at least one polycarboxylic acid unit of formula



(I)

having an acid number between 30 and 400 wherein

R^1 is a radical of an at least oligomer product selected from the group consisting of polyesters and polymers having initially free OH-groups,

R^2 is a radical of a dicarboxylic carbocyclic acid having a COOH-group in ortho-position to its ester bond and

(C) a catalyst component of the formula



(II)

wherein

R^3 is a radical of a homo- or copolymer or combination of both of an unsaturated carboxylic acid with a statistically distributed number of COOH side groups having an acid number between 10 and 500, or the radical of a polyester having initially free COOH groups,

Me is one equivalent of an alkali or an alkaline earth metal, thus being present in its salts form, said component (C) is present in such an amount that the metal content is between 0.02 and 0.2 equivalent-%, referred to component (B), the ratio of the total epoxy equivalents of component (A) to the free COOH-groups of component (B) is between 1:5 and 5:1.

6. A process for the preparation of hardened products based on a composition as claimed in claim 1 wherein the composition is hardened at a temperature between −30° and 350° C.

4,411,956

MAGNETIC RECORDING MEDIUM

Akihiro Matsufuji; Akira Kasuga, and Hajime Miyatsuka, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 11, 1982, Ser. No. 347,810

Claims priority, application Japan, Feb. 13, 1981, 56-19904

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—425.9 **11 Claims**

1. A magnetic recording medium, comprising:

a non-magnetic support base; and

a magnetic layer overlaid on a surface of said non-magnetic support base, said magnetic layer comprising ferromagnetic particles and a binder, said ferromagnetic particles being metal particles and said binder consisting essentially of (a) a nitrocellulose and (b) a polyurethane resin, wherein said nitrocellulose is selected from the group consisting of SS type nitrocellulose with a nitrogen content of 10.7–11.5% and RS type nitrocellulose with a nitrogen content of 11.5–12.2%.

4,411,957

MAGNETIC RECORDING MEDIUM

Fukunori Tokuda, and Yutaka Nakashima, both of Komoro, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

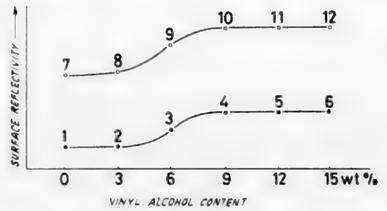
Filed Aug. 27, 1982, Ser. No. 412,164

Claims priority, application Japan, Sep. 3, 1981, 56-137727; Sep. 3, 1981, 56-137728; Sep. 18, 1981, 56-146119; Sep. 18, 1981, 56-146120

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—425.9 **6 Claims**

1. A magnetic recording medium comprising a base and a magnetic coating material applied thereon, said coating being made of a binder which consists of a synthetic resin having a metal sulfonate group and a vinyl chloride-vinyl acetate copolymer containing not less than 8% vinyl alcohol on the basis



of the weight of the copolymer, and magnetic particles dispersed in said binder.

4,411,958

MAGNETIC RECORDING MEDIUM

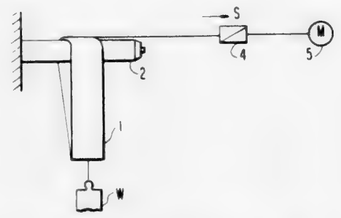
Masami Sato; Yasutoshi Okuzawa, and Noburo Hibino, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 23, 1981, Ser. No. 314,342

Claims priority, application Japan, Oct. 24, 1980, 55/149133

Int. Cl.³ H01F *10/00*

U.S. Cl. 428—457 **2 Claims**



1. A magnetic recording medium comprising a base, a magnetic layer formed thereon and a back coating layer on the surface of the base opposite and magnetic layer, the coefficient of friction (μ_B) of the surface opposite to the magnetic layer in transversal direction against the axial direction of loading post being under the straight line represented by the following formula, with the proviso that μ_B is less than or equal to 0.30, and the total thickness of the medium being 15.5 μm or less:

$$\mu_B = 0.1 S_{TD} - 0.05$$ (wherein S_{TD} is the stiffness of the medium in transversal direction and $0.5 < S_{TD} \leqq 6.0$).

4,411,959

SUBMICRON-PARTICLE DUCTILE SUPERCONDUCTOR

Aleksander I. Braginski, Pittsburgh, and Alan T. Male, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 17, 1981, Ser. No. 293,537

Int. Cl.³ H01B *12/00*

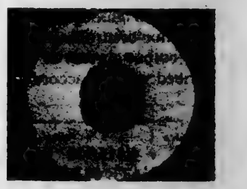
U.S. Cl. 428—558 **12 Claims**

9. A superconducting composite wire comprising:

a. an encapsulating sheath of ductile conducting metal; and

b. encapsulating filaments of essentially contiguous submicron-particle superconducting powder;

wherein said submicron-particle superconducting powder is either coated with a layer of lubricant or mixed with a lubricant powder of comparable particle size, said lubricant being less than 10% by volume of said superconducting powder.



4,411,960

ARTICLES COATED WITH WEAR-RESISTANT TITANIUM COMPOUNDS

Howard Mizuhara, San Mateo, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 21, 1981, Ser. No. 332,429

Int. Cl.³ B22D *25/00*

U.S. Cl. 428—610 **2 Claims**

1. An article of manufacture consisting essentially of a substrate selected from ceramic and metallic substrates and a coating over at least a portion of said substrate said coating having an outer surface consisting essentially of from about 3% to about 27% nickel, from about 0 to about 24% by weight of copper and balance selected from the group consisting of titanium carbide, titanium nitride, titanium carboxynitride and mixtures thereof, an inner surface adjacent and bonded to said substrate said inner surface consisting essentially of from about 5% to about 30% by weight of nickel, from 0 to about 25% by weight of copper, balance titanium, said inner and outer surfaces having been formed from the same brazing alloy composition and a zone between said outer and inner surface containing a gradient of elemental concentration intermediate between said outer and said inner surfaces.

4,411,961

COMPOSITE ELECTROPLATED ARTICLE AND PROCESS

Robert A. Tremmel, Woodhaven, Mich., assignor to Occidental Chemical Corporation, Warren, Mich.

Filed Sep. 28, 1981, Ser. No. 305,887

Int. Cl.³ B32B *15/01*; **C25D** *3/04, 3/12, 3/56*

U.S. Cl. 428—613 **39 Claims**

1. A composite electroplated article comprising a body having an electrically conductive surface, an adherent first layer on said surface comprising a nickel-iron alloy having an average iron content of about 15 to about 50 percent by weight, an adherent second layer on said first layer comprising a nickel-containing plate having an average sulfur content of about 0.02 to about 0.5 percent by weight, and an adherent third layer on said second layer comprising a nickel-iron alloy having an average iron content less than that of said first layer and ranging from about 5 to about 19 percent by weight.

21. A process for making a composite electroplated article comprising the steps of providing a body with an electrically conductive surface, electrodepositing an adherent first layer on said surface comprising a nickel-iron alloy having an average iron content of about 15 to 50 percent by weight, electrodepositing an adherent second layer on said first layer comprising a nickel-containing plate having an average sulfur content of about 0.02 to about 0.5 percent by weight, and electrodepositing an adherent third layer on said second layer comprising a nickel-iron alloy having an average iron content less than that of said first layer and ranging from about 5 to about 19 percent by weight.

4,411,962

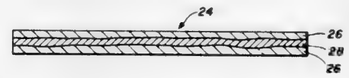
INDUCED OR CONSTRAINED SUPERPLASTIC LAMINATES FOR FORMING

Robert M. Johnson, Arlington, Tex., assignor to Vought Corporation, Dallas, Tex.

Filed Dec. 8, 1981, Ser. No. 328,742

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—615 **24 Claims**



1. A metal laminate comprising a layer of a superplastic metal metallurgically bonded to a layer of a non-superplastic metal.

4,411,963

THIN FILM RECORDING AND METHOD OF MAKING

Harry E. Aine, 1804 Stierlin Rd., Mountain View, Calif. 94040

Division of Ser. No. 736,814, Oct. 29, 1976, Pat. No. 4,277,540, which is a continuation-in-part of Ser. No. 139,887, May 3, 1971, abandoned. This application Jul. 6, 1981, Ser. No. 280,844

Int. Cl.³ B21D *39/00*

U.S. Cl. 428—622 **22 Claims**

1. In a magnetic recording medium, a substrate member, a film of magnetic recording material overlaying said substrate, and a protective layer of gold and tantalum overlaying said film of magnetic recording material.

4,411,964

COMPOSITE COATING STEEL SHEETS HAVING GOOD CORROSION RESISTANCE PAINTABILITY AND CORROSION RESISTANCE AFTER PAINT COATING

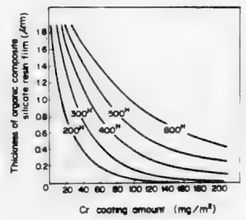
Tomihiro Hara; Masahiro Ogawa; Masakazu Tsukada, and Masaaki Yamashita, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 17, 1981, Ser. No. 331,663

Claims priority, application Japan, Dec. 24, 1980, 55-182112

Int. Cl.³ C25D *3/04, 11/38*

U.S. Cl. 428—626 **25 Claims**



1. A composite coating steel sheet having good corrosion resistance, paintability and corrosion resistance after point coating, which consisting essentially of a plated base steel sheet, a chromate film formed on the surface of the plated base steel sheet and a composite silicate resin film formed on the chromate film and consisting essentially of a colloidal silica, an organic resin and a silane compound.

4,411,965

PROCESS FOR HIGH SPEED NICKEL AND GOLD ELECTROPLATE SYSTEM AND ARTICLE HAVING IMPROVED CORROSION RESISTANCE

Donald R. Rosegren, Cresskill, and Linda J. Mayer, Denville, both of N.J., assignors to Occidental Chemical Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 202,410, Oct. 31, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 407,661

Int. Cl.³ C25D *5/12*

U.S. Cl. 428—672 **11 Claims**

1. A process for obtaining an improved corrosion-resistant gold plating on a substrate which comprises the following sequential plating steps:

(a) electrodepositing a ductile, stress-free nickel coating on said substrate from an electroplating bath containing a nickel salt, an electrolyte selected from the group consisting of boric acid, and citric acid, ortho-formyl benzene sulfonic acid, and as a wetting agent, perfluorocyclohexyl potassium sulfonate; and

(b) electrodepositing a base metal hardened gold coating on the resulting ductile, stress-free nickel plated substrate from an electroplating bath containing a gold salt, an electrolyte selected from the group consisting of acetic acid, citric acid, formic acid and mixtures thereof, and a metal salt hardener selected from the group consisting of cobalt, indium, nickel, zinc salts and mixtures thereof.

11. A substrate having formed thereon a cobalt-hardened gold/low stress nickel composite coating with improved corrosion resistance prepared by the process of claim 1.

4,411,966

MAGNETIC RECORDING MEDIUM

Nobutaka Yamaguchi; Nobuo Tsuji; Yasutoshi Okuzawa; Norio Nasu, and Masaaki Fujiyama, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 28, 1982, Ser. No. 372,686

Claims priority, application Japan, Apr. 28, 1981, 56-63377

Int. Cl.³ G11B *5/70;* **H01F** *10/02*

U.S. Cl. 428—695 **4 Claims**

1. A magnetic recording medium comprising a magnetic recording layer on the surface of a non-magnetic support, the magnetic recording layer comprising a ferromagnetic powder, 0.1 to 2% by weight based on the weight of the ferromagnetic powder of a saturated or unsaturated fatty acid having 6 to 22 carbon atoms, 0.01 to 1% by weight based on the weight of the ferromagnetic powder of a polysiloxane and 0.1 to 2% by weight based on the weight of the ferromagnetic powder of a fatty acid ester having a melting point of at most 60° C.

4,411,967

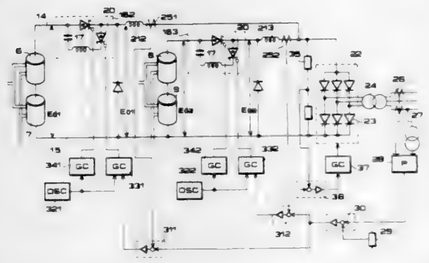
CELL GENERATING SYSTEM

Masao Yano, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1982, Ser. No. 368,517

Int. Cl.³ H01M *8/04*

U.S. Cl. 429—23 **3 Claims**



1. A generating system wherein a plurality of cells are operated in parallel with each other, which comprises each of said plurality of cells being provided with a control circuit including chopper means each composed of switching elements being ignition-controlled and each connected to the output terminal of said respective cells, and ignition circuits each generating an ignition signal for ignition-controlling said switching elements in such manner that output current of said chopper means is made to be a prescribed value in accordance with said output current.

4,411,968

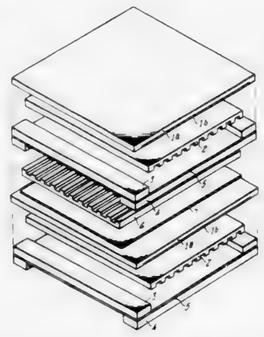
MOLTEN CARBONATE FUEL CELL INTEGRAL MATRIX TAPE AND BUBBLE BARRIER

Carl A. Reiser, and Donald L. Maricle, both of Glastonbury, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1981, Ser. No. 307,338

Int. Cl.³ H01M *4/86*

U.S. Cl. 429—41 **14 Claims**



1. A matrix material for a molten carbonate fuel cell comprising a fine pore, gas permeable, anode stable metal layer having about 25% to about 35% by volume porosity bonded to a matrix tape, the matrix tape comprising a mixture of particles inert to molten carbonate electrolyte having a particle size less than about 1 micron, ceramic particles having a particle size greater than about 25 microns, and an organic polymeric binder material, the binder material being present in an amount at least about 25% by volume, the matrix tape being flexible, pliable, and compliant at room temperature.

8. A molten carbonate fuel cell containing an anode section, a cathode section, a matrix and electrolyte, wherein the improvement comprises as the matrix a fine pore, gas permeable, anode stable metal layer having about 25% to about 35% by volume porosity bonded to a matrix tape, the matrix tape comprising a mixture of particles inert to molten carbonate electrolyte having a particle size less than about 1 micron, ceramic particles having a particle size greater than about 25 microns, and an organic polymeric binder material, the binder material being present in an amount at least about 25% by volume, the matrix tape being flexible, pliable and compliant at room temperature.

4,411,969

BATTERY CONSTRUCTION CHARACTERIZED BY REACTIVELY LIMITED GRIDLESS ELECTRODE MEANS, AND METHODS OF MAKING AND OPERATING SAME

Erik G. Sundberg, Newtown, Pa., assignor to Koehler Manufacturing Company, Marlborough, Mass.

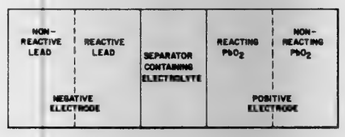
Filed May 6, 1981, Ser. No. 261,282

Int. Cl.³ H01M *10/06*

U.S. Cl. 429—50 **19 Claims**

1. A lead-acid battery construction including positive and negative electrode means supported in contact with separator means in which is contained an electrolyte,

characterized in that the positive and negative electrode means are free from grid structure and reactively limited and further characterized in that the negative electrode means is provided with reactive and non-reactive lead portions which determine and limit dimensional characteristics of reacting and non-reacting PbO_2 portions of the positive electrode means, the non-reacting PbO_2 portions of the positive electrode means and the reactive lead portions of the negative electrode means arranged in series and being of a mass operative to function as sole means for conducting a required electrical current into and out of the electrode means.



4,411,970

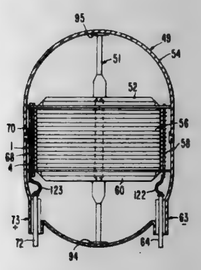
EQUALIZING BATTERY CELL BUSBAR

Theodore O. Meyer, Sunnyvale, and Gerrit van Ommering, San Francisco, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Nov. 16, 1981, Ser. No. 321,514

Int. Cl.³ H01M *2/26*

U.S. Cl. 429—161 **6 Claims**



1. A battery cell comprising:

an electrode stack comprising at least two electrode modules, each module having at least one positive and one negative electrode;

a conductive positive terminal coupled to each of said positive electrodes;

a conductive negative terminal coupled to each of said negative electrodes; and

a conductive equalizing busbar coupled between only one of said terminals and said electrodes of the same polarity as the terminal to which said equalizing busbar is coupled, wherein said equalizing busbar tends to equalize the resistance in each path that comprises both terminals and one module;

wherein said cell has two opposing ends, and each of said terminals protrudes into said cell at the same end.

4,411,971

LITHIUM COMPOUNDS

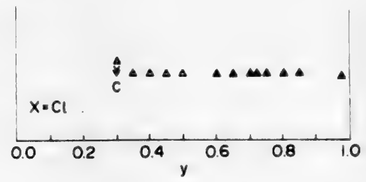
Akira Gotoh, Fuchu; Hidehito Obayashi, Tokyo; Ryo Nagai, Nara; Shouji Mochizuki, Suita, and Tetsuichi Kudo, Tokyo, all of Japan, assignors to Hitachi Maxell, Ltd., Japan

Filed Apr. 26, 1982, Ser. No. 371,798

Claims priority, application Japan, Apr. 27, 1981, 56/62381

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—191 **15 Claims**



1. A lithium compound composed of a lithium halide and lithium imide.

11. A cell comprising a lithium ionic conductive solid electrolyte with electrodes provided repsectively on both sides thereof, said solid electrolyte consisting of a lithium compound which is composed of a lithium halide and lithium imide.

4,411,972

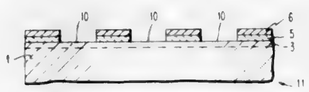
INTEGRATED CIRCUIT PHOTOMASK

Bernt Narken, Poughkeepsie, and Henry C. Schick, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1981, Ser. No. 336,005

Int. Cl.³ B32B *3/00, 7/00;* **G03F** *7/00*

U.S. Cl. 430—5 **25 Claims**



1. A photomask comprised of a transparent dielectric having a tin or tin-indium doped conductive zone therein coextensive with a surface thereof and a minimum transmittance of about 95%; and a mask on said surface and having a predetermined pattern of opaque extensions delineating a desired pattern of complementary transparent areas through said substrate.

4,411,973

ELEMENTS CONTAINING ORDERED WALL ARRAYS AND PROCESSES FOR THEIR FABRICATION

Hugh S. A. Gilmour, Rochester, and Richard N. Blazey, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 196,947, Oct. 14, 1980, abandoned. This application Aug. 17, 1981, Ser. No. 293,080

Int. Cl.³ G03G *13/22;* **G03C** *5/00, 7/12*

U.S. Cl. 430—7 **70 Claims**

63. In a process of producing an element useful in multicolor photography comprising

forming support means areally extended along an axial plane comprised of bottom wall portions and lateral wall portions cooperating to form an array of microcells and

sequentially positioning first, second, and third imaging compositions in first, second, and third interlaid sets of microcells, respectively, the first, second, and third imaging compositions being chosen from among compositions

each responsive to or useful in absorbing light in a different protion of the visible spectrum,

the improvement comprising

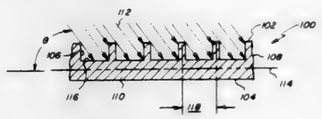
in forming the microcells, differentiating the microcells of each set from the microcells of the remaining sets in at least one of depth, lateral extent along the axial plane, and orientation,

positioning a radiation-sensitive material in the microcells,

directing radiation toward the support means at an acute angle with respect to the axial plane to impinge a portion of the radiation on the radiation-sensitive material in the first set of the microcells while a remaining portion of the radiation is interrupted by the lateral wall portions to entirely shadow the radiation-sensitive material in the second and third sets of microcells,

visibly differentiating the first set of microcells from the second and third sets of microcells as a function of exposure of the radiation-sensitive material,

selectively positioning the first imaging composition on the exposed bottom walls of the support in the first set of microcells,



directing radiation toward the support means at an acute angle with respect to the axial plane to impinge a portion of the radiation on the radiation-sensitive material in the second set of microcells while a remaining portion of the radiation is interrupted by the lateral walls to entirely shadow the radiation-sensitive material in the third set of microcells,

visibly differentiating the second set of microcells from the third set of microcells as a function of exposure of the radiation-sensitive material, and

selectively positioning the second imaging composition on the exposed bottom walls of the support in the second set of microcells.

64. The improved process according to claim **63**, wherein radiation is subsequently directed toward the support means substantially perpendicular to the axial plane to expose the bottom walls of the third set of microcells and selectively positioning the third imaging composition on the exposed bottom walls of the support in the third set of microcells.

67. The improved process according to claim **58**, **59**, **60**, **61**, **62**, **63**, and **64**, wherein the first, second, and third compositions are each coprised of a subtractive primary dye or dye precursor.

4,411,974

ORTHO-HALO PHENYL CARBOXYLIC ACID CHARGE ENHANCING ADDITIVES

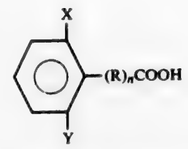
Chin H. Lu, Webster; Christopher J. Au Clair, Fairport, and Peter F. Erhardt, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,193

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—106 **33 Claims**

1. A dry negatively charged toner composition comprised of resin particles, and pigment particles, and from about 0.1 to about 10 weight percent of an ortho-halo phenyl carboxylic acid charge enhancing additive of the formula:



wherein X is halogen, Y is hydrogen or halogen, R is an alkylene group of from 1 to about 3 carbon atoms, and n is the number zero (0) or 1.

4,411,975

PARA-HALO PHENYL CARBOXYLIC ACID CHARGE ENHANCING ADDITIVES

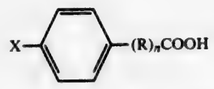
Chin H. Lu, Webster, and Christopher J. Au Clair, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 12, 1982, Ser. No. 367,194

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—106 **21 Claims**

1. A dry positively charged toner composition comprised of resin particles and pigment particles, and from about 0.1 percent to about 10 percent based on the weight of the toner particles, a para-halo phenyl carboxylic acid charge enhancing additive of the formula:



wherein X is a halogen, R is an alkylene group containing from about 1 to about 3 carbon atoms, and n is the number zero or 1.

4,411,976

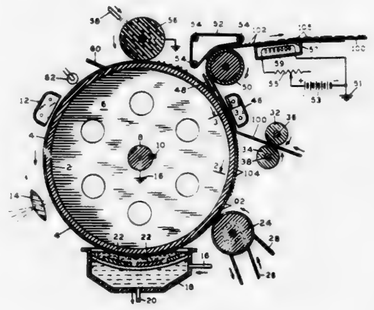
METHOD OF INCREASING THE DENSITY OF LIQUID-DEVELOPED GAP-TRANSFERRED ELECTROPHOTOGRAPHIC IMAGES AND DEVELOPING COMPOSITION FOR USE THEREIN

Benzion Landa, Edmonton, Canada, and E. Paul Charlap, Larchmont, N.Y., assignors to Savin Corporation, Valhalla, N.Y.

Continuation-in-part of Ser. No. 338,006, Jan. 8, 1982. This application Jan. 11, 1982, Ser. No. 338,519

Int. Cl.³ G03G *9/12*

U.S. Cl. 430—114 **5 Claims**



1. In a method of electrophotography in which a latent electrostatic image is formed on a photoconductive surface, the latent image is developed on said surface with toner particles comprising a polymer dispersed in a carrier liquid, said polymer being substantially insoluble in said carrier liquid at ambient temperatures and solvatable in said carrier liquid at an elevated temperature, and in which the developed image is transferred across a gap to a sheet positioned a predetermined distance from the photoconductive surface, the improvement which comprises heating said gap-transferred image to an elevated temperature sufficient to solvate a substantial portion of said polymer in said carrier liquid associated with said transferred image whereby rapidly to increase the density of the transferred image.

4,411,977

TONER IMAGE TRANSFER TO MULTILAYER INTERMEDIATE TRANSFER BODY

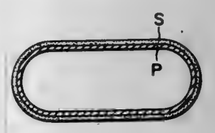
Noriyoshi Tarumi, Hachioji; Kiyoshi Kimura, Iruma, and Tadashi Miwa, Kunitachi, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,357

Claims priority, application Japan, Aug. 14, 1981, 56-126813

Int. Cl.³ G03G *13/16*

U.S. Cl. 430—126 **7 Claims**



1. An image forming process comprising, forming an electrostatic latent image on the surface of an image retaining member, visualizing said electrostatic latent image to a toner image, bringing said toner image into contact with an intermediate transfer body which comprises a substrate consisting of a thermoplastic resin layer and a thermosetting resin layer, and transferring said toner image on the surface of said intermediate transfer body to a recording medium.

4,411,978

PHOTORESIST MATERIALS AND PROCESSES OF USING WITH PHOTOSENSITIVE NAPHTHOQUINONE DIAZIDES AND NITRONES

Urbain L. Laridon, Wilrijk; Hendrik E. Kokelenberg, Merksem, and Rafaël P. Samijn, Hoboken, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Mar. 13, 1978, Ser. No. 885,998

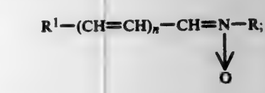
Claims priority, application United Kingdom, Mar. 15, 1977, 10903/77

Int. Cl.³ G03C *1/54, 1/60, 1/72, 5/00*

U.S. Cl. 430—157 **15 Claims**

1. A photosensitive recording material which comprises a supported layer containing a mixture of photosensitive substances in admixture with at least one polymer that is soluble in an alkaline aqueous liquid, characterized in that said mixture of photosensitive substances consists essentially of:

(A) at least one negative-working photosensitive nitrone of the formula:



in which:

R is an aromatic hydrocarbon group

R^1 is an aromatic or heterocyclic group,

n represents zero or 1, and

(B) at least one positive-working photosensitive naphthoquinone(1,2)-diazide (2) compound, having a higher ultraviolet absorption in the wavelength range of 350 to 400 nm and a higher visible light absorption above 400 nm than each such nitrone has, said (A) and (B) compounds being present in such relative quantities to each other that the layer exhibits a relative decrease in solubility in an alkaline aqueous liquid upon a sufficient exposure to a UV-light and a relative increase in solubility in an alkaline aqueous liquid upon a lesser exposure to visible light or to UV-light.

14. A method for producing a positive photoresist comprising the steps of:

(1) information-wise exposing the photosensitive layer of the material according to claim **1** to ultraviolet radiation and/or visible light of a dose sufficient to increase the solubility of the exposed portions by phototransformation of the naphthoquinone-(1,2)-diazide(2) compound without substantially affecting the nitrone, and

(2) overall contacting the exposed photosensitive layer with an aqueous alkaline liquid to remove selectively the exposed portions of the photosensitive layer.

15. A method for producing a negative photoresist comprising the steps of:

(1) information-wise exposing the photosensitive layer of the material according to claim **1** to ultraviolet radiation of a dose sufficient to decrease the solubility of the exposed portions by the photoproducts of the nitrone which are formed by such exposure in a higher amount than are the photoproducts of the naphthoquinone-(1,2)-diazide(2) compound(s),

(2) overall exposing the photosensitive layer to ultraviolet radiation and/or visible light of a dose substantially less than that of step 1 but sufficient to improve the solubility of the initially non-exposed portions, and

(3) overall contacting the exposed photosensitive layer with an aqueous alkaline liquid to remove selectively the initially non-exposed portions of the photosensitive layer.

4,411,979

DIAZO TYPE THERMOSENSITIVE RECORDING MATERIAL

Masanaka Nagamoto, Shizuoka; Yoshihiro Koseki, Numazu, and Susumu Iwata, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

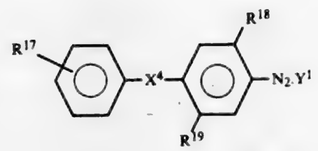
Filed Jan. 6, 1982, Ser. No. 337,334

Claims priority, application Japan, Jan. 28, 1981, 56-11186

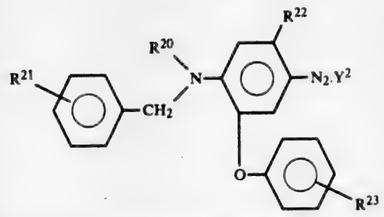
Int. Cl.³ G03C *1/54, 1/60*

U.S. Cl. 430—176 **18 Claims**

1. A diazotype thermosensitive recording material, comprising: a support material and a thermosensitive recording layer formed thereon, said thermosensitive recording layer comprising (a) a diazonium compound selected from the group consisting of diazonium compounds having the formulas (IV) and (V):



(IV)

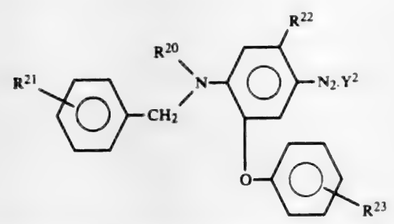


(V)

wherein R^{17}, R^{18}, R^{19}, R^{21}, R^{22} and R^{23} each is hydrogen, lower alkyl, lower alkoxy or halogen, R^{20} is hydrogen, lower

alkyl or lower alkoxy; R^4 is sulfur or oxygen; and Y^1 and Y^2 each represent a halogen ion, a fluorine-containing ion, or an acidic residue forming a double salt, in combination with a metallic salt, (b) a coupler consisting essentially of phloroglucinol, (c) a thermo-fusible or thermo-softening, film-forming binder and (d) a thermo-fusible material capable of promoting fusing said layer when heat is applied thereto to effect a speedy coloring reaction between said diazonium compound and said coupler, the weight ratio of said diazonium compound to said thermo-fusible material being in the range of 1:2 to 1:30, said thermosensitive recording layer has been formed by drying on said support, a dispersion comprising said diazonium compound, said coupler, said thermo-fusible or thermo-softening binder, said thermo-fusible material, and a solvent in which said diazo compound and said coupler are substantially insoluble, so that both said diazonium compound and said coupler exist as unconsecutive particles in said thermosensitive recording layer.

9. A diazotype thermosensitive recording material comprising a support material and a thermosensitive recording layer formed thereon, said thermosensitive recording layer comprising (a) a diazonium compound selected from the group consisting of diazonium compounds having the formula:



wherein R^{21}, R^{22} and R^{23} each is hydrogen, lower alkyl, lower alkoxy or halogen; R^{20} is hydrogen, lower alkyl or lower alkoxy and Y^2 represents a halogen ion, a fluorine-containing ion, or an acidic residue forming a double salt, in combination with a metallic salt, (b) a coupler, (c) a thermo-fusible or thermo-softening, film-forming binder and (d) a thermo-fusible material capable of promoting fusing said layer when heat is applied thereto to effect a speedy coloring reaction between said diazonium compound and said coupler, the weight ratio of said diazonium compound to said thermo-fusible material being in the range of 1:2 to 1:30, said thermosensitive recording layer has been formed by drying on said support a dispersion comprising said diazonium compound, said coupler, said thermo-fusible or thermo-softening binder, said thermo-fusible material, and a solvent in which said diazo compound and said coupler are substantially insoluble, so that both said diazonium compound and said coupler exist as unconsecutive particles in said thermosensitive recording layer.

4,411,980

PROCESS FOR THE PREPARATION OF FLEXIBLE CIRCUITS

Douglas M. Haney, Hockessin, Del., and John W. Lott, Tinton Falls, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 21, 1981, Ser. No. 304,107
Int. Cl.³ G03C *5/24*
U.S. Cl. 430—291 **17 Claims**

1. A process for the preparation of flexible circuits formed from a flexible photohardenable element which comprises:

(a) exposing imagewise to actinic radiation the flexible photohardenable element comprising, in order,

(1) a flexible support,

(2) a dry, tacky photohardenable layer comprising a photohardenable composition, including at least one organic elastomeric polymeric binder compound, and, optionally,

(3) a removable cover sheet;

(b) removing the cover sheet, if present, and applying particulate metal to the unexposed image areas of the photohardenable layer; optionally

(c) heating the element to a temperature in the range of 25° C. to 80° C.; then

(d) removing excess particulate metal; optionally,

(e) fixing or binding the particulate metal to the photohardenable layer by heating, curing by exposing to actinic radiation, embedding mechanically, and combinations thereof; and

(f) plating electrolessly or soldering the particulate metal bearing or metal containing areas thereby forming an electrically conductive flexible circuit, said electrically conductive flexible circuit when having a thickness of 0.001" can be repeatedly bent around a structure having a diameter of 0.600" without breaking, cracking or delaminating, said electrically conductive flexible circuit when having thicknesses different from 0.001" the diameter of said structure would be increased or decreased proportionally with the proviso that the minimum diameter of said structure would always be greater than 0.25".

4,411,981

METHOD FOR FORMING A PATTERN IN A THIN-FILM TRANSISTOR HAVING TELLURIUM SEMICONDUCTOR LAYER

Shigehiro Minezaki, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1981, Ser. No. 238,102
Claims priority, application Japan, Feb. 28, 1980, 55-24888
Int. Cl.³ C23F *1/02*; G03C *5/00*; H01L *21/00*
U.S. Cl. 430—299 **26 Claims**

1. A method for making a patterned tellurium semiconductor layer, comprising the steps of:

depositing a tellurium semiconductor layer on a substrate;

forming a photoresist layer, selected portions of said photoresist layer being soluble upon exposure to actinic radiation in an aqueous basic developing and etching solution consisting essentially of an effective amount of compounds selected from the group consisting of inorganic hydroxides, silicates, phosphates, organic bases, monobasic strong bases, water soluble basic amines, water soluble alcohols and mixtures thereof;

soft baking the substrate having both the tellurium and photoresist layer thereon;

exposing selected portions of the photoresist to actinic radiation to form a pattern in the photoresist;

contacting the thus exposed device with said aqueous basic developing and etching solution to selectively remove the exposed portions of said photoresist and to selectively etch the corresponding portions of said tellurium semiconductor layer;

washing the resultant device; and

contacting the remaining resist layer with an organic solvent to remove the remaining resist layer.

9. A method for making a thin-film transistor, comprising the steps of:

forming a source electrode, a drain electrode, a gate electrode and a tellurium semiconductor layer, wherein the tellurium semiconductor layer is made by a process consisting essentially of the following steps:

depositing a tellurium semiconductor layer on a substrate;

forming a photoresist layer, selected portions of said photoresist layer being soluble upon exposure to ultraviolet light in an aqueous basic developing and etching solution consisting essentially of an effective amount of compounds selected from the group consisting of inorganic hydroxides, silicates, phosphates, organic bases, monobasic strong bases, water soluble basic amines, water soluble alcohols and mixtures thereof;

soft baking the substrate having both the tellurium and photoresist layer thereon;

exposing selected portions of the photoresist to ultraviolet light to form a pattern in the photoresist;

contacting the thus exposed device with said aqueous basic developing and etching solution to selectively remove the exposed portions of said photoresist and to selectively etch the corresponding portions of said tellurium semiconductor layer;

washing the resultant device; and

contacting the remaining resist layer with an organic solvent to remove the remaining resist layer.

4,411,982

METHOD OF MAKING FLEXIBLE PRINTED CIRCUITS

Chuji Shibuya, Katano; Satoshi Kaneda, Takatsuki; Takashi Kanehisa, Osaka; Masatoshi Kondo, Hirakata; Kenji Nogawa, Izumi, and Fumio Hasuike, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Continuation of Ser. No. 188,666, Sep. 19, 1980, abandoned. This application Jan. 12, 1982, Ser. No. 338,907
Claims priority, application Japan, Sep. 26, 1979, 54-124615
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—314 **9 Claims**

1. In a method of making a flexible printed circuit wherein:

(a) a flexible belt-like substrate strip of an insulating polymer resin film is provided with a layer of electrically conductive metal foil bonded on at least one face and is punched with a plurality of through holes;

(b) a photopolymer film is formed on said layer of electrically conductive metal foil;

(c) the photopolymer film is exposed in a predetermined pattern;

(d) the photopolymer film is developed and is thereby removed according to said pattern;

(e) the foil on the substrate, where it is now bare of photopolymer film in certain areas as a result of conducting step (d), is subjected to an etchant, for removing said layer of electrically conductive metal foil where it has thus been bared;

(f) the photopolymer film is removed from where it remains in place upon the remaining pattern of electrically conductive metal foil that is to become electrical circuitry; and

(g) a solder resist layer is formed on selected portions of the thus-bared pattern of electrically conductive metal foil that is to become electrical circuitry,

an improvement for overcoming a problem which arises where the substrate strip of insulating polymeric resin film is subject to longitudinal shrinkage during processing subsequent to the conducting of step (a), in that, in conducting step (g), said selected portions where said solder resist layer is formed are inaccurately located relative to said through holes or said pattern of electrically conductive metal foil that is to become electrical circuitry,

said improvement comprising:

in conducting step (e) there is left on said substrate strip of insulating polymer resin, at least one long, narrow band of said layer of electrically conductive metal in a substantially non-etched condition, of which each such band lies near and extends parallel to a respective lateral extreme of said belt-like strip of insulating polymer resin and adjacent, but separate from and laterally outside said pattern of electrically conductive metal foil that is to become electrical circuitry, so that said at least one band is available at least until the completion of the conducting of step (g), to prevent inaccurate location of said selected portions where said solder resist layer is formed by preventing longitudinal polymer film of said substrate,

said at least one band being formed so as to be on the order of as long as said pattern of electrically conductive metal foil that is to become electrical circuitry, at least to the extent that said pattern of electrically conductive metal is to become one flexible printed circuit.

4,411,983

METHOD FOR PROCESSING AN IMAGE-FORMING MATERIAL

Yasuo Washizawa; Fumiaki Shinozaki; Tomoaki Ikeda, all of Asaka, and Sho Nakao, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 228,506, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 33,071, Apr. 25, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 357,114
Claims priority, application Japan, Apr. 25, 1978, 53/48837
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—325 **3 Claims**

1. In a method of processing an image-forming material comprising a support having thereon an alkaline solution developable light-sensitive resin composition layer developable by fall-off development including image-wise exposure followed by contact with an alkaline developer solution and mechanical abrasion, the improvement which comprises said method comprising the sequential steps of

(1) imagewise exposing said image-forming material,

(2) contacting said image-wise exposed image-forming material obtained in (1) with said alkaline developer solution, and

(3) subsequently treating the developer solution-contacted image-forming material obtained in (2) with

a mixture of water and an organic solvent miscible with water in a volume ratio of water to organic solvent of 100:0.2 to 100:10, said organic solvent being selected from the group consisting of ethylene glycol monophenyl ether, benzyl alcohol, ethylene glycol monobutyl ether, ethylene glycol monoethyl ether, ethylene glycol monomethyl ether and diethylene glycol monomethyl ether.

4,411,984

DYE PRECURSORS AND THEIR USE IN PHOTOGRAPHIC MATERIALS AND PROCESSES

Rolf S. Gabrielsen, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1982, Ser. No. 373,915
Int. Cl.³ G03C *5/24, 1/02*
U.S. Cl. 430—351 **29 Claims**

1. In a photographic element comprising a support having thereon, in reactive association, in binder, photographic silver halide and a dye precursor, the improvement wherein,

said dye precursor is a diphenylamine having, in an ortho position to the amine, a sulfonyldiamido group that is capable upon oxidation of said diphenylamine of releasing a sulfonylamine fragment which, in turn, is capable of thermally releasing ammonia or an amine and wherein said diphenylamine is capable upon oxidation of forming a phenazine dye.

4,411,985

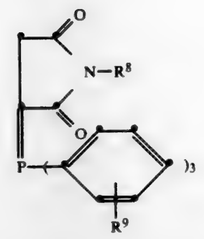
HEAT STABILIZABLE PHOTOGRAPHIC SILVER HALIDE MATERIAL AND PROCESS

Lawrence R. Morrow, Richmond, Tex., and John Thatcher, Webster, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1981, Ser. No. 303,314
Int. Cl.³ G03C *1/02, 5/24*
U.S. Cl. 430—352 **63 Claims**

1. In a heat stabilizable photographic silver halide element comprising a support having thereon, in binder, in reactive association, (a) photographic silver halide, and (b) a silver halide stabilizer precursor, the improvement comprising:

as said stabilizer precursor, a silver halide stabilizing concentration of a phosphorane represented by the formula:



wherein:

R^8 is hydrogen, alkyl containing 1 to 20 carbon atoms or aryl containing 6 to 12 carbon atoms; and

R^9 is hydrogen or alkyl containing 1 to 3 carbon atoms.

4,411,986

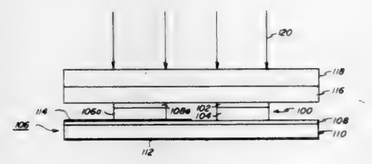
RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER

Thomas I. Abbott, Rochester, and Cynthia Jones, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 320,907, Nov. 12, 1981, abandoned. This application Sep. 30, 1982, Ser. No. 430,222

Int. Cl.³ G03C *1/76*

U.S. Cl. 430—502 **20 Claims**



1. In a radiographic element comprised of

first and second imaging means,

at least said first imaging means including a silver halide emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains, and

a support interposed between said imaging means capable of transmitting radiation to which said second imaging means is responsive

the improvement comprising said first imaging means containing

tabular silver halide grains having a thickness of less than 0.3 micron, a diameter of at least 0.6 micron, and an average aspect ratio of greater than 8:1 accounting for at least 50 percent of the total projected area of said silver halide grains present in said silver halide emulsion and

spectral sensitizing dye adsorbed to the surface of said tubular silver halide grains in an amount sufficient to substantially optimally sensitize said tubular grains.

4,411,987

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hidetoshi Kobayashi; Toshiyuki Watanabe; Keiichi Adachi, and Tadashi Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 8, 1982, Ser. No. 440,044

Claims priority, application Japan, Nov. 6, 1981, 56-177989

Int. Cl.³ G03C *1/02, 1/40*

U.S. Cl. 430—542 **38 Claims**

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer wherein the photographic light-sensitive material contains one or more unsubstituted or substituted glycoluril compounds.

4,411,988

PROCESS FOR THE DETERMINATION OF ANTI-HYALURONIDASE AND AN AGENT SUITABLE FOR THIS PURPOSE

Tibor Toth, Marburg, and Reiner Gils, Schwalmstadt, both of Fed. Rep. of Germany, assignors to Behringwerke A.G., Marburg, Fed. Rep. of Germany

Continuation of Ser. No. 139,456, Apr. 11, 1980, abandoned. This application Jan. 26, 1982, Ser. No. 342,824

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915309

Int. Cl.³ G01N *33/54;* **C12Q** *1/00, 1/34, 1/14*

U.S. Cl. 435—7 **4 Claims**

1. A method for determining anti-hyaluronidase in an aqueous solution thereof, which comprises first reacting a defined amount of streptococcal hyaluronidase with a dilution series of said aqueous solution of anti-hyaluronidase, adding a defined amount of hyaluronic acid to said dilution series, and then adding a mixture of 10 parts by weight of cetyl trimethyl ammonium halide with from 1 to 10 parts by weight of a dis-azo dyestuff to said dilution series to precipitate the hyaluronic acid not decomposed by streptococcal hyaluronidase, and determining the limiting concentration for which a precipitate forms.

3. A test kit for determining anti-hyaluronidase in an aqueous solution thereof, said kit comprising:

(a) human serum containing a defined concentration of anti-hyaluronidase, for use as a reference standard;

(b) streptococcal hyaluronidase for addition to said reference standard and the aqueous test solution to be tested for reaction with anti-hyaluronidase present in said standard and test solution.

(c) a hyaluronic acid substrate consisting of a mixture of hyaluronic acid and glycine for subsequent addition to said reference standard and test solution for reaction with excess unreacted hyaluronidase present therein; and

(d) a dyestuff reagent comprising 10 parts by weight of a cetyl trimethyl ammonium halide with from 1 to 10 parts by weight of a dis-azo dyestuff for further subsequent addition to said reference standard and test solution for the visually detectable precipitation of excess unreacted hyaluronic acid present therein, wherein (a), (b), (c), and (d) are present in amounts sufficient to perform the method of claim 1.

4,411,989

PROCESSES AND DEVICES FOR DETECTION OF SUBSTANCES SUCH AS ENZYME INHIBITORS

Ann E. Grow, Kansas City, Mo., assignor to Midwest Research Institute, Kansas City, Mo.

Filed Aug. 13, 1981, Ser. No. 292,611

Int. Cl.³ C12N *9/12, 9/18, 9/76, 11/00;* **C12Q** *1/46, 1/48, 1/38;* **C12M** *1/34*

U.S. Cl. 435—20 **9 Claims**

1. A method for detecting the presence in a fluid medium of an inhibitor capable of combining with an enzyme, comprising the steps of:

(a) collecting a sample of said inhibitor in said fluid medium by bringing said fluid medium into contact with substantially uncombined enzyme, thereby forming an enzyme-inhibitor combination; and

(b) detecting any infrared wave-energy interaction characteristic of said enzyme-inhibitor combination, which differs, at a given infrared wavelength, from the infrared wave-energy interaction characteristic of the substantially uncombined enzyme at said wavelength, said detecting step including the measurement of the percent transmission of infrared energy of the enzyme-inhibitor combination at the given wavelength, the percent transmission of infrared energy of the substantially uncombined enzyme at said wavelength being known.

4,411,990

PRIMARY BIOASSAY OF HUMAN TUMOR STEM CELLS

Sydney E. Salmon, Tucson, Ariz., and Anne W. Hamburger, Potomac, Md., assignors to University Patents, Inc., Norwalk, Conn.

Continuation of Ser. No. 48,190, Jun. 13, 1979, abandoned, which is a continuation of Ser. No. 922,722, Jul. 7, 1978, abandoned. This application Apr. 15, 1981, Ser. No. 254,346

Int. Cl.³ C12Q *1/18, 1/00;* **C12O** *1/29*

U.S. Cl. 435—32 **25 Claims**

1. An in vitro method for quantitatively assaying for the viable colony-forming tumor stem cell content of a sepcimen of primary explanted cells obtained from primary or metastatic human tumors employing a two-layer culture system exhibiting interlayer diffusibility of dissolved nutrients and growth factors, comprising the steps of:

(a) forming a cell-free gelled underlayer comprising a liquid tissue culture feeder nutrient medium capable of supporting human tumor cell growth and a gelling agent for said feeder nutrient medium;

(b) preparing a gelable liquid single-cell suspension of said explanted cells in a liquid tissue culture carrier nutrient medium capable of supporting human tumor cell growth and containing a gelling agent for said carrier nutrient medium;

(c) plating said suspension onto said underlayer and allowing gelation thereof to occur, thereby forming a gelled overlayer which contains a known quantity of said explanted cells and which together with said underlayer constitutes said two-layer culture system, said culture system further containing a tumor stem cell colony growth-promoting concentration of METGF dissolved within at least one of said two layers, said METGF being a water-soluble tumor growth factor which is elaborated by macrophages;

(d) incubating said culture system for a period of time sufficient to grow tumor stem cell colonies, the concentration of said explanted cells in said suspension being within a range enabling a substantially proportional relationship to exist between the total number of said explanted cells present in said overlayer and the total number of resulting tumor stem cell colonies grown during said incubation period; and

(e) measuring the viable colony-forming tumor stem cell content of said overlayer as the total number of resulting tumor stem cell colonies grown during said incubation period.

4,411,991

PROCESS FOR FERMENTATIVE PRODUCTION OF AMINO ACIDS

Kan Hirakawa, Takasago; Ryoji Takakuma, Kakogawa; Koji Nomura, Takasago; Masami Katoh, and Kiyoshi Watanabe, both of Akashi, all of Japan, assignors to Kanegafuchi Chemical Industry Company, Limited, Osaka, Japan

Filed Sep. 17, 1981, Ser. No. 302,996

Claims priority, application Japan, Oct. 7, 1980, 55-140818; Apr. 9, 1981, 56-54127; Apr. 21, 1981, 56-60098; Jun. 16, 1981, 56-93130

Int. Cl.³ C12P *39/00, 13/04, 13/22, 13/20, 13/14, 13/08, 13/06;* **C12R** *1/13, 1/15, 1/225, 1/285, 1/365, 1/46*

U.S. Cl. 435—42 **18 Claims**

1. In a process for producing an amino acid by mixed-cultivating microorganisms in an aqueous nutrient medium containing one or more carbohydrates, accumulating an amino acid in the resultant culture broth, and recovering the amino acid from the culture broth, the improvement comprising aerobically mixed-cultivating an amino acid-producing microorganism having an ability of assimilating lactic acid, but having no or a weak ability of assimilating at least one carbohydrate in the nutrient medium, and at least one lactic acid-producing microorganism having an ability of assimilating the carbohydrate which is nonassimilable or weakly assimilable by said amino acid-producing microorganism, whereby an amino acid is produced from the carbohydrate in one step operation.

4,411,992

PROCESS FOR PREPARING MURINE INTERLEUKIN 2

Steven Gillis, Woodinville, Wash., assignor to Immunex Corporation, Seattle, Wash.

Filed Apr. 14, 1981, Ser. No. 249,906

Int. Cl.³ C12P *21/00, 1/00, 21/02;* **C12N** *5/00, 5/02;* **C12R** *1/91;* **A61K** *37/00*

U.S. Cl. 435—68 **25 Claims**

1. A process for the production of IL-2 from a murine malignant T-cell line, comprising culturing malignant murine T-cells in a culture medium containing a T-cell mitogen, and recovering the IL-2 from the culture medium.

4,411,993

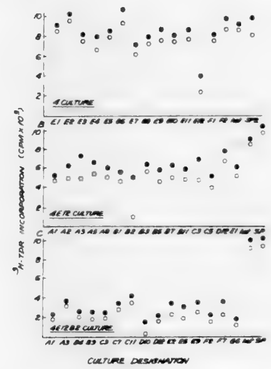
HYBRIDOMA ANTIBODY WHICH INHIBITS INTERLEUKIN 2 ACTIVITY

Steven Gillis, 15509 NE. 198th, Woodinville, Wash. 98072

Filed Apr. 29, 1981, Ser. No. 258,601

Int. Cl.³ C12P *21/00;* **C12N** *5/00, 5/02, 1/00;* **C12P** *1/00, 21/02;* **C12R** *1/91;* **A61K** *39/00*

U.S. Cl. 435—68 **69 Claims**



1. A process for producing a hybridoma antibody which inhibits IL-2 activity, comprising:

immunizing murine B-lymphocyte cells with IL-2;

activating said immunized murine B-lymphocyte cells with a B-cell mitogen;

fusing said activated murine B-lymphocyte cells with murine myeloma cells to form hybridoma anti-IL-2 antibody producing cells

cultivating said anti-IL-2 antibody producing cells; and

recovering the anti-IL-2 antibody produced by said anti-IL-2 antibody producing cells.

4,411,994

PROTEIN SYNTHESIS

Walter Gilbert; Stephanie A. Broome, both of Cambridge; Lydia J. Villa-Komaroff, Boston, and Argiris A. Efstratiadis, Cambridge, all of Mass., assignors to The President and Fellows of Harvard College, Cambridge, Mass.

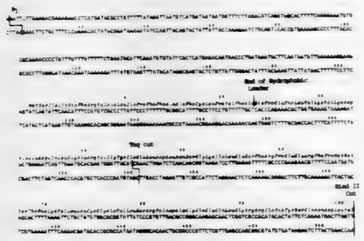
Filed Jun. 8, 1978, Ser. No. 913,533

Int. Cl.³ C12P *21/04, 21/00;* **C12N** *15/00, 1/00*

U.S. Cl. 435—71 **5 Claims**

1. The method of making within a bacterial host and excret-

ing through the membrane of the host cell a selected protein or polypeptide which comprises cleaving a bacterial gene for an extracellular or periplasmic carrier protein, within a cloning vehicle selected from the group comprising plasmids or phage genes, forming a hybrid gene by inserting into that cleavage



site a non-bacterial DNA fragment which codes for the selected protein or polypeptide, transforming said bacterial host with the hybrid gene, and culturing the transformed bacteria to express the hybrid gene and excrete the selected protein or polypeptide.

4,411,995

SYNTHESIS OF NICOTINAMIDE COFACTORS

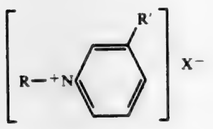
George Whitesides, Newton, and Davis R. Walt, Brookline, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 28, 1981, Ser. No. 306,460
Int. Cl.³ C12P *19/36*; C12N *11/08*; C07H *15/12, 19/00*
U.S. Cl. 435—90 **11 Claims**

1. A method of preparing nicotinamide mononucleotide comprising the steps of

(a) reacting ribose-5-phosphate with a basic material selected from the group of ammonia, primary and secondary amines and mixtures thereof in a polar, non-aqueous solvent solution; and

(b) reacting the resulting product with a pyridinium salt having the following formula:

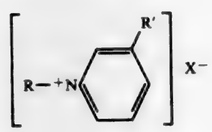


where R is a nitroaromatic group, R′ is a carbamoyl, alkyl, acetyl or alkoxycarbonyl group and X is a halide or other anion for charge balance.

3. A method of preparing nicotinamide adenine dinucleotide comprising the steps of:

(a) reacting ribose-5-phosphates with a basic material selected from the group of ammonia, primary and secondary amines and mixtures thereof while in a polar, non-aqueous solution;

(b) reacting the resulting product with a pyridinium salt having the following formula:



where R is a nitroaromatic group, R′ is a carbamoyl, alkyl, acetyl or alkoxycarbonyl group and X is a halide or other anion for charge balance; and

(c) reacting the second resulting product with adenosine triphosphate in the presence of nicotinamide adenine dinucleotide pyrophosphorase.

4,411,996

PROCESS FOR ISOMERIZING GLUCOSE

Norman E. Lloyd, Clinton, Iowa, assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 30, 1982, Ser. No. 393,845
Int. Cl.³ C12P *19/24*; C12N *9/96*
U.S. Cl. 435—94 **39 Claims**

1. A process for isomerizing glucose to fructose which comprises contacting a glucose-containing feed liquor containing from about 20 to about 65 weight percent glucose with chemically stabilized glucose isomerase at a temperature of from about 90° C. to about 130° C. at a pH of from about 3.5 to about 8 and a contact time of from about 10 seconds to about 5 hours to convert at least about 53 to about 60 weight percent of the glucose present in said liquor to fructose with no substantial formation of psicose.

4,411,997

METHOD FOR PRODUCING L-LYSINE BY FERMENTATION

Keishi Shimazaki; Yoshihiro Nakamura, and Yasutsugu Yamada, all of Saga, Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,455
Claims priority, application Japan, Dec. 29, 1980, 55-185676
Int. Cl.³ C12P *13/08*; C12N *15/00, 1/20*; C12R *1/13, 1/15*
U.S. Cl. 435—115 **7 Claims**

1. A method for producing L-lysine by fermentation, which comprises: culturing aerobically in a culture medium a mutant of the genus Brevibacterium or Corynebacterium which is resistant to ethylene glycol and capable of producing L-lysine; and recovering the L-lysine which accumulates in the culture medium.

4,411,998

SUPPRESSING METHOD OF ISO-CITRIC ACID FORMATION IN PRODUCING CITRIC ACID FROM HYDROCARBONS BY FERMENTATION

Takao Matsumoto; Atsushi Fujimaki, and Takeo Nagata, all of Yokohama, Japan, assignors to Showa Oil Company, Ltd., Japan

Filed Mar. 19, 1982, Ser. No. 359,773
Int. Cl.³ C12P *7/48*
U.S. Cl. 435—144 **2 Claims**

1. A method for suppressing iso-citric acid formation in producing citric acid from hydrocarbons by fermentation, comprising the steps of:

providing microoganisms selected from the group consisting of *Candida tropicalis, Candida lipolytica, Candida intermedia* and *Candida brumptii* and their mutants and their variants;

adding said microorganisms to a culture medium containing olefinic hydrocarbons; further adding to said medium from 0.005 to 0.5 percent on a weight basis of said culture medium of surface active agent selected from the group consisting of polyoxyethylene sorbitan monooleate, polyoxyethylene sorbitan monolaurate and sorbitan monooleate; and

culturing said microorganisms under aerobic conditions to produce a mixture of citric acid and isocitric acid, wherein the ratio of citric to isocitric acid is at least 2:1.

4,411,999

IMMOBILIZATION OF ENZYMES ON GRANULAR GELATIN

Shigeki Shigesada; Hironoshin Kitagawa; Toshio Mihara, and Yoshiaki Ishimatsu, all of Machida, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,870
Int. Cl.³ C12N *11/02, 11/00*
U.S. Cl. 435—177 **12 Claims**

1. A process for producing an immobilized enzyme composition, which comprises:

simultaneously reacting a non-proteolytic enzyme, a water soluble multi-functional reagent and a water soluble protein polymer selected from the group consisting of casein, albumin, gelatin and soybean protein with a non-hardened granular gelatin in the form of flakes, spherical granules or pellets having a particle size within the range of from 0.1 to 2.0 mm to form a film of the non-proteolytic enzyme immobilized on the surface of said granular gelatine, said non-proteolytic enzyme, water soluble multi-functional reagent and water soluble protein polymer being in solution when reacted with said granular gelatin, and the weight ratio of the non-proteolytic enzyme to granular gelatin ranging from 1:2 to 1:100, the weight ratio of the non-proteolytic enzyme to water soluble multi-functional reagent ranging from 1:0.01 to 1:2, the weight ratio of the non-proteolytic enzyme to water soluble protein polymer ranging from 1:0.01 to 1:2 and the weight ratio of the granular gelatin to the aqueous medium ranging from 1:0.2 to 1:3.

4,412,000

METHOD OF BINDING A BIOLOGICALLY ACTIVE MATERIAL TO A CARRIER CONTAINING HYDROXYL GROUPS

Hans-Dieter Lehmann; Gerd G. Krisam, both of Hechingen, and Ruth S. Golla, Hechingen-Weilheim, all of Fed. Rep. of Germany, assignors to Gambro Dialysatoren KG, Fed. Rep. of Germany

Filed Nov. 12, 1981, Ser. No. 320,215
Claims priority, application Sweden, Nov. 19, 1980, 8008096
Int. Cl.³ C12N *11/12, 11/08, 11/06*
U.S. Cl. 435—179 **13 Claims**

2. A method of binding a biologically active material to a carrier containing hydroxyl groups, said method comprising the steps of reacting a sufficient amount of an isocyanate compound with said carrier in the presence of a non-toxic titanium based compound which catalyzes the formation of urethane bonds to form an isocyanate-containing carrier; treating the isocyanate-containing carrier to remove therefrom titanium based compound; and binding said biologically active material to the isocyanate-containing carrier.

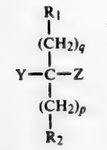
4,412,001

ISOLATION OF BACTERIAL LUCIFERASE

Thomas O. Baldwin, and Thomas F. Holzman, both of Bryan, Tex., assignors to Board of Trustees of The University of Illinois, Urbana, Ill.

Continuation-in-part of Ser. No. 230,178, Jan. 30, 1981, abandoned. This application Dec. 3, 1981, Ser. No. 326,244
Int. Cl.³ C12N *9/02*; C12Q *1/66*
U.S. Cl. 435—189 **11 Claims**

1. A method for isolating bacterial luciferase which comprises saturating an affinity resin which comprises a support material, a spacer arm and a ligand as described in the following Formulas J and K wherein ○— represents the support material; R_3 is oxygen or sulfur; each of R_4 and R_5 is sulfur, oxygen or —NH—; m is an integer from 2 to 6; Q is a straight or branched alkylene moiety having from 2 to 8 carbon atoms; L is

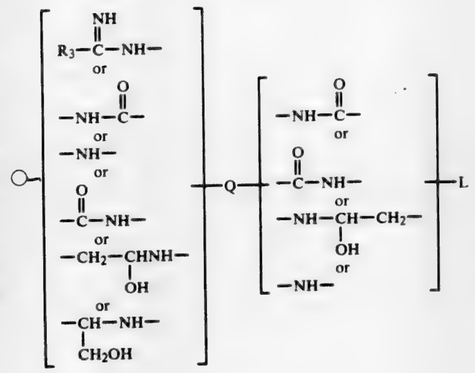


wherein Y is a bond or an alkylene chain of 1 to 4 carbon atoms, one or two carbon atoms of which may be branched; Z is hydrogen or a straight or branched alkyl group having from 1 to 4 carbon atoms; q is zero or one; p is zero, one or two; R_1 is hydrogen, phenyl or phenyl substituted with one or two substituents selected from halogen, trihalomethyl, a straight or branched alkoxy group having from 1 to 4 carbon atoms or a straight or branched alkyl group having from 1 to 4 carbon atoms; and R_2 is ortho, meta or para-biphenylyl, phenyl, or phenyl substituted with one or two substituents selected from halogen, trihalomethyl, a straight or branched alkoxy group having from 1 to 4 carbon atoms or a straight or branched alkyl group having from 1 to 4 carbon atoms with the provisos that: (a) when R_2 is biphenylyl, each of p and q is zero and R_1 is hydrogen; (b) when p is two, q is zero; and (c) when R_2 is other than biphenylyl, R_1 is other than hydrogen, or when the functional linkage in the right hand bracket is other than

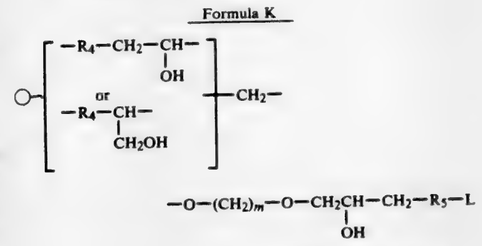


L is 2-(2,4-dichloro-6-phenylphenoxy)ethanyl or 2-(2,3-dichloro-6-phenylphenoxy)ethanyl:

Formula J



Formula K



with a sample containing bacterial luciferase suspended in an appropriate anionic buffer solution, washing said saturated resin with additional anionic buffer to remove unbound pro-

tein, eluting said washed saturated resin with an appropriate cationic buffer solution and recovering the bacterial luciferase therefrom.

4,412,002

PROCESS FOR PREPARING HEPATITIS A VIRUS

William J. McAleer, Ambler; Fred J. Bailey, Hatfield, and Henry Z. Markus, Wincote, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 26, 1982, Ser. No. 352,667
Int. Cl.³ C12N *7/08*
U.S. Cl. 435—237 **4 Claims**

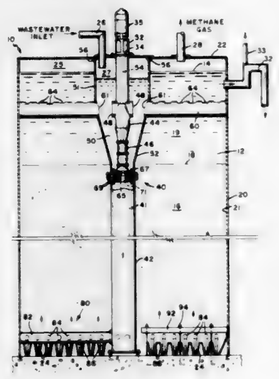
1. A method of growing hepatitis A virus in vitro in a cell culture susceptible to infection by hepatitis A virus comprising trypsinizing a culture of susceptible cells persistently infected with hepatitis A virus, replanting at least part of the trypsinized cells at least one additional time, and harvesting hepatitis A virus from at least some of the replanted cells.

4,412,003

INTEGRAL FLOW CIRCULATOR FOR FLUID BED REACTOR

Richard R. Evans, Norwalk, Conn., assignor to Dorr-Oliver Inc., Stamford, Conn.

Filed Jul. 30, 1981, Ser. No. 288,270
Int. Cl.³ C12M *1/00*
U.S. Cl. 435—287 **1 Claim**



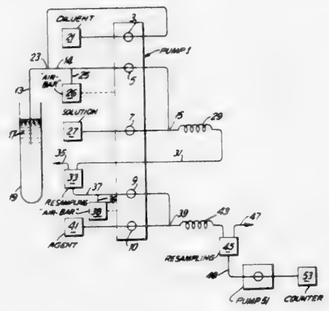
1. A fluid bed reactor for containing a volume of waste water undergoing treatment together with inert particulate material, comprising a reactor tank adapted for anaerobic biological processes which generate combustible gases in that it is provided with an air-tight cover, a gas space over the liquid in said reactor tank, a flow circulator in said reactor tank, including a column conduit extending from the bottom to the top of said reactor tank, a pump in said column conduit arranged to discharge vertically downward, a pump motor operatively connected to said pump and mounted on said cover, a pump well wall surrounding the upper end of said column conduit and the pump therein and having sealing contact with said cover, said pump well wall extending through said gas space into the liquid within said reactor tank, thereby providing a gas zone of limited volume within said pump well so that only said limited volume of gas is discharged into the atmosphere when said pump-containing section of said column conduit is withdrawn from said tank, a plurality of fixed, perforated, horizontal collection manifolds in flow connection with and positioned proximate the upper end of said column conduit but below the surface of the liquid in said reactor tank, a plurality of fixed, horizontal distributor headers adjacent the bottom of said reactor tank in flow connection with the column conduit, distributor pipes connected to said distributor header for injecting fluidizing liquid essentially uniformly across the cross-section of said reactor tank and adjacent the bottom thereof and an influent pipe in flow connection with said column conduit having connection with an external source of waste water.

4,412,004

METHOD FOR TREATING RED BLOOD CELLS TO EFFECT SPHERING AND REAGENT THEREFOR

Leonard Ornstein, White Plains, and Young R. Kim, Hartsdale, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,539
Int. Cl.³ G01N *33/48, 21/49*
U.S. Cl. 436—10 **27 Claims**



1. A diagnostic method for treating mammalian red blood cells in a sample to provide a sample which can be effectively measured electrooptically for determination of red blood cell volumes which process comprises combining an anticoagulated whole blood sample with a first isotonic solution containing sphering agent, and treating an aliquot of the resulting sample with a second isotonic solution containing a protein which reversibly binds the sphering agent and containing a sphering agent wherein the weight ratio of protein sphering agent in the aliquot and the final sample is from about 20:1 to about 70:1 and the concentration of sphering agent in said final sample is from about 2 mg./100 ml. to about 10 mg./100 ml.; and whereby the presence of the prescribed concentration of sphering agent could lead to lysis if sufficient of said protein were not present and a low red blood cell count existed in the original sample; and whereby the presence of less than the prescribed concentration of the sphering agent could lead to incomplete sphering if a high red blood cell count existed in the original sample.

2. The method of claim 1 wherein said whole blood sample is prediluted with saline as diluent resulting in about a 50% by volume dilution of sample.

10. The method of claim 2 wherein the final sample which contains sphered ree blood cells without volume change is subjected to light scattering measurement for red blood cell count and volume determination.

4,412,005

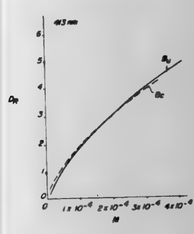
DETERMINATION OF TOTAL BILIRUBIN

Tai-Wing Wu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,230
Int. Cl.³ G01N *33/72*
U.S. Cl. 436—97 **14 Claims**

1. A spectrophotometric method for the determination of the B_T content of an aqueous liquid, said method comprising:
(a) contacting together said aqueous liquid and an essentially dry reagent zone of a test element, said reagent zone

comprising an interactive mordant for bilirubin to mordant bilirubin, and
(b) spectrophotometrically detecting in said test element the



absorption spectrum of said aqueous liquid for B_T at a wavelength within the range of from about 385 to about 425 nm at which the absorption characteristics of mordanted B_u and mordanted B_c are effectively identical.

4,412,006

METHOD FOR DETERMINATION OF NITRATE AND/OR NITRITE

Robert D. Cox, Austin, Tex., and Clyde W. Frank, Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Continuation of Ser. No. 174,690, Aug. 1, 1980, abandoned. This application Mar. 25, 1982, Ser. No. 361,586
Int. Cl.³ G01N *21/76*
U.S. Cl. 436—110 **4 Claims**

1. A method of selective determination of nitrite content of a test sample containing nitrite, and nitrate, and thereafter determining nitrate content of said sample, without also determining additional nitrogen content, said method comprising:
solubilizing a test sample containing nitrite and nitrate,
reducing the nitrite content of said sample with a weakly acidic solution of a water soluble iodide salt to produce nitric oxide, without also reducing the nitrate content,
stripping said nitric oxide from the reduction reaction mixture,
reacting said nitric oxide with ozone in a chemiluminescence reaction, and
determining the magnitude of the chemiluminescence reaction to indicate the nitrite content of said sample, and thereafter,
reducing the nitrate content of said sample with a strongly acidic solution of a transition metal reducing system selected from the group of ferrous ion in the presence of molybdenum ion, or titanium ion, to produce nitric oxide, without also reducing additional nitrogen content,
stripping said nitric oxide from the reduction reaction mixture,
reacting said nitric oxide with ozone in a chemiluminescence reaction, and
determining the magnitude of the chemiluminescence reaction to indicate the nitrate content of said sample.

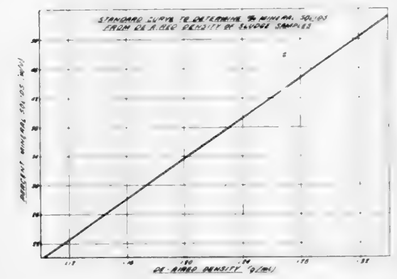
4,412,007

RAPID METHOD FOR BITUMEN ANALYSIS

Raymond N. Yong, Beaconsfield, and Amar J. Sethi, Quebec, both of Canada, assignors to Suncor, Inc., Toronto, Canada

Filed Jan. 20, 1982, Ser. No. 340,946
Int. Cl.³ G01N *33/24*
U.S. Cl. 436—139 **3 Claims**

1. A method for estimating the bitumen content in a material comprised of tar sands tailings or sludge which comprises (1) titrating samples of said materials with methylene blue to an end point showing no further adsorption of said methylene blue and relating said amount of adsorbed methylene blue to clay mineral content from an empirical curve, multiplying said clay mineral content by 0.0234 to obtain the percent adsorbed organic content of said sample, (2) determining the percent of total organic material of said material by a chromic acid oxida-



tion and subtracting the percent adsorbed organics from the percent total organics from the percent total organics to obtain the percent bitumen in said material.

4,412,008

COMPOSITE SINTER OF SILICON NITRIDE/BORON NITRIDE AND METHOD FOR MANUFACTURING THEREOF

Akira Miyamoto, Tokyo; Masaru Ishikawa; Masaaki Nishi, both of Fukuyama; Kenki Ishizawa, and Akira Shiranita, both of Bizen, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha and Shinagawa Shiroenga Kabushiki Kaisha, both of Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 234,939
Claims priority, application Japan, Feb. 23, 1980, 55-21070
Int. Cl.³ C04B *35/58*
U.S. Cl. 501—97 **10 Claims**

1. A method for manufacturing a composite sinter of silicon nitride/boron nitride which consists essentially of a network of silicon nitride within the range of from 60 to 97 wt. % and boron nitride within the range of from 3 to 40 wt. % as a dispersed phase in said network of said silicon nitride which comprises:
kneading silicon powder within the range of from 47.3 to 95.1 wt. % and boron nitride powder within the range of from 4.9 to 52.7 wt. %, as raw materials, with an organic solvent solution containing a dispersant and a binder;
press-forming the resultant kneaded mixture to prepare a green compact;
sintering said green compact in a non-oxidizing atmosphere at a temperature within the range of from 1,100° to 1,300° C. to prepare a sinter having a strength permitting machining;
machining said sinter; and,
sintering said machined sinter in a nitrogen atmosphere at a temperature within the range of from 1,250° to 1,450° C. to nitrify the same, thereby improving the strength and thermal shock resistance of said sinter.

4,412,009

SINTERED SI_3N_4 BODY

Michiyasu Komatsu; Akihiko Tsuge, both of Yokohama; Katsutoshi Komeya, Kanagawa, and Akio Ando, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 122,659, Feb. 19, 1980, Pat. No. 4,327,187. This application Sep. 23, 1981, Ser. No. 304,720
Claims priority, application Japan, Feb. 22, 1979, 54-19013
The portion of the term of this patent subsequent to Apr. 27, 1999, has been disclaimed.
Int. Cl.³ C04B *35/50, 35/58*
U.S. Cl. 501—97 **5 Claims**

1. A sintered ceramic body consisting essentially of at most

10%, exclusive of 0%, by weight of yttrium oxide; at most 10%, exclusive of 0%, by weight of aluminum nitride; at most 10%, exclusive of 0%, by weight of aluminum nitride; at most 5%, exclusive of 0%, by weight of at least one material selected from the group consisting of titanium oxide, magnesium oxide and zirconium oxide; and the balance essentially of silicon nitride; wherein said sintered ceramic body has a relative density of at least 95.1%.

4,412,010

ARC RESISTANT INSULATOR

Isao Ishii; Tadaki Murakami; Yoshiaki Sakamoto; Yoshikazu Utsumi, all of Amagasaki; Tatsuharu Nakamura, and Hiroshi Takayanagi, both of Sanda, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 14, 1982, Ser. No. 378,382

Claims priority, application Japan, May 15, 1981, 56-73170

Int. Cl.³ C04B *35/10*

U.S. Cl. 501—153 **10 Claims**

1. An arc resistant insulator which is composed of a matrix of a composite composition comprising an insulating base material containing aluminum oxide and/or aluminum hydroxide and mica powder, and a zinc borate hydrate composed essentially of $2ZnO.3B_2O_3.3H_2O$.

4,412,011

POLYMERIC CHOLESTEROL REDUCING AGENT HAVING VINYLIMIDAZOLE PENDANT GROUPS

Kunio Kihara; Hideo Toda; Motokuni Mori, and Koji Sato, all of Amimachi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd. and Mitsubishi Yuka Pharmaceutical Co., Ltd., both of Tokyo, Japan

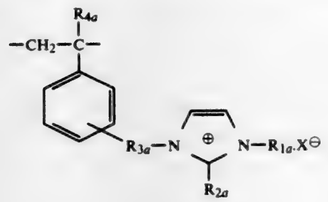
Filed Oct. 13, 1981, Ser. No. 311,069

Claims priority, application Japan, Mar. 2, 1981, 56-28378

Int. Cl.³ B01J *39/20;* **C08F** *26/06;* **A61K** *31/785*

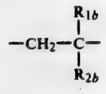
U.S. Cl. 521—38 **12 Claims**

1. A cholesterol reducing agent which consists essentially of a water-insoluble anion exchange resin composed of from 10 to 98 mole % of a structural unit represented by the formula A



A

where, R_{1a} is an alkyl group of from 1 to 12 carbon atoms, an aryl group of from 6 to 8 carbon atoms, an aralkyl group of 7 or 8 carbon atoms, or a $-CH_2CH(OH)CH_2Cl$ group; R_{2a} is a hydrogen atom, an alkyl group of from 1 to 17 carbon atoms, an aryl group of from 6 to 8 carbon atoms, or an aralkyl group of 7 or 8 carbon atoms; R_{3a} is an alkylene group of from 1 to 3 carbon atoms; R_{4a} is a hydrogen atom, a methyl group or an ethyl group; and $X^{\ominus}$ is a halogen ion, a hydroxyl ion, or $\frac{1}{2}$ (sulfate ion), from 0 to 90 mole % of a structural unit represented by the formula B

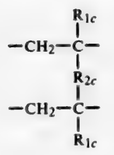


B

where R_{1b} is a hydrogen atom, a methyl group or an ethyl group; and R_{2b} is an aryl group of from 6 to 8 carbon atoms, a

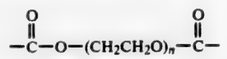


group (where R_3 is a hydrogen atom, an alkyl group of from 1 to 6 carbon atoms, or a glycidyl group) or an acryloxyl group, and from 0.1 to 30 mole % of a structural unit represented by the formula C



C

where R_{1c} is a hydrogen atom or a methyl group; R_{2c} is an arylene group of from 6 to 8 carbon atoms, an alkylene group of from 1 to 12 carbon atoms, or a



group (where n=1 to 8).

4,412,012

CURING POLYEPOXIDE RESIN BINDERS IN SYNTACTIC FOAM FORMING COMPOSITIONS

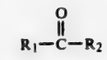
Robert W. Bouley, East Springfield, and Robert F. Kovar, Wrentham, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Filed Mar. 25, 1982, Ser. No. 361,741

Int. Cl.³ C08J *9/32*

U.S. Cl. 521—54 **3 Claims**

1. A method of curing the polyepoxide resin binder component of a syntactic foam forming composition having a thickness in excess of circa 10 to 12 inches, and which comprises in admixture a curable polyepoxide resin matrix and a filler which comprises a plurality of hollow microspheres, said composition containing less than 45 percent by volume of hollow macrospheres, comprising the steps of; curing the polyepoxide component with a curing agent which is provided by the hydrolysis of the reaction product consisting essentially of (1) an organic polyepoxide curing agent possessing a primary amine group and (2) a mole of a ketone of the formula:



wherein R_1 and R_2 are each independently selected from the group consisting of monovalent organic radicals for each of said amine groups, said reaction product having been premixed and reacted before addition to the curable polyepoxide resin binder component, whereby said curing occurs.

4,412,013

EXPANDABLE URETHANE SEALANT COMPOSITIONS

Yun F. Chang, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US82/01302, § 371 Date Sep. 20, 1982, § 102(e) Date Sep. 20, 1982

PCT Filed Sep. 20, 1982, Ser. No. 434,641

Int. Cl.³ C08G *18/14, 18/22*

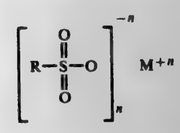
U.S. Cl. 521—121 **24 Claims**

1. A two component expandable urethane sealant composition comprising liquid reactive elastomer and polyisocyanate, characterized in that said composition comprises:

(A) a mixture of:

(i) liquid reactive elastomer (a) having a number average molecular weight (M_n) between about 1500 and about 15,000, (b) containing pendant hydroxyl groups, and (c) being liquid at between about 20° and about 25° C.; and

(ii) metal salts of organic sulfonates having the formula:



wherein R is selected from C_8–C_{36} hydrocarbon groups and M is a metal ion wherein n=1, 2 or 3; and

(B) polyisocyanate having at least two isocyanate groups per molecule, and

wherein said elastomer and said metal salts of organic sulfonates are present in said mixture in amounts so as to provide between about 20 and about 80 percent hydroxyl groups and between about 80 and about 20 percent sulfonate groups based on the total of said hydroxyl groups and said sulfonate groups; and

wherein said polyisocyanate is included in said composition in an amount so as to provide between about 0.85 and 1.15 reactive isocyanate groups for each reactive functional group present in said composition either as a hydroxyl group on said liquid reactive elastomer or as a sulfonate group of said metal salts of organic sulfonates.

4,412,014

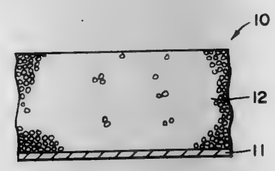
EXTRACTION OF POLYOXYALKYLENE SURFACTANTS FOR PHENOLIC FOAM STABILIZATION

Richard L. Frentzel, and Ernest K. Moss, both of Clearwater, Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 113,909, Jan. 21, 1980, abandoned. This application Jun. 29, 1981, Ser. No. 278,139

Int. Cl.³ C08J *9/14*

U.S. Cl. 521—129 **14 Claims**



1. A foam material comprising a mixture of:

A. a phenol aldehyde resin foam forming reactants wherein the phenol of said resin consists of phenol and orthocresol in the ratio of about 4:1.

B. a blowing agent, and

C. a surfactant which is the major component of a free radical polymerization, said major component being obtained by the steps of:

(1) reacting together a cyclic nitrogenous vinyl monomer and an esterified unsaturated dibasic acid by free radical polymerization in the presence of a polyoxyalkylene adduct having the formula

H←polyoxyalkylene chain→$_t$R,

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, said polyoxyalkylene adduct being treated either before or after said polymerization with a capping agent capable of reacting with the hydroxyl groups of said adduct to reduce the hydroxyl number of said adduct to less than 50, whereby a reaction product is obtained which can be used as a surfactant in the formation of phenolic foams, said step (1) reaction product comprising said major component formed from the reaction of said cyclic nitrogenous vinyl monomer and unsaturated diester onto said polyoxyalkylene adduct and a minor component comprising a copolymer of said cyclic nitrogenous vinyl monomer and unsaturated diester which does not chemically react with said polyoxyalkylene adduct, the capacity of said major component for stabilizing phenolic foams being greater than that of said total step (1) reaction product; and

(2) separating from said step (1) reaction product by any conventional method said major and minor components thereof, and utilizing said major component as the sole surfactant in the foaming reaction, having removed the minor component from said step (1) reaction product.

4,412,015

DENTAL FILLER MATERIAL CONTAINING ZEOLITE FOR DENTAL COMPOSITE AND METHOD OF MANUFACTURE

Stewart J. Lustgarten, 73 Dalton Rd., Holliston, Mass. 01746, and Jürgen Engelbrecht, Kanalstrasse 37, Hamburg 76, Fed. Rep. of Germany

Filed May 4, 1981, Ser. No. 260,394

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034374

Int. Cl.³ C08K *9/04;* **A61K** *6/02*

U.S. Cl. 523—116 **11 Claims**

1. A polishable dental material composite comprising:

a binder resin of unreacted polymerizable acrylate containing monomors or oligomers; a free radical initiating agent for polymerizing said binder and finely divided particles of inorganic filler constituting at least 60% by weight of said composite with said inorganic filler composed primarily of zeolite crystals having a stereo lattice structure with a proportion of said inorganic filler having a coating thereon of a polymerized acrylate containing monomers or oligomers in a ratio of uncoated to coated filler particles between 1:10 and 10:1 by weight.

4,412,016

PROPYLENE POLYMER COMPOSITION

Osamu Fukui, Toyonaka; Yoshiro Umemoto, Nagoya; Tsugumi Sanmiya, Toyota; Yutaka Sano, Kishiwada, and Kazuyoshi Tanaka, Sakai, all of Japan, assignors to UBE Industries, Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha, both of Osaka, Japan

Filed Mar. 19, 1982, Ser. No. 359,763

Claims priority, application Japan, Mar. 30, 1981, 56-45494

Int. Cl.³ C08F *23/16, 53/00*

U.S. Cl. 523—206 **13 Claims**

1. A propylene polymer composition comprising

(A) 45 to 65% by weight of at least one crystalline ethylene-propylene block copolymer in which the content of the polymerized ethylene is in the range of from 5 to 10% by weight, in which the polypropylene component has a fraction thereof insoluble in boiling n-heptane, in an amount of 95% or more based on the weight of said polypropylene component, in which a fraction thereof soluble in p-xylene at room temperature, has an intrinsic viscosity of from 3 to 4 determined in decahydronaphthalene at a temperature of 135° C. and which has a melt flow index of from 5 to 70;

(B) 25 to 40% by weight of at least one amorphous ethylene-propylene copolymer having an intrinsic viscosity of from 2.0 to 3.5 determined in decahydronaphthalene at a temperature of 135° C., and a Mooney viscosity ML_{1+4} of from 40 to 100 determined at a temperature of 100° C.;

(C) 4 to 20% by weight of at least one high density polyethylene having a melt flow index of from 1 to 10; and

(D) 3 to 20% by weight of talc in the form of fine particles having an average size of from 0.01 to 5 microns, in which composition, the ratio in weight of said amorphous ethylene-propylene copolymer (B) to said high density polyethylene (C) is in the range of from 10:1 to 5:3.

4,412,017

COMPOSITIONS FOR BONDING FIBROUS SUBSTRATES

Donald N. Van Eenam, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 121,849, Feb. 15, 1980, Pat. No. 4,308,187. This application Jun. 5, 1981, Ser. No. 270,933

The portion of the term of this patent subsequent to Dec. 29, 1998, has been disclaimed.

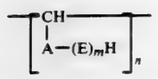
Int. Cl.³ D21H *3/44*

U.S. Cl. 523—408 **12 Claims**

1. A polymer composition comprising:

(A) from 5 to 99.5 percent by weight of thermoplastic predominantly linear polymer comprising intralinear unsaturated linkages in the form of solid, stably dispersed latex particles; and

(B) from 95 to 0.5 percent by weight of a liquid hydrophilic polymer having a backbone comprising at least one segment with the formula



wherein A is a moiety terminating in the residue of an active hydrogen-containing group selected from the group consisting of alcoholic hydroxyl, thiol, amide, carboxylic acid and secondary amine with an active hydrogen removed, E is a moiety containing a radical having an activated olefinic unsaturation either α,β of β,α to the activating group; n is the number of adjacent segments having this formula and n and m are integers and are each at least one provided that where either is less than 4, the other is at least four; all weights being based on the total polymer weight in the composition.

4,412,018

ORGANOPHILIC CLAY COMPLEXES, THEIR PREPARATION AND COMPOSITIONS COMPRISING SAID COMPLEXES

Claude M. Finlayson, Houston, Tex., and Wilbur S. Mardis, Trenton, N.J., assignors to NL Industries, Inc., New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,542

Int. Cl.³ B01J *13/00*; C08K *9/04*

U.S. Cl. 523—508 **24 Claims**

1. An organophilic clay gellant comprising:

(a) a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay;

(b) an organic anion in an amount ranging from 5 to 100 milliequivalents per 100 grams of said smectite-type clay, 100% active clay basis; and

(c) an organic cation containing at least one group having 12 to 22 carbon atoms, said organic cation being present in an amount sufficient to at least satisfy the cation exchange capacity of the smectite-type clay and the cationic activity of the organic anion wherein the cation exchange sites of the smectite-type clay are substituted with the organic cation and wherein substantially all of the formed organic cation-organic anion complex is intercalated with the smectite-type clay.

20. A thixotropic cross-linkable polyester composition comprising an unsaturated polyester and an unsaturated aromatic monomer having dispersed therein from 0.25 to 10% by weight of an organophilic clay gellant which comprises:

(a) a smectite-type clay having a cation exchange capacity of at least 75 milliequivalents per 100 grams of said clay;

(b) an organic anion in an amount ranging from 5 to 100 milliequivalents per 100 grams of said smectite-type clay, 100% active clay basis; and

(c) an organic cation containing at least one group having 12 to 22 carbon atoms, said organic cation being present in an amount sufficient to at least satisfy the cation exchange capacity of the smectite-type clay and the cationic activity of the organic anion wherein the cation exchange sites of the smectite-type clay are substituted with the organic cation and wherein substantially all of the formed organic cation-organic anion complex is intercalated with the smectite-type clay.

4,412,019

ASPHALT COMPOSITIONS

Gerard Kraus, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1980, Ser. No. 397,319

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—71 **12 Claims**

1. Asphalt-rubber-sulfur compositions of improved physical properties comprising:

(a) about 40–95 parts by weight of asphalt,

(b) about 5–20 parts by weight of a hydrogenated synthetic diene rubber, and

(c) about 1–40 parts by weight of sulfur.

4,412,020

NOVEL LIGHT STABILIZERS FOR POLYMERS

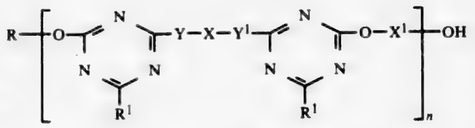
Frank F. Loffelman, and Joseph A. Hoffman, both of Bridgewater, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 20, 1981, Ser. No. 284,890

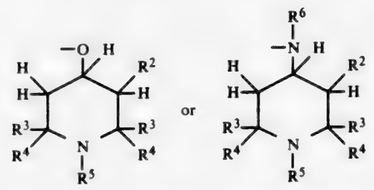
Int. Cl.³ C08K *5/34*

U.S. Cl. 524—100 **20 Claims**

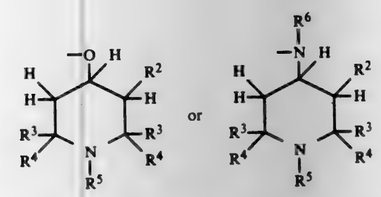
1. An oligomer of the formula:



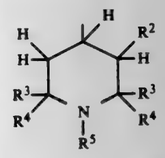
wherein R represents C_1–C_8 alkyl; R^1 represents C_1–C_8 alkoxy, C_1–C_8 alkyl, halo, C_1–C_8 alkylthio, amino, C_1–C_{18} alkylamino, C_1–C_{18} dialkylamino, morpholino, pyrrolidyl, piperidino the groups



wherein R^2, R^3, R^4, R^5 and R^6 are as defined below, a substituted C_1–C_{18} alkylamino or C_1–C_{18} dialkylamino, wherein the substitutents are selected from amino, cyano, carboxy, alkoxycarbonyl wherein the alkoxy moiety has 1–8 carbon atoms, and the groups



wherein R^2 represents hydrogen, C_1–C_8 alkyl, or benzyl; R^3 and R^4 independently represent C_1–C_8 alkyl, benzyl, or phenethyl, or together with the carbon to which they are attached form a C_5–C_{10} cycloalkyl; R^5 represents hydrogen, C_2–C_3 hydroxyalkyl, C_1–C_8 alkyl, hydroxyl, or oxyl; and R^6 represents hydrogen, C_1–C_8 alkyl or



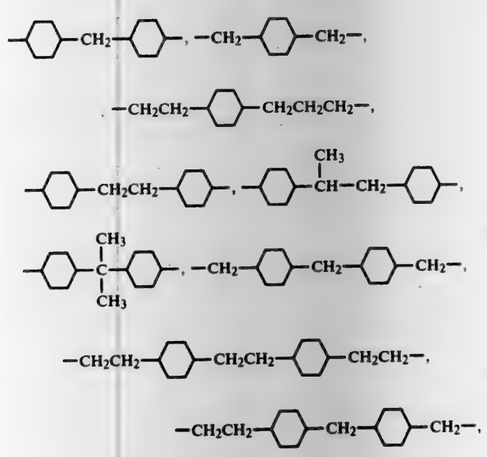
Y and Y^1, which may be the same or different, represent oxy or



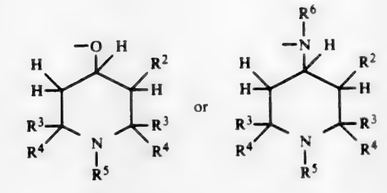
wherein R^6 is as previously defined; X and X^1 represent C_2–C_{18} alkylene, wherein the alkylene chain may be interrupted by one or more oxy, thio, or



radicals, C_5–C_{10} cycloalkylene,



C_6–C_{12} arylene, or C_8–C_{14} aralkylene, and n is an integer greater than 1; with the proviso that when Y and Y^1 are oxy, or R^6 is hydrogen or C_1–C_{16} alkyl, at least one R^1 is



4,412,021

NOVEL POLYALKYLPIPERIDYL-UREAS AND THEIR USE AS STABILIZERS

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

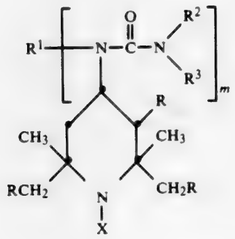
Continuation of Ser. No. 158,038, Jun. 9, 1980, abandoned. This application Feb. 23, 1982, Ser. No. 351,577

Claims priority, application Switzerland, Jun. 21, 1979, 5807/79

Int. Cl.³ C08K *5/34*; C07D *211/56, 211/92*

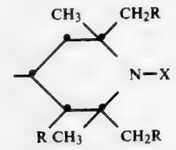
U.S. Cl. 524—102 **7 Claims**

1. A compound of the formula I



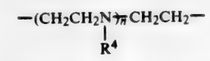
I

in which m is 1, 2, 3 or 4, X is H, O, C_1–C_{18}-alkyl, C_3–C_5-alkenyl, propargyl, C_7–C_{12}-phenylalkyl or a group of the formula —CO—C_1–C_8-alkyl, —CO—C_2–C_3-alkenyl, —CO—O—C_1–C_{10}-alkyl or —CO—N—(C_1–C_{10}-alkyl)$_2$, R is hydrogen and R^1, if m is 1, is C_1–C_{18}-alkyl, C_3–C_5-alkenyl, C_3–C_4-alkynyl, C_5–C_6-cycloalkyl, C_7–C_{18}-aralkyl, C_6–C_{12}-aryl or a group of the formula II

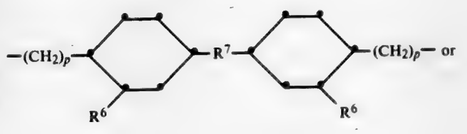


II

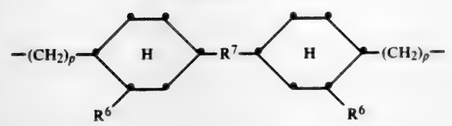
or, if m is 2, is C_2–C_{20}-alkylene, C_4–C_{12}-mono- or -di-oxaalkylene, a



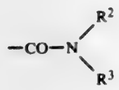
or —$(CH_2)_3$—$N(R^5)$—$(CH_2)_3$-group, cyclohexylene, xylylene, hexahydroxylylene or a



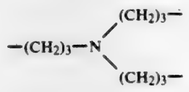
-continued



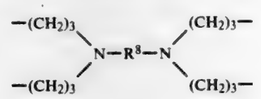
group, in which R^4 is hydrogen, C_1–C_4-alkyl, allyl, benzyl or a



group, n is an integer from 1 to 5, R^5 is C_1–C_{12}-alkyl, phenyl or cyclohexyl, p is nought or 1, R^6 is hydrogen or methyl and R^7 is $-CH_2-$ or $>C(CH_3)_2$, or R^1, if m is 3, is a



radical and if m is 4 is a radical of the formula



in which R^8 is C_2–C_{20}-alkylene, cyclohexylene or xylylene, and R^2 and R^3 independently of one another are C_1–C_{12}-alkyl, cyclohexyl, C_3–C_5-alkenyl, propargyl, C_7–C_{12}-phenylalkyl or C_6–C_{12}-aryl, and R^2 can also be C_1–C_4-alkoxy, or R^2 and R^3 together form C_4–C_9-alkylene or 3-oxa-1,5-pentylene.

4,412,022

POLYURETHANE COATING COMPOSITIONS PREPARED FROM A POLYMERIC DIOL, AN ALICYCLIC DIISOCYANATE, AN ALICYCLIC DIAMINE AND EITHER HYDRAZINE OR ISOPHTHALIC ACID DIHYDRAZIDE

Koji Hirai; Kenji Shirano, both of Kurashiki, and Takayuki Okamura, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed May 5, 1982, Ser. No. 374,923

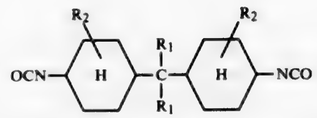
Claims priority, application Japan, May 19, 1981, 56-76199; Jul. 21, 1981, 56-114799; Oct. 13, 1981, 56-163964

Int. Cl.³ C08L *75/08*

U.S. Cl. 524—104 **7 Claims**

1. A polyurethane composition which comprises a polyurethane synthesized substantially from (a) a polymeric diol having an average molecular weight within the range of 1,200 to 2,500, (b) an alicyclic organic diisocyanate, (c) an alicyclic organic diamine and (d) hydrazine or isophthalic acid dihydrazide and a mixed solvent capable of dissolving said polyurethane, said polyurethane satisfying the following conditions (i) through (iv), namely

(i) that component (b) comprises at least 20 mole percent thereof of an alicyclic organic diisocyanate having the formula

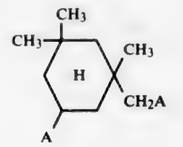


(I)

wherein R_1 and R_2 each is a hydrogen atom or a lower alkyl group,

(ii) that the mole ratio of component (b) to component (a) is within the range of 2.5 to 5.0,

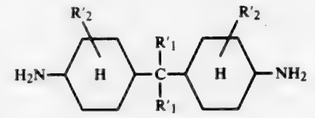
(iii) that at least one of components (b) and (c) comprises as a component thereof a compound having the formula



(II)

wherein A is an amino or isocyanato group and that the total content of the compound or compounds of the above formula (II) based on the sum total of components (b), (c) and (d) is 15 to 45 mole percent, and

(iv) that, when component (d) is hydrazine, component (c) comprises at least 20 mole percent thereof of an alicyclic organic diamine having the formula



(III)

wherein

R_1' and R_2' each is a hydrogen atom or a lower alkyl group and that the mole ratio of component (d) to the sum total of components (c) and (d) is within the range of 0.05 to 0.5, or

that, when component (d) is isophthalic acid dihydrazide, the mole ratio of component (d) to the sum total of components (c) and (d) is within the range of 0.1 to 0.7, and

said mixed solvent satisfying the condition

(v) that it comprises 3 to 70 percent by weight thereof of a compound of the general formula

$$R(CH_2)_nOH \qquad (IV)$$

wherein R is a hydrogen atom or a methoxy, ethoxy or acetoxy group and, when R is a hydrogen atom, n is an integer of 0 through 4 and when R is a methoxy, ethoxy or acetoxy group, n is 2, and that, when component (d) is isophthalic acid dihydrazide, said mixed solvent comprises 40 to 97 percent by weight thereof of an aprotic polar compound.

4,412,023

COATING COMPOSITION

Olof Jernström, Vantaa; Tapio Mattila, Espoo; Kyösti Penttinen, Helsinki, and Hannu Toivonen, Espoo, all of Finland, assignors to Tikkurilan Varitehtaat Oy, Vantaa, Finland

Filed Nov. 2, 1981, Ser. No. 316,815

Claims priority, application Finland, Nov. 5, 1980, 803452

Int. Cl.³ C08K *5/34*

U.S. Cl. 524—106 **6 Claims**

1. A composition suitable for coating, varnishing or as a filler for wood chipboard, which consists of an ordinary paint, varnish or filler for chipboard including polyvinyl acetate as a binder and 0.2–10% by weight of a cyclic urea compound.

4,412,024

CONCENTRATED SOLUTIONS OF AROMATIC OXAMIDE STABILIZERS

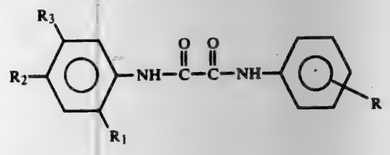
Lajos Avar, Biel-Benken, Switzerland; Evelyne Kalt, Riedisheim, France, and Hellmuth Reinshagen, Heitersheim, Fed. Rep. of Germany, assignors to Sandoz Ltd., Basel, Switzerland

Filed Sep. 14, 1981, Ser. No. 302,036

Int. Cl.³ C07C *103/38*; C09D *7/12*; C08K *5/20*

U.S. Cl. 524—220 **20 Claims**

1. A solid or liquid concentrate comprising a solution of at least 30% by weight of a mixture of compounds of formula I



I

in which

R is C_{6-22}alkyl or C_{8-14}alkoxy

R_1 and R_2 are independently, hydrogen, C_{1-8}alkyl, C_{1-12}alkoxy, C_{1-12}alkylthio, phenoxy or phenylthio; provided that R_1 and R_2 may not both be selected from alkylthio, phenoxy and phenylthio;

and

R_3 is hydrogen or C_{1-8}alkyl

in a solid or liquid organic solvent, said mixture containing compounds of formula I having different isomers of R.

4,412,025

ANTI-BLOCK COMPOUNDS FOR EXTRUSION OF TRANSITION METAL CATALYZED RESINS

Michael A. Corwin, Millington, and George N. Foster, Bloomsbury, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 242,457, Mar. 11, 1981, abandoned. This application Oct. 8, 1981, Ser. No. 309,658.

Int. Cl.³ C08J *5/18*; C08K *3/00, 3/36, 5/13*

U.S. Cl. 524—241 **62 Claims**

1. In an improved film-forming composition containing:

(a) a transition metal catalyzed olefin polymer containing halide residues;

(b) an anti-gel compound characterized by having at least about 5 repeat units of an alkylene oxide;

(c) a hindered phenolic anti-oxidant; and

(d) an inorganic anti-block agent;

the improvement comprising avoiding a yellowing problem by employing an anti-block agent having a pH of between 6 and 8.

4,412,026

ALDEHYDIC COMPOSITIONS

Forrest L. Collins, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Jul. 16, 1981, Ser. No. 284,146

Int. Cl.³ C08K *5/07*

U.S. Cl. 524—354 **12 Claims**

1. A personal care or disinfectant product composition having an aldehyde in a thickened state comprising:

(a) a low viscosity aldehyde;

(b) a solvent in which the aldehyde is miscible selected from the group consisting of water and alcohols and mixtures thereof; and

(c) a homopolymeric salt of 2-acrylamido-2-methylpropanesulfonic acid in an amount to sufficient to thicken the composition.

4,412,027

THICKENED KETONE COMPOSITIONS

Kenneth Klein, Old Bridge; Patricia E. Bator, Secaucus, both of N.J., and Harry H. Pact, Norwalk, Conn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Jul. 16, 1981, Ser. No. 284,145

Int. Cl.³ C08K *5/07*

U.S. Cl. 524—364 **10 Claims**

1. A process for removing nail polish from a nail comprising solvating the polished nail with a composition comprising:

(a) a low viscosity ketone;

(b) a solvent in which the ketone is miscible selected from the group consisting of water and alcohols and mixtures thereof; and

(c) a homopolymeric salt of 2-acrylamido-2-methylpropanesulfonic acid in an amount sufficient to thicken the composition

thereby removing the nail polish from the nail.

4,412,028

CONVERSION OF POLYMER SOLUTIONS INTO SOLIDS OR MORE VISCOUS SOLUTION

Robert D. Lundberg, Bridgewater; Robert R. Phillips, Spring Lake Heights, both of N.J., and Lee A. McDougall, Houston, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 29, 1981, Ser. No. 335,450

Int. Cl.³ C08K *5/01, 5/07*

U.S. Cl. 524—364 **32 Claims**

1. A process for forming a polymeric gel having improved creep resistance at elevated temperatures, a viscosity of at least about 100,000 cps which comprise the steps of:

(a) forming a solvent system of an organic liquid, a free radical generating initiator, and a water miscible cosolvent, said polar cosolvent being less than about 15 wt. % of said solvent system, a viscosity of said solvent system being less than about 1,000 cps;

(b) dissolving a neutralized sulfonated polymer in said solvent system to form a solution, a concentration of said neutralized sulfonated polymer in said solution being about 0.1 to about 10 wt. %, a viscosity of said solution being less than about 20,000 cps;

(c) adding a free radical generating initiator to the solution at a level of about 0.01 to about 1%;

(d) adding under high shear about 5 to about 500 volume % water to said solution, said water being immiscible with said solution, with said water miscible cosolvent transferring from said solution to said water causing the viscosity of said solution or suspension to increase from less than 20,000 cps to greater than 100,000 cps.

4,412,029

ELASTOMERIC COMPOSITION FOR PROVIDING ELECTRICAL STRESS CONTROL

Dieter Kehr, Hamburg, and Manfred Viebranz, Neu-Wulmstorf, both of Fed. Rep. of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 2, 1981, Ser. No. 239,539

Int. Cl.³ C08L *83/04, 23/16*

U.S. Cl. 524—441 **18 Claims**

1. A permanently elastic dielectric composition for influencing electrical fields in power current and high voltage systems, comprising a permanently resilient dielectric base material, a finely divided effect material to increase the relative dielectric constant, comprising strongly structurized dust-fine particles of an electrically polarizable material of low electrical conductivity, in sufficient concentration, but less than about 3 O parts per hundred parts of said base material, to provide, within the range composition in combination:

(a) An electric volume resistivity of at least about 10^6 ohn cm at room temperature,
(b) A relative dielectric constant between about 30 to about 300,
(c) A dielectric loss factor of less than about 1.5,
and a content of a supplemental effect material comprising finely divided particles possessing metal conductivity, in sufficient concentration to maintain the relative dielectric constant at not less than about 20 at high power frequencies.

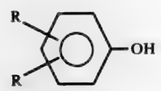
4,412,030

HOT MELT ADHESIVE COMPOSITIONS EMPLOYING RESINS BASED ON 2-METHYL STYRENE, STYRENE AND A PHENOL

Yves Runavot, St. Maur des Fosses; Georges Billault, Saint Quen, and Jaques Salvetat, Le Vesinet, all of France, assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 191,466, Aug. 25, 1980, Pat. No. 4,357,459. This application Apr. 30, 1982, Ser. No. 373,585
Int. Cl.³ C08L *101/06*
U.S. Cl. 524—505 **9 Claims**

1. A hot melt adhesive composition comprising:
(a) a first resin having an average molecular weight of 400 to 2,000, based on α-methyl styrene, stryene and a phenol as constitutents, characterized in that the weight percentages of α-methyl styrene, styrene and a phenol with a structural formula



in which R is hydrogen or a C_1–C_{12} alkyl group, which compounds are substantially the sole constituents, range from 25 to 63, from 35 to 73 and from 2 to 15 parts by weight of the resin, respectively; and
(b) a second resin selected from the group consisting essentially of copolymers of ethylene vinyl acetate containing 25–65% vinyl acetate, atactic polypropylene, ethylacrylate copolymers, natural rubbers and synthetic rubbers.

4,412,031

MODIFIED RUBBER COMPOSITION EMPLOYING A COMPOUND CONTAINING A CARBOXYL AND AN ALDEHYDE GROUP

Shizuo Kitahara, Kawaguchi; Yoshitsugu Hirokawa, Yokohama; Haruki Kawada, Yokohama; Toshihiro Fujii, Yokohama; Nagatoshi Sugi, Yokohama; Hiroaki Hasegawa, Yokohama, and Akira Yoshioka, Kamakura, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,764
Int. Cl.³ C08F *8/28*; C08K *3/04*
U.S. Cl. 524—526 **32 Claims**

1. A modified rubber composition comprising a blend of (a) a modified rubber obtained by reaction a rubber having an unsaturated carbon linkage with an organic compound having a carboxyl group and an aldehyde group in the presence of an acid catalyst, and (b) carbon black.

4,412,032

SILICONIZED POLYETHER THERMOSETTING COATING COMPOSITIONS

Joseph E. Gaske, Mt. Prospect; Thomas H. Plaisance, Wilmette, and Kazys Sekmakas, Palatine, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 268,633, May 29, 1981, Pat. No. 4,370,441. This application Apr. 28, 1982, Ser. No. 372,244
Int. Cl.³ C08L *67/02*
U.S. Cl. 524—538 **9 Claims**

1. An organic solvent solution coating composition adapted to deposit a thermosetting weather-resistant coating comprising three essential resin components, as follows:
(1) an essentially nonfunctional organic solvent-soluble silicone resin reaction product of a low molecular weight hydroxy functional polyether with an hydroxy or alkoxy-functional organic polysiloxane, said polyether having an average molecular weight in the range of 300 to 4000 and an hydroxy functionality of at least about 3, said polysiloxane being present in an amount of from 8% to 20% of the weight of the three resin components, and said polyether and said polysiloxane being combined in approximately stoichiometric proportions;
(2) a reactive organic solvent-soluble essentially linear high molecular weight hydroxy functional polyester, said hydroxy functionality being present in an amount to provide a thermoset film by reaction with aminoplast resin, said reactive polyester constituting the balance of the three resin components; and
(3) from 3% to 15%, based on the weight of the three resin components, of a heterocyclic aminoplast resin for curing said reactive polyester, said components 1 and 2 being compatible in the solution and at least partially incompatible in a film as the solvent evaporates, so that components 2 and 3 can cure in a deposited film and adhere the coating to a metal substrate, and component 1 can concentrate at the surface to enhance the weather resistance which is obtained when a deposited coating is baked.

4,412,033

ONE-PART, CURABLE POLYURETHANE

Stanley B. LaBelle, Anoka, and James A. E. Hagquist, St. Paul, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation of Ser. No. 200,572, Oct. 24, 1980, abandoned. This application Sep. 13, 1982, Ser. No. 417,021
Int. Cl.³ C08G *18/10*
U.S. Cl. 524—590 **34 Claims**

1. A one-part, isocyanate-capped prepolymer composition stable for at least about 48 hours at normal ambient temperature and pressure and curable at temperatures above 60° C. to a solid polymer with at least twice the molecular weight of said prepolymer, said prepolymer composition comprising:
(a) in a continuous phase, an aliphatic or cycloaliphatic polyisocyanate-capped prepolymer which is fluid at temperatures above 60° C., has a molecular weight in excess of 250, and contains a chain of repeating units selected from the group consisting of oxyalkylene, ester, or mixtures thereof; and, uniformly distributed through said continuous phase,
(b) a phase comprising a solid, finely divided polyol of the formula

$$(ROCH_2)_3C—CH_2OCH_2C(CH_2OR)_2]_nCH_2OR$$

wherein
R represents hydrogen or an aliphatic, cycloaliphatic or aromatic acyl radical, provided that more than one of the R groups is hydrogen, and
n is a number ranging from zero to two;
said polyol being at least partially incompatible with said prepolymer at temperatures below about 60° C., wherein the presence of the solid finely divided polyol reduces the ratio of NCO groups to OH groups in the total composition from greater than 1.5:1 to about 0.8:1–1.5:1; and
(c) distributed through said continuous phase, an organometallic or metal salt catalyst for the reaction between isocyanate radicals and the free hydroxyl groups of said component (b).

4,412,034

CROSS-LINKABLE SATURATED POWDEROUS COMPOSITIONS AND POWDEROUS PAINTING AND COATING COMPOSITIONS CONTAINING SAME

Jacques Meyer, Paris, and Daniel Bernelin, Ris-Orangis, both of France, assignors to Chloe Chimie, Puteaux, France

Division of Ser. No. 24,008, Mar. 26, 1979, Pat. No. 4,284,745, which is a division of Ser. No. 833,953, Sep. 16, 1977, Pat. No. 4,182,840. This application May 20, 1981, Ser. No. 265,400
Claims priority, application France, Sep. 22, 1976, 76 28415; May 9, 1977, 77 14039; Jul. 11, 1977, 77 21240
Int. Cl.³ C08G *63/76, 18/80*
U.S. Cl. 524—791 **40 Claims**

1. A powderous composition of matter useful in preparing coatings having a non-glossy surface consisting essentially of;
(a) at least one cross-linkable saturated polyester resin;
(b) a cross-linking agent comprising masked isocyanate groups in an amount sufficient to cross-link said resin; and
(c) a catalytic amount of a salt of an at least bivalent metal ion and an organic acid anion selected from carboxylic and acetylacetonate anions.

30. A composition of matter useful in preparing coatings having a non-glossy surface comprising:
(a) at least one cross-linkable saturated polyester resin which is a co-condensation product of a carboxylic acid component comprising at least one aromatic dicarboxylic acid and an alcohol component comprising at least one diol;
(b) a cross-linking agent comprising masked isocyanate groups in an amount sufficient to cross-link said resin;
(c) a catalytic amount of a salt of an at least bivalent metal cation and an organic acid anion selected from carboxylic and acetylacetonate anions; and,
(d) at least one derivative of the polyester resin which is infusible at 150° C., which is a crystalline fraction of a crystallizable saturated polyester or a cross-linked reaction product of the saturated polyester and the cross-linking agent.

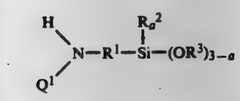
4,412,035

SILICONE EMULSION COMPOSITION

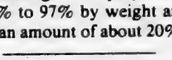
Akitsugu Kurita, Ohta, Japan, assignor to Toshiba Silicones Ltd., Tokyo, Japan

Filed May 24, 1982, Ser. No. 381,488
Int. Cl.³ C08K *3/02, 3/16, 3/28*
U.S. Cl. 524—796 **5 Claims**

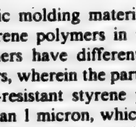
1. A silicone emulsion composition obtained by emulsion-polymerizing:
(1) 0.1–60 weight percent of a reaction product of:
(A) 50–99.9 weight percent of a polydiorganosiloxane having at least one silanol group in the molecule and a viscosity at 25° C. of 5–10,000 cSt, and
(B) 0.1–50 weight percent of a product obtained by reacting:
(a) 1 mole of a compound of the formula:



wherein Q^1 represents a monovalent group selected from the group consisting of hydrogen atom, $—CH_3$, $—CH_2CH_2NH_2$ and $—CH_2CH_2NHCH_2CH_2NH_2$, R^1 represents a divalent hydrocarbon group having 1–4 carbon atoms, R^2 and R^3 each represent a monovalent hydrocarbon group having 1–4 carbon atoms and a represents an integer of 0 or 1, with
(b) 0.5–3.0 mole of a compound of the formula:



wherein Q^2 represents an epoxy group-containing group selected from the group consisting of glycidoxy and epoxycyclohexyl groups, R^4 represents a divalent hydrocarbon group having 2–4 carbon atoms, R^5 and R^6 each represent a monovalent hydrocarbon group having 1–4 carbon atoms and b represents an integer of 0 or 1, with
(2) 1–50 weight percent of a compound of the formula:



wherein R^7 and R^8 may be the same or different and each represent a substituted or unsubstituted hydrocarbon group having 1–50 carbon atoms and n represents an integer of at least 3, in the presence of:
(3) 0.1–20 weight percent of a quaternary ammonium salt surfactant, and
(4) 20–90 weight percent of water.

4,412,036

COMPOSITION FOR ABSORBENT FILM AND METHOD AND PREPARATION

Lee C. Pedersen, Delano, and Lyle F. Elmquist, St. Paul, both of Minn., assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Aug. 5, 1981, Ser. No. 290,385
Int. Cl.³ C08L *33/20*
U.S. Cl. 525—54.26 **6 Claims**

1. An absorbent composition useful in preparing an absorbent film in which the absorbent composition is secured to at least one backing layer by exposing the same to effective heat and pressure conditions, said absorbent composition comprising the reaction product of hydrolyzed starch polyacrylonitrile graft copolymer and a polyhydric alcohol in which, based upon the total weight of the composition, said hydrolyzed starch polyacrylonitrile graft copolymer is present in an amount of about 80% to 97% by weight and said polyhydric alcohol is present in an amount of about 20% to 3% by weight.

4,412,037

THERMOPLASTIC MOLDING MATERIALS

Franz Brandstetter, Neustadt; Adolf Echte, Ludwigshafen; Hermann Gausepohl, Mutterstadt, and Herbert Naarmann, Wattenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 14, 1981, Ser. No. 302,040
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035560
Int. Cl.³ C08L *61/04*
U.S. Cl. 525—68 **4 Claims**

1. A thermoplastic molding material based on a blend of impact-resistant styrene polymers in which the soft components of the polymers have different particle sizes and on polyphenylene ethers, wherein the particles of the soft component of the impact-resistant styrene polymers have a mean diameter of more than 1 micron, which soft component is the part of the impact-resistant styrene polymer which is insoluble in toluene at 25° C., minus any pigments present, and wherein the proportion of particles of the soft component of the poly-

mers which have a diameter of less than 0.6 micron is not less than 40% by weight and the proportion of particles of the soft component of the polymers which have a diameter of from 0.6 to 3 microns is less than 3% by weight.

4,412,038

LOW MOLECULAR WEIGHT 1,3-BUTADIENE POLYMERS CONTAINING REACTIVE SILYL GROUPS, WHICH ARE STABILIZED AGAINST CROSSLINKING

Dieter Zerpner, and Roland Streck, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels AG, Marl, Fed. Rep. of Germany

Filed Aug. 4, 1982, Ser. No. 405,010

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1981, 3130928

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—101 **5 Claims**

1. In a 1,3-butadiene polymer having an average molecular weight (Mn) of 400–4,000 and having bound silyl groups of the formula —SiXYZ wherein X is alkoxy of 1–6 carbon atoms, and Y and Z independently are an X group, hydrogen, alkyl of 1–8 carbon atoms, cycloalkyl 5–12 carbon atoms, phenyl, or phenyl substituted of halogen or alkyl of 6–12 total carbon atoms, the improvement wherein there is combined therewith 0.01–20% by weight of the total combination of an epoxy compound having an epoxy oxygen content of 2–17% by weight.

4,412,039

CROSSLINKED SILICONE-VINYL POLYMER SYSTEMS

Heinrich Alberts; Hans Friemann; Hans-Heinrich Moretto, all of Cologne; Hans Sattlegger, Odenthal, and Fritz Mietzsch, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 17, 1981, Ser. No. 284,295

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030195

Int. Cl.³ C08L *83/10*

U.S. Cl. 525—106 **8 Claims**

1. A co-grafted polymer dispersion comprising blocks of an organopolysiloxane with OH functional groups, blocks of an ethylene/vinyl ester copolymer containing about 5 to 99% by weight of incorporated vinyl ester, and blocks of vinyl monomer units polymerized in the presence of mixtures of the organopolysiloxane and ethylene/vinyl ester copolymer, the organopolysiloxane and ethylene/vinyl ester copolymer blocks being linked via vinyl polymer bridges, the OH-terminated organopolysiloxane blocks constituting 10–90% and the vinyl monomer blocks constituting 5–85% of the weight of the recited blocks.

4,412,040

LOW MOLECULAR WEIGHT COPOLYMER SALTS AS LUBRICANTS IN PLASTICS

Paul J. Albee, Jr., Bensalem, Pa.; Patricia E. Burdick, Lake Hiawatha, and Joseph I. Wrozina, Tenafly, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 2, 1981, Ser. No. 222,197

Int. Cl.³ C08L *33/02*

U.S. Cl. 525—143 **43 Claims**

1. A composition comprising:

a polymer selected from the group consisting of: polyolefins; styrene based polymers; polyamides; polyesters; polycarbonates; polyvinyl chloride; copolymers of acrylonitrile, butadiene, stryrene; and phenolic resins; and

up to 10 parts per hundred of the polymer of a lubricant which comprises a copolymer salt of a copolymer of an alpha-olefin and an alpha,beta-ethylenically unsaturated carboxylic acid, the copolymer acid having a number average molecular weight between about 500 and about 5000, the copolymer acid having up to 100% of the carboxylic acid groups neutralized with at least one cation from the group consisting of metallic cations having a valence of 1 to 3.

4,412,041

PROCESS FOR MODIFYING RUBBERS EMPLOYING A COMPOUND CONTAINING A CARBOXYL AND AN ALDEHYDE GROUP

Shizuo Kitahara, Kawaguchi; Yoshitsugu Hirokawa, Yokohama; Haruki Kawada, Yokohama; Toshihiro Fujii, Yokohama; Nagatoshi Sugi, Yokohama; Hiroaki Hasegawa, Yokohama, and Akira Yoshioka, Kamakura, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Feb. 18, 1983, Ser. No. 467,765

Claims priority, application Japan, Feb. 19, 1982, 57-25476

Int. Cl.³ C08F *8/28*

U.S. Cl. 525—154 **15 Claims**

1. A process for modifying a rubber, which comprises reacting a rubber having an unsaturated carbon linkage with an organic compound having a carboxyl group and an aldehyde group in the presence of an acid catalyst.

4,412,042

PROCESS FOR PREPARING POLYOLEFINS CROSS-LINKED BY SILANE LINKAGE

Kazuo Matsuura, Tokyo; Noboru Yamaoka, Yokohama, and Mituji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Mar. 8, 1982, Ser. No. 356,004

Claims priority, application Japan, Mar. 19, 1981, 56-38758

Int. Cl.³ C08F *255/02, 255/04, 255/08, 255/10*

U.S. Cl. 525—260 **18 Claims**

1. In a process for preparing a polyolefin crosslinked by silane linkage by contacting a polyolefin modified with silane with water in the presence of a silanol condensation catalyst, an improved process wherein said polyolefin modified with silane is a reaction product produced by reacting an ethylene/α-olefin copolymer having a density of from 0.850 to 0.910 with a silane compound in the presence of a free radical generating agent, said ethylene/α-olefin copolymer being prepared by copolymerizing ethylene with an α-olefin having 3 to 12 carbon atoms in a vapor phase with substantially no solvent present and in the presence of a catalyst comprising an organoaluminum compound and a solid substance containing magnesium and a metal selected from the group consisting of titanium, vanadium and mixtures thereof.

4,412,043

VULCANIZABLE ETHYLENE COPOLYMERS

Jose F. Pazos, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1982, Ser. No. 374,615

Int. Cl.³ C08F *8/32*

U.S. Cl. 525—328.2 **10 Claims**

1. A vulcanizable elastomeric copolymer consisting essentially of copolymerized units of:

(a) 20–75 weight percent of a comonomer selected from the group consisting of methyl acrylate, methyl methacrylate, ethylacrylate and ethyl methacrylate,

(b) 0.15–0.5 mole of a cure-site monomer selected from the group consisting of 4-(dialkylamino)-4-oxo-2-butenoic acid per kilogram of copolymer, wherein the alkyl moiety is C_1–C_{12} alkyl substituted with 0–2 C_6–C_{12} aryl groups, and

(c) a complemental amount of ethylene from 15–60 weight percent.

4,412,044

RING-OPENED NORBORNYL POLYMERS

Hiroshi Takahashi, and Katsuhiro Abe, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

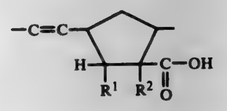
Filed Mar. 23, 1982, Ser. No. 360,908

Claims priority, application Japan, Mar. 27, 1981, 56-44923

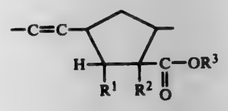
Int. Cl.³ C08F *8/12*

U.S. Cl. 525—329.5 **13 Claims**

1. A polymer which consists essentially of receiving structural units (A) represented by the following formula,



and receiving structural units (B) represented by the following formula,



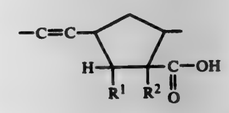
wherein R^1 stands for hydrogen atom, an alkyl group or a phenyl group, R^2 stands for hydrogen atom or an alkyl group, and R^3 stands for an alkyl group, and which also satisfies the following requirements (a) through (c);

(a) the intrinsic viscosity of the polymer being in the range of 0.3 to 4.0,

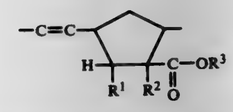
(b) the content of the structural unit (A) being 10 to 90 mol % of the total structural units, and

(c) the trans-form content of the double bonds in the structural units (A) and (B) being 40% or more.

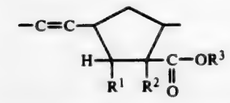
8. A process for preparation of a polymer which consists essentially of receiving structural units (A) represented by the following formula,



and receiving structural units (B) represented by the following formula,



wherein R^1 stands for hydrogen atom, an alkyl group or a phenyl group, R^2 stands for hydrogen atom or an alkyl group, and R^3 stands for an alkyl group wherein the unit (A) comprises 10 to 90% of the units (A) and (B), which comprises treating with an aqueous alkali solution a ring-opened polymer having recurring units of the following formula wherein the trans-form content of the double bonds is 40% or more and then treating the resulting polymer with an acid,



wherein R^1 stands for hydrogen atom, an alkyl group or a phenyl group, R^2 stands for hydrogen atom or an alkyl group, and R^3 stands for an alkyl group, and which also satisfies the following requirements (a) through (c);

(a) the intrinsic viscosity of the polymer being in the range of 0.3 to 4.0,

(b) the content of the structural unit (A) being 10 to 90 mol % of the total structural units, and

(c) the trans-form content of the double bonds in the structural units (A) and (B) being 40% or more.

4,412,045

COLOR DEVELOPER FOR PRESSURE-SENSITIVE COPYING PAPER

Toyoji Kikuga, and Koji Hirai, both of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Shizuoka, Japan

Continuation of Ser. No. 173,562, Jul. 30, 1980, which is a division of Ser. No. 847,519, Nov. 1, 1977, Pat. No. 4,216,300. This application Jan. 25, 1982, Ser. No. 342,537

Claims priority, application Japan, Nov. 4, 1976, 51-131672

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.³ C08L *61/06, 61/08, 61/12, 61/34*

U.S. Cl. 525—501 **42 Claims**

1. A color developer for pressure-sensitive copying paper which comprises a mixture of:

(1) a para-substituted difunctional phenol-aldehyde condensate, and

(2) a tri- or higher functional phenol-aldehyde condensate.

4,412,046

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF TRIMETHOXYBOROXINE AND BENZYL ALCOHOL AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, which is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application May 12, 1982, Ser. No. 377,275

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

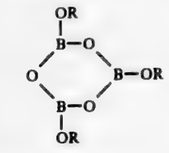
Int. Cl.³ C08G *59/62, 59/40*

U.S. Cl. 525—506 **8 Claims**

1. A transparent composition having resistance to intense heat, comprising:

(a) a transparent blend having from about 80 parts to about 100 parts by weight of an epoxy resin;

(b) from about 5 to about 30 parts by weight of a boroxine having the formula:



where R is a group having from 2 to 18 carbon atoms; and

(c) from 1 part to about 10 parts by weight of a phenyl substituted alkyl alcohol; said alkyl alcohol having from 1 to 20 carbon atoms.

4,412,047

CYCLOALIPHATIC DIEPOXIDE, ITS PREPARATION AND ITS USE

Charles E. Monnier, Basel, and Friedrich Lohse, Oberwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 20, 1982, Ser. No. 419,690

Claims priority, application Switzerland, Oct. 1, 1981, 6352/81

Int. Cl.³ C08G *59/24;* **C07** *303/10*

U.S. Cl. 525—507 **6 Claims**

1. 1,5-Dimethyl-1,2;5,6-diepoxycyclooctane.

6. A curable mixture containing 1,5-dimethyl-1,2:5,6-diepoxycyclooctane according to claim 1 and a curing agent for epoxide resins and optionally a further epoxide resin.

4,412,048

SOLVENTLESS UV DRYABLE B-STAGEABLE EPOXY ADHESIVE

George D. Dixon; Nancy W. Carlson, both of Needham, Mass., and Howard E. Saunders, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 11, 1981, Ser. No. 301,169

Int. Cl.³ C08L *63/00, 63/02*

U.S. Cl. 525—524 **16 Claims**

1. A solventless, UV-dryable, B-stageable, epoxy adhesive comprising:

(A) about 40 to about 70 pbw of a solid thermally curable epoxy having a molecular weight between about 650 to about 4,000;

(B) a thermal curing agent for said thermally curable epoxy, stable at room temperature and soluble in said adhesive, in an amount from about stoichiometric to about 50% by weight in excess of stoichiometric;

(C) up to about 2 pbw of an accelerator for said thermal curing agent, soluble in said adhesive;

(D) about 25 to about 60 pbw of a liquid UV curable epoxy resin in which said solid thermally curable epoxy is soluble;

(E) about 1 to about 10 pbw of a UV photoinitiator for said UV curable epoxy resin; and

(F) up to about 20 pbw of a reactive diluent;

(G) up to about 5 pbw of a flow control agent;

(H) up to about 1 pbw of a surfactant; and

(I) about 2 to about 10 pbw of a tri or higher functional epoxy.

4,412,049

PROCESS FOR PRODUCING HIGHLY STEREOREGULAR α-OLEFIN POLYMERS

Akinobu Shiga; Yukio Naito; Toshio Sasaki; Junpei Kojima, and Hiroshi Yoshioka, all Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 300,694, Sep. 10, 1981, abandoned. This application Jan. 10, 1983, Ser. No. 456,560

Claims priority, application Japan, Sep. 29, 1980, 55-136067; Sep. 29, 1980, 55-136068; Sep. 29, 1980, 55-136069; Sep. 29, 1980, 55-136070; Sep. 29, 1980, 55-136072; Sep. 29, 1980, 55-136073; Sep. 29, 1980, 55-136074

Int. Cl.³ C08F *4/02, 10/06*

U.S. Cl. 526—127 **41 Claims**

1. A process for producing α-olefin polymers of high stereoregularity which comprises polymerizing an α-olefin having not less than three carbon atoms or copolymerizing said α-olefin with another olefin having not less than two carbon atoms in the presence of a catalyst system comprising:

(A) a solid catalyst obtained by contact reaction between

(a) a solid product prepared by reaction of an organo-magnesium compound with at least one of the following halogen-containing compounds (I) and (II) in a solvent comprising an ether compound or a mixture of an ether compound and a hydrocarbon compound,

(I) halogenated silicon compounds of the formula, R_nSiX_{4-n}, in which R is a hydrocarbon group having 1 to 8 carbon atoms, X is a halogen atom and n is a number satisfying $0 \leqq n < 4$,

(II) halogenated aluminum compounds of the formula, R_lAlX_{3-l}, in which R is a hdyrocarbon group having 1 to 8 carbon atoms, X is a halogen atom and l is a number satisfying $0 \leqq l < 3$, and

(b) a titanium compound of the formula, $Ti(OAr)_nX_{4-n}$, in which OAr is an aryloxy group, X is halogen, n is a number satisfying $0.1 \leqq n \leqq 0.8$, the ratio of the number of titanium-aryloxy linkage to that of titanium is less than 1, and the valence of titanium is 4, and (B) an organoaluminum compound as an activating agent.

4,412,050

LINEAR POLYMERS FROM BLOCKED VINYL BIPHENYL COMPOUNDS

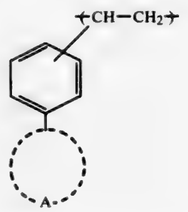
Avinash C. Mehta, Belmont, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 5, 1981, Ser. No. 222,361

Int. Cl.³ C08F *28/04, 24/00, 16/22*

U.S. Cl. 526—266 **9 Claims**

1. A linear polymer comprising recurring units of the formula



wherein the recurring vinyl grouping is in the 3'- or 4'-position and the cyclic moiety A is a 2,5-; -2,3-; or -3,4-di-OR-1-phenyl moiety wherein R is a hydroxy-proteeting group capable of being removed so as to regenerate the hydroxy group.

4,412,051

BROMINE-CONTAINING POLYMER AND PROCESS OF PREPARING A BROMINE-CONTAINING POLYMER

Hendrikus C. J. de Man, Geleen, and Petrus T. J. L. Smids, Maastricht, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation of Ser. No. 100,329, Dec. 5, 1979, abandoned. This application Jul. 21, 1981, Ser. No. 285,511

Claims priority, application Netherlands, Dec. 22, 1978, 7812460

Int. Cl.³ C08F *12/16*

U.S. Cl. 526—293 **8 Claims**

1. A process of preparing a bromine-containing copolymer comprising adding 25 to 100 parts by weight of bromostyrene, continuously or in batches, to an aqueous emulsion of 5 to 40 parts by weight of acrylonitrile, and an emulsifier, conducting the polymerization reaction in the presence of an initiator providing water-soluble free radicals and after completion of the polymerization yielding a copolymer product having 60 to 95% by weight of copolymerized bromostyrene therein and having a weight-average molecular weight in the range of 25,000 to 2,000,000.

4,412,052

MOISTURE PERMEATION RESISTANT RESINS FROM EPOXY RESINS, POLYMERCAPTANS, AND AMINOSILANES

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Division of Ser. No. 204,424, Nov. 6, 1980, Pat. No. 4,352,848, which is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application May 12, 1982, Ser. No. 377,274

The portion of the term of this patent subsequent to Oct. 5, 1999, has been disclaimed.

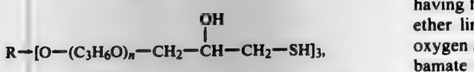
Int. Cl.³ C08G *59/40, 77/26*

U.S. Cl. 528—27 **8 Claims**

1. A composition resistant to moisture permeation comprising:

a blend having,

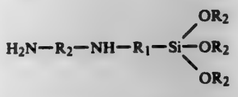
(a) about 100 parts by weight of a mercaptan compound having the following formula:



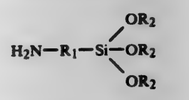
where R is an aliphatic hydrocarbon group having from 1 to 18 carbon atoms and where n is 1 or 2;

(b) from about 40 to about 250 parts by weight of an epoxy resin; and

(c) from about 0.5 parts by weight to about 4.0 parts by weight of a silane selected from the group consisting of: N-aminoalkyl-aminoalkyl-trialkoxysilanes of the formula:



wherein R_1 is an alkylene having 1–6 carbon atoms and R_2 is an alkyl, having 1–6 carbon atoms; and aminoalkyl-trialkoxysilanes of the formula:



wherein R_1 and R_2 are as defined above, and combinations thereof.

4,412,053

POLYPHOSPHAZENE COMPOUNDS AND METHOD OF PREPARATION

Robert H. Neilson, and Patty J. Wisian-Neilson, both of 6513 Lawndale Dr., Forth Worth, Tex. 76134

Continuation of Ser. No. 232,518, Feb. 9, 1981, abandoned. This application Jan. 22, 1982, Ser. No. 341,689

Int. Cl.³ C08G *73/00*

U.S. Cl. 528—30 **3 Claims**

1. A method of preparing a polyphosphazene having a phosphorus-nitrogen backbone and side units bonded to the backbone by direct carbon-phosphorus bonds, comprising the steps of:

reacting a disilylaminophosphine starting material with bromine to produce a P-bromo-N-silylphosphinimine;

reacting the P-bromo-N-silylphosphinimine so produced with trifluoroethanol in the presence of triethylamine to produce a trifluoroethoxy substituted N-silylphosphinimine; and

heating the trifluoroethoxy substituted N-silylphosphinimine in the range of 150°–250° C.

4,412,054

ANTITHROMBOGENIC POLYURETHANES BASED ON FLUORINATED PREPOLYMERS

Masaaki Yamabe, Machida; Masao Kato, and Teruo Takakura, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

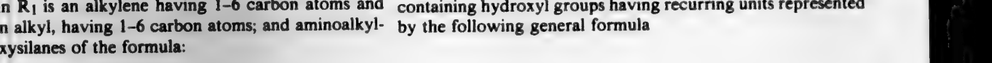
Filed Aug. 17, 1982, Ser. No. 408,936

Claims priority, application Japan, Sep. 4, 1981, 56-138640

Int. Cl.³ C08G *18/77, 18/48, 18/50*

U.S. Cl. 528—70 **3 Claims**

1. An antithrombogenic material which is composed of a fluorine-containing block polymer obtained by the polyaddition or polycondensation of a prepolymer with a chain extender, said prepolymer being a diisocyanate prepolymer represented by the formula



where Rf is a perfluoroalkylene or perfluoroxyalkylene group having from 1 to 20 carbon atoms and containing from 0 to 10 ether linkages, A is a divalent organic group containing an oxygen atom in its main chain and m is from 1 to 3, or a dicarbamate prepolymer obtained by reacting the diisocyanate prepolymer with a lower alcohol.

4,412,055

EPOXY RESINS PREPARED FROM EPIHALOHYDRINS AND HYDROXYL-CONTAINING PHOSPHONOPOLYESTER OLIGOMERS

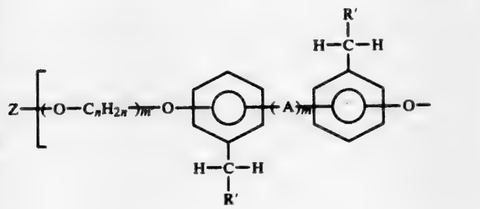
Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

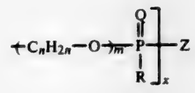
Continuation of Ser. No. 330,106, Dec. 14, 1981. This application Sep. 27, 1982, Ser. No. 423,905

Int. Cl.³ C08G *59/06*

U.S. Cl. 528—99 **4 Claims**

1. An epoxy resin prepared by dehydrohalogenating the reaction product of an epihalohydrin and at least one oligomer containing hydroxyl groups having recurring units represented by the following general formula





wherein each A is independently —O—, —S—, —S—S—,



or a divalent hydrocarbon group having from 1 to about 8 carbon atoms; each Q is independently oxygen or sulfur; each R is independently a hydrocarbon group having from about 1 to about 10 carbon atoms; each R' is independently a —CH=CH₂ group or a —CXH—CXH₂ group, wherein X is chlorine or bromine; each Z is independently a terminal moiety; each m is independently zero or one; each m' indepen-

dently has a value from 1 to about 5; each n independently has a value of 2, 3 or 4; and x has an average value of from 1 to about 10.

4,412,056

POLYGLYCIDYL ETHERS, THEIR PREPARATION AND USE IN CURABLE COMPOSITIONS

Johan van Gogh, and Hermanus Grol, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

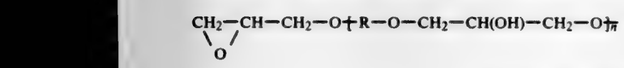
Filed Nov. 10, 1982, Ser. No. 440,647

Claims priority, application United Kingdom, Dec. 22, 1981, 8138505

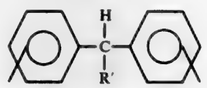
Int. Cl.³ C08G *59/24*

U.S. Cl. 528—112 **8 Claims**

1. A polyglycidyl ether having the general formula:



wherein n is a number of from 0 to 12 and R is the hydrocarbon residue of a diphenylol alkane from 1 to (n+1) groups R in the above molecule have the formula:



wherein R′ is a C_7 to C_{12} alkyl group.

4,412,057

PROCESS FOR MANUFACTURING AROMATIC POLYESTERS

Masahiro Asada, Kobe; Miyuki Matsuura, Nishinomiya, and Kazuya Yonezawa, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 16, 1981, Ser. No. 331,463

Int. Cl.³ C08G *63/18, 63/24*

U.S. Cl. 528—179 **12 Claims**

1. In a process for manufacturing an aromatic polyester by reacting an aromatic dicarboxylic acid dichloride with an alkali metal salt of a bisphenol in an aqueous solution, the improvement which comprises adding 0.01 to 100 mol%, based on the total monomer quantity, of an acid monohalide into the reaction system at a time when the conversion degree is not lower than 50%.

4,412,058

AROMATIC POLYESTERS AND HIGH STRENGTH FILAMENTS THEREOF

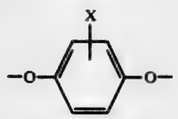
Roger K. Siemionko, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 384,343, Jun. 2, 1982. This application Feb. 7, 1983, Ser. No. 464,428

Int. Cl.³ C08G *63/18, 63/60*

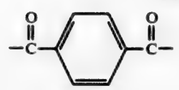
U.S. Cl. 528—191 **8 Claims**

1. A polyester consisting essentially of units having structural formulas as follows:

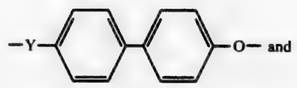


I.

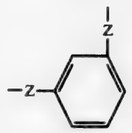
-continued



II.



III.



IV.

where X is chloro or methyl; Y is either carbonyl or oxy and each Z is independently selected from the group consisting of oxy and carbonyl; unit I is present in the amount of from about 30 to 45 mol percent, unit II is present in the amount of from about 30 to 50 mol %, unit III is present in the amount of from about 5 to 20 mol percent and unit IV is present in the amount of from about 2 to 15 mol percent with the total dioxy aryl units and the total dicarbonyl aryl units being present in substantially equimolar amounts.

4,412,059

HIGH MODULUS CHOLESTERIC MESOPHASE POLYMERS

William R. Krigbaum; Alberto Ciferri, both of Durham, and Jack Preston, Raleigh, all of N.C., assignors to Duke University, Durham, N.C.

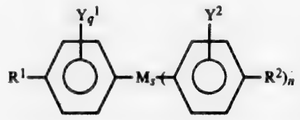
Filed Aug. 20, 1980, Ser. No. 179,962

Int. Cl.³ C08G *69/36, 63/00*

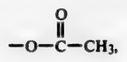
U.S. Cl. 528—192 **20 Claims**

1. A polymeric material which is capable of forming high modulus, biaxially orientable structures of a cholesteric mesophase, wherein said polymeric material comprises an optically active monomer which is condensation co-polymerized with at least one p-phenylene containing monomer which is itself capable of forming a polymer exhibiting a nematic mesophase, or which is capable of being copolymerized with a second monomer to form a nematic mesophase, or which is capable of being copolymerized with a racemic mixture of said optically active monomers to form a nematic mesophase herein the resulting copolymer is characterized by a degree of inflexibility sufficient to form a mesophase and wherein said optically active monomer is present in said polymer after copolymerization in an amount sufficient to impart optical activity to said polymer sufficient to form a cholesteric mesophase.

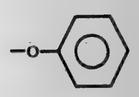
13. The polymer of claim **1** wherein at least one of the monomers capable of forming the nematic phase has the formula



wherein R^1 and R^2 independently represent $-COX^1$, $-NH_2$, -OH,



wherein X^1 is -OH, -Cl,



or -Br; n is 0 or 1, q is 1 or 3; wherein if n=0, M is any R′ group which may be the same or different than the R′ selection, and if n=1 then M is



-CH=CH-, $-C(CH_3)=CH-$, -N=CH-, -N=N- or



Y^1 and Y^2 are independently selected from the group of -H, -Cl, -Br, lower alkyl or -OH; and s may be 0 or 1.

4,412,060

CYCLOALKYL CARBONYL END-CAPPED AROMATIC POLYCARBONATES

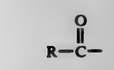
Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jun. 9, 1982, Ser. No. 386,740

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—196 **8 Claims**

1. An aromatic polycarbonate chain terminated with a residue having a structure of the Formula



wherein R is cycloalkyl of four to seven ring carbon atoms, inclusive, or methyl substituted cycloalkyl of four to seven ring carbon atoms, inclusive, wherein from one to three hydrogen atoms of the cycloalkyl group are replaced by a methyl group.

4,412,061

PROCESS FOR THE PREPARATION OF A POLYAMIDE FROM UNSATURATED NITRILE, LACTAM AND WATER

Mu-Yen M. Wu, and Lawrence E. Ball, both of Cuyahoga Falls, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Dec. 24, 1980, Ser. No. 219,782

Int. Cl.³ C08G *69/16*

U.S. Cl. 528—315 **12 Claims**

1. A process for producing a resinous copolyamide comprising polymerizing an alpha, beta-unsaturated nitrile and water with a molar excess of a lactam.

4,412,062

POLYMER STABILIZATION

Jerry O. Reed, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 25, 1982, Ser. No. 392,040

Int. Cl.³ C08G *75/14*

U.S. Cl. 528—388 **25 Claims**

1. A resin composition exhibiting improved melt stability and reduced melt viscosity when subjected to heat comprising a poly(arylene sulfide) resin containing an effective amount sufficient to retard resin curing or cross-linking and to reduce polymer melt viscosity of at least one compound chosen from among the classes of compounds consisting essentially of tetraoxaphosphaspiroundecane, 4-hydroxybenzyl isocyanurate, N-hydrocarbylthiophthalimide, and trihydrocarbyl trithiophosphite.

4,412,063

POLYTETRAHYDROFURANS CONTAINING TERMINAL ACRYLATE OR METHACRYLATE GROUPS

Walter Heitz, Kirchhain; Hans-Jürgen Kress, Giessen, and Wolfgang Stix, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 229,094, Jan. 28, 1981, abandoned. This application Apr. 2, 1982, Ser. No. 364,986

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1980, 3004328

Int. Cl.³ C07C *67/26;* C08G *65/20*

U.S. Cl. 528—409 **2 Claims**

1. A process for the production of polytetrahydrofurans, containing terminal acrylate and/or methacrylate groups, wherein tetrahydrofuran, optionally in an inert organic solvent, is homopolymerized at a temperature of from −10° to +70° C., together with 0.1 to 200% by weight, based on the weight of the tetrahydrofuran, of acrylic acid anhydride and/or methacrylic acid anhydride with the aid of from 0.001 to 5.0% by weight, based on tetrahydrofuran, of $HSbF_6$ as catalyst.

4,412,064

METAL ATOM CONTAINING EPOXY RESINS

P. Anthony Hinman, Torrance, Calif., assignor to Armco Inc., Middletown, Ohio

Filed Aug. 9, 1982, Ser. No. 406,343

Int. Cl.³ C08G *79/00*

U.S. Cl. 528—9 **10 Claims**

1. A metal containing thermosetting epoxy resin obtained by reacting an epoxy resin and one or more metal compounds selected from the following group:

(a) the reaction product of a polyol containing more than two hydroxy groups with boric acid;

(b) the reaction product of a polyol containing more than two hydroxy groups and a metal complex which is the reaction product of tungsten-carbonyl with pyrrolidine;

(c) the reaction product of a polyol containing more than two hydroxy groups and a metal complex which is the reaction product of rhenium carbonyl with pyrrolidine;

(d) the reaction product of a polyol containing more than two hydroxy groups and a metal complex which is the reaction product of molybdenum carbonyl with pyrrolidine; and

(e) zirconium acetate.

4,412,065

POLY(OXY(SILYLENE) ESTERS)

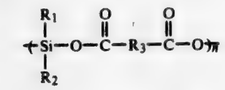
Charles T. Berge, and Mark P. Mack, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 1, 1982, Ser. No. 383,389

Int. Cl.³ G08G *77/04*

U.S. Cl. 528—26 **14 Claims**

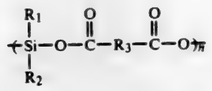
1. Polysilyl esters of the general formula



wherein R_1 and R_2 are, independently, hydrogen, halide, alkyl groups containing from 1 to 30 carbon atoms, cycloalkyl groups, alkaryl groups, aralkyl groups, aryl groups or bicycloalkyl groups, each containing from 6 to 30 carbon atoms,

R_3 is an alkyl group containing from 1 to 30 carbon atoms, a cycloalkyl group, alkaryl group, aralkyl group, aryl group or bicycloalkyl group containing from 6 to 30 carbon atoms and n is greater than 10.

4. A method for the preparation of polysilyl esters having the general formula



wherein R_1 and R_2 are, independently, hydrogen, halide, alkyl groups containing from 1 to 30 carbon atoms, cycloalkyl groups, alkaryl groups, aryalkyl groups, aryl groups or bicycloalkyl groups, each containing from 6 to 30 carbonatoms, R_3 is an alkyl group containing from 1 to 30 carbon atoms, a cycloalkyl group, alkaryl group, aralkyl group, aryl group or bicycloalkyl group containing from 6 to 30 carbon atoms and n is greater than 10 comprising reacting a silicon dihalide, silicon trihalide, silicon tetrahalide, or mixtures of these with a dicarboxylic acid salt or polycarboxylic acid salt in the presence of a phase transfer catalyst.

4,412,066

POLYMER BOUND DYES PREPARED BY DIAZO COUPLING REACTIONS WITH POLY(ORGANOPHOSPHAZENES)

Harry R. Allcock, and Paul E. Austin, both of State College, Pa., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 379,877, May 19, 1982, abandoned. This application Jun. 16, 1982, Ser. No. 389,118

Int. Cl.³ C08G *79/04*

U.S. Cl. 528—168 **7 Claims**

1. A polymer-bound dye prepared by diazotization of a high polymeric polyorganophosphazine $[NP(OC_6H_5)_x(OC_6H_4NH_2\text{-}p)_y]_n$, at about 0° C. in mineral acid solution by addition of alkali metal nitrite in acid solution followed by the addition of a coupling member in alkaline solution at a temperature not greater than about 2° C. to one member of the group consisting of phenol, β-naphthol, 6'-NaO_3S-β-naphthol, and p-aminophenylnaphthalene.

4,412,067

PROCESS FOR THE CONTINUOUS POLYMERIZATION OR COPOLYMERIZATION OF TRIOXANE

Herbert Amann, and Gerhard Morlock, both of Hanau, Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 10, 1982, Ser. No. 448,472

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1981, 3149321

Int. Cl.³ C08G *2/10*

U.S. Cl. 528—232 **12 Claims**

1. A process for the continuous polymerization of trioxane alone or with a copolymerizable monomer in the presence of a cationically active catalyst comprising continuously feeding the starting materials to be polymerized in fluid form into a mixer which serves as the reactor, providing powdered to granular oxymethylene homopolymer or copolymer in the reactor, converting said provided homopolymer or copolymer to a stable fluidized bed by operating said mixer above the critical speed of rotation required to form a fluidized bed, controlling the speed of feeding the materials to be polymerized so that per minute 0.5 to 10 weight percent is supplied based on the total contents of the reactor, selecting the catalyst concentration so that a solidification of the liquid starting material occurs within 20 to 50 seconds after the addition of catalyst, maintaining the temperature of the reactor contents in the range between 60° and 125° C. and discharging polymerizate from the reactor after a polymerization reaction of at least 70%.

4,412,068

NOVEL COMPOUNDS OF THE GENTAMICIN CLASS

David Rosi, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

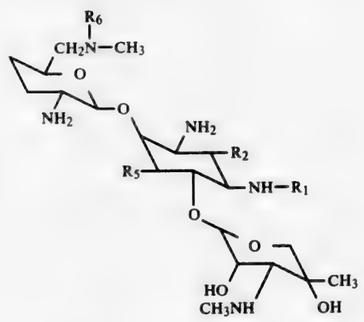
Filed Jun. 8, 1981, Ser. No. 271,552

Int. Cl.³ C07G *11/00*; C12R *1/31*; C07H *15/26*

U.S. Cl. 536—13.6 **5 Claims**

1. A member of the group consisting of

(A) a compound having the formula:



where R_1 is hydrogen or the group, $H_2N(CH_2)_nCHOHCO$—, where n is one of the integers 1 or 2; R_2 and R_5 are either both hydroxy or both hydrogen; and R_6 is hydrogen or methyl, R_2 being hydroxy only when R_6 is methyl; and

(B) acid-addition salts thereof.

4,412,069

PROCESS FOR PREPARING CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Jean-Pierre Demoute, Montreuil-sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

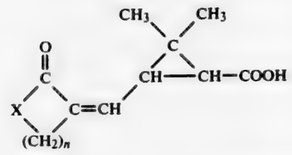
Filed Jul. 17, 1979, Ser. No. 58,273

Claims priority, application France, Jul. 24, 1978, 78 21813

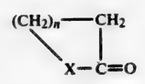
Int. Cl.³ C09B *23/00*

U.S. Cl. 542—429 **8 Claims**

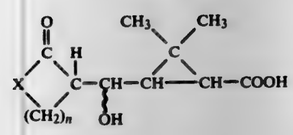
1. A process for the preparation of a compound of the formula



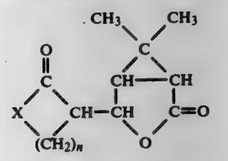
wherein X is selected from the group consisting of oxygen and sulfur and n is 1,2 or 3 comprising reacting in an organic solvent in the presence of a strong base the lactone of cis 2,2-dimethyl-3S-(dihydroxymethyl)-cyclopropane-1R-carboxylic acid with a compound of the formula



to obtain a compound of the formula



reacting the latter with an acid agent in an apolar organic solvent to obtain a compound of the formula



and reacting the latter with a basic agent in an apolar organic solvent to obtain a compound of formula I

4,412,070

CEPHALOSPORIN DERIVATIVES

Roland Reiner, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Sep. 28, 1981, Ser. No. 306,053

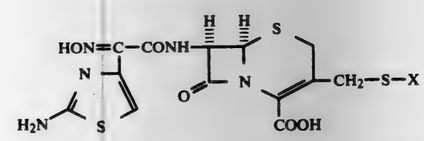
Claims priority, application Switzerland, Oct. 6, 1980, 7450/80

Int. Cl.³ C07D *501/56*

U.S. Cl. 544—27 **8 Claims**

1. A compound of the formula

I



wherein X is the 1,2,5,6-tetrahydro-2-methyl-5,6-dioxo-as-triazin-3-yl group or its corresponding tautomeric form, the 2,5-dihydro-6-hydroxy-2-methyl-5-oxo-as-triazin-3-yl group, and the readily hydrolyzable esters, readily hydrolyzable ethers and salts thereof and hydrates of the compound of formula I or the esters, ethers and salts thereof.

4,412,071

ANTIATHEROSCLEROTIC COMPOSITIONS

Ronald B. Gammill, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

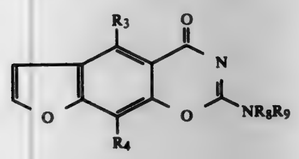
Filed May 17, 1982, Ser. No. 378,702

Int. Cl.³ C07D *491/048, 498/04*

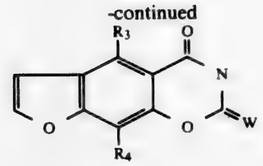
U.S. Cl. 544—58.6 **7 Claims**

1. An antiatherosclerotic compound of formula I, II, or III

I

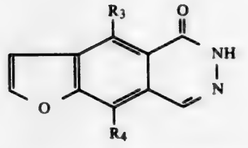


-continued



II

or



III

wherein W is oxo (=O) or α-R_1:β-R_2, wherein R_1 and R_2, being the same or different, are individually:

(a) C_1–C_6 alkyl,

(b) trifluoromethyl,

(c) C_5–C_{10} cycloalkyl with the proviso that the cycloalkyl ring is C_5–C_7,

(d) C_2–C_8 alkoxyaminoalkyl,

(e) C_2–C_8 alkoxyalkyl,

(f) C_2–C_8 alkylthioalkyl,

(g) C_2–C_8 alkylsulfinylalkyl,

(h) C_2–C_8 alkylsulfonylalkyl,

(i) C_7–C_{12} phenoxyalkyl optionally substituted on the phenyl ring by one, 2, or 3,
- (i) hydroxy,
- (ii) C_1–C_3 alkoxy,
- (iii) C_1–C_3 alkyl,
- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,

(j) C_7–C_{12} phenylthioalkyl optionally substituted on the phenyl ring by one, 2, or 3,
- (i) hydroxy,
- (ii) C_1–C_3 alkoxy,
- (iii) C_1–C_3 alkyl,
- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,

(k) phenyl optionally substituted by one, 2, or 3,
- (i) hydroxy,
- (ii) C_1–C_3 alkoxy,
- (iii) C_1–C_3 alkyl,
- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,

(l) aralkyl optionally substituted on the aromatic ring by one, 2, or 3,
- (i) hydroxy,
- (ii) C_1–C_3 alkoxy,
- (iii) C_1–C_3 alkyl,
- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,

(m) 2- or 3-furanyl optionally substituted by
- (i) hydroxy,
- (ii) C_1–C_3 alkoxy,
- (iii) C_1–C_3 alkyl,
- (iv) trifluoromethyl,
- (v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl,

(n) 2- or 3-thenyl optionally substituted by
(i) hydroxy,
(ii) C_1–C_3 alkoxy,
(iii) C_1–C_3 alkyl,
(iv) trifluoromethyl,
(v) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl, or

(o) $-(CH_2)_pNR_{10}R_{11}$ wherein p is one, 2, or 3, and R_{10} and R_{11}, being the same or different, are individually,
(i) hydrogen,
(ii) C_1–C_8 alkyl,
(iii) C_5–C_{10} cycloalkyl,
(iv) C_7–C_{12} aralkyl, or
(v) phenyl optionally substituted by one, 2, or 3
(a) hydroxy,
(b) C_1–C_3 alkoxy,
(c) C_1–C_3 alkyl,
(d) trifluoromethyl,
(e) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl, or

wherein R_{10} and R_{11} are taken together with the nitrogen to form a saturated or unsaturated heterocyclic amine ring consisting of from 2 to 7 carbon atoms, inclusive, and zero, one, or 2 additional hetero atoms or hetero atom groups, with the proviso that said heterocyclic amine ring contains 4 to 8 atoms in the ring, said additional hetero atoms or hetero atom groups being selected from the group consisting of oxygen, nitrogen, sulfur, —SO—, and $—SO_2—$ said heterocyclic amine ring being optionally substituted by one or 2 C_1–C_4 alkyl, C_2–C_8 alkylthiomethyl, or C_2–C_8 alkoxymethyl, C_1–C_4 hydroxyalkyl or phenyl;

wherein R_1 and R_2 are taken together and form a bivalent moiety which is:

(a) $—CH_2—(CH_2)_a—CH_2—$ wherein the integer "a" is zero to 5;

(b) $—CH_2—(CH_2)_b—X—(CH_2)_c—CH_2—$

wherein the integer "b" is zero and the integer "c" is zero, one, 2, or 3 or the integer "b" is one and the integer "c" is zero, one, or 2, and wherein x is oxa (—O—), thia (—S—), or $—N(R_{10})—$ wherein R_{10} is
(i) hydrogen,
(ii) C_1–C_8 alkyl,
(iii) C_5–C_{10} cycloalkyl,
(iv) C_7–C_{12} aralkyl, or
(v) phenyl optionally substituted by one, 2, or 3
(a) hydroxy,
(b) C_1–C_3 alkoxy,
(c) C_1–C_3 alkyl,
(d) trifluoromethyl,
(e) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl;

wherein R_3 is hydrogen, or C_1–C_4 alkoxy and R_4 is hydrogen or C_1–C_4 alkoxy, with the proviso that one of R_3 and R_4 is hydrogen only when the other is other than hydrogen; and

wherein R_8 and R_9, being the same or different, are individually,
(i) hydrogen,
(ii) C_1–C_8 alkyl,
(iii) C_5–C_{10} cycloalkyl,
(iv) C_7–C_{12} aralkyl, or
(v) phenyl optionally substituted by one, 2, or 3
(a) hydroxy,
(b) C_1–C_3 alkoxy,
(c) C_1–C_3 alkyl,
(d) trifluoromethyl,
(e) halo which is fluoro, chloro, or bromo, with the proviso that not more than two such substituents are other than alkyl, or

wherein R_8 and R_9 are taken together with the nitrogen to form a saturated or unsaturated heterocyclic amine ring consisting of from 2 to 7 carbon atoms, inclusive, and zero, one, or 2 additional hetero atoms or hetero atom groups, with the proviso that said heterocyclic amine ring contains 4 to 8 atoms in the ring, said additional hetero atoms or hetero atom groups being selected from the group consisting of oxygen, nitrogen, sulfur, —SO—, and $—SO_2—$ said heterocyclic amine ring being optionally substituted by one or 2 C_1–C_4 alkyl, C_2–C_8 alkylthiomethyl, or C_2–C_8 alkoxymethyl, C_1–C_4 hydroxyalkyl or phenyl.

4,412,072

ISOCYANATE COMPOSITION

Yoshio Kamatani, and Noriaki Fujita, both of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jun. 3, 1981, Ser. No. 270,118
Claims priority, application Japan, Jun. 23, 1980, 55-85487
Int. Cl.³ C07D *273/04*
U.S. Cl. 544—68 **39 Claims**

1. A composition which comprises a stabilized reaction product of an organic isocyanate with carbon dioxide and at least one stabilizing additive selected from the group consisting of an organic peroxide, an inorganic peroxide, sulfur, a polysulfide compound having an S-S bond, a metal sulfide and a halogen; said stabilizing additive being admixed with the reaction product in an amount of 0.001 to 10% by weight based on the organic isocyanate at the time when the reaction product has obtained a predetermined conversion rate whereby the reaction product contains an isocyanate having a stabilized oxadiazinetrione ring structure.

4,412,073

ISOCYANURATE PREPARATION BY CATALYTIC, AMINOSILYL INITIATED CYCLOTRIMERIZATION OF ISOCYANATES

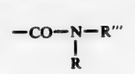
Jean Robin, Lyons, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Feb. 1, 1982, Ser. No. 344,797
Claims priority, application France, Feb. 3, 1981, 81 02192; Dec. 9, 1981, 81 23135
Int. Cl.³ C07D *251/34*; C08G *18/02*; C08F *4/16*
U.S. Cl. 544—193 **20 Claims**

1. A process for the preparation of a monomeric or polymeric isocyanurate compound, comprising catalytically cyclotrimerizing an isocyanate in which the isocyanate moiety is not directly bonded to an aromatic carbon atom, in the presence of an effective amount of an aminosilyl catalysis initiator having the structural formula:

$$R_{(4-n)}Si—NR'R'']_n \qquad (I)$$

wherein R is a saturated or unsaturated, aliphatic, cycloaliphatic, aryl, aralkyl or alkylaryl monovalent hydrocarbon radical, or halo or cyano substituted such radical, and further wherein any two radicals R may together form a single divalent such hydrocarbon radical; R′ is R, SiR_3 or an amido radical having the structural formula:



wherein R‴ is R or SiR_3, with R being as above defined, and further wherein R′, when R′ is neither the amido radical nor SiR_3, may, together with the radical R″, form a single divalent such radical; R″ is R, or a hydrogen atom when R′ is not the amido radical; and n is either 1 or 2, but when n is 2, R′ is R.

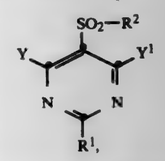
4,412,074

2-ALKYL-5-ALKYL SULFONY 1-4,6-DIHALOPYRIMIDINES AND THE PRODUCTION THEREOF

Karl Hoegerle, Basel, and Kurt Ohnemus, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 10, 1981, Ser. No. 329,169
Claims priority, application Switzerland, Dec. 17, 1980, 9301/80
Int. Cl.³ C07D *239/40*
U.S. Cl. 544—298 **5 Claims**

1. A compound of the formula I



(I)

wherein each of R^1 and R^2 independently is straight chain or branched chain C_1–C_5alkyl, and each of Y and Y^1 independently is chlorine, fluorine or bromine.

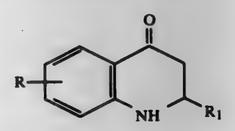
4,412,075

PROCESS FOR THE PREPARATION OF QUINOLIN-4-ONES

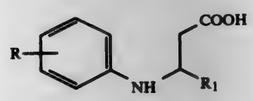
Michel Baudouin, St-Fons, and Michel Desbois, Rillieux la Pape, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Jan. 15, 1982, Ser. No. 339,725
Claims priority, application France, Jan. 16, 1981, 81 00762
Int. Cl.³ C07D *215/22*
U.S. Cl. 546—153 **10 Claims**

1. A process for the preparation of a 1,2,3,4-tetrahydroquinolin-4-one of the general formula:



(wherein R represents a hydrogen atom or a substituent selected from halogen atoms, straight- or branched-chain alkyl radicals containing 1 to 4 carbon atoms, straight- or branched-chain alkoxy radicals containing 1 to 4 carbon atoms, and the trifluoromethyl radical, and R_1 represents a hydrogen atom, a straight- or branched-chain alkyl radical containing 1 to 4 carbon atoms or the trifluoromethyl radical) which comprises cyclizing a 3-anilinopropionic acid of the general formula:



(wherein R and R_1 are as hereinbefore defined) in a mixture of hydrofluoric acid and boron trifluoride, and isolating the quinolinone product obtained.

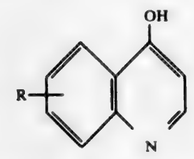
4,412,076

PREPARATION OF 4-HYDROXYQUINOLINES

Michel Baudouin, St. Fons, and Daniel Michelet, Tassin, both of France, assignors to Rhone-Poulenc Sante, Courbevoi, France

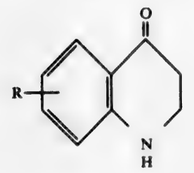
Filed Jan. 15, 1982, Ser. No. 339,723
Claims priority, application France, Jan. 16, 1981, 81 00764
Int. Cl.³ C07D *215/22*
U.S. Cl. 546—153 **9 Claims**

1. A process for the preparation of a 4-hydroxyquinoline of the general formula:



(I)

in which R represents a hydrogen atom, or one, two or three substituents, which may be the same or different, selected from halogen atoms, alkyl radicals containing 1 to 4 carbon atoms, alkoxy radicals containing 1 to 4 carbon atoms, and the trifluoromethyl radical, the substituent(s) being in the 2-, 3-, 5-, 6-, 7- or 8-position, which comprises oxidising a 1,2,3,4-tetrahydroquinolin-4-one of the general formula:



(II)

in which R is as hereinbefore defined, by means of oxygen or air, in the presence of a catalyst based on platinum or ruthenium, or alloys thereof, on a support.

5. A process for the preparation of a 4-hydroxyquinoline of general formula (I) depicted in claim 1 in which R represents a halogen atom, which comprises carrying out the catalytic dehydrogenation of a 1,2,3,4-tetrahydroquinolin-4-one of general formula (II) in which R represents a halogen atom in the presence of a catalyst based on ruthenium or platinum, or alloys thereof, on a support, the reaction being carried out in an organic solvent such as trichlorobenzene, or in water acidified beforehand by an inorganic acid.

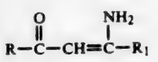
4,412,077

PROCESS FOR PREPARING 5-(LOWER-ALKANOYL)-6-(LOWER-ALKYL)-2(1H)-PYRIDINONE

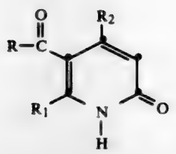
George Y. Lesher, Shodack, and Baldev Singh, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 15, 1982, Ser. No. 357,872
Int. Cl.³ C07D *213/50*
U.S. Cl. 546—298 **7 Claims**

1. The process which comprises heating at about 100° C. to 150° C. 2-(lower-alkanoyl)-1-(lower-alkyl)ethenamine of the formula



where R and R_1 are each lower-alkyl, with lower-alkyl 2-propynoate or 2-butynoate to produce 4-R_2-5-(lower-alkanoyl)-6-(lower-alkyl)-2(1H)-pyridinone having the formula



where R_2 is hydrogen or methyl respectively.

4,412,078

HYDANTOINYLSILANES

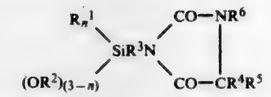
Abe Berger, Summit, N.J., assignor to M & T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 97,902, Nov. 28, 1979, abandoned. This application Dec. 1, 1981, Ser. No. 326,318

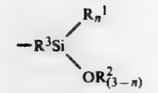
Int. Cl.³ C07F *7/18, 7/10*

U.S. Cl. 548—110 **12 Claims**

1. A hydantoinyl silane represented by the generic formula



wherein R^1 is selected from the group consisting of alkyl, aryl, cyanoalkyl, trifluoropropyl, alkenyl, alkynyl and halophenyl; R^2 is selected from the group consisting of alkyl, alkaryl and cycloalkyl; R^3 is alkylene; R^4 and R^5 are individually selected from the group consisting of hydrogen, alkyl, phenyl and alkaryl; R^6 is



or is selected from the same group as R^4 and n is 0, 1, 2 or 3 with the proviso that any alkyl or alkylene group contains from 1 to 12 carbon atoms and any alkenyl or alkynyl group contains from 2 to 12 carbon atoms.

4,412,079

THIADIAZOLE COMPOUNDS AND METHODS OF USING SAID COMPOUNDS IN AGRICULTURE

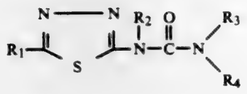
Tony Cebalo, Indianapolis, Ind., and Robert A. Walde, Berwyn, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 229,167, Feb. 24, 1972, which is a continuation-in-part of Ser. No. 37,836, May 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 856,461, Sep. 9, 1969, abandoned, which is a continuation-in-part of Ser. No. 762,604, Sep. 25, 1968, abandoned, which is a continuation-in-part of Ser. No. 712,585, Mar. 13, 1968, abandoned. This application Sep. 20, 1982, Ser. No. 419,883

Int. Cl.³ A01N *47/36*; C07D *285/12*

U.S. Cl. 548—141 **5 Claims**

1. A compound having the formula



wherein

R_1 is a C_3-C_7 alkyl radical,

R_2 is a C_1-C_4 alkyl radical,

R_3 is a C_1-C_4 alkyl radical or a C_2-C_4 alkenyl radical, and

R_4 is hydrogen or a C_1-C_4 alkyl radical or a C_2-C_4 alkenyl radical.

4,412,080

METHODS FOR PREPARING CYCLOPOLYSILOXANES

Robert E. Williams, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 16, 1982, Ser. No. 408,103

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—460 **8 Claims**

1. A process for preparing cyclic dimethylsiloxanes of the formula:

$$[(CH_3)_2SiO]_m$$

where m predominantly equals a whole number from 3-6, which comprises hydrolyzing dimethyldichlorosilane with a normal $C_{6\text{-}16}$ alkylsulfonic acid with aqueous HCl containing, by weight, from 20% to saturated aqueous HCl depending on the temperature.

4,412,081

METHODS FOR PREPARING DECAMETHYL CYCLOPENTASILOXANE

Robert E. Williams, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 27, 1982, Ser. No. 412,062

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—460 **5 Claims**

1. A process for preparing a cyclic pentamer siloxane of the general formula

$$[(CH_3)_2SiO]_5$$

from octamethyl cyclotetrasiloxane by heating the latter with a normal $C_{6\text{-}16}$ alkyl sulfonic acid having the formula

$$n\text{-}C_xH_{(2x+1)}SO_3H$$

where x=6 to 16, inclusive, in the presence of aqueous HCl at a temperature in excess of 50° C.

4,412,082

METHOD FOR PREPARING 4-HYDROXYPHENYLACETIC ACID

Motoo Mutsukado, and Shin Yamada, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 2, 1982, Ser. No. 353,948

Claims priority, application Japan, Mar. 13, 1981, 56-36327

Int. Cl.³ C07C *65/01*

U.S. Cl. 562—478 **13 Claims**

1. A method for preparing 4-hydroxyphenylacetic acid comprising the steps of first reacting benzyl phenyl ether with formaldehyde and hydrogen chloride to form 4-benzyloxybenzyl chloride, second reacting the resultant 4-benzyloxybenzyl chloride with an alkali metal cyanide in at least one solvent selected from the group consisting of water and an organic solvent to form 4-benzyloxyphenylacetonitrile, and hydrolyzing the resultant 4-benzyloxyphenylacetonitrile in the presence of an acid catalyst.

4,412,083

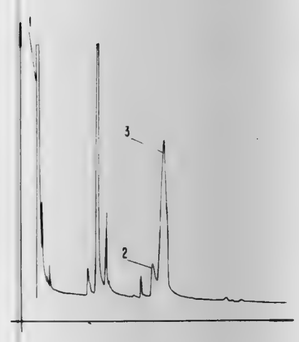
PROCESS FOR PRODUCING SOLANONE, NORSOLANADIONE AND INTERMEDIATES THEREFOR

Kenneth K. Light, North Ogden, Utah; William L. Schreiber, Jackson, N.J.; Joseph A. McGhie, Montclair, N.J.; Ronald P. Schreck, Old Bridge, N.J.; Takao Yoshida, West Long Branch, N.J.; Loren B. Schreiber, Aberdeen, N.J., and Ranya Muralidhara, Fair Haven, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

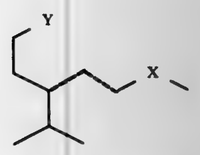
Filed Mar. 11, 1982, Ser. No. 357,158

Int. Cl.³ C07C *119/12*

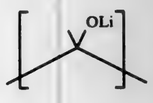
U.S. Cl. 564—279 **3 Claims**



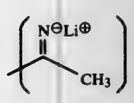
1. At least one compound defined according to the structure:



wherein one of the dashed lines is a carbon-carbon double bond and the other of the dashed lines is a carbon-carbon single bond; wherein X represents:



wherein R represents hydrogen or methyl; and wherein Y represents



4,412,084

PROCESS FOR PRODUCING ETHYLENE GLYCOL

John Kollar, 6 Spencer Ct., Wyckoff, N.J. 07481

Continuation-in-part of Ser. No. 286,721, Jul. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 183,537, Sep. 2, 1980, Pat. No. 4,337,371. This application Feb. 26, 1982, Ser. No. 352,919

Int. Cl.³ C07C *31/20, 29/00*

U.S. Cl. 568—852 **14 Claims**

1. In a process for producing ethylene glycol by reacting methanol, formaldehyde and an organic peroxide having the formula R-O-O-R^1, wherein each R and R^1 is an alkyl or aralkyl group containing from 3 to 12 carbon atoms in a liquid reaction medium, the improvement comprising reacting portions of the total amount of the formaldehyde and peroxide with the methanol in the presence of a basic material present in the reaction medium in an amount sufficient to reduce the hydrogen ions that are formed in the reaction without unduly reducing the ethylene glycol production due to by-product formation, by incrementally adding each of said portions to the reaction medium containing methanol to permit a fraction of the final conversion of said formaldehyde and peroxide to take place prior to the addition of the next added portion, said next added portion being added to said reaction medium wherein said fraction of the final conversion has taken place and containing a concentration of ethylene glycol greater than that of the reaction medium to which said previous portions were added, and continuing the incremental additions until all of said peroxide and formaldehyde has been added to said reaction medium and subjected to reaction to produce the desired amount of ethylene glycol.

4,412,085

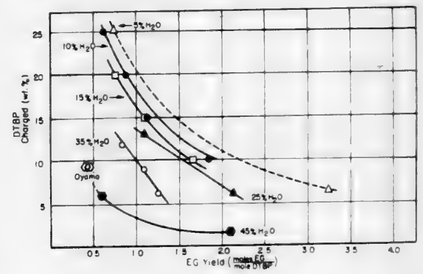
PROCESS FOR PRODUCING ETHYLENE GLYCOL

John Kollar, 6 Spencer Ct., Wyckoff, N.J. 07481

Continuation-in-part of Ser. No. 183,537, Sep. 2, 1980, Pat. No. 4,337,371, and a continuation-in-part of Ser. No. 286,721, Jul. 28, 1981, abandoned. This application Feb. 26, 1982, Ser. No. 352,920

Int. Cl.³ C07C *31/20, 29/00*

U.S. Cl. 568—852 **9 Claims**



(ii) 1. In a process for producing ethylene glycol by reacting methanol, an organic peroxide, and formaldehyde in the presene of water, said organic peroxide having the formula R—O—O—R^1 wherein R and R^1 each is an alkyl or aralkyl group containing 3 to 12 carbon atoms, the improvement comprising utilizing organic peroxide and water in the following ranges:

Peroxide	Water
greater than 6 to about 12 weight percent	about 0.5 to about 35 weight percent
greater than about 12 to about 15 weight percent	about 0.5 to about 25 weight percent
greater than about 15 to about 20 weight percent	about 0.5 to about 15 weight percent

-continued

Peroxide	Water
greater than about 20 to about 25 weight percent	about 0.5 to about 10 weight percent

the above amounts based on the total weight of methanol, organic peroxide, formaldehyde and water present in the initial reaction mixture, the amount of formaldehyde present being from about 0.5 to about 13 weight percent.

4,412,086

PROCESS FOR SEPARATING FERRIC IRON FROM CHLORINATED HYDROCARBONS

William Q. Beard, Jr., and Richard L. Wilson, both of Wichita, Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

Continuation-in-part of Ser. No. 122,040, Feb. 19, 1980, Pat. No. 4,307,261. This application Jun. 1, 1981, Ser. No. 269,514
The portion of the term of this patent subsequent to Dec. 22, 1998, has been disclaimed.
Int. Cl.³ C07C *17/38*
U.S. Cl. 570—262 **17 Claims**

1. A process for the removal of ferric chloride from chlorinated aliphatic hydrocarbons having less than 6 carbon atoms per molecule, comprising the steps of:

(a) mixing a liquid comprising a major amount of at least one relatively volatile saturated aliphatic chlorinated hydrocarbon having 2 to 5 carbon atoms per molecule and at least 0.01% of ferric chloride admixed therewith, with at least 10 volumes (per 100 volumes of volatile chlorinated hydrocarbon) of a relatively less volatile oil composition comprising a hydrocarbon having at least 6 concatenated aliphatic carbon atoms per molecule and selected from the group consisting of alkanes, cycloalkanes, alkenes, cycloalkenes, alkyl aromatic hydrocarbons, and mixtures of at least two of the foregoing;

(b) heating the resulting mixture at a temperature between about 60° and about 140° C. until a major portion of said ferric chloride is reduced to the divalent state and an easily filtrable, essentially inert, non-hazardous, powdery solid precipitate consisting largely of ferrous chloride combined with a small amount of carbonaceous material is formed without significant decomposition of said chlorinated hydrocarbon;

(c) separating said chlorinated hydrocarbon as a vapor from said oil composition and from said precipitate; and

(d) mechanically separating said oil composition from said precipitate.

4,412,087

VISCOSITY INDEX IMPROVER WITH HIGH THICKENING POWER

William J. Trepka, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1981, Ser. No. 331,421
Int. Cl.³ C10M *1/18*
U.S. Cl. 585—12 **22 Claims**

1. Shear-stable, mineral oil-based compositions comprising a major amount of a mineral base oil, and a minor effective viscosity improving amount of an oil-soluble hydrogenated conjugated diene/monovinylarene random block copolymer dissolved therein, said copolymer characterized by:

polymerized conjugated diene content: 44–70 weight percent

total copolymerized monovinylarene content: 56–30 weight percent

block monovinylarene content: 9–23 weight percent

molecular weight M_n: 94,000–199,000

vinyl, before hydrogenation, based on conjugated diene: 30–51 weight percent

vinyl, before hydrogenation, based on entire copolymer: 13–33 weight percent

weight percent vinyl, based on copolymer, plus weight percent monovinylarene: 60–72.

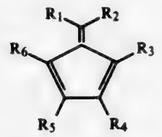
4,412,088

CYCLOPENTADIENE DERIVATIVES, METHOD FOR PREPARING, AND USE THEREOF

Bruce A. Gruber, Worthington; Diether Koch, Dublin; Heimo J. Langer, Columbus, and William R. Dunnavant, Columbus, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Sep. 10, 1981, Ser. No. 300,786
Int. Cl.³ C07C *13/00, 1/20*
U.S. Cl. 585—23 **26 Claims**

1. Disubstituted cyclopentadiene derivative of the formula:



wherein each R_1 and R_2 individually is an alkyl containing 1 to 10 carbon atoms, or a hydrocarbon containing one or more oxygen bridges in the chain and containing up to 10 carbon atoms, or a furyl group; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group or one of R_1 or R_2 is hydrogen; and wherein each R_3, R_4, R_5 and R_6 individually is hydrogen or methyl or



or R_4 or R_5 is

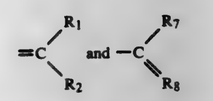


and provided that a maximum of only one such R_3, R_4, R_5 and R_6 is methyl and provided that one such R_3, R_4, R_5 and R_6 is

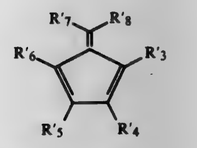


wherein each R_7 and R_8 individually is a hydrocarbon group containing 1–10 carbon atoms or a hydrocarbon containing one or more oxygen bridges in the chain and containing up to 10 carbon atoms or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group; or one of R_7 or R_8 is hydrogen, and further provided that at least one of R_7 and R_8 differs from R_1 and R_2 when both R_1 and R_2 are methyl; or isomers, or prepolymers thereof.

17. A method for preparing disubstituted cyclopentadiene derivative having two exocyclic groups of the formula



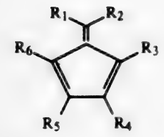
which comprises reacting at a temperature of about 40°–90° C., a fulvene having the formula:



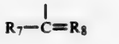
wherein each R'_7 and R'_8 individually is a hydrocarbon containing 1 to 10 carbon atoms or a hydrocarbon containing one or more oxygen bridges in the chain and contains up to 10 carbon atoms; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group or one of R'_7 or R'_8 is hydrogen; and wherein each R'_3, R'_4, R'_5, and R'_6 individually is hydrogen or methyl or R'_4 or R'_5 can have the structure



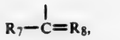
provided that only one such R'_3, R'_4, R'_5, and R'_6 is methyl; with an aldehyde or ketone in the presence of a basic catalyst in an amount of about 20 to about 50 mole percent based upon the moles of said fulvene for a time sufficient to provide a derivative of the formula:



or isomers thereof, or mixtures thereof; wherein each R_1 and R_2 individually is a hydrocarbon containing 1 to 10 carbon atoms or a hydrocarbon containing one or more oxygen bridges in the chain and containing up to 10 carbon atoms; or are interconnected and together with the carbon atom to which they are connected form a cycloaliphatic hydrocarbon group or furyl or one of R_1 or R_2 is hydrogen, and wherein each R_3, R_4, or R_5 or R_6 is hydrogen or methyl or



provided that one such R_3, R_4, R_5, or R_6 is



provided that only one such R_3, R_4, R_5, or R_6 is methyl and wherein R_7 and R_8 are the same as R'_7 and R'_8 respectively and wherein about stoichiometric amounts of said fulvene and aldehyde or ketone are employed, except when R_1, R_2, R_7, and R_8 are methyl the amount of aldehyde or ketone employed is at least twice the stoichiometric amount needed.

4,412,089

PROCESS FOR THE PREPARATION OF DIENES AND/OR TRIENES

Nicolaas Mulder; Willem Terlouw, and Jan H. Wevers, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 16, 1982, Ser. No. 399,040
Claims priority, application United Kingdom, Aug. 24, 1981, 8125781
Int. Cl.³ C07C *6/00*
U.S. Cl. 585—645 **7 Claims**

1. Process for the preparation of at least one of 2,6-dimethyl-1,5-heptadiene and 2,6,10-trimethyl-1,5,9-undecatriene by reacting at a temperature in the range from 50° to 100° C. and a pressure up to 50 bar polyisoprene having a molecular weight in the range from about 5,000 to about 1,000,000 with isobutene in the presence of a heterogeneous diaproportionation catalyst.

4,412,090

THERMAL SENSOR FOR DETECTING TEMPERATURE DISTRIBUTION

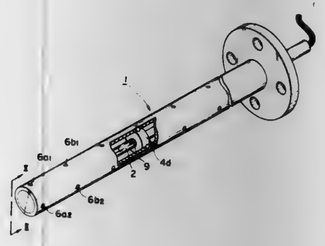
Yoshio Kawate, Toyonaka; Nobuyuki Nagai, Kobe; Takefumi Horiuchi, Kobe; Teruhisa Uehara, Kobe, and Susumu Hachiya, Miki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 5, 1981, Ser. No. 318,401

Claims priority, application Japan, Nov. 7, 1980, 55-159782[U]

Int. Cl.³ H01L *35/02*

U.S. Cl. 136—230 4 Claims



1. A thermal sensor comprising:

(a) an outer protective casing extending along a linear axis;

(b) a plurality of juxtaposed temperature sensing devices disposed within said outer protective casing and extending along the linear axis thereof, said plurality of juxtaposed temperature sensing devices having their respective temperature sensing areas located at spaced intervals;

(c) a plurality of annular disc-like fins disposed within said outer protective casing and extending from said plurality of juxtaposed temperature sensing devices to said outer protective casing, each of said plurality of annular disc-like fins being in good thermal contact both with one of said temperature sensing areas of said plurality of juxtaposed temperature sensing devices and with said outer protective casing; and

(d) insulating filler material disposed within said outer protective casing in between said annular disc-like fins to ensure the endurance of said temperature sensing devices and to deter heat transfer along the linear axis of the thermal sensor, thereby enhancing the accuracy of the temperature measurement.

4,412,091

POLYCRYSTALLINE PHOTOVOLTAIC CELL

John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Division of Ser. No. 25,840, Apr. 2, 1979, Pat. No. 4,304,607, which is a division of Ser. No. 892,375, Mar. 31, 1978, Pat. No. 4,159,914, which is a continuation-in-part of Ser. No. 631,815, Nov. 14, 1975, Pat. No. 4,086,101, which is a continuation-in-part of Ser. No. 508,570, Sep. 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 431,705, Jan. 8, 1974, Pat. No. 3,880,633. This application Mar. 4, 1980, Ser. No. 127,149

Int. Cl.³ H01L *31/06*

U.S. Cl. 136—258 6 Claims

1. An improved cadmium sulfide photovoltaic cell comprising a cadmium sulfide bilayer, the bilayer comprising an initial layer of cadmium sulfide microcrystals having an average crystal diameter of from about 0.02 microns to about 0.1 microns and a second cadmium sulfide layer comprising cadmium sulfide crystals having an average crystal diameter of from about 0.1 microns to about 0.5 microns, wherein said cadmium sulfide bilayer comprises a dopant and said second cadmium sulfide layer being in interfacial contact with a barrier layer.

4,412,092

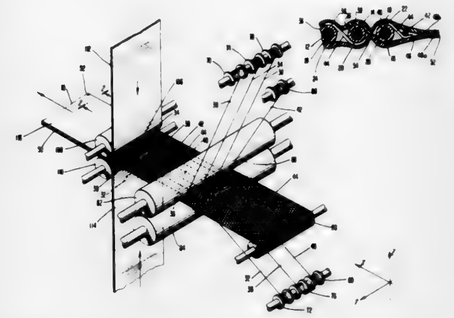
MULTICONDUCTOR COAXIAL CABLE ASSEMBLY AND METHOD OF FABRICATION

George A. Hansell, III, Newark, Del., assignor to W. L. Gore & Associates, Inc., Newark, Del.

Filed Aug. 24, 1981, Ser. No. 295,822

Int. Cl.³ H01B *11/20, 13/22*

U.S. Cl. 174—36 20 Claims



1. A flat multiconductor cable assembly of unlimited length comprising:

a plurality of signal conductors positioned in longitudinally parallel and transversely co-planar relation, said signal conductors being electrically insulated from one another and arranged in clusters of one or more, each of said clusters being individually and coaxially surrounding by an electrically conductive shield, the individually shielded clusters being transversely spaced from one another; and

means for grounding the shields of said clusters, including a ground conductor, and

a transverse conductive element for electrically interconnecting the shields of said shielded clusters with said ground conductor in the transverse direction, said transverse conductive element being interwoven among the transversely spaced clusters and extending intermittently in the longitudinal direction in the spaces between said clusters, whereby said individually shielded clusters are arbitrarily geometrically arranged on said transverse conductive element.

15. Method for fabricating a flat multiconductor cable assembly of unlimited length having at least one ground wire conductor wherein a plurality of insulated signal conductors are positioned in longitudinally parallel and transversely coplanar relation with the ground wire conductor, and wherein the signal conductors are arranged in clusters of one or more, and the individual clusters are coaxially surrounded by an electrically conductive shield, the shielded clusters being physically spaced from, but electrically interconnected with, one another and the ground wire conductor in the transverse direction, the method comprising:

(a) dividing sources of the unlimited length individually shielded clusters into two groups positioned proximate a pair of pinch rollers;

(b) continuously feeding the shielded clusters into the bite of the pinch rollers, the shielded clusters from one of said groups being interspersed with the shielded clusters from the other of said two groups across the transverse width of the bite, and the shielded clusters from one group being fed from one side of a plane passing through the bite of the pinch rollers and the shielded clusters from the other group being fed from the other side of the plane;

(c) concurrently feeding at least one continuous uninsulated grund wire conductor of unlimited length into the bite of the pinch rollers parallel with, and transversely spaced from, said clusters; and

(d) concurrently feeding an uninsulated transverse conductive element of unlimited longitudinal length into the bite

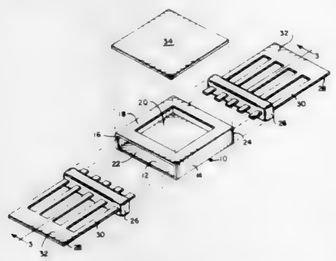
of the rollers along said plane and between the shielded clusters being fed from the two source groups, the transverse conductive element transversely spanning and electrically interconnecting the shields of the clusters and the uninsulated ground wire conductor, the transverse conductor having sufficient flexibility in the transverse direction to conform to a serpentine transverse conductor element path shape wherein the transverse conductive element passes alternately to one side, between, and to the other side of the interspersed clusters with respect to said plane, said transverse conductor extending intermittently in the spaces between interspersed clusters along the entire longitudinal length of the cable assembly.

4,412,093

MICROCIRCUIT FLAT PACK WITH INTEGRAL SHELL

Nicolaas Wildeboer, South Dartmouth, Mass., assignor to Isotronics, Inc., New Bedford, Mass.

Filed Sep. 16, 1981, Ser. No. 302,524
Int. Cl.³ H05K *5/06*
U.S. Cl. 174—52 FP **7 Claims**



1. Apparatus for forming a microcircuit flat package comprising:

an integral and elongated metal tubular shell subassembly having four walls closed on themselves to define two open ends, said walls consisting of first and second broad walls which are joined by respective third and fourth side walls to form said open ends, one of said broad walls having an opening formed therein to provide a continuous and surrounding surface which is peripheral to said opening formed in said broad wall;

an elongated integral insulator subassembly having an array of electrical leads extending through and sealed within an insulative glass body, the insulative glass body of the integral insulator subassembly being dimensioned to be received in each said open end of said tubular shell and to align the leads in substantially parallel alignment with the longitudinal axis of said tubular shell, with the peripheral surface of the insulative body in glass-to-metal non-sealing engagement with the surrounding surfaces of said first, second, third, and fourth walls of said integral shell, with each of the leads terminating at an inner end within said tubular shell and with each of the leads terminating at an outer end exteriorly of said tubular shell, said peripheral surface of the insulative body in glass-to-metal non-sealing engagement with the surrounding surfaces of said first, second, third, and fourth walls of said integral shell providing opposed, touching surfaces that can be subsequently sealed together;

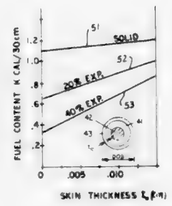
said continuous peripheral surface surrounding said opening in said one of said broad walls of said tubular shell providing a sealing surface to which a cover can be hermetically sealed.

4,412,094

COMPOSITELY INSULATED CONDUCTOR RISER CABLE

Timothy S. Dougherty, Roswell; John J. Kissell, Dunwoody, both of Ga., and Glenn L. Schmehl, Kingsville, Md., assignors to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 151,854, May 21, 1980, abandoned. This application Jul. 28, 1981, Ser. No. 287,620
Int. Cl.³ H01B *7/34*
U.S. Cl. 174—110 F **8 Claims**



1. A fire-retardant cable which is particularly suited for use within a building and which has a predetermined mutual capacitance, said cable comprising:

a core which comprises:

a plurality of conductors, each of said conductors being insulated with a composite expanded insulation which comprises:

an inner layer of a cellular polyolefin plastic material which has an expansion that does not exceed a predetermined percent; and

an outer layer of a relatively fire-retardant plastic material, said outer layer being such that the ratio of its weight to the weight of said composite expanded insulation per unit length of conductor is at least equal to that of a cable having the predetermined mutual capacitance and comprising a plurality of said conductors each of which is covered with a composite unexpanded insulation comprising an unexpanded inner layer of said polyolefin plastic material and an outer layer of said relatively fire-retardant plastic material to cause said composite expanded insulation to have a limiting oxygen index which is at least equal to that of the composite unexpanded insulation and;

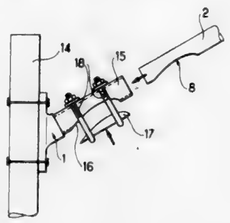
a fire-retardant sheath which encloses said core.

4,412,095

ELECTRIC INSULATOR OF THE LINE POST TYPE

Denis Thuillier, Vichy, and Michel Willem, Abrest, both of France, assignors to Societe Anonyme dite: CERAVER, Paris, France

Filed Feb. 9, 1982, Ser. No. 347,198
Claims priority, application France, Feb. 13, 1981, 81 02888
Int. Cl.³ H01B *17/16*
U.S. Cl. 174—158 R **6 Claims**



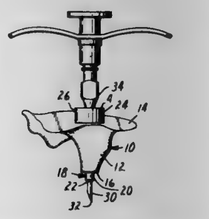
1. An electric insulator of the line post type which has a rod made of resin and glass fibres covered with an insulating sheath, one end of the rod being made fast with a fitting intended to be fixed on a post, in which rod the wall of said one end has at least one hollow orthogonal to the direction of the fibres and situated in the zone where the fibres are liable to be subject to high compression stress, the depth of the hollow not reaching the neutral fibres of the rod, the end of the rod having said hollow being held motionless in a cylindrical socket of said fitting which socket is open adjacent said hollow and accommodates a complementary locking piece which fills said hollow.

4,412,096

COMBINATION EARMOLD AND RECEIVER ADAPTER

Bradly J. Edgerton, Pico Rivera; William F. House, Whittier, and Robert C. Michaels, Santa Barbara, all of Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 24, 1980, Ser. No. 219,896
Int. Cl.³ H04R *25/02*
U.S. Cl. 381—60 **11 Claims**



1. A combination earmold and receiver adapter for insertion in the external auditory canal of the ear and for use in fitting and evaluating hearing aids comprising:

an earmold comprising a flexible, elastic, fast-setting silicone material having a density after curing of about 0.5 to 3.0 gm/cc, said earmold conforming substantially to the contours of said external auditory canal of said ear; and capable of providing an accoustical seal when inserted in said external auditory canal;

a hearing aid receiver adapter inserted through said earmold, said receiver adapter comprising a semi-rigid longitudinal conduit, said longitudinal conduit capable of providing a straight passageway for sound energy from an external receiver to the occluded space of said external auditory canal of said ear when said earmold is inserted in said external auditory canal, and a receiver mounting flange, at one end of said longitudinal conduit, capable of allowing easy change of receivers during a hearing evaluation process.

4,412,097

VARIABLE-DIRECTIVITY MICROPHONE DEVICE

Yukinobu Ishigaki, Machida; Kaoru Totsuka, Tokyo; Makoto Yamamoto, Yokosuka, and Naotaka Miyaji, Yamato, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

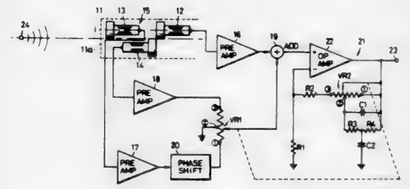
Filed Jan. 21, 1981, Ser. No. 227,035
Claims priority, application Japan, Jan. 28, 1980, 55-8681[U]; Jan. 28, 1980, 55-8682[U]
Int. Cl.³ H01R *1/10*
U.S. Cl. 381—92 **2 Claims**

1. A variable directivity microphone device comprising:

a microphone unit assembly provided and arranged with at least three microphone units, said three microphone units being mutually separated by predetermined distances, and front faces of first and second microphone units among said three microphone units being provided and arranged facing the front surface of said microphone unit assembly while the front face of a third microphone unit is provided and arranged in a direction opposite to those of said first and second microphone units;

a first and second variable resistors respectively having a first terminal at one end, a second intermediate terminal, and a third terminal at the other end, wherein respective sliders are mutually linked or ganged and movable between first, second, and third positions corresponding to said first through third terminals, said first variable resistor having its first and third terminals respectively coupled to outputs of said second and third microphone units and its second intermediate terminal coupled to ground;

a phase-shifter coupled between the output of said second microphone unit and said first terminal of said first variable resistor, for substantially only performing a phase shift in a high-frequency range, said phase-shifter having a phase shifting characteristic wherein the output phase approaches −180 degrees from −90 degrees as a ratio ω/ω_a becomes larger than unity and approaches zero degrees from −90 degrees as the ratio ω/ω_a becomes smaller than unity, where ω is the angular frequency and ω_a is the angular frequency at a point lagging in phase by 90 degrees;



an adder for adding and mixing the output of said first microphone unit and a signal obtained from the slider of said first variable resistor; and

a frequency characteristic compensating circuit having an operational amplifier and a frequency characteristic circuit, for compensating for the frequency characteristic of an output signal of said adder, said second variable resistor having its first terminal and slider coupled to an output of said operational amplifier and its third terminal coupled to one input of said operational amplifier, said frequency characteristic circuit being connected in parallel with said second variable resistor between said first and second terminals of said second variable resistor,

said microphone device having its directivity varied from non-directivity, to primary unidirectivity, and then to secondary unidirectivity, as the sliders of said first and second variable resistors vary from said third, to second, and then to first positions so that the output phase at said phase-shifter approaches zero degree from −90 degrees and then approaches −180 degrees from −90 degrees.

4,412,098

AUDIO SIGNAL RECOGNITION COMPUTER

Byung H. An, Anaheim, Calif., assignor to Interstate Electronics Corporation, Anaheim, Calif.

Division of Ser. No. 73,792, Sep. 10, 1979, Pat. No. 4,292,470. This application Mar. 30, 1981, Ser. No. 249,296
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—43 **3 Claims**

1. Apparatus for identifying signal patterns by comparing plural data elements identifying such patterns with plural data elements identifying a stored reference pattern, comprising:

a first buffer storing said plural data elements identifying signal patterns;

a second buffer storing said plural data elements identifying a reference pattern;

a first register for storing locations in said first buffer at which said plural data elements identifying signal patterns begin;

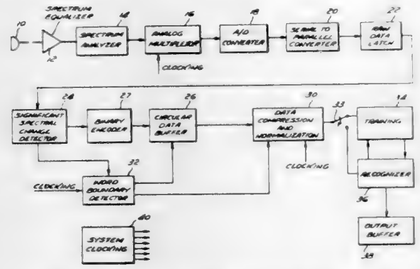
a second register for storing locations in said first buffer at which said plural data elements identifying signal patterns end;

first addressing means for writing plural data elements iden-

tifying said signal pattens into said first buffer, in sequential order, as said plural data elements are received;

means for determining whether said first buffer contains the plural data elements for a complete signal pattern;

second addressing means responsive to said determining means for reading plural data elements identifying said signal patterns from said first buffer at a time when the plural data elements for a complete signal pattern are stored in said first buffer, said second addressing means



operating in response to the locations stored in said first and second registers, said reading performed on a time shared basis time independently from said writing operation performed by said first addressing means such that the new writing operations do not have to be delayed until previously written data is read and compared with said reference patterns; and

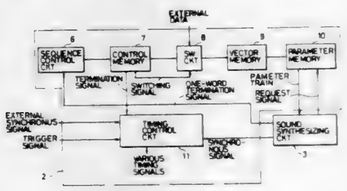
means for comparing said plural data elements read by said second addressing means with data elements stored in said second buffer.

4,412,099

SOUND SYNTHESIZING APPARATUS

Katsuyuki Niyada; Taisuke Watanabe, both of Sagamihara; Shoji Hiraoka, Dobashi, and Shuji Morii, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 15, 1981, Ser. No. 264,175
Claims priority, application Japan, May 16, 1980, 55-65545
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—51 **6 Claims**



2. A sound synthesizing apparatus comprising a sound synthesizing circuit, which converts sound data into sound signals, and a control circuit, said control circuit comprising:

(a) a first memory in which information indicative of the order of words to be pronounced and intervals between said words as well as switching information are prestored, said first memory being arranged to send a piece of address information one after another in response to a timing signal fed thereto;

(b) a variable data producing circuit for producing data which varies as a function of time;

(c) a switching circuit controlled by said switching information for selecting said information indicative of the order of words from said first memory or the variable data;

(d) a second memory in which pieces of information indicative of first addresses of sound data are prestored, one of said pieces of information being selected in accordance with said information or variable data from said switching circuit; and

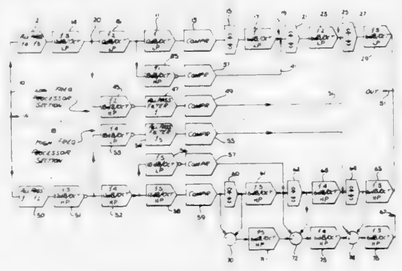
(e) a third memory in which said sound data is prestored as parameters, said sound data being read out in accordance with said information from said second memory one after another in synchroniusm with an external synchronous signal, the read out parameter train being fed to said sound synthesizing circuit to be converted into sound signals.

4,412,100

MULTIBAND SIGNAL PROCESSOR

Robert A. Orban, Belmont, Calif., assignor to Orban Associates, Inc., San Francisco, Calif.

Filed Sep. 21, 1981, Ser. No. 303,789
Int. Cl.³ H04B *1/66*; H04M *1/00*
U.S. Cl. 381—100 **36 Claims**



1. A multiband processor for processing an input signal comprising:

a first and a second lowpass filter, each having approximately a first cutoff frequency;

a first signal processing means for processing a signal, coupled between said first and second filters to receive the output of said first filter;

a third highpass filter having a cutoff frequency approximately equal to said first frequency coupled to said first filter;

a second signal processing means for processing a signal coupled to said third filter;

first combining means for combining the outputs of said second filter and said second signal processing means;

a fourth and a fifth lowpass filter each having approximately a second cutoff frequency different than said first frequency, said fourth and fifth filters being coupled in series with said first and second filters, said fourth filter being coupled to the inputs of said first and third filters, the output of said first combining means being coupled to the input of said fifth filter, and said fourth filter being coupled to receive said input signal;

a sixth highpass filter having a cutoff frequency approximately equal to said second frequency, coupled to said fourth filter;

a seventh allpass filter having phase response approximately matching the phase response of the summation of said first, second, and third filters coupled to said sixth filter; and

second combining means for combining the signal from said sixth and seventh filters with the output signal from said fifth filter;

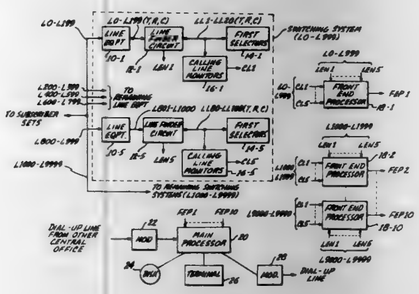
whereby efficient multiband signal processing is achieved at the output of said second combining means.

4,412,101

CALL DATA MONITORING FOR ELECTROMECHANICAL TELEPHONE SWITCHING SYSTEMS

Wallace G. Brown, Redmond, and Otha C. Lee, Kirkland, both of Wash., assignors to Proctor & Associates Co., Redmond, Wash.

Filed Dec. 3, 1981, Ser. No. 327,063
Int. Cl.³ H04M *15/18*
U.S. Cl. 179—7.1 R **17 Claims**



1. A method for determining the line number of a calling subscriber line in a group of subscriber lines connected to an electromechanical telephone switching system of a type consisting of step-by-step and all-relay switching systems, the switching system including: a plurality of line finders for the group, wherein each of the subscriber lines in the group is terminated at a unique location in each of the line finders and wherein each of the line finders is operative to couple one of the subscriber lines to an associated line finder line; and, common control equipment for the group that has connected thereto each of the subscriber lines in the group and that is connected to each of the line finders by a plurality of control leads, the common control equipment being operative to detect a calling subscriber line in the group, to responsively mark the location corresponding to the detected calling subscriber line in each line finder, to select one of the line finders whereupon the associated line finder line is seized, and to cause the selected line finder to find the marked location corresponding to the calling subscriber line, said method comprising the steps of:

detecting the marked location in the selected line finder by monitoring the signal on at least one of the control leads between the common control equipment and the selected line finder; and,

converting the detected marked location into the line number of the calling subscriber line.

4,412,102

KEY TELEPHONE SYSTEM

Seiki Ogawa, Tokyo; Michio Mito, and Tsuyoshi Shinoi, both of Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone, Tokyo and Nippon Tsushin Kogyo Kabushiki Kaisha, Kawasaki, both of, Japan

Continuation-in-part of Ser. No. 178,950, Aug. 18, 1980. This application Jul. 1, 1981, Ser. No. 279,262
Claims priority, application Japan, Aug. 20, 1979, 54/104921; Aug. 20, 1979, 54/113353; Aug. 20, 1979, 54/113354
The portion of the term of this patent subsequent to Aug. 31, 1999, has been disclaimed.
Int. Cl.³ H04M *9/06*; H04Q *5/18*
U.S. Cl. 179—99 M **6 Claims**

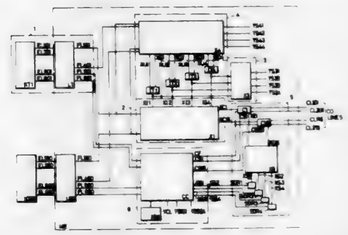
1. In a key telephone system comprising a main equipment connected to a plurality of central office lines and a plurality of key telephones connected to said main equipment, an arrangement in which said main equipment comprises

(a) a central-office-line interface circuit connected to said central office lines,

(b) a key-telephone interface circuit connected to each of said plurality of key telephones,

(c) a first switching matrix including columns, at least some of which are connected to said central-office-line interface circuit and others of which are connected to an intercom trunk circuit, and rows connected to respective said key-telephone interface circuits,

(d) a second switching matrix including columns connected to said central-office-line interface circuit, and rows connected to a dual-tone multifrequency sending circuit,



(e) a third switching matrix including rows connected to said columns of the first switching matrix which are connected to said intercom trunk circuit and columns connected to a tone source,

(f) a fourth switching matrix including columns connected to said intercom trunk circuit and tone source and rows connected to said key-telephone interface circuits, and

(g) a main controlling means connected to the key-telephone interface circuit and duel-tone multifrequency sending circuit and to respective control leads of the first, second, third and fourth switching matrixes for controlling said switching matrixes to perform selected cross-point switching in response to a call request signal.

4,412,103

DIAPHRAGM FOR AN ELECTRO-ACOUSTIC TRANSDUCER

Kiyonobu Fujii, Okayama; Kotaro Ikeda, Ashiya; Kenji Okuno, Kurashiki; Koichi Saito, Kurashiki, and Osamu Ohara, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 19, 1982, Ser. No. 360,001
Claims priority, application Japan, Mar. 20, 1981, 56-40662; Apr. 2, 1981, 56-50367; Jun. 30, 1981, 56-102666
Int. Cl.³ C10K *13/00*; C08K *3/34*
U.S. Cl. 179—115.5 R **12 Claims**

1. A moving coil loudspeaker comprising a diaphragm for an electro-acoustic transducer wherein said diaphragm comprises a sheet formed from a mixture of a polymer and mica, wherein said sheet comprises:

(a) 30 to 95% by weight of a polymer selected from the group consisting of polyolefins, polyesters, and polyamides; and

(b) 5 to 70% by weight of mica having a weight-average flake diameter of no more than 500 microns and a weight-average aspect ratio of at least 10.

4,412,104

RECTANGULAR MAGNETIC CIRCUIT FOR SPEAKER

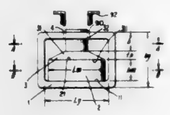
Osamu Fujita; Noriaki Goshi; Shinya Okayasu; Motoharu Shimizu, and Nobuo Kakinuma, all of Saitama, Japan, assignors to Hitachi Metals, Ltd., Japan

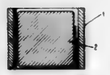
Filed Nov. 21, 1979, Ser. No. 96,399

Claims priority, application Japan, Nov. 24, 1978, 53-145037; Nov. 24, 1978, 53-161595[U]; Nov. 24, 1978, 53-161597[U]; Nov. 25, 1978, 53-162480[U]; Nov. 25, 1978, 53-162481[U]; Jan. 10, 1979, 54-1512[U]

Int. Cl.³ H04R *9/02*

U.S. Cl. 179—117 **8 Claims**





1. Magnetic circuit for a loudspeaker having a circular type of movable coil, comprising a rectangular yoke having a hollow penetrating opposed lateral surfaces of a substantial parallelepiped and a circular through-hole in the upper yoke wall, a substantially parallelepiped sintered magnet with its bottom surface connected with the internal surface of the bottom of said rectangular yoke, and a polepiece composed of a columnar shape and having a cylindrical upper part extending into said through-hole, and a lower part having a bottom surface connected to the upper surface of said magnet said sintered magnet having dimensions containable in said rectangular yoke, an air gap being formed between said polepiece and the annular edge surface of said through-hole, the movable coil being disposed in said air gap, wherein said sintered parallelepiped magnet is selected from the group consisting of ferrite magnet and rare earth magnet having a recoil permanence coefficient μr from 1.0 to 1.2 and having the following dimensions:

$$\frac{\text{Width of permanent magnet } Wm}{\text{Width of rectangular yoke } Wy} = 0.8\text{–}0.9$$

$$\frac{\text{Length of permanent magnet } Lm}{\text{Length of rectangular yoke } Ly} = 0.8\text{–}0.9$$

and wherein the cross-sectional area of said upper section of said polepiece is smaller than that of the bottom surface of said lower part, and the lower part bottom surface area of said polepiece is smaller than that of the upper end surface of said parallelepiped sintered magnet.

4,412,105

LASER MICROPHONE

Ralph P. Muscatell, 2007 NE. 20th Ave., Fort Lauderdale, Fla. 33305

Filed Mar. 8, 1982, Ser. No. 355,898

Int. Cl.³ H04R *17/02*

U.S. Cl. 179—121 R **37 Claims**

1. A microphone for converting sound waves into corresponding electrical signals comprising:

an inner housing;

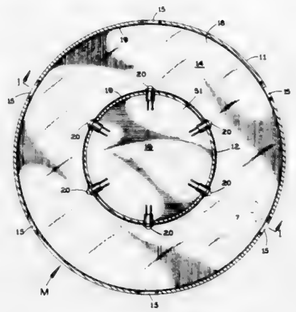
an outer housing extending around said inner housing, said outer and inner housings defining a space between them;

a laser operatively arranged to project coherent monochromatic light into said space between the outer and inner housings;

light reflective means for reflecting the light from said laser in said space;

said outer housing having a plurality of openings for admitting sound to modulate the light in said space;

said openings disposed equidistantly along the perimeter of said outer housing and in a generally horizontal plane, said



openings numbered sequentially, beginning with number one;

and a plurality of electro-optical photo detectors exposed to the modulated light at different locations in said space;

said plurality of photo detectors equal to said plurality of openings, and numbered sequentially, beginning with number one, each photo detector operatively responsive to each same numbered opening.

4,412,106

HIGH FIDELITY STEREOPHONIC REPRODUCTION SYSTEM

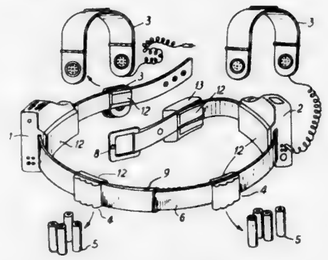
Andreas Pavel, Via Visconti di Modrone 14/A, Milan, Italy

Continuation of Ser. No. 47,967, Jun. 12, 1979, abandoned, which is a continuation-in-part of Ser. No. 889,664, Mar. 24, 1978, abandoned. This application May 19, 1981, Ser. No. 265,124

Claims priority, application Italy, Mar. 24, 1977, 21625 A/77

Int. Cl.³ H04B *1/04*

U.S. Cl. 179—156 R **17 Claims**



1. A personal stereo audio listening system, to be worn by at least one individual listener, comprising the combination of:

(i) a miniaturized programme source device arranged to produce simultaneous mutually different stereo programme output signals;

(ii) first miniaturized stereo amplifier means impedance matched to, and connected to receive stereo output signals from said source device;

(iii) at least one microphone;

(iv) second miniaturized amplifier means impedance matched to and connected to receive output signals from said at least one microphone;

(v) miniaturized mixer means impedance matched to and connected to receive output signals from said first and second amplifier means, for mixing of output signls originated simultaneously by said source device and by environmental sounds;

(vi) stereo third miniaturized amplifier means impedance matched to and connected to receive the outputs of said mixer means;

(vii) miniaturized open-air type lightweight stereo headphone means impedance and sensitivity matched to and connected to receive the output signals of said third amplifier means;

(viii) volume adjusting means for the signals received by said headphone means;

(ix) power source means comprising a battery electrically connected to said first, second and third amplifier means and to said source device and to said mixer means, and

(x) a support for wear on the body, said support carrying said source device, said first, second and third amplifier means, and said battery power source means.

4,412,107

ELECTRICAL CONDUCTOR

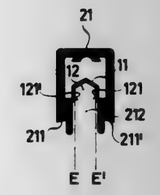
Willi Hillmann, Kamen, Fed. Rep. of Germany, assignor to Paul Vahle GmbH & Co. KG, Kamen, Fed. Rep. of Germany

Filed Jul. 9, 1981, Ser. No. 281,642

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1980, 8018414[U]

Int. Cl.³ B60M *1/34*

U.S. Cl. 191—23 A **5 Claims**



1. Electrically insulated single pole current-conductive conductor comprising: an elongated electrically conductive rail formed with a longitudinally extending track for a sliding current take-off; said track being bounded by two lateral faces, and an electrically insulating casing surrounding said rail and having lateral edge portions engaging said rail but permitting access to said track by leaving a passage for current take-off, said lateral faces being located in respective planes which are inwardly offset relative to said edge portions to avoid contact of the latter with a current take-off in said track, said lateral edge portions projecting over the current rail in direction of the current take-off, so that the current take-off is prevented from contacting said edge portions to avoid wear of said casing and thereby increase the service life of said rail.

4,412,108

ELECTRICAL SWITCH AND ACTUATING MECHANISM THEREFOR

Patrick R. McCarty, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 7, 1981, Ser. No. 327,666

Int. Cl.³ H01H *19/00, 21/00, 23/00*

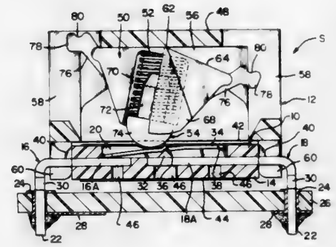
U.S. Cl. 200—5 R **12 Claims**

1. An actuating mechanism, comprising:

housing means having a top section and side sections, said side sections having openings therealong at spaced intervals, said openings extending inwardly into said top section, said openings in one of said side sections and said top section being in alignment with respective ones of said openings in the other of said side sections;

frame means connected to said housing means, said frame means having projection means;

actuating means mounted in said housing means at locations therealong where opposing openings in said side sections are located, said actuating means including rocker means and spring-biased means, said rocker means having pivot means, said spring-biased means extending between said frame means and said rocker means thereby urging said pivot means against an inner surface of said top section;



arm means extending outwardly from said rocker means and disposed in respective ones of the aligned openings, said arm means including section means disposed in said openings, said section means being engageable through said openings in said side sections or through said openings in said top section to move said rocker means from one position with said spring-biased means on one side of said projection means to another position thereby moving said spring-biased means to the other side of said projection means.

4,412,109

PUSH BUTTON SWITCHES HAVING CONTACT STRUCTURES TO AVOID DETENT ACTION AND TO ENHANCE BREAK-BEFORE-MAKE ACTION

William J. Schaad, Winnetka; Charles E. Black, III, Mount Prospect, and Raymond T. Halstead, Wheeling, all of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Division of Ser. No. 287,690, Jul. 28, 1981, Pat. No. 4,392,029. This application Sep. 23, 1982, Ser. No. 421,819

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 C **4 Claims**

1. An electrical switch comprising

a movable carriage,

a contactor mounted on said carriage,

a casing having means for guiding said carriage for movement along a predetermined path,

and first and second coplanar contact plates slidably engageable by said contactor,

said plates having adjacent edge portions with a gap therebetween,

said contactor having a portion in the form of a cylindrically curved bead-shaped rider slidable across said gap and oriented transversely to the path of said contactor,

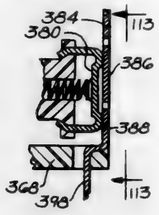
the edge portion of one of said plates having a finger-like projection thereon extending across said gap for smoothly carrying the rider of said contactor across said gap,

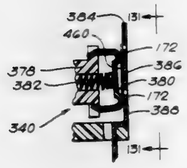
the edge portion of the other plate having a notch therein opposite said projection for maintaining spacing between said projection and said other plate,

said projection and said notch being generally centered relative to the width of said rider for smoothly carrying the central portion of said rider across said gap while avoiding any detent action between said rider and said gap,

3. An electrical switch, comprising

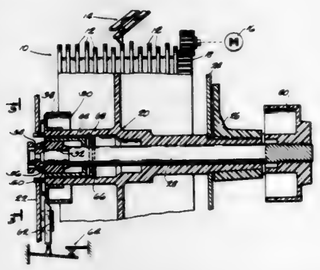
a casing;
a carriage movable in said casing along a predetermined path;
first, second and third conductive contact plates disposed in said casing along said path;
and a conductive contactor mounted on and movable with said carriage for selectively forming a bridging connection between said first and second contact plates and alternatively between said second and third contact plates;
said contactor having a pair of cylindrically curved bead-





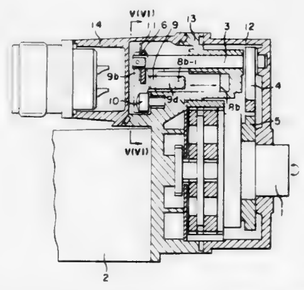
shaped contact riders oriented transversely to said path for slidably engaging said contact plates;
said second contact plate having a rib projecting from the surface of said second plate and extending longitudinally thereon along the path of said contactor for slidable engagement by said contact riders to tilt said contactor away from said first and third contact plates as said contact riders are moved alternatively out of contact with said first and third contact plates and into contact with said rib for enhancing the break-before-make action of said contactor relative to said first and third contact plates.

4,412,110
TIMER CLUTCH
Guy A. Wojtanek, Franklin Park, Ill., assignor to The Singer Company, Stamford, Conn.
Filed Apr. 22, 1982, Ser. No. 370,612
Int. Cl.³ H01H *43/00*
U.S. Cl. 200—38 R **5 Claims**



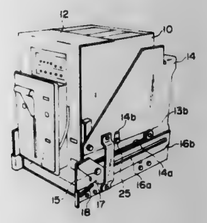
1. In a timer including a program cam drum having a hollow hub rotatably mounted between support plates, a shaft mounted in said drum for axial movement between first and second positions, switch means for controlling the application of power to said timer, and switch actuating means on one end of the shaft, the improvement comprising,
a sleeve between the shaft and the drum hub adjacent said one end of the shaft,
means rotatably connecting the sleeve to the drum hub,
a plurality of axially extending teeth on one end of the sleeve, and
a pin mounted in a transverse hole through the shaft inside the hub, the pin being free to rotate within the hole and retained lengthwise in the hole by engagement of its ends with the interior of the hub,
said pin being axially spaced from the confronting end of the sleeve in said first axial position of the shaft and engaging said teeth in the end of the sleeve when the shaft is in said second axial position.

4,412,111
LIMIT SWITCH MECHANISM
Hirotoshi Yasuoka, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 2, 1982, Ser. No. 394,861
Claims priority, application Japan, Jul. 21, 1981, 56-108305[U]
Int. Cl.³ H01H *3/16, 21/28*
U.S. Cl. 200—47 **5 Claims**



1. A limit switch mechanism for coaction with a driver for limiting movement of said driver to a predetermined range, said mechanism comprising:
a shaft rotatable about a first axis and operatively connected to said driver for rotational movement in response to movement of said driver;
a cam mounted on one end of said shaft for movement therewith;
a switch drive arm, said switch drive arm having at least one elastic cam arm positioned so as to be engaged and moved by said cam during rotation of said shaft, and a switch arm movable with each said cam arm, said switch arm having a first portion extending toward said shaft and a second portion extending parallel to said shaft, whereby said switch arm is relatively closer to said shaft than said cam arm; and
a switch for each said switch arm, each said switch having at least a longitudinal and transverse dimension and being operative to limit the movement of said driver, the longer of said dimensions extending parallel to said first axis, each said switch having an actuating pushbutton positioned adjacent said second portion of one said switch arms such that said pushbutton is engaged by said second portion upon the movement of said arm by said cam,
whereby the width of said mechanism is reduced.

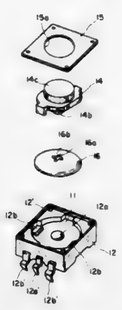
4,412,112
DRAWER-TYPE CIRCUIT BREAKER
Takayoshi Ishikawa; Yasushi Genba; Shigemi Tamaru, and Kiyoshi Eguchi, all of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Hiroshima, Japan
Filed Apr. 13, 1982, Ser. No. 368,065
Claims priority, application Japan, Apr. 14, 1981, 56-54081[U]; Apr. 14, 1981, 56-54082[U]
Int. Cl.³ H01H *9/20*
U.S. Cl. 200—50 AA **1 Claim**



1. A drawer-type circuit breaker comprising a housing having a pair of horizontally disposed guide slots and a pair of vertically extending notches intersecting said slots respectively, circuit breaker means having roller means thereon extending into said slots in engagement with the edges thereof for supporting said circuit breaker means in said housing, an actuating lever pivotally mounted on each side of said circuit breaker means for pivotal movement on a horizontal axis, a guide roller projecting from one end of each lever for travel along a respective one of said slots and intersecting notches, first stop means on said breaker means engagable by the opposite ends of said actuating levers for locating said guide rollers in said slots for movement along said slots during withdrawal or insertion of said breaker means in said housing, second stop means on said housing adapted to engage each actuating lever during insertion of said breaker means to align each guide roller with each notch so that upon pivoting each lever said guide roller thereon will enter a respective notch to move said circuit breaker means further into said housing and third stop means engagable by each lever to limit pivotal movement thereof and maintain each guide roller in a respective notch in the final inserted position.

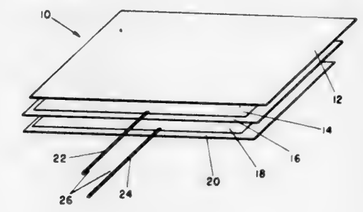
4,412,113
DUST VENTING CONTACT WITH A NON-CIRCULAR HOLE
Itaru Mitsugi, Uji; Shunzo Oka, Hirakata; Yoshinobu Nakagawa, Hirakata, and Kenichi Shiho, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Continuation of Ser. No. 176,271, Aug. 8, 1980, abandoned. This application Aug. 4, 1982, Ser. No. 405,108
Claims priority, application Japan, Aug. 10, 1979, 54-110666[U]
Int. Cl.³ H01H *1/18*
U.S. Cl. 200—67 DB **5 Claims**

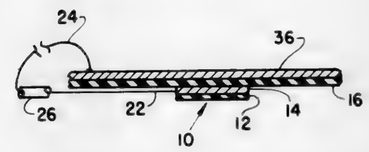
1. A switch comprising:
a case having a recessed space therein;
a central fixed contact disposed at the center of the bottom face of said recessed space;
at least one peripheral fixed contact fixedly disposed at a peripheral part of the bottom face of said recessed shape;
a movable contact of resilient metal which is partially hemispherically shaped with a central portion movable between a normal state where said resilient metal is unflexed and no force is applied thereto and a strained state where said central portion is pushed down;
an actuation member having a pushing part movable in engagement with said central portion of said moving contact;



the improvement comprising said central portion of said moving contact having an opening, said opening having a peripheral edge at least a portion of which projects into said opening whereby said opening is non-circular.

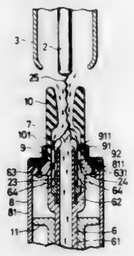
4,412,114
ELECTRICAL SWITCH
John Arbeeny, 6011 Craig St., Springfield, Va. 22150
Filed Mar. 3, 1982, Ser. No. 354,316
Int. Cl.³ H01H *35/00*
U.S. Cl. 200—61.08 **6 Claims**





1. A electrical switch comprising;
an electric insulator formed as a continuous sheet and adapted to be penetrated by a manually held probe,
a first electrical conductor mounted on one side of said electric insulator, and
a second electrical conductor similar to said first electrical conductor mounted on the opposite side of said electric insulator for causing contact between said first electrical conductor and said second electrical conductor, upon rupture of said insulator, to close said switch, said first and second electrical conductors comprising soft, flexible, metal foil adapted to be penetrated by a manually held probe.

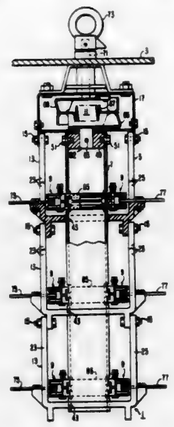
4,412,115
CIRCUIT INTERRUPTER
Michiharu Okuno, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 27, 1981, Ser. No. 238,900
Claims priority, application Japan, Feb. 28, 1980, 55-26079[U]
Int. Cl.³ H01H *33/88*
U.S. Cl. 200—148 A **12 Claims**



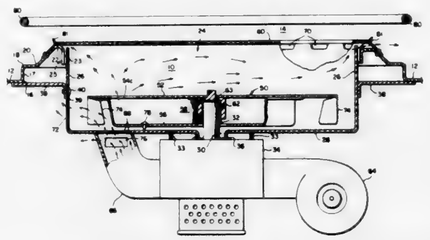
1. A puffer type gas circuit breaker comprising: a pair of terminals; a pair of separable contacts which are electrically connected to respective ones of said terminals; a pair of arcing contacts which are electrically connected to respective ones of said terminals and are disposed to be separated from each other after the separation of said separable contacts at the time of interruption, at least one of said arcing contacts having a plurality of fingers; a puffer cylinder; and a piston fitted slidably in said puffer cylinder for compressing gas in said puffer cylinder in cooperation with said puffer cylinder at the time of interruption to such an extent that at the time of interruption the compressed gas is capable of blowing out an arc generated between said arcing contacts; a gas guide provided inside and adjacent to said fingers of said arcing contact, said gas guide defining with said fingers passageways for gas to be blown against said arc, said gas contacting said fingers prior to reaching said arc.

4,412,116
CIRCUIT BREAKER WITH UNITARY ACTUATING SHAFT
Gregory J. Golub, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 26, 1982, Ser. No. 382,251
Int. Cl.³ H01H *19/52, 77/08*
U.S. Cl. 200—155 R **6 Claims**

1. An electric switch comprising:
a dielectric housing including at least one housing section having side walls and an end wall;
spaced stationary contact structures for each housing section extending through the side walls and into the housing interior;
a dielectric, hollow actuating shaft within the housing with one end of the shaft being journally-mounted in an opening in the end wall and the shaft being rotatable between open and closed circuit positions;
a movable contact structure for each housing section mounted within the shaft and including a pair of parallel conductors having end portions clampingly engaging corresponding stationary contact structures when the shaft is in the closed circuit position;
rotatable driving means for turning the shaft between the open and closed circuit positions;
the shaft having aperture means, and the conductor extending through the aperture means; and
each parallel conductor being mounted within a channel comprising a base and opposite flanges, each flange having notch means for contact with the shaft for preventing longitudinal shifting of the conductor.

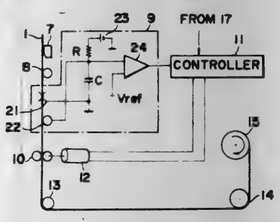


4,412,117
MICROWAVE OVEN FEED SYSTEM
Kenneth W. Dudley, Sudbury; Wesley W. Teich, Wayland, and Robert F. Bowen, Burlington, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Division of Ser. No. 146,561, May 5, 1980, Pat. No. 4,350,859.
This application Sep. 10, 1981, Ser. No. 301,055
Int. Cl.³ H05B *6/72, 6/76*
U.S. Cl. 219—10.55 F **8 Claims**



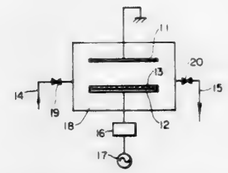
1. A self-clean combination microwave conventional heat oven comprising:
a conductive enclosure for exposing bodies to microwave energy comprising a plurality of metallic surfaces, the bottom surface having an orifice;
a tunnel extending through said orifice into said enclosure;
said bottom surface around said tunnel having a raised portion comprising first and second surfaces parallel to said tunnel, at least a portion of said second surface being above the top of said first surface;
the distance from said first surface to said tunnel being approximately one quarter wavelength of said energy from said tunnel;
the distance of said second surface being less than one quarter inch from said tunnel;
a primary radiator of microwave energy positioned in said tunnel;
means for heating said enclosure;
means for coupling microwave energy to said primary radiator;
a metal bracket for attaching said surface to said tunnel, said bracket and said tunnel having a connection having poor thermal conductivity;
said tunnel having cross-sectional orthogonal dimensions greater than a free space wavelength of said energy; and
a microwave transparent layer substantially separating the interior of said tunnel from the interior of said enclosure, said layer providing thermal insulation to suppress the temperature in said tunnel from reaching self-cleaning temperatures created by said heating means.

4,412,118
WIRE-CUT, ELECTRIC DISCHARGE MACHINE
Yoshiyuki Nomura, and Kanemasa Okuda, both of Hino, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan
Filed Jun. 10, 1981, Ser. No. 272,190
Claims priority, application Japan, Jun. 30, 1980, 55-89386
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 W **3 Claims**



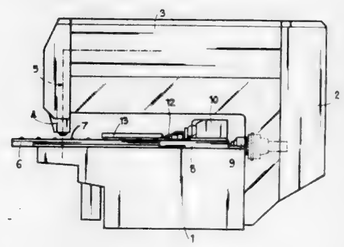
1. A wire-cut, electric discharge machine for cutting a workpiece into an arbitrary configuration by discharging a voltage between the workpiece and a wire installed on a wire running system, said wire running system having a wire supply reel, a guide means for guiding the wire from the supply reel, a lower guide means for guiding the wire from the guide means to the workpiece, an upper guide means for guiding the wire from the workpiece and away from the supply reel, a wire feed means for feeding the wire from said upper guide means and a take up means for receiving the wire from the feed means, said machine comprising:
a wire breakage detector means for detecting the breakage of the wire and for providing a breakage signal responsive to the breakage of the wire;
auxiliary wire feed means, operatively connected to the wire breakage detector means, for feeding the wire in a direction away from the workpiece and toward the supply reel in response to the breakage signal; and
a wire detector operatively connected to the auxiliary wire feed means, for detecting, at a predetermined position, the extreme end of the broken wire fed in the direction away from the workpiece and for applying a detection signal to the auxiliary wire feed means to stop the feed of the broken wire by the auxiliary wire feed means, said wire detector means including
a wire detecting brush for contacting the wire,
a feed pin for contacting the wire and for detecting the wire,
a capacitor connected in parallel with the wire between the wire detecting brush and the feed pin,
a power source connected in series with the capacitor,
means for receiving a reference voltage, and
a voltage comparator operatively connected to the wire detecting brush and the reference voltage for comparing a voltage across the capacitor with the reference voltage and for generating the detection signal.

4,412,119
METHOD FOR DRY-ETCHING
Hideo Komatsu, Hinodemachi; Shinya Iida, Tama; Tatsumi Mizutani, Kodaira, and Kazuyoshi Ueki, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 5, 1981, Ser. No. 260,813
Claims priority, application Japan, May 14, 1980, 55-62815
Int. Cl.³ H01L *21/306*
U.S. Cl. 219—121 PF **16 Claims**



1. A drying-etching method for working the surface of a workpiece by the use of a glow discharge plasma comprising: a step of positioning a workpiece within a reaction chamber, a step (i) of introducing into said reaction chamber from the outside helium gas that is inactive with said workpiece even under a plasma discharge; and a step (ii) of effecting the plasma discharge in said reaction chamber so that a reactive gas that is reactive with said workpiece under the plasma discharge is liberated from a material which is arranged in said reaction chamber.

4,412,120
MACHINE FOR CUTTING SHEET MATERIAL
Louis Duruz, Romanel, and Alfred Furrer, Winterthur, both of Switzerland, assignors to Raskin, S.A., Chesceaux, Switzerland
Filed Oct. 23, 1981, Ser. No. 314,192
Claims priority, application Switzerland, Oct. 23, 1980, 7907/80
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LG **6 Claims**

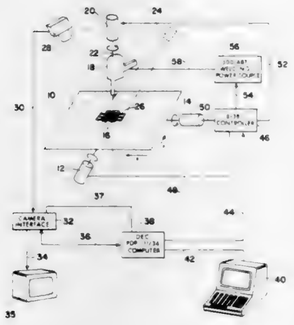


1. A machine for cutting sheet material by means of a laser beam, which machine comprises a movable support frame for a sheet to be cut which is movable both longitudinally and transversely relative to a supporting stationary table and opposite to a stationary working head of the machine, said support frame being arranged to receive the sheet of material to be worked, the arrangement being such that cut-out worked members or the waste do not have to be separated from the sheet during working.

4,412,121
IMPLEMENT POSITIONING APPARATUS AND PROCESS

Jan H. Kremers, Boulder Creek, and Robert C. Bolles, Mountain View, both of Calif., assignors to S R I International, Menlo Park, Calif.

Filed Aug. 28, 1981, Ser. No. 297,514
Int. Cl.³ B23K *9/10*
U.S. Cl. 219—124.34 **14 Claims**



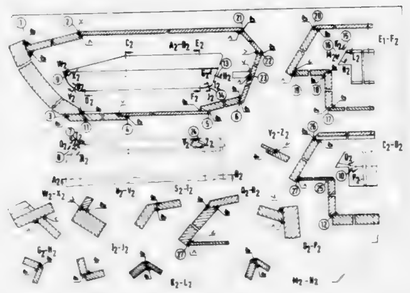
1. A process for controlling positioning of an implement relative to a workpiece, which comprises:
- projecting a light pattern including an array of light elements, each having a known shape and spacing relative to one another, on the workpiece,
- sensing the array of light elements as reflected from the workpiece,
- clustering the sensed light elements into groups based on at least one common characteristic resulting from workpiece geometry of the light elements as reflected,
- defining a plurality of surfaces of the workpiece geometry by fitting a mathematical surface to at least some of the clustered groups of sensed light elements,
- defining the workpiece geometry from at least some of the defined surfaces, and
- controlling the positioning of the implement and the workpiece relative to one another based on the so-defined workpiece geometry.

4,412,122
METHOD FOR WELDING BODIES MADE OF VERY HARD OR GREATLY REFINED ARMORED STEEL, RESPECTIVELY, AND STRUCTURES MADE ACCORDING TO THIS METHOD

Günter Böhm, Witten, and Wolfram Funk, Groshansdorf, both of Fed. Rep. of Germany, assignors to Thyssen Industrie Ag Maschinenbau, Witten, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 926,962
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1977, 2730826
Int. Cl.³ B23K *35/34*
U.S. Cl. 219—137 R **35 Claims**

1. Method for welding bodies made of very hard or highly refined armor steel, particularly objects to be armored against the penetration of projectiles, flying bodies, splinters or the like, characterized in that armor steel bodies (e.g. **28**) arranged in juxtaposition with a gap (A) therebetween are provided, in the region of the root of the joint, with preferably one bar each (e.g. **31**), and/or a filler body of, in particular, an unalloyed steel is arranged in the joint so as to cover the joint gap (A), whereupon the armor steel bodies (e.g. **28**, **29**) are welded together without preheating with a suitable ferritic welding material—of like base—under a protective gas atmosphere and after cooling of the weld seam from the welding heat to not less than 100° C., the weld seam is heated locally and progressively without any holding period to at least 450° C. and subsequently, without maintaining a certain ambient temperature and/or period of time, the weld seam is cooled to ambient temperature in air, or a like-base layer of armor is locally applied onto a wall of armor steel from a suitable ferritic welding material in that the welding area which has been cooled from the welding heat to no less than 100° C. is heated locally and progressively without any holding period to at least 450°

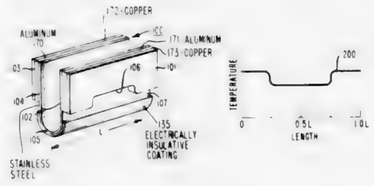


C. and subsequently the weld region is cooled in air without maintaining a certain time period and only the last (uppermost) welded layer of the weld region is again locally reheated, before being cooled from the welding heat to below 100° C. to at least 450° C. without holding period and subsequently again cooled in air to ambient temperature without maintaining a certain time period and/or temperature.

4,412,123
LAMINATED ELECTRIC HEAT GENERATING MEMBER FOR REFLOW SOLDERING DEVICES

Hans H. Ammann, Chester; Rocco Bonanni, Wayne, and Werner Engelmaier, Mendham, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1980, Ser. No. 148,505
Int. Cl.³ B23K *3/02;* **H05B** *3/00*
U.S. Cl. 219—233 **6 Claims**

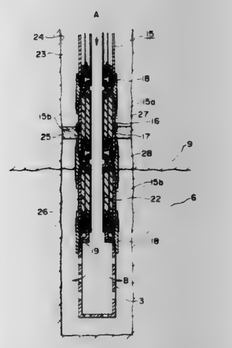


1. Apparatus for heating a plurality of spaced elements comprising:
- an elongated metal laminate of substantially U-shaped cross section having a bight portion between two side portions, said laminate including a layer of aluminum between a layer of copper and a layer of stainless steel, the layers being roll bonded together, the copper and aluminum layers being removed at the bight portion to expose the stainless steel layer for contacting the plurality of spaced elements, the edges of said copper and aluminum layers adjacent to said bight portion being shaped to impart a selectable temperature profile along the length of said bight portion; and
- an electrical current source and means for applying electrical current from the source to the copper and aluminum layers.

4,412,124
ELECTRODE UNIT FOR ELECTRICALLY HEATING UNDERGROUND HYDROCARBON DEPOSITS

Toshiyuki Kobayashi, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Hyogo, Japan

Filed Jun. 2, 1981, Ser. No. 269,180
Claims priority, application Japan, Jun. 3, 1980, 55-75208; Jun. 3, 1980, 55-75209; Jun. 3, 1980, 55-75210; Jun. 3, 1980, 55-75212; Jun. 3, 1980, 55-75213; Jun. 3, 1980, 55-75214
Int. Cl.³ H05B *3/03;* **E21B** *36/00, 43/24;* **H01R** *4/60*
U.S. Cl. 219—277 **11 Claims**



1. An electrode unit for electrically heating underground hydrocarbon deposits comprising: a main conduit pipe; a cylindrical water pipe disposed within and coaxially to said main conduit pipe; a cylindrical electrical conductor disposed between said water pipe and said main conduit pipe; and a solid heat insulating material disposed in spaces between said water pipe and said main conduit pipe.

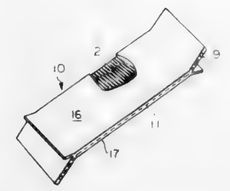
4. The electrode unit of claim 1 further comprising first and second connectors for connecting electrical conductors between adjacent electrode units, said first and second connectors being disposed at the opposite ends of said electrode unit, said first connector comprising a ring-shaped connecting terminal disposed coaxially between said water pipe and said main conduit pipe, and said second connector comprising a plurality of contactors arranged cylindrically and movable radially adapted for making contact with a ring-shaped connecting terminal of an adjacent electrode unit while providing a predetermined contact pressure, said contact is being coupled to said electrical conductor through a second ring-shaped connecting terminal arranged coaxially with said water pipe at said second end.

4,412,125
HEAT-SHRINKABLE COVER

Toshio Nagasawa, and Yoshio Nishihara, both of Kyoto, Japan, assignors to Ube Industries, Ltd., Tokyo, Japan

Division of Ser. No. 177,447, Aug. 11, 1980, Pat. No. 4,370,548. This application Sep. 27, 1982, Ser. No. 424,092
Claims priority, application Japan, Aug. 14, 1979, 54-102792
Int. Cl.³ H05B *3/36, 3/10*
U.S. Cl. 219—549 **13 Claims**

1. A heat-shrinkable cover comprising a heat-shrinkable synthetic resin member and an electrical heating element combined with the heat-shrinkable synthetic resin member substantially over the entire region thereof, wherein the electrical heating element comprises a web of a synthetic resin having a plurality of flexible metal conductor wires arranged therein in parallel to one another along the longitudinal direction of the web, said web being folded in succession at predetermined intervals along folding lines inclined at a small acute angle to the transverse direction of the web to form a two-layer rectangular sheet, and the direction of the folding lines forming the side edges of the two-layer rectangular sheet of the electrical heating element is substantially in agreement with the direction

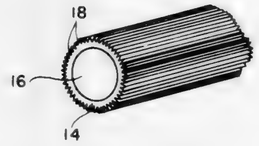


of heat shrinkage of the heat-shrinkable synthetic resin member.

4,412,126
INFRARED SOURCE

Richard J. Brockway, Amherst, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Feb. 4, 1982, Ser. No. 345,884
Int. Cl.³ H05B *3/10*
U.S. Cl. 219—553 **1 Claim**



1. In an infrared source including a hollow cylindrical integral rod of a material which when heated by passing an electrical current along its length will emit thermal energy by radiation and having a requirement for constant rod length and voltage, means for decreasing the operating temperature of the rod, comprising:
- a replacement graphite rod having an increased outside diameter and irregular surface, to decrease cross-sectional areas, to maintain substantially constant resistance and greater emissivity at lower operating temperatures, said irregular surface comprising macroscopic sawtooth grooves.

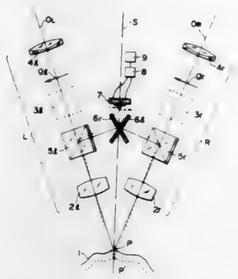
4,412,127
IN-FOCUS DETECTOR FOR BINOCULAR STEREOSCOPE

Toshihiro Imai, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Japan

Filed Jan. 5, 1982, Ser. No. 337,107
Claims priority, application Japan, May 29, 1981, 56-82250
Int. Cl.³ G01J *1/36*
U.S. Cl. 250—204 **11 Claims**

1. An in-focus detector for binocular stereoscope including a pair of left- and right-hand observation optic systems each having an optical axis; comprising:
- a pair of beam splitters each disposed on the optical path of a respective one of the observation optic systems for splitting part of observation light passing therethrough and for diverting it out of the associated observation optical path for use in detecting an in-focus condition;
- a pair of reflecting elements for directing the light diverted out of the observation output path by the respective beam splitters to a focused position which corresponds to an in-focus condition;
- a light receiver disposed at the focused position for simultaneously receiving the light from each of the reflecting elements to produce a photoelectric output in accordance

with an image of an object being examined which is incident thereon;



and an in-focus detection circuit for producing an in-focus signal in response to a photoelectric output from the light receiver.

4,412,128

AUTOMATIC BRIGHTNESS CONTROL CIRCUIT FOR A HIGH VOLTAGE ELECTRICAL POWER SUPPLY

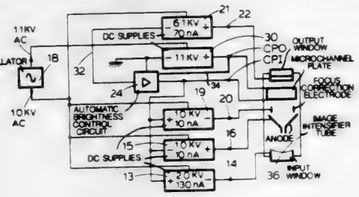
Richard L. C. McDonald, Mitcham, England, assignor to U.S. Philips Corporation, New York, N.Y.

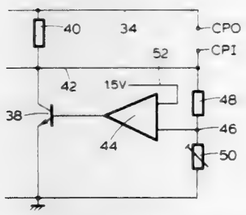
Filed Jan. 29, 1981, Ser. No. 229,418

Claims priority, application United Kingdom, Feb. 4, 1980, 8003613

Int. Cl.³ H01J *31/50*

U.S. Cl. 250—213 VT **9 Claims**





9. A high voltage power supply for an image intensifier tube having a microchannel image intensifier plate, said plate having an input end and an output end, said power supply having an automatic brightness control circuit for producing a variable voltage across the ends of the image intensifier plate to vary the brightness of the image intensifier tube in response to a source of a signal which is related to the brightness of the tube, said power supply comprising:

means for generating a high voltage direct current signal which, in operation, is connected to one end of the image intensifier plate; and

an automatic brightness control circuit comprising a series regulating circuit having a transistor operating in class A with a current gain less than unity and with such a low maximum collector current that the risk of thermal runaway which would lead to secondary breakdown is substantially zero, said transistor having an emitter, base, and collector, the emitter and collector being electrically connected in series with a load resistor between ground and the high voltage direct current signal, the base, in operation, being electrically connected to the source of the signal which is related to the brightness of the image intensifier tube, the output of the automatic brightness control circuit being taken at the electrical connection between the transistor and the load resistor, said output, in operation, being connected to the other end of the image intensifier plate.

4,412,129

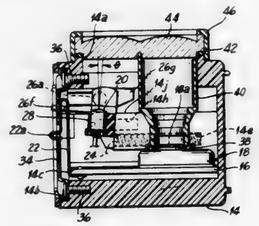
ADJUSTABLE PHOTOELECTRIC DETECTOR HEAD FOR SOLID STATE LIMIT SWITCH

Eugene F. Duncan, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 1, 1981, Ser. No. 249,764

Int. Cl.³ H01J *5/02*

U.S. Cl. 250—239 **12 Claims**



1. A photoelectric detector head for a solid state limit switch, said detector head comprising, in combination:

a housing having a window in one side thereof;

photoelectric detector means within said housing comprising a photoreceiver and a light source;

said photoreceiver being fixedly mounted within said housing and having a field of view directed through said window;

said light source being pivotally mounted within said housing and directed to emit a light beam through said window to intersect said field of view outside said housing; and

adjustment means operable to pivot said light source to change the angle of convergence of said light beam with said field of view of said photoreceiver to thereby vary the distance from said housing at which said light beam intersects said field of view;

said light source comprises a cradle journaled for rotation in said housing and a light emitting device fixedly mounted to said cradle;

an indicator projecting from said cradle toward a side of said housing and providing an indication of the distance from said housing at which said light beam intersects said field of view;

window means in said housing in which said indicator may be viewed; and

indicia on said housing adjacent said window means;

said indicator means and said indicia cooperatively providing an indication of the distance from the housing at which said light beam intersects said field of view; and wherein

said adjustment means comprises a screw threadably received in said housing and having a portion in cooperating engagement with said cradle to pivotably move said cradle.

4,412,130

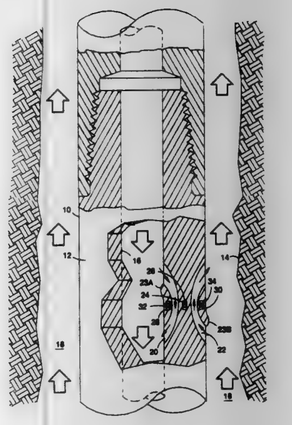
DOWNHOLE DEVICE TO DETECT DIFFERENCES IN FLUID DENSITY

Warren J. Winters, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 13, 1981, Ser. No. 253,466

Int. Cl.³ G01V *5/00*

U.S. Cl. 250—260 **12 Claims**



1. Apparatus for indicating the difference in densities between a first and second fluids, comprising:

a housing interconnectable with a conduit string and provided with two approximately equal fluid sampling chambers, a first of said chambers in communication with the interior of said housing and a second of said chambers in communication with the exterior of said housing;

said first fluid passing interiorly of said housing and said second fluid passing exteriorly of said housing;

a radiation source mounted within said housing equidistant between said first and second chambers;

at least two radiation detectors mounted within said housing equidistant from said radiation source with one of said chambers equidistant between one of said radiation detectors and said radiation source;

each of said detectors upon energization produces a signal directly related to the density of the fluid in said chamber to which said detector is adjacent; and

circuit means operably connected to said detectors and responsive to said signals for producing an indication directly related to the difference in densities of said fluids.

4,412,131

MONOCHROMATOR FOR CHARGED PARTICLES

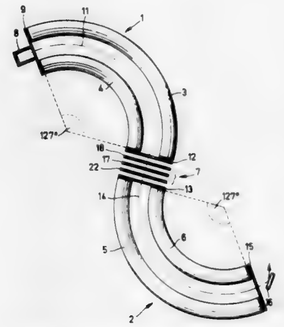
Hermann Froitzheim, Aachen, Fed. Rep. of Germany, assignor to Leybold Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Mar. 30, 1981, Ser. No. 249,246

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1980, 3014785

Int. Cl.³ H01J *49/48*

U.S. Cl. 250—305 **5 Claims**



1. A monochromator for charged particles, comprising: two monochromators in tandem and a retarding lens disposed between the two monochromators.

4,412,132

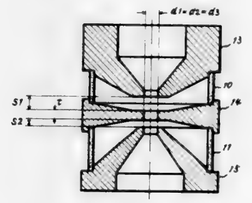
ELECTRON LENS EQUIPPED WITH THREE MAGNETIC POLE PIECES

Katsushige Tsuno, Akishimashi, Japan, assignor to JEOL Ltd., Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,562

Int. Cl.³ H01J *29/64*; G01N *23/00*

U.S. Cl. 250—396 ML **5 Claims**

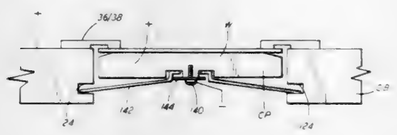


1. An electron lens consisting of upper, middle and lower magnetic pole pieces installed inside a yoke enveloping two excitation coils so that magnetic fields are generated with opposite and same strength excitation in the two gaps respectively between said three magnetic pole pieces, and wherein the spacing ratio S1/S2, in which S1 represents the axial gap between the upper and middle pole pieces and S2 represents the axial gap between the middle and lower pole pieces, is in the range of 2.7 to 3.8 such that radial and spiral distortion are reduced.

4,412,133
ELECTROSTATIC CASSETTE

William A. Eckes, Berkeley; Russell H. Rhoades, Palo Alto; John W. Vorreiter, Sunnyvale; John C. Wiesner, Hayward, and Charles E. Shepard, San Jose, all of Calif., assignors to The Perkin-Elmer Corp., Norwalk, Conn.

Filed Jan. 5, 1982, Ser. No. 337,205
Int. Cl.³ H02N *13/00*; H01J *37/30*
U.S. Cl. 250—492.2 **14 Claims**



1. An electrostatic cassette assembly for securing and positioning a wafer in a particle beam lithography system so that the upper surface of the wafer is exposed to the particle beam, comprising,

a cassette body having a central opening for receiving said wafer,

retainer means secured in fixed relationship and extending into said opening,

a charge plate fabricated with extreme flatness with a top surface having a relatively thin dielectric formed to be extremely uniform on which the wafer is positioned so that the bottom surface of the wafer engages the dielectric,

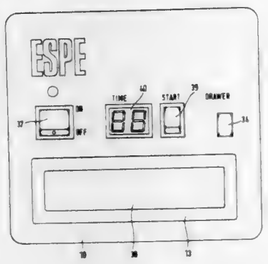
holding means cooperable with said cassette body to force said wafer into contact with said retaining means whereby the wafer is held rigidly in said cassette assembly, and,

means for applying a first potential to the wafer and a second potential of a different value to said charge plate on the side opposite said charge plate from said dielectric to flatten said wafer by Coulombic force whereby the wafer is held both mechanically and electrostatically in said cassette assembly.

4,412,134
APPARATUS FOR IRRADIATING DENTAL OBJECTS

Wolf-Dietrich Herold, Hechendorf; Karl L. Grafwallner, Munich, and Michael Keller, Lochham, all of Fed. Rep. of Germany, assignors to ESPE Fabrik Pharmazeutischer Praeparate GmbH, Seefeld, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,690
Int. Cl.³ C08F *2/48*; C08G *2/02*; C08U *7/10*
U.S. Cl. 250—504 R **10 Claims**



1. An apparatus for treating dental objects with radiation of a selected spectral range, comprising

(a) a housing,

(b) support means including a horizontal glass plate for holding an object and being transparent for radiation of said selected spectral range,

(c) a first lamp for emitting radiation containing said selected spectral range,

(d) a first reflector for reflecting radiation of said selected spectral range, said first lamp and reflector being disposed so as to direct radiation in a substantially transverse direction,

(e) a mirror disposed above said support means to redirect the radiation from said first lamp and reflector to said support means, said mirror being removable to allow access to said support means,

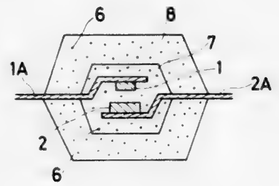
(f) a second lamp disposed below said support means and emitting radiation containing said selected spectral range, and

(g) a second reflector disposed below said support means and reflecting radiation of said selected spectral range substantially upwardly through said glass plate.

4,412,135
PHOTO COUPLER DEVICE MOLDING INCLUDING FILLER PARTICLES

Hidekazu Awaji, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 132,794, Mar. 21, 1980, abandoned. This application May 28, 1982, Ser. No. 383,330
Claims priority, application Japan, Mar. 23, 1979, 54-38674[U]; May 25, 1979, 54-65379
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **15 Claims**



1. A photo coupler device comprising:

a light emitting element and a light receiving element disposed in opposing relationship with respect to each other, and

a unitary layer of synthetic resinous material encapsulating the light emitting element and the light receiving element, said unitary layer containing a substantial amount of filler particles which are held in suspension within said layer in an amount up to about 70 percent by weight based on the weight of said layer, said filler particles having a particle size with a diameter in the range of about several tens to about one hundred μm,

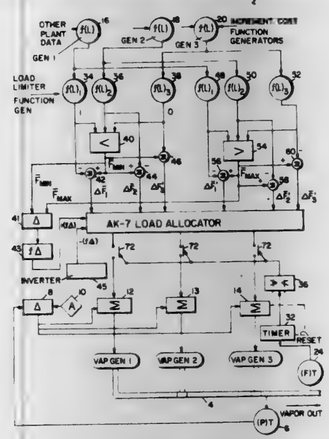
wherein the thickness of the synthetic resinous material between the light emitting element and the light receiving element is small relative to the thickness of the synthetic resinous material separating said elements from the environment, whereby the light transmitting efficiency between the two elements is effectively maintained while substantially eliminating the effects of ambient light upon said elements.

4,412,136
LOAD CONTROL FOR ENERGY CONVERTERS

Azmi Kaya, Akron; Marion A. Keyes, Chagrin Falls, and Thomas J. Scheib, Chesterland, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Dec. 15, 1981, Ser. No. 330,995
Int. Cl.³ G06G *7/635*; H02J *3/46*
U.S. Cl. 290—40 R **5 Claims**

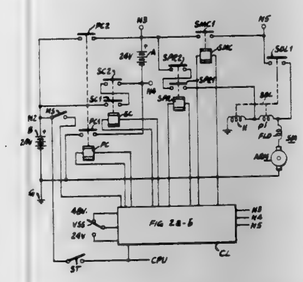
1. A load control for a system comprised of a plurality of energy converters, comprising, a first means generating a System Control Signal corresponding to the system load, a second means adjusting in parallel the energy output of each of said converters in accordance with changes in the System Control Signal, means producing an individual incremental cost signal for each of said plurality of converters, means responsive to said last named signals generating (a) a signal corresponding to the difference between the highest and lowest incremental cost, and (b) a signal identifying the generator having said lowest incremental cost and said highest incremental cost and means under the control of signals (a) and (b) increasing the energy output of the converter having the lowest incremental cost and simultaneously decreasing by a like amount the energy output of the converter having the highest incremental cost.



4,412,137
DUAL VOLTAGE ENGINE STARTER MANAGEMENT SYSTEM

James E. Hansen, Oak Creek, and Richard G. Smith, Milwaukee, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 13, 1982, Ser. No. 449,072
Int. Cl.³ B62D *45/00*; H02G *3/00*
U.S. Cl. 307—10 R **23 Claims**



1. In a system for starting an internal combustion engine having a starter motor and a standard starter solenoid, the system comprising:

a first battery for or battery pack for supplying operating power to the system;

a second battery or battery pack;

first electrically operable switching means for connecting said first and second batteries in parallel for normal starting;

second electrically operable switching means for connecting said first and second batteries in series for cold weather starting;

an electrically operable starter pilot switch in circuit with said batteries for energizing the standard starter solenoid;

an electrically operable starter motor switch in circuit with said batteries for energizing the starter motor;

means for operating said first switching means to connect said batteries in parallel;

means for selecting a series or parallel batteries starting mode;

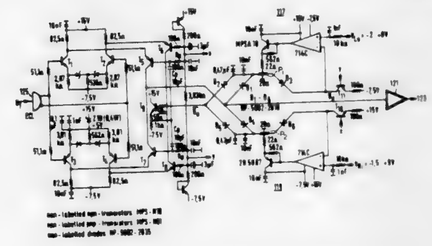
means for applying a start signal;

and control means operable when series batteries starting has been selected and responsive to said start signal for opening said first switching means and then closing in predetermined timed sequence said second switching means, said starter pilot switch and said starter motor switch in that order to apply power to the starter motor to initiate a high voltage starting cycle.

4,412,138
PULSE GENERATOR CIRCUIT

Josef Becker, Marbach, Fed. Rep. of Germany, assignor to Hewlett-Packard GmbH, Boblingen, Fed. Rep. of Germany

Filed Dec. 28, 1981, Ser. No. 335,307
Int. Cl.³ H03K *3/295, 5/24, 5/02*
U.S. Cl. 307—264 **3 Claims**



1. A pulse generator circuit for generating pulses with variable upper and lower levels, comprising:

an input for receiving a driving signal;

an output having two complementary terminals where said pulses or logic signals are delivered in response to the driving signal;

first and second variable voltage sources, said first voltage source representing said upper level and said second voltage source representing said lower level;

switching means for alternately connecting the output with one of said voltage sources, said switching means comprising a diode bridge in Graetz rectifier configuration having a first pair of diodes with the cathode leads of said first pair of diodes coupled at a first node, having a second pair of diodes with the anode leads of said second pair of diodes coupled at a second node, having one anode lead of said first pair of diodes coupled to one cathode lead of said second pair of diodes to form a third node corresponding to one terminal of said output, and having the other anode lead of said first pair of diodes coupled to the other cathode lead of said second pair of diodes to form a fourth node corresponding to the other terminal of said output;

first current source means coupled to said input for supplying a constant current to said third node and for supplying an equal but oppositely directed constant current to said fourth node, the directions of said constant currents from said first current source means to said third and fourth nodes being reversible in response to said driving signal;

said first voltage source comprising a first amplifier with a feedback circuit in voltage follower configuration, said feedback circuit comprising a fifth diode oriented with its cathode lead coupled to said first node and to the output

of said first amplifier, said fifth diode having substantially the same characteristics as said diodes comprising said diode bridge;

said second voltage source comprising an amplifier with a feedback circuit in voltage follower configuration, said feedback circuit comprising a sixth diode oriented with its anode lead coupled to said second node and to the output of said second amplifier, said sixth diode and having substantially the same characteristics as said diodes comprising said diode bridge:

second current source means coupled to said fifth diode for supplying a constant current therethrough which is equal in magnitude to said current supplied by said first current source means so that voltage drops in said diode bridge are compensated; and

third current source means coupled to said sixth diode for supplying a constant current therethrough which is equal in magnitude to said current supplied by said first current source means so that voltage drops in said diode bridge are compensated.

4,412,139

INTEGRATED MOS DRIVER STAGE WITH A LARGE OUTPUT SIGNAL RATIO

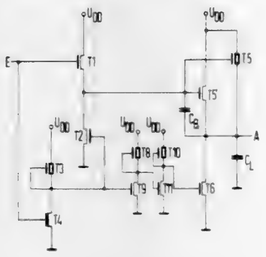
Karlheinrich Horninger, Eglharting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,342

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1980, 3026951

Int. Cl.³ H03K *3/01, 17/60*

U.S. Cl. 307—270 **4 Claims**



1. A driver stage formed in integrated MOS technology and which has a large output signal ratio, comprising: a first control stage comprising first and second series connected MOSFETs, both of which are of the enhancement type, and with an input at the first MOSFET and an output between the two MOSFETs; a second control stage having first and second MOSFETs, one of which is connected to said input and an output being provided between the two MOSFETs; an output stage comprising a first depletion type MOSFET and a second series connected enhancement type MOSFET with an output connecting between the two, the output of the first control stage connecting to a gate of the first MOSFET and the output of the second control stage connecting to a gate of the second MOSFET; an additional enhancement type MOSFET in the output stage whose source, drain and gate are parallel-connected with the respective source, drain and gate of the first MOSFET of the output stage; a boot strap capacitor connected between the gate of the additional MOSFET and a connection point between the additional MOSFET and second MOSFET of the output stage; a W/L (width-to-length) ratio of the channel of the first MOSFET of the output stage being reduced in size with respect to the W/L ratio of the additional MOSFET, whereby a channel resistance of the output stage first MOSFET is reduced; and between the second control stage signal output acting upon the gate of the second output stage MOSFET and the gate of the second output stage MOSFET there being directly connected two auxiliary inverter stages directly serially connected and each of which is formed of a first auxiliary MOSFET of a depletion type and a second auxiliary MOSFET of an enhancement type.

4,412,140

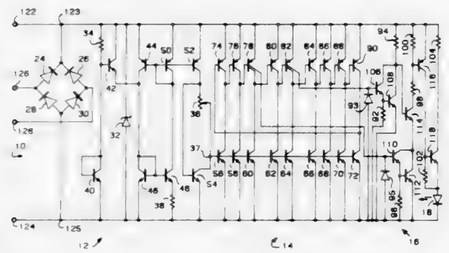
CIRCUIT FOR REDUCING CURRENT TO LIGHT EMITTING DIODE OF OPTICALLY COUPLED DRIVER

David A. Reynolds, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 19, 1981, Ser. No. 322,810

Int. Cl.³ H03K *3/42, 3/01*

U.S. Cl. 307—311 **10 Claims**



1. A circuit for providing periodic light pulses to an optically coupled light responsive device, said optically coupled light responsive device enabling a substantially continuous current path to a load, said circuit comprising:

oscillating means adapted to be coupled to a voltage source for generating a first repetitive signal and a second repetitive signal;

logic means coupled to said oscillating means and responsive to said first and second repetitive signals for generating an output, said logic means including a means for removing photogenerated current therein;

output means coupled to said logic means and responsive to said output for generating a current pulse; and

light emitting means coupled to said output means and responsive to said current pulse for providing said periodic light pulse.

4,412,141

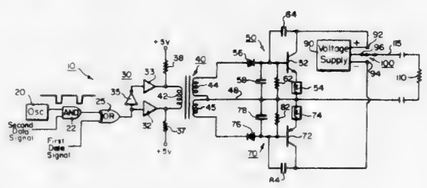
THREE STATE LOOP KEYER

Christian C. Jacobsen, Brookfield, Conn., assignor to General DataComm Industries, Inc., Danbury, Conn.

Filed Dec. 16, 1980, Ser. No. 217,098

Int. Cl.³ H03K *17/04, 17/28*

U.S. Cl. 307—471 **9 Claims**



1. A keying circuit comprising:

an oscillator which produces a binary output signal having an asymmetric duty cycle,

a first logic gate to which is applied the output from said oscillator and a first binary data signal, said logic gate producing an output signal which is the exclusive OR of the oscillator signal and the first data signal applied to its inputs,

a transformer having a primary winding and at least one secondary winding, the output signal from said logic gate being applied to said primary winding,

a signal transmission line connected to one terminal of each secondary winding,

first means connected to a secondary winding of said transformer for connecting a voltage source of a first polarity to said signal transmission line when said first data signal has a first signal polarity, and

second means connected to a secondary winding of said transformer for connecting a voltage source of a second polarity to said signal transmission line when said first data signal has a second signal polarity.

4,412,142

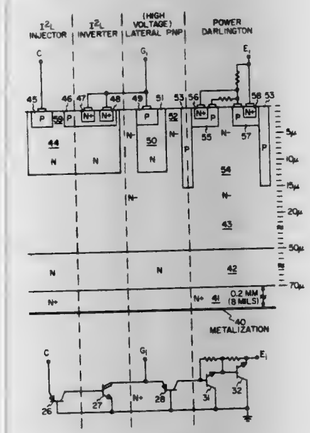
INTEGRATED CIRCUIT INCORPORATING LOW VOLTAGE AND HIGH VOLTAGE SEMICONDUCTOR DEVICES

Louis J. Ragonese; Nicholas A. Schmitz, both of Liverpool; Saverio F. Bevacqua, Fulton, and King Owyang, Baldwinsville, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,824

Int. Cl.³ H01L *27/04;* **H03K** *19/091*

U.S. Cl. 307—477 **14 Claims**



1. An integrated circuit comprising:

A. a monolithic substrate having an underlying highly doped first region of a first conductivity type, a contact on the undersurface thereof, and a second moderately doped region of said first conductivity type overlaying said first region;

B. low voltage control logic including a first, vertical, transistor comprising:

(1) a first underlying emitter of said first conductivity type defined in said second region, and electrically connected to said contact,

(2) a first base of a second conductivity type, disposed upon said first emitter to form a junction therewith,

and

(3) a first collector of said first conductivity type, disposed upon and horizontally bounded by said second base to form a junction therewith;

C. a second, lateral, transistor of high voltage design for coupling said low voltage control logic to high voltage power transistor means, comprising:

(1) a second emitter of said second conductivity type, disposed upon said second region, and coupled to the collector of said first transistor,

(2) a second base of said first conductivity type defined in said second region and in electrical connection with said contact, laterally adjacent to said second emitter to form a junction therewith, and

(3) a second collector of said second conductivity type disposed upon said second region, laterally adjacent to said second base to form a junction therewith, and formed deeply beneath the upper surface of said substrate so as to provide improved high voltage performance and a guard ring between said high voltage power transistor means and said low voltage control logic;

and

D. power transistor means of high voltage design including a third, vertical power transistor, comprising:

(1) a third, underlying collector defined in said second region and electrically connected to said contact,

(2) a third base of said second conductivity type, disposed upon said third collector to form a junction therewith, shielded from said low voltage control logic by said guard ring, and electrically connected thereto, and

(3) a third emitter of said first conductivity type, disposed upon and horizontally bounded by said third base to form a junction therewith.

4,412,143

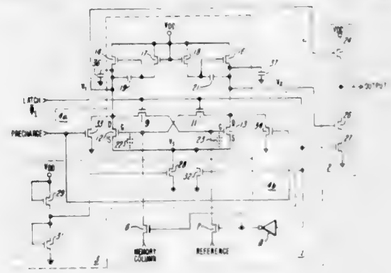
MOS SENSE AMPLIFIER

James F. Patella, Centerville, and Donald G. Craycraft, Spring Valley, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 26, 1981, Ser. No. 247,683

Int. Cl.³ H03K *5/24;* **G11C** *7/06*

U.S. Cl. 307—530 **9 Claims**



1. A comparator circuit, comprising:

a multivibrator of substantially symmetric organization having first and second conductive paths, each path containing series connected load and amplification elements joined through an intermediate node;

a first means, for selectively coupling said node in said first path with said amplification element in said second path;

a second means, for selectively coupling said node in said second path with said amplification element in said first path;

a third means, for selectively coupling first and second input signals to said amplification elements in said first and second paths;

selectively operable means for biasing the operating voltages of said amplification elements into operative correspondence with said first and second input signal voltages; and

control means, operatively coupled to said first means, said second means, said third means and said selectively operable means for biasing, for decoupling said first and second means concurrent with the coupling of said third means and an operation of said means for biasing, and for coupling said first and second means concurrent with a disabling of said means for biasing in timed sequence thereafter.

4,412,144

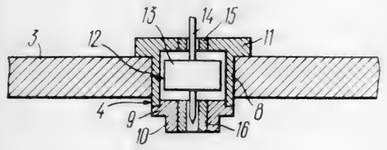
SINGLE-PHASE STEP MOTOR

Vladimir A. Denisov; Elena F. Kulevskaya; Jury S. Zhiltsov; Olga M. Kuznetsova; Zoya D. Novakovskaya; Vyacheslav I. Kozlov; Vyacheslav K. Korol, and Nikolai I. Pershin, all of Moscow, U.S.S.R., assignors to Moskovsky Energeticheskiy Institut; Pervy Moskovsky Cashovoizavod im. S. M. Kirova and V. M. Chasovoi, all of Moscow, U.S.S.R.

Filed Apr. 8, 1982, Ser. No. 366,560

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—49 R **5 Claims**



1. A single-phase stepping motor, comprising:
a stator;
a coil of said stator;
a magnetic circuit of said stator;
a core of said magnetic circuit;
a plate of said magnetic circuit having a hole;
poles of said stator which are magnetically asymmetric and formed by said hole of said plate;
straps interconnecting said poles of said stator;
a rotor;
a shaft of said rotor;
a diametrically magnetized permanent magnet of said rotor;
first and second supports of said shaft of said rotor;
a capsule set in said hole of said plate;
a cover of said capsule;
a body of said capsule having a diameter exceeding the diameter of said hole in said plate by an amount equal to tolerances ensuring interference fit of said capsule in said hole in said plate;
a portion of said body disposed against said cover;
the first support of said shaft of said rotor being arranged in said cover of said capsule;
the second support of said shaft of said rotor being arranged in said portion of said body;
an external cylindrical boss of said capsule, coaxial with said rotor;
a bearing flange of said body of said capsule, which positions said rotor with respect to said poles of said stator.

4,412,145

STATOR FOR AN ELECTRIC MACHINE EXCITED BY PERMANENT MAGNETS

Erich Voss, and Horst Gräfenschnell, both of Bad Neustadt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

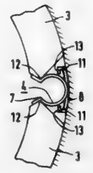
Filed Jan. 27, 1982, Ser. No. 343,111

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3105602

Int. Cl.³ H02K *21/26*

U.S. Cl. 310—154 **3 Claims**

1. A stator for use in an electric machine which is excited by permanent magnets, the stator having a bore hole with a circumference and an end face and further comprising:
a plurality of channels at the circumference of the bore hole, each channel having at least two undercuts, said channels extending to and open on the end face;
a plurality of arcuate permanent magnets, each magnet positioned in the bore hole between adjacent channels and each magnet having axially extending lateral edges; and
a spring element in each channel, each spring element having a back part and extensions formed on the back part, each extension engaging an undercut of the respective channel, and each spring element having at least two spring arms connected to its back part, each spring arm extending around a lateral edge of one arcuate permanent magnet.



4,412,146

ELECTRIC MOTOR CONTROL

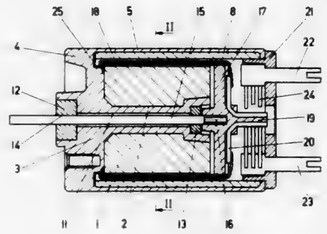
Bodo Fütterer, Luzern; Jurgen Mayer, and Hugo Fritschy, both of Sachseln, all of Switzerland

Continuation of Ser. No. 901,607, May 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 594,768, Jul. 10, 1975, abandoned. This application Oct. 30, 1980, Ser. No. 202,398

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1974, 2433770

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—266 **6 Claims**



1. An electric motor having a bell-shaped rotor and a generally cylindrical stator, the rotor being positioned in an air gap between spaced inner and outer concentric portions of the stator, the stator comprising:
a generally cylindrical permanent magnet, said magnet having a central axial aperture, said magnet defining the inner portion of the stator;
an injection molded element, said injection molded element positioning said magnet in said motor, said molded element having a first portion positioned in, and conforming in shape to, said aperture of said magnet, and having a second portion forming a face plate which engages a first end of said magnet and which extends radially outwardly beyond the periphery of said magnet, said first portion of said molded element having a central bore positioned on the axis of said magnet, said central bore having end portions which carry bearings, said bearings supporting a shaft which passes through said central bore in said injection molded element, said shaft supporting the bell-shaped rotor for rotation in the air gap;
a flux return element concentric with, and spaced radially outwardly from said magnet to define the air gap in which the bell-shaped rotor is positioned, said flux return element being cylindrical with a first end of said flux return element contacting said face plate radially outwardly of said magnet;
a casing, said casing extending from said face plate radially outwardly of, and in intimate engagement with said flux return element, said casing extending beyond a second end of said magnet and terminating in a radially inwardly turned free end, said free end extending radially inwardly to an extent not exceeding an inner diameter of said flux return element; and,
a brush cover, a wall portion of said cover contacting a second end of said flux return element, said radially inwardly turned free end of said casing engaging said wall portion of said brush cover to secure said cover to said casing.

4,412,147

ULTRASONIC HOLOGRAPHY IMAGING DEVICE HAVING A MACROMOLECULAR PIEZOELECTRIC ELEMENT TRANSDUCER

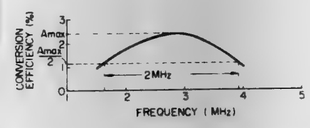
Masato Nagura, Chofu; Kazushige Kikuchi, Tokyo; Hiroshi Obara, and Yasushi Endo, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1980, Ser. No. 203,838

Claims priority, application Japan, Nov. 26, 1979, 54-152697

Int. Cl.³ H01L *41/00*

U.S. Cl. 310—320 **3 Claims**



1. An ultrasonic holography imaging device comprising; a transducer having a macromolecular piezoelectric sheet with a thickness in the range of 3 μm to 1000 μm; a high frequency signal sweeping device for applying an oscillation high frequency signal to said transducer while changing its frequency sequentially continuously or stepwise, wherein a plurality of high frequencies in the range of from 0.3 f_0 to 0.9 f_0 or 1.1 f_0 to 1.7 f_0 are inputted to said transducer by said high frequency signal sweeping device, where; l is the thickness of a piezoelectric sheet, v is an acoustic velocity in said piezoelectric sheet, and f_0 is a fundamental resonance frequency expressed by v/2l.

4,412,148

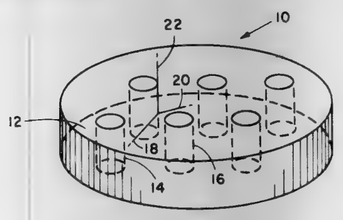
PZT COMPOSITE AND A FABRICATION METHOD THEREOF

Kenneth A. Klicker, Whitehall; Robert E. Newnham, State College; Leslie E. Cross, State College, and James V. Biggers, State College, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 24, 1981, Ser. No. 257,289

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—358 **4 Claims**



1. A PZT-polymer composite material of 3–1 connectivity which comprises:
a matrix of a polymer;
a plurality of PZT rods embedded in said matrix of the polymer each member of said plurality of PZT rods having the longitudinal axis thereof aligned in the same direction; and
means for electrically poling said PZT material with poling field parallel to the direction of the axes of said plurality of PZT rods.

4,412,149

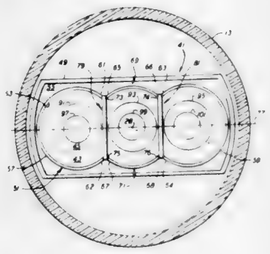
CRT FOCUSING ELECTRODE STRUCTURE

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Sep. 21, 1981, Ser. No. 303,751

Int. Cl.³ H01J *29/50*

U.S. Cl. 313—414 **5 Claims**

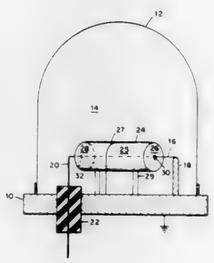


1. An improved beam focusing structure in a color CRT plural beam in-line electron gun assembly embodying a center and two side-related integrated gun structures from which said beams emanate on respective axes in a common in-line plane, said gun assembly being a construction of sequentially positioned in-line electrodes including a forwardly positioned main focusing electrode having rear and forward apertured ends and an adjacent terminally-related plural-apertured final accelerating electrode; said improved structure comprising means for beneficially modifying the lensing fields associated with the main focusing of each of the respective electron beams, said means comprising:
a common elongated perimetrically configurated aperture formed in the forward portion of said main focusing electrode to provide three adjacently overlapping in-line non-symmetrical focusing lenses thereat associated with the respective in-line beams, said perimetrically configurated aperture being formed of peripherally in-turned projections extending substantially normal to the interior surface of said forward end, said configurated aperture being delineated by circular end portions each having termini merging with those of opposed side-related arc portions to produce a pair of equi-spaced opposing cusps pointing toward said in-line plane on either side of said configurated aperture, thereby forming three apertural regions of said common elongated aperture, said arcuate side and circular end portions being delineated substantially from the respective beam axes by substantially similar radii of values greater than the radii of the related individual apertures in said adjacent accelerating electrode;
said means further comprising two like planar wall elements oriented in equi-spaced parallel position on either side of said center axis in a manner to effect jointure with opposed cusps of said aperture, each of said wall elements having a defined length extending into said focusing electrode and a width greater than the diameter of a single aperture in said adjacent accelerating electrode, said wall width being sufficient to bridge said opposed cusps but less than the diameter of a single apertural region of said common configurated aperture, with the forward edge thereof being a concave arcuate formation.

4,412,150
MASER

Igor Alexeff, 2709 Turnpike, Oak Ridge, Tenn. 37830

Filed Nov. 12, 1980, Ser. No. 205,992
Int. Cl.³ H01J *25/00*
U.S. Cl. 315—4 15 Claims



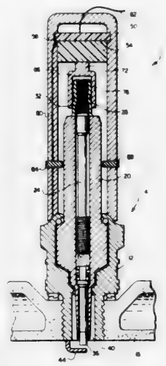
1. A system for generating microwave radiation comprising:
a cathode comprising parallel side wall means;
a first end wall;
a second end wall spaced apart from and opposed to said first end wall;
a first aperture defined in said first end wall and an opposed second aperture defined in said second end wall;
said side wall means, first and second end walls cooperatively defining a space;
an elongated anode extending across said space and outwardly through each of said first and second apertures;
means for generating free electrons adjacent to said anode;
means for applying a potential between said cathode and said anode with said anode having a positive voltage relative to said cathode for electrostatically trapping said free electrons in a surrounding relation with said anode to electrostatically produce a phase bunching in orbit of the electrons and to emit microwave radiation from the chamber defined by said cathode; and
said cathode forming a cavity for containing microwaves to interact with the electrons surrounding said anode.

9. A method of producing microwave radiation comprising:
enclosing an anode and a cathode within a sealed container, said cathode comprising parallel side wall means, a first end wall and a second end wall spaced apart from and opposed to said first end wall, said first end wall defining a first aperture and said second end wall defining an opposing second aperture, said anode comprising an elongated wire means extending across a space, defined by said side wall means and said first end wall and said second end wall, and outwardly through said first aperture and said second aperture;
applying a potential of at least about 500 V between said cathode and said anode;
developing an ion plasma within said space of said cathode and surrounding said anode;
electrostatically trapping electrons contained in said plasma in orbit around said anode;
phase bunching in orbit of the electrons to produce microwave radiation; and
containing microwave radiation within said side wall means and said first and second end walls for interacting with electrons orbiting the anode.

4,412,151
PIEZOELECTRIC CRYSTAL SPARK PLUG

Elwood G. Norris, Salt Lake City, Utah, assignor to Charles W. Taggart, Salt Lake City, Utah

Filed Sep. 2, 1980, Ser. No. 183,253
Int. Cl.³ H01J *7/44, 17/34, 19/78, 29/96*
U.S. Cl. 315—55 10 Claims

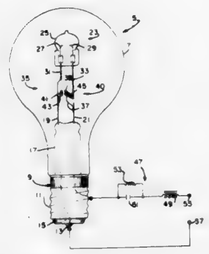


1. A piezoelectric crystal spark plug assembly comprising an electrically conducting body,
a first electrode mounted in said body and electrically insulated therefrom,
a second electrode disposed near but spaced from one end of the first electrode and electrically coupled to the body,
a first piezoelectric crystal, one side of which is electrically coupled to the other end of said first electrode, and
means responsive to a low voltage electrical signal for mechanically deforming said crystal to cause it to produce and apply an electrical signal to said first electrode to thereby produce a spark between said first and second electrode, said means comprising a plurality of individual piezoelectric crystals structurally coupled together, a first side of each of said individual crystals being connected electrically to said low voltage signal, and a second side of said individual crystals being connected electrically to said body.

4,412,152
DISCHARGE LAMP WITH BIMETAL STARTER

Nikolaos Barakitis, Haverhill, and Sheppard Cohen, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 19, 1982, Ser. No. 398,723
Int. Cl.³ H05B *41/06*
U.S. Cl. 315—73 12 Claims



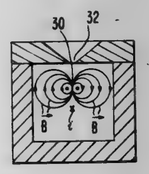
1. A high intensity discharge lamp comprising:
a first heremetically sealed envelope having first and second electrically conductive support wires sealed therein and passing therethrough;

a hermetically sealed arc tube disposed within said first envelope and having first and second electrical leads sealed therein and passing therethrough with said first electrical lead connected to said first support wire; and
a starter device disposed within said first envelope and including a normally-closed switch having first and second contacts, a first bimetal coupling said first contact to said second support wire, an electrical connector coupling said first contact to said second electrical lead, and a second bimetal coupling said second contact to said first support wire.

4,412,153
DUAL FILAMENT ION SOURCE

Charles R. Kalbfus, Stromville, N.Y., and Norman L. Turner, Gloucester, Mass., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 126,225, Mar. 3, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 293,026
Int. Cl.³ H01J *7/24*
U.S. Cl. 315—111.81 6 Claims

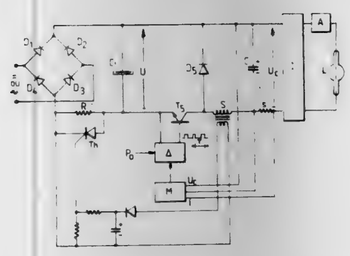


1. An electron-bombardment ion source having an electrode mounted within an ionization chamber, a power supply to provide electrical current to said electrode to heat it resistively to produce thermionic emission of electrons, an external magnet for superimposing a magnetic field on the interior of the ionization chamber, means for providing ionizable material to said ionization chamber, and an ion extraction aperture formed in a wall of said ionization chamber, the improvement comprising:
the electrode is composed of two parallel segments mounted symmetrically inside said ionization chamber along opposing edges of said extraction aperture and oriented with parallel axes aligned with said magnetic field.

4,412,154
START UP FREQUENCY ADJUSTMENT IN AN ELECTRONIC POWER DEVICE FOR A DISCHARGE LAMP

Denys C. Klein, Orsay, France, assignor to Compagnie de Signaux et d'Entreprises Electriques, Paris, France

Filed Jun. 25, 1981, Ser. No. 277,392
Claims priority, application France, May 20, 1981, 81 10056
Int. Cl.³ H05B *41/36*
U.S. Cl. 315—224 5 Claims

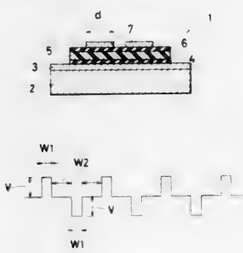


1. An electronic power supply device for a discharge lamp including a switching regulator formed by a chopper transistor driven with a variable cyclic ratio through a driver stage, a smoothing inductance, a freewheel diode and a smoothing capacitor, further comprising:
means for lowering the switching frequency of the chopper transistor during the heating-up period of the lamp until its striking voltage has reached about 70% of its rated value.

4,412,155
AGING METHOD FOR THIN-FILM ELECTROLUMINESCENT DISPLAY ELEMENT

Kinichi Isaka, Tenri; Masashi Kawaguchi, Nara, and Hisashi Uede, Wakayama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1981, Ser. No. 274,741
Claims priority, application Japan, Jun. 23, 1980, 55-85705
Int. Cl.³ H05B *33/10*
U.S. Cl. 315—246 8 Claims

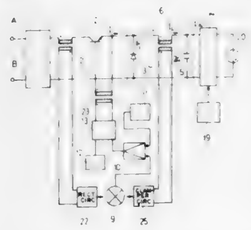


7. An aging method for a thin-film electroluminescent display element comprising the steps of:
applying an AC voltage to electrode means of the element, the frequency of the AC voltage being approximately 500 Hz through 10 KHz, the pulse width of the AC voltage being approximately 20 μsec through 100 μsec, and the magnitude of the AC voltage being approximately the voltage at which a virgin thin-film electroluminescent display element starts to emit electroluminescence plus 30 V to 60 V.

4,412,156
POWER SUPPLY FOR AN AC DISCHARGE LAMP

Masataka Ota, Okazaki, Japan, assignor to Elmo Company, Limited, Nagoya, Japan

Filed Aug. 18, 1981, Ser. No. 294,048
Claims priority, application Japan, Sep. 3, 1980, 55-122592
Int. Cl.³ G05F *1/00*
U.S. Cl. 315—308 3 Claims



1. A power supply adapted for use with an ac discharge lamp, comprising:
a dc power circuit for generating dc power,
a switching transistor for turning on and off the dc power from said dc power circuit,

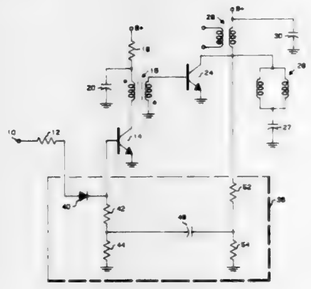
a low pass filter for receiving the dc power from said switching transistor and for supplying smoothed dc power,
a commutator circuit for supplying the dc power from said low pass filter with alternating polarity to said ac discharge lamp,
a commutator control circuit for controlling said cummutator circuit,
a first transformer connected in series between said dc power circuit and said switching transistor, and adapted for sensing the current of the dc power,
a second transformer connected in series between said switching transistor and said commutator circuit, and adapted for sensing the output voltage from said switching transistor,
a rectifier circuit for rectifying the current sensed by said first transformer,
a clamper circuit for applying dc voltage to the voltage sensed by said second transformer,
a summing circuit for summing both of the output voltages from said rectifier circuit and said clamper circuit,
an error detector circuit for comparing the output voltage from said summing circuit with a reference voltage from a reference voltage generating circuit in conjunction with said error detector circuit, and for producing an error signal indicative of the voltage difference therebetween,
a voltage-pulse width converter for receiving a constant frequency pulse signal produced from an oscillator in conjunction with said converter, and altering the pulse width of the pulse signal in response to the error signal from said error detector circuit, and
a third transformer for supplying the output signal from said voltage-pulse width converter to the input terminal of said switching transistor.

4,412,157

PROTECTION CIRCUIT FOR A HORIZONTAL SCANNING CIRCUIT AND CRT

Paul Gamboa, St. Charles, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 2, 1982, Ser. No. 344,918
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—387 **4 Claims**



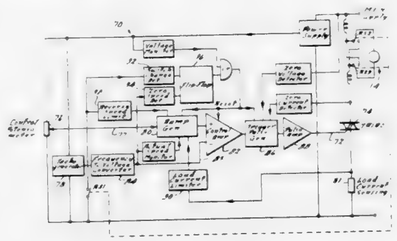
1. A horizontal scanning circuit having the capability of self-oscillation at a first predetermined frequency for a CRT device comprising:
input means for providing horizontal deflection drive signals at a second predetermined frequency, the second frequency being higher than the first predetermined frequency;
yoke means for providing horizontal deflection of the electron beam in the CRT;
horizontal output transistor means coupled to supply signals to the yoke means;
driver means coupled to the input means and to the horizontal output transistor means for preventing conduction in the transistor means and preventing oscillation in the circuit when the driver means is conducting; and
feedback means for coupling the yoke supply signals to control the driver means for allowing self-oscillation in the circuit only while energy is stored in the circuit elements and the drive signals are interrupted.

4,412,158

SPEED CONTROL CIRCUIT FOR AN ELECTRIC POWER TOOL

Keith A. Jefferson, Windsor, and Derek A. Lansdell, Slough, both of England, assignors to Black & Decker Inc., Newark, Del.

Filed Feb. 19, 1981, Ser. No. 236,040
Claims priority, application United Kingdom, Feb. 21, 1980, 8005840
Int. Cl.³ H02P *1/22*
U.S. Cl. 318—257 **2 Claims**



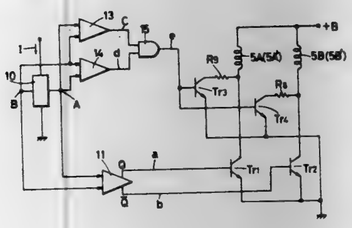
1. An electric power tool, comprising:
an electric motor for driving an output spindle having connected thereto means for receiving a tool implement;
said motor having its commutator brushes slightly shifted from the neutral position to provide for better commutation in the forward direction of rotation;
switch means operable between forward and reverse positions for changing the direction of rotation of said motor from a forward direction to a reverse direction and vice versa by controlling the polarity of the power applied to said motor;
control circuit means for controlling the speed of rotation of said motor in both rotational directions by controlling the magnitude of the power applied to said motor, said control circuit means comprising a potentiometer, a ramp generator, reverse speed limiting means, a zero speed detector, a switch change detector, and a flip-flop;
said potentiometer being adjusted to provide a set speed signal to the ramp generator to determine the power applied to the motor;
said reverse speed limiting means being rendered operative when said switch means is in the reverse position to limit the ramp height attainable by said ramp generator to limit the maximum speed of the motor in said reverse direction to below that attainable in said forward direction to keep problems in the reverse direction due to poor commutation to an acceptable level;
said switch change detector actuating said flip-flop each time said switch means is actuated to disable the ramp generator and cut off supply of power to the motor; and
said zero speed detector actuating said flip-flop to remove its disabling effect and re-establish the supply of power to the motor when the motor speed has dropped to zero.

4,412,159

DRIVE CIRCUIT FOR AN ALTERNATE PHASE BRUSHLESS DC MOTOR

Mitsuo Uzuka, Urawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,439
Claims priority, application Japan, Feb. 29, 1980, 55-25798
Int. Cl.³ H02P *7/06*
U.S. Cl. 318—254 **24 Claims**



1. A drive circuit for an alternate phase brushless DC motor having at least first and second stator coils of alternate phase and a rotor including rotor magnets, the stator coils and the rotor magnets having a rotational torque relationship such that the rotational torque for each coil extends over an electrical angle of more than 180° and has gradual rising and falling portions having points of intersection with falling and rising portions, respectively, of the rotational torque of the other coil, the drive circuit comprising:
sensing means for sensing the rotational position of said rotor magnets;
and switching means for alternately energizing said first and second stator coils in dependence on the rotational position of said rotor magnets as determined by said sensing means so that such energization occurs substantially between said points of intersection, wherein said switching means includes a first pair of switching elements for alternately energizing said first and second stator coils for respective electrical angles of 180° commencing and ending substantially at successive points of intersection so that simultaneous energization of said coils by said first pair of switching elements is substantially avoided; and
correcting means comprising a second pair of switching elements coupled to said stator coils for energizing by predetermined amounts said first and second stator coils, respectively, prior to and following said points of intersection to provide a predetermined period of simultaneous energization of said stator coils at said points of intersection and thereby minimize torque ripple.

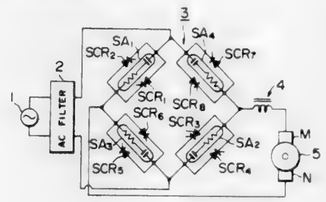
4,412,160

DC MOTOR DRIVING APPARATUS

Akira Kojima, Toki, and Toshiyasu Sakai, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 14, 1981, Ser. No. 311,401
Claims priority, application Japan, Oct. 16, 1980, 55/144627
Int. Cl.³ H02K *23/66*
U.S. Cl. 318—280 **2 Claims**

1. A dc motor driving apparatus comprising:
a full-wave rectifier bridge circuit comprising thyristors for converting ac power to dc power;
a dc motor forward rotation control signal supply circuit;
a dc motor backward rotation control signal supply circuit;
a dc motor driving control circuit, responsive to said forward and backward control signal supply circuits, for controlling said thyristors; and
a protecting control circuit operatively associated with said dc motor driving control circuit for preventing the occurrence of a short-circuit mode in said bridge circuit caused by a malfunction of said thyristors and enabling stable driving control of said dc motor, said protecting control circuit comprising:
a first and a second comparator respectively supplied with a dc motor forward rotation control signal from said supply circuit thereof and a dc motor backward rotation control signal from said supply circuit thereof, each thereof generating an output signal when the level of said signal supplied thereto is higher than a predetermined reference voltage, and



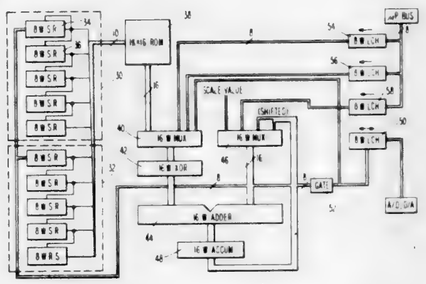
a first and a second inhibit circuit each thereof supplied with the output signals of said comparators and respectively responsive to a signal indicative of a positive half cycle of an ac supply voltage and a signal indicative of a negative half cycle of the ac supply voltage, each thereof generating an output signal for disabling either one of said dc motor forward rotation control signal supply circuit and said dc motor backward rotation control signal supply circuit.

4,412,161

DIGITAL CONTROL OF SERVO CIRCUIT

David T. Cornaby, Roy, Utah, assignor to Iomega Corporation, Ogden, Utah

Filed Apr. 24, 1981, Ser. No. 257,489
Int. Cl.³ G05B *13/00*
U.S. Cl. 318—561 **5 Claims**

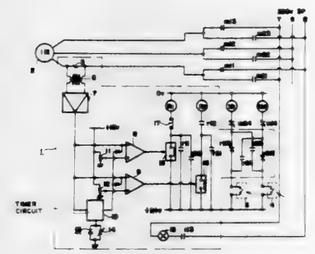


1. Servo apparatus comprising means for comparing a detected position signal to a command position signal, means for updating said command signal based on the result of said comparison means for recursive summation of plural previous command signals and previous detected position signals to yield a next command signal, memory means for storing coefficients, and means for weighting said previous command and/or detected position signals in said summing step in accordance with said coefficients stored in said memory means.

4,412,162
PROTECTIVE SYSTEM FOR AUTOMATIC TOOL CHANGING APPARATUS

Koichiro Kitamura, Takaoka, Japan, assignor to Kitamura Machinery Co., Ltd., Takaoka, Japan

Filed Feb. 12, 1982, Ser. No. 348,306
Claims priority, application Japan, Feb. 26, 1981, 56-26127
Int. Cl.³ G05B *9/02*
U.S. Cl. 318—563 **4 Claims**



1. A protective system for automatic tool changing apparatus which provides protection against an interference between a tool and a work during the tool changing operation by an automatic tool changing apparatus for a machine tool which performes through a driving electric motor a series of tool changing cyclic operations including lowering and raising of a tool magazine, etc., between a socket of a machining head spindle and the tool magazine, said protective system comprising:

a current detecting circuit for detecting a load current of said driving motor;

a first comparator circuit for generating an output when said current detecting circuit detects a current which is greater than a warning current value preset to a current level greater than a maximum steady-state load current value of said motor;

a second comparator circuit for generating an output when said current detecting circuit detects a current which is greater than an irregularity protection current value preset to a second current level higher than said first current level;

a timer circuit for preventing a detection output of said current detecting circuit from being applied to said comparator circuits for a predetermined time interval during a starting period between the starting of said motor and a time that said load current is stabilized at a steady-state value;

warning relay means operable in response to an output of said first comparator circuit to give an overload warning; and

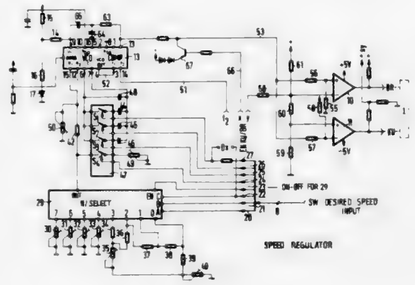
protective action relay means operable in response to an output of said second comparator circuit and an actuation signal from said warning relay means to reverse the direction of rotation of said driving motor thereupon.

4,412,163
POSITIONING DRIVE

Wolfgang Angersbach, Darmstadt, and Peter Schüler, Oberthausen, both of Fed. Rep. of Germany, assignors to Quick-Rotan Elektromotoren GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,971
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1979, 2938040; Mar. 26, 1980, 3011587
Int. Cl.³ G05B *19/00*
U.S. Cl. 318—567 **19 Claims**

1. Positioning drive for a sewing machine having a variable speed coupling motor and means coupled to said motor for performing different sewing functions such as needle positioning, thread cutting, feed adjustment and the like, comprising an at least 8-bit microprocessor system provided with input connections which are connectable to a program data source, and output connections to said motor and to said functional means to control the sewing machine by controlling the rotary speed and/or angular position of the motor, and to control the operation of said functional means according to said program data

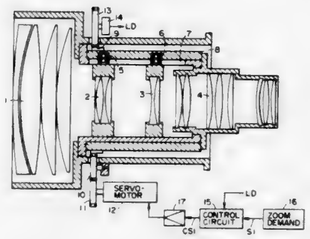


source, and further comprising an actual-speed-value transmitter, the speed-dependent time unit of the actual-speed-value transmitter being comparable by means of the microprocessor with the internal time increment of the microprocessor system, and by a function being triggerable only after a predetermined reference value has been attained.

4,412,164
LENS SYSTEM DRIVING DEVICE

Takashi Ohnuma, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 82,534, Oct. 9, 1979, abandoned. This application Sep. 29, 1982, Ser. No. 428,270
Claims priority, application Japan, Oct. 11, 1978, 53-124134
Int. Cl.³ G05B *11/18*
U.S. Cl. 318—596 **2 Claims**



1. A lens driving device for moving at least one movable lens of a lens system up to an end of a path of movement by a servo-motor, comprising:

a mechanism for moving said at least one movable lens;

a servo-motor operatively connected to said mechanism to move said at least one movable lens;

a speed demand signal generator for generating a direct current voltage signal corresponding to a demanded moving speed and a demanded moving direction;

position detection means for generating a position detection signal corresponding to the position of said at least one movable lens;

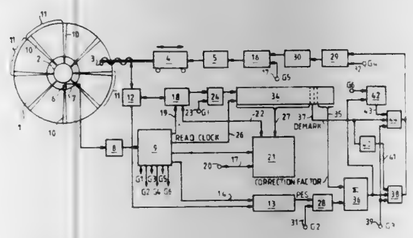
a comparator for comparing the output of said position detecting means with a fixed signal representing the end of the path of movement and for generating a signal representing the difference therebetween; and

switching means for supplying the direct current signal of said speed demand signal generator to said servo-motor until said at least one movable lens reaches a predetermined position adjacent but before the said end, and for supplying the output of said comparator to said servo-motor after said at least one movable lens has reached the predetermined position so that said at least one movable lens approaches and reaches the end without any influence from said speed demand signal generator.

4,412,165
SAMPLED SERVO POSITION CONTROL SYSTEM

William J. Case, Winchester, and Christopher N. Wallis, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1981, Ser. No. 304,433
Claims priority, application European Pat. Off., Oct. 29, 1980, 80303849
Int. Cl.³ G05B *21/02*
U.S. Cl. 318—636 **3 Claims**



1. A method of utilizing recorded information on a record medium,

said information being capable of being used by servo controlled apparatus to control a transducer sampling said information to follow a path determined by the recorded information,

said method comprising

causinga servo read/write head to follow the desired track and to sample the recorded items of servo information,

generating for each sampled item of servo information a position error signal indicating mis-alignment between the portion of the desired track and the actual path defined by the recorded servo information,

recording on the medium each generated position error signal indicating mis-alignment between the portion of the desired tracks and the actual path at a location available to be read in advance of the sampling of the associated servo information item,

determining the average value of the position error signals derived by sampling the servo information items around the track and indicating mis-alignment between the desired track and the actual servo paths,

subtracting the average position error signal value from each individual position error-signal, and

storing in digital form each remaining position error signal component at a location along the track available to be read in advance of the sampling of the servo information associated therewith.

4,412,166
STEPPER MOTOR DRIVE CIRCUIT FOR SYNCHRONOUS SWITCHING OF CORE WINDING

Chester H. Crider, and Charles R. Linton, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

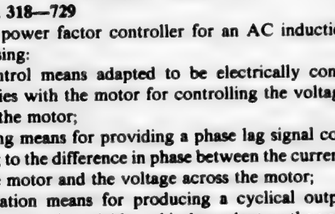
Filed Feb. 26, 1981, Ser. No. 238,399
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **11 Claims**

1. A stepper motor drive circuit for controlling current flow from a power source through a stepper motor comprising:

a current path from said source through said motor including at least one winding about a core, said path having two branches,

a first switching device in the first of said branches switchable to conduction or non-conduction through said branch,

a second switching device in the second of said branches switchable to conduction or to non-conduction through said branch,



sensing means operative during the switching of said switching devices to sense the non-conduction of current through the branch being turned off,

and means responsive to said sensing means to switch the switching device in the branch being turned on to then conduct current through said branch.

4,412,167
POLYPHASE POWER FACTOR CONTROLLER

Dan Green, Cranford, N.J., and Sandor Goldner, Brooklyn, N.Y., assignors to Cynex Manufacturing Corporation, Hillside, N.J.

Continuation-in-part of Ser. No. 166,046, Jul. 7, 1980. This application Mar. 30, 1981, Ser. No. 248,990
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—729 **7 Claims**

1. A power factor controller for an AC induction motor, comprising:

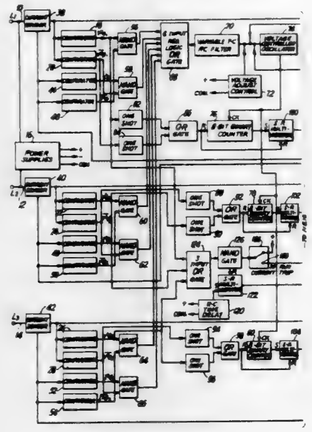
a control means adapted to be electrically connected in series with the motor for controlling the voltage applied to the motor;

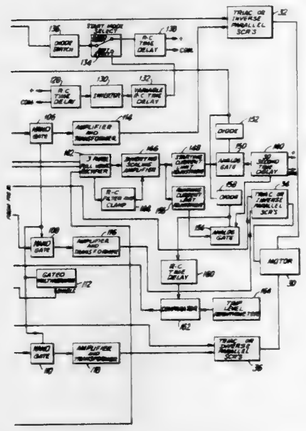
sensing means for providing a phase lag signal corresponding to the difference in phase between the current through the motor and the voltage across the motor;

oscillation means for producing a cyclical output whose frequency is variable and is dependent on the value of said phase lag signal; and

counter means receiving said cyclical output and for producing a control signal corresponding to a predetermined cycle count of said cyclical output, whereby the duration of said control signal is dependent upon said phase difference,

said control signal being applied to said control means for controlling the conduction angle of the voltage applied to





the motor to thereby provide power to the motor in accordance with motor landing.

4,412,168

BATTERY CHARGING AND INDICATING CIRCUIT

Michael R. Sell, Denton, Md., assignor to Black & Decker, Inc., Newark, Del.

Filed Jul. 10, 1981, Ser. No. 282,058

Int. Cl.³ H02J *7/02*

U.S. Cl. 320—48 **3 Claims**

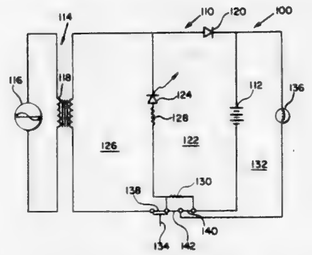
1. A circuit for selectively charging a flashlight battery, indicating the charging process, and operating a flashlight from said battery, said circuit comprising:

a battery charging and indicating circuit portion for providing DC charging current from an AC line current source having alternating half cycle voltage and current, said circuit portion comprising

a step down transformer having a primary and a secondary, the primary being electrically connected to said AC line current source whereby the transformer is adapted to reduce the voltage of said AC line current source,

a charging loop, electrically connected to the secondary of said transformer and comprising a battery and a rectifier, adapted to conduct only those alternate half cycles of said reduced voltage AC line current source comprising charging current for said battery, and

a separate indicating loop, electrically connected to the secondary of said transformer, comprising first discrete current limiting means and combined rectifying and signalling means, said combined rectifying and signal-



ling means being biased to conduct only those half cycles of reduced voltage AC line current source not conducted by said battery charging loop rectifier and emitting a signal when it conducts;

a flashlight operating circuit portion comprising a lamp positioned in series with said battery; and

switch means for selectively closing said battery charging and indicating circuit portion and said flashlight operating circuit portion.

4,412,169

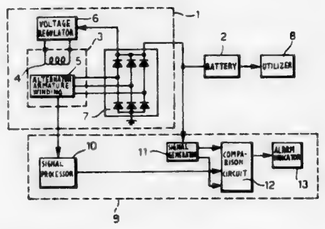
CIRCUIT FOR DETECTING AND INDICATING FAULTS AND OPERATING ANOMALIES IN A SYSTEM FOR RECHARGING ELECTRIC ACCUMULATORS

Giuseppe Dell'Orto, Milan, Italy, assignor to Marelli Autronica S.p.A., Milan, Italy

Filed Nov. 25, 1981, Ser. No. 324,938

Int. Cl.³ H02J *7/00*

U.S. Cl. 320—64 **20 Claims**



1. In a system for recharging electric accumulators, including a three-phase alternator with a three-phase armature winding and a field winding, a rectifier circuit connected to said alternator, and a voltage regulator circuit connected to said rectifier circuit and said alternator field winding,

a circuit for detecting and indicating faults and operating anomalies, comprising:

a signal processor circuit connected to said alternator armature winding and operable to provide an output test signal substantially proportional to the mean signal value present, in operation, at a real or virtual star point of the phases of said armature winding;

generator means operable to provide first and second predetermined stabilised reference output signals representing, respectively, a minimum and a maximum acceptable value of said test signal and which are substantially independent of the voltage appearing at said rectifier circuit output;

a comparison circuit connected to said signal processor circuit and said generator means, and operable to provide an output control signal when said test signal falls below said first reference signal, and when said test signal exceeds said second reference signal and,

indicator means connected to said comparison circuit and operable to provide an alarm indication when it receives said control signal.

4,412,170

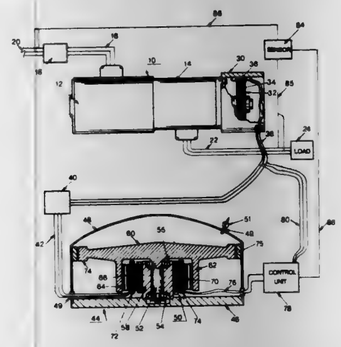
MOTOR-GENERATOR SYSTEM PROVIDING PROLONGED UNINTERRUPTED POWER SUPPLY TO A LOAD

John F. Roesel, Jr., Bradenton, Fla., assignor to Precise Power Corporation, Bradenton, Fla.

Filed Jul. 2, 1981, Ser. No. 279,880

Int. Cl.³ H02P *9/42;* **H02K** *16/00, 47/04, 21/00*

U.S. Cl. 322—4 **8 Claims**



1. In a generator system connected to and cooperating with an external A.C. power source which is subject to faults, failures and outages, in order to supply A.C. power of a substantially constant frequency and voltage to a load without interruptions and including prolonged periods when electrical power from the external A.C. source fails, in combination:

(a) a rotatable generator system connectable to the external A.C. power source, comprising (1) a main A.C. generator which can generate and supply to the load a main A.C. potential at a selected substantially constant frequency and voltage while the main A.C. generator is rotating in a given RPM range and (2) an auxiliary high frequency A.C. generator rotatably connected to the main A.C. generator, the auxiliary A.C. generator capable of functioning as a synchronous motor when supplied high frequency A.C. potential from an outside source, and

(b) the auxiliary generator being electrically connected to a high speed motor and flywheel unit in a sealed chamber to supply the high frequency A.C. to the high speed motor to cause it to rotate at a high speed whereby the motor and flywheel unit can store large amounts of rotational kinetic energy at full speed, a low windage-loss atmosphere being present in the sealed chamber, the high speed motor comprising a motor having a field core of soft magnetic material with a circular cylindrical surface having a layer of magnetizable permanent magnet material thereon, and a slotted stator armature of soft magnetic material having a cylindrical surface complementary to and juxtaposed with the layer of magnet material on the field core, an excitation coil in slots in the armature whereby when A.C. current of a selected frequency is passed through the excitation coil it will induce in the juxtaposed layer of permanent magnet material in the rotating field core a pattern of north and south magnetic poles, and power windings in other slots in the stator armature, the power windings being connected to the auxiliary A.C. generator to receive the high frequency A.C. potential therefrom to cause the high speed motor to operate as hysteresis motor, and upon failure of the external electrical A.C. power, the excitation coil can be energized with a selected constant frequency A.C. current to induce the pattern of north and south magnetic poles in the layer of magnetizable permanent magnet material and thereby cause the power windings in the armature to generate high frequency A.C. of a constant frequency as the rotational kinetic energy of the rotor and flywheel cause the rotor and the stator to rotate with respect to each other, and when this last high frequency A.C. is supplied to the auxiliary generator it will be caused to operate as a synchronous motor to drive the main A.C. generator for a prolonged period of time in the given RPM range and thus generate A.C. potential of the selected frequency and voltage to be supplied to the load.

4,412,171

CIRCUIT ARRANGEMENT FOR DAMPING POWER OSCILLATIONS OF SYNCHRONOUS GENERATORS IN NETWORKS

Wolfgang Kaufhold, Erlangen-Tennenlohe, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 282,149

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026360

Int. Cl.³ H02P *9/10*

U.S. Cl. 322—20 **2 Claims**

1. In a circuit arrangement for damping power oscillations of synchronous generators in networks, where discrete filters tuned for the individual oscillator frequency ranges are provided, the output quantities of which are used as supplementary damping signals for regulating the synchronous generators, the improvement comprising:

(a) a plurality of angle measuring devices, one for each filter each angle measuring device having a first input and a second input;

(b) means supplying the respective input signal of the circuit arrangement, corresponding to the frequency or power variation both to the inputs of the individual filters and to the first inputs of angle measuring devices assigned to the latter;

(c) a switching element for each filter;

(d) means connecting the outputs of the filters to the second inputs of the associated angle measuring devices and to said switching elements;

(e) means coupling the outputs of said angle measuring devices to said switches to bring them into circuit dependence on said angle measuring devices;

(f) a common maximum selector element for delivery of a

damping signal to the control device of the synchronous generator;

(g) a phase shifter for each filter; and

(h) a matching element for each filter, the outputs of the respective filter elements coupled through an associated phase shifter and matching element to said common maximum selector.

4,412,172

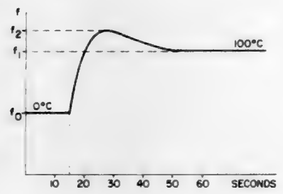
METHOD OF MEASURING THE THERMAL PROPERTIES OF A RESONATOR

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 28, 1981, Ser. No. 315,850

Int. Cl.³ G01R *29/22, 23/00;* H04R *17/00*

U.S. Cl. 324—56 **11 Claims**



6. Method of rapidly and inexpensively measuring the thermal properties of a crystal resonator that is substantially free of activity dips, said method including the steps of:

(a) immersing the resonator into a constant temperature ice bath at 0° C. and monitoring the frequency versus time characteristic of the resonator at least until the frequency of the resonator is no longer changing,

(b) rapidly immersing the resonator into a constant temperature boiling water bath at 100° C. and monitoring the frequency versus time characteristic of the resonator at least until the frequency of the resonator is no longer changing,

(c) repeating steps (a) and (b) at least once, and

(d) determining the thermal properties of the crystal resonator from the frequency versus time characteristics wherein the water in both baths has a resistivity of greater than 1 megohm centimeter.

4,412,173

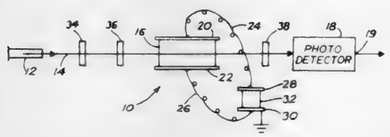
APPARATUS USING LEAKAGE CURRENT FOR MEASURING RESISTIVITY

Gail A. Massey, San Diego, Calif., assignor to The Oregon Graduate Center for Study and Research, Beaverton, Oreg.

Filed Jan. 26, 1981, Ser. No. 228,147

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—62 **9 Claims**



1. Apparatus for measuring electrical resistivity of a sample comprising

an optically active material, said material being of the type which changes a property of a light beam passing therethrough responsive to changes in an electric field,

a source for transmitting light through said material,

a first pair of conductors between which lies said material,

a second pair of conductors between which lies the sample,

first connecting means electrically connecting one conductor in said first pair to one conductor in said second pair,

second connecting means electrically connecting the other conductor in said first pair to the other conductor in said second pair,

a source for selectively generating voltage between said second pair of conductors, and

a light detector positioned to detect light emerging from said material, said detector being constructed to monitor such property changes of the emerging light.

4,412,174

MONITORING OF CORROSION

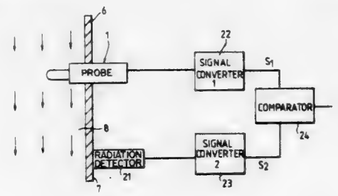
Thomas W. Conlon, Abingdon, and Constantin Edeleanu, Cambridge, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 27, 1981, Ser. No. 267,656

Claims priority, application United Kingdom, May 30, 1980, 8017670

Int. Cl.³ G01R *27/02*

U.S. Cl. 324—65 CR **8 Claims**



1. A method of detection and measurement of pitting corrosion in a corrosive environment, comprising the operations of exposing to the corrosive environment a corrodible element, a surface region of which has been rendered radioactive, measuring changes in a parameter of the element which is susceptible to the effects of corrosion of the element, simultaneously either measuring changes in the activity of the element or the growth of activity at a station downstream of the element, deriving from both sets of measurements indications of the rate of removal of corroded material from the element and comparing the indicated rates of removal of material from the element.

4,412,175

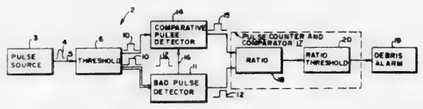
DEBRIS ALARM

Franklin D. Maynarez, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation-in-part of Ser. No. 259,717, Apr. 30, 1981. This application Mar. 15, 1982, Ser. No. 357,913

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—71.1 **10 Claims**



1. An abnormal pulse detector for use with a particle analyzing apparatus for studying particles in suspension, said apparatus including a particle sensing aperture through which said particles in suspension are passed, means for passing an electric current through said aperture simultaneously with passage of a particle through said aperture, and detecting means responsive to impedance variations for generating a discrete particle pulse with the passage of said particle through said aperture, said abnormal pulse detector comprising: bad pulse detector means for generating a bad pulse signal for each said particle pulse which has an abnormal width; accumulating means for accumulating said bad pulse signals; comparator means for comparing the accumulated bad pulse signals to a predetermined standard representative of an undesirable level of said bad pulse signals; alarm indicator means for indicating that the accumulated bad pulse signals have reached said undesirable level.

4,412,176

TESTING METHOD FOR DETERMINING THE MAGNETIC PROPERTIES OF FERROMAGNETIC POWDERS

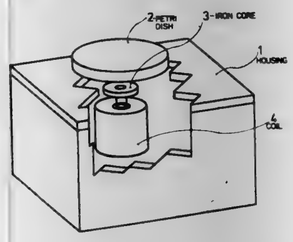
Horst Krämer, and Heinrich Fassbender, both of Hürth, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,986

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006626

Int. Cl.³ G01R *33/12;* G01N *27/74*

U.S. Cl. 324—204 **2 Claims**



1. A method permitting ferromagnetic powders to be tested for their qualification for use as heavy media in the float-sink dressing of minerals, which comprises:

(a) magnetizing the ferromagnetic powder in a magnetic steady field at a field strength within the range 600 to 1000 amperes per cm;

(b) demagnetizing the magnetized ferromagnetic powder in a cyclicly decreasing magnetic alternating field at a field strength within the range 1000 to 1500 amperes per cm;

(c) heaping up, in the center portion of a circular plate made from dielectric material, 0.2 to 0.5 g of the ferromagnetic powder pretreated as described under (a) and (b);

(d) placing the circular plate described under (c) on an iron core-provided coil, applying an alternating current voltage of 180 to 260 volts thereto, thereby effecting the occurrence of alternating fields of 180 to 220 amperes per cm in the center portion of the circular plate; and

(e) observing the heaped ferromagnetic powder for the figure it is forming under the influence of the alternating fields according to (d), the formation of a closed figure around the center portion of the plate indicating unlimited qualification of the ferromagnetic powder for use in a heavy medium suspension.

4,412,177

EDDY CURRENT INSPECTION TOOL WHICH IS SELECTIVELY OPERABLE IN A DISCONTINUITY DETECTION MODE AND A DISCONTINUITY MAGNITUDE MODE

Richard R. Petrini, and Dorin F. Van Lue, both of Livermore, Calif., assignors to The United States of America as represented by the U.S. Department of Energy, Washington, D.C.

Filed Oct. 29, 1980, Ser. No. 201,946

Int. Cl.³ G01N *27/90;* G01R *33/12;* G01B *7/14;* G02B *5/17*

U.S. Cl. 324—226 **3 Claims**

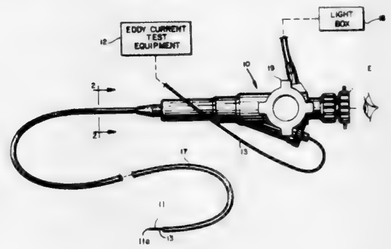
1. An eddy current inspection tool for nondestructive testing and detection of discontinuities in metal objects, said tool comprising:

an eddy current sensing coil;

means for activating said coil with a high-frequency signal whereby said coil is adapted to induce eddy currents in objects positioned within the pulsating magnetic field of said coil;

circuit means responsive to impedance changes produced in said coil by the eddy currents induced in the test object, to produce a voltage output data signal which is proportional to the distance between said coil and the test object; and

audio signalling means, operable in at least two modes and responsive to said voltage output data signal, for audibly signalling the detection of a discontinuity in the test object, which audio signalling means includes a mode select switch which is selectively operable in a first mode to route said voltage output data signal through means responsive to said voltage output data signal for generating a constant single frequency tone indicating detection of a discontinuity in said test object, and which mode select switch is selectively operable in a second mode to route said voltage output data signal through means responsive to said voltage output data signal for generating from a tone generator means a signal tone whose frequency is proportional to the voltage output data signal whereby said signal tone is indicative of the magnitude of the discontinuity in inspection applications or of the degree of displacement of the test object in displacement measurement applications.



4,412,178

COMPUTER-CONTROLLED, PORTABLE PULSED NMR INSTRUMENT AND METHOD OF USE WHEREIN A DC MAGNETIC FIELD GRADIENT IS ARTIFICIALLY INTRODUCED

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 15, 1981, Ser. No. 255,975

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—303 **16 Claims**

1. Automatic apparatus for swiftly determining fluid-flow properties of a rock sample based on NMR response of hydrogen nuclei of interstitial fluids within pore spaces of said samples in which DC field inhomogeneity must be artificially introduced in order to increase data-throughput efficiency (DTE) comprising:

(a) magnet means for producing a DC magnetic field acting on said rock sample, said magnetic field having an intensity of at least 1 kilogauss to aid in providing a series of nuclear magnetization build-ups associated with said interstitial fluids within said sample as a function of time;

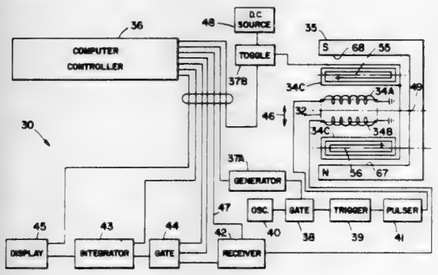
(b) RF coil means acting at right angles to said DC magnetic field;

(c) transmitter means including digital control means for generating a first series of digital control codes associated with a series of RF magnetic pulses of selected frequency, amplitude and duration, connected to said RF coil means to pro-

duce said series of RF magnetic pulses for interrogating said sample;

(d) gradient DC coil means connected to said digital control means for generating a series of DC magnetic gradient fields across said sample as a function of a second series of control pulses so as to artificially introduce a DC field inhomogeneity of D gauss across said sample;

(e) said amplitude of each pulse of (c) being controlled to be at least greater than the variation D in said DC field over of said sample;



(f) receiver means connected to said digital control means and to said RF coil means for generating aided via a third series of digital control codes associated with opening and closing of a plurality of time windows output signals proportional to said nuclear magnetic resonance response of said interstitial fluids;

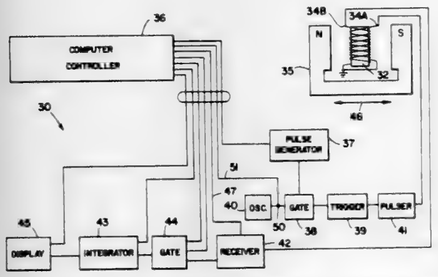
(g) said transmitter means including said digital control means being employed so that said sample can be repetitively interrogated to serially indicate nuclear magnetization relaxation without need for applying rescrambling reversing RF magnetic field pulses prior to the start of each magnetization build-up cycle.

4,412,179

COMPUTER-CONTROLLED, PORTABLE PULSED NMR INSTRUMENT AND METHOD OF USE WHEREIN THE TIMES OF RF INTERROGATION ARE DISTRIBUTED OVER AT LEAST A CYCLE AT THE NUCLEAR MAGNETIZATION PRECESSIONAL FREQUENCY

Robert J. S. Brown, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Apr. 15, 1981, Ser. No. 255,977
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—303 **17 Claims**



1. Automatic apparatus for swiftly determining flid-flow properties of a rock sample based on NMR response of hydrogen nuclei of interstitial fluids within pore spaces of said sample in which phase background jitter must be artificially introduced to increase data-throughput efficiency (DTE) comprising:

(a) magnet means for producing a DC magnetic field acting on said rock sample, said magnetic field having an intensity of at least 1 kilogauss and an inhomogeneity of at least D gauss over said sample to aid in providing a series of nuclear magnetization build-ups associated with said interstitial fluids within said sample as a function of time;

(b) RF coil means acting at right angles to said DC magnetic field;

(c) transmitter means including digital control means for generating a first series of digital control codes associated with a series of RF magnetic pulses of selected frequency, amplitude and duration, connected to said RF coil means to produce said series of RF magnetic pulses for interrogating said sample, said amplitude of each pulse being controlled to be at least greater than the variation D in said DC field over of said sample;

(d) receiver means connected to said digital control means and to said RF coil means for generating (via a second series of digital control codes associated with a plurality of time windows) output signals proportional to said nuclear magnetic resonance response of said interstitial fluids;

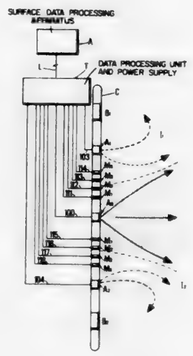
(e) said transmitter means including said digital control means having an artificially provided phasal background jitter characteristic associated wherein the times of RF interrogation are distributed over at least a cycle at the nuclear magnetization precessional frequency, so that said sample can be repetitively interrogated to serially indicate nuclear magnetization relaxation without need for applying rescrambling reversing RF magnetic field pulses prior to the start of each magnetization build-up cycle.

4,412,180

METHOD AND DEVICE WITH ADJUSTABLE FOCUSING FOR MEASURING THE ELECTRIC RESISTIVITY OF GEOLOGICAL FORMATIONS

Robert Desbrandes, Sevres, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 15, 1980, Ser. No. 178,421
Claims priority, application France, Aug. 17, 1979, 79 21030
Int. Cl.³ G01V *3/24*
U.S. Cl. 324—373 **19 Claims**



1. In a method of measuring the electrical resistivity of geological formations traversed by a borehole, comprising transmitting a main electric current into these formations from a central electrode, and transmitting focusing currents from at least two guard electrodes symmetrically located on opposite sides of the central electrode, with said central and guard electrodes being positioned in the borehole, the improvement comprising the steps of:

(a) separately and independently supplying, from a separate current source, each guard electrode with an electric current to generate an electric potential varying in a predetermined manner between the guard electrodes and the central electrode;

(b) measuring the relative values of the electrical potential of at least two separate points on respective sides of the central electrode, each of said at least two separate points being located between the central electrode and a respective guard electrode, and each of said measuring points being electrically independent from all other measuring points;

(c) independently adjusting the focusing electric current supplied to each of the guard electrodes, in response to said measured relative potential values of said at least two points between the central electrode and the respective guard electrode to obtain a voltage gradient of a zero value at a pre-selected location on each side of the central electrode to define between said pre-selected locations the geological formation whose electrical resistivity is being measured; and

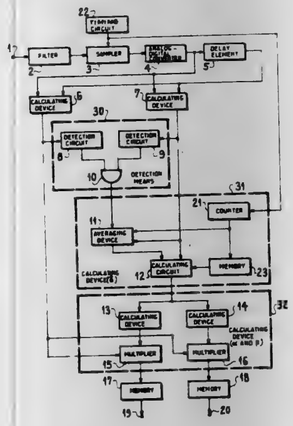
(d) processing the values of the guard electrode currents and potentials, and the central electrode current and potential, as adjusted, in a predetermined functional manner to obtain the electrical resistivity of said defined geological formation.

4,412,181

PROCESS FOR THE DEMODULATION OF AN AMPLITUDE MODULATED SIGNAL AND DEMODULATOR PERFORMING THIS PROCESS

Andre Marguinaud, and Gerard Sorton, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 27, 1981, Ser. No. 248,287
Claims priority, application France, Apr. 1, 1980, 80 07297
Int. Cl.³ H04N *5/04*
U.S. Cl. 329—50 **5 Claims**



1. A process for the demodulation of an amplitude modulated signal composed of two suppressed carriers, at a same frequency F and in phase quadrature, which are respectively modulated by two modulation signals, comprising the steps of:

determining polar coordinates (ρ_t, θ_t) of a rotating vector representing the modulated signal, at time t, by calculating:

$$\rho_t = \sqrt{y^2\left(t-\frac{1}{4F}\right)+y^2(t)}$$

$$\theta_t = arcig\frac{y(t)}{y\left(t-\frac{1}{4F}\right)}$$

where y(t) and $y(t-(1/4F)$ are values of two successive samples of the modulated signal;

calculating a value γ of the difference between the polar angle θ_t of the rotating vector representing the modulated signal and the polar angle of a rotating vector representing a reference signal at a frequency F;

calculating values α and β of the instantaneous amplitudes of the modulation signals according to the formulas:

$$\alpha=\rho_t\cos\gamma$$

$$\beta=\rho_t\sin\gamma$$

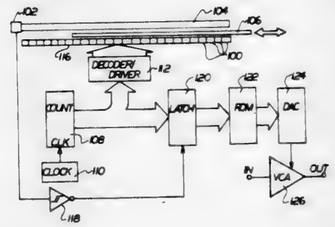
generating two signals whose instantaneous amplitudes are α and β.

4,412,182

APPARATUS FOR CONTROLLING AN OPERATIONAL CHARACTERISTIC OF A CONTROLLED DEVICE IN ACCORDANCE WITH THE POSITION OF A MOVABLE MEMBER

Billy G. Yochum, Quincy, Ill., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 9, 1981, Ser. No. 242,019
Int. Cl.³ H03F *17/00*; G01D *5/34*
U.S. Cl. 330—59 **27 Claims**



1. Apparatus comprising:

a movable member;

means for providing a first electrical signal indicating the position of said movable member; and

means responsive to said first electrical signal for providing a second electrical signal representing a value assigned to the position indicated by said first electrical signal, said second electrical signal providing means comprising a solid state memory having said assigned values stored at addressable locations therein, said memory being addressed by said first electrical signal to provide said second electrical signal in accordance with said stored assigned values,

whereby the values assigned to different positions of said movable member may be changed by changing said solid state memory or the values stored therein.

4,412,183

AC RESISTOR ATTENUATOR AND ASSOCIATED AMPLIFIER CIRCUITS

Benjamin T. Brodie, 8209 181st Pl. Edmonds, Wash. 98020

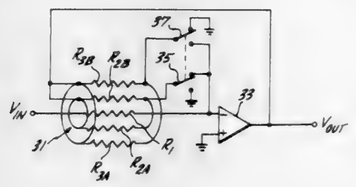
Filed Oct. 6, 1980, Ser. No. 194,137
Int. Cl.³ H03F *1/00*
U.S. Cl. 330—68 **28 Claims**

26. An AC resistor attenuator with low parasitic capacitance coupling to surrounding items and, thus, substantially constant attenuation over a relatively wide frequency range, said AC resistor attenuator comprising:

a first resistor;

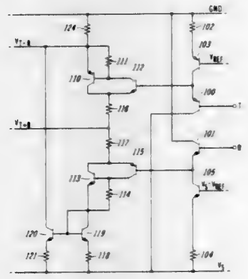
a second resistor substantially entirely surrounding said first resistor for reducing parasitic capacitance coupling to said first resistor;

said first and second resistors being thermally matched and having substantially identical resistance profiles;
electrical connecting means for connecting said first and second resistors in series;
input terminal means connected to one end of said series connected first and second resistors;
output terminal means connected to the junction between said series connected first and second resistors; and



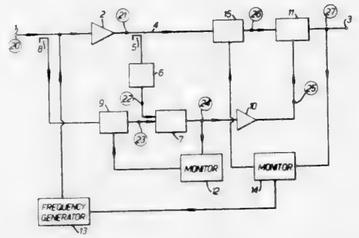
common terminal means connected to the other end of said series connected first and second resistors, wherein said first resistor comprises a first coil of elongate resistive material; said second resistor comprises a second coil of elongate resistive material having a diameter larger than the first coil of elongate resistive material; and said first and second coils of elongate resistive material are coaxially oriented.

4,412,184
PRECISION ISOLATION AMPLIFIER
Milton L. Embree, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 24, 1981, Ser. No. 295,691
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—69 **5 Claims**



1. A precision isolation amplifier circuit having a pair of input terminals (T, R) and an output terminal (V_{T+R}), for producing an output signal on said output terminal (V_{T+R}) representing the average of the input signals (V_T, V_R) appearing on said pair of input terminals (T, R) comprising:
first (**100, 102, 103**) and second (**101, 104, 105**) input means connected respectively to said first (T) and said second (R) input terminal and responsive to a first (V_T) and a second (V_R) voltage signal appearing on said first (T) and said second (R) input terminals respectively for generating a first (V_T+V_{BE100}) and a second (V_R+V_{BE101}) drive signal which respectively comprise said first voltage signal (V_T) plus a first offset signal (V_{BE100}) which is independent of said first voltage signal and said second voltage signal (V_R) plus a second offset signal (V_{BE101}) which is independent of said second voltage signal;
first (**110–112**) and second (**113–115**) up/down emitter follower means connected to said first (**100, 102, 103**) and said second (**101, 104, 105**) input means respectively for generating the inverse of said first offset signal (V_{BE100}) and said second offset signal (V_{BE101}) respectively;
wherein said first (**110–112**) and said second (**113–115**) up/-down emitter follower means are responsive to said first (V_T+V_{BE100}) and said second (V_R+V_{BE101}) drive signals respectively for combining said generated inverse first (V_{BE100}) and second (V_{BE101}) offset signals respectively with said first and said second drive signals to output said first (V_T) and said second (V_R) voltage signals respectively; and
sum means (**116, 117**) connected to both said first (**110–112**) and said second (**113–115**) up/down emitter follower means and responsive to said first (V_T) and said second (V_R) voltage signals output therefrom for generating said output signal on said output terminal (V_{T+R}) representing the average of said first (V_T) and said second (V_R) voltage signals.

4,412,185
FEEDFORWARD AMPLIFIERS
Roger E. J. Gerard, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, England
Filed Jun. 16, 1981, Ser. No. 274,214
Claims priority, application United Kingdom, Jul. 4, 1980, 8021928
Int. Cl.³ H03F *1/26*
U.S. Cl. 330—149 **12 Claims**

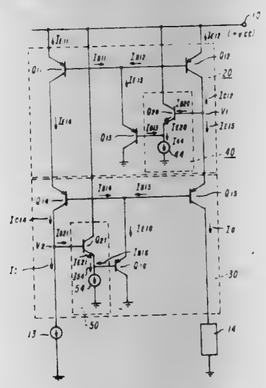


1. A feedforward amplifier including a main amplifying device coupled between an input terminal at which an input signal is received and an output terminal at which an amplified replica of the input signal is provided; comparison means for comparing a signal derived from the output of the main amplifying device with the input signal to produce a difference signal representative of distortions introduced by said main amplifying device; combiner means for combining an amplified difference signal with the output of the main amplifying device to compensate for these distortions; means for injecting a reference signal into the main amplifying device and for monitoring the amplified signal present at said output terminal; and means for adjusting the transfer characteristic of the feedforward amplifier to minimise the amplitude level of said reference signal at said output terminal.

4,412,186
CURRENT MIRROR CIRCUIT
Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan
Filed Apr. 6, 1981, Ser. No. 251,338
Claims priority, application Japan, Apr. 14, 1980, 55-49021
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—288 **2 Claims**

1. A current mirror circuit comprising:
a power supply terminal;
an input current source;
an output across a load;
a first stage including:
first, second and third transistors of a first conductivity type, each having a base, a collector and an emitter electrode,

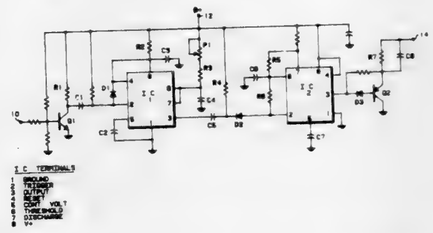
said first and second transistors having their base electrodes connected in common and their emitter electrodes connected to said power supply terminal, and said third transistor having its emitter connected in common with said base electrodes of said first and second transistors and its collector electrode connected to a reference voltage;
a fourth transistor of a second conductivity type, having a base electrode connected to said collector electrode of said second transistor, a collector electrode connected to said power supply terminal, and an emitter electrode connected to the base electrode of said third transistor;
and a current source connected to said emitter electrode of said fourth transistor;
a second stage including:
fifth, sixth and seventh transistors of said first conductivity type, each having a base, a collector and an emitter elec-



trode, said fifth and sixth transistors having their base electrodes connected in common and their emitter electrodes connected to the respective collector electrodes of said first and second transistors, the collector electrode of said fifth transistor being connected to said input current source, and the collector electrode of said sixth transistor being connected to said output, and said seventh transistor having its emitter electrode connected in common with the base electrodes of said fifth and sixth transistors and its collector electrode connected to said reference voltage;
an eighth transistor of said second conductivity type having a base electrode connected to the collector electrode of said fifth transistor, a collector electrode connected to said power supply terminal, and an emitter electrode connected to the base electrode of said seventh transistor; and
a current source connected to the emitter electrode of said seventh transistor.

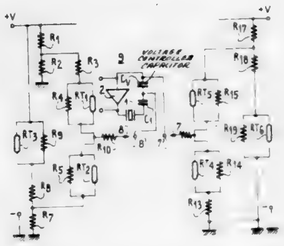
4,412,187
PHASE ADJUSTABLE HORIZONTAL OSCILLATOR FOR A DATA DISPLAY MONITOR
Donald C. Ryon, Carol Stream, Ill., assignor to Motorola, Inc., Schaumburg, Ill.
Filed May 4, 1981, Ser. No. 260,518
Int. Cl.³ H03D *1/00*; H03K *9/00*
U.S. Cl. 331—108 D **2 Claims**

1. Horizontal oscillator circuitry as for a CRT data display monitor and comprising:
input means for providing a horizontal synchronizing signal having a range of possible frequencies and including an inverting circuit, a differentiating circuit coupled to the output of the inverting circuit, and means for clipping the differentiated signal to provide a negative going spike in response to each pulse of the received signal;
an adjustable delay circuit coupled to the input means for delaying the received signal over a range of at least one horizontal line period and including a controllable delay means, means for adjusting the delay means, a differentiator coupled to the output of the delay means, and means for clipping the differentiated signal to provide a delayed negative spike in response to each pulse of the received signal;
an oscillator coupled to the delay circuit for being synchronized by the delayed signals and adapted to oscillate at a first predetermined frequency when no signal is being received, said predetermined frequency being higher than the range of possible synchronizing frequencies;



a discharge circuit coupled to the output of the oscillator for providing immediate discharge for a portion of the horizontal output circuitry of the CRT monitor and including means for disenabling the discharge during the positive portions of the oscillator output signals; and
output means for coupling the output signals of the discharge circuit to said portion of the horizontal output circuitry.

4,412,188
TEMPERATURE-COMPENSATED CRYSTAL OSCILLATOR
Jacques Helle, and Guy Caret, both of Sartrouville, France, assignors to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E., Sartrouville, France
Filed Feb. 20, 1981, Ser. No. 236,630
Claims priority, application France, Feb. 22, 1980, 80 03979
Int. Cl.³ H03B *5/36*; H03L *1/02*
U.S. Cl. 331—176 **4 Claims**



1. A crystal oscillator with frequency regulation over a wide temperature range comprising:
an oscillating circuit in the form of an amplifier, an oscillating piezoelectric crystal and a capacitor variable as a function of applied voltage; and
a two-part compensating circuit adapted for connection to the terminals of a d.c. power supply and having first and second output terminals for supplying to said capacitor a compensating signal including:
(1) a main circuit part for supplying a potential to said first output terminal and constituted by first and second elements whose electrical resistance is dependent upon temperature each connected at one end to said first output terminal, and two voltage dividers each con-

nected, respectively, to the other end of one of said first and second elements, one of said dividers including a third element whose electrical resistance is dependent upon temperature and said dividers having respective terminals for connection to a power supply; and

(2) a complementary circuit part for supplying a potential to said second output terminal including a voltage divider constituted by fourth and fifth serially connected elements whose electrical resistance is dependent upon temperature, said elements being connected to said second output terminal and at one end to each other, a first fixed resistor shunting one of said fourth and fifth elements, second and third fixed resistors respectively connected at one end to the other end of said fourth and fifth elements and having a terminal at the other end for connection to respective terminals of said power supply, said compensating signal being the difference between the voltages at said output terminals.

4,412,189

SWITCHABLE SIGNAL COMPRESSOR/SIGNAL EXPANDER

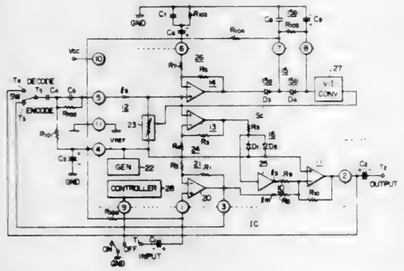
Yasuo Kominami, Kokubunji; Tetsuo Sato, Fussa, and Yuichi Ohkubo, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1981, Ser. No. 262,814

Claims priority, application Japan, May 19, 1980, 55-65382; May 19, 1980, 55-65384

Int. Cl.³ H04B *1/64*

U.S. Cl. 333—14 **13 Claims**



1. A switchable signal compressor/signal expander comprising a combining network and an inverter which are connected in series to form a main path extending between an input terminal and an output terminal; a variable filter and a signal amplifier which are connected in series to form a side path coupled to said combining network; a control amplifier and a rectifier and integrator circuit which are connected in series to control the transfer of said variable filter, an input terminal of said control amplifier being connected to receive the output of said variable filter without passing through said signal amplifier; and a mode switch connected to apply to said side path either the input signal of said combining network or the output signal of said inverter.

4,412,190

APPARATUS FOR PROCESSING CCD OUTPUT SIGNALS

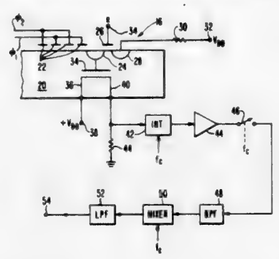
Peter A. Levine, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 5, 1981, Ser. No. 318,350

Int. Cl.³ H03H *17/00, 7/01*

U.S. Cl. 333—165 **7 Claims**

1. Apparatus for processing a sampled signal having a sampling frequency and harmonics thereof, a predominantly low frequency relative to the sampling frequency noise component, and a baseband component, said apparatus comprising a sampled integrator having an input means for receiving said sampled signal, a gate coupled to said sampled integrator, filtering means coupled to said gate for band pass filtering said sampled signal about said sampling frequency or a harmonic thereof to produce a filtered signal, and converting means for frequency



converting said filtered signal to a baseband signal; whereby the signal-to-noise ratio of said baseband signal is improved with respect to the signal-to-noise ratio of said baseband component of said sampled signal.

4,412,191

METHOD AND ARRANGEMENT FOR QUANTITATIVE POTENTIAL MEASUREMENTS ON SURFACE-WAVE FILTERS

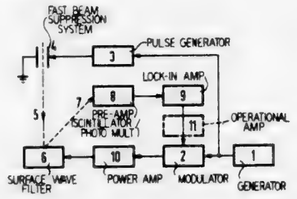
Hans P. Feuerbaum, and Gerald Tobolka, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 287,133

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1980, 3036713

Int. Cl.³ H03H *9/64, 9/00*

U.S. Cl. 333—193 **4 Claims**



1. A method for quantitative potential measurements of a surface-wave filter in which an electron beam measuring device having a scanned and pulsed electron beam makes local measurements at various regions of the surface wave filter by stroboscopically locally sampling in a short time with the pulsed electron beam an overall period of an alternating voltage at the various local regions, and by measuring secondary electron emissions from said various regions which are proportional to the respective alternating voltage at each of said regions, said electron beam measuring device having detection means for providing an alternating current signal proportional to the various secondary electron emissions, wherein the improvement comprises the steps of: providing an alternating driving voltage with an amplitude U_{Ei} connected to an input transducer of the surface-wave filter, an alternating voltage of amplitude U_P arising at each local region to be measured of the surface-wave filter; comparing the secondary electron/alternating current signal with an amplitude I_{AC} created by the stroboscopic local sampling and which arises as a result of pulses of the electron beam at each local region and comparing this signal to a nominal value which is the same for all local region measurements of the filter; and determining a deviation of I_{AC} from the nominal value and controlling the input voltage U_{Ei} driving the surface-wave filter in accordance with said deviation from the nominal value such that the amplitude U_{Ei} is adjusted for each local region being measured to maintain I_{AC} substantially constant whereby amplitudes of the voltage U_{Ei} for the various local regions of the surface wave filter may be utilized to determine surface attenuation of the surface-wave filter and as a function of a frequency of the driving alternating voltage to determine specific characteristics of the filter.

4,412,192

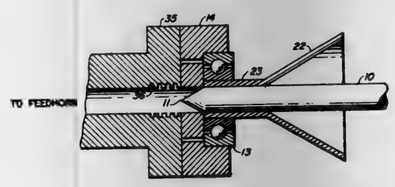
MILLIMETER WAVE DIELECTRIC WAVEGUIDE ROTARY JOINT

Donald D. Paolino, Ridgecrest, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1981, Ser. No. 292,777

Int. Cl.³ H01P *1/06*

U.S. Cl. 333—257 **16 Claims**



1. An apparatus for use as a waveguide rotary joint in a waveguide system, comprising:

a ball bearing having an inner and an outer race, whose inner race diameter will support the TE_{11}° waveguide mode at a predetermined wavelength;

a flexible dielectric waveguide having the same diameter as said ball bearing's inner face, and having first and second ends, said first end of said dielectric waveguide operably attached to said ball bearing inner race;

means for attaching said ball bearing to said waveguide system;

means for attaching said second end of said dielectric waveguide to said waveguide system.

4,412,193

RESETTABLE CIRCUIT BREAKER FOR USE IN GROUND FAULT CIRCUIT INTERRUPTERS AND THE LIKE

Wolfgang F. Bienwald, Melville, and Herbert W. Tumsaden, Jr., Floral Park, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Sep. 7, 1978, Ser. No. 940,224

Int. Cl.³ H01H *83/02, 73/06*

U.S. Cl. 335—18 **5 Claims**

1. In a resettable circuit breaker having at least one pair of normally closed contacts, first means for connecting a load to one of said contacts of said pair, second means for connecting a source of electric current to the other of said contacts of said pair, said second means including means for interrupting the connection between said current source and said other contact in response to a predetermined change in said current, and means for resetting the connection between said current source and said other contact, said resetting means including a movable member having a surface adapted to have applied to it a pressure for movement thereof, the improvement which comprises:

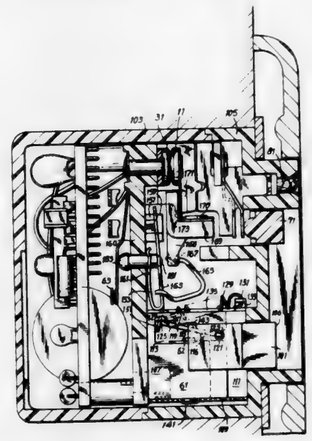
a frame having a planar central member and two spaced parallel side planar members extending transversely from opposite edges of said central member, said side planar members each having a slot, one side of each said slot having first and second laterally displaced edges and a shoulder separating said laterally displaced edges,

a support to which said frame is fixedly mounted,

an armature pivotally connected to said movable member at one end and having spaced from said pivot connection a pair of oppositely extending ears slidably disposed within said respective slots,

a coil spring connected at one end to said armature and at the other end to said frame, the axis of said spring being oblique to the direction of movement of said ears in said slot so that said spring, when tensioned, has one force component urging said ears in a direction parallel to said direction of movement and another force component urging said ears in a direction substantially transverse to said direction of movement and towards said one side of each said slot, the edge of each shoulder adjacent each second edge of each said slot providing a latching point for said ears, said coil spring urging said ears towards said latching point and said second edge when said ears are slid from said first edge to said second edge, said coil spring urging said armature in said direction of movement away from said second edge when said ears are displaced transversely from said second edge beyond said shoulder,

rocker means for supporting a first of said pair of contacts, said rocker means including a rocking member having lip means, a pivot support member fixedly mounted with respect to said base, said pivot support member having



intersecting surfaces adapted to loosely receive said lip means of said rocking member, a second support member fixedly mounted to said base and spaced from said pivot support member having a surface adapted to engage a surface of said rocking member, a spring means in engagement with said rocking member, said base and said armature, said spring means urging said rocking member against said pivot support means and being movable in response to movement of said armature to urge said rocking member to rotate into engagement with said second support member when the ears of said armature are in engagement with the first edges of said slots and to urge said rocking member to rotate away from said second support member when the ears are urged in engagement with the second edges of said slots, one of said pair of contacts being mounted on said rocking member and the other of said pair of contacts being mounted on said base, said contacts being urged into mutual engagement when said rocking member is urged away from said second support member and being urged apart when said rocking member is urged against said second support member, and

an electromagnet mounted on said frame in spaced relationship to said armature and energized in response to said predetermined change in current for transversely displacing said ears from said second edge of said slot to a posi-

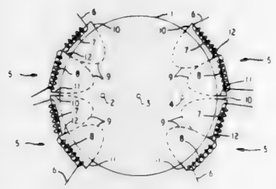
tion beyond said shoulder thereby causing said contacts to separate.

4,412,194

CONVERGENCE UNIT FOR IN-LINE COLOR CATHODE RAY TUBE

Brian D. Chase, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,399
Claims priority, application European Pat. Off., Mar. 31, 1982, 82301684.5
Int. Cl.³ H01F 7/00
U.S. Cl. 335—210 **8 Claims**



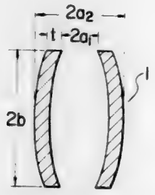
1. A convergence unit for an in-line color cathode ray tube comprising a pluraity of E-shaped cores carrying windings and located around the neck of the cathode ray tube for providing magnetic fields for shifting one or both of the outside electron beams to correct for misconvergence at the screen of the cathode ray tube, characterized in that there are four E-shaped cores, two associated with each outside electron beam each E-shaped core being arranged to provide a substantially zero magnetic field at the center electron beam and a net magnetic field at its associated outer electron beam by means of a winding or windings causing its central pole piece to be of opposite magnetic polarity to its end pole pieces.

4,412,195

SUPERCONDUCTING SOLENOID COIL

Kunishige Kuroda, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,662
Claims priority, application Japan, Apr. 17, 1981, 56-57106
Int. Cl.³ H01F 7/22
U.S. Cl. 335—216 **9 Claims**



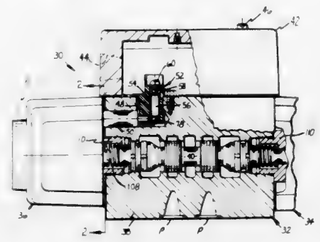
1. A superconducting solenoid coil having an inner surface portion of curved configuration in axial section, the radius of said inner surface portion being largest at the middle point of the central axis of said coil and decreasing towards the both ends of said coil, said inner surface portion making point symmetry with respect to a point on said central axis and extending over at least a part of the axial total length of said coil.

4,412,196

SOLENOID FOR DIRECTIONAL VALVES

Rainer Teichert, Plymouth, Mich., assignor to Double A Products Company, Manchester, Mich.

Filed Apr. 8, 1982, Ser. No. 366,629
Int. Cl.³ H01F 7/10
U.S. Cl. 335—250 **20 Claims**



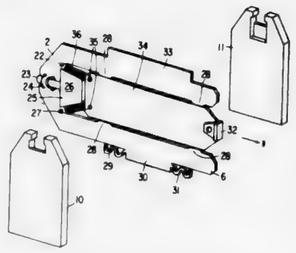
1. In a solenoid operated directional valve comprising a valve assembly and a solenoid assembly assembled together, said solenoid assembly comprising a solenoid winding which is selectively energizable to operate the directional valve, said valve assembly including a valve body and electrical means thereon via which energizing current is conducted to said solenoid winding, said electrical means including a plurality of electrical terminals arranged in a given geometric pattern and constituting a first set of terminals, the improvement which comprises a plurality of electrical terminals constituting a second set of terminals arranged on the solenoid assembly in a given geometric pattern, each terminal of said second set of terminals being connected to a corresponding point of the solenoid winding such that the solenoid winding presents different solenoid characteristics across selected ones of said second set of terminals, and electrical connector structure which is selectively positionable on the solenoid assembly for selectively connecting selected ones of said second set of terminals with said first set of electrical terminals whereby the position of said electrical connector structure on the solenoid assembly establishes the solenoid characteristics which appear at said first set of terminals.

4,412,197

ELECTROMAGNETIC RAM ACTUATOR

Armin Bohg, Weil im Schoenbuch, and Kurt Hartmann, Calw-Heumaden, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1982, Ser. No. 364,091
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1981, 3114834
Int. Cl.³ H01F 7/08
U.S. Cl. 335—256 **5 Claims**



1. An electromagnetic ram actuator comprising:

an electromagnetic, said electromagnetic further comprising:

a first symmetrical magnetizable E-shaped yoke half having pole end faces and legs;

a second symmetrical magnetizable E-shaped yoke half having pole end faces and legs whose pole ends face the pole ends of said first E-shaped yoke half to form a plurality of aligned operating gaps;

a first coil for energizing said first E-shaped yoke half extending between the legs of said first E-shaped yoke half,

a second coil for energizing said second E-shaped yoke half extending between the legs of said second E-shaped yoke half; and

a tongue-shaped ram perpendicular to said first E-shaped yoke half and said second E-shaped yoke half, said ram arranged between said operating gaps and shiftable in the direction of the line of alignment of said operating gaps, said ram further comprising:

a plurality of armature bars of magnetizable material, each of said armature bars being associated with one of said operating gaps, the size of said armature bars each being approximately equal to the size of one of said operating gaps;

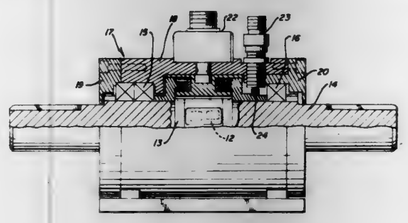
wherein said armature bars are positioned in front of said operating gaps when said electromagnet is in a non-energized state and upon energization of said electromagnet, said armature bars are pulled into said operating gaps.

4,412,198

ROTARY TRANSFORMER

Richard B. Reich, Algonquin, Ill., assignor to S. Himmelstein and Company, Hoffman Estates, Ill.

Filed Dec. 14, 1981, Ser. No. 330,078
Int. Cl.³ H01E 21/06
U.S. Cl. 336—120 **13 Claims**



1. In a rotary transformer structure having at least one annular stator support, a rotor, at least one annular rotor support on said rotor, and a pair of annular bearings journaling said rotor in said stator support at axial spaced positions, improved transformer means including an annular excitation transformer having a first stator coil and a first rotor coil, and an annular signal transformer having a second rotor coil, a pair of annular cores each having a U-shaped cross section and being formed of a magnetically permeable material, said U-shaped cross section being defined by a bight portion and a pair of leg portions extending away from the bight portion parallel to the axis of the core, said excitation transformer being disposed in one core and the signal transformer being disposed in the other core, the improvement comprising:

means for mounting said cores to at least one of said supports intermediate said spaced bearings with said bight portions in axially spaced relationship and the legs of each core extending axially away from the other core toward the bearing outboard thereof; and

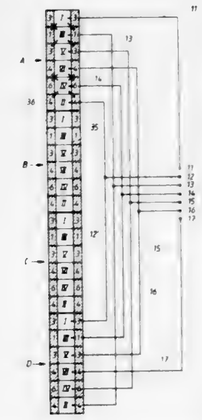
opposed permeable means extending toward each other radially intermediate said ends of the legs of the respective cores and defining small air gaps with said leg ends to cooperate with said U-ahaped cores in substantially fully permeably enclosing the transformers and defining air gaps opening axially away from the other of said pair of cores whereby cross talk between said transformers is effectively minimized notwithstanding the disposition of the transformer inboard of said spaced bearings, each pair of associated permeable means and U-shaped core being mounted for coaxial relative rotation therebetween.

4,412,199

REGULATING WINDING CONNECTED IN SERIES WITH A MAIN WINDING OF A TRANSFORMER

Adrian von Renteln, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västeras, Sweden

Filed Jun. 29, 1981, Ser. No. 278,021
Claims priority, application Sweden, Jul. 8, 1980, 8005009
Int. Cl.³ H01F 15/14, 21/12
U.S. Cl. 336—70 **4 Claims**

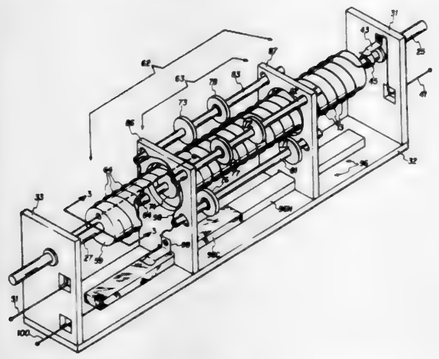


1. A regulating winding arranged in a transformer and provided with a plurality of connecting contacts, arranged at different potentials, each connecting contact representing a corresponding regulating step, said winding comprising a plurality of multi-turn, substantially helical current-carrying conductor loops, said current-carrying conductor loops being electrically insulated from each other and arranged in such a way that each one of said current-carrying conductor loops has a first end point at the one end of said winding and a second end point at the other end of said winding, a plurality of electrical connecting elements arranged to connect a plurality of said first end points to a plurality of said second end points in such a way that said helical current-carrying conductor loops are thereby series-connected with each other, each of said connecting elements being connected to a respective one of said connecting contacts, characterized in that said winding also comprises a plurality of insulated helical potential loops, each of which is arranged with at least one surface portion thereof facing an adjoining surface portion of at least one of said current-carrying conductor loops along at least part of the length thereof, each of said potential loops at one or the other end of said winding having an end point which by means of electrical connecting means, is placed in electrical connection with an end point of a corresponding current-carrying conductor loop located at the same end of the winding, whereby each potential loop has a surface portion confronting the adjacent surface portion belonging to a current-carrying conductor loop, but not to the current-carrying conductor loop which is electrically connected to that potential loop.

4,412,200
VARIABLE INDUCTOR WITH CARRIAGE FOR MULTIPLE TROLLEY WHEELS

Jack C. Thornton, Satellite Beach, Fla., and Randy G. Russell, Arlington Heights, Ill., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 1, 1982, Ser. No. 364,291
Int. Cl.³ H01F *29/06*
U.S. Cl. 336—139 **5 Claims**



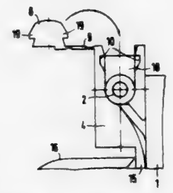
1. A variable inductor comprising:
rotatable, substantially helical coil means comprising multiple turns of electrical conductor, said multiple turns of electrical conductor having a first end and a second end;
electrically conductive contact means being situated remote from said first end;
a carriage means for being driven by and traveling along said coil means as said coil means is rotated;
said carriage means including (i) a plurality of trolley wheels and (ii) support means for holding said wheels in contact with and in a distribution around the coil means, at least one of said trolley wheels being electrically conductive and affording electrical contact with the electrical conductor;
said carriage means further including electrical connection means for electrically interconnecting said conductive wheel and said remotely situated electrically conductive contact means, said electrical connection means traveling simultaneously with the carriage means and so that as the trolley wheel travels away from the first end said electrical connection means also travels away from the first end.

4,412,201
COIL FORM AND ASSEMBLY FOR AUTOMATED MANUFACTURING OPERATIONS

Rudolf Glassauer, Oberndorfer Str. 28; Bernhard Duschl, Nussbaumstr. 35; Wilhelm Linzmeier, Tannenweg 9, and Arnold Schaffrik, Regierungstr. 545, all of 8300 Landshut, Fed. Rep. of Germany

Filed Jun. 9, 1982, Ser. No. 386,726
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125623
Int. Cl.³ H01F *15/10*
U.S. Cl. 336—192 **5 Claims**

1. A coil assembly having a winding for electric devices such as inductive reactors, motors and the like, and adapted for manufacture by automatic machinery, comprising:
a spool-like form of insulating material for receiving and supporting said winding, said form having flanges;
first means affixed to an edge of at least one of said flanges, said first means including a pocket structure having a groove elongated in a generally tangential direction, said pocket structure including a snap-in cover;
a recess enlarging said groove over a first distance from a first end of said groove thereby forming a recess having an opening through the corresponding flange with one end of said winding passing therethrough;
second means comprising a conductive sleeve member affixed adjacent to said groove first end and initially extending normally with respect to said groove direction of elongation, said sleeve member also including a conductive pin extending normal to said sleeve member, said one end of said winding connecting to said pin;
a taper producing a bending point in said sleeve member

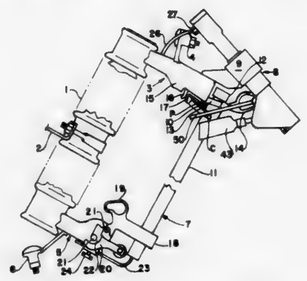


such that said member is bent into said recess thereby providing folding of the conductor of said one end of said winding into said recess;
a Litz wire affixed into the free end of said sleeve member, said Litz wire assuming a lay-in position in said groove when said sleeve member is bent into said recess;
and third means associated with the inside surface of said cover to grip said Litz wire thereby providing relief against strain from external forces applied to said Litz wire.

4,412,202
ELECTRIC CIRCUIT INTERRUPTING APPARATUS

William H. Russell, Stockbridge, and Robert D. Ball, Tucker, both of Ga., assignors to Kearney-National, Inc., Atlanta, Ga.

Filed Sep. 18, 1981, Ser. No. 303,504
Int. Cl.³ H01H *71/20*
U.S. Cl. 337—171 **10 Claims**

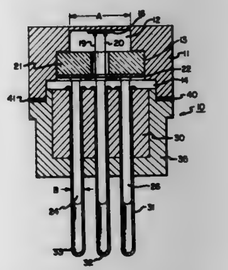


1. In combination a first electric circuit interrupter having a pair of relatively movable normally closed disconnect contacts and a fusible element disposed in a fuse holder and arranged to interrupt an overload current, and a second electric circuit interrupter having a pair of relatively movable normally closed circuit interrupting contacts arranged to interrupt load currents, said second interrupter, forming a parallel circuit to said disconnect contacts only during opening of said disconnect contacts so as to prevent arcing at said disconnect contacts during opening thereof and arranged to insure that said fuse holder will open if the disconnect contacts of the first interrupter are not engaged and latched closed following a closing operation.

4,412,203
HOUSING AND INTERCONNECTION ASSEMBLY FOR A PRESSURE TRANSDUCER

Anthony D. Kurtz, Englewood, and Joseph R. Mallon, Franklin Lakes, both of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.

Filed Sep. 10, 1981, Ser. No. 301,108
Int. Cl.³ G01L *1/22*
U.S. Cl. 338—4 **10 Claims**



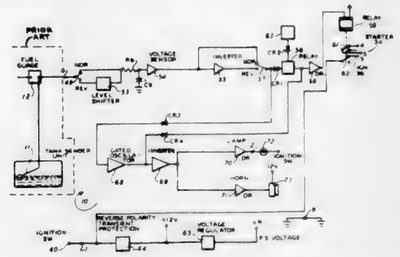
1. An electromechanical transducer housing and interconnection assembly, comprising:
(a) a first top cylindrical housing section having an internal hollow manifested by a top internal section of a given diameter, contiguous with a second concentric section of a larger diameter, with the top surface of said housing as under lying said top internal section providing a force responsive surface,
(b) an insulative annular member positioned in said hollow and within said second section with the central aperture of said annular member positioned concentrically with said housing sections, with the undersurface of said annular member metallized to provide separate contact land areas, with each area associated with and coupled to one depending conductive post relatively parallel to the main axis of said housing,
(c) a transducer assembly positioned within said hollow formed by said top section and positioned on the bottom of said force responsive surface, with sensor elements located on the opposite surface of said assembly said sensor elements having terminals with said terminals connected to wires with said wires directed through said central aperture of said annular member and coupled to an associated one of said land areas on said annular member,
(d) a second bottom cylindrical housing section having a plurality of apertures aligned with each of said conductive posts, each of said apertures containing an elongated tubular conductor member for accommodating said associated post, with said second housing secured to said top housing section with said posts and said tubular conductor members permanently affixed.

4,412,204
FUEL LEVEL MONITORING AND ENGINE CONTROL DEVICE

Warren H. Pagane, 16 Forbes Hill Rd., Wallaston, Mass. 02170

Continuation-in-part of Ser. No. 48,025, Jun. 13, 1979, and Ser. No. 63,276, Aug. 2, 1979, which is a continuation of Ser. No. 925,473, Jul. 17, 1978, abandoned. This application Sep. 18, 1981, Ser. No. 303,586
Int. Cl.³ B60Q *5/00*; G08B *21/00*
U.S. Cl. 340—59 **8 Claims**

1. A fuel level monitoring and engine control device for use with an engine having an electrical ignition system including an electrical ignition switch and power source, a starter system, a fuel supply tank and an electrically operated fuel gauge system, including a fuel sending unit and a fuel gauge interconnected electrically and to the power source, whereby a first signal voltage is generated to indicate the quantity of fuel in said fuel tank, said device serving to shut down the engine when the fuel supply in said tank reaches a predetermined low level but before said fuel supply is exhausted, said device comprising:
first circuit means including voltage sensing means connected to the junction of the fuel sending unit and the fuel gauge of said electrically operated fuel gauge system, whereby said voltage sensing means changes state when the first signal voltage reaches a predetermined value indicating the predetermined low level of fuel in said supply tank;
timing means electrically connected to the output of said voltage sensing means, for timing the elapsed period from

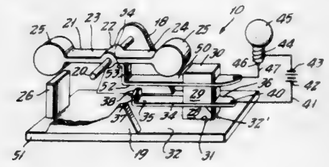


when said voltage sensing means changes state at said predetermined low level of fuel until a predetermined elapsed time has expired;
means electrically interconnected between said timing means and said electrical ignition and or said starter system, whereby said electrical ignition and or said starter system is rendered inoperative at the end of said predetermined elapsed time; and lockout circuit means electrically connected to said timing means such that for a fuel condition below said predetermined low level existing while said engine is shut down, when said electrical ignition switch is closed, said timing means responds electrically such that said electrical ignition and or starter is rendered inoperative.

4,412,205
SWITCH CONSTRUCTION RESPONSIVE TO MOTIONS OF A WEARER

Miklos Von Kemenczky, Greenville, N.J., assignor to Guilden Development Corp., N.J.

Filed Aug. 24, 1981, Ser. No. 295,841
Int. Cl.³ G08B *5/00*; F21L *15/08*
U.S. Cl. 340—331 **15 Claims**



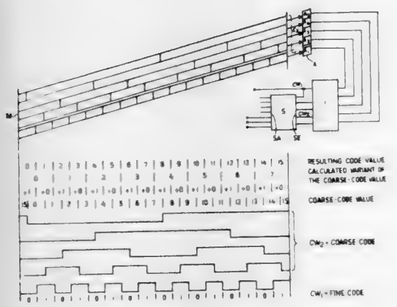
1. An improved switch construction responsive to the motions of a wearer comprising: a relatively fixed base adapted to be secured to desired portions of the clothing of the wearer in relatively fixed relation thereto; a substantially balanced mass mounted for pivotal movement upon said base about an axis; means for limiting said pivotal movement of said mass in at least a first angular direction; a pair of electrical contact means, at least one of which lies in the path of pivotal movement of

said mass in at least one angular direction; and a source of electromotive force and an illumination means connected in series with said contact means; whereby said contact means will be closed to illuminate said illumination means only upon the occurrence of angular acceleration of said balanced mass in said at least one angular direction.

4,412,206
DIGITAL ELECTRICAL LENGTH OR ANGLE MEASURING DEVICE

Ernst Schwefel, Traunreut, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,276
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938318
Int. Cl.³ H03K *13/18*
U.S. Cl. 340—347 P **7 Claims**



1. Digital electrical measuring device, particularly an absolute measuring device with means for scanning at least one value representation with code groups of different resolutions and with means for adding unambiguously higher resolution code groups to coarser resolution code groups, wherein the improvement comprises means for connecting digitalized scanning signals (code values CW) of at least one coarser resolution code group (C_2–C_n) to first addressing inputs (SE) of at least one fixed value storage (S) containing integral, non-rounded off, binary-stored calculated variants of such digitalized signals (CW) in tabular form; and means for alternately connecting such variants of the digitalized signals (CW) to outputs (SA) of said storage (S), in dependence upon the logical state of a control signal which is derived from the respective higher resolution code groups (C_1) and which is connected to a second addressing input (SE) of said storage (S), said variants including $(CW+1)/2$ for preceding signals and $(CW+0)/2=CW/2$ for non-preceding signals when the resolution of a higher resolution code group is double the resolution of a coarser resolution code group so that the calculated variants are dependent on a function of the resolution of the code groups, whereby a resolution of N-2 bits is achieved when a coarse resolution code is interconnected with an intermediate resolution code and a fine resolution code.

4,412,207
DIGITAL INDUCTION LOGGING TOOL INCLUDING A FLOATING POINT A/D

Paul L. Sinclair, Houston, Tex., assignor to Schlumberger Technical Corporation, Houston, Tex.

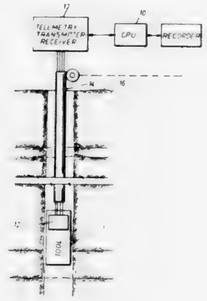
Filed Jun. 8, 1981, Ser. No. 271,279
Int. Cl.³ H03 *13/20*
U.S. Cl. 340—347 AD **24 Claims**

1. A floating point analog-to-digital convertor for converting an input analog signal into floating point digital signals, each digital signal having a digital code representative of the exponent of a floating point number and a digital code representative of its magnitude, the convertor comprising:

(a) a voltage-to-frequency convertor for generating a digital clocking signal having a frequency proportional to the magnitude of the input analog signal;

(b) a comparator for generating a count direction control signal according to the instantaneous polarity of the analog input signal;

(c) an up-down counter responsive to the count direction control signal for counting up or counting down in response to clock pulses generating means of the digital clocking signal during a predetermined time period;



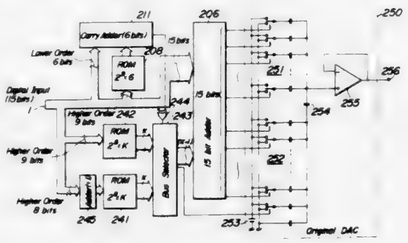
(d) a shift register having a bit position for each bit of said up-down counter and responsive to shift pulses for storing and shifting at the end of each predetermined time period the count from said up/down counter one bit position for each shift pulse in a direction to obtain a predetermined magnitude for the count contained in a predetermined sub-set number of output bits of said shift register, the set of bits having a sign bit and a most significant bit (MSB), the sub-set of shift register output bits forming the magnitude of the floating point digital sample; and

(e) a shift pulse counter for counting the number of shift pulses applied to said shift register, the count in said shift pulse counter forming the exponent of the floating point digital signal.

4,412,208
DIGITAL TO ANALOG CONVERTER

Yukio Akazawa, Iruma; Yasuyuki Matsuya, Tokyo, and Atsushi Iwata, Tokorozawa, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 3, 1981, Ser. No. 299,120
Claims priority, application Japan, Sep. 16, 1980, 55-127239; Jul. 13, 1981, 56-108135; Jul. 13, 1981, 56-108137
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 DA **4 Claims**



1. A digital to analog converter for converting a digital input signal to an analog output signal comprising:

a first digital to analog converter for generating an output of higher order bits, said first digital to analog converter including a first capacitor array having capacitors arranged with binary weighting corresponding to a train of higher order bits of said digital input signal and a first analog switch array having analog switches for selectively connecting one terminal of each of said capacitors of said first capacitor array to a reference voltage or ground;

a second digital to analog converter for generating a full scale output as an output signal of lower order bits which is always larger than every quantizing level of said first digital to analog converter, said second digital to analog converter including a second capacitor array having capacitors arranged with binary weighting corresponding to a train of lower order bits of said digital input signal and a second analog switch array having analog switches for selectively connecting one terminal of each of said capacitors of said capacitor array to said reference voltage or ground, the other terminals of said capacitors in said first capacitor array being connected in common to an output point of said first digital to analog converter and the other terminals of said capacitors in said second capacitor array being connected in common to an output point of said second digital to analog converter;

a coupling capacitor coupling the output points of said first and second digital to analog converters, the equivalent capacitance formed by said second digital to analog converter and said coupling capacitor across the output point of said first digital to analog converter being larger than the unit capacitance of said first digital to analog converter;

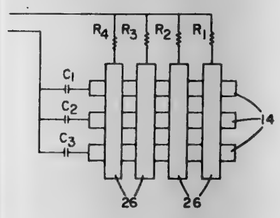
output means having its input coupled to the output point of said first digital to analog converter for generating at its output said analog output signal; and

a code converter for applying to said first and second digital to analog converters an input code obtained by shifting said digital input signal by a predetermined value such that the relationship between said digital input signal and said analog output signal is substantially linear.

4,412,209
RC ARRAY

Norman J. Frame, Whitefish Bay; James P. Walber, Cedar Grove, and Jan M. Janick, Brookfield, all of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Nov. 20, 1981, Ser. No. 323,281
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 C **12 Claims**



1. An assembly of switches, comprising

a plurality of switch elements each including first and second electrical contacts,

a plurality of capacitors each having a different capacitance value and each having first and second electrical connections,

a plurality of resistors each having a different resistance value and each having first and second electrical connections,

a plurality of first conductors forming an electrical connection between said first capacitor connections and said first switch contacts,

a plurality of second conductors forming an electrical connection between said first resistor connections and said second switch contacts,

a first electrical lead connecting all of said second capacitor connections, for supplying a first electrical connection to external detection circuitry, and

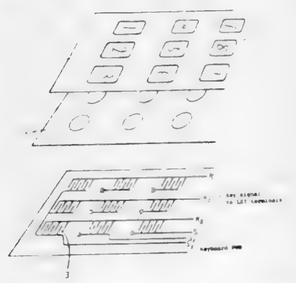
a second electrical lead connecting all of said second resistor connections, for supplying a second electrical connection to external detection circuitry,

whereby said external detection circuitry is connected to a different combination of resistance and capacitance for each of said plurality of switch elements, thereby allowing said circuitry to distinguish which of said switch elements has been activated.

4,412,210
ELECTRONIC CALCULATOR WITH ACOUSTIC CONFIRMATION OF KEY ACTUATION AND ACOUSTICAL ALARMS

Isamu Washizuka, Soraku, and Shintaro Hashimoto, Shiki, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 845,977, Oct. 27, 1977, abandoned. This application Jul. 16, 1981, Ser. No. 283,978
Claims priority, application Japan, Nov. 1, 1976, 51-147436[U]
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 S **2 Claims**



1. An electronic data processor apparatus including a substantially flat keyboard, said data processor being capable of audibly confirming whether any key on said substantially flat keyboard has been actuated, thereby introducing an input into said electronic data processor apparatus, said electronic data processor apparatus further comprising:

a substantially flat keyboard means responsive to the actuation of the keys on said keyboard for introducing inputs into said data processor apparatus, said substantially flat keyboard means including a predetermined number of keys grouped in respective key working areas which lie substantially in a plane, said keys on said keyboard capable of being actuated by depression of each of said keys through a substantially miniscule key stroke distance;

a processor unit means including a processor circuit means for performing an operation on said inputs, said processor unit means including a signal generator means for generating a plurality of key strobe signals, said key strobe signals being input to each of said keys on said substantially flat keyboard means, said respective keys which receive said key strobe signals passing said respective key strobe signals to said processor unit means in response to actuation of said respective keys, said processor unit means further generating a sound instruction signal indicative of the actuation of said respective keys and of the introduction of said inputs into said data processor apparatus, said sound instruction signal being generated in accordance with the receipt of said respective key strobe signals; and

means resposive to said sound instruction signal for generating an acoustic sound in accordance with said sound in-

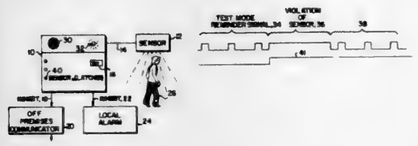
struction signal, thereby confirming audibly whether any key on said substantially flat keyboard means has been actually actuated and whether said inputs introduced in response to said actuation.

4,412,211

SYSTEM FOR TEST SEQUENCE ANNUNCIATION

William J. Lautzenheiser, North Billerica, Mass.; Richard A. Simonetti, Baldwin Harbor, N.Y.; Martin E. Henderson, Wayland, Mass.; James B. Edson, Concord, Mass., and Kenneth E. Beeson, Waltham, Mass., assignors to American District Telegraph Co., New York, N.Y.

Filed Aug. 28, 1981, Ser. No. 297,330
Int. Cl.³ G08B *29/00*
U.S. Cl. 340—514 **13 Claims**



1. A system for alerting the user of a security system to the placing of the security system in a walk test mode and the results of performing tests on the system comprising:

means responsive to said security system being placed in a walk test mode involving an individual moving from one local walk test location to another within a predetermined area of the security system to be tested for providing a first distinctive audible or visible test mode reminder signal throughout said predetermined area, said first signal being provided in such a manner that said first signal will be detected at a local walk test location by the individual performing the walk test; and

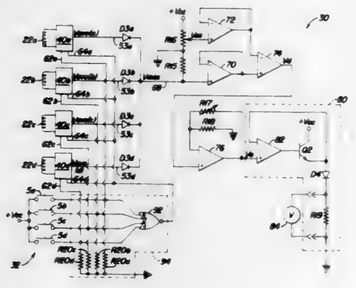
means for changing said first signal to a different distinctive audible or visible signal throughout said predetermined area in such a manner that said different signal will be detected at a local walk test location by the individual performing the walk test, said different signal being provided responsive to said security system responding in a predetermined manner to the walk testing of said security system at local walk test locations.

4,412,212

SHEARBAR CLEARANCE DETECTOR

Kenneth J. Kolegraff, and David T. Allen, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 10, 1981, Ser. No. 291,589
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—684 **10 Claims**



1. In a cutting machine having a shearbar and a plurality of blades movable with respect to the shearbar to cut material inserted therebetween, a clearance monitor for monitoring clearance between the blades and the shearbar, comprising:

a proximity sensor fixed with respect to the shearbar for sequentially generating a plurality of proximity signals, each proximity signal varying as a function of velocity and separation of the one of the plurality of blades with respect to the shearbar;

an integrator coupled to receive the plurality of proximity signals, the integrator converting each proximity signal to a gap signal having a magnitude representing a minimum separation between the sensor and the corresponding blade, the magnitude of the gap signal being substantially independent of blade velocity;

an averaging circuit coupled to sequentially receive the gap signals and generating an average gap signal representing an average over time of the minimum separations between the sensor and the plurality of blades;

means for generating an offset signal having a desired magnitude;

differential amplifier means for generating a difference signal representing a difference between the offset and the average gap signal;

variable amplifier means for generating an output signal obtained by multiplying the difference signal by a predetermined gain factor;

display means for generating an operator-detectable signal representing the output signal; and

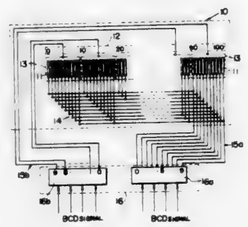
adjustable means for varying the magnitudes of the offset signal and the gain factor.

4,412,213

DRIVING CIRCUIT FOR A FLUORESCENT DISPLAY APPARATUS HAVING FEWER LEADS

Takao Kishino; Toshihiro Yamaguchi, and Kazunori Tanaka, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan.

Division of Ser. No. 98,690, Nov. 29, 1979, Pat. No. 4,325,064. This application Nov. 12, 1981, Ser. No. 320,527
Claims priority, application Japan, Nov. 30, 1978, 53-163766
Int. Cl.³ G09G *3/12*
U.S. Cl. 340—753 **1 Claim**



1. A fluorescent display apparatus comprising:

a vacuum casing made up of a substrate and a front cover airtightly bonded together;

a plurality of anodes each coated with a phosphor layer on the upper surfaces thereof and disposed on said substrate;

said anodes being divided into consecutive several groups so as to include a certain number of anodes in each of said anode groups;

each of said anodes disposed in corresponding positions of said respective anode groups being connected together in parallel;

a plurality of control electrodes each provided in an opposite relationship with respect to said respective anode groups;

a filamentary cathode stretched above said control electrodes for emitting thermions when energized and heated;

a first decoder means for decoding the least significant digit of an input signal and for driving a plurality of anodes having corresponding positions in said respective anode groups with a continuous signal; and

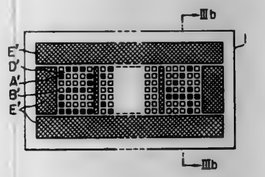
a second decoder means for decoding at least one more significant digit of said input signal and for driving one of said control electrodes with a continuous signal, whereby one of said anodes selected by said first and second decoders representing the value of said input signal is illuminated and said fluorescent display apparatus is substantially noise-free.

4,412,214

LIQUID CRYSTAL DISPLAY ELEMENT HAVING NON-DISPLAY ELECTRODE ARRANGEMENT

Hironari Tanaka; Tadashi Ishibashi, and Masaharu Koyama, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 12, 1981, Ser. No. 273,036
Claims priority, application Japan, Jun. 16, 1980, 55-80204
Int. Cl.³ G09G *3/36*
U.S. Cl. 340—765 **11 Claims**



1. A liquid crystal display element comprising:

(a) opposite upper and lower substrates having a longitudinal direction and a direction transverse thereto;

(b) a liquid crystal sandwiched between inner surfaces of said upper and lower substrates;

(c) a set of plural separated and adjacent pattern display sections, each of said display sections having a first upper electrode arrangement including a plurality of electrodes and a first lower electrode arrangement including at least one electrode, said first upper electrode arrangement being disposed on the inner surface of said upper substrate and said first lower electrode arrangement being disposed on the inner surface of said lower substrate, said first upper and lower electrode arrangement being configured so that superposing portions thereof selectively provide a plurality of predetermined display patterns, said first upper and lower electrode arrangements being adapted to be selectively applied therebetween with a selective voltage which excites the liquid crystal and a non-selective voltage which is lower than said selective voltage;

(d) a background non-display area delimited by an area around said display sections, said background non-display area including first regions at opposite first sides of said set of display sections in the longitudinal direction of each of said upper and lower substrates, second regions at opposite second sides of said set of display sections in the transverse direction of each of said upper and lower substrates, and third regions between the adjacent display sections, a second upper electrode arrangement disposed on the inner surface of said upper substrate in said background non-display area, a second lower electrode arrangement disposed on the inner surface of said lower substrate in said background non-display area, said second upper and lower electrode arrangements having superposing portions thereof at least partially covering said background non-display area, said second upper and lower electrode arrangements being adapted to be always applied therebetween with said non-selective voltage, at least the portions of said second upper electrode arrangement disposed in said second region of said background non-display area being electrically interconnected with each other and electrically isolated from said first upper electrode arrangement, and at least the portions of said second lower electrode arrangement disposed in said first and third regions of said background non-display area being electrically interconnected with each other and electrically isolated from said first lower electrode arrangement; and

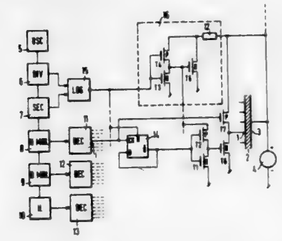
(e) the voltage applying means for selectively applying said selective and non-selective voltages between said first upper and lower electrode arrangements in accordance with a pattern to be displayed and for always applying said non-selective voltage between said second upper and lower electrode arrangements irrespective of the pattern to be displayed.

4,412,215

NOVEL CONTROL MEANS FOR AN ELECTROCHROMIC DISPLAY

Hubert Portmann, Colombier, Switzerland, assignor to Ebauches, S.A., Switzerland

Continuation of Ser. No. 119,140, Feb. 5, 1980. This application Mar. 11, 1982, Ser. No. 357,298
Claims priority, application Switzerland, Feb. 16, 1979, 1535/79
Int. Cl.³ G09G *3/34*
U.S. Cl. 340—785 **2 Claims**



1. Apparatus for controlling an electrochromic display cell having a plurality of electrode segments spaced from a counter-electrode by an electrolyte and disposed for representing different symbols according to those segments which are set in a colored state or in an bleached state by application of a current in one direction or in the other between the segments and counter-electrode, said apparatus comprising:

power supply means having a first and a second terminal, said counter-electrode being directly connected to said second terminal;

control means comprising a plurality of terminals corresponding each to one of said segments and providing each a control signal having a first state when said one segment is to be colored and a second state when said one segment is to be bleached;

means for producing a control pulse whenever at least either one of said segments is to be colored;

generator means responsive to said control pulse for producing a bias voltage pulse;

a plurality of individual supply circuit means connected each between one of said control means terminals and the corresponding segment and comprising each a first field-effect transistor whose source is connected to said first power supply terminal, whose drain is connected to said corresponding segment, and whose channel-width is substantially proportional to the area of said corresponding segment, a switching circuit responsive to said control pulse and to said first state of said control signal for applying said bias voltage pulse to the gate of said first transistor, whereby said first transistor applies a constant current pulse between said corresponding segment and said counter-electrode whenever said corresponding segment is to be set in one of its colored or bleached states, said supply circuit means further comprising a second field-effect transistor whose source is connected to said counter-elec-

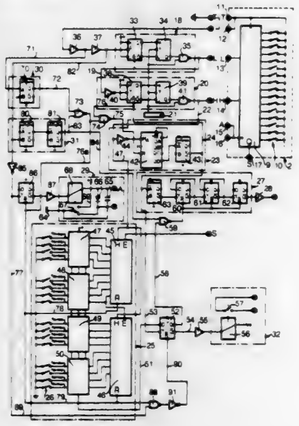
trode, whose drain is also connected to said corresponding segment and whose gate is connected to said one of said control means terminals, whereby said second transistor is responsive to said second state of said control signal for short-circuiting said corresponding segment with said counter-electrode whenever said corresponding segment is to be set in the other of its states.

4,412,216

SYSTEM FOR IDENTIFYING, FOR EXAMPLE, A PERSON FOR OPERATING AN ELECTRICAL APPLIANCE, A MECHANICAL APPLIANCE OR ANY OTHER APPLIANCE

Alain M. L. Mole, Avenue Ambroise Croissat 38400, Saint Martin d'Heres, and Jean-Louis P. J. Savoyet, La Mayrie 38770, La Motte d'Aveillans, both of France

Filed Apr. 3, 1981, Ser. No. 250,564
Claims priority, application France, Apr. 3, 1980, 80 07570
Int. Cl.³ H04Q *3/00*; E05B *49/00*
U.S. Cl. 340—825.31 **23 Claims**



1. A security system for enabling or preventing operation of an electrical, mechanical or other appliance, including in combination:

a portable key member comprising

an energizable bus, normally de-energized,

a parallel-to-serial shift register having a series of flip-flop means sequentially connected with each other, each said flip-flop means being either connected to or not connected to said bus according to a key code, so that, when said shift register is energized, the status of the series of connections and non-connections between said bus and said flip-flop means defines an identification code memorized within said portable key member, but, until such energization, said status constitutes a preprogrammed passive-type memory,

a fixed lock member secured to said appliance and controlling its operation, normally preventing such operation. While permitting it when unlocked, and comprising

key-receiving means for coupling with said key member,

electric power supply means for energizing said first shift register upon coupling with said key member,

single pulse loading means powered by said electric power supply means for supplying a single pulse to said shift register upon coupling of said key member and said lock member to cause thereby each of said flip-flop means to take a status depending upon the status of its said corresponding individual connection or non-connection to said bus and to load said identification code into said shift register,

electronic means for serially receiving the contents of said shift register after actuation thereof by said loading means, and

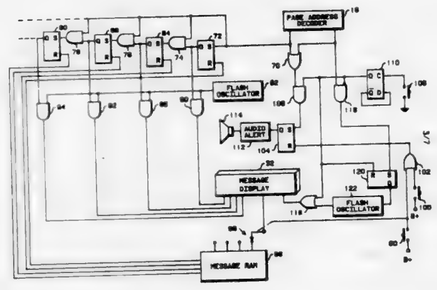
comparison means for comparing said identification with a code memorized into said lock, and for unlocking said lock member if they coincide.

4,412,217

PAGER WITH VISIBLE DISPLAY INDICATING STATUS OF MEMORY

David F. Willard, Plantation, and Gerald W. Tidwell, Sunrise, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1981, Ser. No. 306,800
Int. Cl.³ H04B *5/04*; H04M *11/00*; H04Q *9/00*
U.S. Cl. 340—825.44 **12 Claims**



1. In a pager, a method of indicating a number of received pages comprising the steps of:

incrementing a register when a page is received; and

displaying a count from the register, which count is a measure of the number of received pages.

4,412,218

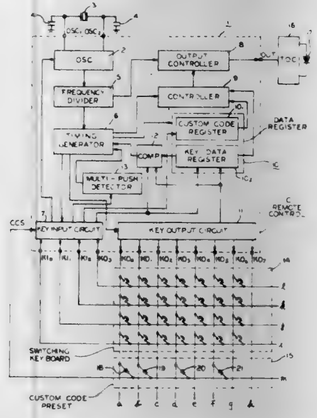
REMOTE CONTROL SIGNAL TRANSMITTER CAPABLE OF SETTING CUSTOM CODES INDIVIDUALLY ALLOTED TO A PLURALITY OF CONTROLLED INSTRUMENTS

Shigeo Niitsu, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 17, 1981, Ser. No. 234,507
Claims priority, application Japan, Feb. 26, 1980, 55-23166
Int. Cl.³ H04Q *9/00*
U.S. Cl. 340—825.56 **5 Claims**

1. A transmitter comprising generating means for generating cyclically recurring scan signals, scan signal output terminals through which said respective scan signals are output, a key matrix circuit means having a plurality of column lines and a plurality of row lines connected to said respective scan signal output terminals, key input terminals connected to said respective column lines, a custom code selection terminal, custom code designation means for selectively connecting said scan signal output terminals to said custom code selection terminal

in accordance with a custom code corresponding to an identity of an instrument to be controlled, and output means for outputting a custom code derived from said custom code selection terminal and key data derived from said key matrix circuit.

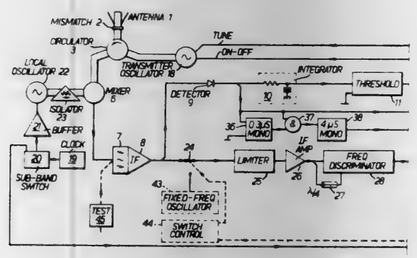


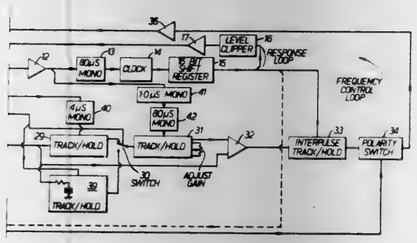
4,412,219

SECONDARY RADAR RESPONDERS

John N. Briggs, Kirby Muxloe, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Dec. 31, 1980, Ser. No. 221,732
Claims priority, application United Kingdom, Jan. 19, 1980, 8001833
Int. Cl.³ G01S *13/80*
U.S. Cl. 343—6.8 R **18 Claims**





1. A secondary radar responder including means for receiving an interrogation pulsed radar signal, a transmitter for transmitting a pulsed response thereto in response to a received single pulse of said interrogation signal, means for monitoring the difference in frequency between said received single pulse and said transmitted response, and means for modifying the frequency of the transmitted response during transmission so as to reduce the difference, wherein said monitoring means comprise storage means for storing a signal representative of the frequency of said single pulse of said interrogation signal, and means for comparing a signal representative of the frequency of the transmitted response with the stored signal whereby the result of said comparison is used to modify the frequency of the transmitted response.

4,412,220

DIGITAL SCAN CONVERTER

Jan Aanstoot, Enter, and Bernard H. M. Oude Elberink, Oldenzaal, both of Netherlands, assignors to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Apr. 6, 1981, Ser. No. 251,675
Claims priority, application Netherlands, Apr. 14, 1980, 8002171
Int. Cl.³ G01S *7/44*
U.S. Cl. 343—55 C **4 Claims**

1. Digital scan converter for a pulse radar apparatus provided with: a random-access memory (1), each cell of which containing brightness data; a circuit (3) connected to the memory (1) for reading out the brightness data and for presenting corresponding video signals on a raster scan display (2) at positions corresponding with the respective cells; a control unit (15) for supplying persistence data and address information to process the persistence data; switching means (17) for passing either radar video signals or the persistence data; and a logical unit (7) for supplying, in response to the radar video signals and the persistence data, respectively, and to the brightness data stored in memory (1), new brightness data overwriting that stored in memory (1), whereby the memory positions are determined by an address conversion circuit (10) which converts the radar video addresses and the persistence data addresses established in polar coordinates by the pulse radar apparatus and the control unit (15), respectively, into addresses expressed in Cartesian cordinates, characterised in that, to renew the stored brightness data, either simultaneously with a radar scan or between the generation of two successive radar scans, synchronously with a radar scan in obtaining a desired persistence on the raster scan display (2), the digital scan converter is provided with: a control code circuit (21) for supplying, in response to signals form the control unit (15) determining the conditions for and the frequency of the persistence data processing, a signal to indicate that only a radar scan must be presented on the display, a signal to indicate that simultaneously and in the same sequence therewith persistence data must be processed, or a signal to indicate that only persistence data must be processed in the same sequence as a radar scan; and a control code register (19) in which the signals supplied via the switching means (17) are supplemented with the output signals of the control code circuit (21).

4,412,221

ANTENNA SYSTEM FOR AIRBORNE TRANSCEIVER PROVIDING QUASI CONTINUOUS RECEPTION AND TRANSMISSION FREE FROM SHADOWING BY AIRCRAFT STRUCTURE

Brian P. Stapleton, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

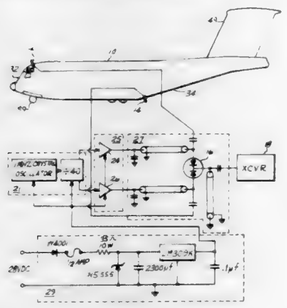
Filed Jul. 28, 1978, Ser. No. 928,926
Int. Cl.³ H01Q *1/28*
U.S. Cl. 343—705 **1 Claim**

1. An aircraft antenna system utilizing high frequency lobe switching between antennas for providing hemispherical coverage and reducing shadowing including:

a first one quarter wavelength blade antenna disposed on the top centerline of the fuselage of an aircraft for providing forward coverage below the horizon;

a second one quarter wavelength blade antenna disposed on the bottom centerline of the fuselage of an aircraft for providing aft coverage above the horizon; and

a switching circuit coupled between said first one quarter wavelength blade antenna and said second one quarter wavelength blade antenna and adapted for coupling to utilization means, said switching circuit including a solid state lobing switch for alternating between said first one quarter wavelength blade antenna and said second one quarter wavelength blade antenna;



wherein said lobing switch is operative at a frequency exceeding that required to satisfy the Nyquist criteria for information transmitted and received by the antenna system, the operating frequency of said lobing switch exceeding 6 KHz; and,

wherein the operating frequency of said lobing switch is 25 KHz.

4,412,222

DUAL POLARIZED FEED WITH FEED HORN

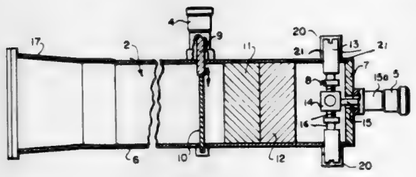
Günter Möhring, Langenhagen, Fed. Rep. of Germany, assignor to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft AG, Hanover, Fed. Rep. of Germany

Filed Jul. 2, 1981, Ser. No. 280,712

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027497

Int. Cl.³ H01Q *13/02, 19/13*

U.S. Cl. 343—779 **14 Claims**



1. In a dual polarized feed having a feed horn for the separation of two linearly polarized electromagnetic waves for the irradiation of a directional antenna with a parabolic reflector, and comprising a circular tube length which is closed by a short-circuit plate on the side thereof facing away from the reflector and on the side facing the reflector has the feed horn with an aperture which widens in the direction towards the reflector, and two feeder lines which conduct the electromagnetic waves are separately connected to the tube length in such a manner that they lie in one plane one behind the other with respect to the reflector, the improvement wherein

each of the feeder nes being formed as a high frequency coaxial cable comprising an inner conductor and a concentric outer conductor and a dielectric separating said outer conductor from the inner conductor,

an inductive sensor being disposed at the short-circuit plate, the latter being disposed at an end side of the tube length, one of said coaxial cables is connected to said inductive sensor, said one coaxial cable at a connection place is operatively connected in the axial direction of the tube length to the latter,

a capacitive sensor being connected to the other of said coaxial cables, said other coaxial cable is operatively connected radially to the tube length at another connection place,

a flat short-circuit plate extending from wall to wall of the tube length is arranged between the said connection places of said two coaxial cables.

4,412,223

ANTENNA ARRAY WITH ELEMENT ISOLATION IN THE COUPLING NETWORK

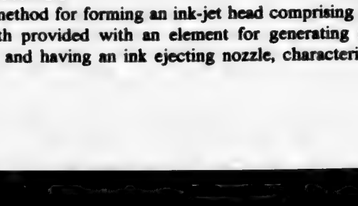
Werner Kautz, Korntal, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jul. 10, 1981, Ser. No. 282,320

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1980, 3027451

Int. Cl.³ H01Q *21/06*

U.S. Cl. 343—844 **6 Claims**



1. In an antenna array including a plurality of individual antenna elements each activated by an antenna switching device and a plurality of RF lines each connecting a different one of said plurality of antenna elements to said switching device, an improvement comprising:

a plurality of reciprocal power dividers to isolate adjacent ones of said plurality of antenna elements from each other, each of said plurality of power dividers being associated with a different one of said plurality of antenna elements and disposed in an associated one of said plurality of RF lines, each of said plurality of dividers having four terminals, a first of said four terminals being connected to said antenna switching device, a second of said four terminals being connected to an associated one of said plurality of antenna elements, a third of said four terminals being connected to one of said plurality of power dividers associated with a first adjacent one of said plurality of antenna elements and a fourth of said four terminals being connected to another of said plurality of power dividers associated with a second adjacent one of said plurality of antenna elements.

4,412,224

METHOD OF FORMING AN INK-JET HEAD

Hiroshi Sugitani, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

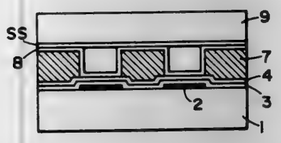
Filed Nov. 30, 1981, Ser. No. 325,822

Claims priority, application Japan, Dec. 18, 1980, 55-180202

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **5 Claims**

1. A method for forming an ink-jet head comprising an ink flow path provided with an element for generating ink-jet pressure and having an ink ejecting nozzle, characterized in that said ink flow path and the nozzle are formed by a technique of "photo-forming" directly on a substrate having previously disposed thereon the element for generating ink-jet pressure.



4,412,225

METHOD FOR COLOR REPRESENTATION USING COLORED INK DOTS

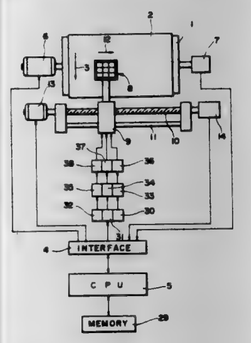
Kazutaka Yoshida, and Hideo Horiuchi, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 8, 1982, Ser. No. 346,908

Claims priority, application Japan, Feb. 6, 1981, 56-15655

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **8 Claims**



1. A method for representing a complex color wherein a plurality of different color ink drops are deposited on a dot matrix, said method comprising:

providing a mean-value color mixture of a complex color to be represented in low and middle density so as to deposit at least two kinds of different color ink drops on a dot matrix in such a way as to permit a single ink drop to be disposed in each of the greater part of the cells of the dot matrix; and

applying a subtractive color mixture to a complex color to be represented in high density so as to deposit at least two kinds of different color ink drops on a dot matrix in such a way as to permit at least two kinds of ink drops to be superimposed in each of the greater part of the cells of the dot matrix.

4,412,226

INK-JET PRINTING METHOD

Kazutaka Yoshida, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

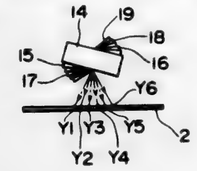
Filed Feb. 8, 1982, Ser. No. 346,909

Claims priority, application Japan, Feb. 6, 1981, 56-15657

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—1.1 **5 Claims**

1. In a method for painting images with ink dots deposited on a recording medium by a plurality of ink-jet heads disposed close to said recording medium, wherein said recording medium moves in a primary scanning direction and said plurality of ink-jet heads move intermittently in a secondary scanning direction perpendicular to the primary scanning direction; the improvement comprising providing ink-jet heads equal in number to the least common multiple of arbitrary integers m and n; arranging said ink-jet heads in such manner that ink dots are deposited with separation by a distance equal to the size of



a single cell of a dot matrix used in the secondary scanning direction; and dividing said ink-jet heads into a plurality of sub-groups of ink-jet heads, each sub-group containing a number of heads equal to a whole number factor of the number of possible dots in a said matrix, said whole number factor being greater than one.

4,412,227

THERMAL HEAD

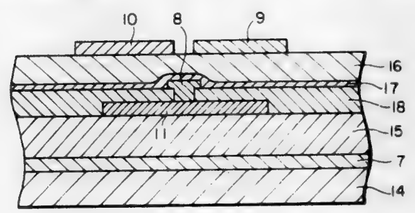
Toshihisa Hamano, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,823

Claims priority, application Japan, Jun. 10, 1981, 56-88043

Int. Cl.³ G01D *15/10*

U.S. Cl. 346—76 PH **4 Claims**



1. A thermal head having reading and thermal printing sections, comprising;

electrode (7) connected to a heat generating resistor driving power line (7') formed on a substrate (14):

a photo-conductive layer (15) formed on said electrode;

photo-sensor electrode means (11) formed on said photo-conductive layer;

a gate electrode (8) connected to said photo-sensor electrode means;

thin film transistor (TFT) semiconductor means (16) formed, through a gate insulating film (17), on said gate electrode;

a source electrode formed on said thin film transistor semiconductor and connected to said power line (7') for driving a heat generating resistor (12);

a drain electrode (10) formed on said thin film transistor semiconductor so as to be isolated from said source electrode, said drain electrode being connected to said heat generating resistor (12); and

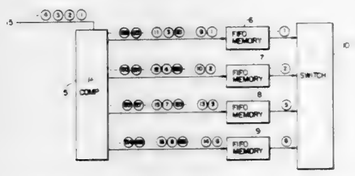
a driving power line (6) connected to said heat generating resistor.

4,412,228

HEAT-SENSITIVE RECORDING HEAD DRIVING METHOD

Haruhiko Moriguchi, and Tomio Murayama, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,606
Claims priority, application Japan, Dec. 18, 1979, 54-163598
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **6 Claims**



4. A system of driving a heat-sensitive recording head having leads alternately arranged on an insulated substrate with leads extending alternately to one side or the other and being parallel with one another and heat-generating elements disposed between adjacent leads comprising;

a microcomputer receiving an input data signal and dividing the data therein in a predetermined manner into discrete data blocks and said microcomputer rearranging the data in each data block in a predetermined manner,

a plurality of memories disposed in parallel and receiving the outputs of said microcomputer,

a series of shift registers receiving data from said memories to be applied successively to the leads on one side of said recording head, and

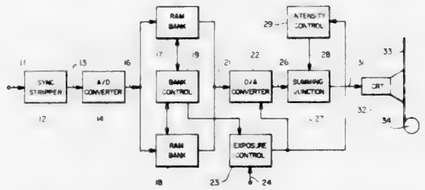
switch means to gate said data from said memories to said shift registers.

4,412,230

APPARATUS AND METHOD FOR PRODUCING IMAGES ON A PHOTOSENSITIVE MEDIA

Paul R. Goldberg, Palo Aito, Calif., assignor to Wavetek Indiana, Inc., Mountain View, Calif.

Filed Sep. 21, 1981, Ser. No. 303,876
Int. Cl.³ G01D *9/02*
U.S. Cl. 346—110 R **14 Claims**



1. A system of the type forming line displays on line scan cathode ray tube for recording on a photosensitive medium moved past said cathode ray tube to form a graphic display on the photosensitive media which is exposed during each line display as the media is moved past the tube comprising

storage means for storing signals corresponding to lines of input data

means for reading each stored line of input data a plurality of times to provide a predetermined number of repetitive scan signals for each line of input data

means forming a control signal which is related to media speed past the cathode ray tube

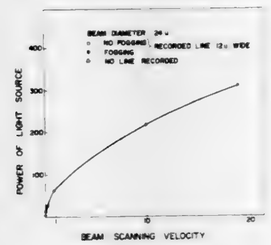
means for receiving said repetitive scan signals and the control signal and controlling the amplitude of selected ones of said scan signals responsive to the control signal whereby to control the recording media exposure for each stored line of input data.

4,412,229

LINE RECORDING METHOD

Minoru Wada, and Satoshi Yoshida, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Saitama, Japan

Filed Aug. 13, 1981, Ser. No. 292,518
Claims priority, application Japan, Aug. 19, 1980, 55/113764
Int. Cl.³ G01D *9/42, 15/10*
U.S. Cl. 346—108 **1 Claim**



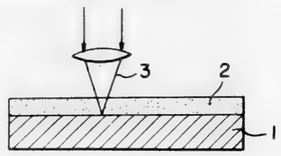
1. A recording method for recording a line image on a heat-mode recording medium comprising the steps of moving a light spot from a light source over the surface of a heat-mode recording medium; determining the velocity of and providing a velocity signal V corresponding to the speed of the light spot on the medium; and simultaneously regulating the power output of the light source so that the intensity is substantially proportional to the square root of the value of V.

4,412,231

LIGHT RECORDING MEDIUM

Kenryo Namba; Akihiko Kuroiwa, and Shiro Nakagawa, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1982, Ser. No. 362,652
Claims priority, application Japan, Sep. 28, 1981, 56-152126
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 **2 Claims**



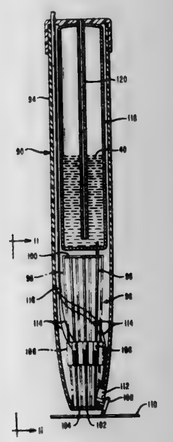
1. In a light recording medium which has a substrate and a recording layer provided on said substrate and effects recording of information by selective removal or deformation of the recording layer by laser light, the light recording medium which is characterized by that said recording layer contains an organic dye as a light absorber, said dye is a mixed dye obtained by mixing a plurality of dyes having different light absorbing wavelengths from each other and the recording layer has a light absorptivity of 80% or more at the whole wavelengths in the range of 400–900 nm in wavelength.

4,412,232

INK JET PRINTER

Helmut Weber, Augsburg; Peter H. Reitberger, Munich; Leonhard Bader, and Walter König, both of Augsburg, all of Fed. Rep. of Germany, assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 15, 1982, Ser. No. 368,611
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **10 Claims**



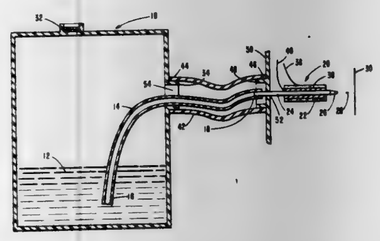
2. An ink jet printer including a print head having at least one piezoelectric driving element selectively energizable to cause ejection of a droplet of ink through a nozzle associated therewith, an ink reservoir for supplying ink to said print head, and capillary means connecting the interior of the ink reservoir with the ambient atmosphere with one end of said capillary means being so arranged as to be immersed in operation in ink contained in the reservoir, the reservoir being air-tight in operation apart from the provision of said capillary means whereby a predetermined underpressure is maintained in respect of the ink in said nozzle, any increase in underpressure as ink droplets are ejected being inhibited by virtue of the intake of air into the reservoir via said capillary means.

4,412,233

INK EVAPORATION PREVENTION MEANS FOR INK JET PRINT HEAD

Jacob E. Thomas, Ithaca, and James K. McKnight, Trumansburg, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 7, 1982, Ser. No. 385,956
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **24 Claims**



21. Means for maintaining ink constituency comprising ink supply means, a

print head operably associated with the ink supply means for utilizing the ink,

means carrying ink from the supply means to the print head, and

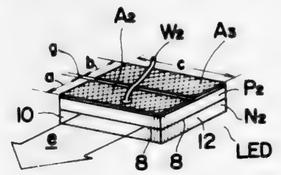
means operably connected with the ink supply means and with the print head and extending the ink vapor pressure environment of the ink supply means therebetween.

4,412,234

LIGHT EMITTING DIODE

Motonobu Matsuda, Kawachinagano, and Yoshihiro Tanaka, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1981, Ser. No. 244,321
Claims priority, application Japan, Apr. 1, 1980, 55-43351; Jan. 22, 1981, 56-8706
Int. Cl.³ H01L *33/00, 23/48, 23/28, 25/04*
U.S. Cl. 357—17 **4 Claims**



1. A light emitting diode comprising:

a pair of semiconductor layers having a planar P-N junction therebetween, said semiconductor layers having at least one side surface extending transversely across said P-N junction and from which light is emitted in a direction parallel with the plane of said P-N junction;

a pair of electrodes on the respective outer surfaces of said pair of semiconductor layers parallel with the plane of said P-N junction plane, at least one of said pair of electrodes covering an area less than the total area of said P-N junction and being located adjacent to said one side surface from which the light is emitted, the remainder of the area of the outer surface of said semiconductor layer not being covered by said electrode; and

a light shielding member covering said remainder of the area of the outer surface of said semiconductor layer which is not covered by said one electrode, said light shield member is made of a material identical with that of said one electrode, and being insulated from said one electrode, and said light shielding member and said one electrode being spaced from each other to define a gap therebetween for insulating them from each other.

4,412,235

INTEGRATED OPTO-ELECTRONIC RELAY USING A SEMICONDUCTOR WITH PERSISTENT PHOTOCONDUCTIVITY AND A MATRIX OF SUCH RELAYS

Daniel Bois, 9, rue de la Grange, 38240 Meylan, France

Filed Feb. 12, 1981, Ser. No. 234,005
Claims priority, application France, Feb. 21, 1980, 80 03814
Int. Cl.³ H01G *31/12, 27/14*
U.S. Cl. 357—19 **7 Claims**

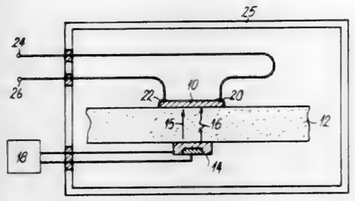
1. An integrated opto-electronic relay comprising:

an insulating substrate made of a first semiconductor material;

a layer of a second semiconductor material having a persistent photoconductivity, said layer being deposited on said substrate, said layer being provided with two electrical contacts;

a diode made of a third semiconductor material, said diode being integrated into said substrate facing the layer and being able to emit optical radiation directed onto said

layer through said substrate when it is forward biased and to emit thermal radiation directed onto said layer through



said substrate when it is reverse biased, an enclosure to enable low temperature control of the layer having persistent photoconductivity.

4,412,236

COLOR SOLID-STATE IMAGER

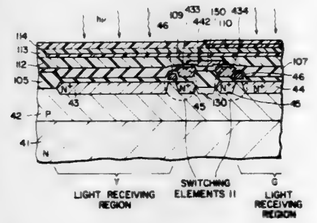
Akira Sasano; Toshio Nakano, both of Tokyo; Ken Tsutsui, Hachioji; Michiaki Hashimoto, Yono; Tadao Kaneko; Norio Koike, both of Tokyo, and Akiya Izumi, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 21, 1980, Ser. No. 180,042

Claims priority, application Japan, Aug. 24, 1979, 54/107262; Oct. 3, 1979, 54/126844

Int. Cl.³ H01L *27/14, 29/78, 27/02*

U.S. Cl. 357—31 **16 Claims**



1. A color solid-state imager comprising:

a semiconductor body including a plurality of light receiving regions which each include a photosensor element and a switching element located in a major surface of said semiconductor body, each of said switching elements having an output terminal coupled thereto;

a color filter formed over said major surface of said semiconductor body to cover said plurality of light receiving regions; and

a shading layer interposed between said color filter and said major surface of said semiconductor body to cover at least a portion of said output terminals of said switching elements.

4,412,237

SEMICONDUCTOR DEVICE

Nobutake Matsumura, Tokyo; Ryusuke Hoshikawa, Sagamihara; Yoshihide Sugiura, Tokyo; Hiroaki Ichikawa, Yokohama, and Syoji Sato, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP78/00048, § 371 Date Aug. 29, 1979, § 102(e) Date Aug. 29, 1979, PCT Pub. No. WO79/00461, PCT Pub. Date Jul. 26, 1979

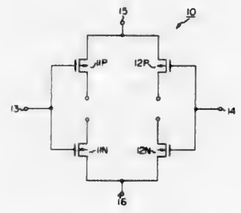
PCT Filed Dec. 11, 1978, Ser. No. 143,472

Claims priority, application Japan, Dec. 30, 1977, 52-158445

Int. Cl.³ H01L *27/02*

U.S. Cl. 357—42 **17 Claims**

1. A semiconductor device having a large number of basic cells on a semiconductor substrate, the basic cells being arranged along rows and columns of the semiconductor substrate, characterized in that each said basic cell is comprised of a first P-channel MIS transistor, a first N-channel MIS transistor, a second P-channel MIS transistor and a second N-channel MIS transistor, wherein the gates of the first P-channel and N-channel MIS transistors are commonly connected to each other by the same electrode material, the gates of the second P-channel and N-channel MIS transistors are commonly connected to each other by the same electrode material, the sources or the drains of both the first and second P-channel MIS transistors occupy a single P-type region and are connected to each other and the sources or the drains of both the first and second N-channel MIS transistors occupy a single N-type region and are connected to each other, interconnecting lines being distributed on the semiconductor substrate, said interconnecting lines being selectively distributed adjacent the basic cells, whereby a variety of functional circuits can be obtained by suitably utilizing one or more of the basic cells, wherein in each of the basic cells, the first and second common gates are arranged in parallel to each other and, at the same time, are extended from one side to the other side of the basic cell.



4,412,238

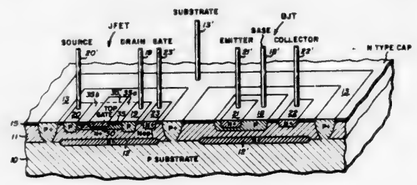
SIMPLIFIED BIFET STRUCTURE

Wadie N. Khadder, Sunnyvale; Jia T. Wang, San Jose, and Brian E. Hollins, Los Altos, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 27, 1980, Ser. No. 153,486

Int. Cl.³ H01L *27/04*

U.S. Cl. 357—43 **3 Claims**



1. A monolithic semiconductor integrated circuit having bipolar junction transistors that incorporate emitter and base elements diffused into collector element semiconductor material, and including at least one junction field effect transistor, said field effect transistor comprising:

a lower gate region located in a portion of said collector element semiconductor material;

spaced apart source and drain regions composed of said base element material;

a subsurface channel located below the surface of said semiconductor, having the same conductivity type as said source and drain regions, and extending therebetween; and

a top cap electrode having a conductivity type opposite to that of said channel, extending over the entire integrated circuit, and having an integrated net concentration of the order of 2×10^{12} carriers per square centimeter within a few tenths of a micrometer of said semiconductor surface so as to prevent field inversion, below an electrode voltage of about 50 volts, in said collector element semiconductor material in addition to providing for a subsurface channel action.

4,412,239

POLYSILICON INTERCONNECTS WITH PIN POLY DIODES

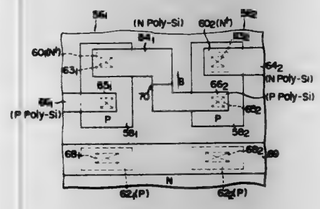
Hiroshi Iwasaki, and Osamu Ozawa, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

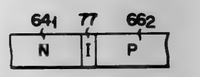
Filed Apr. 7, 1980, Ser. No. 137,648

Claims priority, application Japan, Apr. 9, 1979, 54-42819

Int. Cl.³ H01L *27/10, 23/52, 29/04*

U.S. Cl. 357—44 **4 Claims**





1. A semiconductor device comprising:

a semiconductor substrate;

an integrated circuit having a plurality of bipolar transistors formed in the substrate, each transistor including a diffusion layer of P conductivity type and a diffusion layer of N conductivity type;

a polysilicon film of P conductive type formed as an electrode on the diffusion layer of P conductivity type of each transistor:

a polysilicon film of N conductivity type formed as an electrode on the diffusion layer of N conductivity type of each transistor;

a P-N junction formed between the P and N polysilicon films; and

a PIN diode formed at the P-N junction.

3. A semiconductor device comprising:

a semiconductor substrate;

an integrated circuit having a plurality of bipolar transistors formed in the substrate, each transistor including a diffusion layer of P conductivity type and a diffusion layer of N conductivity type;

a polysilicon film of P conductivity type formed as an electrode on the diffusion layer of P conductivity type of each transistor;

a polysilicon film of N conductivity type formed as an electrode on the diffusion layer of N conductivity type of each transistor; and

an amorphous portion provided between the P and N polysilicon films and connecting the P and N polysilicon films.

4,412,240

SEMICONDUCTOR INTEGRATED CIRCUIT AND WIRING METHOD

Hideo Kikuchi; Shigenori Baba, both of Yokohama, and Shoji Sato, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

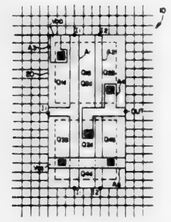
PCT No. PCT/JP80/00025, § 371 Date Oct. 27, 1980, § 102(e) Date Oct. 15, 1980, PCT Pub. No. WO80/01859, PCT Pub. Date Sep. 4, 1980

PCT Filed Feb. 22, 1980, Ser. No. 198,131

Claims priority, application Japan, Feb. 27, 1979, 54-22289

Int. Cl.³ H01L *27/00*

U.S. Cl. 357—45 **13 Claims**



1. A semiconductor integrated circuit having a top side of overlapped wiring layers, each layer having a respective minimum wiring pitch, said circuit comprising:

connection wirings formed on respective ones of said overlapped wiring layers, and spaced in accordance with a grid having square meshes with an interval which is larger than a length corresponding to a minimum dimension for patterning in a manufacturing process for making said integrated circuit and corresponding to the respective wiring pitches of the overlapped wiring layers, said respective wiring pitches being expressed by a maximum integer unit which is not a prime number; and

circuit cells respectively connected to corresponding ones of said connection wirings, said circuit cells having vertical and horizontal dimensions corresponding to respective integer multiples of said interval, and terminals spaced in accordance with said grid, for connection to corresponding ones of said connection wirings.

4,412,241

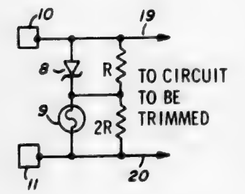
MULTIPLE TRIM STRUCTURE

Carl T. Nelson, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 21, 1980, Ser. No. 209,248

Int. Cl.³ H01L *27/02;* **G05F** *3/00, 5/00, 7/00*

U.S. Cl. 357—51 **10 Claims**



1. A multiple trim structure for use in semiconductor integrated circuits and having a nominal output resistance value wherein a trimming operation can either raise or lower said nominal output value, said structure comprising:

a plurality of bonding pads;

a network of resistance elements coupled between a pair of

said bonding pads, said network presenting an output resistance value that can be varied by trimming;

a combination of zener diode means and fuse element means coupled between said pair of bonding pads and to said network of resistance elements whereby selected ones of said resistance elements can be invoked;

means for coupling current pulses to said pair of bonding pads whereby a selected fuse element can be blown so as to remove a short circuit across a portion of said network thereby raising said output resistance; and

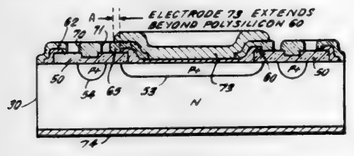
means for coupling current pulses to said pair of bonding pads whereby a selected zener diode can be zapped so as to add a short circuit across a portion of said network thereby lowering said output resistance.

4,412,242

PLANAR STRUCTURE FOR HIGH VOLTAGE SEMICONDUCTOR DEVICES WITH GAPS IN GLASSY LAYER OVER HIGH FIELD REGIONS

Thomas Herman, Redondo Beach, and Alexander Lidow, Manhattan Beach, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Filed Nov. 17, 1980, Ser. No. 207,123
Int. Cl.³ H01L *29/34*
U.S. Cl. 357—52 **15 Claims**



1. A high voltage semiconductor device comprising a chip of semiconductor material; at least one P-N junction formed in at least one surface of said chip; electrode means connected to at least a selected area of said surface whereby, upon application of a reverse-biasing voltage to said electrode means, an electric field is produced in said chip of semiconductor material; a thin glassy layer of insulation material overlying and sealing at least portions of said one surface of said chip; a second insulation layer of material which is not subject to polarization effects disposed between said glassy layer and said first surface of said chip; said glassy layer being polarizable by electric fields having at least a component parallel to said thin glassy layer; and first and second coextensive spaced elongated gaps in said glassy layer to reduce polarization effects therein and to reduce the adverse influence of polarization adjacent said gaps on the electric field within said chip under reverse-bias conditions; a guard ring formed in said first surface of said chip closely adjacent to but spaced from the outer periphery of said chip; said guard ring having a conductivity type opposite to that of the chip in which said guard ring is formed; said first and second gaps being located above and extending along opposite sides respectively of said guard ring.

4,412,243

METHOD OF REPRODUCING COLORED MOTION PICTURES

Walter Jaeger, Cureglia, Switzerland, assignor to GX-Holding AG, Basel, Switzerland

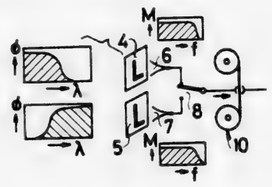
Filed Apr. 11, 1980, Ser. No. 139,292
Claims priority, application Switzerland, Apr. 12, 1979, 3497/79
Int. Cl.³ H04N *9/07*
U.S. Cl. 358—334 **7 Claims**

1. In a method of reproducing a moving colored picture on the screen of a television receiver, including the steps of:

optically splitting the picture into two images; filtering the images to extract different colors therefrom; sequentially scanning the color extract images to generate a corresponding time spaced single sequence of video signals;

repeating the scanning of at least one of the two images;

inserting a corresponding repeated signal sequence between the time spaced signal sequences to establish a continuous uninterrupted signal train from which the color signals are separated;



retrieving the stored signals within time spaced signal sequences respectively corresponding to at least one of the color extract images; and

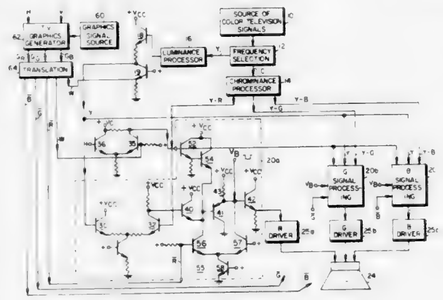
separating said time spaced signal sequences into three primary color signals for modulating a video information signal carrier.

4,412,244

SWITCHING CIRCUIT FOR TELEVISION RECEIVER ON-SCREEN DISPLAY

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 20, 1981, Ser. No. 323,197
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—22 **19 Claims**



1. In an image reproducing system including a kinescope for displaying an image in response to image representative signals applied thereto; a source of image representative video signals; a source of auxiliary image representative graphics signals; and a signal path for coupling image representative signals to said kinescope; graphics display control apparatus comprising:

means coupled to said source of graphics signals for deriving therefrom first and second control signals for timing the display of auxiliary graphics information by said kinescope during intervals within picture intervals of said video signals;

a video coupling transistor responsive to said video signals and having an output coupled to said signal path;

a graphics coupling transistor responsive to said first control signal and having an output coupled to said signal path;

a current source; and

a controlled current steering network coupled to said current source and having first and second outputs coupled to said signal path, said current steering network being controlled in response to said second graphics control signal

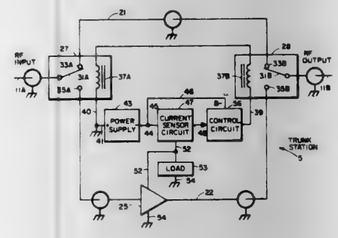
for selectively supplying an operating current from said current source to said video coupling transistor via said first output, and to said graphics coupling transistor via said second output.

4,412,245

DIFFERENTIAL CURRENT DETECTOR IN CABLE TELEVISION TRUNK AMPLIFIER STATION

Sai W. Kwok, El Paso, Tex., assignor to GTE Products Corporation, Stamford, Conn.

Filed Oct. 1, 1980, Ser. No. 193,315
Int. Cl.³ H04N *7/10*
U.S. Cl. 358—86 **29 Claims**



1. Apparatus for detecting a differential decrease in a DC current that exceeds a prescribed value, comprising:

comparator means having first and second input terminals and an output terminal, said comparator means producing a first output voltage when the input voltage at said first terminal is greater than that on said second terminal and producing a second output voltage when the input voltage at said second terminal is greater than that at said first terminal,

first means producing a signal voltage Vs proportional to the magnitude of the DC current,

second means operative for producing a control voltage,

third means responsive only to a first output voltage for decreasing the magnitude of the control voltage a prescribed amount from what it is when said comparator means produces a second output voltage,

fourth means coupling a representation of the signal voltage to said first input terminal of said comparator means, and coupling a representation of the control voltage to said comparator means second input terminal that changes more rapidly than a representation thereof that it couples to said comparator means first input terminal for a given change in control voltage,

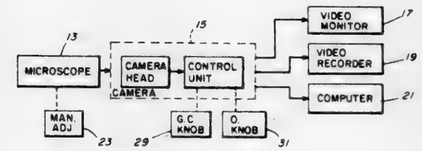
the difference between said comparator means input terminal voltages being a prescribed value when the control voltage is the reduced value, immediately following prior establishment of a control voltage that is just sufficient for making said comparator means change operating states in a manner that makes the output thereof change from the second to the first output voltage, for a prescribed DC reference current from which a change in current is to be measured, the prescribed value of difference voltage being a function of the magnitude of decrease in DC current that is to be detected.

4,412,246

METHOD OF ADJUSTING A VIDEO MICROSCOPE SYSTEM INCORPORATING POLARIZATION OR INTERFERENCE OPTICS FOR OPTIMUM IMAGING CONDITIONS

Robert D. Allen, and Nina S. Allen, both of Hanover, N.H., assignors to Hamamatsu Systems, Inc., Waltham, Mass.

Filed Jul. 13, 1981, Ser. No. 282,412
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—107 **8 Claims**



1. A method of adjusting a polarizing or interference type video microscope system for optimum imaging conditions, said video microscope system including a polarizing or interference type microscope for forming an optical image of a specimen, a video camera for forming a video image of the optical image and a video monitor for displaying the video image so formed, said microscope including an iris diaphragm and a compensator, said video camera including an adjustable gain control circuit and a DC restoration circuit having an adjustable clamp level, said method comprising:

a. adjusting the microscope for optimum optical imaging conditions as seen through the microscope with the gain and clamp level of the DC restoration circuit both at a minimum, said optimum optical imaging conditions including partly closing and iris diagragm and setting the compensator at approximately the same bias retardation as the specimen,

b. changing the compensator setting to within the range of around $\lambda/4$ to $\lambda/9$, and then

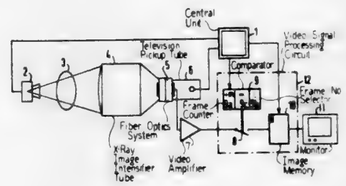
c. increasing the gain and changing the clamping level of the DC restoration circuit in the video camera for optimum video imaging conditions as seen on the video monitor.

4,412,247

X-RAY DIAGNOSTIC INSTALLATION COMPRISING AN IMAGE INTENSIFIER TELEVISION CHAIN

Heinz Horbaschek, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 22, 1981, Ser. No. 227,464
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1980, 3004977; May 29, 1980, 3020464
Int. Cl.³ H04N *5/32*
U.S. Cl. 358—111 **9 Claims**



1. An X-ray diagnostic installation, comprising an X-ray tube, an X-ray image intensifier, an optical coupler, a television pickup tube, a central unit for the control of the radiographic exposure values of the X-ray tube, a video amplifier coupled with the pickup tube for amplifying the image signal, switch

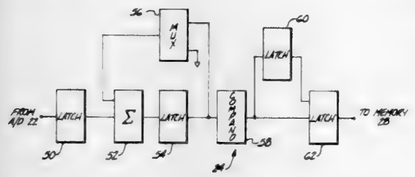
means, an image memory operable for storing an image-representing segment of the image signal under the control of the switch means and being controlled by the central unit, and a monitor, control means connected with the central unit and with the switch means and operable for actuating the switch means to control the selection of a segment of the image signal which is to be supplied from the video amplifier and stored by the image memory as a selected image, the central unit being operable to block the X-ray tube after completed exposure of the target of the television pickup tube, and the switch means being controlled by the control means in such a fashion that the storage of an image proceeds in each instance only after a number of scannings of the target of the television pickup tube, the control means being connected with the output of the video amplifier and controlling the switch means, in dependence upon the image signal, so as to effect storage when the maximum amplitude of the image signal falls below a specified value.

4,412,248

ULTRASONIC IMAGE STORAGE DEVICE AND METHOD

Ralph H. Carmen, Lebanon, N.J., assignor to Technicare Corporation, Solon, Ohio

Filed Jan. 11, 1982, Ser. No. 338,730
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—112 **15 Claims**



1. An ultrasonic imaging system for collecting and thereafter displaying body tissue images comprising:
an ultrasonic transducer;
input imaging means for converting signals received by said transducer to an analog video input signal;
means for producing a first series of digital amplitude samples representative of said video input signal;
means for forming a second series of digital amplitude samples from said first series, each element of said second series being an average of a group of elements from said first series;
means for storing and retrieving said second series of samples;
means for converting said retrieved samples to a video output signal substantially similar to said video input signal; and
display means responsive to said video output signal for producing an image of said tissue.

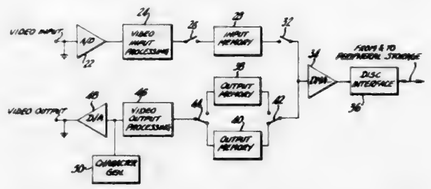
4,412,249

ULTRASONIC IMAGE STORAGE DEVICE AND METHOD

Ralph H. Carmen, Lebanon, N.J., assignor to Technicare Corporation, Solon, Ohio

Filed Jan. 11, 1982, Ser. No. 338,731
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—112 **15 Claims**

1. An ultrasonic imaging system for collecting and thereafter displaying body tissue images comprising:
an ultrasonic transducer;
input imaging means for converting signals received by said transducer to an analog video input signal;
means for producing a first digital signal representative of said video input signal;
means for companding said first digital signal to produce a second digital signal, said second digital signal being a first non-linear function of said first digital signal;
means for storing and retrieving said second digital signal;
means for decompanding a retrieved second digital signal to reconstitute said first digital signal;



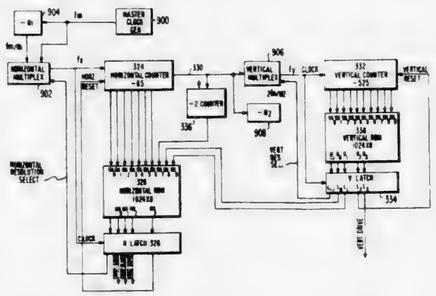
means responsive to said decompanding means for converting said first digital signal to a video output signal substantially similar to said video input signal; and
display means responsive to said video output signal for producing an image of said tissue.

4,412,250

MEMORY-TYPE SYNC GENERATOR WITH REDUCED MEMORY REQUIREMENTS

Terrence R. Smith, Clementon, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 24, 1981, Ser. No. 277,018
Int. Cl.³ H04N *5/06*
U.S. Cl. 358—150 **1 Claim**



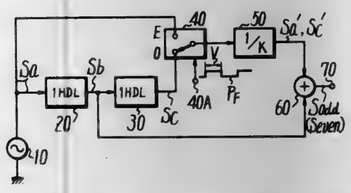
1. A television synchronizing signal generator comprising:
first memory means for storing information relating to the magnitude of at least one component of a composite synchronizing signal at each of a predetermined plurality of sample points in each television frame;
clock signal generating means coupled with said memory means for generating signals for recurrently addressing said memory means for reading said information from said memory sample by sample for generating said component signal;
the improvement comprising;
controllable rate controlling means coupled with said clock signal generating means and with said first memory means for controlling the instantaneous rate to a value other than zero at which said first memory means is addressed for controllably changing the rate at which said samples relating to the magnitude of at least one component of a composite sync signal are generated; and
second memory means coextensive with said first memory means and coupled with said first memory means for being addressed simultaneously therewith, said second memory means being adapted for being loaded with information relating to the rate at which said first memory means is addressed, said second memory means being coupled to a rate control input terminal of said controllable rate controlling means for changing the rate of addressing of said first memory means during each field,
said controllable rate controlling means comprising a controllable counter, said controllable counter comprising,
a fixed counter coupled to said clock signal generating means for generating a divided clock signal; and
controllable multiplexing means coupled to said clock signal generating means and to said fixed counter for coupling to an output terminal thereof one of said divided clock signal and said clock signal in response to a control input, said control input being coupled to said second memory means for controlling said rate.

4,412,251

FLICKER PREVENTING CIRCUIT

Yutaka Tanaka, Yokohama, and Toshinobu Isobe, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 31, 1981, Ser. No. 298,106
Claims priority, application Japan, Sep. 2, 1980, 55-121539
Int. Cl.³ H04N *5/14*
U.S. Cl. 358—160 **7 Claims**



1. A flicker preventing circuit for a television receiver which displays interlaced even and odd video fields during successive field periods in response to an input video signal, each of said fields comprising a plurality of horizontal lines displayed during successive horizontal periods, said circuit comprising:
delay means receiving said input video signal and providing therefrom first and second delayed signals which are delayed by one horizontal period and by two horizontal periods, respectively, relative to said input video signal;
processing means receiving said input video signal and said first and second delayed signals and including means for alternatively delivering said input video signal and said second delayed signal during successive field periods, as a first output of said processing means, and delivering said first delayed signal as a second output of said processing means, with the level of said first output being different from the level of said second output; and
adding means for adding said first and second outputs of said processing means and providing a corresponding sum signal as the output of said flicker preventing circuit.

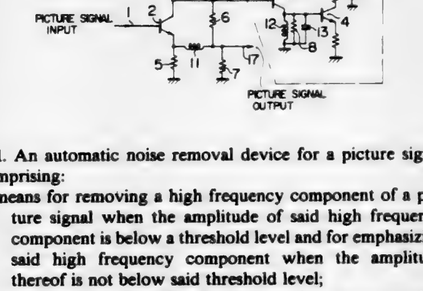
4,412,252

IMAGE REDUCTION SYSTEM

Robert S. Moore, Palo Alto, Calif., and Walter F. Wessel, III, Vestal, N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Jun. 1, 1981, Ser. No. 269,237
Int. Cl.³ H04N *1/02*
U.S. Cl. 358—160 **19 Claims**

1. Image reduction apparatus for deleting portions of image representations, comprising:
storage means for storage of information used to form an image;
output means coupled to said storage means for outputting image information to a utilizing device;
data input means for supplying data to be entered into said storage means;
data induction means for causing the selective elimination of data to produce a reduced data image representation;
first means controlled by said data reduction means to cause a selective first elimination of data during data storage in said storage means; and



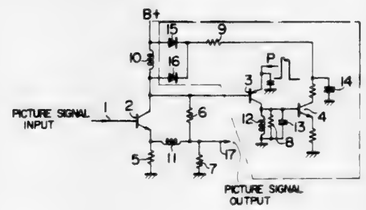
second means controlled by said data reduction means to cause a selective second elimination of data during transfer of data from said storage means to said output means.

4,412,253

AUTOMATIC NOISE REMOVAL DEVICE FOR A PICTURE SIGNAL

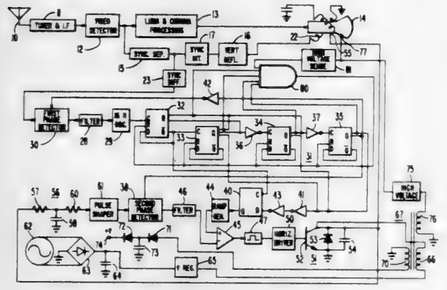
Masanori Oguino, Yokohama, Japan, assignor to Hatachi, Ltd., Tokyo, Japan

Filed Oct. 1, 1981, Ser. No. 307,583
Claims priority, application Japan, Oct. 4, 1980, 55-138245
Int. Cl.³ H04N *5/21*
U.S. Cl. 358—167 **10 Claims**



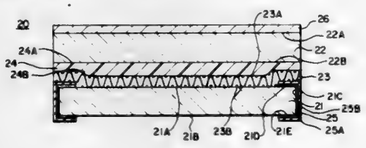
1. An automatic noise removal device for a picture signal comprising:
means for removing a high frequency component of a picture signal when the amplitude of said high frequency component is below a threshold level and for emphasizing said high frequency component when the amplitude thereof is not below said threshold level;
noise detecting means for detecting a noise component during part of a retrace interval of said picture signal;
means for controlling said threshold level in accordance with the amplitude of the detected signal from said noise detecting means;
wherein when the detected signal from said noise detecting means is small, said threshold control means makes said threshold level substantially zero, and operation of said high frequency removing means is prevented, and when said detected signal is large, said threshold level becomes large and said high frequency component removal means removes a high frequency component contained in said picture signal when it is below said threshold level.

4,412,254
TELEVISION RECEIVER HIGH VOLTAGE PROTECTION CIRCUIT
Frank B. Lang, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Jun. 24, 1981, Ser. No. 276,897
Int. Cl.³ H04N *5/68*
U.S. Cl. 358—243 **12 Claims**



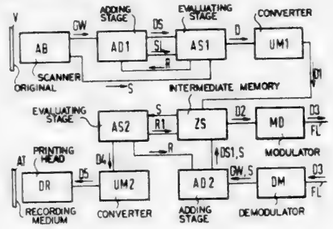
1. In a television receiver having a high frequency oscillator and a counter coupled to said oscillator incorporating a plurality of resettable counting means for providing a horizontal rate signal, means comprising:
fault sensing means having an output for providing an indication of a receiver malfunction; and
resetting means coupled to said output of said fault sensing means and to said resettable counting means, and responsive to said malfunction indication for resetting said resettable counting means such that said counter provides a signal having a frequency different than said horizontal rate.

4,412,255
TRANSPARENT ELECTROMAGNETIC SHIELD AND METHOD OF MANUFACTURING
Bruce E. Kuhlman, and Marc A. Kamerling, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed Feb. 23, 1981, Ser. No. 237,367
Int. Cl.³ H04N *5/65*
U.S. Cl. 358—245 **15 Claims**



1. A transparent electromagnetic shield adapted for use on an information display device in electronic equipment comprising first and second transparent substrates each having major front and back surfaces with a front surface of one substrate adapted to be mated together with a back surface of the other, a conductive wire screen interposed between said first and second substrates in physical contact with one of said mating front and back surfaces thereof, and a single layer of polymer laminating material interposed between said screen and the other of said mating surfaces to bond said screen thereto, said layer of polymer laminating material filling the apertures in said screen and contacting portions of said one mating surface to bond said screen thereto and to bond said first and second substrates together.

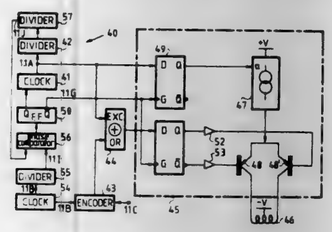
4,412,256
METHOD AND APPARATUS FOR THE REPRESENTATION OF GRAY SCALE VALUES IN FACSIMILE TRANSMISSION
Joachim Heinzl, Munich, and Klaus P. von Borstel, Pullach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
Filed Jul. 9, 1981, Ser. No. 281,868
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1980, 3030648
Int. Cl.³ H04M *1/40*
U.S. Cl. 358—283 **12 Claims**



1. A method for representing gray scale values in facsimile transmission wherein said gray scale values are represented on a recording medium by a plurality of printed dots of equal size, the number of said dots per unit area of recording medium being associated with a specific gray scale value, said method comprising the steps of:
scanning an original having graphic patterns thereon along a plurality of parallel lines;
generating a plurality of instantaneous gray scale value signals corresponding to gray scale values of the scanned graphic pattern;
adding said instantaneous gray scale values for each of a pre-determined number of scanned lines to arrive at a sum for each line;
storing said sums for each line;
adding a different constant value to said stored sums if said stored sums associated with each line are equal;
printing a dot on said recording medium for a particular line when the sum associated with said particular line reaches a pre-determined threshold value; and
decreasing the sum for said particular line after printing said dot by an amount corresponding to a black value of said gray scale.

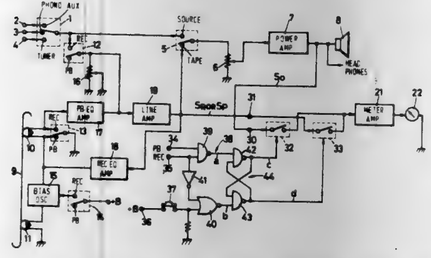
4,412,257
METHOD AND ARRANGEMENT FOR MAGNETIC DIGITAL RECORDING WITH HIGH FREQUENCY BIASING
Jean-Paul Lesieur, Massy, France, assignor to Compagnie Internationale pour l'Informatique Cii Honeywell Bull, Paris, France
Continuation of Ser. No. 156,368, Jun. 3, 1980. This application Jun. 11, 1982, Ser. No. 387,628
Claims priority, application France, Jun. 18, 1979, 79 15584
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—45 **2 Claims**

1. A circuit arrangement for magnetic recording of a digital data signal composed of a set of transitions comprising magnetic biasing means for delivering a high frequency, constant amplitude, original biasing signal and means for combining the said digital data signal with the said magnetic biasing signal so as to provide a recording signal, said combining means comprising a current switch device including a first and a second current switch connected to receive, respectively, complementary formats of the data signal, a recording winding connected to said first and second switches to produce the recording signal, and a current source for each said current switch supplying the associated current switch and means for phase



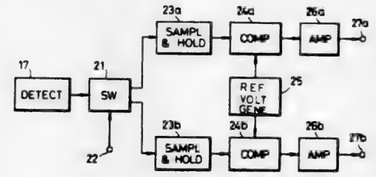
modulating the original biasing signal relative to the data signal transitions.

4,412,258
MAGNETIC RECORDING AND PLAYBACK APPARATUS
Shojiro Shimada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 3, 1981, Ser. No. 231,052
Claims priority, application Japan, Feb. 6, 1980, 55-13244
Int. Cl.³ G11B *15/12, 15/04, 27/36*
U.S. Cl. 360—62 **14 Claims**



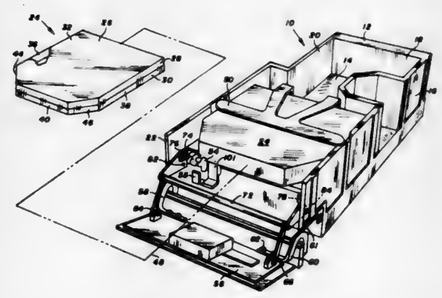
1. Magnetic recording and playback apparatus selectively changeable between a recording mode, a playback mode, and a stop mode, comprising level indicator means for indicating the strength of a signal applied thereto and operative, when said apparatus is in the recording mode, to indicate the strength of a signal to be recorded; power amplifying means having an input coupled to receive a played back signal and an output providing an amplified output signal; and switching circuit means for automatically coupling said level indicator means to the output of said power amplifying means when either of said stop mode and said playback mode is selected, including manually actuable means operative when said apparatus is in the playback mode for selectively connecting said level indicator means to the input of said power amplifying means, whereby the level indicator means can be selectively set to monitor the strength of the played back signal at the input of said power amplifying means when said apparatus is in its playback mode but is automatically returned to monitor the level at the output of the power amplifying means whenever said stop mode or said playback mode is again selected.

4,412,259
MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS HAVING A ROTARY HEAD TRACKING CONTROL DEVICE
Seisuke Hiraguri, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa, Japan
Filed Feb. 17, 1981, Ser. No. 234,791
Claims priority, application Japan, Feb. 18, 1980, 55-18824
Int. Cl.³ G11B *21/10, 5/52*
U.S. Cl. 360—77 **9 Claims**



1. A magnetic recording and/or reproducing apparatus having a tracking control device for performing tracking control by varying the height position of a rotary head which makes contact with a magnetic tape over a predetermined angular portion of its rotating range to record and/or reproduce signals in oblique tracks on the magnetic tape and is out of contact with the magnetic tape over the remaining portion of its rotating range, according to a control signal applied to said tracking control device, said magnetic recording and/or reproducing apparatus comprising:
detecting means mounted in stationary relation with respect to the rotary head, for detecting the height position of said rotary head at a predetermined location where said rotary head is out of contact with said magnetic tape; and
control signal forming means for forming a control signal according to the output of said detecting means and supplying said control signal to said tracking control device to control the height position of said rotary head so that the height position becomes constant.

4,412,260
CARTRIDGE RECEIVER MECHANISM
John D. Stricklin; Anthony D. Denero; Robert A. Quatro, all of Oklahoma City, Okla., and James A. Duff, Omaha, Nebr., assignors to Magnetic Peripherals Inc., Minneapolis, Minn.
Filed Apr. 24, 1981, Ser. No. 257,086
Int. Cl.³ G11B *5/012*
U.S. Cl. 360—97 **14 Claims**



1. For mounting a disk cartridge in a disk drive, apparatus including:
a housing, and means defining an anterior opening through which a disk cartridge is insertable into the housing; a

spindle mounted in said housing and adapted to driveably engage a disk carried in said cartridge;

a receiver in said housing including a substantially rigid frame adapted to confine said cartridge, once inserted therein, to an attitude conforming to that of the frame;

an actuator means mounted for movement relative to said housing between open and closed positions, for moving said frame between extended and retracted positions corresponding to said open and closed positions, respectively, said frame in its extended position adapted to receive said cartridge inserted longitudinally inward through said opening and, when moved to its retracted position, to carry said disk to a driving engagement with the spindle;

a first connecting means for mounting said receiver frame to the housing and for restricting movement of said frame to transverse rotation and linear translation between anterior and posterior positions with respect to the housing;

a second connecting means for mounting said actuator means to the receiver frame and for restricting movement of said actuator means to transverse rotation and linear translation between first and second actuator positions relative to said frame; said first actuator and anterior positions corresponding to said open position, and said second actuator and posterior positions corresponding to said closed position; and

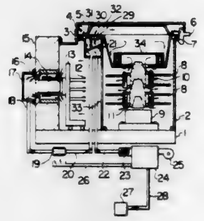
detent means, operative during pivoting of said actuator means inward from the open position toward the closed position, for maintaining said actuator means substantially in its first actuator position until said receiver is moved from the anterior position to the posterier position, thus to define an intermediate stage for said receiver frame between said extended and retracted positions, further inward movement of said actuator means to the closed position moving said actuator to its second position relative to the frame.

4,412,261

MAGNETIC DISK MEMORY DEVICE

Kenichi Tateyama, Odawara; Yasuo Matsumiya, Nakaimachi, and Toshio Hishinuma, Kanagawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 10, 1981, Ser. No. 252,816
Claims priority, application Japan, Apr. 16, 1980, 55-49234
Int. Cl.³ G11B *5/60, 5/40*
U.S. Cl. 360—98 **9 Claims**



1. A magnetic disc memory device having at least one disk pack including a plurality of magnetic disks and adapted to be driven rotatively, a magnetic head adapted to make recording and reproducting of information in and out of said magnetic disks, an access mechanism supporting said magnetic head and adapted to locate said magnetic head on the track in said magnetic disks, and an enclosure integrally enclosing said disk pack, magnetic head, and said access mechanism, said disk pack being removable;

said magnetic disk memory device comprising:

that said enclosure surrounds and encloses said disk pack and said access mechanism and provided with an opening through which said disk pack is changed with another disk pack;

a cover adapted to cover said opening of said enclosure and adapted to permit said opening to be opened as desired;

an air intake means for taking-in the external air through a filter;

an air passaage control means for receiving the cleaned air from said air intake means;

a first air passage connected at its one end to said air passage control means while the other end being opened to the inside of said enclosure to permit the air to be circulated between said air passage control means and the space inside said enclosure; and

a second air passage connected at its one end to said air passage control means and opened at its other end to a portion in the space within said enclosure different from the portion of the same to which said first air passage opens, thereby to permit said air to be circulated between said air passage control means and the space inside said enclosure;

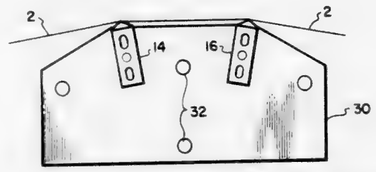
said air passage control means being operated in response to opening and closing motion of said cover in such a manner as to permit said air supplied from said air intake means to be circulated through said first air passage when said cover is in the opening position, and to permit, when said cover is in the closing position, the air delivered by a blower to be circulated through said second air passage and be recycled to said second air passage through said first air passage.

4,412,262

MOUNT FOR MAGNETIC RECORDER TRANSDUCER

Earl R. Schultz, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 29, 1981, Ser. No. 316,262
Int. Cl.³ G11B *21/24*
U.S. Cl. 360—109 **10 Claims**



1. A magnetic tape recorder apparatus having a transducer assembly, and mounting means for said transducer assembly, said mounting means comprising:

a fixed mounting bracket having a front surface and a rear surface;

adjustable cam means carried by said fixed mounting bracket having a cam element extending beyond said rear surface, said cam means being accessible for adjustment from said front of said bracket, said cam means including a screw structure and said mounting bracket having a threaded hole with said screw structure being threaded into said threaded opening to allow a rotation of said screw structure, said cam means further including a pin extending from one end of said screw structure with said pin being positioned eccentrically with respect to the axis of said screw structure,

said transducer assembly including a mounting block means on which one or more magnetic signal transducers are securely mounted;

said mounting block means having recess means arranged to cooperatively engage said pin extending from said cam element, and

securing means accessible from said front surface of said bracket for selectively securing said mounting block to said rear surface of said bracket;

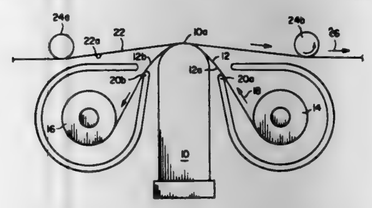
said cam means being adjustable to selectively select a position of said transducer assembly relative to said bracket.

4,412,263

RECORDING HEAD PROTECTIVE OVERLAY AND CLEANING ARRANGEMENT

Alfred M. Nelson, Redondo Beach, Calif.; Houshang Rasekhi, Convent Station, and Ronald J. Cieplik, Mountain Lakes, both of N.J., assignors to Wang Laboratories, Inc., Lowell, Mass.

Filed Aug. 5, 1981, Ser. No. 290,272
Int. Cl.³ G11B *5/41, 23/50*
U.S. Cl. 360—128 **15 Claims**



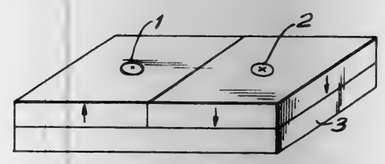
1. In a system in which at least the recording zone of a recording head is in intimate operative contact with a recording medium and substantially continuous relative movement is effected between the head and the medium, and a dielectric material is provided between the head and the medium, the protective arrangement comprising, first means for detecting a first condition of electrical conductivity between the head and the medium and second means responsive to said first means for effecting cessation of relative movement between such head and said medium when said first condition is detected.

4,412,264

MAGNETO-OPTIC RECORDING MEDIUM

Nobutake Imamura, Tokyo, and Chuichi Ota, Fuchu, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1980, Ser. No. 197,805
Claims priority, application Japan, Oct. 22, 1979, 54-135123; Oct. 22, 1979, 54-135124
Int. Cl.³ G11B *11/10*; G11C *11/42*
U.S. Cl. 360—131 **6 Claims**



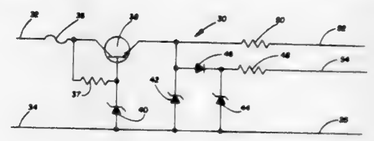
1. In a thin film magneto-optic recording medium on which two sorts of values are recorded by upward and downward magnetizations perpendicular to the film surface, the improvement wherein a tracking guide, which in use of said medium is followed by a magneto-optic recording/reproducing head, is defined on said medium by a region whose magnetization easy axis is perpendicular to the film surface and a region having no magnetization easy axis at least in the direction perpendicular to the film surface, said regions being located contiguously on the same surface.

4,412,265

INTRINSIC BARRIER

Frederick A. Buuck, Fort Wayne, Ind., assignor to Tokheim Corporation, Ft. Wayne, Ind.

Filed Nov. 27, 1981, Ser. No. 325,500
Int. Cl.³ H02H *3/20*
U.S. Cl. 361—18 **11 Claims**



1. An intrinsic barrier comprising:

a first and second input lines for receiving input from an electrical source,

a first and second output lines for electrically connecting electronic circuitry that exists in a potentially explosive environment,

said second input line and said second output line forming a common lead,

a transistor having collector, base and emitter leads,

a fuse electrically connected between said first input line and the collector lead of said transistor,

a first zener diode interconnecting the base lead of said transistor and said common lead,

a first resistor electrically series connected in said first output line,

a voltage limiting means electrically interposed between the emitter lead of said transistor and said common lead; said voltage limiting means also being electrically interposed between said first output line and the emitter lead of said transistor,

said transistor and said first zener diode combining to function as a regulated voltage source to said first and said second output lines,

said first resistor being selected to limit the current in said first and said second output lines to a preselected maximum,

said voltage limiting means limiting the output voltage on said first and said second output lines only in the event that said first zener diode opens or a short occurs between the collector and the emitter leads of said transistor.

4,412,266

AC ELECTRICAL DEVICE PROTECTIVE THERMAL RELAY

Masahiko Niino, Nagoya, Japan, assignor to Yamada Electric Manufacturing Company Ltd., Nagoya, Japan

Continuation of Ser. No. 215,810, Dec. 12, 1980, abandoned. This application Jul. 21, 1982, Ser. No. 400,448
Claims priority, application Japan, Jul. 2, 1980, 55-90359; Jul. 7, 1980, 55-92869
Int. Cl.³ H02H *7/085, 7/097*
U.S. Cl. 361—24 **2 Claims**

1. In a three phase ac electric motor system comprising a three phase electric motor and a manual switch to control flow of current to said motor, the improvement of a protective device to protect said system against both motor overload and negative phase sequence, said protective device comprising:

a snap-action bimetallic switch of the normally closed circuit type connected in series with said motor,

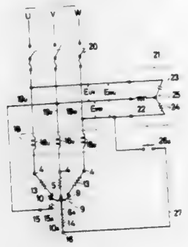
a casing enclosing said bimetallic switch,

a main heater disposed in said casing adjacent said bimetallic switch, said heater being connected in series with said motor and said bimetallic switch so that when said bimetallic switch is heated above a predetermined temperature by an overload current through said motor said bimetallic switch will snap into an open circuit mode,

a PTC heater disposed in said casing adjacent to said bimetallic switch so that when said bimetallic switch is heated above said predetermined temperature by said PTC heater said bimetallic switch will snap into an open circuit mode,

a negative phase sequence detector electrically connected to said motor, said detector having an output switch of the normally open circuit type that is closed when said detector senses a negative phase sequence in said motor system,

said PTC heater being connected in series with said output switch to be energized to heat to above said predetermied temperature upon closing of said output switch and



circuit means to cause said PTC heater to continue to heat once said output switch closes as long as said abnormal condition continues comprising an auxiliary contact on said bimetallic switch that engages a fixed contact within said casing when said bimetallic switch snaps into said open circuit mode, said contacts being electrically connected in series with said PTC heater, and the power supply line of one of the three field windings of said three phase motor and said output switch is connected in series with said PTC heater and the power supply line of another of said three field windings of said three phase motor.

4,412,267

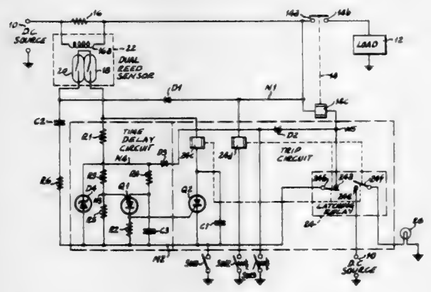
TIME-DELAY CURRENT SENSING CIRCUIT BREAKER RELAY

James E. Hansen, Oak Creek, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 119,055, Feb. 6, 1980, abandoned. This application Feb. 22, 1982, Ser. No. 350,790

Int. Cl.³ H02H *3/08, 3/093*

U.S. Cl. 361—94 **15 Claims**



1. A circuit breaker relay, comprising:

an electrical DC battery power supply source;

a load circuit including power switching means controllable to connect said source to a load;

a pilot switch operable to control said power switching means for energization and deenergization of said load;

current sensing means comprising normally open reed relay contact means operable to close for indicating that the current flowing in said load circuit has reached a predetermined level; and

circuit control means connected through said reed relay contact means to the power supply source side of said power switching means for opening said power switching means in response to said indication from said current sensing means that said current has reached said predetermined level;

said circuit control means comprising a time delay circuit and a trip circuit normally without supply power, said time delay circuit responding to closure of said contact means for precisely providing a predetermined time delay and then signaling said trip circuit, which in turn deenergizes said power switching means, disconnecting said load from said source;

and energy storage means connected to the power supply source side of said power switching means for supplying operating voltage through said reed relay contact means to said time delay circuit and said trip circuit in the event the voltage of said DC battery source should drop low on a high overload.

4,412,268

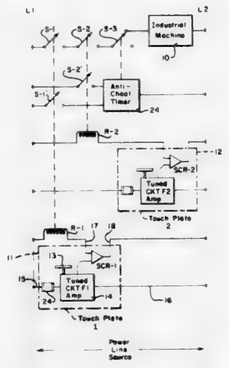
SAFETY SWITCH SYSTEM FOR INDUSTRIAL MACHINES

Edgar E. Dassow, West Bend, Wis., assignor to Dart Industries Inc., Northbrook, Ill.

Filed Oct. 2, 1981, Ser. No. 307,905

Int. Cl.³ H01H *9/00*

U.S. Cl. 361—181 **2 Claims**



1. A safety switch system for passing electrical power from a power source to an industrial machine, including, in combination:

(a) first and second touch plate switches physically positioned adjacent to the industrial machine to be energized thereby at a spacing from each other sufficient that both switches cannot be operated simultaneously with one hand of an operator but require both hands of the operator, each of said touch plate switches including an oscillating tuned circuit and amplifier; a touch plate connected to said oscillating tuned circuit, said oscillating tuned circuit being responsive to touching of the plate by an operator's hand to result in a signal change from said oscillating tuned circuit, said amplifier generating a trigger signal in response to said signal change, the frequency of the oscillating tuned circuit in said first touch plate switch being different from the frequency of said oscillating tuned circuit in the second touch plate switch; and a silicon controlled rectifier having its control terminal connected to receive said trigger signal;

(b) first and second relay switches connected in series with each other between said power source and machine;

(c) first and second relay coils respectively connected in circuit with the silicon control rectifiers of the first and second touch plate switches so as to be energized in response to firing of the silicon control rectifiers respectively whereby power cannot be passed to said industrial machine from said power source unless both said relay switches are closed and whereby operation of either one of said touch plate switches does not require any physical movement of the associated touch plate itself so that the risk of an operator developing carpal tunnel syndrome is substantially eliminated; and

(d) third and fourth relay switches connected to said first and second relay coils, respectively, to open and close simultaneously with the opening and closing of said first and second relay switches, respectively;

(e) an anti-cheat timer connected to said third and fourth relay switches to measure the time interval between the closing of said third and fourth relay switches; and

(f) a fifth relay switch connected in series with said first and second relay switches, said fifth relay switch also connected to said anti-cheat timer such that if the time interval between the closing of said third and fourth relay switches exceeds a predetermined amount said fifth relay switch is opened thereby opening the circuit to said industrial machine.

4,412,269

LOCK OUT MEANS IN IGNITION DEVICES FOR LIQUID FUEL BURNERS

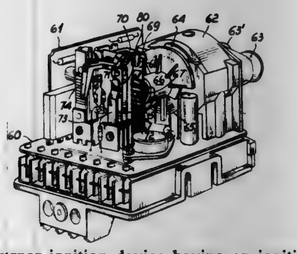
Antonio Stella, and Giuseppe Canova, both of Legnago, Italy, assignors to R.B.L. Riello Bruciatori Legnago S.p.A., Legnago, Italy

Filed Feb. 12, 1981, Ser. No. 233,763

Claims priority, application Italy, Mar. 14, 1980, 20672 A/80

Int. Cl.³ F23Q *9/14*

U.S. Cl. 361—263 **7 Claims**



1. A fuel burner ignition device having an ignition transformer connected to electrodes, and having a lock out device comprising a thermal relay means and a resistive heating element for heating said relay means, said relay means controlling the flow of power to said ignition device and said heating element having a current flow which is directly related to a current flow to said electrodes;

wherein said thermal relay is arranged so as to receive at least a portion of said transformers electromagnetic flux, whereby said flux heats said thermal relay due to the parasitic current generated therein; and

wherin said thermal relay is arranged so that said heating of said thermal relay by said flux at least partially compensates for variations in said heating of said thermal relay due to changes in said resistive heating element current flow which are due to changes in said current flow to said electrodes.

4,412,270

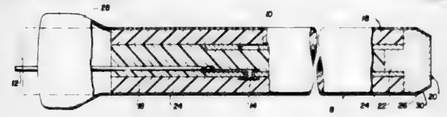
ELECTRODE ASSEMBLY FOR A CAPACITANCE TYPE PROBE

Paul G. Weitz, Jr., Salisbury, and Cecil Franklin, Middlebury, both of Vt., assignors to Simmonds Precision Products, Inc., Tarrytown, N.Y.

Filed Jun. 25, 1981, Ser. No. 277,427

Int. Cl.³ G01F *23/26*

U.S. Cl. 361—284 **5 Claims**



1. An electrode assembly for use in a capacitance type probe for measuring the volume or height of electrically conductive liquids which comprises:

an inner conductive element, having an upper end and a bottom end;

a TEFLON coated electrical conductor secured in electrical contact with the upper end of said inner conductive element for conducting current from one to the other;

a thick-wall TEFLON tube pressed over the upper end of said inner conductive element with its bottom end even with said bottom end of said inner conductive element and the upper end extending above the upper end of said inner conductive element;

an end plug secured to the bottom end of said inner conductive element and said thick-wall TEFLON tube;

an outer TEFLON FEP sleeve coaxial with said inner conductive element and said thick-wall TEFLON tube, said outer TEFLON FEP sleeve extending around said end plug and above the upper end of said thick-wall TEFLON tube, said outer TEFLON FEP sleeve sealed to said end plug along its side and to said TEFLON coated electrical conductor at its upper end.

4,412,271

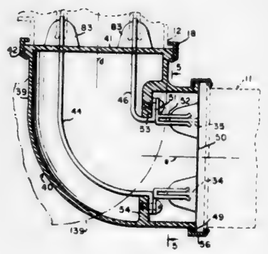
SUPPORT FOR FACILITATING READING OF AN ELECTRIC METER

Herbert C. Bailey, 12209 Hanover St., Sunnymead, Calif. 92388

Continuation of Ser. No. 78,178, Sep. 24, 1979, abandoned. This application Jul. 24, 1981, Ser. No. 286,692

Int. Cl.³ H02B *9/00*

U.S. Cl. 361—370 **5 Claims**



1. In combination, a socket type electric meter having an annular mounting flange encircling spaced terminals of a plurality of first electrical conductors, said meter being adapted to fit a conventional meter socket having an annular seating flange sized to congruently abut said mounting flange, which seating flange extends about a horizontal axis and encircles spaced terminals of a plurality of second electrical conductors which latter terminals engage the terminals of said plurality of first electrical conductors when the meter is mounted on the

socket for use, and meter support means particularly adapted for installation between said meter and said meter socket, said meter support means comprising:

a substantially hollow body characterized by the presence of a first annular flange extending about a first axis and sized to congruently abut the annular seating flange of said meter socket, and a second annular flange extending about a second axis disposed at an angle to said first axis and sized to congruently abut the annular mounting flange of said electric meter;

said meter support means including spaced terminals encircled by said first annular flange that are shaped and positioned for engagement with the spaced terminals of said plurality of second electrical conductors in either of two inverse positions about said horizontal axis, and spaced terminals encircled by said second annular flange that are shaped and positioned for engagement with the spaced terminals of said plurality of said first electrical conductors in either of two inverse positions of said meter about said second axis; and

conductive means directly interconnecting the spaced terminals encircled by said first annular flange with the spaced terminals encircled by said second annular flange in a way to permit conductive interconnection of said meter with said socket through said meter support means in either of two positions facing in different directions;

whereby said meter support means can be plugged into said socket in a first position and said meter attached thereto in right-side-up position to face in one of said two directions, or can be removed from said socket and reinserted therein in a position rotated 180 degrees from said first position whereat said meter can be removed therefrom, rotated through 180 degrees and reattached thereto to face in the other of the two directions in right-side-up position.

4,412,272

FLEXIBLE PRINTED CIRCUIT CARD ASSEMBLY

Larry D. Wedertz, Mira Loma, and Oakley G. Ross, Upland, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Aug. 31, 1981, Ser. No. 297,548
Int. Cl.³ H05K 7/20
U.S. Cl. 361—383 14 Claims



1. A flexible printed circuit card assembly comprising:

a strip of flexible insulating material having printed circuit conductor means thereon for accepting the leads of electronic components and embodying them into said circuit;

a sheet of insulating material positioned on said conductor means for covering said conductor means, said sheet having openings for accommodating the leads of electronic components extending into said printed circuit conductor means; and

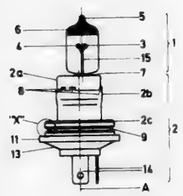
a cushioning layer of foam insulating and cushioning material having a plurality of air channels therein positioned on said sheet for covering electronic components when mounted on said sheet and connected to the printed circuit conductor means for electrically insulating and cushioning said components when said card is folded into a spiral.

4,412,273

HALOGEN INCANDESCENT LAMP WITH PART METAL, PART PLASTIC SOCKET, PARTICULARLY FOR AUTOMOTIVE HEADLIGHTS

Peter Heibig, Soatheim; Walter Schöuberr, Giengea-Hürbea, and Hermaan Steiner, Herbrechtingea, all of Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft für Elektrische Glühlampen mbH, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,491
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1982, 8201536[U]
Int. Cl.³ F21M 3/30
U.S. Cl. 362—211 5 Claims



1. Single-ended press-sealed halogen cycle incandescent lamp, particularly for use in automotive headlights and for combination with a reflector, having

a lamp bulb (1);

a lamp base (2) receiving said lamp bulb;

and terminal connectors (14) projecting from the lamp,

wherein, in accordance with the invention, the lamp base comprises

a generally cup-adjustment cap (2*a*) having a cylindrical portion, and made of metal;

a cylindrical sleeve (2*b*) made of metal and telescopically connected to the cylindrical portion of the adjustment cap;

and a plastic terminal element (2*c*) secured to the cylindrical sleeve,

the adjustment cap being formed with an opening (7) receiving the bulb (1), the diameters of the cylindrical portion and of said sleeve being matched to each other to provide for a snug fit between the sleeve and said cylindrical portion;

integrally formed welding flaps distributed about the circumference of the cylindrical portion and secured to one of said sleeves, and weld connections between said cylindrical portion and said sleeve at said welding flaps to provide for reliable secure welded connection of the cylindrical portion of the adjustment cap and the sleeve;

the plastic end portion (2*c*) comprising a ring-shaped element having an outer diameter substantially greater than the outer diameter of the cylindrical sleeve, secured to the cylindrical sleeve, and formed with a circumferential groove (9);

a sealing ring (10) received within the circumferential groove;

and an annular projecting flange (11) located beyond the sealing ring, at the site of the groove remote from the lamp, and terminating in a frusto-conical portion (13);

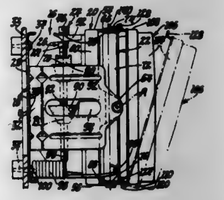
and wherein the connecting prongs (14) are secured to the frusto-conical portion and electrically connected to the bulb.

4,412,274

SUPPORT HOUSING FOR A VEHICLE HEADLAMP

David R. McMahan, Anderson, and Ronald O. Woodward, Muncie, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1982, Ser. No. 450,747
Int. Cl.³ F21V 21/26
U.S. Cl. 362—269 3 Claims



1. A support housing attachable to a vehicle body at the front end thereof and adapted to support and provide adjustable aiming movement of a headlamp about a pair of mutually perpendicular first and second pivot axes, said support housing including a bracket member comprising a vertically oriented mounting portion adapted to be secured to said vehicle body and a pair of laterally spaced arms fixed to said mounting portion, said arms extending horizontally outwardly from said mounting portion; a first ring member supported between said arms for pivotal movement about said first pivot axis, a second ring member located within said first ring member and supported by said first ring member for pivotal movement about said second pivot axis, said second ring member having a rearwardly extending section formed therewith, locator surfaces formed on said second ring member forwardly of said slot for engaging seating pads formed on the rear portion of said headlamp; a retainer member removably attached to said second ring member and surrounding the lens of said headlamp for maintaining said seating pads firmly in contact with said locator surfaces; a first adjustment screw located between said bracket member and said first ring member for adjusting the position of said headlamp about said first pivot axis, a second adjustment screw carried by said first ring member and having a nut threadably mounted on the shank portion of said second adjustment screw adjacent said rearwardly extending section of said second ring member and a pin and slot connection joining said nut to said rearwardly extending section so that upon rotation of said second adjustment screw said nut moves along said shank portion and said pin moves to different positions within said slot for adjusting the position of said headlamp about said second pivot axis, said first and second adjustment screws and said nut being located within the peripheral confines of said lens of said headlamp so as to provide a compact support housing.

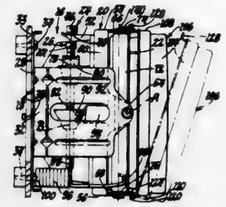
4,412,275

SUPPORT HOUSING FOR A VEHICLE HEADLAMP

David R. McMahan, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 17, 1982, Ser. No. 450,683
Int. Cl.³ F21V 21/26
U.S. Cl. 362—269 3 Claims

1. A support housing attachable to a vehicle body at the front end thereof and adapted to support and provide adjustable aiming movement of a headlamp about a pair of mutually perpendicular first and second pivot axes, said support housing including a bracket member comprising a mounting portion adapted to be secured to said vehicle body and a pair of laterally spaced arms fixed to the opposite end of said mounting portion, said arms extending horizontally outwardly from said mounting portion; a first ring member supported between said arms for pivotal movement about said first pivot axis, a second ring member located within said first ring member and being supported by said first ring member for pivotal movement about said second pivot axis, said second ring member having locator surfaces for engaging seating pads formed on the rear portion of said headlamp; a retainer member removably attched to said second ring member and surrounding the lens of said headlamp for maintaining said seating pads on said rear portion of said headlamp firmly in contact with said locator surfaces; a first adjustment screw located between said bracket



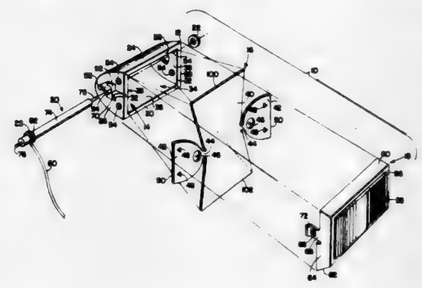
member and said first ring member for adjusting the position of said headlamp about said first pivot axis, and a second adjustment screw located between said first and second ring members for adjusting the position of said headlamp about said pivot axis, said first and second adjustment screws being located within the peripheral confines of the lens of said headlamp.

4,412,276

STROBE REFLECTOR ASSEMBLY

Igor Blinow, Millis, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 7, 1981, Ser. No. 327,920
Int. Cl.³ F21V 7/00
U.S. Cl. 362—278 5 Claims



1. A strobe lighting unit including a reflector having a generally concave predetermined shape, said lighting unit comprising:

a housing having an open ended cavity therein defined by surfaces which when engagingly contacted by reflective material support said material to form a reflector having said predetermined shape;

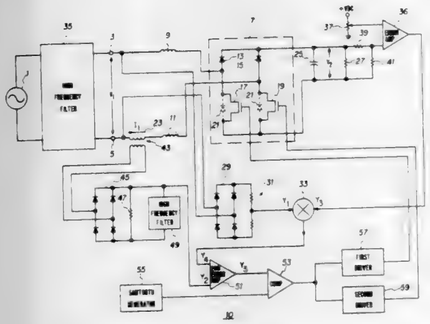
a thin, substantially planar blank of bendable light reflective material having an initial shape that is formed into said predetermined shape in response to pressing said blank into said cavity with a conforming die plunger and having residual tension forces induced therein, as a result of such formation, that urge said material into contact with said cavity surfaces to form said reflector when said shaped blank is retained in said cavity;

means, on said blank and housing, for temporarily holding said shaped blank in said cavity while the die plunger is withdrawn to prevent displacement of said shaped blank from said cavity;

means for retaining said shaped blank in said cavity, said retain-

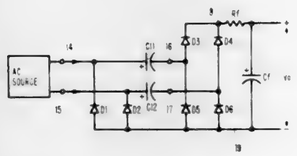
ing means including a cover plate member being attachable to said housing for covering said open end of said cavity;
a light emitting strobe tube configured to be located at a predetermined position relative to said formed reflector; and
means for locating said strobe tube at its said predetermined position and retaining it thereat.

4,412,277
AC-DC CONVERTER HAVING AN IMPROVED POWER FACTOR
Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Sep. 3, 1982, Ser. No. 414,757
Int. Cl.³ H02P *13/00*
U.S. Cl. 363—81 **8 Claims**



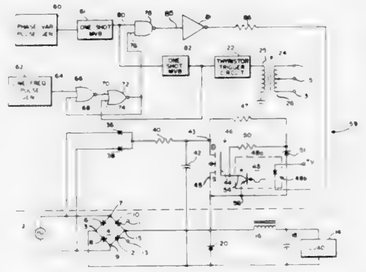
1. A converter circuit for converting an AC signal to a DC signal comprising:
controllable converter means controlled by a control signal for controlling the phase and frequency of the current of the AC signal and the DC signal level;
first reference signal generator means for generating a first reference signal from the current of the AC signal;
second reference signal generator means for generating a second reference signal from the DC signal and the voltage of the AC signal; and
control signal generator means for generating the control signal from the first reference signal and the second reference signal.

4,412,278
AC-TO-DC CONVERTER USING POLARIZED INPUT ISOLATION CAPACITORS
Graig S. Cambier, Louisville, and Lawrence P. Trubell, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 12, 1982, Ser. No. 338,927
Int. Cl.³ H02M *7/06*
U.S. Cl. 363—126 **3 Claims**



1. In a direct-current power supply operated from an alternating current source and having a pair of alternating current input terminal means for receiving input alternating current from said alternating current source and full-wave rectifier means for converting alternating current into full-wave pulsating direct current, said full-wave rectifier means having a pair of input terminal means for receiving alternating current and a pair of output terminal means for supplying pulsating direct current, the improvement comprising:
a pair of polarized input isolation capacitor means, having anode means and cathode means, each of said input capacitor means coupling a different one of said pair of alternating current input terminal means to a different one of said pair of input terminal means of said full-wave rectifier means; and
a pair of single-wave rectifier means, each coupled to conduct current between the same one of said pair of output terminal means of said full-wave rectifier means and a different one of said pair of alternating current input terminal means.

4,412,279
SWITCHING REGULATOR WITH TRANSIENT REDUCTION CIRCUIT
Robert C. Franklin, Los Gatos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.
Filed Dec. 28, 1981, Ser. No. 335,041
Int. Cl.³ H02M *7/155*
U.S. Cl. 363—128 **3 Claims**

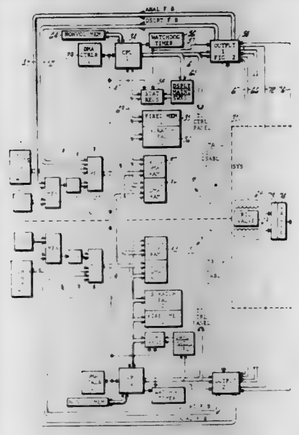


1. In a switching voltage regulator including an AC voltage source, a full wave rectifier having its input terminals connected to the voltage source, a positive output terminal and negative output terminal connected to a load, and having a thyristor in each of two legs connected to the positive output terminal, an L-C filter including an inductor in series with the load and a first capacitor connected across the load, a commutating diode connected between the output terminals of the rectifier and across the L-C filter, and circuit means for activating the thyristors alternately over a predetermined period, the improvement comprising:
means synchronized to the circuit means for reverse biasing the commutating diode in advance of each activation of the thyristors.

4,412,280
COMPLEMENTARY COMMANDS IN FAIL-OPERATIONAL, FAIL-SAFE MULTI-COMPUTER CONTROL SYSTEM
Richard D. Murphy, Monroe, and Douglas H. Clelford, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Division of Ser. No. 938,583, Aug. 31, 1978, Pat. No. 4,270,168.
This application May 19, 1980, Ser. No. 151,488
Int. Cl.³ G06F *15/46, 11/08, 15/16*
U.S. Cl. 364—200 **3 Claims**

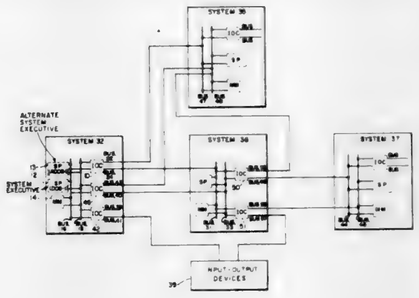
1. A multiple computer process control system, in which each computer system comprises:
a plurality of inputs for providing signals for controlling said process;

a plurality of outputs corresponding to different functions to be controlled in said process;
feedback paths from said outputs to said inputs to provide feedback signals to said computer system indicative of the operation of said outputs;
a data link for providing data communication with a second one of said computer systems; and
program controlled means for performing a plurality of self tests indicative of the correct operation of said computer system and providing a self test failure signal in the event of failure of one of said self tests, for receiving signals from said inputs and providing calculated signals in response thereto related to said outputs, for providing command signals related to said calculated signals, for applying said command signals to corresponding ones of said outputs, for comparing the respective feedback signals provided by said feedback paths with corresponding ones of said command signals and providing a feedback failure signal corresponding to a related one of said outputs in the event of discrepancy between said command signals and said feedback signals corresponding to said related one of said outputs, for disabling any one of said outputs in response to a corresponding feedback failure signal, for disabling all of said outputs in response to a self test failure signal, for communicating said feedback failure signals to said second computer system, and for providing with respect to any one of said outputs which is disabled in said computer system, a zero-valued command signal to said output and a command signal equal to said calculated signal to said second computer system over said data link for comparison, in said second computer system, with a command signal equal to said calculated signal provided by said second computer system with respect to an output thereof corresponding to the output of said computer system which has been disabled.

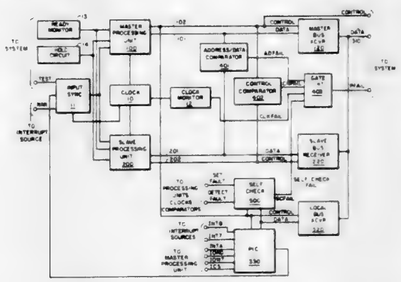


4,412,281
DISTRIBUTED SIGNAL PROCESSING SYSTEM
George A. Works, Stow, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Jul. 11, 1980, Ser. No. 168,899
Int. Cl.³ G06F *11/20*
U.S. Cl. 364—200 **52 Claims**

1. In combination:
a plurality of distributed signal processing systems;
each of said systems comprising a plurality of elements including a signal processor, a mass memory, and an input-output controller, and a first bus means for interconnecting in common said plurality of elements;
said input-output controller of each one of said systems comprising a second bus means for interconnecting a plurality of said systems by coupling said second bus means to said first bus means of another of said systems and for providing coupling to a plurality of input-output data devices; and
each of said elements comprising one or more bus transceivers and arbitration means coupled to one of said first and second bus means for determining the one of a plurality of elements connected to said one of the first and second bus means that obtains first use of said connected one of the first and second bus means when more than one of said elements attempt to use one of said first and second bus means simultaneously.



4,412,282
MICROPROCESSOR CONTROL CIRCUIT
James R. Holden, Chicago, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 29, 1980, Ser. No. 220,934
Int. Cl.³ G06F *7/00*; H04M *3/00*
U.S. Cl. 364—200 **12 Claims**



1. A processor control circuit for use in a computer system operated to generate an interrupt signal, said control circuit comprising:
a processing unit operated to generate a group of internal address, data and control signals;
a master bus transceiver connected to said processing unit;
a system data bus connected to said master bus transceiver;
said master bus transceiver operated in response to a first predetermined pattern of said internal address and control signals to transfer said internal data signals to said system data bus;
a local bus transceiver connected to said system data bus and said processing unit; and
an input-output device connected to said local bus transceiver and said processing unit;
said local bus transceiver operated in response to a second predetermined pattern of said internal address and control

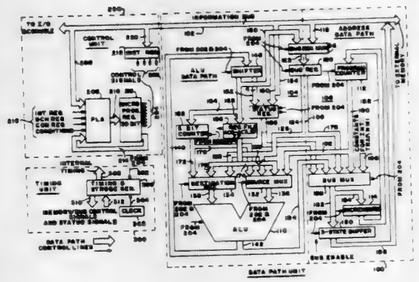
signals to transfer data from said system data but to said local bus transceiver;
said input-output device operates in response to a third predetermined pattern of said internal address and control signals to transfer data from said local bus transceiver to said input-output device;
said input-output device further operated in response to a fourth predetermined pattern of said internal address and control signals to transfer data to said local bus transceiver;
said local bus transceiver operated in response to a fifth predetermined pattern of said internal address and control signals to transfer data from said input-output device to said system data bus;
said master bus transceiver operated in response to a sixth predetermined pattern of said internal address and control signals to transfer data from said system data bus to said processing unit;
said input-output device comprising
a programmable interrupt controller connected to said computer system and said processing unit, operated in response to said data from said local bus transceiver to arrange an interrupt recognition sequence; said programmable interrupt controller further operated in response to said interrupt signal to generate an interrupt received signal; said processing unit further operated in response to said interrupt received signal to generate an interrupt acknowledge signal; said programmable interrupt controller further operated in response to said interrupt acknowledge signal and said fourth pattern of internal address and control signals to transfer interrupt identification data to said local bus transceiver.

4,412,283

HIGH PERFORMANCE MICROPROCESSOR SYSTEM

Yeshayahu Mor, Santa Clara, and Dan Wilnai, Sunnyvale, both of Calif., assignors to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed May 30, 1980, Ser. No. 155,832
Int. Cl.³ G06F *7/48*
U.S. Cl. 364—200 **9 Claims**



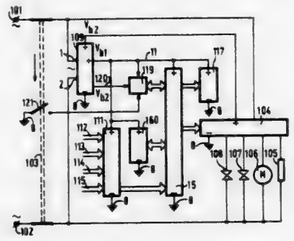
1. In a microprocessor, a central processing unit which includes a data path unit comprising:
an address data path for operating on address information provided thereto and an arithmetic logic unit data path for operating on data information provided thereto, each of said data paths being capable of simultaneous operation during a clocked cycle, said data paths having
(i) a shared input multiplexer operatively connected to an information bus to receive address and data information therefrom and to said arithmetic logic unit data path to receive data information therefrom, said information bus being operatively connected to a control unit of said central processing unit for exchanging address and data information therewith; and
(ii) a shared bus register connected to receive address and data information from said input multiplexer, said bus register having means operatively connected thereto for transferring information from said bus register to said arithmetic logic unit data path, and
(iii) a shared output multiplexer operatively connected to said bus register to transfer address and data information from said bus register to said information bus, said bus register being usable as a memory data register, a memory address register or a temporary data register.

4,412,284

METHOD OF CONTROLLING AN APPARATUS, WHICH IS OPERATED BY A SOLID-STATE PROCESSOR AND POWERED BY AN ELECTRIC MAINS, IN CASE OF A POWER FAILURE AND APPARATUS EMPLOYING SAID METHOD

Jean-Francois Kerforne, Evreux; Jacques Le Gars, Pacy, and Michel Remery, Evreux, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,824
Claims priority, application France, Mar. 21, 1980, 80 06414; Mar. 21, 1980, 80 06415
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **14 Claims**



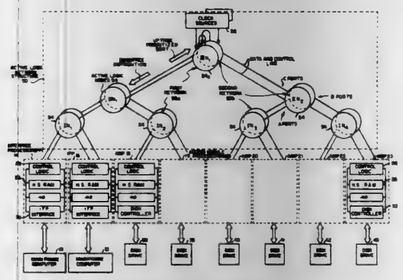
1. A method of operating an apparatus by means of a solid state processor, which apparatus is powered by an electric mains and controlling, during a conditional operation, within a limited volume of space, at least one physical parameter through a predetermined range of values, which processor holds a plurality of selectable programmed routines, said method comprising the following subroutine steps which are activated by the machine in case of a power failure during execution of a selected routine,
(1) a power outage subroutine, comprising the steps of:
sensing the beginning of said power failure;
interrupting said selected routine;
enabling a timer means to start from an initial position;
saving identifier data associated with said selected routine, and indicating the point at which the interruption of said selected routine occurred;
(2) a power restoration subroutine comprising the steps of:
sensing the end of said power failure;
disabling said timer means and sensing its actual setting;
determining the duration of said power failure;
determining whether said duration exceeds a predetermined limit;
generating an "excess" signal if said duration exceeds said predetermined limit; generating a "non-excess" signal if said duration does not exceed said predetermined limit;
under control of an "excess" signal jumping to a termination subroutine;
under control of a "non-excess" signal proceeding with the power-restoration subroutine;
fetching said identifier data;
sensing the value of at least one physical parameter;
determining a reference value for said physical parameter at said point at which the interrption of said selected routine occurred;
comparing the value of said sensed physical parameter with said determined reference value for said physical parameter, and determining whether said sensed physical parameter has a value lying within a predetermined tolerance from said reference value for said physical parameter;
generating an "acceptable" signal if said sensed physical parameter has a value lying within said predetermined tolerance; generating a "conditionally acceptable" signal if said sensed physical parameter has a value lying outside said predetermined tolerance;
under control of an "acceptable" signal restarting said interrupted routine;
under control of a "conditionally acceptable" signal, determining from which point said interrupted routine has to be restarted in order to restore said parameter and proceed with said interrupted routine.

4,412,285

MULTIPROCESSOR INTERCOMMUNICATION SYSTEM AND METHOD

Philip M. Neches, Pasadena; David H. Hartke, Los Angeles; Richard C. Stockton; Martin C. Watson, both of Northridge; David Cronshaw, Torrance, and Jack E. Shemer, Los Angeles, all of Calif., assignors to Teradata Corporation, Inglewood, Calif.

Filed Apr. 1, 1981, Ser. No. 250,022
Int. Cl.³ G06F *15/16*
U.S. Cl. 364—200 **155 Claims**



1. A multiprocessor system comprising:
a plurality of processor modules, each including means for providing externally accessible semaphores evidencing readiness states of the procesor as to different transactions;
network means coupled to the processor modules for conducting a "test and set" operation as to the readiness states of the processors relating to a given transaction simultaneously in all processors, and selecting the least ready state as an indication of global readiness.

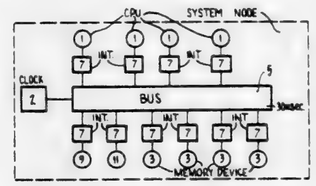
4,412,286

TIGHTLY COUPLED MULTIPLE INSTRUCTION MULTIPLE DATA COMPUTER SYSTEM

Brendan O'Dowd, 27 Foster Crescent, Knoxfield, Victoria, and Christopher Pitcher, 13 Orange Grove, Bayswater, Victoria, both of Australia

Continuation-in-part of Ser. No. 190,510, Sep. 25, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,427
Int. Cl.³ G06F *7/02, 15/16*
U.S. Cl. 364—200 **40 Claims**

1. A multiple instruction multiple data system for concurrently processing data for a plurality of separate processes comprising:
(a) a first and second central processing unit,
(b) a first and second memory device,
(c) a bus,
(d) at least one of said first and second central processing units operable together with at least one of said first and second memory devices for executing at least a first and second of said plurality of separate processes,
(e) first and second interface means respectively connecting said first and second central processing units to said bus, and third and fourth interface means respectively connecting said first and second memory devices to said bus,
(f) said first interface means generating a first transaction code including a first process code identifying a first process to be executed by said first central processing unit and a first data field,
(g) said second interface means generating a second transaction code including a second process code identifying a second process to be executed by said second central processing unit and a second data field,
(h) said third interface means receiving said first and second transaction codes and including:
(1) means for storing an assigned process code,
(2) means for comparing said stored, assigned process code with said received first and second process codes and for generating a match signal when said stored, assigned process code is equal to one of said first and second process codes,
(3) means for receiving said first and second data fields, and
(4) means for feeding one of said received first and second data fields to said first memory device in response to said match signal, said first data field being fed when said stored, assigned process code is equal to said first process code, and said second data field being fed when said stored, assigned process code is equal to said second process code,
(i) said fourth interference means receiving said first and second transaction codes and including:

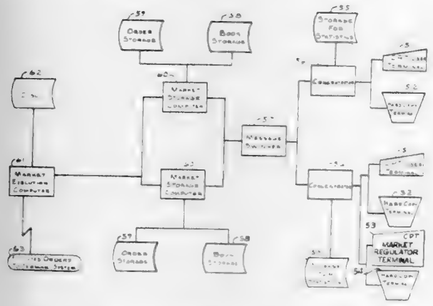


(1) means for storing an assigned process code,
(2) means for comparing said stored, assigned process code with said received first and second process codes and for generating a match signal when said stored, assigned process code is equal to one of said first and second process codes,
(3) means for receiving said first and second data fields, and
(4) means for feeding one of said received first and second data fields to said second memory device in response to said match signal, said first data field being fed when said stored, assigned process code is equal to said first process code, and said second data field being fed when said stored, assigned process code is equal to said second process code,
(j) means for assigning said first process code for storage in said third interface means,
(k) means for assigning said second process code for storage in said fourth interface means
whereby said first central processing unit and said first memory device execute said first process and said second central processing unit and said second memory device concurrently executes said second process, and
(l) means for dynamically modifying said assigned first and second process codes whereby said first and second memory devices may be dynamically reassigned to the same or different process codes and thus to the same or different processes executed by said first and second central processing units.

4,412,287
AUTOMATED STOCK EXCHANGE

Walter D. Braddock, III, 70 W. Fairview, Springfield, Ill. 62707

Continuation of Ser. No. 581,840, May 29, 1975, abandoned.
This application Sep. 15, 1982, Ser. No. 418,297
Int. Cl.³ G06F *15/20, 15/24*
U.S. Cl. 364—408 **1 Claim**



1. The method of operating a computer to process data records containing information about transactions in fungible goods, such as securities, which are produced by a data input device and generating an output display comprising the steps of:

(a) storing in a designated area all data records relating to each security,

(b) processing the data records relating to a first security in sequence in accordance with the following steps,

(c) sorting the data records into a first subset, each containing information including a customer identifier, an offer to buy, an associated price, and the number of shares of the security, hereinafter limit buy orders, in a priority sequence beginning with the highest price,

(d) sorting the data records into a second subset, each containing information including a customer identifier, an offer to sell, an associated price, and the number of shares of the security, hereinafter limit sell orders, in a priority sequence beginning with the lowest price,

(e) sorting the data records into a third subset, each containing information including a customer identifier, an offer to buy at the market, and an order time, hereinafter market buy order, in a priority sequence beginning with the earliest time,

(f) sorting the data records into a fourth subset, each containing information including a customer identifier, an offer to sell at the market, and an order time, hereinafter market sell orders, in a priority sequence beginning with the earliest time,

(g) sorting the data records into a fifth subset, each containing information including a customer identifier, an offer to buy at the market above a certain or stop buy price, hereinafter stop buy orders, into a priority sequence beginning with the lowest stop buy price,

(h) sorting the data into a sixth subset, each containing information including a customer identifier, an offer to sell at the market below a certain or stop sell price, hereinafter stop sell orders, into a priority sequence beginning with the highest stop sell price,

(i) storing within said designated area, in a seventh subset, a data record containing the price of the latest transaction of said security, hereinafter the last trade price,

(j) comparing each data record in said first subset with the record in said seventh subset to identify those records having a limit buy price above the last trade price,

(k) comparing each data record in said second subset with the record in said seventh subset to identify those records having a limit sell price below the last trade price,

(l) processing each such identified data record in said first subset in priority sequence against such identified records in said second subset at the last trade price, until the identified records of one subset are exhausted,

(m) merging said processed records into new records stored in an eighth subset of data records relating to said security, said records containing a puchaser identifier, a seller identifier, a transaction price and an identifier for the number of shares in the transaction,

(n) comparing each data record in said fifth and sixth subsets with said data record in said seventh subset to determine the stop buy orders at or below the last trade price and the stop sell orders at or above the last trade price and moving each such record to the end of the third and fourth subsets of data records,

(o) comparing each of the data records in said first and second subsets to identify either limit buy orders at or above the last trade price or limit sell orders at or below the last trade price,

(p) merging said identified records of limit order from said first or second subsets of data against opposed records of market orders at the last trade price and adding said new records to said eighth subset of data records, until the identified records in said first or second subset are exhausted,

(q) merging the records of market orders from said third and fourth subsets of data at the last trade price and adding said records to said eighth subset of data records, until the identified records in said third or fourth subset are exhausted,

(r) merging the remaining records of market orders from the unexhausted third or fourth subset of data against the records, in sequence of the records of limit orders of the second or first subset of data at the limit price until one of such subsets of records are exhausted,

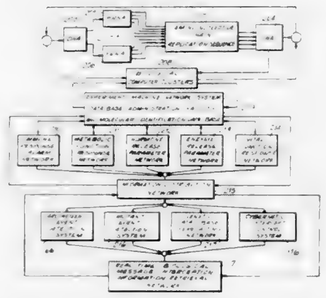
(s) comparing each such record added to the eighth subset with the record in the seventh subset to update the value of the last trade, according to the result of the comparison,

(t) transferring control to process the data records relating to the next security.

4,412,288
EXPERIMENT-MACHINE

Michael Herman, 3059 Brighton 5th St., Brooklyn, N.Y. 11235

Filed Apr. 1, 1980, Ser. No. 136,326
Int. Cl.³ A61B *5/00*
U.S. Cl. 364—413 **38 Claims**



1. A biological diagnostic and testing system comprising:

probe means for examining intra-cellular activity within an individual cell in animal tissue in vivo and selectively providing a physical indication signal representing that activity;

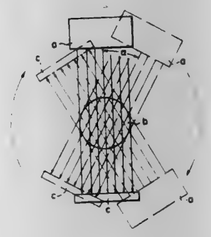
control means for selectively actuating said probe means to provide said physical indication signal; and

display means for providing a visual display in real time of the intra-cellular activity represented by said physical indication signal.

4,412,289
RECONSTRUCTION METHOD OF X-RAY COMPUTED TOMOGRAPHY

Shoichiro Yamaguchi, and Fujio Kabayashi, both of Tokyo, Japan, assignors to The President of Tokyo Institute of Technology, Tokyo, Japan

Filed Jan. 23, 1981, Ser. No. 227,683
Claims priority, application Japan, Feb. 13, 1980, 55-16340; Mar. 4, 1980, 55-27168; Mar. 7, 1980, 55-29446; Mar. 7, 1980, 55-29447
Int. Cl.³ G06F *15/42;* **G01T** *1/20*
U.S. Cl. 364—414 **12 Claims**



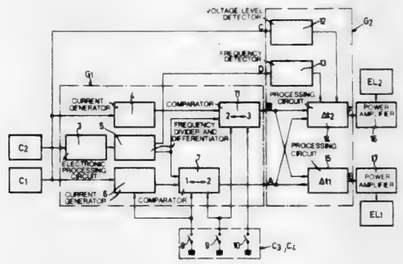
1. A method of constructing a computed tomogram of the internal structure of an object analyzed by X-rays comprising, emitting toward an object being analyzed in a common direction relative to an imaginary reference direction and in a common tomographic plane a plurality of substantially parallel X-ray beams equally spaced from each other laterally, detecting and measuring the density of the individual X-ray beams at separate corresponding spaced points downstream of the object after traversing of the X-ray beams through said object and developing in dependence upon the measured density of said plurality of X-ray beams signals representative of and corresponding to the density of the individual X-ray beams measured, subsequently emitting toward said object from a different common direction relative to said reference direction in said common tomographic plane a second plurality of substantially parallel X-ray beams laterally equally spaced from each other and intersecting at individual regions in said object paths traversed by the first-mentioned plurality of X-ray beams, the areas of intersection having a matrix pattern, detecting and measuring the X-ray beam density of said second plurality individually at separate corresponding spaced points downstream of the object after the traversing of said beams through said object, developing signals in dependence upon the measured density of said individual second plurality of X-ray beams, calculating the absorption coefficient of each of the individual areas of the tomographic plane where the X-ray beam paths intersect with reference to said measured beam densities, each beam being no wider than the corresponding individual area of path intersections and for which the absorption coefficients are calculated, developing signals corresponding to calculated absorption coefficients, constructing with said signals a tomogram depicting an image of the internal structure of the object scanned and analyzed by said X-ray beams.

4,412,290
ELECTRONIC CONTROL DEVICE FOR CHANGING THE SPEED RATIOS IN AN AUTOMATIC TRANSMISSION OF AN AUTOMOTIVE VEHICLE

Gerard Pannier, Bois d'Arcy, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jul. 22, 1980, Ser. No. 171,092
Claims priority, application France, Jul. 24, 1979, 79 19104
Int. Cl.³ G05D *17/02;* **G06G** *7/64;* **B60K** *41/08*
U.S. Cl. 364—424.1 **28 Claims**

1. An electronic governor for an electronic control system which changes the speed ratios in an automatic transmission of an automotive vehicle having first, second, and third forward ratios with shifting under torque and one reverse mode, said transmission being controlled by a hydraulic circuit with electrically actuated control valves dependent on information relating to the operation of the vehicle and in particular on signal corresponding to: (1) the load on the motor as indicated by the position of the accelerator pedal, (2) the speed of the vehicle, (3) the position of a manual control member imposing certain transmission ratios and (4) an end-of-course retrocontact of the accelerator pedal, said electronic governor receiving the above information and supplying to a sequential commutator means a first signal for shifting from the first forward transmission ratio to the second ratio and vice versa, a second signal for shifting from the second ratio to the third ratio and vice versa, and a third signal whose frequency corresponds to the speed of the vehicle, said sequential commutator means upon receiving said signals supplying control signals for actuating said electrically actuated control valves, said electronic governor comprising



first time-interval comparator means for supplying said first signal for the control of shifting from the first transmission ratio to the second ratio and vice versa,

second time-interval comparator means for supplying the second signal for the control of the shifting from the second transmission ratio to the third ratio and vice versa,

each said comparator means comparing the length of the period of the signal corresponding to the speed of the vehicle with the duration of the signal corresponding to the load on the motor,

first current generator means connected to said switch and receiving the signal corresponding to the motor load and for sending an output signal to said first said comparator means, and

second current generator means connected to the signal corresponding to the motor load and sending an output signal to the second said comparator means.

4,412,291
BRAKE TORQUE CONTROL SYSTEM

Robert L. Amberg, and Thomas J. Gaseor, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1980, Ser. No. 192,248
Int. Cl.³ B60T *8/00;* **G06G** *7/70*
U.S. Cl. 364—426 **15 Claims**

1. A brake torque control system for limiting torque developed during braking of a braked wheel, comprising:

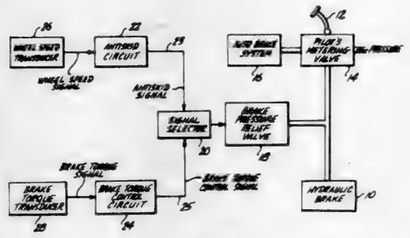
transducer means responsive to brake torque to provide a brake torque signal representative of the magnitude of the torque developed at the braked wheel;

means for providing a reference torque signal representative of a predetermined maximum brake torque;

means for comparing said brake torque signal with said reference torque signal to provide an error signal representative of the difference between said brake torque and said predetermined maximum brake torque;

a torque limiting circuit including an integrator, propor-

tional gain means, and a differentiator, said integrator operating to integrate said error signal to provide an output signal representative at the integral of said error signal, said proportional gain means operating in response to an error signal having a polarity representative of a brake torque greater than said predetermined maximum brake torque to provide an output signal substantially proportional to said error signal, said differentiator operating to provide an output signal representative of the derivative of said error signal;



summing means for additively combining said output signals of said integrator, said proportional gain means, and said differentiator to provide a brake torque control signal; and

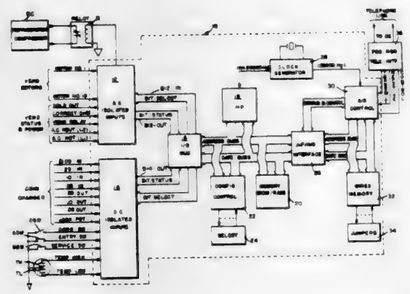
means responsive to said brake torque control signal for reducing brake force in response to said brake torque control signal.

4,412,292

SYSTEM FOR THE REMOTE MONITORING OF VENDING MACHINES

Jason K. Sedam; James V. M. Hale, both of Dunwoody; Stewart W. Caldwell, Marietta, all of Ga.; Willard T. Bushman, Palm Bay, and Richard A. Wright, Melbourne, both of Fla., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Feb. 17, 1981, Ser. No. 235,122
Int. Cl.³ G06F *15/20*; G07F *11/00*; H04M *11/04*
U.S. Cl. 364—479 **11 Claims**



1. A system for the remote monitoring of sensors in a vending machine and for automatically communicating the condition of said sensors to a central computer complex comprising:

a plurality of storage compartments for containing products to be vended;

door means in said vending machine providing access to said storage compartments;

door switch means for sensing when said door is open and generating a door open signal;

entry acknowledge switch means within said vending machine which is inaccessible until said door means is opened, said entry acknowledge switch means generating a legal entry signal when actuated within a predetermined period of time after the generation of said door open signal;

timer means for measuring said predetermined period of time after the generation of said door open signal;

logic circuit means for sensing if said entry acknowledge switch means is actuated during said predetermined period of time;

alarm generating means coupled to said logic circuit means for transmitting an illegal entry alarm signal to said central computer complex if said entry acknowledge switch is not actuated within said predetermined period of time;

service switch means for generating a service signal in response to the manual actuation thereof indicative of an entry into said vending machine to service the same; and

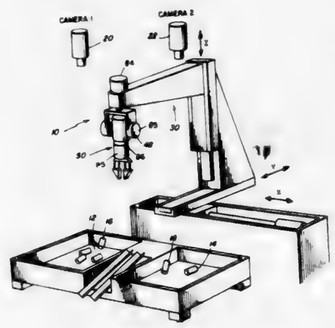
means for generating and transmitting a service alarm signal to said central computer complex in response to the occurrence of said service signal in combination with said legal entry signal.

4,412,293

ROBOT SYSTEM WHICH ACQUIRES CYLINDRICAL WORKPIECES FROM BINS

Robert B. Kelley, 69 Linden Dr., Kingston, R.I. 02881; John R. Birk, 8 Spruce Ct., Peace Dale, R.I. 02879; Henrique Martins, University of Rhode Island, J-11 Old Graduate Student Apts., Kingston, R.I. 02881, and Richard P. Tella, Valley Dr., Ashaway, R.I. 02804

Filed Mar. 30, 1981, Ser. No. 248,784
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—513 **26 Claims**



16. A method of acquiring unoriented workpieces from a bin using a clamping-type hand, the workpieces being structurally distinct from a sensing system which collects data at least some of the pieces having arbitrary orientation angles in three rotational degrees of freedom which includes:

(a) collecting data about the unoriented workpieces in a bin by a sensing system, the data sufficient to select a holdsite for such a hand on workpieces having arbitrary orientation angles;

(b) determining and selecting holdsites on workpieces in a bin;

(c) locating a selected holdsite relative to the hand of a robot assembly, the robot assembly including an arm to position and rotate the hand;

(d) moving the hand having clamping fingers to engage the selected holdsite; and,

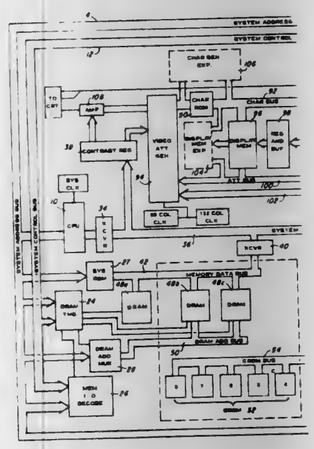
(e) engaging the workpiece with the fingers.

4,412,294

DISPLAY SYSTEM WITH MULTIPLE SCROLLING REGIONS

LaVaughn F. Watts; Ronald L. Smith; Yogendra C. Pandya, and Paul B. Wood, all of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 23, 1981, Ser. No. 237,316
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—518 **7 Claims**



1. A data display system for forming a plurality of independently controllable display regions on a display device comprising:

data processor means;

input means for transmitting electronic signals to said processor means;

main memory means connected to said processor means for receiving data therefrom and for providing data and instructions thereto;

mass data storage means having processor instructions permanently stored therein for transferring selected instructions to said memory means for subsequent transfer to said processor means as required;

control means for controlling the transfer of instructions from said mass data storage means to said main memory means;

a display device;

display controller means;

display memory means connected to and accessed by said controller means for storing information to be outputted to said display device;

character memory means connected to said controller means and to said display memory means for storing a set of predetermined character codes;

generator means connected to said display controller means, to said character memory means and to said display memory means for outputting signals to said display device; and

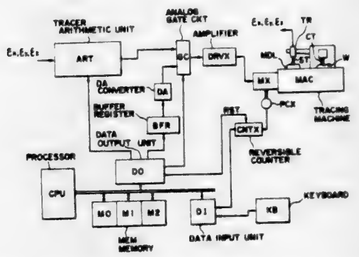
random access memory means connected to said display controller means and to said generator means for storing alterable character code information, wherein said random access memory means is accessed by said display controller means through said generator means.

4,412,295

TRACER CONTROL EQUIPMENT

Ryoji Imazeki, and Etsuo Yamazaki, both of Hachioji, Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Continuation of Ser. No. 141,794, Apr. 18, 1980, abandoned. This application Mar. 29, 1982, Ser. No. 362,667
Claims priority, application Japan, Oct. 24, 1978, 53-130836
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—520 **6 Claims**



1. A tracer control device which calculates a trace direction and a trace velocity for tracing control using displacement signals from a tracer head tracing the surface of a model and a predetermined desired value for a composite displacement signal, and which performs the tracing control for tracing the model by moving the tracer head selectively along a plurality of machine axes of said device in accordance with the calculated trace direction and trace velocity values, said device comprising:

a memory for storing predetermined numerical command data in digital form for providing selective numerical control of the position of said tracer head apart from said tracing control;

an analog gate circuit including means for being selectively operated for said tracing control and for said numerical control of the position of said tracer head, and having outputs for selectively driving said tracer head along said machine axes of said device for tracing control and for said numerical control of the position of the tracer head; and

control means, including a processor, for determining whether said tracing control or said numerical control of the position of the tracer head is to be performed, for selectively reading out the numerical command data from the memory, and for performing said numerical control of the position of the tracer head in accordance with the selected numerical command data;

wherein said control means comprises:

means for selectively operating said analog gate circuit for said tracing of said model and for said numerical control of the position of the tracer head;

a buffer register in which the processor sets digital data corresponding to a direction and velocity of the motion of the tracer head according to the selected numerical command data for performing said numerical control of the position of the tracer head;

A D-A converter for converting said digital data set in the buffer register to a respective analog signal, and to provide each said analog signal to said analog gate circuit to selectively drive said tracer head along said machine axes for performing said numerical control of the position of said tracer head;

a plurality of servo motors and respectively coupled position detectors, for providing motion of said tracer head along the respective machine axes of the tracer control device for said numerical control of the position of the tracer head, and means for driving each said servo motor according to each respective analog signal as a velocity command signal, each said position detector

providing output pulses corresponding to the distance moved along respective machine axes; and

a respective reversible counter for counting the output of each said position detector;

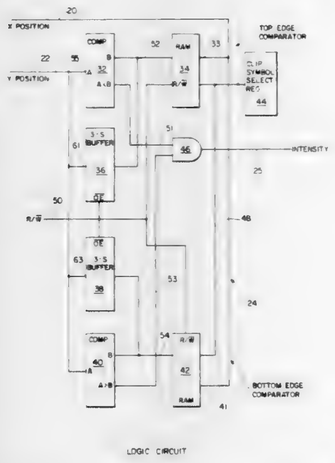
wherein said control means selectively reads the count content of each said respective reversible counter for comparing the count content with respective numerical command data stored in the memory, for providing said numerical control of the position of the tracer head.

4,412,296

GRAPHICS CLIPPING CIRCUIT

Stephen P. Taylor, Dunedin, Fla., assignor to Smiths Industries, Inc., Clearwater, Fla.

Filed Jun. 10, 1981, Ser. No. 272,408
Int. Cl.³ G06F *3/153*
U.S. Cl. 364—521 **5 Claims**



1. In a system for clipping graphic symbols on a CRT, within preselected linear or curvilinear clipping boundaries, a logic circuit for controlling CRT intensity, the logic circuit comprising:

input terminals at which first and second coordinate positional data regarding graphic symbols are presented;

memory means for storing a look-up table enabling correlation between first coordinates of points for corresponding second coordinate addresses, of preselected linear and curvilinear clipping boundaries;

comparator means connected at its input to the input terminals and the memory means for comparing an instantaneous first positional coordinate of the symbol at the input terminals with the coordinates in memory; and

gating means, connected at its input to the output of the comparator means, for generating a

(a) first intensity signal at the output thereof when a symbol point, at a moment of time, is located within a clipping boundary and

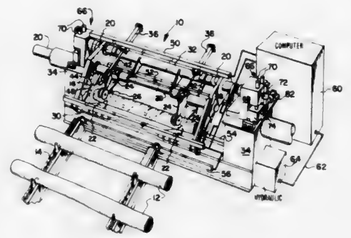
(b) second intensity signal at the output thereof when a symbol point is located outside a clipping boundary.

4,412,297

ULTRASONIC LOG SCANNING AND ORIENTATION SYSTEM

Darrell N. Halgrimson, Edmonds; Donald H. Hanson, Arlington, and Richard T. King, Mountlake Terrace, all of Wash., assignors to Black Clawson, Inc., Evertt, Wash.

Filed Oct. 6, 1980, Ser. No. 193,980
Int. Cl.³ B27B *1/00*
U.S. Cl. 364—559 **14 Claims**



1. In a device for orienting a log with respect to the axis of rotation of a veneer lathe prior to supplying the log to the veneer lathe, including support means for supporting a log, positioning means for adjusting the position of said support means, transducer means for sensing the position of a log supported by said support means to determine the orientation of the log for optimum operation of said veneer lathe, and control means, responsive to said transducer means, for controlling said positioning means to orient the log with respect to the axis of rotation of said veneer lathe, the improvement wherein said transducer means comprises;

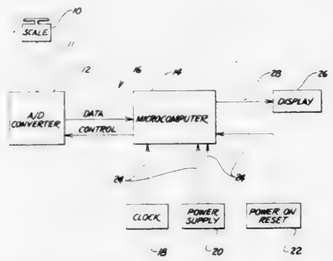
a plurality of groups of ultrasonic transducers, said groups being spaced apart along the length of the log, and each such group including a plurality of ultrasonic transducers positioned circumferentially about said log for sensing the surface of the log at points spaced circumferentially thereabout.

4,412,298

METHOD FOR TRACKING CREEP AND DRIFT IN A DIGITAL SCALE UNDER FULL LOAD

Seymour Feinland, and Arthur Rubinstein, both of Stamford, Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 20, 1979, Ser. No. 77,468
Int. Cl.³ G01G *23/14, 19/413*
U.S. Cl. 364—567 **7 Claims**



1. A method for tracking creep and drift in an electronic scale during the period when a load remains on the scale, comprising:

(a) continuously updating the tare weight of the scale prior to placing said load on the scale;

(b) placing a load on the scale;

(c) storing the current tare weight recorded at the time the load is placed upon the scale;

(d) storing the gross weight of the load;

(e) tracking the variance in the gross weight as a result of creep and drift; and

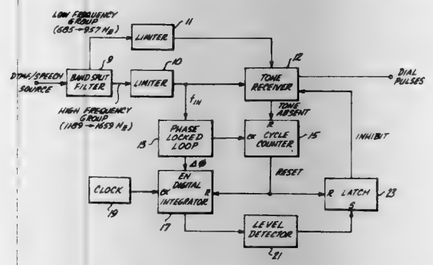
(f) updating the stored tare weight by adding thereto the variance in the gross weight while the load remains on the scale.

4,412,299

PHASE JITTER DETECTOR

Joseph K. Huffman, Kirkland, Wash., assignor to Teltone Corporation, Kirkland, Wash.

Filed Feb. 2, 1981, Ser. No. 230,689
Int. Cl.³ G01R *23/12*; H04M *1/26, 1/00*
U.S. Cl. 364—570 **40 Claims**



1. A phase jitter detector for determining the phase jitter of an incoming signal comprising:

(A) squaring means for receiving and squaring the wave shape of said incoming signal; and,

(B) electronic circuit means coupled to said squaring means for determining the phase jitter of said incoming signal by: (i) determining the phase difference between each cycle of the squared incoming signal and the average frequency of the squared incoming signal over a predetermined number of preceeding cycles of the incoming signal; and, (ii) combining said phase difference information and said predetermined number of cycles information to determine the phase jitter of said incoming signal, said electronic circuit means including:

(1) phase determining means coupled to said squaring means for determining the phase difference between each cycle of the squared incoming signal and the average frequency of the preceeding cycles of said squared incoming signal and producing an output signal containing said phase difference information;

(2) cycle counting means incremented at a rate related to the frequency of said incoming signal; and,

(3) digital integrating means coupled to said phase determining means and to said cycle counting means for integrating the output of said phase determining means containing said phase difference information over a predetermined number of cycles of said incoming signal counted by said counting means, said integrated output signal information defining the phase jitter of said incoming signal over the predetermined number of cycles counted by said cycle counting means.

30. A signal-to-noise ratio measuring system comprising:

(A) a squaring circuit for receiving and squaring the wave shape of the signal whose signal-to-noise ratio is to be measured;

(B) electronic circuit means coupled to said squaring means for measuring the signal-to-noise ratio of said incoming signal by: (i) determining the phase difference between each cycle of the squared incoming signal and the average frequency of the squared incoming signal over a predetermined number of preceeding cycles of the incoming signal; (i) combining said phase difference information and said predetermined number of cycles information to determine the phase jitter of said incoming signal; and, (iii) converting said phase jitter into signal-to-noise ratio form, said electronic circuit means including:

(1) phase determining means connected to the output of said squaring means for determining the phase difference between each cycle of the signal whose signal-to-noise ratio is to be determined and the average frequency of the preceeding cycles of said signal and producing a related phase difference output signal;

(2) cycle counting means for counting at a rate related to the frequency of said incoming signal;

(3) signal detecting means connected to the output of said squaring means for detecting the presence of the signal whose signal-to-noise ratio is to be determined, said signal detecting means connected to said cycle counting means for inhibiting the operation of said cycle counting means until said signal detecting means detects the presence of the signal whose signal-to-noise ratio is to be measured; and,

(4) digital integrating means connected to said phase determining means for integrating the phase difference output signal of said phase determining means and to said cycle counting means for being reset when said cycle counting means reaches a predetermined level; and,

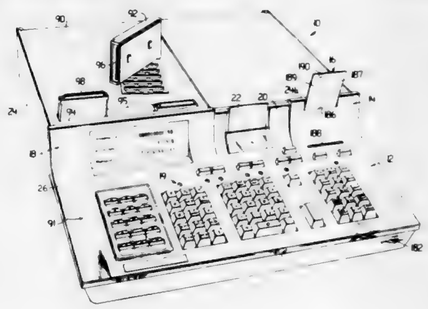
(C) display means connected to the output of said digital integrating means for displaying the output of said digital integrating means just prior to said digital integrating means being reset by said cycle counting means, said display representing the signal-to-noise ratio of the signal whose signal-to-noise ratio is to measured.

4,412,300

PROGRAMMABLE CALCULATOR INCLUDING ALPHABETIC OUTPUT CAPABILITY

Robert E. Watson; Jack M. Walden, and Charles W. Near, all of Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 43,780, May 31, 1979, abandoned, which is a continuation of Ser. No. 848,686, Nov. 4, 1977, abandoned, which is a division of Ser. No. 535,750, Dec. 23, 1974, Pat. No. 4,063,221, which is a division of Ser. No. 153,437, Jun. 15, 1971, Pat. No. 3,859,635. This application Feb. 6, 1981, Ser. No. 232,088
Int. Cl.³ G06F *3/02*
U.S. Cl. 364—709 **9 Claims**



1. An electronic calculator comprising:

a keyboard input unit for entering information into the calculator, said keyboard input unit being normally operative for entering numeric data into the calculator and for initiating other nonalphabetic functions to be performed by the calculator;

a basic first memory unit, coupled to the keyboard input unit, into which information may be written and from which information may be read;

a basic second memory unit for storing routines and/or subroutines to be executed by the calculator in performing selected functions;

one or more additional second memory units, adapted to be removably plugged into the calculator, for storing routines and/or subroutines to be executed by the calculator in performing additional selected functions, thereby increasing the number of functions that may be performed by the calculator;

processing means, coupled to the keyboard input unit, basic first and second memory units, and additional second memory units, the processing means being responsive to information from the keyboard input unit or the basic first memory unit and to operating states within the calculator itself for selectively executing one or more of the routines and/or subroutines stored in the basic second memory unit or in any of the additional second memory units plugged into the calculator to perform one or more of the selected functions employing information from one or both of the keyboard input and basic first memory units; and

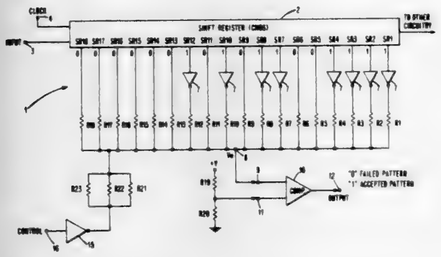
an output printer unit, coupled to the processing means, for providing an output indication of the selected functions performed by the calculator, said output printer unit being operative for printing out a complete set of alphabetic and numeric characters and other symbols;

said processing means being responsive to routines and/or subroutines stored in one of said additional second memory units for enabling a plurality of nonalphabetic keys of said keyboard input unit to be redefined as alphabetic keys and for enabling printing by the output printer unit of alphabetic and numeric characters and other symbols individually and in the form of messages.

4,412,301
DIGITAL DATA CORRELATOR

W. Douglas Strubeck, Norwood, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 8, 1981, Ser. No. 271,737
Int. Cl.³ G06F *15/34*; G06J *1/00*
U.S. Cl. 364—728 **7 Claims**



1. A digital data correlator for detecting the presence of a predetermined binary code word in a data stream, said code word comprising a predetermined combination of bits of first and second possible logic values, said digital data correlator comprising:

storage means arranged to receive and store therein bits of a data stream and having a plurality of outputs at which the bits stored in the storage means are presented, each of said outputs being at the same value of impedance irrespective of the logic value of the bit presented to the output;

linear circuit means coupled to the outputs of the storage means and operative whenever bits presented to the outputs of the storage means have values other than those expected when a coded word having the predetermined combination of bits is present at the outputs of the storage means to produce an analog error voltage having a value linearly related to the number of erroneous bits, said error voltage being independent of the position of the erroneous bits in the storage means;

wherein the linear circuit means comprises:

a plurality of inverter means coupled to selected ones of the outputs of the storage means and corresponding to bits of one of the two possible logic values expected to be present at the selected outputs when a code word having the predetermined combination of bits is present in the storage means and at the outputs of the storage means, each of said inverter means being operative to invert the logic value of the bit presented to the corresponding output of the storage means; and

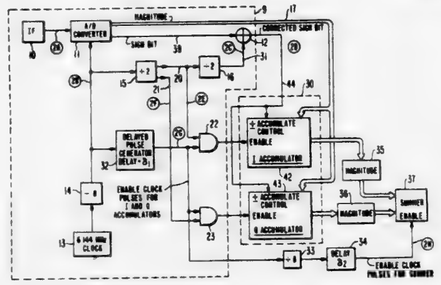
a plurality of like-valued resistance means coupled to the plurality of inverter means, to the outputs of the storage means and to a common point coupled to the comparator means, said plurality of like-valued resistance means being operative in conjunction with the inverter means to establish and provide to the common point to the comparator means an analog error voltage whenever bits presented to the outputs of the storage means have values other than those expected when a code word having the predetermined combination of bits is present in the storage means at the outputs of the storage means; and

comparator means coupled to the linear circuit means and operative to compare the value of each error voltage produced by the linear circuit means against a reference voltage having a value related to a predetermined number of erroneous bits and to produce an output of a first value indicative of an accepted code word when the compared voltages bear a predetermined first relationship to each other and to produce an output of a second value indicative of a non-accepted code word when the compared voltages bear a predetermined second relationship to each other.

4,412,302
DIGITAL PHASE DEMODULATION AND CORRELATION

Edward J. Nossen, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,167
Int. Cl.³ G06F *15/34*
U.S. Cl. 364—728 **12 Claims**



1. A system for digital detection of the energy content of a received analog signal of frequency f_c and comprising:

sampling means including sampling signals for obtaining digitized samplings of said analog signal at sampling rate 4 f_c with successive samplings being defined alternately as I and Q samplings and spaced apart 90° relative to the phase of said received analog signal, and with each of said digitized samplings having a magnitude component and a sign component;

first means responsive to said sampling means to produce first and second quadrature two level timing control signals each having a frequency 2 f_c with the level transitions of said first quadrature signal occurring at each sampling signal, to produce a two level polarity control signal of frequency f_c with the transitions occurring at every alternate sampling, and to produce clock pulses having a repetition rate 4 f_c and occurring between the level transitions defining each half cycle of one of said two level timing control signals;

multiplier means responsive to said sign component of said digitized samplings and said two level polarity control signal to produce a corrected sign bit signal;

and

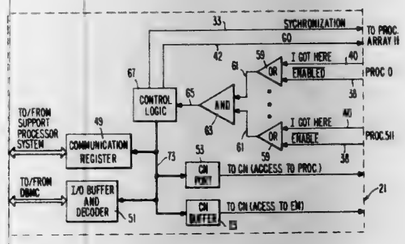
first logic means comprising first and second accumulator means for accumulating, when enabled, the magnitude components of said I and Q samplings, respectively, in accordance with the polarity of the said corrected sign bit signal of each of said samplings; and

second logic means for enabling said first and second accumulator means upon the concurrence of a given level of said first and second two level timing control signals, respectively, and a clock pulse.

4,412,303
ARRAY PROCESSOR ARCHITECTURE

George H. Barnes; Stephen F. Lundstrom, both of Wayne, and Philip E. Shafer, Holmes, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 26, 1979, Ser. No. 97,191
Int. Cl.³ G06F *15/16, 15/20*
U.S. Cl. 364—900 **8 Claims**



1. An array processing system interfacing with a host processor for performing I/O functions and a file memory, said array processing system comprising:

data base buffer memory means having at least one data transfer channel connected to the file memory under control of the support processor for rapid transfer of information therethrough, said data base memory means receiving parallel processing jobs from the file memory and returning to the file memory the processed resultants of the jobs received, said parallel processing jobs including both programs for vector and scalar processing and related data;

an array of parallel memory modules connected via a second data transfer channel to said data base memory means, each memory module in said array storing data from said data base memory means during processing by said array processing system;

an array of parallel processor means, each processor means being programmable for independently processing data fetched approximately in parallel from individual memory modules, each processor means having indicator means for indicating when a future operation must be initiated in parallel with at least one other processor means for indicating when it is ready to begin said future operation;

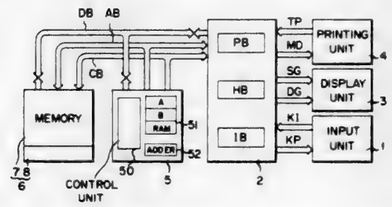
connection network means interposing said array of parallel memory modules and said array of parallel processor means, said connection network means providing a plurality of data communication paths between said array of parallel memory modules and said array of parallel processor means wherein each provided data communications path in said plurality thereof is provided to a requested individual memory module from a requesting individual processor means; and

coordinator means connected to each processor means for monitoring each said indicator means for indicating when a future operation must be initiated in parallel with at least one other processor means and for inhibiting each processor means so indicating from initiating said future operation until each processor means so indicating is also indicating that it is ready to begin it's future operation.

4,412,304
ELECTRONIC CASH REGISTER

Tooru Yamakita, Hamura, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1980, Ser. No. 183,630
Claims priority, application Japan, Sep. 10, 1979, 54-115937
Int. Cl.³ G06F *3/12, 3/02*
U.S. Cl. 364—900 **2 Claims**



1. In an electronic cash register, the improvement comprising the combination of:

a keyboard for having entry keys for inputting sales data and particular data date;

a central processing unit coupled to said keyboard for processing input sales data;

current date memory means coupled to said central processing unit for storing current dates;

particular date memory means coupled to said central processing unit for storing a plurality of particular dates written in by way of operation of said keyboard;

message storing means for storing messages corresponding to said particular dates;

said central processing unit including:

a first register means for receiving current date data from said current date memory means and a second register means for receiving a particular date data from said particular date memory means;

means for reading out said current date from said first register means in response to an operation of said keyboard to produce a sales receipt;

means for reading out a particular date sequentially from said second register means;

comparing means for sequentially determining whether the particular date read from said second register means is a particular date following the current date read out from said first register means everytime a particular date is read from said second register means; and

means for extracting only those particular dates following the current date which is read out from said first register means; and

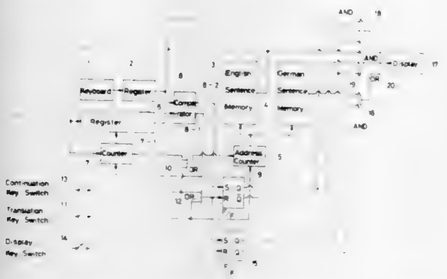
printing means coupled to said central processing unit for issuing a sales receipt and for printing on the sales receipt the current date read out of said first register means, calculated sales data, at least one of the particular dates following said current date and at least one message, previously stored in said message storing means, corresponding to said at least one of said particular dates printed on the sales receipt.

4,412,305

SENTENCE TRANSLATION DEVICE

Kunio Yoshida, Nara, Japan, assignor to 501 Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1980, Ser. No. 204,924
Claims priority, application Japan, Nov. 12, 1979, 54-146935
Int. Cl.³ G06F *15/38*
U.S. Cl. 364—900 **14 Claims**



1. An electronic language translator for use in translating any of a certain plurality of groups of words from a first language into a second language, the translator comprising:

an input means for entering and storing a selected word from a chosen group of words corresponding to one of the certain plurality of groups of words in the first language;

a first memory means for storing data representing each of the plurality of groups of words in the first language;

an address means responsive to the input means for addressing the first memory means to cause sequential retrieval of each of the plurality of groups of words stored in the first memory means;

a detection means connected to the first memory means and responsive to the addressing of the first memory means by the address means for detecting equivalency between the selected word stored in the input means and any word of any one of the plurality of groups of words retrieved from the first memory means;

a second memory means for storing data representing a second and like plurality of groups of words in the second language, each of the second groups of words being the translation of one of the groups in the first language and being correspondingly addressed within the second memory means as is its counterpart in the first memory means, the second memory means being simultaneously addressed along with the first memory means by the address means such that upon a detection of equivalency by the detection means, the corresponding, translated group of words in the second language is retrieved; and

a display means responsive to the detection means for displaying the corresponding, translated group of words in the second language that has been retrieved from the second memory means whereby translation of a group of words from the first language to the second language can be accomplished by inputting only a single word selected from the group of words in the first language.

4,412,306

SYSTEM FOR MINIMIZING SPACE REQUIREMENTS FOR STORAGE AND TRANSMISSION OF DIGITAL SIGNALS

Edward W. Moll, 7A W. Bluebell La., Mt. Laurel, N.J. 08054

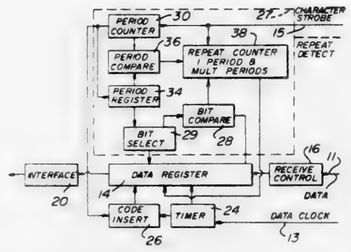
Filed May 14, 1981, Ser. No. 263,570
Int. Cl.³ G06F *7/02*
U.S. Cl. 364—900 **5 Claims**

1. A system for minimizing the storage or transmission of digital information signals, comprising:

(a) data register means for storing said digital information signals at locations in timed relationship with each other corresponding to the order of receipt of said digital signals,

(b) means including a repeat logic circuit for detecting repetition of digital information signals substantially the same as previously transmitted digital signals;

(c) means for detecting the start and length of said repetition relating to said digital signals;



(d) means for deriving a digital repeat code including data relating to the start and length of said repetition when said repetition of said digital signals is detected;

(e) means for inserting said repeat code in said data register means to provide encoded data in locations time related to said digital signals previously stored therein;

(f) utilization means, and

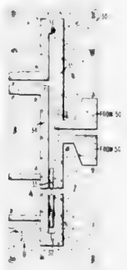
(g) means for transferring said encoded data from said data register means to said utilization means.

4,412,307

MAGNETIC BUBBLE DETECTOR

David T. Ekholm, Bethlehem Township, Hunterdon County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 24, 1981, Ser. No. 305,129
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—8 **6 Claims**



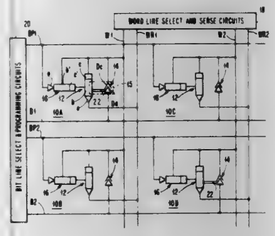
1. A magnetic bubble memory comprising a layer of material in which magnetic bubbles can be moved along at least a first path having spaced-apart first and second positions, a detection element extending from said first position along an axis aligned laterally with respect to the axis of said path and terminating short of said second position, first and second electrical conductors extending between said first and second positions, and means for selectively applying to said first and second conductors current pulses in a manner and for a time to first stretch a bubble in said first position along said detection element to said second position and thereafter to destretch said bubble from said detection element leaving said bubble at said second position.

4,412,308

PROGRAMMABLE BIPOLAR STRUCTURES

David L. Bergeron, Winooski, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 15, 1981, Ser. No. 273,520
Int. Cl.³ G11C *17/06*
U.S. Cl. 365—105 **39 Claims**



1. A switchable structure comprising;

a rectifying contact disposed on an N type semiconductor substrate forming a Schottky diode between said contact and said substrate,

a P type diffusion region disposed in said substrate and spaced within a minority carrier diffusion length from said rectifying contact,

means for applying a potential to said region more positive than the potential at said contact, and

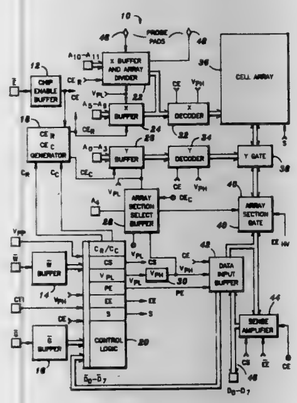
means for applying a reverse bias between said rectifying contact and said N type substrate to produce a conductive filament between said contact and said region.

4,412,309

EEPROM WITH BULK ZERO PROGRAM CAPABILITY

Clinton C. K. Kuo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 28, 1981, Ser. No. 306,119
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—184 **6 Claims**



1. An electrically erasable programmable read only memory (EEPROM) comprising:

an array of memory elements arranged with one of said memory elements at the intersection of each of a plurality of row lines and column lines of said array, said memory elements characterized as assuming relatively high threshold voltage states in response to a selectively applied voltage having a first predetermined polarity, and a relatively low threshold voltage state in response to a selectively applied voltage having a second predetermined polarity; and

circuit means for applying, in response to an array program input signal, to all of the memory elements in said array a voltage having said second predetermined polarity; whereby

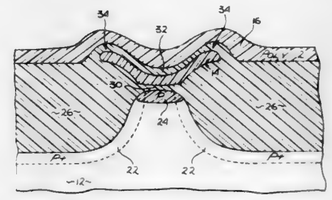
all of said memory elements assume the relatively low threshold voltage state.

4,412,310

EPROM CELL WITH REDUCED PROGRAMMING VOLTAGE AND METHOD OF FABRICATION

George J. Korsh, Redwood City; Mark A. Holler, Milpitas; George Perlegos, Fremont, and Paolo Gargini, Palo Alto, all of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 14, 1980, Ser. No. 196,838
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 **10 Claims**



1. In an electrically programmable, MOS memory cell, having a pair of spaced-apart regions in a substrate which define a channel region, a floating gate member insulated from and disposed above said channel region, and a control gate member insulated from and disposed above said floating gate member, an improvement in said cell wherein:

the insulation between said floating gate member and said control gate member is thicker at the edges of said floating gate member than in the central portion of said floating gate member;

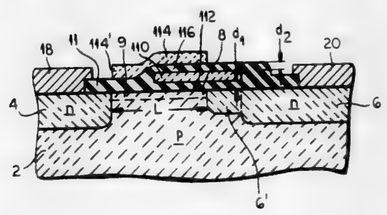
wherein a thinner insulation may be used between said floating gate member and said control gate member without having uncontrolled removal of charge from said floating gate member, thereby permitting the programming of said cell at a lower potential.

4,412,311

STORAGE CELL FOR NONVOLATILE ELECTRICALLY ALTERABLE MEMORY

Franco Miccoli, Ravenna, and Giuseppe Corda, Saronno, both of Italy, assignors to SGS-Ates Componenti Elettronici S.p.A., Agrate Briazna, Italy

Filed Jun. 3, 1981, Ser. No. 269,814
Claims priority, application Italy, Jun. 4, 1980, 22538 A/80
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—185 **7 Claims**

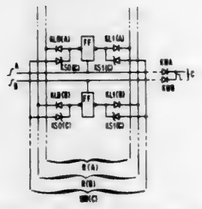


1. A storage cell for a nonvolatile electrically alterable memory, comprising:

a semiconductor substrate of p-type conductivity provided

at a surface thereof with n-doped source and drain areas sepaarated by a channel region;
a dielectric layer on said surface spanning said channel region and adjacent parts of said source and drain areas;
a floating gate of conductive material imbedded in said dielectric layer above a portion of said drain area and an adjacent section of said channel region, said floating gate leaving uncovered another section of said channel region adjoining said source area;
a control gate of conductive material on said dielectric layer extending above and not beyond said channel region between said source and drain areas while terminating above the boundaries of said areas and overlapping only a portion of said floating gate; and
circuit means connected to said drain area and to said control gate for enabling the application of selected writing, reading and cancellation voltages thereto.

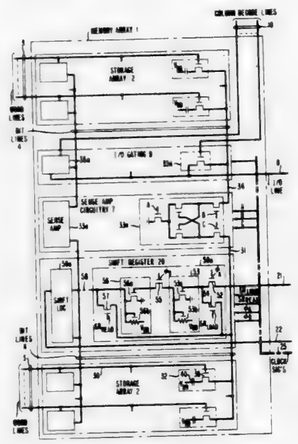
4,412,312
MULTIADDRESSABLE HIGHLY INTEGRATED SEMICONDUCTOR STORAGE
Horst H. Berger, Sindelfingen, and Siegfried K. Wiedmann, Stuttgart, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 2, 1981, Ser. No. 317,045
Claims priority, application European Pat. Off., Nov. 26, 1980, 80 10 7368.5
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—189 **8 Claims**



1. A multiaddressable storage comprising a plurality of intersecting bit and word lines forming crosspoints therebetween, a plurality of storage locations provided at the crosspoints and connected to said respective bit and word lines, said storage locations each consisting of at least a cell pair of two storage elements, and coupling elements for connecting the storage elements to associated bit lines differing from each other and to separate word lines, whereby each storage location is provided with at least three independently selectable read/write ports.

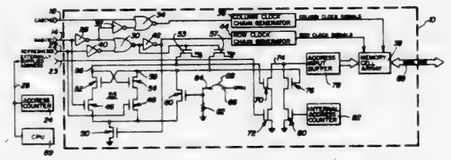
4,412,313
RANDOM ACCESS MEMORY SYSTEM HAVING HIGH-SPEED SERIAL DATA PATHS
Bryan D. Ackland, East Windsor, and Neil H. E. Weste, Eatontown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 19, 1981, Ser. No. 226,462
Int. Cl.³ G11C *7/00, 8/00*
U.S. Cl. 365—221 **11 Claims**

1. A random access memory having a storage array of memory elements arranged in rows and columns, comprising
a plurality of bit lines arranged such that each bit line runs parallel to a respective one of the columns and is connected to at least individual ones of the memory elements in said respective one of the columns,
shift register means directly connected to at least individual ones of said bit lines and positioned within said random access memory substantially at the midpoint of said array, and
means responsive to address signals applied to said memory for transferring bit signals between each of said bit lines and addressed ones of the memory elements in said row and for



transferring said bit signals between said bit lines and said shift register means.

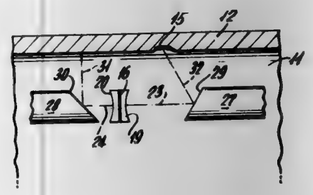
4,412,314
SEMICONDUCTOR MEMORY FOR USE IN CONJUNCTION WITH ERROR DETECTION AND CORRECTION CIRCUIT
Robert J. Proebsting, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.
PCT No. PCT/US80/00672, § 371 Date Jun. 2, 1980, § 102(e) Date Jun. 2, 1980. PCT Pub. No. WO81/03568, PCT Pub. Date Dec. 10, 1981
PCT Filed Jun. 2, 1980, Ser. No. 292,122
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—222 **4 Claims**



1. In a semiconductor dynamic memory wherein a memory cell is accessed through row and column lines at a memory address in conjunction with a row address strobe (RAS) signal and a column address strobe (CAS) signal, the memory address stored in an address buffer, the RAS signal generating row clock signals which access and refresh the memory cells on the row corresponding to the memory address in the address buffer, the CAS signal generating column clock signals for connecting the addressed memory cell to a data bus, a circuit for enhancing the refresh of the memory cells and for enhancing error detection and correction, comprising:
a terminal for receiving a refresh signal;
an internal address counter for generating memory addresses;
means for optionally connecting first and second internal terminals;
means for generating said row clock signals upon receipt of said refresh signal;
means for inhibiting the generation of said column clock signals in the absence of said RAS signal; and
means for transferring the memory address in said address

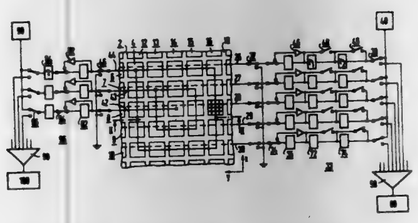
counter to said address buffer when said means for connecting is in the first state and said refresh signal is received in the absence of said RAS signal and for transferring an externally supplied memory address to said address buffer when said means for connecting is in a second state, and either said RAS signal or said refresh signal or said RAS signal and said refresh signal are received.

4,412,315
ACOUSTIC PULSE-ECHO WALL THICKNESS METHOD AND APPARATUS
Norman E. Flournoy, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.
Filed Jul. 27, 1981, Ser. No. 286,921
Int. Cl.³ G01S *15/08*
U.S. Cl. 367—99 **6 Claims**



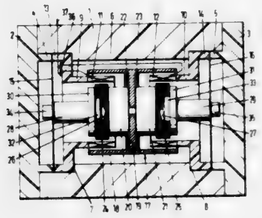
1. Acoustic pulse-echo wall thickness testing method, comprising the steps of
generating acoustic pulses in opposite directions simultaneously,
reflecting one of said pulses into a path normal to said wall,
reflecting the other of said pulses into a path oblique to said wall, and
receiving returning pulses along both said paths to determine thickness and presence of an anomaly in said wall.

4,412,316
ULTRASONIC TRANSDUCER ARRANGEMENT
Heinrich Diepers, Höchstadt, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed May 20, 1981, Ser. No. 265,448
Claims priority, application Fed. Rep. of Germany, May 21, 1980, 3019409
Int. Cl.³ G01S *15/02, 7/54*
U.S. Cl. 367—105 **9 Claims**



1. An ultrasonic transducer array comprising:
a. a matrix of ultrasonic oscillators, each comprising a matrix of jointly controlled column-like transducer elements, the end faces of which are arranged in the plane of one of the flat sides of the matrix, the transducers of each oscillator connected to a common control electrode;
b. on one flat side of the matrix, a separate common control line for each row of ultrasonic oscillators; and
c. on the opposite flat side of the matrix, a separate common control line connected to electrodes of groups of ultrasonic oscillators arranged concentrically to each other.

4,412,317
TRANSDUCER FOR PICKING UP MECHANICAL VIBRATIONS, IN PARTICULAR SEISMIC WAVES, AND A SEISMIC MEASURING SYSTEM INCLUDING SUCH A TRANSDUCER
Ronald J. Aajes, Valkenswaard; Jacobus C. L. van Peppen, Delft, and Klaas B. Klaassen, 's-Gravenzande, all of Netherlands, assignors to De Regt Special Cable B.V., Capelle a/d Ijssel, Netherlands
Filed Dec. 19, 1980, Ser. No. 218,090
Claims priority, application Netherlands, Dec. 21, 1979, 7909287
Int. Cl.³ H04R *11/00*
U.S. Cl. 367—185 **27 Claims**



1. A transducer for picking up mechanical vibrations, in particular seismic waves, comprising:
a housing;
a magnet assembly having first and second magnets disposed in said housing for producing first and second permanent magnetic fields;
a coil system disposed in said housing including two separate coils respectively mounted in corresponding ones of said magnetic fields;
first means for supporting said magnet assembly and said coil system in said housing for relative movement;
said magnet assembly including second means defining a magnetic circuit path for electro-magnetically isolating said two separate coils from each other operative to provide a magnetic short-circuit path for dynamic magnetic fields produced by either one of said coils;
whereby, electromagnetic coupling exists only between respective ones of said two coils and the magnet assembly providing a coupling factor between said two coils substantially equal to zero.

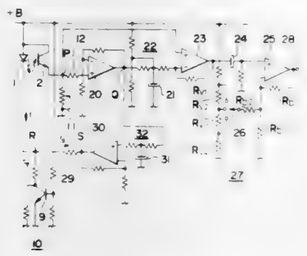
4,412,318
DEVICE FOR DETECTING INTERBAND GAPS ON RECORD MEDIUM
Masao Goto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 19, 1982, Ser. No. 340,538
Claims priority, application Japan, Jan. 23, 1981, 56-9370
Int. Cl.³ G11B *3/38, 17/06*
U.S. Cl. 369—41 **8 Claims**

1. A device for detecting, on a record medium, positions of unrecorded interband regions disposed between bands of recorded information on said medium, in which differences in reflectivity of said regions and said bands are detected by emitting electromagnetic radiation to be incident on a recorded surface of said medium containing said bands and regions and detecting the level of the radiation reflected thereby, comprising
a radiation source for emitting a beam of said radiation to be incident upon said medium with a beam intensity that varies with a current furnished thereto;

detector means detecting the intensity of the beam reflected from said medium and providing an output level that varies with the intensity of the reflected beam;

interband region detecting circuit means having an input coupled to receive the output level of said detector means and providing an interband region detection signal in response to variations in said output level;

average level detecting means having an input coupled to said detector means and an output providing an average level signal in response to a time average of said output level; and



current control means having an input coupled to the output of said average level detecting means and an output coupled to said radiation source for controlling said current furnished to the same and thereby controlling the intensity of said radiation emitted thereby, such that the intensity of the reflected beam is automatically maintained within an operable range of said detector means and detecting circuit means notwithstanding variations from one record medium to another in the reflectivity thereof.

4,412,319

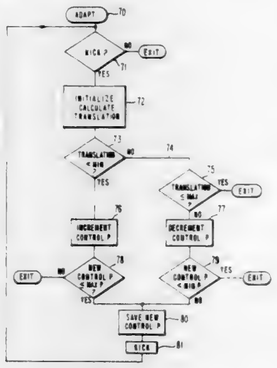
VIDEO DISC PLAYER WITH SELF CALIBRATING STYLUS TRANSLATOR

Bryon K. Taylor, Carmel, Ind., and George H. N. Riddle, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 86,246, Oct. 18, 1979, abandoned. This application Jul. 13, 1981, Ser. No. 283,051

Int. Cl.³ G11B *7/00, 15/52;* **H04N** *5/76*

U.S. Cl. 369—43 **4 Claims**



1. In combination with a disc record player mechanism for recovering recorded information from disc records having information bearing tracks thereon, the recorded information including track identification signals, said player mechanism including circuitry responsive to user operated controls for generating player program commands, said player mechanism further including a track following signal pickup stylus cooperating with pickup circuitry for recovering the recorded signals, the signal pickup stylus being mounted to a first end of a stylus arm, the second end of which is supported by a compliant coupling in a carriage mechanism for translating the signal pickup stylus radially across the disc record, an adaptive stylus translating system for translating the stylus relative to said carriage mechanism comprising:

a transducer responsive to drive signals for selectively imparting stylus translation relative to said carriage mechanism and in a direction radially across said record;

a programmable pulse generator for generating incrementally variable drive signals in response to control signals for application to the transducer;

control circuitry responsive to said recovered track identification signals and to player program commands for generating and calibrating said control signals including;

(a) means for providing a nominal control signal for generating a drive signal to produce a prescribed transducer induced stylus translation;

(b) means responsive to recovered track identification signals for determining errors between the stylus translation induced by the transducer in response to said nominal control signal and said prescribed translation; and

means for adjusting the nominal control signal to reduce said errors thereby producing a corrected nominal control signal, said corrected nominal control signal inducing transducer produced stylus translations equal to the prescribed translation.

4,412,320

RELEASABLE COVER LOCKING DEVICE

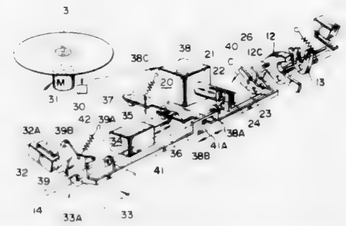
Akio Yamakawa, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 26, 1981, Ser. No. 296,492

Claims priority, application Japan, Aug. 29, 1980, 55-122602[U]

Int. Cl.³ G11B *1/00;* **E05B** *47/00;* **E05C** *3/06*

U.S. Cl. 369—79 **13 Claims**



8. A releasable cover locking device for a recording and/or reproducing apparatus of the type in which a record medium is adapted to be moved when power is supplied to said apparatus, said releasable cover locking device comprising:

support shaft means;

releasable locking means including first lever means rotatably mounted on said support shaft means, and biasing means for rotatably biasing said first lever means about said support shaft means to a locking position;

first release means for releasing said locking means when power is supplied to said apparatus and when the speed of movement of said record medium is less than a predetermined value, said first release means including release link means for biasing said first lever means about said support shaft means to an unlocked position against the biasing force of said biasing means, and actuating means for actuating said release link means to bias said first lever means about said support shaft means to said unlocked position when the speed of movement of said record medium is less than said predetermined value and when said power is supplied to said apparatus, said release link means being rotatably mounted on said support shaft means and including a transmitting arm for biasing said first lever means about said support shaft means to said unlocked position, a driven arm and a connecting member for connecting said driven arm to said transmitting arm; and said actuating means including a reciprocable rod connected to said driven arm and plunger means for actuating said reciprocable rod when said power is supplied to said apparatus and when the speed of movement of said record medium is less than said predetermined value, wherein said transmitting arm biases said first lever means about said support shaft means to said unlocked position; and

second release means for releasing said locking means when said power supplied to said apparatus is interrupted.

4,412,321

RECORD CHANGER

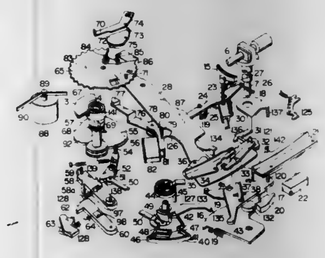
Shunji Tokumitsu, Machida; Hiroyuki Urushibata, Yokohama, and Masao Goto, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 245,098

Claims priority, application Japan, Mar. 18, 1980, 55-34611

Int. Cl.³ G05B *19/28;* **G11B** *3/06*

U.S. Cl. 369—233 **7 Claims**



1. A record playing apparatus of the type including a center spindle on which records are adapted to be held and then dropped onto a turntable to be played, said record playing apparatus comprising:

arm means for reproducing signals recorded on a record situated on said turntable;

detecting means for detecting the position of said arm means;

common operating means for commonly controlling lead-in of said arm means from an inoperative position to an operative position and return of said arm means from an operative position to said inoperative position such that said lead-in of said arm means from said inoperative position to an operative position occurs only when said detecting means detects that said arm means is in said inoperative position; and

stopping means for controlling said common operating means to return said arm means from an operative position to said inoperative position when said detecting means detects that said arm means is in an operative position, said stopping means including three position plunger means which occupies a neutral position during return of said arm means from an operative position to said inoperative position, and record size selecting means associated with said three position plunger means for maintaining said arm means in said inoperative position after the latter is controlled by said stopping means to return thereto from an operative position so as to bring said record playing apparatus to a stop condition.

4,412,322

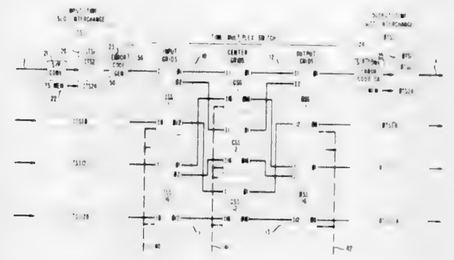
TIME DIVISION SWITCHING SYSTEM

Bruce E. Briley, Countryside, and John Montsma, Wheaton, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 25, 1980, Ser. No. 190,517

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—58 **24 Claims**



5. In a time division multiplex switching system comprising a switching network (FIGS. 1 to 3), at least part of which includes a space switching portion (TMS) for interconnecting input and output channels in which each channel is manifested by recurring periodic time slots each containing a prescribed number of information digits, a method of establishing connections through the network in which in response to a call a first path through the network is selected between an input channel and an output channel in accordance with a path hunt algorithm, said method being characterized by the steps of

transmitting one of the information digits of one of the time slots of the input channel to the output channel via the first path, and

reconfiguring the space portion of the network after the transmission of said one and each other information digit of said time slot such that each said digit is transmitted to the output channel via a different path of the space portion.

4,412,323

MULDEM WITH IMPROVED MONITORING AND CONTROL SYSTEM

Ned E. Abbott, McKinney, Tex.; Hampapur R. Keshavan, Huntington Beach, Calif., and Robert J. McGuire, Richardson, Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 3, 1980, Ser. No. 155,988

Int. Cl.³ H04J *3/14*

U.S. Cl. 370—16 **12 Claims**

1. A multiplexer comprising in combination:

a plurality of parallel data input groups;

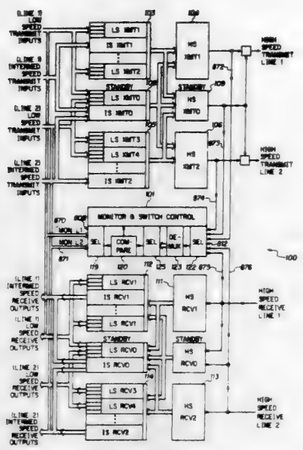
normally on-line transmission means multiplexing said data input groups for serial transmission of high speed data;

standby data protective switching means providing an alternate data path around said transmission means; and

monitor means testing data paths through said multiplexer for detection of malfunctions in said multiplexer and automatically switching a defective normally on-line data path to standby through said alternate data path,

said monitor means including lockout selection means for manually selecting a data path through said multiplexer which is not to be switched to standby, and means for automatically checking the selection accomplished by the

lockout means prior to switching any data path to standby, so as to prevent the selected path from switching



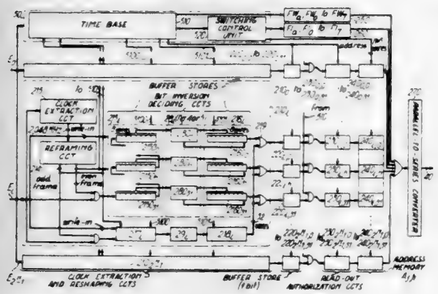
to standby, while permitting automatic protective switching or other data paths.

4,412,324

BIT-BY-BIT TIME-DIVISION SWITCHING NETWORK

Albert Glowinsky, Clamart, and Pierre M. Lucas, Issy-Les-Moulineaux, both of France, assignors to Etat Francais, Issy-Les Moulineaux, France

Filed May 18, 1981, Ser. No. 264,813
Claims priority, application France, May 23, 1980, 80 11549
Int. Cl.³ H04J *6/00*; H04Q *11/04*
U.S. Cl. 370—58 **8 Claims**



1. A time-division digital switching network for switching a plurality of incoming and outgoing isochronous digital data channels transmitting data words consisting of a given even or odd number of bits and having rates which are different but sub-multiples of a given low rate, said switching network comprising:

means for phasing said incoming digital channels;

means connected to said phasing means for adding the bits of each data word of each phased incoming channel into a sum to produce an additional bit having first and second binary states when said sum is respectively no greater and greater than half of the given bit number;

first means controlled by said adding means for selectively inverting and not inverting the bits of said data word of said phased incoming channel in response to the state of said additional bit;

means controlled by said adding means for deriving inversion indicating words, each indicating whether the bit states of each incoming channel word have or have not been inverted;

means for storing the bits having the same rank in said phase incoming channel data words;

means for detecting stored same rank bits having a predetermined binary state;

means for storing address words of said outgoing digital channels to be switched to said incoming digital channels;

means controlled by said predetermined binary state bit detecting means for reading stored outgoing channel address words corresponding to switched incoming channels with bits having said predetermined binary state and the same rank;

means for multiplexing the read outgoing channel address words and said bit inversion indicating words into an address word multiplex digital highway at high rate;

means connected to said multiplex digital highway for detecting said address words of each outgoing digital channel;

means controlled by said address word detecting means for supplying a bit having said first and second binary states to said rank of a data word of said outgoing digital channel in response to said address word of said outgoing digital channel being detected and not detected, respectively;

means connected to said intermediate digital highway for detecting said inversion indicating words for said incoming digital channel words corresponding to each outgoing digital channel to restore said additional bits; and

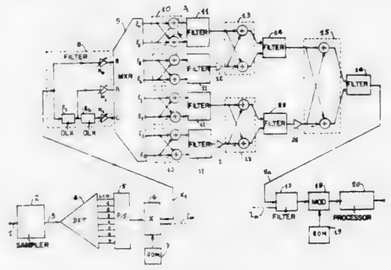
second switching means controlled by said inversion indicating word detecting means for transmitting uninverted and inverted replicas of the bits of each data word transmitted from said supplying means to said outgoing digital channel in response to the binary state of said additional bit corresponding to said data word.

4,412,325

EQUIPMENT FOR SINGLE BAND MULTIPLEXING THROUGH DIGITAL PROCESSING

Francesco Molo, Milan, Italy, assignor to Telettra- Telefonia Elettronica e Radio S.p.A., Milan, Italy

Filed Jul. 13, 1981, Ser. No. 282,644
Int. Cl.³ H04J *4/00*
U.S. Cl. 370—70 **6 Claims**



1. A single sideband system for multiplexing and demultiplexing a given number of baseband signals equal to a power of two, said system having a multiplexing section comprising:

sampling means for sampling the incoming baseband signals at a predetermined sampling frequency to transform the baseband signals into complex sample signals of sample digital form having real and imaginary parts and a frequency spectrum which is symmetrically arranged around zero frequency;

process means for performing a Discrete Fourier Transform on said complex sample signals in groups and in a substantially identical manner for each group to be frequency multiplexed;

wherein each group of signals contains a number of signals equal to a total number of signals to be frequency multiplexed divided by a power of two, there being at least a first and a second of said groups of said signals;

a multiplier for multiplying said complex sample signals by complex numbers to frequency modulate the complex sample signals;

at least first and second synchronously operating demultiplexers for demultiplexing the real and imaginary parts, respectively, of the frequency modulated signals from said multiplier;

first and second substantially identical filter and modulator circuits, each having one output and a number of inputs equal to the number of said groups of said complex signals, each circuit receiving the real and imaginary parts, respectively from said demultiplexer of the demultiplexed signals of respective signal groups in a serial manner and cyclically in time, the filter portions of said circuit comprising a set of individual filters with a passband equal to the frequency which characterizes each baseband signal, said individual filter being cascade-connected to supply one filtering function with a passband symmetrically arranged around the zero frquency and around frequencies which are integral multiples of the predetermined sampling frequency, and wherein said circuits each include individual modulators for frequency shifting the frequency spectra of signals passing through said circuit by a power of two of a basic frequency which is equal to the predetermined sampling frequency multiplied by the number of signals contained in each groups of signals, said individual filters and modulators being connected in a tree-like structure, wherein the output signals of one-half of the individual filters is summed with the output signal of an identical filter from the other half of the individual filters after the output signals from said other half of said filters is passed through one of said individual modulators; and

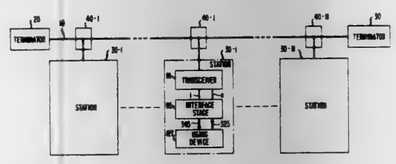
modulator means for frequency translating the output signal from one output of said filter and modulator circuits by one quarter of the predetermined sampling frequency to provide a sampled multiplexed signal in the form of complex output signal samples having real portions which represent single sideband frequency multiplexing of the system input baseband signals.

4,412,326

COLLISION AVOIDING SYSTEM, APPARATUS AND PROTOCOL FOR A MULTIPLE ACCESS DIGITAL COMMUNICATIONS SYSTEM INCLUDING VARIABLE LENGTH PACKETS

John O. Limb, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.

Filed Oct. 23, 1981, Ser. No. 314,489
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—85 **21 Claims**



1. A method for controlling digital signals in a communications system, said system including a communications path, a plurality of stations, at least two of said stations being coupled to said path, said method including the steps of writing signals on said path and reading signals from said path and characterized in that said method further comprises the steps of :

responsive to signals read from said path, avoiding a collision on said communications path, said collision avoiding step including

detecting that a first packet, which is received at a first station on said path, has been transmitted from a second station on said path, and

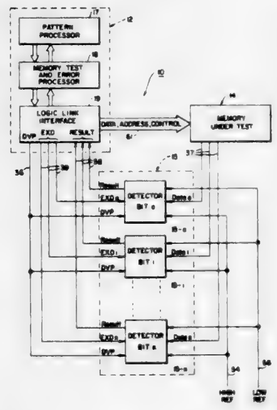
introducing a first predetermined time delay before said first station is permitted to transmit a second packet, said predetermined time delay being related to the electrical distance between said first and said second stations.

4,412,327

TEST CIRCUIT FOR CHECKING MEMORY OUTPUT STATE CONTINUOUSLY DURING TIME WINDOW

William B. Fox, Columbus, and Harry L. Maddox, Reynoldsburg, both of Ohio, assignors to Western Electric Company, Inc., New York, N.Y.

Filed Feb. 25, 1981, Ser. No. 237,836
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—21 **21 Claims**



1. A test circuit for continuously sensing for the presence of valid "one" and "zero" data bit signals read out of a memory when under test throughout an established time window test period, said circuit comprising:

first means, conditionally responsive to a data bit signal, a first time window-controlling signal, and selectively to a second expected reference data bit signal and the complement thereof, when applied thereto, for comparing the logic state of each data bit signal when received from the output of a memory under test relative both to selective predetermined high and low reference voltage limits, when applied to said first means, and to a selected one of the second signal and its complement, when also applied to said first means, with the selected one of the latter two signals, during each time window test period, being predetermined to have the logic state expected of a data bit signal to be compared, and said first means, when made conditionally responsive, producing a high voltage output whenever the state of an applied data bit signal continuously remains valid throughout said time window, and for producing a low voltage output whenever such a data bit signal is sensed at any time to be invalid during a given time window, and

second means, responsive to a high voltage output from said first means, and an applied first signal, for producing a "pass" output signal that corresponds in logic state to that of a continuously valid data bit signal when applied to both said first and second means during each time window, with said second means, in response to a low voltage output from said first means, and an applied first signal, producing a "fail" output signal that corresponds in logic state to that of an invalid data bit signal, even if the latter

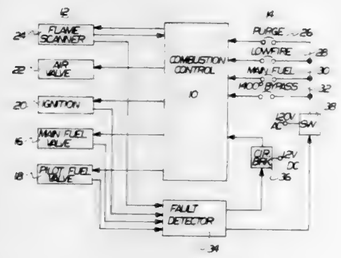
is only momentarily invalid, when applied to both said first and second means during any given time window, said "pass" and "fail" signals remaining for interrogation after the termination of said time window, and a change of any low voltage output from said first means to a high voltage output, until at least the termination of each data bit signal as applied to both said first and second means.

4,412,328

ELECTROMECHANICAL DEVICE DRIVE CIRCUIT FAULT DETECTION APPARATUS

John L. Homa, Lyndhurst, Ohio, assignor to The North American Manufacturing Company, Cleveland, Ohio

Filed Feb. 4, 1981, Ser. No. 231,498
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—25 **13 Claims**



1. Apparatus for verifying the proper operation of a drive circuit which controls the application of power to an electromechanical device comprising:

means for applying a control signal to said drive circuit to cause said drive circuit to apply power to said electromechanical device for an interval of time too brief to cause actuation of said device;

said drive circuit including a controlled switching element connected in series with said electromechanical device across a power source and means for controlling the conductance state of said controlled switching element; and

means for sensing the power applied across said device to verify that power has been properly applied thereto by said drive circuit in response to said control signal;

said apparatus being adapted for use with a drive circuit wherein said means for controlling the conductance state of said controlled switching element includes means for rendering said element conductive in response to said control signal, said element remaining conductive thereafter until the level of current passing through it drops below a limit, said apparatus further comprising reset means for causing said current to drop below said limit in order to reset said conductive element after said controlled switching element has been properly rendered conductive in response to said control signal.

4,412,329

PARITY BIT LOCK-ON METHOD AND APPARATUS

John M. Yarborough, Jr., Palo Alto, Calif., assignor to SRI International, Menlo Park, Calif.

Filed Oct. 15, 1981, Ser. No. 311,782
Int. Cl.³ H04L *7/02*
U.S. Cl. 371—47 **10 Claims**

1. Parity bit lock-on apparatus for use in locking onto parity bits included in a serial bit stream of equal length words each of which words includes a plurality of data bits and a parity bit, said apparatus comprising,

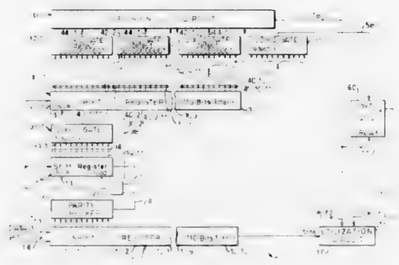
a data shift register having a serial input into which the serial bit stream is shifted and including a plurality of word length sections,

means for parity checking the word length group of bits contained in the first section of the data shift register every bit interval of the bit stream shifted into the register,

a first parity bit shift register having a serial input and a serial output, and having a length of one word,

a second parity bit shift register having a serial input, parallel outputs and having a length equal to that of the data shift register,

means under control of the serial output of said first parity bit register for shifting the output from said parity check-



ing means into the serial inputs of said first and second parity bit shift registers when the serial output from said first parity bit shift register is a 1-bit and for shifting a 0-bit into the first and second parity bit shift registers when the serial output from the first parity bit shift register is a 0-bit, and

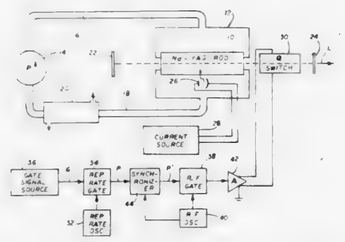
means responsive to parallel outputs from said second parity bit shift register for generating word clock pulses in synchronization with parity bits of words shifted into the final stage of said data shift register.

4,412,330

Q-SWITCHED LASER WITH STABLE OUTPUT AND METHOD OF MAKING THE SAME

Michael S. Mauck, and William S. Neeland, both of Portland, Oreg., assignors to Electro Scientific Industries, Inc., Portland, Oreg.

Filed Apr. 16, 1981, Ser. No. 254,895
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—29 **12 Claims**



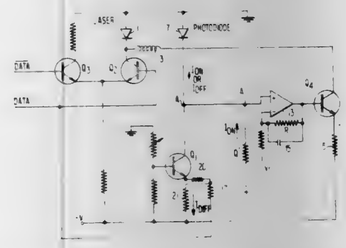
1. In a Q-switched laser having an acousto-optic Q-switch driven intermittently by RF signals having a repetitive wave and interrupted periodically by laser gating pulses having leading and trailing edges, the method of stabilizing the output laser pulses comprising synchronizing the laser gating pulses and the phase of the RF signals with each other.

4,412,331

FEEDBACK CIRCUIT FOR CONTROLLING THE PEAK OPTICAL OUTPUT POWER OF AN INJECTION LASER

Lynn C. Chapman, Gaithersburg, Md., assignor to M/A-COM DCC, Inc., Germantown, Md.

Filed Apr. 22, 1981, Ser. No. 256,466
Int. Cl.³ H01S *3/00*
U.S. Cl. 372—29 **4 Claims**



1. Apparatus for controlling a bias current of a laser at an appropriate operating point, comprising:

means for operating a laser either in an ON state or an OFF state in response to corresponding data signals,

photodiode means for receiving at least a portion of radiation emitted by a laser to be so controlled and for passing a photodiode current corresponding to incident radiation,

a current node coupled to said photodiode means,

a fixed source of current of magnitude I_{ON}, said magnitude I_{ON} corresponding to a photodiode current produced by a laser in said ON state and biased at an appropriate operating point, said fixed source of current also coupled to said node,

current source means for generating a current of magnitude of zero or I_{DIFF}, where I_{DIFF} is a difference between I_{ON} and I_{OFF}, where I_{OFF} is a photodiode current produced by a laser to be so controlled in an OFF state operating at an appropriate bias point, said current source means also connected to said node, and

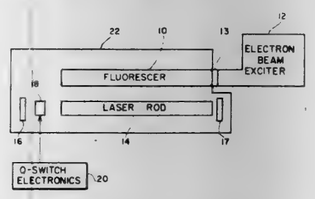
processing means responsive to a net current coupled to said node for deriving said bias current for said laser to be so controlled, wherein said processing means includes an integrator for integrating said net current and producing a signal corresponding to said net integrated current, and means responsive to said net integrated current for producing a bias current inversely proportional thereto.

4,412,332

HIGH EFFICIENCY STORAGE LASER

Mark G. Knights, Brookline, and Evan P. Chicklis, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Mar. 16, 1981, Ser. No. 244,375
Int. Cl.³ H01S *3/091*
U.S. Cl. 372—70 **2 Claims**



1. A high efficiency storage laser, comprising:

a resonant cavity;

means for extracting energy from said cavity;

a solid state $Tm:LiYF_4$ crystal disposed in said cavity; and

pump means including an XeBr* mixture and an electron beam exciter for supplying energy to the XeBr* mixture to cause the XeBr* mixture to spontaneously emit sufficient radiation within the absorption band of the $Tm:LiYF_4$ crystal to cause lasing; and

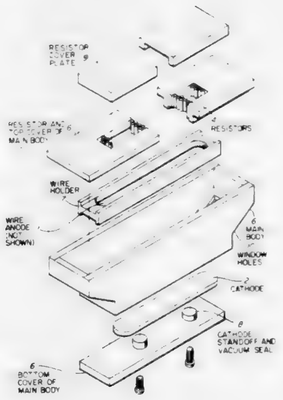
means for supplying the radiation from the spontaneously emitting fluorescer to said crystal.

4,412,333

THREE-ELECTRODE LOW PRESSURE DISCHARGE APPARATUS AND METHOD FOR UNIFORM IONIZATION OF GASEOUS MEDIA

Edward J. McLellan, 422 Connie Ave., Los Alamos, N. Mex. 87544

Filed Oct. 17, 1980, Ser. No. 198,028
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—87 **10 Claims**



1. An apparatus for uniformly ionizing a gaseous medium and substantially uniformly depositing substantial energy therein which comprises in combination:

(a) a pair of rectangular electrodes including a metal cathode and a wire screen anode, said anode being spaced apart from, approximately coextensive with, and disposed in a substantially parallel manner to said cathode and forming a first volume therebetween enclosed on two sides by said pair of rectangular electrodes into which the gaseous medium can freely travel;

(b) a close-packed array of high voltage impedance elements disposed in a planar configuration, said array being spaced apart from, approximately coextensive with, and located in a substantially parallel manner to said anode on the opposite side thereof from said cathode and with said anode forming a second volume therebetween into which the gaseous medium can freely travel, said second volume being enclosed on two sides by said anode and said array, each of said impedance elements in said array thereof including a first electrical lead and a second electrical lead, all of said first electrical leads being unconnected, approximately of equal length and disposed in a manner substantially perpendicular to said planar configuration and pointing toward and spaced apart from said anode, and all of said second leads being brought into electrical contact forming an electrical bus thereby said bus being disposed on said array in a direction away from said anode:

(c) means for producing a low energy, high voltage pulse between said bus and said anode thereby forming a first electric discharge in the gaseous medium present in said second volume, said first electric discharge producing a uniform ionization of the gaseous medium in said second

volume which extends into said first volume through said anode in a manner sufficient to produce substantial uniform ionization of the gaseous medium therein;

(d) means for producing a high dc potential difference between said pair of electrodes said potential difference being below the breakdown limit of the gaseous medium in said first volume, said potential difference producing means being capable of delivering substantial energy to a second electric discharge occurring between said pair of electrodes said second electric discharge being initiated and controlled solely by said substantial uniform ionization of the gaseous medium in said first volume, said second electric discharge depositing substantial energy in the gaseous medium; and

(e) a gas impermeable enclosure for containing and supporting said pair of electrodes and said array of impedance elements, and containing the gaseous medium.

4,412,334

METHOD OF MELTING VITREOUS MATERIALS AND USE OF THE SUITABLE DEVICE FOR THE ACCOMPLISHMENT OF THE METHOD

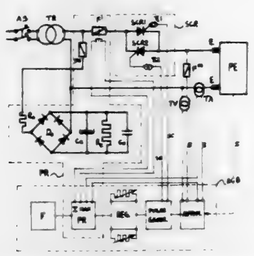
Maurizio G. Tironi, Modena; Mario Barbini, and Giannetto Del Sere, both of Florence, all of Italy, assignors to Elettromeccanica Tironi S.r.l., Italy

Continuation of Ser. No. 117,853, Jan. 31, 1980. This application Apr. 6, 1982, Ser. No. 365,984

Claims priority, application Italy, Feb. 19, 1979, 40024 A/79

Int. Cl.³ C03B *5/027*

U.S. Cl. 373—40 **4 Claims**



1. A method of melting vitreous materials in electric melting plants by controlling the thermal energy supplied electrically to the vitreous mass during the process of melting and/or refining and/or homogenization, comprising the steps of supplying energy to the plant according to supply cycles each having a time interval P, making up each supply cycle P of a time period t_c when power is supplied to said vitreous mass and a time period t_{nc} when no power is supplied, selecting the lengths of said intervals of time t_c and t_{nc} to be each equivalent to an integral number of cycles of the alternating voltage acting on the electrodes, sensing the values of selected operating parameters of said plant, including current, power and/or temperature providing means to control the ratio of t_c to P, feeding signals proportional to said sensed values of said ratio control means, and using said feed back signals to adjust the ratio of t_c to P in each time interval P in response to variations of the values of said selected parameters.

4,412,335

DIGITAL SIGNAL DISTRIBUTION SYSTEM

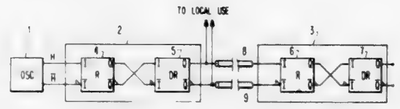
Jean-Claude Froment, Villeneuve-Loubet; Jean-Louis Marijon, Gradignan; Gerard Orengo, Antibes, and Michel Verhaeghe, Le Suve, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1981, Ser. No. 305,564

Claims priority, application European Pat. Off., Nov. 28, 1980, 80430027.5

Int. Cl.³ H03K *6/02*

U.S. Cl. 375—3 **4 Claims**



1. A digital signal distribution system for distributing digital signals to points of a signal transmission chain, characterized in that it includes, at each of said points:

a distribution device being comprised of a receiver and at least one driver, said receiver and driver which are matched and have a true input and a complementary input respectively in phase with a true output and a complementary output, are connected such that the true output of the receiver is connected to the complementary input of the driver and the complementary output of the receiver is connected to the true input of the driver.

4,412,336

STORAGE COMPARATOR, FOR REGENERATING DIGITAL ELECTRIC SIGNALS AND DIGITAL TRANSMISSION SYSTEM USING SUCH A COMPARATOR

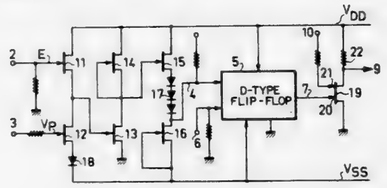
Michel Peltier; Maurice Gloanec; Gerard Nuzillat; Vincent Maurel, and Michel Charrier, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 3, 1980, Ser. No. 203,380

Claims priority, application France, Nov. 5, 1979, 79 27217

Int. Cl.³ H03K *5/153*

U.S. Cl. 375—4 **5 Claims**



1. A storage comparator, providing regeneration of digital electric signals transmitted over coaxial lines, comprising: a D-type field effect transistor flip-flop triggered on leading edges, said comparator further comprising:

an input stage having a FET adjustable threshold voltage comparator, which receives a signal on a first input terminal and a polarization signal on a second input terminal, said polarization signal allowing a choice of the threshold for the signal at the input of the D-type flip-flop, and at least one diode locating said threshold near the FET's threshold, in said input stage; and

an output stage, formed by a double-gate FET, which receives at a first gate thereof the signals from the output terminal of the flip-flop, and at a second gate thereof a control voltage for the impedance adjustment of the output signal.

4,412,337

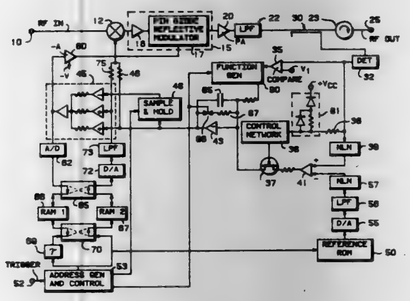
POWER AMPLIFIER AND ENVELOPE CORRECTION CIRCUITRY

Robert H. Bickley, Scottsdale; Christopher D. Broughton, and Thad J. Gearich, both of Mesa, all of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 4, 1981, Ser. No. 318,281

Int. Cl.³ H04B *1/03*

U.S. Cl. 375—60 **16 Claims**



1. A power amplifier and envelope correction circuitry comprising:

(a) a power amplifier having an output and an input;

(b) envelope generating means for generating a preferred envelope;

(c) error determining means, coupled to the output of said amplifier and to said envelope generating means, including a comparison circuit for comparing envelopes at the outputs thereof to determine errors therebetween and provide error signals representative of the difference between the compared envelopes and further including storage means for storing a previous predistorted envelope and combining circuitry for combining the error signals with the stored envelope to produce a corrected predistorted envelope; and

(d) modulating means coupled to the input of said amplifier and to receive the corrected predistorted envelope from said error determining means for modulating input signals applied to the input of said amplifier so that output signals at the output of said amplifier have an envelope substantially similar to the generated preferred envelope.

4,412,338

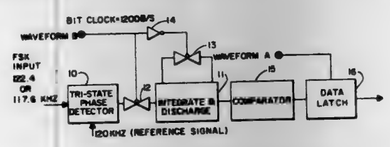
FREQUENCY SHIFT KEYED DETECTOR SYSTEM

Max S. Hendrickson, Forest Lake, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 28, 1981, Ser. No. 306,273

Int. Cl.³ H03D *3/18*

U.S. Cl. 375—82 **5 Claims**



1. A method of discriminating FSK transmitted signals comprising the steps of:

combining a reference input signal of known frequency with an FSK data input signal of unknown frequency but known bit time in a tri-state phase detector;

causing a portion of the output of said tri-state phase detector to be integrated in an integrating circuit means and discharged to a means for determining the binary equivalent thereof once each bit time; and

controlling the integration and discharge function of said integrater circuit means such that the integration function remains disabled for a time at least equal to the minimum clearing time of the tri-state detector before integration is begun during each bit time.

4,412,339

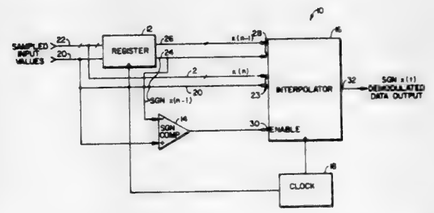
ZERO-CROSSING INTERPOLATOR TO REDUCE ISOCHRONOUS DISTORTION IN A DIGITAL FSK MODEM

Peter H. Alfke, Los Altos Hills, and Michael K. Stauffer, Redwood City, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 24, 1981, Ser. No. 305,015

Int. Cl.³ H03D *3/18*

U.S. Cl. 375—95 **8 Claims**



1. An apparatus for processing a plurality of digital values in a sequence of discrete samples of a continuous signal in a digital data communication receiver, each of said discrete samples being separated by a sampling interval, said apparatus comprising:

means for comparing a first discrete sample of said sequence with a second subsequent discrete sample of said sequence to sense for a change in sign between said first and second samples;

means responsive to a change in sign between said first and second samples for interpolating between values of said first sample and said second sample, which means for interpolating generates a timing signal for estimating the time of occurrence of a zero-crossing of said continuous signal prior to said second sample;

clock means for establishing a plurality of subintervals, each of which is a fraction of said sampling interval;

the means for comparing including means for subtracting the value of said first sample from the value of said second sample to produce an interval difference value;

means coupled to said subtracting means for dividing said interval difference value into a number of subinterval difference values each of which is representative of the fractional change of said interval difference value during each said subinterval;

means responsive to said clock means for repeatedly summing the value of a subinterval difference value and the sum of said first sample and previously summed subinterval difference values in order to generate interpolated values; and

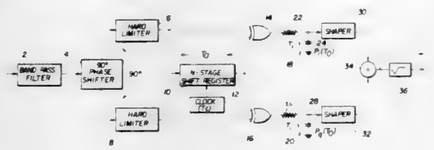
means responsive to said summing means for indicating a zero-crossing of said continuous signal upon occurrence of a change in sign between two successive interpolated values.

4,412,340

ONE-BIT AUTOCORRELATION ENVELOPE DETECTOR

Marion C. Bartlett, and Raymond C. Johnson, both of Gainesville, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1981, Ser. No. 334,626
Int. Cl.³ H03D *3/02*
U.S. Cl. 375—96 **7 Claims**



1. Correlation apparatus for detecting an unknown, narrow-band signal in the presence of wide-band noise-like interference, comprising,

bandpass filter means for accepting said signal and noise and providing a frequency limited output signal,

means for receiving said output signal and for providing therefrom first and second outputs which are phase-shifted 90° for each other,

means for hard-limiting said first and second outputs to provide first and second hard limited digital signals,

means for autocorrelating said first and second hard-limited signals at a selected delay to provide first and second autocorrelation signals,

means for integrating said first and second autocorrelation signals to provide first and second integrated signals, and

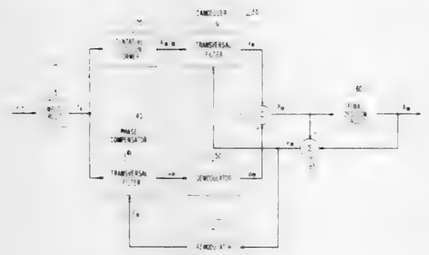
means for processing said first and second integrated signals for providing an estimate of the envelope of the autocorrelation of said frequency limited signal.

4,412,341

INTERFERENCE CANCELLATION METHOD AND APPARATUS

Allen Gersho, Goleta, Calif.; Edmond Y. Ho, Colts Neck Township, Monmouth County, N.J.; Richard D. Gitlin, Monmouth Beach, N.J.; Victor B. Lawrence, Holmdel, N.J., and Tong L. Lim, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 18, 1981, Ser. No. 322,517
Int. Cl.³ H04B *3/14*
U.S. Cl. 375—102 **47 Claims**



1. Apparatus for processing an interference-corrupted signal representing a plurality of data signal values, said interference-

$$Y(\omega)=|Y(\omega)|e^{\theta_Y(\omega)}$$

corrupted signal having a frequency spectrum said apparatus comprising

means for generating in response to said interference-corrupted signal a phase-compensated signal whose frequency spectrum is a function of $|Y(\omega)|$ and is substantially independent of $\theta_Y(\omega)$,

canceller means for forming in response to a stream of tentative decisions as to said signal values a cancellation signal representing the interference in said phase-compensated signal, said tentative decisions having been formed in response to said interference-corrupted signal, and

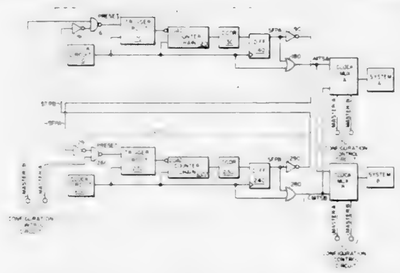
means for forming a stream of final decisions as to said signal values in response to said phase-compensated and cancellation signals.

4,412,342

CLOCK SYNCHRONIZATION SYSTEM

Ashfaq R. Khan, Glendale Heights, and Ivan L. Edwards, Downers Grove, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 18, 1981, Ser. No. 332,137
Int. Cl.³ H03K *1/17*
U.S. Cl. 375—107 **12 Claims**



1. A clock synchronization system for use in a switching system including a plurality of clock circuits, each operated to provide periodic clock pulses, and a control circuit operated to exclusively provide a master clock signal for each clock circuit, said clock synchronization system comprising:

a plurality of clock synchronization circuits each connected to an associated one of said clock circuits, to said control circuit, and to each other clock synchronization circuit, and each operated in response to a predetermined number of said clock pulses from said associated clock circuit and an absence of said master clock signal for each other clock circuit, to provide a timing pulse;

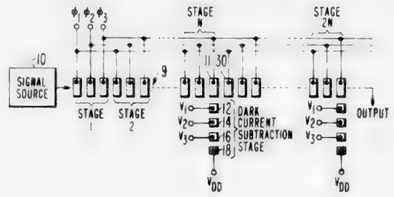
each clock synchronization circuit further operated in response to said master clock signal for each other clock circuit, said timing pulse from each other clock synchronization circuit and a predetermined number of said clock pulses from said associated clock circuit to provide said timing pulse.

4,412,343

CHARGE TRANSFER CIRCUITS WITH DARK CURRENT COMPENSATION

Walter F. Kosonocky, Skillman, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 15,772
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 377—58 **7 Claims**



1. In a charge coupled device (CCD) delay line which includes a semiconductor substrate, electrodes insulated from the substrate to which multiple phase voltages are applied for creating potential wells in the substrate for the storage and propagation of signal charge packets along the length of the delay line, and in which dark current charges are produced which add to the charge packets as they are being propagated along the delay line, a system for reducing the effect of the dark current charge comprising:

means coupled to said CCD delay line for subtracting from each signal charge packet, after it has accumulated a fixed amount of dark current charge, not greater than a relatively small fraction of the capacity of one of said potential wells, said fixed amount of charge and for disposing of the subtracted charge, said means comprising:

M second CCD's coupled to said delay line, where M is an integer equal to at least 1, each such second CCD being located at a point along said CCD delay line at which a charge packet arrives after it has accumulated said fixed amount of dark current charge, each such second CCD comprising:

means including two electrodes coupled to a common voltage source and with a fixed offset voltage between them for creating a potential well in said substrate;

means for propagating each charge packet reaching said second CCD to said potential well;

means for returning all except said fixed amount of said charge in said well to said CCD delay line;

a drain; and

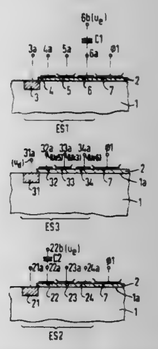
means for shifting said fixed amount of charge to said drain.

4,412,344

INTEGRATED RECTIFIER CIRCUIT

Manfred Mauthe, Munich, and Hans-Jörg Pfleiderer, Zorneding, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,134
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935292
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 377—60 **5 Claims**



1. An integrated rectifier circuit comprising:

a doped semiconductor substrate having a boundary surface;

an insulating layer covering said boundary surface;

a plurality of transfer electrodes on said insulating layer respectively charged with successive clock pulses forming a charge transfer device transfer channel in a region of said substrate beneath said transfer electrodes;

a first input stage for said charge transfer device transfer channel consisting of

a first region disposed in said substrate at said boundary layer and doped oppositely thereto,

a first pair of input gate electrodes disposed on said insulating layer between said first region and said transfer channel;

a second input stage for said charge transfer device transfer channel consisting of

a second region disposed in said substrate at said boundary layer and doped opposite thereto,

a second pair of input gate electrodes disposed on said insulating layer between said second region and said transfer channel;

said first and second regions being connected to a common clock pulse voltage;

each of said input gate electrodes being connected to respective constant voltage sources having a magnitude such that a uniform surface potential is generated in the substrate regions covered by the input gate electrodes;

one of said input gate electrodes in said first pair which is disposed at a greater distance from said first region being charged with an alternating voltage component of an input signal;

one of said input gate electrodes in said second pair disposed closer to said second region being charged with said alternating voltage component of said input signal;

a third input stage for said charge transfer device consisting of

a third region disposed in said substrate having a conductivity type opposite to that of said substrate,

a third pair of input gate electrodes disposed on said insulating layer between said third region and said transfer channel,

said input gate electrodes in said third pair being respectively connected to constant voltage sources of differing magnitudes with an input gate electrode of said third pair which is disclosed closer to said third region being charged with a smaller of the constant voltages; and

an output stage for said charge transfer device at which an output signal is generated,

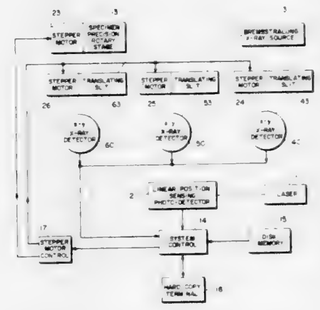
whereby said alternating voltage component in said output signal is rectified.

4,412,345

APPARATUS AND METHOD FOR PRECISE DETERMINATIONS OF CRYSTALLOGRAPHIC ORIENTATION IN CRYSTALLINE SUBSTANCES

S. Thomas Workman, Saratoga; John L. Chambers, Sunnyvale; Myron A. Pugh, San Jose, all of Calif., and Roger W. Ward, Loveland, Colo., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 3, 1981, Ser. No. 289,353
Int. Cl.³ G01N *23/20*
U.S. Cl. 378—078 **5 Claims**



3. A method of measuring the crystallographic orientation of single crystal plates of singly and doubly rotated cuts comprising the steps of;

affixing a major surface of a crystal to be measured to a rotatable table;

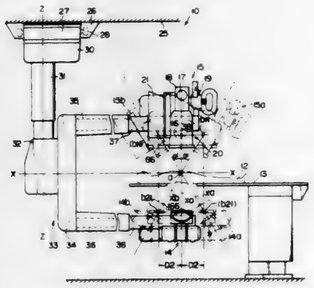
reflecting the output of a collimated light source from a small portion of a major surface of said crystal,
measuring the degree of precession of said reflected light beam;
reflecting from said small portion of said crystal the output of another source of collimated electromagnetic radiation capable of producing at least two diffracted reflections;
measuring the angle of each of the diffracted reflections generated from said other source; and
computing the angle of cut from the measured angles.

4,412,346

X-RAY PHOTOGRAPHY APPARATUS

Eisuke Takenouti, Yamato, and Sigeru Urata, Tochigi, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 19, 1982, Ser. No. 399,868
Claims priority, application Japan, Jul. 21, 1981, 56-114982
Int. Cl.³ G01N *21/26*; G01J *3/34*; G03B *41/16*
U.S. Cl. 378—181 **7 Claims**



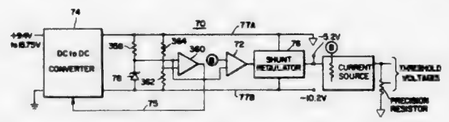
1. An X-ray photography apparatus comprising:
a rotating body rotatable about a substantially horizontal main axis;
an X-ray tube for radiating an X-ray beam along a main plane containing said main axis;
an image receiving device for photographing an X-ray image formed after the X-ray beam is transmitted through a subject lying in the path of the X-ray beam;
first transfer means capable of supporting said image receiving device in a position off said main axis and moving said image receiving device substantially parallel to said main axis over a range exceeding the half length of the stature of the subject;
second transfer means capable of supporting said X-ray tube substantially on the opposite side of said main axis to said image receiving device and moving said X-ray tube substantially parallel to said main axis over a range exceeding the half length of the stature of the subject;
first tilting means attached to said first transfer means to change the direction of said image receiving device within said main plane;
second tilting means attached to said second transfer means to change the direction of said X-ray tube within said main plane; and
means capable of driving said first and second transfer means and said first and second tilting means to set independently the position and direction of said X-ray tube within said main plane and the position and direction of said image receiving device within said main plane.

4,412,347

PRECISION SETTING OF CURRENTS AND REFERENCE VOLTAGES

Jesse B. Lipcon, Harvard, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 267,394, May 26, 1981, Pat. No. 4,384,363. This application Aug. 11, 1981, Ser. No. 292,006
Int. Cl.³ H04B *1/00, 1/40*
U.S. Cl. 455—58 **4 Claims**



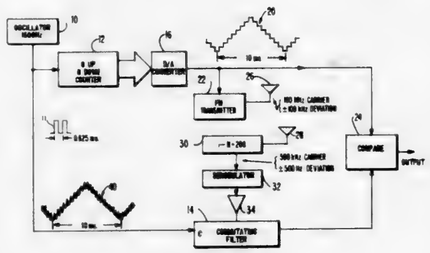
1. A precision combination voltage and current source comprising:
means for providing a first d.c. power supply voltage;
regulator means for providing a second d.c. power supply voltage derived from said first voltage, the amplitude of the second voltage being variable responsive to a control signal;
a current source energized by and having an output that varies with the second voltage;
a means within the current source for developing a voltage across a resistor proportional to the output of the current source;
means for providing a precision reference voltage equal to the desired voltage across said resistor; and
means for comparing the voltage across the resistor with the precision reference voltage, and for generating the regulator control signal in response to the comparison,
whereby the second d.c. power supply voltage is driven by the control signal to a value which causes the voltage across the resistor to tend to equal the reference voltage, thereby simultaneously providing the voltage needed to establish the output of the current source at the desired level and also providing the desired second power supply voltage.

4,412,348

APPARATUS FOR TESTING LINEARITY OF AN FM TRANSMITTER

Eldon M. Sutphin, Jr., Merrimack, N.H., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 369,009
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—67 **4 Claims**



1. Apparatus for testing the amplitude vs. frequency linearity of an FM transmitter receptive of varying amplitudes at an input for producing corresponding various modulation frequencies at an output comprising, in combination:
means for producing an analog signal which varies in amplitude in a known manner at a known rate and including means for producing a signal indicative of said rate;

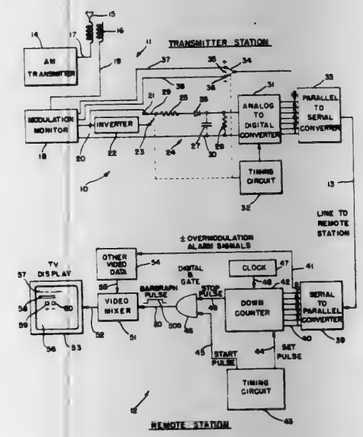
means for applying the analog signal to said transmitter to be tested for causing said transmitter to produce a radio frequency FM signal modulated in accordance with the analog signal provided thereto;
means to demodulate the said radio frequency FM signal from said transmitter to produce an analog signal corresponding to the modulation frequency of said transmitter;
a commutating filter receptive to the output of said demodulator and including a control terminal responsive to said signal at said known rate for controlling the rate at which said commutation filter operates; and
a comparator receptive to said analog signal and the output of said commutating filter.

4,412,349

REMOTE DISPLAY OF PERCENTAGE MODULATION DATA OBTAINED AT A TRANSMITTER SITE

Charles S. Wright, Springfield, Va., assignor to Delta Electronics, Inc., Alexandria, Va.

Continuation-in-part of Ser. No. 255,345, Apr. 17, 1981, abandoned, which is a continuation of Ser. No. 129,311, Mar. 11, 1980, abandoned. This application Oct. 19, 1981, Ser. No. 313,238
Int. Cl.³ H04B *3/46, 17/00*
U.S. Cl. 455—67 **8 Claims**



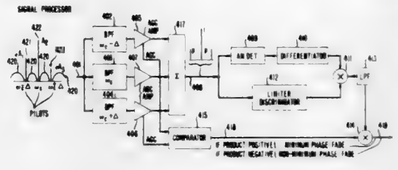
6. A method for remote display of percentage modulation of a broadcast transmission in the form of a modulated broadcast carrier wave measured at a transmitter site comprising continuously measuring the percentage modulation of the broadcast carrier wave at the transmitter site and producing an analog value representing percentage modulation, periodically converting the analog value to digital parallel bit data at a predetermined frequency, converting the digital parallel bit data into serial digital data form and transmitting the serial digital data through a conductor to a remote station, reconverting the serial digital data to parallel bit digital data, periodically producing a bar graph pulse at said predetermined frequency whose length corresponds to the value of said parallel bit digital data reconverted from said serial digital data form, displaying said bar graph pulse on a TV display screen as an illuminated bar graph which begins at a desired point on said TV screen corresponding to zero percentage modulation, generating scale marker pulses corresponding to scale divisions representing percentage modulation values, and producing illuminated scale markers across said TV screen parallel to said bar graph from which the percentage modulation value of said bar graph can be read.

4,412,350

METHOD AND APPARATUS FOR DISTINGUISHING BETWEEN MINIMUM AND NON-MINIMUM PHASE FADES

Hotze Miedema, Boxford, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1981, Ser. No. 335,729
Int. Cl.³ H04B *1/10, 15/00*
U.S. Cl. 455—306 **12 Claims**



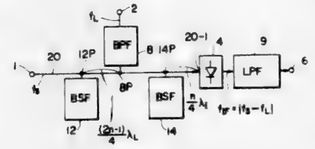
1. A fade character detector for use in a radio receiver adapted to receive an incoming radio signal comprising a phase modulated double-sideband signal having a predetermined modulation rate, said phase modulated signal being amplitude modulated at said rate by fading along with having maximum amplitude attenuation at a fade notch frequency, said fade character detector being characterized by
means (e.g., **402, 403, 404, 405, 406, 407, 417, 409, 410, 411, 412, 413**) responsive to said phase modulated signal for determining an algebraic sign of the fade induced amplitude modulation;
means (e.g., **402, 404, 405, 406, 415**) responsive to said phase modulated signal for determining the location of the fade notch frequency relative to the center of the double-sideband signal frequency spectrum; and
means (e.g., **414**) responsive to the determined fade notch frequency location and the determined algebraic sign for determining when the fade is minimum phase fade and when the fade is non-minimum phase fade.

4,412,351

MICROWAVE MIXING CIRCUIT

Hiroshi Onishi; Sadahiko Yamashita, and Mitsuo Makimoto, all of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 43,003, May 29, 1979, abandoned. This application Oct. 23, 1981, Ser. No. 314,501
Claims priority, application Japan, May 30, 1978, 53-65205
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—317 **12 Claims**



1. A microwave mixing circuit constructed of a microwave integrated circuit, comprising:
(a) a main transmission line having an input port at one end thereof for receiving an input high frequency, and an output port at an opposite end thereof;
(b) a band pass filter responsive to a local oscillation frequency, said band pass filter having a parallel-coupled strip line filter which is electromagnetically coupled to said main transmission line at a point between said input and output ports;
(c) a mixing diode having an input terminal connected to said output port for producing an intermediate frequency by mixing said local oscillation frequency, supplied to said

diode in one direction along a portion of said main transmission line, with said input high frequency, supplied to said diode in the same direction along said main transmission line including said main line portion; and

(d) a band stop filter for simultaneously blocking said local oscillation frequency and an image frequency, produced by said diode in response to said input high frequency and to said local oscillation frequency, said band stop filter being electromagnetically coupled to said main transmission line between said input port and said point in such a manner the the impedance at said local oscillation frequency viewed from said point toward said input port is infinite and that the impedance at said image frequency viewed from the input terminal of said mixing diode toward said point is either zero or infinite.

4,412,352

FREQUENCY CONVERSION CIRCUIT

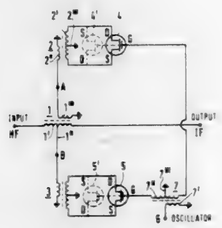
Harald Schuster, Neu-Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 23, 1982, Ser. No. 371,477

Claims priority, application Fed. Rep. of Germany, May 13, 1981, 3118854

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—319 **6 Claims**



1. A circuit arrangement for converting the frequency of a high-frequency input signal into an intermediate frequency output signal by mixing with the frequency of a heterodyning oscillator, comprising in combination: an input terminal for receiving said high frequency input signal and an output terminal for providing said intermediate frequency output signal; a polarity reversing transformer having a primary winding with a center tap and, a secondary winding, said primary winding being connected between said input and said output terminals; and electronic switching means responsive to an output signal from a heterodyning oscillator for, at the frequency of the heterodyning oscillator, alternately short-circuiting and open circuiting said secondary winding and, with a 180° shift in phase, alternately short circuiting and open circuiting said center tap of said primary winding of said polarity reversing transformer.

4,412,353

MIXING CIRCUIT

Shinobu Itoh, 5-6-10-401, Shinkawa, Mitaka-shi, Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,978

Claims priority, application Japan, Jan. 19, 1979, 54-4971

Int. Cl.³ H04M *1/58*

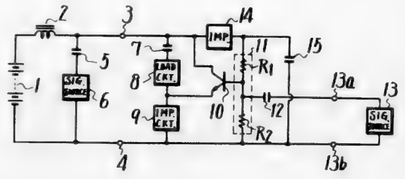
U.S. Cl. 455—323 **12 Claims**

1. A mixing circuit comprising:

(A) first and second signal sources;

(B) a series connection of a load circuit and an impedance circuit connected in parallel to said first signal source;

(C) an active element having a main current path in parallel across said load circuit and a control electrode connected to said second signal source; in which a mixed signal component of first and second signals from said first and second signal sources is derived from said load circuit,



said series connection and active element cooperating to present high impedance.

4,412,354

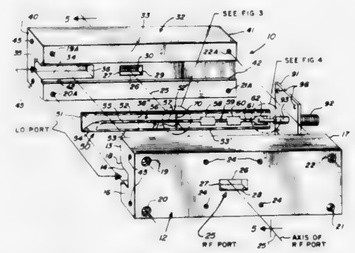
MILLIMETER-WAVE STRIPLINE PLANAR MIXER

Chi P. Hu, Santa Barbara, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 1, 1982, Ser. No. 364,289

Int. Cl.³ H04B *1/26*

U.S. Cl. 455—327 **10 Claims**



1. A millimeter-wave stripline planar wide-band mixer comprising:

(a) an elongated housing member having a first end and a second end;

(b) an elongated enclosure extending from one end of said housing member to the other end thereof;

(c) an elongated flat stripline base member positioned in said elongated enclosure;

(d) a first relatively deep recess in said housing member extending from said enclosure along one side of the entire length of said stripline member;

(e) a second relatively deep recess in said housing member extending from said enclosure along a relatively short portion of the other side of said stripline member beginning at said first end of said housing member;

(f) a radio frequency (R.F.) port passing into said housing member intersecting at a right angle with said first deep recess, and also extending into said housing member a quarter wave length beyond said elongated enclosure;

(g) first planar microstrip means on said stripline base member extending from said first end of said housing member in register with said second deep recess in said housing;

(h) second planar microstrip means on said stripline base member having a first end connected to said first planar microstrip means and extending therefrom to the second end of said housing member;

(i) a matched pair of mixer diodes connected in series and also connected to said second planar microstrip means at a location substantially in register with the axis of said R.F. port;

(j) means for applying a local oscillator (L.O.) signal to said first end of said housing and to the ends of said first and second relatively deep recesses which collectively define a local oscillator port and thus to an end of said first planar microstrip means;

(k) means for applying a R.F. signal to said R.F. port and thence to impinge on said pair of mixer diodes to thereby mix with said L.O. signal and to produce an intermediate frequency (I.F.) signal;

(l) I.F. output means attached to the other end of said housing, said I.F. output means being connected to the other end of said second planar microstrip means; and

(m) filter means associated with said second planar microstrip means located between said I.F. output means and said pair of mixer diodes.

4,412,355

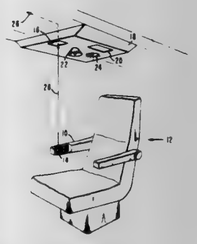
PUSH-BUTTON OPERATED ELECTRICAL POWER SOURCE FOR AN OPTICAL COMMUNICATION LINK

William H. Terbrack, Irvine, and Terry L. Hummel, Laguna Hills, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Oct. 14, 1981, Ser. No. 311,367

Int. Cl.³ H04B *9/00*

U.S. Cl. 455—603 **7 Claims**



1. A power supply, comprising:

an unmagnetized core;

a coil associated with said core and having two output terminals;

a permanent magnet;

means for oscillating said permanent magnet near said coils so as to induce a magnetic flux in said core, said core being otherwise unmagnetized;

means for permitting manual actuation of said oscillating means;

a transmitter;

a code generator associated with said transmitter;

means coupling electrical power from said coil to said transmitter and said code generator, whereby said transmitter transmits a code in synchronism with said code generator upon manual actuation of said oscillating means;

wherein said core comprises at least three legs and said permanent magnet comprises at least two legs, said coil being wound around at least one of said core legs, and said oscillating means cause said two magnet legs to face respective ones of alternate pairs of adjacent ones of said three core legs in alternate succession, whereby magnetic flux reversal through said core occurs in each motion cycle of said oscillating means.

4,412,356

LIGHT ACTUATED REMOTE CONTROL SECURITY SYSTEM

Jack C. Klaus; Larry D. Schroeder; Vincent H. Casteel, and Kenneth E. Schwartz, all of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 14, 1980, Ser. No. 112,125

Int. Cl.³ F05B *47/00*; H04B *9/00*; H04Q *1/00*

U.S. Cl. 455—603 **4 Claims**



1. A remote control lock for a door having one side pivotally connected to one side portion of a door frame and an opposite free side closeable against an opposite side portion of the door frame, comprising,

a lock housing supported on said opposite side portion of said door frame,

a lock element supported on said housing for movement between a locked position wherein said element is advanced into the path of said door and an unlocked position wherein said element is retracted clear of the path of said door,

a lock element receiving member secured to said opposite free side of said door at a position for receiving said lock element in the locked position thereof when said door is closed, thereby to lock said door in the closed position,

bias means urging said lock element to said locked position,

an electrically actuated power means supported by said housing for moving said lock element to said unlocked position against the urging of said bias means,

a portable transmitter adapted to generate light which is interrupted at a continuously oscillating predetermined frequency,

a signal receiving circuit supported by said housing and including means for detecting said encoded light signal and verification means for determining whether said encoded light signal is interrupted generally at said predetermined frequency,

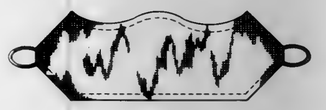
said verification means being electrically connected to said power means and operative to actuate said power means to move said lock element to said unlocked position when the frequency of the detected light signal substantially equals said predetermined frequency,

said signal receiving circuit further comprising an override switch which is manually operable to actuate said power means to retrace said lock element.

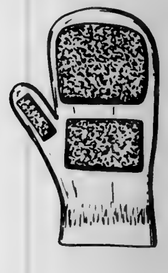
DESIGNS

OCTOBER 25, 1983

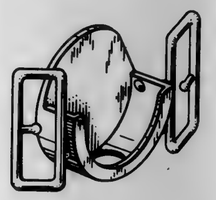
271,059
FACIAL MASK
Ardath E. McKelvy, 5100 Leetsdale Dr., #125, Denver, Colo. 80222
Filed Mar. 23, 1981, Ser. No. 246,736
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—234



271,060
SCRUBBING MITTEN
Mohammad A. Sami, 3271 Gilbert, Huntington Beach, Calif. 92649
Filed Apr. 13, 1981, Ser. No. 253,990
The portion of the term of this patent subsequent to May 17, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D02—*06*
U.S. Cl. D2—365



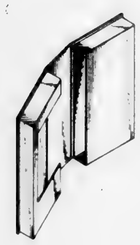
271,061
COMBINED BELT BUCKLE AND SNUFF BOX HOLDER
Tom Zimmerman, 1642 Apache Trail, St. Germain, Wis. 54558
Filed Jun. 10, 1981, Ser. No. 270,856
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D2—400



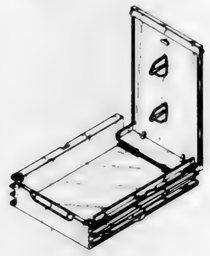
271,062
KNITTING NEEDLE
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 19, 1979, Ser. No. 105,288
Claims priority, application Japan, Nov. 12, 1979, 54-47496
The portion of the term of this patent subsequent to Jul. 19, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D02—*07*
U.S. Cl. D3—28



271,063
VIDEO CASSETTE BOOK COVER STORAGE RECEPTACLE PACKAGE
Edward M. Compton, 7116 Three Chopt Rd., Richmond, Va. 23226
Filed Feb. 27, 1981, Ser. No. 238,742
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



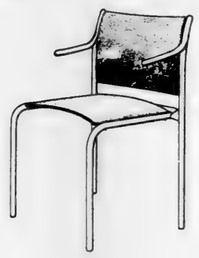
271,064
CASE FOR A MAGNETIC TAPE
Hideo Shirako, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 11, 1981, Ser. No. 301,237
Claims priority, application Japan, Jun. 16, 1981, 56-25916
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



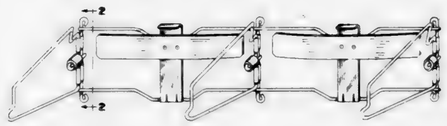
271,065
CHAIR
Robert V. Thompson, Boatyard Condominiums, 75th Ave. N., Myrtle Beach, S.C. 29577
Filed Apr. 23, 1981, Ser. No. 256,940
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—69



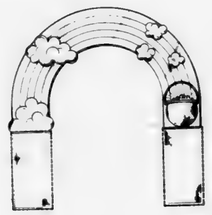
271,066
ARMCHAIR
David L. Rowland, 8 E. 62nd St., New York, N.Y. 10021
Filed Jun. 9, 1980, Ser. No. 157,960
The portion of the term of this patent subsequent to May 3, 1997, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—72



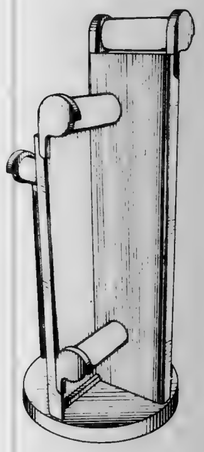
271,067
BAG HOLDER OR THE LIKE
Randolph D. Prader, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 30, 1981, Ser. No. 259,220
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—114



271,068
BRIDGING RAINBOW ORNAMENT FOR USE PRIMARILY BETWEEN A PAIR OF AUDIO COMPONENTS
Richard D. Williams, c/o Monte R. Williams, 2002 N. Irwin, Indianapolis, Ind. 46219
Filed Sep. 24, 1980, Ser. No. 190,488
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—151



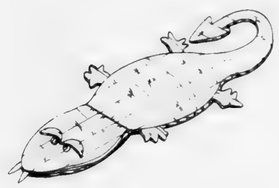
271,069
CHAIN JEWELRY DISPLAY UNIT
Raymond J. Caminale, New York, N.Y., and John Svezia, Millburn, N.J., assignors to Trifari, Krussman & Fishel, Inc., New York, N.Y.
Filed Jun. 8, 1981, Ser. No. 271,582
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



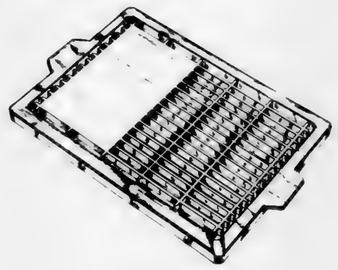
271,070
FURNITURE CORNER PROTECTOR
Douglas Durkee, 1173 Hill Crest Rd., Cincinnati, Ohio 45224
Filed Jun. 23, 1981, Ser. No. 276,466
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—191



271,071
CHILD'S SLEEPING BAG
Sarah L. Koether, 1333 E. Third Ave., Denver, Colo. 80218
Filed May 26, 1981, Ser. No. 266,807
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—203



271,072
COMBINED CUTTING BOARD AND SERVING TRAY
Olaf G. Mjelde, P.O. Box 83, Old York Rd., Three Bridges, N.J. 08887
Filed May 4, 1981, Ser. No. 260,307
Term of patent 14 years
Int. Cl. D07—*04, 99*
U.S. Cl. D7—3

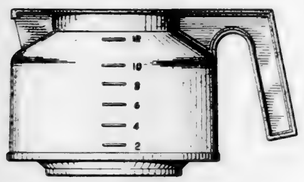


271,073
CUP HOLDER
Stanley R. Field, 2459 W. 256th St., Lomita, Calif. 90717
Filed Jul. 2, 1981, Ser. No. 279,869
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—70

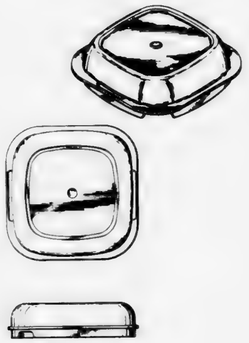


271,074
COFFEE SERVER
James E. Richardson, Weston, Conn., assignor to ACA Products, Inc., Greenwich, Conn.
Filed Dec. 15, 1980, Ser. No. 216,389
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—318





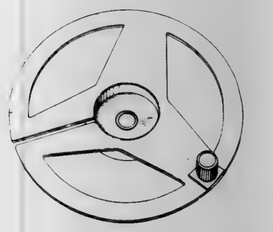
271,075
COVER FOR AN ICE CONTAINER
Robert H. C. M. Daenen, Hekelgem, Belgium, and Erik Herlow, Tikob, Denmark, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Sep. 17, 1981, Ser. No. 280,684
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—391



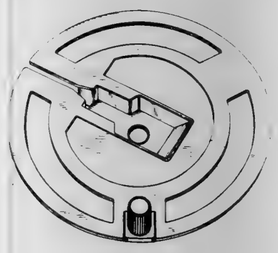
271,076
AXE HEAD
George Hillinger, Los Angeles, Calif., assignor to Alltrade, Inc., Montebello, Calif.
Filed May 4, 1981, Ser. No. 260,033
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—76



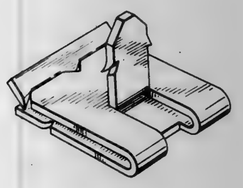
271,077
HOSE CASSETTE REEL
John R. Houghton, Skjetten, Norway, assignor to Heger Plastics A/S, Oslo, Norway
Filed Apr. 3, 1981, Ser. No. 250,673
Claims priority, application Norway, Oct. 8, 1980, 61403
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—358



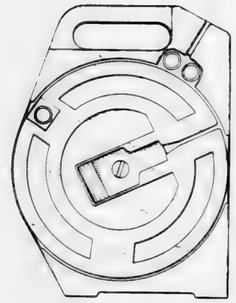
271,078
REEL FOR A HOSE CASSETTE
John R. Houghton, Skjetten, Norway, assignor to Heger Plastics A/S, Oslo, Norway
Filed Apr. 3, 1981, Ser. No. 250,674
Claims priority, application Norway, Oct. 8, 1980, 61404
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—358



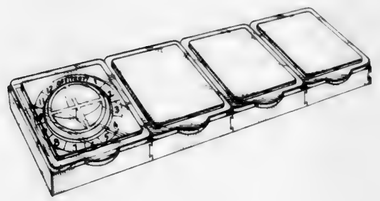
271,079
SPLASH GUARD CLIP
Douglas K. Ward, Toronto, Canada, assignor to Powerflow Inc., Buffalo, N.Y.
Filed Feb. 5, 1981, Ser. No. 231,642
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



271,080
HOSE CASSETTE
John R. Houghton, Skjetten, Norway, assignor to Heger Plastics A/S, Oslo, Norway
Filed Apr. 3, 1981, Ser. No. 250,675
Claims priority, application Norway, Oct. 8, 1980, 61405
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—359



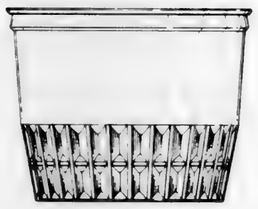
271,081
PILL CONTAINER
Terrance O. Noble, Rosemount, Minn., assignor to Quanterron, Inc., Burnsville, Minn.
Filed Jun. 8, 1981, Ser. No. 271,798
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—341



271,082
PERFUME BOTTLE
Dakota Jackson, 383 W. Broadway, New York, N.Y. 10012
Filed Jun. 12, 1981, Ser. No. 272,957
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—377



271,083
PACKAGING CUP OR THE LIKE
Frank S. Tyler, Wirral, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Jun. 2, 1981, Ser. No. 269,209
Claims priority, application United Kingdom, Dec. 5, 1980, 997927
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—389

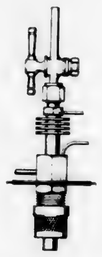


271,084
BOTTLE
William R. Gurolnick, Morton Grove, Ill., assignor to Gold Eagle Co., Chicago, Ill.
Filed Jul. 27, 1981, Ser. No. 287,275
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—389

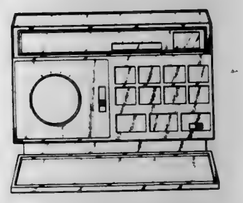


271,085
CHROMATOGRAPHIC ON-COLUMN INJECTOR
Norman W. Wohlers, Davis, and Rand G. Jenkins, Fair Oaks, both of Calif., assignors to J & W Scientific, Inc., Rancho Cordova, Calif.
Filed Apr. 27, 1981, Ser. No. 257,959
Term of patent 14 years
Int. Cl. D10—*04*; D24—*99*
U.S. Cl. D10—46

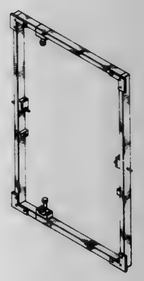




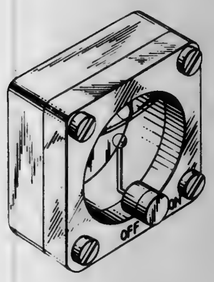
271,086
CLOCK THERMOSTAT
James A. Odom, Apple Valley, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed May 18, 1981, Ser. No. 264,267
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50



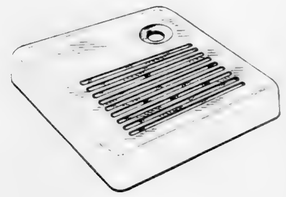
271,087
DOOR JAMB SETTER
Steve E. Gianos, 2402 Oak St., Santa Monica, Calif. 90401
Filed Apr. 13, 1981, Ser. No. 253,694
Term of patent 14 years
Int. Cl. D8—*05*; D10—*04*
U.S. Cl. D10—61



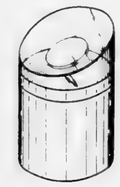
271,088
ILLUMINATED SPIRIT LEVEL
Edwin D. Ebner, 32 John St., New City, N.Y. 10956
Filed Oct. 8, 1981, Ser. No. 309,821
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—69



271,089
SMOKE DETECTOR COVER
John Mallory, Mississauga, Canada, assignor to Isotec Industries Limited, Toronto, Canada
Filed Feb. 17, 1981, Ser. No. 234,933
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—121



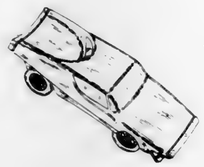
271,090
AWARD
Terrell W. Edgar, Plymouth, and James L. Quinlan, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 22, 1980, Ser. No. 219,028
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—131



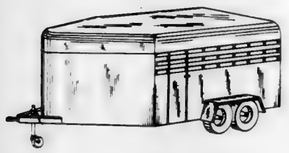
271,091
PLANTER
Paul D. Peterson, 3310 Azahar Pl., Rancho La Costa, Calif. 92008
Division of Ser. No. 74,880, Sep. 12, 1979, Pat. No. Des. 268,256. This application Jun. 24, 1982, Ser. No. 391,840
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—153



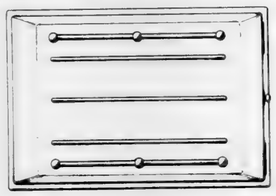
271,092
SPORTS CAR
Orville Prewitt, 65 E. Great Lakes, Apt. 7, River Rouge, Mich. 48218
Filed Nov. 17, 1980, Ser. No. 207,603
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—92

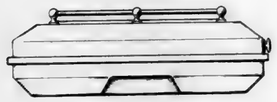


271,093
TRAILER
Clarence Triggs, Belmond, Iowa, assignor to Triggs Manufacturing Company, Belmond, Iowa
Filed Jun. 8, 1981, Ser. No. 271,195
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102

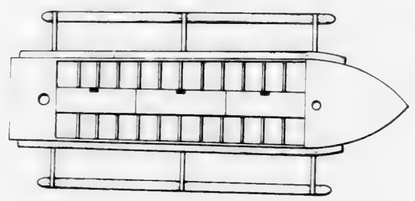


271,094
TRAILER BOX
William E. Fisher, 12634 E. 31st, Tulsa, Okla. 74145
Filed Jul. 2, 1981, Ser. No. 279,764
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—102



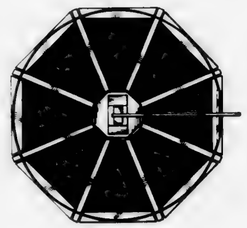


271,095
COMMANDO LANDING CRAFT
Irving D. Paster, 210 Regency West, 2 Jackson Walkway, Providence, R.I. 02903
Filed May 18, 1981, Ser. No. 264,535
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

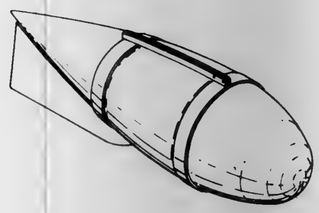


271,096
FISH-BREEDING SEA VESSEL
Aulis U. Nurmi, Sirkkalankatu 27 A 29, SF-20700 Turku 70, Finland
Filed Feb. 17, 1981, Ser. No. 234,494
Claims priority, application Finland, Aug. 19, 1980, 80587
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—316

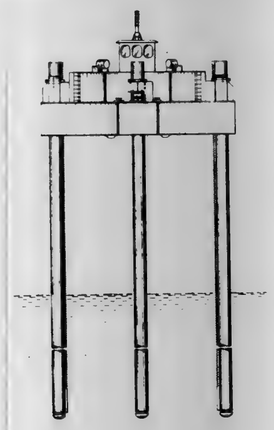




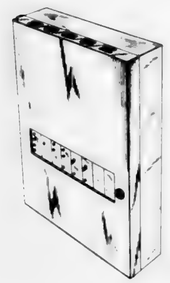
271,097
TOWABLE BUOYANT BODY
Helge Brandsaeter, Stabekk, Norway, assignor to Geophysical Company of Norway A/S, Norway
Filed Feb. 19, 1981, Ser. No. 235,957
Claims priority, application Norway, Aug. 22, 1980, 61277
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—316



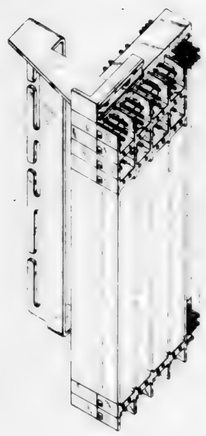
271,098
SELF-ELEVATING WELL SERVICING VESSEL FOR OFFSHORE OIL WELLS OR THE LIKE
David T. Younes, P.O. Box 7333, Abu Dhabi, United Arab Emirates
Filed Jun. 18, 1981, Ser. No. 275,134
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—316



271,099
MODULAR CONTROL UNIT HOUSING FOR AN ELECTRICAL PROTECTION SYSTEM
Terence E. Gibbs, Pomona, N.Y., assignor to American District Telegraph Company, New York, N.Y.
Filed Jul. 30, 1979, Ser. No. 62,005
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



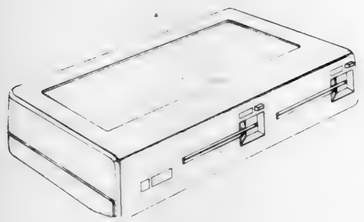
271,100
TELEPHONE CONNECTOR BLOCK
Thomas A. Hollfelder, Huntington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.
Filed Mar. 6, 1981, Ser. No. 241,030
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—24



271,101
COMPUTER HOUSING
Bernard A. Grae, Fort Worth, Tex., assignor to Tandy Corp., Fort Worth, Tex.
Filed Dec. 15, 1980, Ser. No. 216,263
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—100



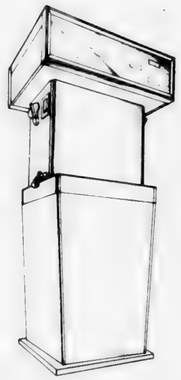
271,102
DUAL DISK DRIVE
Jerrold C. Manock, Palo Alto, and James R. Stewart, San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Aug. 24, 1981, Ser. No. 295,091
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—109



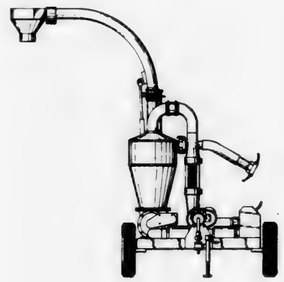
271,103
COMPUTER DISPLAY TERMINAL
Evert Endt, Paris, France, assignor to Thomson, CSF, Paris, France
Filed Jan. 21, 1981, Ser. No. 226,659
Claims priority, application World Intel. Prop. Org., Jul. 21, 1980, DM000276
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D14—113



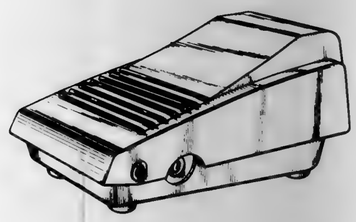
271,104
FUEL PUMP HOUSING
Bolling H. Sasnett, Jr., 80 Forest Lake Dr. N. W., Atlanta, Ga. 30327
Filed Jul. 17, 1981, Ser. No. 284,462
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—9.2



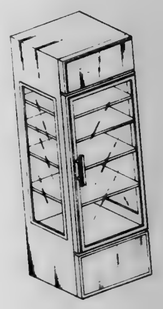
271,105
BULK MATERIAL HANDLING APPARATUS
Roy O. Christianson, and Ted T. Christianson, both of Blomkest, Minn., assignors to Christianson Systems, Inc., Blomkest, Minn.
Filed Jul. 21, 1981, Ser. No. 285,475
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—10



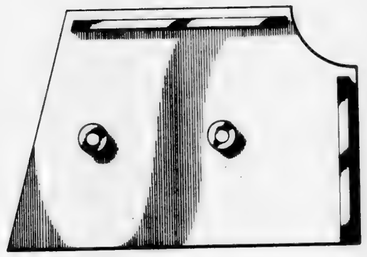
271,106
SEWING MACHINE CONTROLLER
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed Mar. 23, 1981, Ser. No. 246,252
Claims priority, application Japan, Sep. 22, 1980, 55-38832
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D15—72



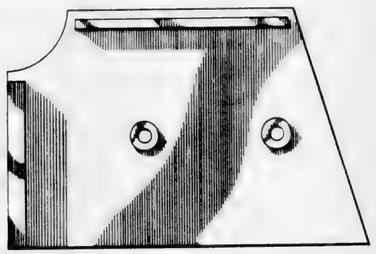
271,107
BEVERAGE COOLER
Arthur W. Trulaske, Frontenac, Mo., assignor to True Manufacturing Company, O'Fallon, Mo.
Filed Nov. 5, 1981, Ser. No. 318,411
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D15—85



271,108
ABRASIVE BLASTING WHEEL LINER
W. David Watts, P.O. Box 48,166, Atlanta, Ga. 30362
Filed Apr. 22, 1981, Ser. No. 256,260
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



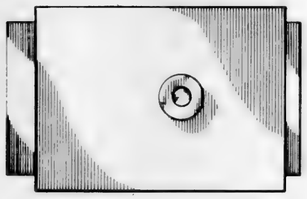
271,109
ABRASIVE BLASTING WHEEL LINER
W. David Watts, P. O. Box 48,166, Atlanta, Ga. 30362
Filed Apr. 22, 1981, Ser. No. 256,494
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



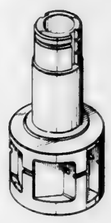
271,110
ABRASIVE BLASTING WHEEL LINER
W. David Watts, P.O. Box 48,166, Atlanta, Ga. 30362
Filed Apr. 22, 1981, Ser. No. 256,606
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



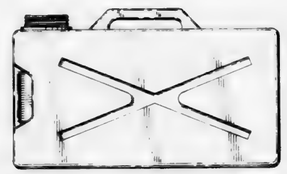
271,111
ABRASIVE BLASTING WHEEL LINER
W. David Watts, P.O. Box 48,166, Atlanta, Ga. 30362
Filed Apr. 22, 1981, Ser. No. 256,609
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—126



271,112
CHUCK BODY
James G. Wiatt; James W. Calvert; Samual L. Belcher, all of Cincinnati, and Roger D. Smith, Bethel, all of Ohio, assignors to Cincinnati Milacron Industries, Inc., Cincinnati, Ohio
Filed Jul. 13, 1981, Ser. No. 282,917
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—140



271,113
CHEMICAL CONTAINER
Stephen P. Birkeland, White Bear Lake, Minn., and Noboru Sawamura, Othu, Japan, assignors to Minnesota Mining & Manufacturing Company, St. Paul, Minn.
Filed Jul. 9, 1981, Ser. No. 281,576
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—27



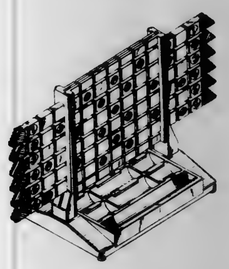
271,114
DRUMSTICK
Irvin H. Brochstein, 10706 Craighead Dr., Houston, Tex. 77025
Filed May 22, 1978, Ser. No. 908,103
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D17—22



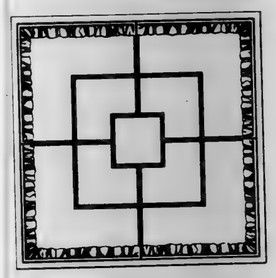
271,115
WRITING INSTRUMENT OR SIMILAR ARTICLE
Richard Luntz, P.O. Box 24234, Lyndhurst, Ohio 44124
Filed Jan. 4, 1982, Ser. No. 336,563
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—47



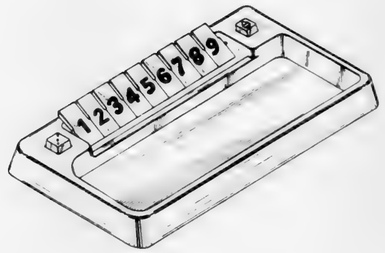
271,116
VERTICAL GAMEBOARD
William B. Burke, Sarasota, Fla., assignor to Milton Bradley International, Inc., Springfield, Mass.
Filed Sep. 21, 1981, Ser. No. 304,172
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12



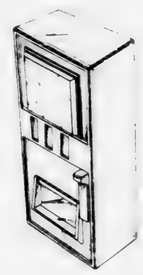
271,117
GAME BOARD
Edward J. Armstrong, P.O. Box 184, Bangor, Me. 04401
Filed Oct. 13, 1981, Ser. No. 311,024
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—34



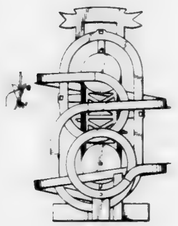
271,118
DICE GAMEBOARD
Hanns Persch, Bodenheim, Fed. Rep. of Germany, assignor to Firma Kuemmerling GmbH, Bodenheim, Fed. Rep. of Germany
Filed Jun. 10, 1981, Ser. No. 272,311
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—41



271,119
TOY VENDING MACHINE
Chun-Chiu Wong, 40-42, 10th Floor, Ta Chuen Ping St., Kwai Chung, Kowloon, Hong Kong
Filed Dec. 24, 1980, Ser. No. 219,974
Claims priority, application United Kingdom, Jun. 27, 1980, 995496
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—124



271,120
TOY TRACKWAY
Hajime Matsumoto, Chiba, and Toshihisa Suga, Saitama, both of Japan, assignors to Toybox Corporation, Tokyo, Japan
Filed Aug. 24, 1981, Ser. No. 295,625
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



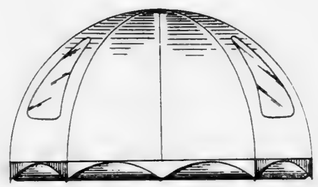
271,121
STUFFED TOY CAT OR SIMILAR ARTICLE
Francesca S. Hoerlein, 857 Castac Pl., Los Angeles, Calif. 90272
Filed Mar. 2, 1981, Ser. No. 239,557
Claims priority, application Taiwan, Jan. 24, 1981, 7030239
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—163



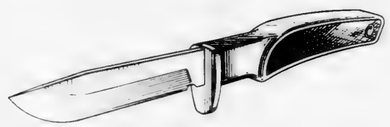
271,122
PLAY POOL
James F. Mariol, 481 Dean View Dr., Cincinnati, Ohio 45224
Filed Sep. 21, 1981, Ser. No. 303,766
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—252



271,123
TENT
Pierre Jutras, 111 rue de la Barre, Suite 111, Longueuil, Quebec, Canada J4K 2T8
Filed Apr. 20, 1981, Ser. No. 255,491
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D21—253



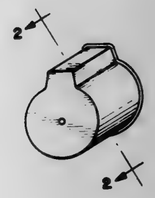
271,124
KNIFE
Robert Ferraro, Springfield, Mass., assignor to Bangor Punta Corporation, Greenwich, Conn.
Filed Sep. 21, 1981, Ser. No. 303,973
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



271,125
KNIFE
Robert Ferraro, Springfield, Mass., assignor to Bangor Punta Corporation, Greenwich, Conn.
Filed Sep. 21, 1981, Ser. No. 303,975
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



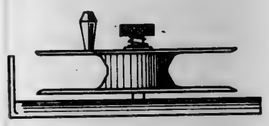
271,126
PROTECTIVE CAP FOR GUN BARREL
Ron K. Doak, 15021 Kimberley La., Houston, Tex. 77079
Filed Nov. 13, 1981, Ser. No. 320,942
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—7



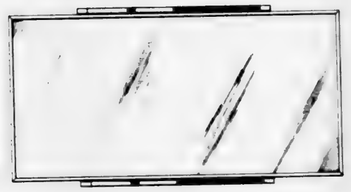
271,127
LINE GUIDE FOR FISHING ROD
Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Shizuoka, Japan
Filed Jul. 1, 1981, Ser. No. 279,355
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24

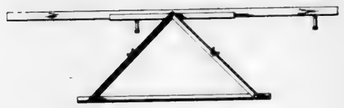


271,128
REEL FOR A FISHING ROD
Douglas D. Riis, 1720 First Ave., Marion, Iowa 52302
Filed Jul. 17, 1981, Ser. No. 284,582
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

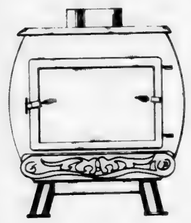


271,129
SOLAR COLLECTOR FOR A SWIMMING POOL
John Demmer, R.D. 2, Kingsley, Pa. 18826
Filed Mar. 31, 1981, Ser. No. 249,586
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—72

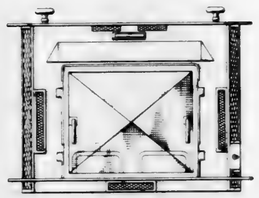




271,130
HEATER
Richard K. Frank, and Gerald L. Quimby, both of 18505 Clubhouse Pl., Sumner, Wash. 98390
Filed Jun. 25, 1979, Ser. No. 51,874
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



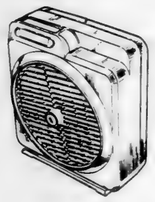
271,131
SOLID FUEL HEATING UNIT
Carrol E. Buckner, Asheville, N.C., assignor to Buck Stove Corporation, Asheville, N.C.
Filed Apr. 1, 1980, Ser. No. 136,187
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



271,132
PORTABLE RADIANT ELECTRIC HEATER
Melvin H. Boldt, Glenview; Thurber H. Morrison, Evanston; Robert W. Becker, Naperville, and Robert S. Huff, Oak Park, all of Ill., assignors to National Presto Industries, Inc., Eau Claire, Wis.
Filed Apr. 8, 1981, Ser. No. 252,190
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—123



271,133
PORTABLE FAN HOUSING
Robert Pataki, Burwood, Australia, assignor to Kemtron Properties Pty. Ltd., Australia
Filed Mar. 4, 1982, Ser. No. 354,739
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155



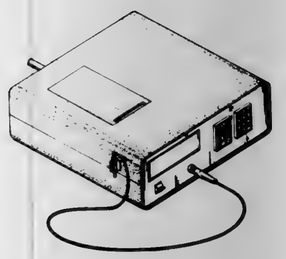
271,134
HOLDER FOR THE BLADE OF A CEILING FAN
Yau Yung, Chai Wan, Hong Kong, assignor to Shell Electric Manufacturing Company Limited, Chai Wan, Hong Kong
Filed Feb. 26, 1982, Ser. No. 352,872
Claims priority, application United Kingdom, Oct. 28, 1981, 1003261
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163



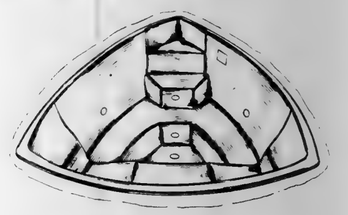
271,135
LARYNGOSCOPE
Gordon M. Greenblatt, 5533 N. Third St., Private Dr., Phoenix, Ariz. 85073
Filed Aug. 21, 1981, Ser. No. 295,119
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17

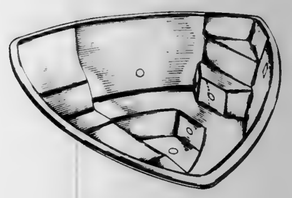


271,136
ULTRASONIC OCULAR BIOMETRY UNIT
Arthur E. Bollinger, St. Louis County, and Kenneth O. Head, St. Louis, both of Mo., assignors to Teknar, Inc., Fenton, Mo.
Filed Oct. 23, 1981, Ser. No. 314,112
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—17



271,137
HYDROTHERAPY SPA
Herbert V. Kohler, Jr., Kohler, and Robert C. Giese, Jr., Sheboygan, both of Wis., assignors to Kohler Company, Kohler, Wis.
Filed May 8, 1981, Ser. No. 261,960
Term of patent 14 years
Int. Cl. D24—*01*; D23—*02*
U.S. Cl. D24—38

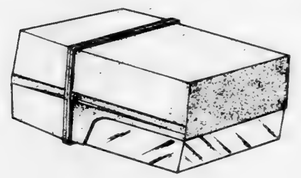




271,138
LIGHT TRANSMITTING PANEL
Frank A. Sportelli, 7 Redwood Ct., Glen Cove, N.Y. 11542
Filed Aug. 11, 1981, Ser. No. 292,088
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—72



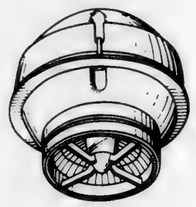
271,139
LUMINAIRE
Hendrik A. J. deVos, Swansea, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Mar. 4, 1981, Ser. No. 240,448
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D26—24



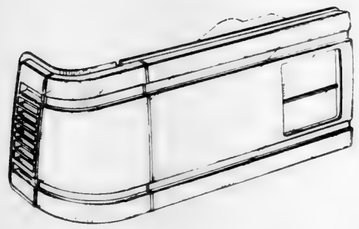
271,140
PORTABLE LANTERN
Paul Thom, Quincy, Mass., assignor to Ray-O-Vac Corporation, Madison, Wis.
Filed Jul. 13, 1981, Ser. No. 282,385
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D26—42



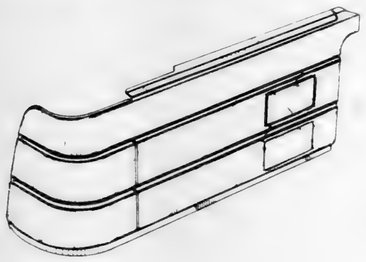
271,141
ADJUSTABLE LIGHT
Herbert E. Seymour, Chatsworth, and Philip Sacks, Van Nuys, both of Calif., assignors to Xantech Corporation, North Hollywood, Calif.
Filed Aug. 2, 1982, Ser. No. 404,576
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—74



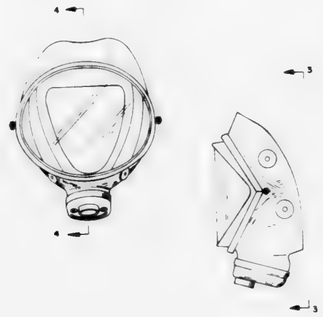
271,142
COMBINED AUTOMOBILE TAILLIGHT LENS AND GRILL
Eiji Hirasawa, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 30, 1982, Ser. No. 430,118
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—120



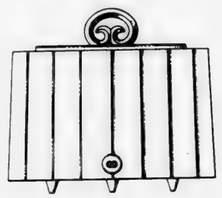
271,143
COMBINED AUTOMOBILE TAILLIGHT LENS AND COVER
Masatoshi Hirakawa, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 30, 1982, Ser. No. 430,123
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—120



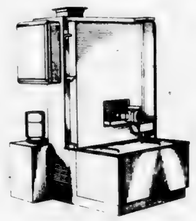
271,144
BREATHING GAS MASK
Donald L. Gadberry, Huntington Beach, Calif., assignor to U.S.D. Corp., Santa Ana, Calif.
Filed Jul. 6, 1981, Ser. No. 280,689
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D29—9



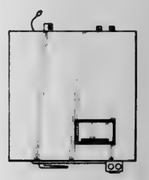
271,145
JEWELRY CLEANER
John J. McNaughton, Newport Beach, Calif., assignor to McJaf Enterprises, Costa Mesa, Calif.
Filed Jun. 1, 1981, Ser. No. 268,800
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—1



271,146
CLEANING APPARATUS FOR AUTOMOTIVE ENGINE PARTS AND THE LIKE
Bero Burghard, and Helmut Schauer, both of 1243 Dorion St., Montreal, Quebec, Canada H2K 4A2
Filed Jan. 19, 1981, Ser. No. 226,530
Term of patent 14 years
Int. Cl. D15—*99, 05*
U.S. Cl. D32—4



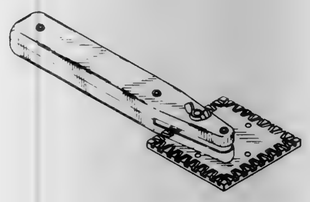
271,147
COIN OPERATED COMMERCIAL WASHER
Howard Krebs, 9 Briarwood Dr., Glen Cove, N.Y. 11542
Filed May 21, 1981, Ser. No. 265,836
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—6



271,148
COMMERCIAL WASHER
Howard Krebs, 9 Briarwood Dr., Glen Cove, N.Y. 11542
Filed May 22, 1981, Ser. No. 266,172
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D32—6



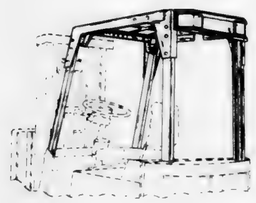
271,149
ICE SCRAPER
William F. Castiglione, Denver, Colo., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Sep. 15, 1980, Ser. No. 187,331
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—48



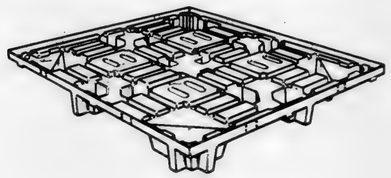
271,150
WINCH
Paul D. Cavanagh, 495 Newbury St., Danvers, Mass. 01923
Filed May 26, 1981, Ser. No. 266,909
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—33



271,151
OVERHEAD GUARD FOR A LIFT TRUCK
Robert L. Kirby; Warner K. Brown, and Deryl R. Hoyt, all of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.
Filed May 22, 1981, Ser. No. 266,033
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—35



271,152
PALLET
Joseph H. Wind, Taylors, S.C., assignor to Bigelow-Sanford, Inc., Greenville, S.C.
Filed Jan. 28, 1981, Ser. No. 229,196
Term of patent 14 years
Int. Cl. D09—*08*
U.S. Cl. D34—38



271,153
TOTE BOX
Thomas P. Deaton, Mason, Ohio, assignor to Nestier Corporation, Cincinnati, Ohio
Filed Apr. 17, 1981, Ser. No. 250,651
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D34—40



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aanstoot, Jan; and Oude Elberink, Bernard H. M., to Hollandse Signaalapparaten B.V. Digital scan converter. 4,412,220., Cl. 343-55.00C.

Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., to Rockwell International Corporation. Muldem with improved monitoring and control system. 4,412,323., Cl. 370-16.000.

Abbott, Thomas I.; and Jones, Cynthia, to Eastman Kodak Company. Radiographic elements exhibiting reduced crossover. 4,411,986., Cl. 430-502.000.

Abdelhamid, Amr N.: *See—*
Traver, Darwin G.; Anderson, Carl M.; and Abdelhamid, Amr N., 4,411,592., Cl. 415-119.000.

Abdulla, Riaz F., to Eli Lilly and Company. Synthesis of 6-t-alkyl-3-pyridazinones. 4,411,753., Cl. 204-158.00R.

Abe, Katsuhiro: *See—*
Takahashi, Hiroshi; and Abe, Katsuhiro, 4,412,044., Cl. 525-329.500.

Abel, Irving R.; and Hatch, Marcus R., to Honeywell Inc. Compact optical system. 4,411,499., Cl. 350-442.000.

Abeta, Sadaharu: *See—*
Hashizume, Shuhei; Abeta, Sadaharu; Ohmae, Tadayuki; and Nishibara, Hajime, 4,411,666., Cl. 8-455.000.

Abex Corporation: *See—*
Beetle, Robert H., 4,411,305., Cl. 164-529.000.

Ableitner, Erich; Conrad, Ulrich; Derndinger, Hans-Otto; and Niemeier, Gerd, to Daimler-Benz AG. Drive mechanism for fuel injection pumps of an internal combustion engine. 4,411,237., Cl. 123-501.000.

Acker, Jesse L.: *See—*
Meserol, Peter M.; and Acker, Jesse L., 4,411,518., Cl. 356-39.000.

Ackland, Bryan D.; and Weste, Neil H. E., to Bell Telephone Laboratories, Incorporated. Random access memory system having high-speed serial data paths. 4,412,313., Cl. 365-221.000.

Adachi, Hiroyuki; and Taniishi, Shinnosuke, to Canon Kabushiki Kaisha. Original illumination apparatus. 4,411,516., Cl. 355-67.000.

Adachi, Keiichi: *See—*
Kobayashi, Hidetoshi; Watanabe, Toshiyuki; Adachi, Keiichi; and Ogawa, Tadashi, 4,411,987., Cl. 430-542.000.

Adelbratt, Kurt, to Aktiebolaget SKF. Device for providing a friction joint. 4,411,551., Cl. 403-370.000.

Adidas - Fabrique de Chassures de Sport: *See—*
Kreyenbuhl, Armand, 4,411,445., Cl. 280-615.000.

Adnovum AG: *See—*
Lauchenauer, Alfred E., 4,411,663., Cl. 8-107.000.

Advanced Cardiovascular Systems, Inc.: *See—*
Simpson, John B.; and Robert, Edward W., 4,411,055., Cl. 29-447.000.

Advanced Fuel Systems: *See—*
Middleton, Harold G., 4,411,234., Cl. 123-485.000.

Advanced Micro Devices, Inc.: *See—*
Alfke, Peter H.; and Stauffer, Michael K., 4,412,339., Cl. 375-95.000.

Aftergut, Siegfried; and Cole, Herbert S., to General Electric Company. Dichroic liquid crystal compositions made with asymmetric tris-azo dyes. 4,411,812., Cl. 252-299.100.

Agarwal, Suresh C.; Jager, Horst; Podder, Nitya G.; and Mollet, Hans, to Ciba-Geigy Corporation. Liquid dyestuff preparations. 4,411,668., Cl. 8-527.000.

Agency of Industrial Science & Technology: *See—*
Sakamoto, Tsunenori, 4,411,728., Cl. 156-606.000.

AGFA-Gevaert N.V.: *See—*
Laridon, Urbain L.; Kokelenberg, Hendrik E.; and Samijn, Rafael P., 4,411,978., Cl. 430-157.000.

Aggregates Equipment, Inc.: *See—*
Morrow, Harold F., Jr., 4,411,578., Cl. 414-300.000.

Agius, Frank P. Tubular key cutting machine. 4,411,567., Cl. 409-82.000.

Agricultural Computer Systems, Inc.: *See—*
Wright, Thad F., 4,411,274., Cl. 128-738.000.

Aikman, Floyd O. Trigger mechanism for firearms. 4,411,087., Cl. 42-69.00A.

Aine, Harry E. Thin film recording and method of making. 4,411,963., Cl. 428-622.000.

Air Products and Chemicals, Inc.: *See—*
Bennett, Douglas L.; and Amoss, Donald C., 4,411,756., Cl. 204-176.000.
Cebalo, Tony; and Walde, Robert A., 4,412,079., Cl. 548-141.000.
Garg, Diwakar; and Givens, Edwin N., 4,411,766., Cl. 208-10.000.
Garg, Diwakar, 4,411,767., Cl. 208-10.000.
Pervier, James W.; Vines, Harvey L.; Marano, Vincent, III; and Patterson, Michael A., 4,411,677., Cl. 62-25.000.

Airco, Inc.: *See—*
Marancik, William G., 4,411,712., Cl. 148-11.50Q.

Aisin Kako Kabushiki Kaisha: *See—*
Sakabe, Toshiaki; Matsumoto, Yasuhiro; and Tsujio, Hisami, 4,411,851., Cl. 264-137.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Inada, Masami; and Nomura, Isshi, 4,411,406., Cl. 251-129.000.
Kawai, Shinji; Suzuki, Koichi; and Yamaguchi, Yuji, 4,411,030., Cl. 4-443.000.
Nishida, Koji; and Kawai, Taneichi, 4,411,208., Cl. 112-103.000.
Sakabe, Toshiaki; Matsumoto, Yasuhiro; and Tsujio, Hisami, 4,411,851., Cl. 264-137.000.

Ajinomoto Company Incorporated: *See—*
Shimazaki, Keishi; Nakamura, Yoshihiro; and Yamada, Yasutsugu, 4,411,997., Cl. 435-115.000.

Akao, Mutsuo, to Fuji Photo Film Co., Ltd. Friction sheet. 4,411,943., Cl. 428-161.000.

Akao, Mutsuo; and Furuta, Haruo, to Fuji Photo Film Co., Ltd. Friction sheets. 4,411,945., Cl. 428-216.000.

Akazawa, Yukio; Matsuya, Yasuyuki; and Iwata, Atsushi, to Nippon Telegraph & Telephone Public Corporation. Digital to analog converter. 4,412,208., Cl. 340-347.0DA.

Akimoto, Osamu: *See—*
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.

Akiyama, Yoshinori: *See—*
Nishimura, Shinichi; Akiyama, Yoshinori; and Hoshika, Yoshiaki, 4,411,470., Cl. 297-410.000.

Aktiebolaget Bofors: *See—*
Gustavsson, Olle, 4,411,188., Cl. 89-20.00A.

Aktiebolaget SKF: *See—*
Adelbratt, Kurt, 4,411,551., Cl. 403-370.000.

Akzo N.V.: *See—*
Hageman, Hendrik J.; Giezen, Egenius A.; and Jansen, Leonardus G. J., 4,411,822., Cl. 502-168.000.
Hageman, Hendrik J.; de Klein, Willem J.; and Giezen, Egenius A., 4,411,823., Cl. 502-168.000.

Akzona Incorporated: *See—*
Seibert, Karl; Praetorius, Heinz; and Poppel, Gunter, 4,411,887., Cl. 424-78.000.

Albany International Corp.: *See—*
Bouley, Robert W.; and Kovar, Robert F., 4,412,012., Cl. 521-54.000.

Albee, Paul J., Jr.; Burdick, Patricia E.; and Wrozina, Joseph I., to Allied Corporation. Low molecular weight copolymer salts as lubricants in plastics. 4,412,040., Cl. 525-143.000.

Alberto-Culver Company: *See—*
Fiebig, August E., Jr.; Shurney, Glenn A.; and Nagy, Anton J., 4,411,855., Cl. 264-219.000.

Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, to Bayer Aktiengesellschaft. Cross-linked silicone-vinyl polymer systems. 4,412,039., Cl. 525-106.000.

Albrecht, Joachim; Duerig, Thomas; and Schroeder, Gunther, to BBC Brown, Boveri & Company Limited. Process to produce a reversible two-way shape memory effect in a component made from a material showing a one-way shape memory effect. 4,411,711., Cl. 148-11.50A.

Albrecht, William L.; and Jones, Winton D., to Richardson-Merrell Inc. Antisecretory 1,2,4-triazole-3-thiols. 4,411,905., Cl. 424-269.000.

Alcan Aluminum Corporation: *See—*
Gailey, J. Lynn; and Wollam, Carl A., 4,411,215., Cl. 118-111.000.
Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander F., 4,411,218., Cl. 118-411.000.

Alcon Laboratories, Inc.: *See—*
Kwan, Stephen C., 4,411,932., Cl. 427-164.000.

Alcott, David K., to Haulamatic Corporation. Log splitter. 4,411,299., Cl. 144-193.00R.

Alderman, Paul. Golf ball retrieving rake. 4,411,463., Cl. 294-19.00A.

Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., to University of Medicine and Dentistry of New Jersey. Bio-absorbable composite tissue scaffold. 4,411,027., Cl. 3-1.000.

Alexeff, Igor. Maser. 4,412,150., Cl. 315-4.000.

Alfke, Peter H.; and Stauffer, Michael K., to Advanced Micro Devices, Inc. Zero-crossing interpolator to reduce isochronous distortion in a digital FSK modem. 4,412,339., Cl. 375-95.000.

Allahverdian, Edward. Cake cutter. 4,411,066., Cl. 30-114.000.

Allcock, Harry R.; and Austin, Paul E., to United States of America, Health and Human Services. Polymer bound dyes prepared by diazo coupling reactions with poly(organophosphazenes). 4,412,066., Cl. 528-168.000.

Allegheny Ludlum Steel Corporation: *See—*
Datta, Amitava; and Stroble, Carl P., 4,411,714., Cl. 148-111.000.

Allen, Albert H.: *See—*
Golden, Neil S., 4,411,112., Cl. 52-288.000.

Allen, David T.: *See—*
Kolegraff, Kenneth J.; and Allen, David T., 4,412,212., Cl. 340-684.000.

Allen, Nina S.: *See—*
Allen, Robert D.; and Allen, Nina S., 4,412,246., Cl. 358-107.000.

Allen, Robert D.; and Allen, Nina S., to Hamamatsu Systems, Inc. Method of adjusting a video microscope system incorporating polarization or interference optics for optimum imaging conditions. 4,412,246., Cl. 358-107.000.

Allied Corporation: *See—*
Albee, Paul J., Jr.; Burdick, Patricia E.; and Wrozina, Joseph I., 4,412,040., Cl. 525-143.000.
Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., 4,411,843., Cl. 260-544.00Y.

Allsop, Jon I.: *See—*
Stern, Donald J.; and Allsop, Jon I., 4,411,387., Cl. 239-345.000.

Altus Corporation: *See—*
Domeniconi, Michael, 4,411,825., Cl. 252-503.000.

Alumasc Limited: *See—*
Hyde, Roger J., 4,411,287., Cl. 137-315.000.

Aluminum Company of America: *See—*
Dawless, Robert K.; Bowman, Kenneth A.; Mazgaj, Robert M.; and Cochran, C. Norman, 4,411,747., Cl. 204-67.000.

Amann, Herbert; and Morlock, Gerhard, to Degussa Aktiengesellschaft. Process for the continuous polymerization or copolymerization of trioxane. 4,412,067., Cl. 528-232.000.

Amberg, Robert L.; and Gaseor, Thomas J., to Boeing Company, The. Brake torque control system. 4,412,291., Cl. 364-426.000.

Amchem Products, Inc.: *See—*
Nishida, Takao; and Hirohata, Takashi, 4,411,937., Cl. 427-435.000.
Smith, Timothy J. C., 4,411,950., Cl. 428-327.000.

American Cyanamid Company: *See—*
Bambrick, William E.; and Goldstein, Marvin S., 4,411,771., Cl. 208-112.000.
Loffelman, Frank F.; and Hoffman, Joseph A., 4,412,020., Cl. 524-100.000.
Shepherd, Robert G., 4,411,903., Cl. 424-267.000.
Smith, Frank H., Jr.; and Mookerjee, Pradip K., 4,411,694., Cl. 71-118.000.

American District Telegraph Co.: *See—*
Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., 4,412,211., Cl. 340-514.000.

American Hospital Supply Corporation: *See—*
White, Fred K., 4,411,163., Cl. 73-864.020.

Ametek, Inc.: *See—*
Schaff, Alfred, Jr., 4,411,158., Cl. 73-721.000.

AMF Incorporated: *See—*
Bos, Peter J., 4,411,139., Cl. 62-126.000.

Ammann, Hans H.; Bonanni, Rocco; and Engelmaier, Werner, to Bell Telephone Laboratories, Incorporated. Laminated electric heat generating member for reflow soldering devices. 4,412,123., Cl. 219-233.000.

Ammermann, Eberhard: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,411,687., Cl. 71-76.000.

Amoss, Donald C.: *See—*
Bennett, Douglas L.; and Amoss, Donald C., 4,411,756., Cl. 204-176.000.

AMP Incorporated: *See—*
Casey, Daniel T., 4,411,484., Cl. 339-97.00C.
Folk, Kenneth F.; and Jackson, Mark F., 4,411,062., Cl. 29-749.000.
McCarty, Patrick R., 4,412,108., Cl. 200-5.00R.

AMSTED Industries Incorporated: *See—*
Gain, Lorand H., Jr., 4,411,288., Cl. 137-363.000.

An, Byung H., to Interstate Electronics Corporation. Audio signal recognition computer. 4,412,098., Cl. 381-43.000.

Anders, Walter G., to Diebold Incorporated. Railway transport banking system. 4,411,336., Cl. 186-37.000.

Anderson, Carl M.: *See—*
Traver, Darwin G.; Anderson, Carl M.; and Abdelhamid, Amr N., 4,411,592., Cl. 415-119.000.

Anderson, James Y. Powder flame spraying apparatus and method. 4,411,935., Cl. 427-318.000.

Anderson, Richard N., to Hunter Douglas, Inc. Headrail mounting bracket. 4,411,401., Cl. 248-262.000.

Anderson, William G. Method for controlling bluetongue disease in sheep. 4,411,895., Cl. 424-211.000.

Anderson, William S., to United States of America, Air Force. Solid rocket propellants comprising guignet's green pigment. 4,411,717., Cl. 149-18.000.

Ando, Akio: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,412,009., Cl. 501-97.000.

Ando, Hideo; Hayashi, Akira; and Kitano, Kyozo, to Lion Corporation. Process for preparing odorless alkyl ether sulfate concentrates. 4,411,815., Cl. 252-353.000.

Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., to Allied Corporation. Conversion of 1,1,1-trichloroperhaloalkanes into perhaloalkanoyl chlorides. 4,411,843., Cl. 260-544.00Y.

Angersbach, Wolfgang; and Schuler, Peter, to Quick-Rotan Elektromotoren GmbH. Positioning drive. 4,412,163., Cl. 318-567.000.

Anson, Paul A.: *See—*
Spear, Peter; and Anson, Paul A., 4,411,159., Cl. 73-768.000.

Aoki, Masayoshi: *See—*
Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Apissomian, Arthur A., to Homecrest Industries Incorporated. Rocking chair. 4,411,468., Cl. 297-264.000.

Applegate, Robert D., to Driall, Inc. Grain drier and method of drying grain. 4,411,620., Cl. 432-29.000.

Applied Power Inc.: *See—*
Eichelsheim, Alexander V., 4,411,332., Cl. 180-89.140.

Apros Corporation: *See—*
Twyman, Noel H., 4,411,695., Cl. 75-44.00S.

Arai, Motohiro, to Nippon Electric Co., Ltd. Method for fabricating an optical waveguide on a planar glass substrate. 4,411,678., Cl. 65-3.120.

Araki, Yusuke: *See—*
Ito, Taizo; and Araki, Yusuke, 4,411,724., Cl. 156-304.100.

Arata, Tetsuya: *See—*
Itagaki, Masato; Harada, Fumio; and Arata, Tetsuya, 4,411,600., Cl. 417-312.000.

Arbeeny, John. Electrical switch. 4,412,114., Cl. 200-61.080.

Ariyama, Kenzo; and Hirose, Akira, to Ricoh Company, Ltd. Image transfer material separation and transportation apparatus for electrophotographic copying apparatus. 4,411,511., Cl. 355-3.0TR.

Arken, Inc.: *See—*
Farmer, Ian W., 4,411,085., Cl. 40-610.000.

Armco Inc.: *See—*
Hinman, P. Anthony, 4,412,064., Cl. 528-9.000.

Armour and Company: *See—*
Theiler, Richard F., 4,411,922., Cl. 426-266.000.

Armstrong World Industries, Inc.: *See—*
Duong, Chau H., 4,411,931., Cl. 427-54.100.
Valenti, James P., 4,411,217., Cl. 118-212.000.

Arnett, David W.: *See—*
Davis, Charles P.; Warren, Michael M.; and Arnett, David W., 4,411,648., Cl. 604-21.000.

Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, to Commissariat a l'Energie Atomique; and Compagnie Francaise de Raffinage. Process for the treatment of a hydrocarbon charge by high temperature ultrafiltration. 4,411,790., Cl. 210-637.000.

Asada, Masahiro; Matsuura, Miyuki; and Yonezawa, Kazuya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Process for manufacturing aromatic polyesters. 4,412,057., Cl. 528-179.000.

Asahi Glass Company Ltd.: *See—*
Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Morimoto, Takeshi, 4,411,749., Cl. 204-98.000.
Yamabe, Masaaki; Kato, Masao; and Takakura, Teruo, 4,412,054., Cl. 528-70.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kato, Michio; Endo, Toshiyuki; and Nomura, Junji, 4,411,793., Cl. 210-656.000.

Asahi Yukizai Kogyo Co., Ltd.: *See—*
Ninomiya, Youichi; and Tsuno, Kazuhiko, 4,411,407., Cl. 251-315.000.

Asakura, Osamu: *See—*
Nozaki, Mineo; Nagashima, Masasumi; and Asakura, Osamu, 4,411,540., Cl. 400-175.000.

Asakura, Toshio: *See—*
Blume, Horst K.; and Asakura, Toshio, 4,411,523., Cl. 356-246.000.

Asano, Kiyomitsu; Kondo, Toshikatsu; and Mizuno, Shigeru, to Brother Kogyo Kabushiki Kaisha; and Nippon Telecommunication Eng. Co. Print-head of a dot-printer. 4,411,538., Cl. 400-124.000.

Aschauer, Hans; and Funk, Gunter, to Voest-Alpine Aktiengesellschaft. Press brake. 4,411,148., Cl. 72-306.000.

ASEA Aktiebolag: *See—*
von Renteln, Adrian, 4,412,199., Cl. 336-70.000.

Ashland Oil, Inc.: *See—*
Gruber, Bruce A.; Koch, Diether; Langer, Heimo J.; and Dunnavant, William R., 4,412,088., Cl. 585-23.000.

Asjes, Ronald J.; van Peppen, Jacobus C. L.; and Klaassen, Klaas B., to De Regt Special Cable B.V. Transducer for picking up mechanical vibrations, in particular seismic waves, and a seismic measuring system including such a transducer. 4,412,317., Cl. 367-185.000.

Atago, Takeshi; and Manaka, Toshio, to Hitachi, Ltd. Method of controlling air-fuel ratio in internal combustion engine. 4,411,232., Cl. 123-438.000.

Atlantic Richfield Company: *See—*
DeVries, Donald L.; and DeJovine, James M., 4,411,804., Cl. 252-29.000.
Ecker, Amir L., 4,411,307., Cl. 165-70.000.

Au Clair, Christopher J.: *See—*
Lu, Chin H.; Au Clair, Christopher J.; and Erhardt, Peter F., 4,411,974., Cl. 430-106.000.
Lu, Chin H.; and Au Clair, Christopher J., 4,411,975., Cl. 430-106.000.

Auer, Mark J. Apparatus for cutting pie-shaped openings in fiberboard duct. 4,411,183., Cl. 83-581.000.

Auld, David L.; and Miller, Herbert W., to Texaco Inc. Mechanical means for securing a screen holding caulking in a groove and methods. 4,411,782., Cl. 210-230.000.

Aulisio, Callixtus: *See—*
Ehrlich, Shelton; and Aulisio, Callixtus, 4,411,879., Cl. 423-640.000.

Austin, Paul E.: *See—*
Allcock, Harry R.; and Austin, Paul E., 4,412,066., Cl. 528-168.000.

Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, to Sandoz Ltd. Concentrated solutions of aromatic oxamide stabilizers. 4,412,024., Cl. 524-220.000.

Awaji, Hidekazu, to Sharp Kabushiki Kaisha. Photo coupler device molding including filler particles. 4,412,135., Cl. 250-551.000.

Axelsson, Per A. T. Device for applying toothpaste. 4,411,623., Cl. 433-80.000.

Aydin, Kemal, to Kadex, Inc. Electronic lock system. 4,411,144., Cl. 70-278.000.

Azzola, Roberto, to Saiag S.p.A. Industria Articoli Gomma. Sealing strip for vehicle bodies. 4,411,941., Cl. 428-122.000.

Baba, Shigenori: *See—*
Kikuchi, Hideo; Baba, Shigenori; and Sato, Shoji, 4,412,240., Cl. 357-45.000.

Babb, Albert L., to Trimedyne, Inc. Lymph filtration system. 4,411,792., Cl. 210-651.000.

Babcock & Wilcox Company, The: *See—*
Kaya, Azmi; Keyes, Marion A.; and Scheib, Thomas J., 4,412,136., Cl. 290-40.00R.

Babin, Eugene R.; and Drago, William R. Contamination-free transfer and purge apparatus. 4,411,157., Cl. 73-864.810.

Bachelis, Leonid V.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Bader, Leonhard: *See—*
Weber, Helmut; Reitberger, Peter H.; Bader, Leonhard; and Konig, Walter, 4,412,232., Cl. 346-140.00R.

Badesha, Santokh S., to Xerox Corporation. Process for reclaimation of high purity selenium, tellurtum, and arsenic from scrap alloys. 4,411,698., Cl. 75-121.000.

Bailey, David C.; and Klein, Robert E., to Harris Corporation. Airplaten bearing. 4,411,503., Cl. 352-222.000.

Bailey, Fred J.: *See—*
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., 4,412,002., Cl. 435-237.000.

Bailey, Herbert C. Support for facilitating reading of an electric meter. 4,412,271., Cl. 361-370.000.

Baker International Corporation: *See—*
Carmody, Michael A., 4,411,316., Cl. 166-323.000.
McStravick, David M., 4,411,435., Cl. 277-9.500.

Baker, Randy S.; and Price, H. R., to Hughes Tool Company. Drag spring unit. 4,411,315., Cl. 166-187.000.

Baldwin, A. Frank, to Burlington Industries, Inc. Process for applying a water and alcohol repellent microbiocidal finish to a fabric and product so produced. 4,411,928., Cl. 427-2.000.

Baldwin, John J.; and Lumma, William C., Jr., to Merck & Co., Inc. Substituted derivatives of amino alkane diols as gastric secretion inhibitors. 4,411,899., Cl. 424-246.000.

Baldwin, Thomas O.; and Holzman, Thomas F., to University of Illinois, Board of Trustees of The. Isolation of bacterial luciferase. 4,412,001., Cl. 435-189.000.

Bales, Thomas T.: *See—*
McWithey, Robert R.; Royster, Dick M.; and Bales, Thomas T., 4,411,380., Cl. 228-181.000.

Ball, Gerald G., to Peabody Holmes Limited. Liquid seal valve. 4,411,286., Cl. 137-253.000.

Ball, Lawrence E.; Pichler, Martin A.; and Gaylor, V. Frances, to Standard Oil Company, The. Electrolytic initiation of polymerization in aqueous two-phase systems. 4,411,745., Cl. 204-59.00R.

Ball, Lawrence E.: *See—*
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,412,061., Cl. 528-315.000.

Ball, Robert D.: *See—*
Russell, William H.; and Ball, Robert D., 4,412,202., Cl. 337-171.000.

Bally Manufacturing Corporation: *See—*
Nicolaus, Frank G., 4,411,428., Cl. 273-143.00R.

Bambrick, William E.; and Goldstein, Marvin S., to American Cyanamid Company. Process for hydrotreating heavy hydrocarbons and catalyst used in said process. 4,411,771., Cl. 208-112.000.

Bannou, Masahiko: *See—*
Watanabe, Yasuo; Isoyama, Seiji; and Bannou, Masahiko, 4,411,807., Cl. 252-62.580.

Barakitis, Nikolaos; and Cohen, Sheppard, to GTE Products Corporation. Discharge lamp with bimetal starter. 4,412,152., Cl. 315-73.000.

Barbe, Pierre L. C. C., to Pont-A-Mousson S.A. Butterfly-valve. 4,411,405., Cl. 251-306.000.

Barbini, Mario: *See—*
Tironi, Maurizio G.; Barbini, Mario; and Del Sere, Giannetto, 4,412,334., Cl. 373-40.000.

Barels, Ronald R.; and Ghinazzi, Daniel J. Vitamin E oil based dentifrice. 4,411,885., Cl. 424-52.000.

Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., to Burroughs Corporation. Array processor architecture. 4,412,303., Cl. 364-900.000.

Barnett, Robert V. Weight lifting exercise apparatus. 4,411,424., Cl. 272-118.000.

Barr & Stroud Limited: *See—*
Neil, Iain A., 4,411,488., Cl. 350-1.400.

Barsotti, Robert J., to Du Pont de Nemours, E. I., and Company. High solids coating composition of an enamel containing a rheology control additive of silica and polyethylene glycol. 4,411,951., Cl. 428-328.000.

Barthelmess, Casey E. Cutting torch guide attachment. 4,411,411., Cl. 266-66.000.

Bartlett, Marion C.; and Johnson, Raymond C., to United States of America, Army. One-bit autocorrelation envelope detector. 4,412,340., Cl. 375-96.000.

Bartoli, Bernard: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

BASF Aktiengesellschaft: *See—*
Brandstetter, Franz; Echte, Adolf; Gausepohl, Hermann; and Naarmann, Herbert, 4,412,037., Cl. 525-68.000.
Degner, Dieter; Roos, Hans; and Hannebaum, Heinz, 4,411,746., Cl. 204-59.00R.
Koenig, Karl-Heinz; and Feuerherd, Karl-Heinz, 4,411,752., Cl. 204-158.0HA.
Naarmann, Herbert; Penzien, Klaus; Schlag, Johannes; and Simak, Petr, 4,411,826., Cl. 252-518.000.
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, 4,411,818., Cl. 502-35.000.
Rohr, Wolfgang; Hansen, Hanspeter; Wuerzer, Bruno; and Ceser, Heinz-Guenter, 4,411,691., Cl. 71-92.000.
Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, 4,411,761., Cl. 204-290.00R.
Sander, Bruno; Hess, Klaus; Lintz, Peter; and Goesele, Walter, 4,411,797., Cl. 210-727.000.
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,411,687., Cl. 71-76.000.

BASF Wyandotte Corporation: *See—*
Dutton, Daniel R.; Parker, Edward J.; Ott, Roger A.; and Otten, Jay G., 4,411,810., Cl. 252-99.000.
Panek, Edward J.; and Davis, Pauls, 4,411,819., Cl. 252-315.100.

Basterfield, Ernest P.; and Basterfield, Parker L., to Chern Developments Limited. Pressure vessel construction. 4,411,372., Cl. 220-327.000.

Basterfield, Parker L.: *See—*
Basterfield, Ernest P.; and Basterfield, Parker L., 4,411,372., Cl. 220-327.000.

Batistoni, Michel, to Frammatome. Numerical control surfacing plate. 4,411,177., Cl. 82-2.00E.

Bator, Patricia E.: *See—*
Klein, Kenneth; Bator, Patricia E.; and Pact, Harry H., 4,412,027., Cl. 524-364.000.

Baudouin, Michel; and Desbois, Michel, to Rhone-Poulenc Sante. Process for the preparation of quinolin-4-ones. 4,412,075., Cl. 546-153.000.

Baudouin, Michel; and Michelet, Daniel, to Rhone-Poulenc Sante. Preparation of 4-hydroxyquinolines. 4,412,076., Cl. 546-153.000.

Bauer, James J., to Clark Equipment Company. Operator protective posts. 4,411,464., Cl. 296-102.000.

Baumgartner, Alfred. Bat for playing games. 4,411,427., Cl. 273-67.00R.

Baxter Travenol Laboratories, Inc.: *See—*
Boarini, Edward J.; and Jonker, Joseph W., 4,411,654., Cl. 604-165.000.
Kamen, Dean L., 4,411,649., Cl. 604-65.000.
Norton, William W., 4,411,047., Cl. 17-51.000.
Olson, Wayne P., 4,411,795., Cl. 210-679.000.
Pearson, Stephen, 4,411,662., Cl. 604-411.000.

Bayer Aktiengesellschaft: *See—*
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, 4,412,039., Cl. 525-106.000.
Geisler, Klaus, 4,411,841., Cl. 260-543.00F.
Harnisch, Horst, 4,411,946., Cl. 428-219.000.
Heitz, Walter; Kress, Hans-Jurgen; and Stix, Wolfgang, 4,412,063., Cl. 528-409.000.
Nickel, Andreas; Reissinger, Karl H.; Brandt, Hans-Walther; and Melin, Thomas, 4,411,942., Cl. 428-137.000.
von Bonin, Wulf; von Gizycki, Ulrich; Wagner, Kuno; and Schapel, Dietmar, 4,411,262., Cl. 128-90.000.
Wild, Peter; and Nickel, Horst, 4,411,669., Cl. 8-654.000.

BBC Brown, Boveri & Company Limited: *See—*
Albrecht, Joachim; Duerig, Thomas; and Schroeder, Gunther, 4,411,711., Cl. 148-11.50A.

Beal, Glenn I., to R. M. Smith, Inc. Hose coupling and clamp. 4,411,460., Cl. 285-243.000.

Beard, William Q., Jr.; and Wilson, Richard L., to Vulcan Materials Company. Process for separating ferric iron from chlorinated hydrocarbons. 4,412,086., Cl. 570-262.000.

Becker Dental-Labor GmbH: *See—*
Becker, Gunter; and Weiden, Horst, 4,411,626., Cl. 433-223.000.

Becker, Gunter; and Weiden, Horst, to Becker Dental-Labor GmbH. Process and apparatus for preparing a crown portion to be fixed on a tooth. 4,411,626., Cl. 433-223.000.

Becker, Josef, to Hewlett-Packard GmbH. Pulse generator circuit. 4,412,138., Cl. 307-264.000.

Becker, Wolfgang, to Blessing, Wilhelm. Swinging chuck for turning machines. 4,411,440., Cl. 279-5.000.

Beckman Instruments, Inc.: *See—*
Franklin, Robert C., 4,412,279., Cl. 363-128.000.
Harman, John N., III; and Jones, Robert H., 4,411,764., Cl. 204-411.000.
Momany, Frank A., 4,411,890., Cl. 424-177.000.

Becton, Dickinson and Company: *See—*
Noack, W. L., 4,411,868., Cl. 422-104.000.

Bedford Industries, Inc.: *See—*
Tinklenberg, Lloyd, 4,411,644., Cl. 493-213.000.

Bednar, Thomas R., to Falk Corporation, The. Pneumatic clutch. 4,411,347., Cl. 192-88.00B.

Beeson, Kenneth E.: *See—*
Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., 4,412,211., Cl. 340-514.000.

Beetle, Robert H., to Abex Corporation. Metal founding. 4,411,305., Cl. 164-529.000.

Behrendt, Martin, to Wickmann-Werke AG. Fuse holder for a cartridge fuse. 4,411,486., Cl. 339-147.00R.

Behringwerke Aktiengesellschaft: *See—*
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Drescher, Heinz H., 4,411,794., Cl. 210-670.000.
Toth, Tibor; and Gils, Reiner, 4,411,988., Cl. 435-7.000.

Belani, Jagdish G., to National Semiconductor Corporation. Polymeric insulation layer etching process and composition. 4,411,735., Cl. 156-659.100.

Bell & Howell Company: *See—*
Karsh, Herbert; and Karsh, Irving, 4,411,397., Cl. 242-192.000.
Kosner, Jerry J., 4,411,416., Cl. 271-11.000.

Bell Telephone Laboratories, Incorporated: *See—*
Ackland, Bryan D.; and Weste, Neil H. E., 4,412,313., Cl. 365-221.000.
Ammann, Hans H.; Bonanni, Rocco; and Engelmaier, Werner, 4,412,123., Cl. 219-233.000.
Beni, Gerardo; Craighead, Harold G.; and Hackwood, Susan, 4,411,495., Cl. 350-347.00V.
Briley, Bruce E.; and Montsma, John, 4,412,322., Cl. 370-58.000.
Ekholm, David T., 4,412,307., Cl. 365-8.000.
Embree, Milton L., 4,412,184., Cl. 330-69.000.
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., 4,412,341., Cl. 375-102.000.
Limb, John O., 4,412,326., Cl. 370-85.000.
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,411,733., Cl. 156-643.000.
Miedema, Hotze, 4,412,350., Cl. 455-306.000.
Miller, Anton J., 4,411,731., Cl. 156-630.000.

Bendix Corporation, The: *See—*
Hammelmann, Robert W., 4,411,634., Cl. 464-91.000.
Rauch, Burton S., 4,411,637., Cl. 464-180.000.

Beni, Gerardo; Craighead, Harold G.; and Hackwood, Susan, to Bell Telephone Laboratories, Incorporated. Refractive index switchable display cell. 4,411,495., Cl. 350-347.00V.

Bennett, Douglas L.; and Amoss, Donald C., to Air Products and Chemicals, Inc. Boiling coolant ozone generator. 4,411,756., Cl. 204-176.000.

Bennett, Robert A.; and Nuckols, Walter S. Liquid soap dispenser. 4,411,376., Cl. 222-212.000.

Bennwik, Percy; and Hjertman, Birger, to Vitrum AB. Package. 4,411,358., Cl. 206-45.340.

Berge, Charles T.; and Mack, Mark P., to Conoco Inc. Poly(oxy(silylene) esters). 4,412,065., Cl. 528-26.000.

Berger, Abe, to M & T Chemicals Inc. Hydantoinylsilanes. 4,412,078., Cl. 548-110.000.

Berger, Horst H.; and Wiedmann, Siegfried K., to International Business Machines Corporation. Multiaddressable highly integrated semiconductor storage. 4,412,312., Cl. 365-189.000.

Bergeron, David L., to International Business Machines Corporation. Programmable bipolar structures. 4,412,308., Cl. 365-105.000.

Bergez, Pierre: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Bergman, Gunnar B., to SeaTek. Apparatus for reducing roll and pitch motions of floating vessels. 4,411,212., Cl. 114-125.000.

Bergmann, Horst: *See—*
Hardenberg, Horst; and Bergmann, Horst, 4,411,243., Cl. 123-577.000.

Berkman, Joseph L. Holder for audio/video cassettes, games cartridges and storage cases. 4,411,481., Cl. 312-8.000.

Berlin & Jones Company, Inc.: *See—*
Higginson, Richard L., 4,411,643., Cl. 493-188.000.

Bermudez, Mauricio; Klimpel, Richard R.; and Sands, Steven D., to Dow Chemical Company, The. Method for grinding cereal grains in the presence of grinding aids. 4,411,927., Cl. 426-618.000.

Bernareggi, Virgilio; Margutti, Roberto; Bonifacio, Fausto; and Fano, Maurizio, to Valeas S.p.A. Salts of endo-8-methyl-8-syn-alkyl-8-azoniabicyclo-[3.2.1]-octane-3-alkylcarboxylates, and therapeutic compositions containing them. 4,411,902., Cl. 424-265.000.

Bernelin, Daniel: *See—*
Meyer, Jacques; and Bernelin, Daniel, 4,412,034., Cl. 524-791.000.

Bernhardt, Martin: *See—*
Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, 4,411,550., Cl. 403-358.000.

Berthold, Richard: *See—*
Payne, Trevor G.; and Berthold, Richard, 4,411,913., Cl. 424-330.000.

Best, Gerd; and Weikert, Norbert B., to Krampe & Co. Fertifung in Bergbaubedarf GmbH. Cutting drum. 4,411,475., Cl. 299-81.000.

Bethge, Horst; Kleemann, Axel; and Martens, Jurgen, to Degussa Aktiengesellschaft. Process for the resolution of the racemate S-(carboxymethyl)-(RS)-cysteine (B). 4,411,840., Cl. 260-501.120.

Betti, Vittorio: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Betts, William H., to Wean United, Inc. Shell for a composite roll. 4,411,713., Cl. 148-35.000.

Betz Laboratories, Inc.: *See—*
Geiger, Gary E.; and May, Roger C., 4,411,865., Cl. 422-16.000.

Bevacqua, Saverio F.: *See—*
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,412,142., Cl. 307-477.000.

Beyer, Horst: *See—*
Hostettler, Hans U.; and Beyer, Horst, 4,411,886., Cl. 424-70.000.

Bickley, Robert H.; Broughton, Christopher D.; and Genrich, Thad J., to Motorola Inc. Power amplifier and envelope correction circuitry. 4,412,337., Cl. 375-60.000.

Biedermann, Jean: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Bienwald, Wolfgang F.; and Tumsuden, Herbert W., Jr., to Leviton Manufacturing Company, Inc. Resettable circuit breaker for use in ground fault circuit interrupters and the like. 4,412,193., Cl. 335-18.000.

Biggers, James V.: *See—*
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,412,148., Cl. 310-358.000.

Billault, Georges: *See—*
Runavot, Yves; Billault, Georges; and Salvetat, Jaques, 4,412,030., Cl. 524-505.000.

Bindel, Paul. Tire traction chain. 4,411,301., Cl. 152-213.00R.

Biochemical Research Corporation: *See—*
Welebir, Andrew J., 4,411,685., Cl. 71-84.000.

Birdsall, John D.; Liedtke, Ronald; and Smollar, Marvin, to Birdsall, John D. Toy vehicle. 4,411,098., Cl. 46-206.000.

Birk, John R.: *See—*
Kelley, Robert B.; Birk, John R.; Martins, Henrique; and Tella, Richard P., 4,412,293., Cl. 364-513.000.

Bittler, Knut: *See—*
Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, 4,411,761., Cl. 204-290.00R.

Black, Charles E., III: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,412,109., Cl. 200-16.00C.

Black Clawson, Inc.: *See—*
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,412,297., Cl. 364-559.000.
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,412,297., Cl. 364-559.000.

Black & Decker Inc.: *See—*
Jefferson, Keith A.; and Lansdell, Derek A., 4,412,158., Cl. 318-257.000.
Mixer, John E., 4,411,173., Cl. 74-785.000.
Sell, Michael R., 4,412,168., Cl. 320-48.000.

Blacklin, Peter A.; Dougherty, James R.; Johnson, Richard J.; and Tate, Donald L., to Tate Architectural Products, Inc. Structural member with truncated conical portion and composite panel including same. 4,411,121., Cl. 52-792.000.

Blaudszun, Bernd, to Lohmann GmbH & Co. KG. Process and apparatus for drying of solvent containing material. 4,411,075., Cl. 34-32.000.

Blazey, Richard N.: *See—*
Gilmour, Hugh S. A.; and Blazey, Richard N., 4,411,973., Cl. 430-7.000.

Blechschmitt, Kurt: *See—*
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, 4,411,818., Cl. 502-35.000.

Blessing, Wilhelm: *See—*
Becker, Wolfgang, 4,411,440., Cl. 279-5.000.

Blinow, Igor, to Polaroid Corporation. Strobe reflector assembly. 4,412,276., Cl. 362-278.000.

Block, Jacob: *See—*
Green, Peter C.; and Block, Jacob, 4,411,800., Cl. 252-8.50A.

Blokland, Adriaan, to J. de Reus B.V. Stair-climbing apparatus for a wheel chair or similar mobile transport means. 4,411,330., Cl. 180-8.00A.

Blomsterberg, Karl-Ingemar. Method of anodically deburring articles of steel or aluminium alloys in an electrolytic bath, and a bath for carrying out the method. 4,411,751., Cl. 204-129.850.

Bluege, John H., to United Technologies Corporation. Dispersionless refractor for use with high-power lasers. 4,411,492., Cl. 350-173.000.

Blume, Horst K.; and Asakura, Toshio, to Technical Consulting Services. Cuvette for blood oxygen analysis apparatus. 4,411,523., Cl. 356-246.000.

Board of Regents, The University of Texas System: *See—*
Davis, Charles P.; Warren, Michael M.; and Arnett, David W., 4,411,648., Cl. 604-21.000.

Boarini, Edward J.; and Jonker, Joseph W., to Baxter Travenol Laboratories, Inc. Peelable catheter with securing ring and suture sleeve. 4,411,654., Cl. 604-165.000.

Boehm, Alfred; and Richter, Eberhard, to LIBA Maschinenfabrik GmbH. Speed-compensating device for the feeding of threads to a weaving or knitting machine. 4,411,392., Cl. 242-35.50R.

Boehn, Hugo: *See—*
Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, 4,411,761., Cl. 204-290.00R.

Boeing Company, The: *See—*
Amberg, Robert L.; and Gaseor, Thomas J., 4,412,291., Cl. 364-426.000.
Hapke, Donald W., 4,411,399., Cl. 244-130.000.
Perry, Clifford R.; Dietz, Lloyd H.; and Shannon, Roger L., 4,411,310., Cl. 165-166.000.

Shrader, John E.; and Zimmerschied, Alan B., 4,411,198., Cl. 102-216.000.
Stapleton, Brian P., 4,412,221., Cl. 343-705.000.

Boelke, Art: *See—*
Rushing, Wilford A.; and Rushing, Barbara R., 4,411,095., Cl. 46-7.000.

Boelke, Rosemary E.: *See—*
Rushing, Wilford A.; and Rushing, Barbara R., 4,411,095., Cl. 46-7.000.

Bohg, Armin; and Hartmann, Kurt, to International Business Machines Corporation. Electromagnetic ram actuator. 4,412,197., Cl. 335-256.000.

Bohm, Gunter; and Funk, Wolfram, to Thyssen Industrie Ag Maschinenbau. Method for welding bodies made of very hard or greatly refined armored steel, respectively, and structures made according to this method. 4,412,122., Cl. 219-137.00R.

Bois, Daniel. Integrated opto-electronic relay using a semiconductor with persistent photoconductivity and a matrix of such relays. 4,412,235., Cl. 357-19.000.

Boise Cascade Corporation: *See—*
Woerz, Stephen E.; and Canup, Travis K., 4,411,726., Cl. 156-423.000.

Bolha, David J. Building siding replacement device and method. 4,411,117., Cl. 52-521.000.

Bolles, Robert C.: *See—*
Kremers, Jan H.; and Bolles, Robert C., 4,412,121., Cl. 219-124.340.

Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,411,688., Cl. 71-90.000.

Bollinger, Frederic G., to Monsanto Company. Substituted 2-imino-1,3-dithio and 1,3-oxathio heterocyclic compounds as herbicidal antidotes. 4,411,689., Cl. 71-90.000.

Bonanni, Rocco: *See—*
Ammann, Hans H.; Bonanni, Rocco; and Engelmaier, Werner, 4,412,123., Cl. 219-233.000.

Bonifacio, Fausto: *See—*
Bernareggi, Virgilio; Margutti, Roberto; Bonifacio, Fausto; and Fano, Maurizio, 4,411,902., Cl. 424-265.000.

Booth, Weldon S. Method of making a high-capacity earthbound structural reference. 4,411,557., Cl. 405-238.000.

Boothroyd, Howard W.; and Carlsmith, Lawrence A., to Ingersoll-Rand Company. Shear overload release coupling. 4,411,635., Cl. 464-33.000.

Borg-Warner Chemicals, Inc.: *See—*
Hechenbleikner, Ingenuin; and Enlow, William P., 4,411,842., Cl. 260-543.00P.

Borows, Allan A. One way stopper plug for bottles. 4,411,369., Cl. 215-21.000.

Borzym, John J. Belt driven flying cutoff apparatus. 4,411,182., Cl. 83-319.000.

Bos, Peter J., to AMF Incorporated. Defrost control system and display panel. 4,411,139., Cl. 62-126.000.

Bosch-Siemens Hausgerate GmbH: *See—*
Scholl, Michael; and Klassen, Herbert, 4,411,143., Cl. 68-12.00R.

Bosshard, Hans: *See—*
Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,411,337., Cl. 187-29.00R.

Bothwell, P. W. Motor cycle fairing. 4,411,333., Cl. 180-219.000.

Bouley, Robert W.; and Kovar, Robert F., to Albany International Corp. Curing polyepoxide resin binders in syntactic foam forming compositions. 4,412,012., Cl. 521-54.000.

Bouvet, Claude: *See—*
Terrien, Michel E.; and Bouvet, Claude, 4,411,037., Cl. 14-2.600.

Bowen, Robert F.: *See—*
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,412,117., Cl. 219-10.55F.

Bowman, Kenneth A.: *See—*
Dawless, Robert K.; Bowman, Kenneth A.; Mazgaj, Robert M.; and Cochran, C. Norman, 4,411,747., Cl. 204-67.000.

Boyles, David A.; Gaines, Jack R.; and Haissig, Bruce E., to United States of America, Agriculture. Auxin compositions of N-phenyl and N-chloro phenyl indolyl-3-alkylene amides and their use as auxin growth regulators. 4,411,684., Cl. 71-77.000.

Boyum, George A.; Renner, Robert A.; and Lovelace, Ralph, to Jarraff Industries, Inc. Tree-trimming apparatus. 4,411,070., Cl. 30-379.500.

Braddock, Walter D., III. Automated stock exchange. 4,412,287., Cl. 364-408.000.

Bradley, Walter E.: *See—*
Floyd, Terry S.; Rhoden, Donna G.; and Bradley, Walter E., 4,411,280., Cl. 131-332.000.

Braga, Renato. Silver-plated tooth brush. 4,411,041., Cl. 15-167.00R.

Braginski, Aleksander I.; and Male, Alan T., to Westinghouse Electric Corp. Submicron-particle ductile superconductor. 4,411,959., Cl. 428-558.000.

Bramson, Mogens L. Water unit for use with a membrane blood oxygenator. 4,411,872., Cl. 422-310.000.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,411,478., Cl. 308-6.00C.

Brandstetter, Franz; Echte, Adolf; Gausepohl, Hermann; and Naarmann, Herbert, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,412,037., Cl. 525-68.000.

Brandt, Hans-Walther: *See—*
Nickel, Andreas; Reissinger, Karl H.; Brandt, Hans-Walther; and Melin, Thomas, 4,411,942., Cl. 428-137.000.

Branson Ultrasonics Corporation: *See—*
Sager, Thomas B., 4,411,720., Cl. 156-69.000.

Brauner, Jochen: *See—*
Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, 4,411,524., Cl. 356-313.000.

Brede, Uwe; Penner, Horst; Stahlmann, Rudolf; and Zeiher, Erich, to Dynamit Nobel Aktiengesellschaft. Short trajectory round. 4,411,200., Cl. 102-529.000.

Breglia, Denis R.; Oharek, Frank J.; and Grimmer, Paul D., to United States of America, Navy. Articulated light guide. 4,411,627., Cl. 434-44.000.

Bregolin, Graziano: *See—*
Maillard, Laurent; and Bregolin, Graziano, 4,411,116., Cl. 52-489.000.

Brennan, Thomas M.; and Hendrick, Michael E., to Pfizer Inc. Branched amides of L-aspartyl-d-amino acid dipeptides. 4,411,925., Cl. 426-548.000.

Brennecke, Paul; and McAuliffe, Donald C., to Coors Container Company. Processes for making can end stock from roll cast aluminum and product. 4,411,707., Cl. 148-2.000.

Briand, Louis: *See—*
Ecomard, Andre; and Briand, Louis, 4,411,238., Cl. 123-501.000.

Bridgestone Tire Company Limited: *See—*
Ito, Taizo; and Araki, Yusuke, 4,411,724., Cl. 156-304.100.
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,411,175., Cl. 76-107.00R.

Briggs, John N., to Marconi Company Limited, The. Secondary radar responders. 4,412,219., Cl. 343-6.80R.

Briley, Bruce E.; and Montsma, John, to Bell Telephone Laboratories, Incorporated. Time division switching system. 4,412,322., Cl. 370-58.000.

Brill, Joseph H. Process and apparatus for producing compost. 4,411,682., Cl. 71-9.000.

Brisken, Thomas A.; and Maier, Alexander G., to United States of America, Air Force. Method of enhancing rotor bore cyclic life. 4,411,715., Cl. 148-131.000.

British Gas Corporation: *See—*
Timmins, Cyril; and Templeman, John J., 4,411,039., Cl. 15-104.06R.

British Petroleum Company, p.l.c., The: *See—*
Ward, Denis S., 4,411,791., Cl. 210-649.000.

British Steel Corporation: *See—*
Meredith, Douglas; and Cronin, James A., 4,411,667., Cl. 8-471.000.
Spenceley, Gene D.; and Welbourn, Brian C., 4,411,697., Cl. 75-60.000.

Brock, James D.; and Morrison, Gerald B., to Tuftec, Inc. Yarn saving method and apparatus. 4,411,207., Cl. 112-79.00A.

Brockway Glass Co., Inc.: *See—*
McDole, Lawrence K., 4,411,353., Cl. 198-425.000.

Brockway, Richard J., to Sanders Associates, Inc. Infrared source. 4,412,126., Cl. 219-553.000.

Brodie, Benjamin T. AC Resistor attenuator and associated amplifier circuits. 4,412,183., Cl. 330-68.000.

Brogna, Christopher B., to Celanese Corporation. Process for disposing of carbon fibers. 4,411,880., Cl. 423-659.000.

Brois, Stanley J.: *See—*
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,411,808., Cl. 252-78.100.

Bromley, James E.; and Dees, John R., to Fiber Industries, Inc. Spinning process with a desensitized spinneret design. 4,411,852., Cl. 264-171.000.

Broome, Stephanie A.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,411,994., Cl. 435-71.000.

Brosius, Klaus; and Herrmann, Berthold, to Voith Getriebe KG. Hydrodynamic brakes. 4,411,340., Cl. 188-296.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Mizuno, Shigeru, 4,411,538., Cl. 400-124.000.

Broughton, Christopher D.: *See—*
Bickley, Robert H.; Broughton, Christopher D.; and Genrich, Thad J., 4,412,337., Cl. 375-60.000.

Brown, Robert J. S., to Chevron Research Company. Computer-controlled, portable pulsed NMR instrument and method of use wherein a DC magnetic field gradient is artificially introduced. 4,412,178., Cl. 324-303.000.

Brown, Robert J. S., to Chevron Research Company. Computer-controlled, portable pulsed NMR instrument and method of use wherein the times of RF interrogation are distributed over at least a cycle at the nuclear magnetization precessional frequency. 4,412,179., Cl. 324-303.000.

Brown, Wallace G.; and Lee, Otha C., to Proctor & Associates Co. Call data monitoring for electromechanical telephone switching systems. 4,412,101., Cl. 179-7.10R.

Browne, John M., to Xerox Corporation. Bottom sheet feeding apparatus. 4,411,417., Cl. 271-94.000.

Bruckner, Neal R.: *See—*
Lanham, Joseph S.; and Bruckner, Neal R., 4,411,552., Cl. 403-388.000.

Bruggemann, Josef: *See—*
Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, 4,411,524., Cl. 356-313.000.

Brun, Robert P.: *See—*
Minvielle, Monique L. S.; Mazoin, Albert H. F.; Brun, Robert P.; Chevanne, Sylvain V. L.; and See, Jacques L. A., 4,411,555., Cl. 405-50.000.

Brussing, Bernd: *See—*
Zeischegg, Walter; and Brussing, Bernd, 4,411,318., Cl. 169-26.000.

Brustle, Klaus: *See—*
Rock, Erich; and Brustle, Klaus, 4,411,045., Cl. 16-243.000.

Bucheder, Erwin, to Koflach Sportgerate Gesellschaft. Device for closing a slot in an upper or gaiter of a skiing boot. 4,411,078., Cl. 36-117.000.

Budd Company, The: *See—*
Reidenbach, Robert B., 4,411,413., Cl. 269-48.100.

Buehrig, Gordon M.; and Buehrig, Kathryn L., to Kughn, Richard P. Automobile front end construction incorporating an air-bag. 4,411,462., Cl. 293-132.000.

Buehrig, Kathryn L.: *See—*
Buehrig, Gordon M.; and Buehrig, Kathryn L., 4,411,462., Cl. 293-132.000.

Bulten-Kanthal AB: *See—*
Schrewelius, Nils G., 4,411,936., Cl. 427-367.000.

Burdick, Patricia E.: *See—*
Albee, Paul J., Jr.; Burdick, Patricia E.; and Wrozina, Joseph I., 4,412,040., Cl. 525-143.000.

Burgdorf, Jochen, to ITT Industries, Inc. Two-circuit pressure control unit for hydraulic brake systems. 4,411,477., Cl. 303-22.00R.

Burkhardt, Charles W., to Petrolite Corporation. Use of polyamines as demulsifiers. 4,411,814., Cl. 252-344.000.

Burlington Industries, Inc.: *See—*
Baldwin, A. Frank, 4,411,928., Cl. 427-2.000.

Burroughs Corporation: *See—*
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., 4,412,303., Cl. 364-900.000.
Wallace, Harry L.; and Thomas, John D., 4,411,706., Cl. 134-37.000.

Bushman, Willard T.: *See—*
Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., 4,412,292., Cl. 364-479.000.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Mobile display rack. 4,411,367., Cl. 211-187.000.

Butch, Peter J., III; and Puletti, Paul P., to National Starch and Chemical Corporation. Hot melt pressure sensitive adhesive and diaper tape closures coated therewith. 4,411,954., Cl. 428-343.000.

Buthe, Theo; and Mikeska, Felix, to Jean Walterscheid GmbH. Protective device for a universal joint assembly. 4,411,636., Cl. 464-172.000.

Butler, Richard A., to Mining & Chemical Products Limited. Injection moulding machine. 4,411,615., Cl. 425-591.000.

Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., to Central Illinois Public Service Company. Dual alkali process for combustion gas cleaning. 4,411,875., Cl. 423-242.000.

Buuck, Frederick A., to Tokheim Corporation. Intrinsic barrier. 4,412,265., Cl. 361-18.000.

Caddell, Samuel N., to Systems Engineering and Manufacturing Corp. Safety device for use in conveyor-type apparatus. 4,411,357., Cl. 198-802.000.

Caldwell, Stewart W.: *See—*
Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., 4,412,292., Cl. 364-479.000.

Cambier, Graig S.; and Trubell, Lawrence P., to International Business Machines Corporation. Ac-to-dc converter using polarized input isolation capacitors. 4,412,278., Cl. 363-126.000.

Cameron Iron Works, Inc.: *See—*
Gieswein, Jimmie T., 4,411,317., Cl. 166-347.000.

Caminade, Philippe: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Campbell, Willis R.: *See—*
Diederich, Anthony F., Jr.; Haldeman, Peter P.; and Campbell, Willis R., 4,411,127., Cl. 56-364.000.

Cancel, Radames. Singing electronic frog. 4,411,099., Cl. 46-232.000.

Canon Kabushiki Kaisha: *See—*
Adachi, Hiroyuki; and Taniishi, Shinnosuke, 4,411,516., Cl. 355-67.000.
Kazumi, Jiro, 4,411,508., Cl. 354-198.000.
Kinoshita, Takao; Hosoe, Kazuya; and Yamamichi, Masayoshi, 4,411,504., Cl. 354-25.000.
Komori, Shigehiro; and Ogawa, Hiroshi, 4,411,514., Cl. 355-14.0CH.
Nozaki, Mineo; Nagashima, Masasumi; and Asakura, Osamu, 4,411,540., Cl. 400-175.000.
Ohnuma, Takashi, 4,412,164., Cl. 318-596.000.
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,411,505., Cl. 354-25.000.
Sugitani, Hiroshi, 4,412,224., Cl. 346-1.100.

Canova, Giuseppe: *See—*
Stella, Antonio; and Canova, Giuseppe, 4,412,269., Cl. 361-263.000.

Canup, Travis K.: *See—*
Woerz, Stephen E.; and Canup, Travis K., 4,411,726., Cl. 156-423.000.

Capuano, Terry D., to Russell Burdsall & Ward Corporation. Rolling dies and method of forming the same. 4,411,147., Cl. 72-220.000.

Cardinal Manufacturing Co.: *See—*
Weisbach, Albert P., 4,411,404., Cl. 249-3.000.

Caret, Guy: *See—*
Helle, Jacques; and Caret, Guy, 4,412,188., Cl. 331-176.000.

Carey, Robert J. Rain gutter. 4,411,110., Cl. 52-11.000.

Carl Zeiss-Stiftung: *See—*
Lang, Walter H.; Muchel, Franz; Schulz, Kurt; and Summerer, Gunther, 4,411,502., Cl. 351-206.000.

Carlsmith, Lawrence A.: *See—*
Boothroyd, Howard W.; and Carlsmith, Lawrence A., 4,411,635., Cl. 464-33.000.

Carlson, David H. J., to UOP Inc. Method for treating mercaptans contained in a sour petroleum distillate. 4,411,776., Cl. 208-206.000.

Carlson, Nancy W.: *See—*
Dixon, George D.; Carlson, Nancy W.; and Saunders, Howard E., 4,412,048., Cl. 525-524.000.

Carmen, Ralph H., to Technicare Corporation. Ultrasonic image storage device and method. 4,412,248., Cl. 358-112.000.

Carmen, Ralph H., to Technicare Corporation. Ultrasonic image storage device and method. 4,412,249., Cl. 358-112.000.

Carmody, Michael A., to Baker International Corporation. Subterranean well valve with lock open mechanism. 4,411,316., Cl. 166-323.000.

Carnahan, John T., to Emerson Electric Company. Spring feeding device. 4,411,561., Cl. 406-137.000.

Carrier Corporation: *See—*
Traver, Darwin G.; Anderson, Carl M.; and Abdelhamid, Amr N., 4,411,592., Cl. 415-119.000.

Case, William J.; and Wallis, Christopher N., to International Business Machines Corporation. Sampled servo position control system. 4,412,165., Cl. 318-636.000.

Casey, Daniel T., to AMP Incorporated. Terminations for flat cable. 4,411,484., Cl. 339-97.00C.

Casio Computer Co., Ltd.: *See—*
Yamakita, Tooru, 4,412,304., Cl. 364-900.000.

Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, to Forsyth Dental Infirmary for Children. Self-gelling liquid composition for topical application in the oral cavity. 4,411,889., Cl. 424-151.000.

Cassimally, Khalil A. I.; and Frommelt, Horace, to Cassimally, Khalil Ahmid Ibrahim. Luggage trolley. 4,411,343., Cl. 190-18.00A.

Cassimally, Khalil Ahmid Ibrahim: *See—*
Cassimally, Khalil A. I.; and Frommelt, Horace, 4,411,343., Cl. 190-18.00A.

Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, to Farmitalia Carlo Erba, S.p.A. Preparation of II-deoxy anthracycline antibiotics. 4,411,834., Cl. 260-365.000.

Casteel, Vincent H.: *See—*
Klaus, Jack C.; Schroeder, Larry D.; Casteel, Vincent H.; and Schwartz, Kenneth E., 4,412,356., Cl. 455-603.000.

Castelli S.p.A.: *See—*
Ponzellini, Giulio, 4,411,471., Cl. 297-417.000.

Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, to Crinos Industria Farmabiologica, S.p.A. Polyaminic resin for the selective separation of heparin from other glucosaminoglycanes and method for the preparation thereof. 4,411,796., Cl. 210-692.000.

Caterpillar Tractor Co.: *See—*
Hart, Cullen P., 4,411,447., Cl. 280-714.000.
Stedman, Robert N., 4,411,329., Cl. 180-7.00R.

Cebalo, Tony; and Walde, Robert A., to Air Products and Chemicals, Inc. Thiadiazole compounds and methods of using said compounds in agriculture. 4,412,079., Cl. 548-141.000.

Celanese Corporation: *See—*
Brogna, Christopher B., 4,411,880., Cl. 423-659.000.
Floyd, Terry S.; Rhoden, Donna G.; and Bradley, Walter E., 4,411,280., Cl. 131-332.000.

Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Tylosin macrolide antibiotics from streptomyces. 4,411,892., Cl. 424-181.000.

Celotex Corporation, The: *See—*
Frentzel, Richard L.; and Moss, Ernest K., 4,412,014., Cl. 521-129.000.
Snider, Scott C.; and DeLeon, Alberto, 4,411,949., Cl. 428-304.400.

Central Illinois Public Service Company: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Ceser, Heinz-Guenter: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Wuerzer, Bruno; and Ceser, Heinz-Guenter, 4,411,691., Cl. 71-92.000.

Chalmers, Alexander F.: *See—*
Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander F., 4,411,218., Cl. 118-411.000.

Chambers, John L.: *See—*
Workman, S. Thomas; Chambers, John L.; Pugh, Myron A.; and Ward, Roger W., 4,412,345., Cl. 378-078.000.

Chan, Keng S., to Standard Oil Company. Process for separating D_2O from H_2O using surfactant systems. 4,411,798., Cl. 210-727.000.

Chang, Pei K., to Nutrisearch Company. Fabricated shellfish products containing whey protein concentrate composition and method of preparation. 4,411,917., Cl. 426-104.000.

Chang, Yun F., to Ford Motor Company. Expandable urethane sealant compositions. 4,412,013., Cl. 521-121.000.

Chantant, Michel: *See—*
Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, 4,411,862., Cl. 376-442.000.

Chapleo, Christopher B.; and Myers, Peter L., to Reckitt & Colman Products Limited. Imidazoline derivatives as presynaptic α_2-adrenoreceptor antagonists. 4,411,908., Cl. 424-273.00R.

Chapman, Lynn C., to M/A-COM DCC, Inc. Feedback circuit for controlling the peak optical output power of an injection laser. 4,412,331., Cl. 372-29.000.

Charbonneau, Jacques: *See—*
Tailleux, Christian; and Charbonneau, Jacques, 4,411,195., Cl. 101-226.000.

Charlap, E. Paul: *See—*
Landa, Benzion; and Charlap, E. Paul, 4,411,976., Cl. 430-114.000.

Charrier, Michel: *See—*
Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, 4,412,336., Cl. 375-4.000.

Chase, Brian D., to International Business Machines Corporation. Convergence unit for in-line color cathode ray tube. 4,412,194., Cl. 335-210.000.

Chemetals Incorporated: *See—*
Welsh, Jay Y., 4,411,878., Cl. 423-605.000.

Chemische Werke Huels AG: *See—*
Zerpner, Dieter; and Streck, Roland, 4,412,038., Cl. 525-101.000.

Chen, H. Chiu, to Chevron Research Company. Method of making a catalyst suitable for hydrometalation of hydrocarbonaceous feedstocks. 4,411,824., Cl. 502-323.000.

Chen, John Y., to Hughes Aircraft Company. Process for fabricating CMOS devices with self-aligned channel stops. 4,411,058., Cl. 29-571.000.

Chen, Nai Y.; Scott, Eric J.; and Shihabi, David S., to Mobil Oil Corporation. Hydrovisbreaking process. 4,411,770., Cl. 208-111.000.

Chen, Richard M.: *See—*
Spackova, Daniela; and Chen, Richard M., 4,411,094., Cl. 43-121.000.

Chenet, Jacques; and Pierlot, Michel, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburation devices for internal combustion engines. 4,411,233., Cl. 123-439.000.

Chern Developments Limited: *See—*
Basterfield, Ernest P.; and Basterfield, Parker L., 4,411,372., Cl. 220-327.000.

Chevanne, Sylvain V. L.: *See—*
Minvielle, Monique L. S.; Mazoin, Albert H. F.; Brun, Robert P.; Chevanne, Sylvain V. L.; and See, Jacques L. A., 4,411,555., Cl. 405-50.000.

Chevron Research Company: *See—*
Brown, Robert J. S., 4,412,178., Cl. 324-303.000.
Brown, Robert J. S., 4,412,179., Cl. 324-303.000.
Chen, H. Chiu, 4,411,824., Cl. 502-323.000.
Heath, Warren A., 4,411,290., Cl. 137-615.000.

Chicklis, Evan P.: *See—*
Knights, Mark G.; and Chicklis, Evan P., 4,412,332., Cl. 372-70.000.

Chilman, John A., to Sundstrand Corporation. Ram air turbine control system. 4,411,596., Cl. 416-51.000.

Chivas Products Limited: *See—*
Moore, Ronald D., 4,411,944., Cl. 428-172.000.

Chloe Chimie: *See—*
Meyer, Jacques; and Bernelin, Daniel, 4,412,034., Cl. 524-791.000.

Cho, Kon H., to Western Electric Co., Inc. Method of manufacturing dielectrically-isolated single-crystal semiconductor substrates. 4,411,060., Cl. 29-576.00W.

Chown, Martin; and Farrington, Jeffrey G., to International Standard Electric Corporation. Measurement of rotation rate using sagnac effect. 4,411,526., Cl. 356-350.000.

Christian, Donald K. Novel shelf arrangement for a drop shelf vending machine. 4,411,375., Cl. 221-90.000.

Christopherson, John K. Hand held, single shot, firearm. 4,411,086., Cl. 42-1.00R.

Ciba-Geigy Corporation: *See—*
Agarwal, Suresh C.; Jager, Horst; Podder, Nitya G.; and Mollet, Hans, 4,411,668., Cl. 8-527.000.
Hoegerle, Karl; and Ohnemus, Kurt, 4,412,074., Cl. 544-298.000.
Karrer, Friedrich, 4,412,021., Cl. 524-102.000.
Monnier, Charles E.; and Lohse, Friedrich, 4,412,047., Cl. 525-507.000.
Petitpierre, Jean C., 4,411,450., Cl. 282-27.500.
Scartazzini, Riccardo, 4,411,897., Cl. 424-246.000.
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,411,896., Cl. 424-244.000.

Cie Electro Mecanique: *See—*
Sterlini, Jacques, 4,411,739., Cl. 203-24.000.

Cieplik, Ronald J.: *See—*
Nelson, Alfred M.; Rasekhi, Houshang; and Cieplik, Ronald J., 4,412,263., Cl. 360-128.000.

Ciferri, Alberto: *See—*
Krigbaum, William R.; Ciferri, Alberto; and Preston, Jack, 4,412,059., Cl. 528-192.000.

Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, to Kontek - Tecnologie della Conservazione - S.R.L. Apparatus for preserving food by generating preservative gas. 4,411,918., Cl. 426-124.000.

Cincinnati Milacron Industries, Inc.: *See—*
Grone, Robert J.; and Schnell, Leonard R., 4,411,579., Cl. 414-417.000.

Cities Service Company: *See—*
Gulbrandsen, Arthur F.; and Oko, Uriel M., 4,411,871., Cl. 422-232.000.

Claerbout, Paul F.: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Clapper, Allen R.; and Davis, Burlin, to Emerson Electric Co. Method of making a thermal switch having a lead interlocked thereto by a skived part of the lead. 4,411,061., Cl. 29-622.000.

Clark Equipment Company: *See—*
Bauer, James J., 4,411,464., Cl. 296-102.000.

Claudius Peters AG: *See—*
Zimmermann, Wilhelm, 4,411,113., Cl. 52-303.000.

Claver, Jorge C. Panel set for the formation of athermanous walls. 4,411,118., Cl. 52-582.000.

Cleland, Randy S.: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Clelford, Douglas H.: *See—*
Murphy, Richard D.; and Clelford, Douglas H., 4,412,280., Cl. 364-200.000.

Clements, John D.: *See—*
Klipstein, Frederick A.; Engert, Richard E.; and Clements, John D., 4,411,888., Cl. 424-92.000.

Close, Albert R.; and Oster, Winton, to McCulloch Corporation. Spoolless string trimmer head. 4,411,069., Cl. 30-276.000.

Coates, David: *See—*
Crossland, William A.; and Coates, David, 4,411,494., Cl. 350-339.00R.

Coca-Cola Company, The: *See—*
Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., 4,412,292., Cl. 364-479.000.

Cochran, C. Norman: *See—*
Dawless, Robert K.; Bowman, Kenneth A.; Mazgaj, Robert M.; and Cochran, C. Norman, 4,411,747., Cl. 204-67.000.

Cohen, Ellen R.: *See—*
Schlanger, Samuel L., 4,411,334., Cl. 180-274.000.

Cohen, Sheppard: *See—*
Barakitis, Nikolaos; and Cohen, Sheppard, 4,412,152., Cl. 315-73.000.

Cole, Herbert S.: *See—*
Aftergut, Siegfried; and Cole, Herbert S., 4,411,812., Cl. 252-299.100.

Colgate-Palmolive Company: *See—*
Kenkare, Divaker B.; and Shumway, Durland K., 4,411,883., Cl. 424-47.000.
Wixon, Harold E., 4,411,803., Cl. 252-8.750.
Wixon, Harold E., 4,411,809., Cl. 252-91.000.

Collier, Lyn D.; and Stark, Marvin. Hatch cover locking mechanism. 4,411,371., Cl. 220-314.000.

Collins, Forrest L., to Henkel Corporation. Aldehydic compositions. 4,412,026., Cl. 524-354.000.

Combeau, Guy, to Societe d'Exploitation des Machines Dubuit. Centrally mechanically controlled printing machine. 4,411,191., Cl. 101-38.00A.

Combustion Engineering, Inc.: *See—*
Hamilton, Thomas B., 4,411,204., Cl. 110-347.000.

Commissariat a l'Energie Atomique: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.
Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, 4,411,862., Cl. 376-442.000.

Communications Systems, Inc.: *See—*
Wiseheart, Ronald W.; and Meyer, Daniel, 4,411,485., Cl. 339-.125.00R.

Compagnie de Signaux et d'Entreprises Electriques: *See—*
Klein, Denys C., 4,412,154., Cl. 315-224.000.

Compagnie d'Electronique et de Piezo-Electricite C.E.P.E.: *See—*
Helle, Jacques; and Caret, Guy, 4,412,188., Cl. 331-176.000.

Compagnie Francaise de Raffinage: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Compagnie Internationale de Participation et d'Investissement Cipari S.A.: *See—*
Devreux, Andre F. O.; and Jerumanis, Janis, 4,411,914., Cl. 426-12.000.

Compagnie Internationale pour l'Informatique Cii Honeywell Bull: *See—*
Delorme, Raymond L., 4,411,149., Cl. 72-385.000.
Lesieur, Jean-Paul, 4,412,257., Cl. 360-45.000.

Concord Laboratories, Inc.: *See—*
Raitto, Russell G., 4,411,275., Cl. 128-763.000.

Conlon, Thomas W.; and Edeleanu, Constantin, to United Kingdom Atomic Energy Authority. Monitoring of corrosion. 4,412,174., Cl. 324-65.0CR.

Conoco Inc.: *See—*
Berge, Charles T.; and Mack, Mark P., 4,412,065., Cl. 528-26.000.

Conrad, Ulrich: *See—*
Ableitner, Erich; Conrad, Ulrich; Derndinger, Hans-Otto; and Niemeier, Gerd, 4,411,237., Cl. 123-501.000.

Conti, Roger C., to Reliance Electric Company. Seal with face-to-face flat metal sealing washers. 4,411,437., Cl. 277-53.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Heynhold, Ingo, 4,411,947., Cl. 428-250.000.
Control Data Corporation: *See—*
Newcomb, James S.; and Eumurian, Charles, 4,411,528., Cl. 356-375.000.
Cook, Gayle. Infant eye shield. 4,411,263., Cl. 128-132.00R.
Coors Container Company: *See—*
Brennecke, Paul; and McAuliffe, Donald C., 4,411,707., Cl. 148-2.000.
Corda, Giuseppe: *See—*
Miccoli, Franco; and Corda, Giuseppe, 4,412,311., Cl. 365-185.000.
Cordella, Johannes, to Voest-Alpine Aktiengesellschaft. Driving roller stand for continuous casting plants. 4,411,304., Cl. 164-448.000.
Cordis Dow Corp.: *See—*
Kell, Michael J., 4,411,603., Cl. 417-479.000.
Cornaby, David T., to Iomega Corporation. Digital control of servo circuit. 4,412,161., Cl. 318-561.000.
Corneille, David M. Coprecipitation process for thermionic cathode type materials. 4,411,827., Cl. 252-521.000.
Cornellier, Joseph R. Method and apparatus for inserting weft filaments. 4,411,294., Cl. 139-435.000.
Cornett, Walter G., III, to Urologic & Enteric Research Associates. Compressible syringe. 4,411,656., Cl. 604-212.000.
Corning Glass Works: *See—*
Montierth, Max R., 4,411,856., Cl. 264-267.000.
Cornish, Darrel G.; and Hartl, Carroll P., to Oscar Mayer & Co., Inc. Apparatus and method for pressure resizing of products. 4,411,122., Cl. 53-436.000.
Correale, James V.: *See—*
Dawn, Frederic S.; and Correale, James V., 4,411,660., Cl. 604-396.000.
Corwin, Michael A.; and Foster, George N., to Union Carbide Corporation. Anti-block compounds for extrusion of transition metal catalyzed resins. 4,412,025., Cl. 524-241.000.
Cosentino, Cesare C.: *See—*
Madonia, Ciro; Hatzikelis, Christopher; and Cosentino, Cesare C., 4,411,938., Cl. 428-31.000.
Cosman, Eric R. Thermocouple radio frequency lesion electrode. 4,411,266., Cl. 128-303.180.
Coulange, Jean, to e.d. Veglia. Sensor for detecting the level of liquid in a tank. 4,411,155., Cl. 73-295.000.
Coulter Electronics, Inc.: *See—*
Maynarez, Franklin D., 4,412,175., Cl. 324-71.100.
Couture, Guy. Jewelry clasp. 4,411,050., Cl. 24-234.000.
Couvillion, Paul L.; and Ray, James E., to Jim Ray Company, Inc. Sealing member with anti-extrusion means and protective coating. 4,411,439., Cl. 277-188.00A.
Cox, James A., to Medtronic, Inc. Muscle stimulator. 4,411,268., Cl. 128-421.000.
Cox, Robert D.; and Frank, Clyde W., to University of Iowa Research Foundation. Method for determination of nitrate and/or nitrite. 4,412,006., Cl. 436-110.000.
Craddock, Charles F.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,411,610., Cl. 425-174.400.
Craighead, Harold G.: *See—*
Beni, Gerardo; Craighead, Harold G.; and Hackwood, Susan, 4,411,495., Cl. 350-347.00V.
Cram, Ronald P.: *See—*
Jones, Bradley N.; Harris, Robert J.; Cram, Ronald P.; and Huber, Gene A., 4,411,673., Cl. 55-41.000.
Crane, Dennis P., to Ofrex Group Limited. Document shredding machines. 4,411,391., Cl. 241-232.000.
Craycraft, Donald G.: *See—*
Patella, James F.; and Craycraft, Donald G., 4,412,143., Cl. 307-530.000.
Crider, Chester H.; and Linton, Charles R., to International Business Machines Corporation. Stepper motor drive circuit for synchronous switching of core winding. 4,412,166., Cl. 318-696.000.
Crinos Industria Farmabiologica, S.p.A.: *See—*
Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,411,796., Cl. 210-692.000.
Cristea, Norm E. Retainer strap. 4,411,049., Cl. 24-20.0EE.
Cronin, James A.: *See—*
Meredith, Douglas; and Cronin, James A., 4,411,667., Cl. 8-471.000.
Cronshaw, David: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.
Crook, Edward J., Jr., to Crosby Group, The. Wire rope to chain connector for anchoring systems. 4,411,132., Cl. 59-85.000.
Crosby Group, The: *See—*
Crook, Edward J., Jr., 4,411,132., Cl. 59-85.000.
Cross, Leslie E.: *See—*
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,412,148., Cl. 310-358.000.
Crossland, William A.; and Coates, David, to International Standard Electric Corporation. Roughening surfaces for homeotropic layers of smectic LCD's. 4,411,494., Cl. 350-339.00R.
Cuatrecasas, Pedro; and Parikh, Indu. Polysaccharide matrices comprising macromolecular spacer arms for use as adsorbents in affinity chromatography techniques. 4,411,832., Cl. 260-121.000.
Cullen, Walter P.: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,411,892., Cl. 424-181.000.
Cummins, William T.: *See—*
Leblanc, Raymond F.; and Cummins, William T., 4,411,556., Cl. 405-213.000.
Cunnion, James P., Jr.: *See—*
Netting, David I.; Spivack, Bruce D.; and Cunnion, James P., Jr., 4,411,847., Cl. 264-7.000.
Currah, Walter E.: *See—*
Currah, Walter E., Jr., 4,411,588., Cl. 415-2.00A.
Currah, Walter E., Jr., to Currah, Walter E. Wind driven power plant. 4,411,588., Cl. 415-2.00A.
Curtis, Nikolaus A.; and Karner, James E., to Mile-Age Research Corporation. Cylinder deactivation device. 4,411,229., Cl. 123-198.00F.
Cuscurida, Michael: *See—*
McCoy, David R.; Cuscurida, Michael; and Speranza, George P., 4,411,775., Cl. 208-188.000.
CX Corporation: *See—*
Siegel, John H.; and Edwards, Gerald L., 4,411,725., Cl. 156-353.000.
Cynex Manufacturing Corporation: *See—*
Green, Dan; and Goldner, Sandor, 4,412,167., Cl. 318-729.000.
Cyphelly, Ivan J. Decanter centrifuge having differential drive unit. 4,411,646., Cl. 494-53.000.
Cziptschirsch, Kurt; Kaiser, Klaus-Peter; and Zwirner, Gerhard, to Gebr. Happich GmbH. Foil covering layer for sun visor. 4,411,467., Cl. 296-97.00H.
Dahlgren Manufacturing Company: *See—*
Hess, Max W., 4,411,193., Cl. 101-148.000.
Daimler-Benz AG: *See—*
Ableitner, Erich; Conrad, Ulrich; Derndinger, Hans-Otto; and Niemeier, Gerd, 4,411,237., Cl. 123-501.000.
Hardenberg, Horst; and Bergmann, Horst, 4,411,243., Cl. 123-577.000.
Daly, Charles L. Process and apparatus for thermally drying oil well cuttings. 4,411,074., Cl. 34-32.000.
Damadian, Raymond V. Apparatus and method for nuclear magnetic resonance scanning and mapping. 4,411,270., Cl. 128-653.000.
Daniel, Maurice. Apparatus for collecting, distributing and utilizing solar radiation. 4,411,490., Cl. 350-96.100.
Darnell, Robert D.; Goetz, Carl A.; and Ingle, William M., to Motorola, Inc. Flange and coupling cooling means and method. 4,411,619., Cl. 432-1.000.
Dart Industries Inc.: *See—*
Dassow, Edgar E., 4,412,268., Cl. 361-181.000.
Dassow, Edgar E., to Dart Industries Inc. Safety switch system for industrial machines. 4,412,268., Cl. 361-181.000.
Datta, Amitava; and Stroble, Carl P., to Allegheny Ludlum Steel Corporation. Method for improving the magnetic properties of grain oriented silicon steel. 4,411,714., Cl. 148-111.000.
Daumal, Jeanne: *See—*
Voegele, Jean D.; Jourdheuil, Pierre E. J.; and Daumal, Jeanne, 4,411,220., Cl. 119-1.000.
Davidson, William W., Jr., to North Shore Precision Research Corporation. Printing press. 4,411,194., Cl. 101-216.000.
Davis, Burlin: *See—*
Clapper, Allen R.; and Davis, Burlin, 4,411,061., Cl. 29-622.000.
Davis, Charles P.; Warren, Michael M.; and Arnett, David W., to Board of Regents, The University of Texas System. Iontophoretic catheter device. 4,411,648., Cl. 604-21.000.
Davis, Pauls: *See—*
Panek, Edward J.; and Davis, Pauls, 4,411,819., Cl. 252-315.100.
Davis, Steven C.: *See—*
Klein, Dean A.; Davis, Steven C.; and Wroblewski, Jerome J., 4,411,150., Cl. 72-461.000.
Dawless, Robert K.; Bowman, Kenneth A.; Mazgaj, Robert M.; and Cochran, C. Norman, to Aluminum Company of America. Process of electrolysis and fractional crystallization for aluminum purification. 4,411,747., Cl. 204-67.000.
Dawn, Frederic S.; and Correale, James V., to United States of America, National Aeronautics and Space Administration. Absorbent product and articles made therefrom. 4,411,660., Cl. 604-396.000.
Dayco Corporation: *See—*
Wilson, Leslie B., 4,411,638., Cl. 474-138.000.
Daykin, Theodore W.: *See—*
Watanabe, Shunso F.; Daykin, Theodore W.; and Heiney, Elmer T., III, 4,411,231., Cl. 123-339.000.
De Greef's Wagen-, Carrosserie- en Machinebouw B.V.: *See—*
De Greef, Jan A., 4,411,366., Cl. 209-648.000.
De Regt Special Cable B.V.: *See—*
Asjes, Ronald J.; van Peppen, Jacobus C. L.; and Klaassen, Klaas B., 4,412,317., Cl. 367-185.000.
de Castella, Pierre. Apparatus for the purification of gases. 4,411,675., Cl. 55-316.000.
Deen, Harold E.: *See—*
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,411,808., Cl. 252-78.100.
Deere & Company: *See—*
Haight, Robert E.; and Tjepkes, Kendall D., 4,411,345., Cl. 192-12.00C.
Kolegraff, Kenneth J.; and Allen, David T., 4,412,212., Cl. 340-684.000.
Dees, John R.: *See—*
Bromley, James E.; and Dees, John R., 4,411,852., Cl. 264-171.000.
Degner, Dieter; Roos, Hans; and Hannebaum, Heinz, to BASF Aktiengesellschaft. Preparation of alkyl-substituted benzaldehydes. 4,411,746., Cl. 204-59.00R.

De Greef, Jan A., to De Greef's Wagen-, Carrosserie- en Machinebouw B.V. Device for grading products. 4,411,366., Cl. 209-648.000.
Degussa: *See—*
Kreuter, Erika; and Zilske, Wolfgang, 4,411,743., Cl. 204-47.000.
Degussa Aktiengesellschaft: *See—*
Amann, Herbert; and Morlock, Gerhard, 4,412,067., Cl. 528-232.000.
Bethge, Horst; Kleemann, Axel; and Martens, Jurgen, 4,411,840., Cl. 260-501.120.
Grimm, Dieter, 4,411,537., Cl. 374-185.000.
de Jager, Arie, to IHC Holland N.V. Suction drag system. 4,411,079., Cl. 37-58.000.
DeJovine, James M.: *See—*
DeVries, Donald L.; and DeJovine, James M., 4,411,804., Cl. 252-29.000.
de Klein, Willem J.: *See—*
Hageman, Hendrik J.; de Klein, Willem J.; and Giezen, Egenius A., 4,411,823., Cl. 502-168.000.
DeLeon, Alberto: *See—*
Snider, Scott C.; and DeLeon, Alberto, 4,411,949., Cl. 428-304.400.
Dell'Orto, Giuseppe, to Marelli Autronica S.p.A. Circuit for detecting and indicating faults and operating anomalies in a system for recharging electric accumulators. 4,412,169., Cl. 320-64.000.
Dell'Orto, Pierluigi, to Dell'Orto S.p.A. Oil pump for internal combustion engines. 4,411,225., Cl. 123-73.0AD.
Dell'Orto S.p.A.: *See—*
Dell'Orto, Pierluigi, 4,411,225., Cl. 123-73.0AD.
Delorme, Raymond L., to Compagnie Internationale pour l'Informatique Cii Honeywell Bull. Machine for bending conductors of a semiconductor chip device. 4,411,149., Cl. 72-385.000.
Del Sere, Giannetto: *See—*
Tironi, Maurizio G.; Barbini, Mario; and Del Sere, Giannetto, 4,412,334., Cl. 373-40.000.
Delta Electronics, Inc.: *See—*
Wright, Charles S., 4,412,349., Cl. 455-67.000.
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, to Wisconsin Alumni Research Foundation. Method for preparing 26,26,26,27,27,27-hexafluoro-1α,25-dihydroxycholesterol. 4,411,833., Cl. 260-239.55R.
de Man, Hendrikus C. J.; and Smids, Petrus T. J. L., to Stamicarbon B.V. Bromine-containing polymer and process of preparing a bromine-containing polymer. 4,412,051., Cl. 526-293.000.
DeMarco, Michael, to United States of America, Navy. Variable speed reducing and torque transmitting system. 4,411,172., Cl. 74-690.000.
Demianczuk, Dionisyj W.; McLean, Gregory J.; and Franklin, Joseph E., to Republic Steel Corporation. Production of steel products with medium to high contents of carbon and manganese and superior surface quality. 4,411,056., Cl. 29-527.700.
Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,412,069., Cl. 542-429.000.
Denaro, James J. Compound jaw plate. 4,411,415., Cl. 269-134.000.
Denero, Anthony D.: *See—*
Stricklin, John D.; Denero, Anthony D.; Quatro, Robert A.; and Duff, James A., 4,412,260., Cl. 360-97.000.
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., to Moskovsky Energetichesky Institut; Pervy Moskovsky Cashovoizavod im. S. M. Kirova; and V. M. Chasovoi. Single-phase step motor. 4,412,144., Cl. 310-49.00R.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Shigesada, Shigeki; Kitagawa, Hironoshin; Mihara, Toshio; and Ishimatsu, Yoshiaki, 4,411,999., Cl. 435-177.000.
Dennison Manufacturing Company: *See—*
Jodrey, Robert M.; and Scott, Robert J., 4,411,393., Cl. 242-75.430.
Dentsply Research & Development Corp.: *See—*
Koblitz, Franics F.; and Reichart, Jane L., 4,411,625., Cl. 433-217.000.
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., to TRW Inc. Airfoil. 4,411,940., Cl. 428-73.000.
Derndinger, Hans-Otto: *See—*
Ableitner, Erich; Conrad, Ulrich; Derndinger, Hans-Otto; and Niemeier, Gerd, 4,411,237., Cl. 123-501.000.
DeSantis, Raymond P., to PTX-Pentronix, Inc. Method for compacting articles made of powder material at a predetermined density. 4,411,848., Cl. 264-40.500.
Desbois, Michel: *See—*
Baudouin, Michel; and Desbois, Michel, 4,412,075., Cl. 546-153.000.
Desbrandes, Robert, to Institut Francais du Petrole. Method and device with adjustable focusing for measuring the electric resistivity of geological formations. 4,412,180., Cl. 324-373.000.
Desiage, Christian: *See—*
Marcheix, Raymond; and Desiage, Christian, 4,411,441., Cl. 280-5.00A.
Desiro, Richard. Radiator recoring fixturing and tools. 4,411,414., Cl. 269-71.000.
DeSoto, Inc.: *See—*
Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, 4,412,032., Cl. 524-538.000.
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, to Hoechst Aktiengesellschaft. Piston pump for needle-less injection instruments. 4,411,650., Cl. 604-72.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Touch responsive keyboard electronic musical instrument. 4,411,185., Cl. 84-1.270.
Development Finance Corp of New Zealand: *See—*
Hiscock, Donald C., 4,411,206., Cl. 111-34.000.
Devin, Paul W. Ash hood. 4,411,253., Cl. 126-242.000.
Devreux, Andre F. O.; and Jerumanis, Janis, to Compagnie Internationale de Participation et d'Investissement Cipari S.A. Process for the production of a colloidally stable beer. 4,411,914., Cl. 426-12.000.
DeVries, Donald L.; and DeJovine, James M., to Atlantic Richfield Company. Solid particles containing lubricating oil composition. 4,411,804., Cl. 252-29.000.
Devro, Inc.: *See—*
Green, Edward A. T., 4,411,048., Cl. 17-49.000.
DewEze Manufacturing, Inc.: *See—*
Hostetler, Dewey, 4,411,572., Cl. 414-24.500.
Diamond Automations, Inc.: *See—*
Riley, Douglas E., 4,411,574., Cl. 414-121.000.
Diamond Shamrock Corporation: *See—*
Kline, George A., 4,411,762., Cl. 204-290.00F.
Dian, Walter, to Walter Dian, Inc. Golf putter. 4,411,430., Cl. 273-171.000.
Dickens, Duane D.; and Servas, Francis M., to Shiley Incorporated. Arterial blood filter with improved gas venting. 4,411,783., Cl. 210-304.000.
Dickhudt, Eugene A.; and Paulson, Roger A., to Medtronic, Inc. Implantable multiple connector. 4,411,276., Cl. 128-784.000.
Dickhudt, Eugene A., to Medtronic, Inc. Implantable connector. 4,411,277., Cl. 128-784.000.
Dickinson, Peter J.: *See—*
Parker, Alan; and Dickinson, Peter J., 4,411,129., Cl. 57-228.000.
Didier-Werke AG: *See—*
Neumann, Ernst-Georg, 4,411,616., Cl. 431-114.000.
Diebold Incorporated: *See—*
Anders, Walter G., 4,411,336., Cl. 186-37.000.
Diederich, Anthony F., Jr.; Haldeman, Peter P.; and Campbell, Willis R., to Sperry Corporation. Floating windguard. 4,411,127., Cl. 56-364.000.
Diepers, Heinrich, to Siemens Aktiengesellschaft. Ultrasonic transducer arrangement. 4,412,316., Cl. 367-105.000.
Dietz, Lloyd H.: *See—*
Perry, Clifford R.; Dietz, Lloyd H.; and Shannon, Roger L., 4,411,310., Cl. 165-166.000.
Digital Equipment Corporation: *See—*
Lipcon, Jesse B., 4,412,347., Cl. 455-58.000.
Disbrow, Lynnford E. Apparatus for controlling spray pattern. 4,411,386., Cl. 239-177.00R.
Disco Co., Ltd.: *See—*
Sekiya, Shinji; and Ono, Takatoshi, 4,411,107., Cl. 51-209.00R.
Dixon, George D.; Carlson, Nancy W.; and Saunders, Howard E., to Westinghouse Electric Corp. Solventless UV dryable B-stageable epoxy adhesive. 4,412,048., Cl. 525-524.000.
Dr. Ing. h.c.F. Porsche AG: *See—*
Striebich, Helmut, 4,411,135., Cl. 60-616.000.
Doern, Klaus, to Wik Elektro-Hausgerate Vertriebsgesellschaft mbH & Co., Productions-KG. Hairdressing device for styling, winding and drying hair. 4,411,281., Cl. 132-37.00R.
Domeniconi, Michael, to Altus Corporation. Current collector manufacturing process for an electrochemical cell. 4,411,825., Cl. 252-503.000.
Donakowski, William A.; and Morgan, John R., to Ford Motor Company. Electrolytic codeposition of zinc and graphite and resulting product. 4,411,742., Cl. 204-16.000.
Donaldson, A. Burl; Hoke, Donald E.; and Mulac, Anthony J. Downhole steam generator with improved preheating/cooling features. 4,411,618., Cl. 431-190.000.
Donoian, Gary S.: *See—*
Valsamis, Lefteris N.; Yang, Jan-Chin; and Donoian, Gary S., 4,411,532., Cl. 366-99.000.
Dorr-Oliver Inc.: *See—*
Evans, Richard R., 4,412,003., Cl. 435-287.000.
Doss, Harry L. Grading machine. 4,411,323., Cl. 172-799.500.
Double A Products Company: *See—*
Teichert, Rainer, 4,412,196., Cl. 335-250.000.
Dougherty, James R.: *See—*
Blacklin, Peter A.; Dougherty, James R.; Johnson, Richard J.; and Tate, Donald L., 4,411,121., Cl. 52-792.000.
Dougherty, Timothy S.; Kissell, John J.; and Schmehl, Glenn L., to Western Electric Company, Inc. Compositely insulated conductor riser cable. 4,412,094., Cl. 174-110.00F.
Dow Chemical Company, The: *See—*
Bermudez, Mauricio; Klimpel, Richard R.; and Sands, Steven D., 4,411,927., Cl. 426-618.000.
Hefner, Robert E., Jr., 4,412,055., Cl. 528-99.000.
Dow Corning Corporation: *See—*
Flaningam, Ora L.; and Halm, Roland L., 4,411,740., Cl. 203-58.000.
Dowa Mining Co., Ltd.: *See—*
Watanabe, Yasuo; Isoyama, Seiji; and Bannou, Masahiko, 4,411,807., Cl. 252-62.580.
Dowty Mining Equipment Limited: *See—*
Rutherford, Dennis F., 4,411,558., Cl. 405-294.000.
Drabert, Fritz; Posch, Oskar; Edel, Hans-Joachim; and Schroeder, Bernhard, to Drabert Sohne. Chair, particularly a data display chair. 4,411,469., Cl. 297-300.000.

Drabert Sohne: *See—*
Drabert, Fritz; Posch, Oskar; Edel, Hans-Joachim; and Schroeder, Bernhard, 4,411,469., Cl. 297-300.000.

Drago, William R.: *See—*
Babin, Eugene R.; and Drago, William R., 4,411,157., Cl. 73-864.810.

Dreishev, Igor I.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Drescher, Heinz H.: *See—*
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Drescher, Heinz H., 4,411,794., Cl. 210-670.000.

Drew, John W.; and Swift, Joe M. Offset putter. 4,411,429., Cl. 273-164.000.

Driall, Inc.: *See—*
Applegate, Robert D., 4,411,620., Cl. 432-29.000.

Drummond, Denis S. Apparatus for engaging a hook assembly to a spinal column. 4,411,259., Cl. 128-69.000.

Dubix: *See—*
Ferrage, Francois, 4,411,082., Cl. 38-9.000.

Dubois, Gilles; and Hulin, Jean P., to Lignes Telegraphiques et Telephoniques. Head for the simultaneous laying of optical fibers within a grooved cylindrical support. 4,411,130., Cl. 57-352.000.

Duda, Eugene; Tondu, Claude; and Maumy, Alain, to Thomson-CSF. Method of manufacturing a laser source with stamped support. 4,411,057., Cl. 29-569.00L.

Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., to Raytheon Company. Microwave oven feed system. 4,412,117., Cl. 219-10.55F.

Duerig, Thomas: *See—*
Albrecht, Joachim; Duerig, Thomas; and Schroeder, Gunther, 4,411,711., Cl. 148-11.50A.

Duff, Charles B.: *See—*
Stout, Daniel M.; and Duff, Charles B., 4,411,093., Cl. 43-114.000.

Duff, James A.: *See—*
Stricklin, John D.; Denero, Anthony D.; Quatro, Robert A.; and Duff, James A., 4,412,260., Cl. 360-97.000.

Duke University: *See—*
Krigbaum, William R.; Ciferri, Alberto; and Preston, Jack, 4,412,059., Cl. 528-192.000.

Duncan, Eugene F., to Eaton Corporation. Adjustable photoelectric detector head for solid state limit switch. 4,412,129., Cl. 250-239.000.

Dunlap, Richard M., to United States of America, Navy. Heat driven heat pump using paired ammoniated salts. 4,411,384., Cl. 237-2.00B.

Dunn, Aubrey J.: *See—*
Durenec, Peter; and Dunn, Aubrey J., 4,411,164., Cl. 74-55.000.

Dunnavant, William R.: *See—*
Gruber, Bruce A.; Koch, Diether; Langer, Heimo J.; and Dunnavant, William R., 4,412,088., Cl. 585-23.000.

Duong, Chau H., to Armstrong World Industries, Inc. Multiple step UV curing process for providing accurately controlled surface texture. 4,411,931., Cl. 427-54.100.

Du Pont de Nemours, E. I., and Company: *See—*
Barsotti, Robert J., 4,411,951., Cl. 428-328.000.
Feathers, William D., 4,411,614., Cl. 425-466.000.
Haney, Douglas M.; and Lott, John W., 4,411,980., Cl. 430-291.000.
Howard, Edward G., Jr., 4,411,821., Cl. 502-117.000.
Pazos, Jose F., 4,412,043., Cl. 525-328.200.
Regenstein, Klaus J., 4,411,142., Cl. 66-196.000.
Siemionko, Roger K., 4,412,058., Cl. 528-191.000.
Silva, Raimund H.; and Smith, Roger A., 4,411,750., Cl. 204-98.000.
Tseng, Chi-Ping, 4,411,690., Cl. 71-92.000.

Durant, Will G., to W. G. Durant Corporation. Valve bag placer. 4,411,296., Cl. 141-98.000.

Durenec, Peter; and Dunn, Aubrey J., to United States of America, Army. Rotary to recipricating motion translator. 4,411,164., Cl. 74-55.000.

Durenec, Peter, to United States of America, Army. Spring loaded piston seal assembly. 4,411,436., Cl. 277-53.000.

Durr-Dental GmbH & Co., KG: *See—*
Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, 4,411,550., Cl. 403-358.000.

Duruz, Louis; and Furrer, Alfred, to Raskin, S.A. Machine for cutting sheet material. 4,412,120., Cl. 219-121.0LG.

Duschl, Bernhard: *See—*
Glasauer, Rudolf; Duschl, Bernhard; Linzmeier, Wilhelm; and Schaffrik, Arnold, 4,412,201., Cl. 336-192.000.

Dutton, Daniel R.; Parker, Edward J.; Ott, Roger A.; and Otten, Jay G., to BASF Wyandotte Corporation. Low-foaming nonionic surfactant for machine dishwashing detergent. 4,411,810., Cl. 252-99.000.

Dynabrade, Inc.: *See—*
Fleckenstein, Elwin H.; and Welsch, Walter N., 4,411,106., Cl. 51-170.0EB.

Dynamit Nobel Aktiengesellschaft: *See—*
Brede, Uwe; Penner, Horst; Stahlmann, Rudolf; and Zeiher, Erich, 4,411,200., Cl. 102-529.000.
Gauchel, Peter; and Kurth, Josef, 4,411,613., Cl. 425-388.000.

e.d. Veglia: *See—*
Coulange, Jean, 4,411,155., Cl. 73-295.000.

Easley, Othel D., Jr.; and Wooten, John T., to Reactor Services International, Inc. For removing particles from a tube by means of a missile. 4,411,705., Cl. 134-8.000.

Eastman Kodak Company: *See—*
Abbott, Thomas I.; and Jones, Cynthia, 4,411,986., Cl. 430-502.000.
Gabrielsen, Rolf S., 4,411,984., Cl. 430-351.000.
Gilmour, Hugh S. A.; and Blazey, Richard N., 4,411,973., Cl. 430-7.000.
Morrow, Lawrence R.; and Thatcher, John, 4,411,985., Cl. 430-352.000.
Wu, Tai-Wing, 4,412,005., Cl. 436-97.000.

Eaton Corporation: *See—*
Duncan, Eugene F., 4,412,129., Cl. 250-239.000.
Hamilton, Martin W., 4,411,325., Cl. 177-136.000.
Hansen, James E.; and Smith, Richard G., 4,412,137., Cl. 307-10.00R.
Hansen, James E., 4,412,267., Cl. 361-94.000.

Ebauches, S.A.: *See—*
Portmann, Hubert, 4,412,215., Cl. 340-785.000.

Echte, Adolf: *See—*
Brandstetter, Franz; Echte, Adolf; Gausepohl, Hermann; and Naarmann, Herbert, 4,412,037., Cl. 525-68.000.

Ecker, Amir L., to Atlantic Richfield Company. Wound tube heat exchanger. 4,411,307., Cl. 165-70.000.

Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., to Perkin-Elmer Corp., The. Electrostatic cassette. 4,412,133., Cl. 250-492.200.

Eckstein, Helmut: *See—*
Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, 4,411,524., Cl. 356-313.000.

Ecodyne Corporation: *See—*
Yu, Steven P.; Matunas, Frank C.; and Zwetkow, Nikolaus, 4,411,785., Cl. 210-321.100.

Ecomard, Andre; and Briand, Louis, to Institut Francais du Petrole. Pump-injector device for an internal combustion engine. 4,411,238., Cl. 123-501.000.

Edamatu, Mitisuke: *See—*
Nakazima, Atushi; and Edamatu, Mitisuke, 4,411,930., Cl. 427-54.100.

Edel, Hans-Joachim: *See—*
Drabert, Fritz; Posch, Oskar; Edel, Hans-Joachim; and Schroeder, Bernhard, 4,411,469., Cl. 297-300.000.

Edeleanu, Constantin: *See—*
Conlon, Thomas W.; and Edeleanu, Constantin, 4,412,174., Cl. 324-65.0CR.

Edgerton, Bradly J.; House, William F.; and Michaels, Robert C., to Minnesota Mining and Manufacturing Company. Combination earmold and receiver adapter. 4,412,096., Cl. 381-60.000.

Edson, James B.: *See—*
Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., 4,412,211., Cl. 340-514.000.

Edwards, Gerald L.: *See—*
Siegel, John H.; and Edwards, Gerald L., 4,411,725., Cl. 156-353.000.

Edwards, Ivan L.: *See—*
Khan, Ashfaq R.; and Edwards, Ivan L., 4,412,342., Cl. 375-107.000.

Efstratiadis, Argiris A.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,411,994., Cl. 435-71.000.

Egli, Hermann; and Engeler, Emil, to Sandoz Ltd. Dyeing process using alkoxylated fatty amines and polyamines as reserving agents. 4,411,665., Cl. 8-455.000.

Eguchi, Kiyoshi: *See—*
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,412,112., Cl. 200-50.0AA.

Ehemann, Gero, to Kurt Ehemann Spezialmaschinenfabrik KG. Process for heat treating textile material items. 4,411,051., Cl. 26-18.500.

Ehrlich, Shelton; and Aulisio, Callixtus, to Electric Power Research Institute. Method for enhancing the sulfur capture potential of lime using a filter means in the flue gas. 4,411,879., Cl. 423-640.000.

Eibeck, Richard E.: *See—*
Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., 4,411,843., Cl. 260-544.00Y.

Eichelsheim, Alexander V., to Applied Power Inc. Tiltcab truck with a safety latch cylinder. 4,411,332., Cl. 180-89.140.

Eichenlaub, John E. Ear wax removing device. 4,411,265., Cl. 128-303.100.

Eigenmann, Ludwig. Retro-reflecting globules for road surface marking. 4,411,553., Cl. 404-16.000.

Ekholm, David T., to Bell Telephone Laboratories, Incorporated. Magnetic bubble detector. 4,412,307., Cl. 365-8.000.

Electric Power Development Co.: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Electric Power Research Institute: *See—*
Ehrlich, Shelton; and Aulisio, Callixtus, 4,411,879., Cl. 423-640.000.

Electro Scientific Industries, Inc.: *See—*
Mauck, Michael S.; and Neeland, William S., 4,412,330., Cl. 372-29.000.

Elettromeccanica Tironi S.r.l.: *See—*
Tironi, Maurizio G.; Barbini, Mario; and Del Sere, Giannetto, 4,412,334., Cl. 373-40.000.

Elfes, Lee E.: *See—*
Wood, Dale A.; and Elfes, Lee E., 4,411,319., Cl. 172-10.000.

Eli Lilly and Company: *See—*
Abdulla, Riaz F., 4,411,753., Cl. 204-158.00R.

Ellingsen, Raymond L.; and Manteufel, Dale A., to J. I. Case Company. Log splitter mounting arrangement. 4,411,298., Cl. 144-193.00A.

Elliott, James F.; Richter, George N.; and Estabrook, Lawrence E., to Texaco Inc. Production of synthesis gas. 4,411,817., Cl. 212-373.000.

Ellis, Billy H.; and Ellis, Randall. Aluminum shingle accesories. 4,411,120., Cl. 52-748.000.

Ellis, Randall: *See—*
Ellis, Billy H.; and Ellis, Randall, 4,411,120., Cl. 52-748.000.

Elmo Company, Limited: *See—*
Ota, Masataka, 4,412,156., Cl. 315-308.000.

Elmquist, Lyle F.: *See—*
Pedersen, Lee C.; and Elmquist, Lyle F., 4,412,036., Cl. 525-54.260.

Embree, Milton L., to Bell Telephone Laboratories, Incorporated. Precision isolation amplifier. 4,412,184., Cl. 330-69.000.

Emerson Electric Company: *See—*
Carnahan, John T., 4,411,561., Cl. 406-137.000.
Clapper, Allen R.; and Davis, Burlin, 4,411,061., Cl. 29-622.000.
Munoz, John, 4,411,850., Cl. 264-105.000.

Endo, Masao: *See—*
Saito, Masumi; Hirai, Eiichi; and Endo, Masao, 4,411,701., Cl. 106-87.000.

Endo, Toshiyuki: *See—*
Kato, Michio; Endo, Toshiyuki; and Nomura, Junji, 4,411,793., Cl. 210-656.000.

Endo, Yasushi: *See—*
Nagura, Masato; Kikuchi, Kazushige; Obara, Hiroshi; and Endo, Yasushi, 4,412,147., Cl. 310-320.000.

Engelbrecht, Jurgen: *See—*
Lustgarten, Stewart J.; and Engelbrecht, Jurgen, 4,412,015., Cl. 523-116.000.

Engeler, Emil: *See—*
Egli, Hermann; and Engeler, Emil, 4,411,665., Cl. 8-455.000.

Engelmaier, Werner: *See—*
Ammann, Hans H.; Bonanni, Rocco; and Engelmaier, Werner, 4,412,123., Cl. 219-233.000.

Engert, Richard E.: *See—*
Klipstein, Frederick A.; Engert, Richard E.; and Clements, John D., 4,411,888., Cl. 424-92.000.

English, Donald H., to Hewing Manufacturing Corporation. Watertight conduit well cap. 4,411,312., Cl. 166-75.00R.

Enlow, William P.: *See—*
Hechenbleikner, Ingenuin; and Enlow, William P., 4,411,842., Cl. 260-543.00P.

Erhardt, Peter F.: *See—*
Lu, Chin H.; Au Clair, Christopher J.; and Erhardt, Peter F., 4,411,974., Cl. 430-106.000.

Eriksson, Caj. Heme-iron-enriched amino acid and a process for the preparation of heme-iron-enriched amino acid. 4,411,915., Cl. 426-32.000.

Ernst, Horst M.: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,411,478., Cl. 308-6.00C.

Ernst Leitz Wetzlar GmbH: *See—*
Faatz, Rudi; Moeller, Siegfrid; Ruehl, Friedel; and Steuernagel, Adolf, 4,411,510., Cl. 354-272.000.

Escuret, Pierre: *See—*
Godbille, Etienne; Escuret, Pierre; and Scheid, Jean-Pierre, 4,411,658., Cl. 604-285.000.

Esmond, William G. Stacked plate transfer device. 4,411,784., Cl. 210-321.100.

ESPE Fabrik Pharmazeutischer Praeparate GmbH: *See—*
Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, 4,412,134., Cl. 250-504.00R.

Essilor International: *See—*
Tagnon, Luc A., 4,411,501., Cl. 351-202.000.

Estabrook, Lawrence E.: *See—*
Elliott, James F.; Richter, George N.; and Estabrook, Lawrence E., 4,411,817., Cl. 212-373.000.

Estel Hoesch Werke Aktiengesellschaft: *See—*
Roll, Werner, 4,411,152., Cl. 73-46.000.

Estwanik, Joseph J., III. Exercise device and exercise adapter for forming same. 4,411,423., Cl. 272-117.000.

Etat Francais: *See—*
Glowinsky, Albert; and Lucas, Pierre M., 4,412,324., Cl. 370-58.000.
Terrien, Michel E.; and Bouvet, Claude, 4,411,037., Cl. 14-2.600.

Ettridge, John P. Webbing harness restraints. 4,411,473., Cl. 297-484.000.

Eumurian, Charles: *See—*
Newcomb, James S.; and Eumurian, Charles, 4,411,528., Cl. 356-375.000.

Evans, Lyle B. Power transmission unit with infinite speeds. 4,411,165., Cl. 74-63.000.

Evans, Richard R., to Dorr-Oliver Inc. Integral flow circulator for fluid bed reactor. 4,412,003., Cl. 435-287.000.

Everett, Lynn E., to Tusco Manufacturing Co. Shelving system. 4,411,400., Cl. 248-216.100.

Ex-Cell-O Corporation: *See—*
Kunkel, Harold E., 4,411,309., Cl. 165-76.000.

Excel Corporation: *See—*
Furlette, James L.; and Stadler, Donald A., 4,411,355., Cl. 198-718.000.

Exxon Research & Engineering Co.: *See—*
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,411,808., Cl. 252-78.100.
Lundberg, Robert D.; Phillips, Robert R.; and McDougall, Lee A., 4,412,028., Cl. 524-364.000.
Oldweiler, Morey E., 4,411,769., Cl. 208-54.000.
Schucker, Robert C.; and Wheelock, Kenneth S., 4,411,772., Cl. 208-121.000.
Tirtiaux, Robert; and Lenack, Alain L. P., 4,411,806., Cl. 252-49.600.

Faatz, Rudi; Moeller, Siegfrid; Ruehl, Friedel; and Steuernagel, Adolf, to Ernst Leitz Wetzlar GmbH. Apparatus for compensating for the rebounding of an automatic diaphragm in a photographic objective. 4,411,510., Cl. 354-272.000.

Fairchild Camera & Instrument Corp.: *See—*
Mor, Yeshayahu; and Wilnai, Dan, 4,412,283., Cl. 364-200.000.

Faivre, Eric. Stringed musical instrument having soundboard. 4,411,186., Cl. 84-291.000.

Falk Corporation, The: *See—*
Bednar, Thomas R., 4,411,347., Cl. 192-88.00B.
Witt, Ronald A., 4,411,346., Cl. 192-85.00A.

Fano, Maurizio: *See—*
Bernareggi, Virgilio; Margutti, Roberto; Bonifacio, Fausto; and Fano, Maurizio, 4,411,902., Cl. 424-265.000.

Farmanian, Paul A.: *See—*
Yen, Teh F.; and Farmanian, Paul A., 4,411,816., Cl. 252-356.000.

Farmer, Ian W., to Arken, Inc. Slit-tube sign stand. 4,411,085., Cl. 40-610.000.

Farmitalia Carlo Erba, S.p.A.: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,411,834., Cl. 260-365.000.

Farrington, Jeffrey G.: *See—*
Chown, Martin; and Farrington, Jeffrey G., 4,411,526., Cl. 356-350.000.

Fassbender, Heinrich: *See—*
Kramer, Horst; and Fassbender, Heinrich, 4,412,176., Cl. 324-204.000.

Feathers, William D., to Du Pont de Nemours, E. I., and Company. Removable contoured insert for an extrusion die. 4,411,614., Cl. 425-466.000.

Feichtinger, Gerhard, to List, Hans. Internal combustion engine. 4,411,227., Cl. 123-196.00R.

Feinland, Seymour; and Rubinstein, Arthur, to Pitney Bowes Inc. Method for tracking creep and drift in a digital scale under full load. 4,412,298., Cl. 364-567.000.

Fenoglio, Bernard F. Process for baking pies. 4,411,920., Cl. 426-233.000.

Fenwick, Loel. Maternity care bed. 4,411,035., Cl. 5-68.000.

Ferix Corporation: *See—*
Springer, Gilbert D., 4,411,512., Cl. 355-3.0TR.

Ferrage, Francois, to Dubix. Laundry ironing device with pivoted blade folder. 4,411,082., Cl. 38-9.000.

Fetheroff, Charles W.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,411,940., Cl. 428-73.000.

Feuerbaum, Hans P.; and Tobolka, Gerald, to Siemens Aktiengesellschaft. Method and arrangement for quantitative potential measurements on surface-wave filters. 4,412,191., Cl. 333-193.000.

Feuerherd, Karl-Heinz: *See—*
Koenig, Karl-Heinz; and Feuerherd, Karl-Heinz, 4,411,752., Cl. 204-158.0HA.

Feutrel, Claude: *See—*
Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, 4,411,862., Cl. 376-442.000.

Fiala, Ernest, to Volkswagenwerk Aktiengesellschaft. Vehicle drive. 4,411,171., Cl. 74-675.000.

Fiber Industries, Inc.: *See—*
Bromley, James E.; and Dees, John R., 4,411,852., Cl. 264-171.000.

Fiebig, August E., Jr.; Shurney, Glenn A.; and Nagy, Anton J., to Alberto-Culver Company. Method for making perfume-release plastic decorations. 4,411,855., Cl. 264-219.000.

Field, Thomas R.; and Simon, Donald J., to Jenn-Air Corporation, The. Countertop range with proximity ventilation and electronic air cleaner. 4,411,254., Cl. 126-300.000.

Fillion, Pierre, to Somfy. Control device for electric motor-reducing unit. 4,411,348., Cl. 192-139.000.

Fine, Howard: *See—*
Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, 4,411,889., Cl. 424-151.000.

Finlayson, Claude M.; and Mardis, Wilbur S., to NL Industries, Inc. Organophilic clay complexes, their preparation and compositions comprising said complexes. 4,412,018., Cl. 523-508.000.

Finney, Roy P., to Medical Engineering Corporation. Semi-rigid penile implant. 4,411,261., Cl. 128-79.000.

Fioriti, Joseph A.: *See—*
Trumbetas, Jerome F.; Sims, Rex; and Fioriti, Joseph A., 4,411,926., Cl. 426-565.000.

Firmenich SA: *See—*
Schulte-Elte, Karl H.; and Kastner, Dietrich, 4,411,829., Cl. 252-522.00R.

Fischer, Carlin P., to Technicraft, Inc. Oil well sucker rod shear tool. 4,411,546., Cl. 403-23.000.

Fishter, Robert E.; and Lada, Henry, to United Technologies Corporation. Selective chemical milling of recast surfaces. 4,411,730., Cl. 156-626.000.

Fitzgerald-Smith, James P., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britan-

nic Majesty's Government of the. Transportable bridge. 4,411,036., Cl. 14-2.400.
Flaningam, Ora L.; and Halm, Roland L., to Dow Corning Corporation. Separation of chlorosilanes by extractive distillation. 4,411,740., Cl. 203-58.000.
Fleckenstein, Elwin H.; and Welsch, Walter N., to Dynabrade, Inc. Miniature belt grinder. 4,411,106., Cl. 51-170.0EB.
Fleming, Philip J. Solar collector. 4,411,256., Cl. 126-441.000.
Flexnit Company, Inc.: *See—*
Weintraub, Ronald, 4,411,269., Cl. 128-482.000.
Flournoy, Norman E., to Texaco Inc. Acoustic pulse-echo wall thickness method and apparatus. 4,412,315., Cl. 367-99.000.
Floyd, Terry S.; Rhoden, Donna G.; and Bradley, Walter E., to Celanese Corporation. Ventilated thermoplastic polymer foam filter rods. 4,411,280., Cl. 131-332.000.
Flynn, William M., to Gametree Company, The. Board game apparatus. 4,411,433., Cl. 273-260.000.
Fogarty, A. Edward: *See—*
Fogarty, Bonnie R.; Fogarty, A. Edward; Nowak, Ralph; and Lovewell, Jack S., 4,411,249., Cl. 124-64.000.
Fogarty, Bonnie R.; Fogarty, A. Edward; Nowak, Ralph; and Lovewell, Jack S. Toy glider with pneumatic launcher. 4,411,249., Cl. 124-64.000.
Folk, Kenneth F.; and Jackson, Mark F., to AMP Incorporated. Apparatus and method for terminating ribbon cable. 4,411,062., Cl. 29-749.000.
Ford Aerospace & Communications Corporation: *See—*
Meyer, Theodore O.; and van Ommering, Gerrit, 4,411,970., Cl. 429-161.000.
Ford Motor Company: *See—*
Chang, Yun F., 4,412,013., Cl. 521-121.000.
Donakowski, William A.; and Morgan, John R., 4,411,742., Cl. 204-16.000.
Mohr, John D., 4,411,167., Cl. 74-492.000.
Watanabe, Shunso F.; Daykin, Theodore W.; and Heiney, Elmer T., III, 4,411,231., Cl. 123-339.000.
Forestier, Serge: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,411,884., Cl. 424-47.000.
Forgac, John P., to Ohio Blow Pipe Co. Continuous clean bag filter apparatus and method. 4,411,674., Cl. 55-304.000.
Forrester, Joseph H. Hunter's tree stand. 4,411,335., Cl. 182-83.000.
Forsyth Dental Infirmary for Children: *See—*
Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, 4,411,889., Cl. 424-151.000.
Foster, George N.: *See—*
Corwin, Michael A.; and Foster, George N., 4,412,025., Cl. 524-241.000.
Fox, William B.; and Maddox, Harry L., to Western Electric Company, Inc. Test circuit for checking memory output state continuously during time window. 4,412,327., Cl. 371-21.000.
Frame, Norman J.; Walber, James P.; and Janick, Jan M., to W. H. Brady Co. RC Array. 4,412,209., Cl. 340-365.00C.
Frammatome: *See—*
Batistoni, Michel, 4,411,177., Cl. 82-2.00E.
Franco, Gino, to Magna Technologies, Inc. Fluid pouch with integral straw. 4,411,359., Cl. 206-217.000.
Frank, Clyde W.: *See—*
Cox, Robert D.; and Frank, Clyde W., 4,412,006., Cl. 436-110.000.
Franklin, Cecil: *See—*
Weitz, Paul G., Jr.; and Franklin, Cecil, 4,412,270., Cl. 361-284.000.
Franklin, Joseph E.: *See—*
Demianczuk, Dionisyj W.; McLean, Gregory J.; and Franklin, Joseph E., 4,411,056., Cl. 29-527.700.
Franklin, Robert C., to Beckman Instruments, Inc. Switching regulator with transient reduction circuit. 4,412,279., Cl. 363-128.000.
Franz, Joachim; and Patt, Ludwig, to Sandoz Ltd. Galenical compositions. 4,411,882., Cl. 424-33.000.
Frentzel, Richard L.; and Moss, Ernest K., to Celotex Corporation, The. Extraction of polyoxyalkylene surfactants for phenolic foam stabilization. 4,412,014., Cl. 521-129.000.
Friedman, Davide R., to Stone Container Corporation. Skin-packaged pouches of the retort or like type. 4,411,364., Cl. 206-466.000.
Friemann, Hans: *See—*
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, 4,412,039., Cl. 525-106.000.
Fritschy, Hugo: *See—*
Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo, 4,412,146., Cl. 310-266.000.
Froitzheim, Hermann, to Leybold Heraeus GmbH. Monochromator for charged particles. 4,412,131., Cl. 250-305.000.
Froment, Jean-Claude; Marijon, Jean-Louis; Orengo, Gerard; and Verhaeghe, Michel, to International Business Machines Corporation. Digital signal distribution system. 4,412,335., Cl. 375-3.000.
Frommelt, Horace: *See—*
Cassimally, Khalil A. I.; and Frommelt, Horace, 4,411,343., Cl. 190-18.00A.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Matsui, Fujio; and Suzuki, Hitoshi, 4,411,236., Cl. 123-492.000.
Fuji Photo Film Co., Ltd.: *See—*
Akao, Mutsuo, 4,411,943., Cl. 428-161.000.
Akao, Mutsuo; and Furuta, Haruo, 4,411,945., Cl. 428-216.000.
Iwakura, Ken; Sekikawa, Nobuyoshi; and Miyamoto, Akio, 4,411,699., Cl. 106-23.000.
Kobayashi, Hidetoshi; Watanabe, Toshiyuki; Adachi, Keiichi; and Ogawa, Tadashi, 4,411,987., Cl. 430-542.000.
Masami, Sato; Okuzawa, Yasutoshi; and Hibino, Noburo, 4,411,958., Cl. 428-457.000.
Matsufuji, Akihiro; Kasuga, Akira; and Miyatsuka, Hajime, 4,411,956., Cl. 428-425.900.
Miyamoto, Akio, 4,411,452., Cl. 282-27.500.
Miyoshi, Takahito; Tsuji, Nobuo; Okutu, Toshimitu; and Fujiyama, Masaaki, 4,411,953., Cl. 428-336.000.
Sekikawa, Nobuyoshi; Iwakura, Ken; Miyamoto, Akio; and Satomura, Masato, 4,411,700., Cl. 106-23.000.
Wada, Minoru; and Yoshida, Satoshi, 4,412,229., Cl. 346-108.000.
Washizawa, Yasuo; Shinozaki, Fumiaki; Ikeda, Tomoaki; and Nakao, Sho, 4,411,983., Cl. 430-325.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,411,966., Cl. 428-695.000.
Yoshida, Kazutaka; and Horiuchi, Hideo, 4,412,225., Cl. 346-1.100.
Yoshida, Kazutaka, 4,412,226., Cl. 346-1.100.
Fuji Photo Optical Co., Ltd.: *See—*
Ogawa, Tomoya, 4,411,525., Cl. 356-339.000.
Fuji Xerox Co., Ltd.: *See—*
Hamano, Toshihisa, 4,412,227., Cl. 346-76.0PH.
Moriguchi, Haruhiko; and Murayama, Tomio, 4,412,228., Cl. 346-76.0PH.
Fujihara, Naoyuki, to Shachihata Industrial Co., Ltd. Rotary stamp. 4,411,192., Cl. 101-111.000.
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, to Kuraray Co., Ltd. Diaphragm for an electro-acoustic transducer. 4,412,103., Cl. 179-115.50R.
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, to Taiho Pharmaceutical Company, Limited. Method of treating hyperlipidemia and inflammation with sulfonate derivatives. 4,411,911., Cl. 424-283.000.
Fujii, Toshihiro: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.
Fujikawa Cable Works, Limited, The: *See—*
Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, 4,411,710., Cl. 148-6.14R.
Fujikura, Yoshiaki; Inamoto, Yoshiaki; Takaishi, Naotake; and Nakajima, Motoki, to Kao Corporation. Fragrant tricyclic carboxylates. 4,411,828., Cl. 252-522.00R.
Fujimaki, Atsushi: *See—*
Matsumoto, Takao; Fujimaki, Atsushi; and Nagata, Takeo, 4,411,998., Cl. 435-144.000.
Fujioka, Futoshi: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,411,830., Cl. 252-522.00R.
Fujisawa, Naoyuki: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; and Murata, Masayoshi, 4,411,898., Cl. 424-246.000.
Ueda, Ikuo; Morino, Daizou; and Takimoto, Koichi, 4,411,900., Cl. 424-250.000.
Fujita, Noriaki: *See—*
Kamatani, Yoshio; and Fujita, Noriaki, 4,412,072., Cl. 544-68.000.
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, to Hitachi Metals, Ltd. Magnetic circuit for speaker. 4,412,104., Cl. 179-117.000.
Fujitsu Fanuc Limited: *See—*
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,412,295., Cl. 364-520.000.
Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,412,118., Cl. 219-69.00W.
Fujitsu Limited: *See—*
Kikuchi, Hideo; Baba, Shigenori; and Sato, Shoji, 4,412,240., Cl. 357-45.000.
Komeno, Junji, 4,411,729., Cl. 156-612.000.
Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, 4,412,237., Cl. 357-42.000.
Fujiu, Takamitsu: *See—*
Ogino, Makoto; Fujiu, Takamitsu; Kariya, Michio; and Ichimura, Takeo, 4,411,624., Cl. 433-173.000.
Fujiwara, Hideo: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.
Fujiyama, Masaaki: *See—*
Miyoshi, Takahito; Tsuji, Nobuo; Okutu, Toshimitu; and Fujiyama, Masaaki, 4,411,953., Cl. 428-336.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,411,966., Cl. 428-695.000.
Fukada, Yasuo: *See—*
Ohtawa, Kimiaki; and Fukada, Yasuo, 4,411,611., Cl. 425-237.000.
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, to UBE Industries, Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Propylene polymer composition. 4,412,016., Cl. 523-206.000.
Fukumoto, Takaaki: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.

Funk, Gunter: *See—*
Aschauer, Hans; and Funk, Gunter, 4,411,148., Cl. 72-306.000.
Funk, Harald F. System for treating and recovering energy from exhaust gases. 4,411,136., Cl. 60-648.000.
Funk, Wolfram: *See—*
Bohm, Gunter; and Funk, Wolfram, 4,412,122., Cl. 219-137.00R.
Funkhouser, Berland M. Wall protector and heat circulator. 4,411,252., Cl. 126-201.000.
Furlette, James L.; and Stadler, Donald A., to Excel Corporation. Automatic accumulating transfer mechanism. 4,411,355., Cl. 198-718.000.
Furrer, Alfred: *See—*
Duruz, Louis; and Furrer, Alfred, 4,412,120., Cl. 219-121.0LG.
Furuta, Haruo: *See—*
Akao, Mutsuo; and Furuta, Haruo, 4,411,945., Cl. 428-216.000.
Futaba Denshi Kogyo K.K.: *See—*
Nishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,412,213., Cl. 340-753.000.
Futamura, Shoji: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,411,175., Cl. 76-107.00R.
Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo. Electric motor control. 4,412,146., Cl. 310-266.000.
G. L. Rexroth GmbH: *See—*
Wusthof, Peter; and Schneider, Johann, 4,411,607., Cl. 418-61.00B.
Gabrielsen, Rolf S., to Eastman Kodak Company. Dye precursors and their use in photographic materials and processes. 4,411,984., Cl. 430-351.000.
Gailey, J. Lynn; and Wollam, Carl A., to Alcan Aluminum Corporation. Apparatus for producing striped surface coatings. 4,411,215., Cl. 118-111.000.
Gailey, J. Lynn: *See—*
Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander F., 4,411,218., Cl. 118-411.000.
Gain, Lorand H., Jr., to AMSTED Industries Incorporated. Valve position indicator with variable indicator plates. 4,411,288., Cl. 137-363.000.
Gaines, Jack R.: *See—*
Boyles, David A.; Gaines, Jack R.; and Haissig, Bruce E., 4,411,684., Cl. 71-77.000.
Galeano, Sergio F., to Owens-Illinois, Inc. Pulp treating process. 4,411,737., Cl. 162-7.000.
Galeski, Andrzej; Kalinski, Ryszard; and Kryszewski, Marian, to Polska Akademia Nauk. Process for improvement of adhesion between mineral fillers and thermoplastic polymers. 4,411,704., Cl. 106-308.00Q.
Galindo, Anibal. Hypodermic needle. 4,411,657., Cl. 604-274.000.
Gallman, Joseph L., to Loose Leaf Metals Company, Inc. Post binder ball lock assembly. 4,411,544., Cl. 402-69.000.
Gamboa, Paul, to Motorola, Inc. Protection circuit for a horizontal scanning circuit and CRT. 4,412,157., Cl. 315-387.000.
Gambro Dialysatoren KG: *See—*
Lehmann, Hans-Dieter; Krisam, Gerd G.; and Golla, Ruth S., 4,412,000., Cl. 435-179.000.
Gamertsfelder, George R.; and Ljung, Bo Hans G., to Singer Company, The. Ring laser gyroscope with compensation. 4,411,527., Cl. 356-350.000.
Gametree Company, The: *See—*
Flynn, William M., 4,411,433., Cl. 273-260.000.
Gamma Biologicals, Inc.: *See—*
Meserol, Peter M.; and Acker, Jesse L., 4,411,518., Cl. 356-39.000.
Gammill, Ronald B., to Upjohn Company, The. Antiatherosclerotic compositions. 4,412,071., Cl. 544-58.600.
Ganguly, Ashit K.: *See—*
Girijavallabhan, Viyyoor M.; McCombie, Stuart W.; and Ganguly, Ashit K., 4,411,906., Cl. 424-270.000.
Garcia, Barbara A.: *See—*
Henrick, Clive A.; and Garcia, Barbara A., 4,411,912., Cl. 424-304.000.
Gardineer, Bayard G., Jr.; and Howlett, Charles W., to Technicare Corporation. Storage and record system for a large number of associated images. 4,411,360., Cl. 206-313.000.
Garg, Diwakar; and Givens, Edwin N., to Air Products and Chemicals, Inc. Iron catalyzed coal liquefaction process. 4,411,766., Cl. 208-10.000.
Garg, Diwakar, to Air Products and Chemicals, Inc. Integrated process for the solvent refining of coal. 4,411,767., Cl. 208-10.000.
Gargini, Paolo: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,412,310., Cl. 365-185.000.
Gaseor, Thomas J.: *See—*
Amberg, Robert L.; and Gaseor, Thomas J., 4,412,291., Cl. 364-426.000.
Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, to DeSoto, Inc. Siliconized polyether thermosetting coating compositions. 4,412,032., Cl. 524-538.000.
Gates Rubber Company, The: *See—*
Steinhagen, Thomas C., 4,411,934., Cl. 427-242.000.
Gauchel, Peter; and Kurth, Josef, to Dynamit Nobel Aktiengesellschaft. Apparatus for the vacuum calibration of profiled articles made of a thermoplastic synthetic resin. 4,411,613., Cl. 425-388.000.
Gausepohl, Hermann: *See—*
Brandstetter, Franz; Echte, Adolf; Gausepohl, Hermann; and Naarmann, Herbert, 4,412,037., Cl. 525-68.000.
Gauthier, Jean: *See—*
Louis, Jacques; and Gauthier, Jean, 4,411,420., Cl. 271-276.000.
Gautier, Raoul L. A., to Societe Generale des Eaux Minerales de Vittel. Packaging apparatus. 4,411,123., Cl. 53-550.000.
Gay, Charles H., Jr.: *See—*
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.
Gaylor, V. Frances: *See—*
Ball, Lawrence E.; Pichler, Martin A.; and Gaylor, V. Frances, 4,411,745., Cl. 204-59.00R.
Gebr. Happich GmbH: *See—*
Cziptschirsch, Kurt; Kaiser, Klaus-Peter; and Zwirner, Gerhard, 4,411,467., Cl. 296-97.00H.
Gee, Minor E., to Maxco Supply, Inc. Carton-erecting machine. 4,411,642., Cl. 493-125.000.
Geiger, Gary E.; and May, Roger C., to Betz Laboratories, Inc. Method of corrosion inhibition in aqueous mediums. 4,411,865., Cl. 422-16.000.
Geisler, Klaus, to Bayer Aktiengesellschaft. Preparation of novel perfluorinated sulphonic acid fluorides. 4,411,841., Cl. 260-543.00F.
Genba, Yasushi: *See—*
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,412,112., Cl. 200-50.0AA.
General DataComm Industries, Inc.: *See—*
Jacobsen, Christian C., 4,412,141., Cl. 307-471.000.
General Dynamics, Pomona Division: *See—*
Wedertz, Larry D.; Ross, Oakley G.; and Niemeier, Byron M., 4,411,398., Cl. 244-3.280.
Wedertz, Larry D.; and Ross, Oakley G., 4,412,272., Cl. 361-383.000.
General Electric Company: *See—*
Aftergut, Siegfried; and Cole, Herbert S., 4,411,812., Cl. 252-299.100.
Hazra, Jayanta; and Haque, Sazzadul, 4,411,565., Cl. 407-114.000.
Lee, Minyoung; Reed, William R., Jr.; and Szala, Lawrence E., 4,411,566., Cl. 407-119.000.
Pisano, Alan D., 4,411,595., Cl. 416-1.000.
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,412,142., Cl. 307-477.000.
Rickard, Jimmy R.; and Hollenbeck, Robert K., 4,411,664., Cl. 8-158.000.
Rosenquist, Niles R., 4,412,060., Cl. 528-196.000.
Waldron, Wesley K., 4,411,633., Cl. 445-24.000.
Williams, Robert E., 4,412,081., Cl. 556-460.000.
Williams, Robert E., Jr., 4,412,080., Cl. 556-460.000.
General Foods Corporation: *See—*
Trumbetas, Jerome F.; Sims, Rex; and Fioriti, Joseph A., 4,411,926., Cl. 426-565.000.
General Motors Corporation: *See—*
McMahan, David R.; and Woodward, Ronald O., 4,412,274., Cl. 362-269.000.
McMahan, David R., 4,412,275., Cl. 362-269.000.
Genrich, Thad J.: *See—*
Bickley, Robert H.; Broughton, Christopher D.; and Genrich, Thad J., 4,412,337., Cl. 375-60.000.
Georgia Tech Research Institute: *See—*
Tedder, Daniel W., 4,411,676., Cl. 62-24.000.
Gerard, Roger E. J., to Marconi Company Limited, The. Feedforward amplifiers. 4,412,185., Cl. 330-149.000.
Gerken, William G., to Xerox Corporation. Very high speed duplicator with document handling. 4,411,517., Cl. 355-14.0SH.
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., to Bell Telephone Laboratories, Incorporated. Interference cancellation method and apparatus. 4,412,341., Cl. 375-102.000.
Ghinazzi, Daniel J.: *See—*
Barels, Ronald R.; and Ghinazzi, Daniel J., 4,411,885., Cl. 424-52.000.
GHT, Gesellschaft fur Hochtemperaturreaktor-Technik mbH: *See—*
Reutler, Herbert; Muller-Frank, Ulrich; Ullrich, Manfred; and Schepers, Hubert, 4,411,860., Cl. 376-338.000.
Gibson, Kenneth L., to Zenith Radio Corporation. Means for attaching television receiver cabinet back panels. 4,411,480., Cl. 312-7.200.
Gies, Thomas E.: *See—*
Keith, Jack L.; and Gies, Thomas E., 4,411,219., Cl. 118-505.000.
Gieswein, Jimmie T., to Cameron Iron Works, Inc. Flowline connector. 4,411,317., Cl. 166-347.000.
Giezen, Egenius A.: *See—*
Hageman, Hendrik J.; Giezen, Egenius A.; and Jansen, Leonardus G. J., 4,411,822., Cl. 502-168.000.
Hageman, Hendrik J.; de Klein, Willem J.; and Giezen, Egenius A., 4,411,823., Cl. 502-168.000.
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., to President and Fellows of Harvard College, The. Protein synthesis. 4,411,994., Cl. 435-71.000.
Gildon, Troy. Hay bale retrieving and transporting trailer. 4,411,571., Cl. 414-24.500.
Gillette Company, The: *See—*
Trotta, Robert A., 4,411,065., Cl. 30-47.000.
Gilligan, William H.; and Stafford, Scott L., to United States of America, Navy. Halo, nitro, and halonitro S-alkyl thiocarbonates. 4,411,837., Cl. 260-455.00B.
Gilligan, William H.; and Stafford, Scott L., to United States of America, Navy. Unsymmetrical polynitrocarbonates and symmetrical 1,3-bis(halo- and nitroalkyl carbonyldioxy)-2,2-dinitropropanes and methods of preparation. 4,411,838., Cl. 260-463.000.

Gillis, Steven, to Immunex Corporation. Process for preparing murine interleukin 2. 4,411,992., Cl. 435-68.000.
Gillis, Steven. Hybridoma antibody which inhibits interleukin 2 activity. 4,411,993., Cl. 435-68.000.
Gilmour, Hugh S. A.; and Blazey, Richard N., to Eastman Kodak Company. Elements containing ordered wall arrays and processes for their fabrication. 4,411,973., Cl. 430-7.000.
Gils, Reiner: *See—*
Toth, Tibor; and Gils, Reiner, 4,411,988., Cl. 435-7.000.
Girijavallabhan, Viyyoor M.; McCombie, Stuart W.; and Ganguly, Ashit K., to Schering Corporation. (5R,6S,8R)-6-(1-Hydroxyethyl)-2-(2-fluoroethylthio)-penem-3-carboxylates. 4,411,906., Cl. 424-270.000.
Gitlin, Richard D.: *See—*
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., 4,412,341., Cl. 375-102.000.
Givens, Edwin N.: *See—*
Garg, Diwakar; and Givens, Edwin N., 4,411,766., Cl. 208-10.000.
Glasauer, Rudolf; Duschl, Bernhard; Linzmeier, Wilhelm; and Schaffrik, Arnold. Coil form and assembly for automated manufacturing operations. 4,412,201., Cl. 336-192.000.
Glaubitz, Klaus-Dieter: *See—*
Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, 4,411,524., Cl. 356-313.000.
Glew, Derek A.: *See—*
Pellow, Terence R.; and Glew, Derek A., 4,411,594., Cl. 415-174.000.
Glissmann, Jochen: *See—*
Wurtinger, Horst; Glissmann, Jochen; and Heissler, Herbert, 4,411,114., Cl. 52-309.100.
Gloanec, Maurice: *See—*
Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, 4,412,336., Cl. 375-4.000.
Glowinsky, Albert; and Lucas, Pierre M., to Etat Francais. Bit-by-bit time-division switching network. 4,412,324., Cl. 370-58.000.
Godbille, Etienne; Escuret, Pierre; and Scheid, Jean-Pierre, to Roussel Uclaf. Device for administering. 4,411,658., Cl. 604-285.000.
Goertz, Harvey M., to O. M. Scott & Sons Company, The. Process of preparing solid controlled release fertilizer composition. 4,411,683., Cl. 71-28.000.
Goesele, Walter: *See—*
Sander, Bruno; Hess, Klaus; Lintz, Peter; and Goesele, Walter, 4,411,797., Cl. 210-727.000.
Goetz, Carl A.: *See—*
Darnell, Robert D.; Goetz, Carl A.; and Ingle, William M., 4,411,619., Cl. 432-1.000.
Goetz, Norbert: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,411,687., Cl. 71-76.000.
Goldberg, Paul R., to Wavetek Indiana, Inc. Apparatus and method for producing images on a photosensitive media. 4,412,230., Cl. 346-110.00R.
Golden, Neil S., to Allen, Albert H., a part interest. Sealing strip for an expansion void. 4,411,112., Cl. 52-288.000.
Goldner, Sandor: *See—*
Green, Dan; and Goldner, Sandor, 4,412,167., Cl. 318-729.000.
Goldstein, Marvin S.: *See—*
Bambrick, William E.; and Goldstein, Marvin S., 4,411,771., Cl. 208-112.000.
Golla, Ruth S.: *See—*
Lehmann, Hans-Dieter; Krisam, Gerd G.; and Golla, Ruth S., 4,412,000., Cl. 435-179.000.
Golub, Gregory J., to Westinghouse Electric Corp. Circuit breaker with unitary actuating shaft. 4,412,116., Cl. 200-155.00R.
Gonella, Jacques, to Refarmed, Recherches Pharmaceutiques et Medicales, S.A. [(2-Oxo-3-tetrahydrothienylcarbamoyl)-alkylthio] acetic acids, their salts and esters, a process for preparation thereof and the pharmaceutical compositions containing same. 4,411,909., Cl. 424-275.000.
Goodman System Company, Inc., The: *See—*
Goodman, Toronta P., 4,411,224., Cl. 123-25.00A.
Goodman, Toronta P., to Goodman System Company, Inc., The. Fluid injection system for a turbocharged internal combustion engine. 4,411,224., Cl. 123-25.00A.
Goodyear Aerospace Corporation: *See—*
Uram, John R., Jr., 4,412,046., Cl. 525-506.000.
Uram, John R., Jr., 4,412,052., Cl. 528-27.000.
Gordin, Stefan: *See—*
Makinen, Eero; and Gordin, Stefan, 4,411,631., Cl. 440-72.000.
Goshi, Noriaki: *See—*
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, 4,412,104., Cl. 179-117.000.
Goto, Hiroki: *See—*
Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, 4,411,696., Cl. 75-51.000.
Goto, Masao, to Sony Corporation. Device for detecting interband gaps on record medium. 4,412,318., Cl. 369-41.000.
Goto, Masao: *See—*
Tokumitsu, Shunji; Urushibata, Hiroyuki; and Goto, Masao, 4,412,321., Cl. 369-233.000.
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, to Hitachi Maxell, Ltd. Lithium compounds. 4,411,971., Cl. 429-191.000.
Grabenhorst, Rolf: *See—*
Hubner, Rudolf; and Grabenhorst, Rolf, 4,411,483., Cl. 339-17.00M.
Graber Industries, Inc.: *See—*
Volfson, Boris, 4,411,044., Cl. 16-219.000.
Grafenschnell, Horst: *See—*
Voss, Erich; and Grafenschnell, Horst, 4,412,145., Cl. 310-154.000.
Grafwallner, Karl L.: *See—*
Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, 4,412,134., Cl. 250-504.00R.
Grain Processing Corporation: *See—*
Pedersen, Lee C.; and Elmquist, Lyle F., 4,412,036., Cl. 525-54.260.
Gratzfeld, Edward P. Material spreader and bridge. 4,411,554., Cl. 404-110.000.
Gravel, Real. Solder feeding gun and attachment. 4,411,379., Cl. 228-52.000.
Great Lakes Carbon Corporation: *See—*
Harvey, Jay A., 4,411,748., Cl. 204-70.000.
Green, Dan; and Goldner, Sandor, to Cynex Manufacturing Corporation. Polyphase power factor controller. 4,412,167., Cl. 318-729.000.
Green, Edward A. T., to Devro, Inc. End closure for sausage casings. 4,411,048., Cl. 17-49.000.
Green, Laddie L.; and Matsumoto, Kent E., to Stauffer Chemical Company. Dihalopropyl ester antidotes for acetanilide herbicides. 4,411,686., Cl. 71-88.000.
Green, Peter C.; and Block, Jacob, to W. R. Grace & Co. High temperature stable fluid loss control system. 4,411,800., Cl. 252-8.50A.
Greenwood, Arthur R.: *See—*
Kroushl, Joseph A.; and Greenwood, Arthur R., 4,411,869., Cl. 422-188.000.
Kroushl, Joseph A.; and Greenwood, Arthur R., 4,411,870., Cl. 422-188.000.
Grein, Arpad: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,411,834., Cl. 260-365.000.
Griffin, Ernest E.: *See—*
Lowry, Joseph M.; and Griffin, Ernest E., 4,411,126., Cl. 56-17.500.
Grimm, Dieter, to Degussa Aktiengesellschaft. Electrical thermometer for measuring surface temperature (I). 4,411,537., Cl. 374-185.000.
Grimmer, Paul D.: *See—*
Breglia, Denis R.; Oharek, Frank J.; and Grimmer, Paul D., 4,411,627., Cl. 434-44.000.
Grindler, Horst: *See—*
Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, 4,411,550., Cl. 403-358.000.
Grol, Hermanus: *See—*
van Gogh, Johan; and Grol, Hermanus, 4,412,056., Cl. 528-112.000.
Gron, Poul: *See—*
Caslavsky, Vera B.; Gron, Poul; and Fine, Howard, 4,411,889., Cl. 424-151.000.
Grone, Robert J.; and Schnell, Leonard R., to Cincinnati Milacron Industries, Inc. Ejection means for removing a hollow article from machine in which the article is made. 4,411,579., Cl. 414-417.000.
Gross, Benjamin, to Mobil Oil Corporation. Heat balance in FCC process and apparatus with downflow reactor riser. 4,411,773., Cl. 208-164.000.
Grow, Ann E., to Midwest Research Institute. Processes and devices for detection of substances such as enzyme inhibitors. 4,411,989., Cl. 435-20.000.
Gruber, Bruce A.; Koch, Diether; Langer, Heimo J.; and Dunnavant, William R., to Ashland Oil, Inc. Cyclopentadiene derivatives, method for preparing, and use thereof. 4,412,088., Cl. 585-23.000.
Gruber, Gunther: *See—*
Kriegner, Othmar; and Gruber, Gunther, 4,411,534., Cl. 374-141.000.
Grundfest, Michael A., to Thomas & Betts Corporation. Splice installing tool. 4,411,063., Cl. 29-751.000.
Gruppo Lepetit, S.p.A.: *See—*
Toia, Emilio, 4,411,907., Cl. 424-273.00B.
GTE Automatic Electric Labs Inc.: *See—*
Holden, James R., 4,412,282., Cl. 364-200.000.
Khan, Ashfaq R.; and Edwards, Ivan L., 4,412,342., Cl. 375-107.000.
Koppensteiner, James V.; and Onesto, Joseph B., 4,411,064., Cl. 29-764.000.
GTE Products Corporation: *See—*
Barakitis, Nikolaos; and Cohen, Sheppard, 4,412,152., Cl. 315-73.000.
Kwok, Sai W., 4,412,245., Cl. 358-86.000.
Mizuhara, Howard, 4,411,960., Cl. 428-610.000.
Strubeck, W. Douglas, 4,412,301., Cl. 364-728.000.
Guerriero, Renato; and Vittadini, Italo, to SAMIM Societa Azionaria Minero Metallurgica S.p.A. Electrolytic cells. 4,411,760., Cl. 204-270.000.
Guilden Development Corp.: *See—*
Von Kemenczky, Miklos, 4,412,205., Cl. 340-331.000.
Gulbrandsen, Arthur F.; and Oko, Uriel M., to Cities Service Company. Apparatus for converting coal. 4,411,871., Cl. 422-232.000.
Gulf Research & Development Company: *See—*
Pretzer, Wayne R.; and Pannell, Richard B., 4,411,820., Cl. 502-167.000.
Gustavsson, Olle, to Aktiebolaget Bofors. Device for speed control of cylinder piston, particularly useful for a firearm. 4,411,188., Cl. 89-20.00A.

Gutekunst, Robert W.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,411,610., Cl. 425-174.400.
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., to Exxon Research & Engineering Co. Multifunctional additive for power transmission shift fluids. 4,411,808., Cl. 252-78.100.
GX-Holding AG: *See—*
Jaeger, Walter, 4,412,243., Cl. 358-334.000.
H. B. Fuller Company: *See—*
LaBelle, Stanley B.; and Hagquist, James A. E., 4,412,033., Cl. 524-590.000.
H. J. Weir Engineering Co., Ltd.: *See—*
Weir, Henry J., 4,411,083., Cl. 38-143.000.
Hachiya, Susumu: *See—*
Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, 4,412,090., Cl. 136-230.000.
Hackwood, Susan: *See—*
Beni, Gerardo; Craighead, Harold G.; and Hackwood, Susan, 4,411,495., Cl. 350-347.00V.
HAG Aktiengesellschaft: *See—*
Hubert, Peter; and Vitzthum, Otto, 4,411,923., Cl. 426-271.000.
Hageman, Hendrik J.; Giezen, Egenius A.; and Jansen, Leonardus G. J., to Akzo N.V. Initiator system for radiation curable compositions, radiation curable compositions containing such an initiator system, a process for curing said compositions and products covered therewith. 4,411,822., Cl. 502-168.000.
Hageman, Hendrik J.; de Klein, Willem J.; and Giezen, Egenius A., to Akzo N.V. Initiator system for radiation curable compositions, radiation curable compositions containing such an initiator system, a process for curing said compositions and products covered therewith. 4,411,823., Cl. 502-168.000.
Hagquist, James A. E.: *See—*
LaBelle, Stanley B.; and Hagquist, James A. E., 4,412,033., Cl. 524-590.000.
Haight, Robert E.; and Tjepkes, Kendall D., to Deere & Company. Clutch modulating system. 4,411,345., Cl. 192-12.00C.
Haissig, Bruce E.: *See—*
Boyles, David A.; Gaines, Jack R.; and Haissig, Bruce E., 4,411,684., Cl. 71-77.000.
Haldeman, Peter P.: *See—*
Diederich, Anthony F., Jr.; Haldeman, Peter P.; and Campbell, Willis R., 4,411,127., Cl. 56-364.000.
Hale, James V. M.: *See—*
Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., 4,412,292., Cl. 364-479.000.
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., to Black Clawson, Inc.; and Black Clawson, Inc. Ultrasonic log scanning and orientation system. 4,412,297., Cl. 364-559.000.
Hall, Floyd V., to Liggett Group Inc. Apparatus for the production of cigarette filter tips having multi-sectional construction. 4,411,640., Cl. 493-45.000.
Hallmark Camera Mfg. Pte. Ltd.: *See—*
Yang, Lian T., 4,411,506., Cl. 354-145.000.
Halm, Roland L.: *See—*
Flaningam, Ora L.; and Halm, Roland L., 4,411,740., Cl. 203-58.000.
Halstead, Raymond T.: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,412,109., Cl. 200-16.00C.
Hamakawa, Toshihiro: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,411,911., Cl. 424-283.000.
Hamamatsu Systems, Inc.: *See—*
Allen, Robert D.; and Allen, Nina S., 4,412,246., Cl. 358-107.000.
Hamano, Toshihisa, to Fuji Xerox Co., Ltd. Thermal head. 4,412,227., Cl. 346-76.0PH.
Hamburger, Anne W.: *See—*
Salmon, Sydney E.; and Hamburger, Anne W., 4,411,990., Cl. 435-32.000.
Hamilton, Martin W., to Eaton Corporation. Load bar mounting assembly. 4,411,325., Cl. 177-136.000.
Hamilton, Thomas B., to Combustion Engineering, Inc. Method of firing a pulverized fuel-fired steam generator. 4,411,204., Cl. 110-347.000.
Hammelmann, Robert W., to Bendix Corporation, The. Flexible coupling having molded plastic flexible diaphragms. 4,411,634., Cl. 464-91.000.
Hanada, Hidekazu, to Nihon Plast Co., Ltd. Automotive steering column cover. 4,411,331., Cl. 180-78.000.
Haney, Douglas M.; and Lott, John W., to Du Pont de Nemours, E. I., and Company. Process for the preparation of flexible circuits. 4,411,980., Cl. 430-291.000.
Hannebaum, Heinz: *See—*
Degner, Dieter; Roos, Hans; and Hannebaum, Heinz, 4,411,746., Cl. 204-59.00R.
Hans Grohe GmbH & Co. KG, Firma: *See—*
Hogner, Johannes, 4,411,028., Cl. 4-199.000.
Hansell, George A., III, to W. L. Gore & Associates, Inc. Multiconductor coaxial cable assembly and method of fabrication. 4,412,092., Cl. 174-36.000.
Hansen, Gorm P. Jaw hinge-axis locator. 4,411,622., Cl. 433-73.000.
Hansen, Hanspeter: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Wuerzer, Bruno; and Ceser, Heinz-Guenter, 4,411,691., Cl. 71-92.000.
Hansen, James E.; and Smith, Richard G., to Eaton Corporation. Dual voltage engine starter management system. 4,412,137., Cl. 307-10.00R.
Hansen, James E., to Eaton Corporation. Time-delay current sensing circuit breaker relay. 4,412,267., Cl. 361-94.000.
Hanson, Donald H.: *See—*
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,412,297., Cl. 364-559.000.
Hapke, Donald W., to Boeing Company, The. Retractable nozzle fairing system for aeroplane center boost engine. 4,411,399., Cl. 244-130.000.
Haque, Sazzadul: *See—*
Hazra, Jayanta; and Haque, Sazzadul, 4,411,565., Cl. 407-114.000.
Hara, Akira, to Mitsubishi Denki Kabushiki Kaisha. Parallel operation compressor type refrigerating apparatus. 4,411,141., Cl. 62-468.000.
Hara, Tomihiro; Ogawa, Masahiro; Tsukada, Masakazu; and Yamashita, Masaaki, to Nippon Kokan Kabushiki Kaisha. Composite coating steel sheets having good corrosion resistance paintability and corrosion resistance after paint coating. 4,411,964., Cl. 428-626.000.
Harada, Fumio: *See—*
Itagaki, Masato; Harada, Fumio; and Arata, Tetsuya, 4,411,600., Cl. 417-312.000.
Harada, Hiroshi: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.
Hardenberg, Horst; and Bergmann, Horst, to Daimler-Benz AG. Externally operated internal combustion engine. 4,411,243., Cl. 123-577.000.
Harman, John N., III; and Jones, Robert H., to Beckman Instruments, Inc. Hydrogen ion interferent reduction system for ion selective electrodes. 4,411,764., Cl. 204-411.000.
Harnisch, Horst, to Bayer Aktiengesellschaft. Impregnating paper with 7-hydroxy-coumarin compounds. 4,411,946., Cl. 428-219.000.
Harris Corporation: *See—*
Bailey, David C.; and Klein, Robert E., 4,411,503., Cl. 352-222.000.
Yochum, Billy G., 4,412,182., Cl. 330-59.000.
Harris, Robert J.: *See—*
Jones, Bradley N.; Harris, Robert J.; Cram, Ronald P.; and Huber, Gene A., 4,411,673., Cl. 55-41.000.
Harrison, John D., to Shell Internationale Research Maatscappij, B. A. Filler gun suitable for cavity injection. 4,411,389., Cl. 239-427.500.
Hart, Cullen P., to Caterpillar Tractor Co. Vehicle suspension system. 4,411,447., Cl. 280-714.000.
Hartke, David H.: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.
Hartl, Carroll P.: *See—*
Cornish, Darrel G.; and Hartl, Carroll P., 4,411,122., Cl. 53-436.000.
Hartmann, Kurt: *See—*
Bohg, Armin; and Hartmann, Kurt, 4,412,197., Cl. 335-256.000.
Harvey, Jay A., to Great Lakes Carbon Corporation. Anode and process for magnesium production. 4,411,748., Cl. 204-70.000.
Hasegawa, Hiroaki: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.
Hasegawa, Takashi: *See—*
Iwata, Nobuo; and Hasegawa, Takashi, 4,411,539., Cl. 400-144.200.
Hashimoto, Junichi; and Miyagi, Tadayuki, to Pentel Kabushiki Kaisha. Self-feeding mechanical pencil. 4,411,543., Cl. 401-53.000.
Hashimoto, Michiaki: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.
Hashimoto, Sadao: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,411,911., Cl. 424-283.000.
Hashimoto, Shintaro: *See—*
Washizuka, Isamu; and Hashimoto, Shintaro, 4,412,210., Cl. 340-365.00S.
Hashizume, Shuhei; Abeta, Sadaharu; Ohmae, Tadayuki; and Nishibara, Hajime, to Sumitomo Chemical Company, Limited. Process for dyeing polyolefin fiber materials. 4,411,666., Cl. 8-455.000.
Hass, Phyllis W.: *See—*
Hass, Richard M., 4,411,320., Cl. 172-13.000.
Hass, Richard M., to Hass, Phyllis W. Edging tool. 4,411,320., Cl. 172-13.000.
Hassel, Helmut; and Stark, Reimund, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Railway car diaphragm construction. 4,411,201., Cl. 105-8.00R.
Hasuike, Fumio: *See—*
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.
Hatachi, Ltd.: *See—*
Oguino, Masanori, 4,412,253., Cl. 358-167.000.
Hatch, Marcus R.: *See—*
Abel, Irving R.; and Hatch, Marcus R., 4,411,499., Cl. 350-442.000.

Hatzikelis, Christopher: *See*—
Madonia, Ciro; Hatzikelis, Christopher; and Cosentino, Cesare C., 4,411,938., Cl. 428-31.000.

Haulamatic Corporation: *See*—
Alcott, David K., 4,411,299., Cl. 144-193.00R.

Hawkins, James A.: *See*—
Hawkins, Robert D.; and Hawkins, James A., 4,411,939., Cl. 428-58.000.

Hawkins, Robert D.; and Hawkins, James A., to National Research Development Corporation. Conformable reinforcement board. 4,411,939., Cl. 428-58.000.

Hayashi, Akira: *See*—
Ando, Hideo; Hayashi, Akira; and Kitano, Kyozo, 4,411,815., Cl. 252-353.000.

Hayes, J. Brian, to Kendall Company, The. Protective glove. 4,411,024., Cl. 2-20.000.

Hazra, Jayanta; and Haque, Sazzadul, to General Electric Company. Finishing insert with improved chip control. 4,411,565., Cl. 407-114.000.

Heath, Warren A., to Chevron Research Company. Bottom loading arm for bulk liquid carriers. 4,411,290., Cl. 137-615.000.

Hechenbleikner, Ingenuin; and Enlow, William P., to Borg-Warner Chemicals, Inc. Oxidation of alkyl phosphonous dichlorides. 4,411,842., Cl. 260-543.00P.

Heck, Gunter: *See*—
Ulrich, Michael; Trautmann, Manfred; Heck, Gunter; and Malow, Egon, 4,411,846., Cl. 261-98.000.

Hedstrom, Dennis G.; and Hedstrom, Rocky O. Animal trap with support-suspension legs. 4,411,091., Cl. 43-88.000.

Hedstrom, Rocky O.: *See*—
Hedstrom, Dennis G.; and Hedstrom, Rocky O., 4,411,091., Cl. 43-88.000.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Epoxy resins prepared from epihalohydrins and hydroxyl-containing phosphonopolyester oligomers. 4,412,055., Cl. 528-99.000.

Heimberger, Halmut, to Optilon W. Erich Heilmann GmbH. Method of and apparatus for attaching slide fastener coupling chains to a flexible support. 4,411,211., Cl. 112-265.200.

Heimburger, Norbert: *See*—
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Drescher, Heinz H., 4,411,794., Cl. 210-670.000.

Heiney, Elmer T., III: *See*—
Watanabe, Shunso F.; Daykin, Theodore W.; and Heiney, Elmer T., III, 4,411,231., Cl. 123-339.000.

Heinonen, Seppo: *See*—
Sulasaari, Jukka; and Heinonen, Seppo, 4,411,146., Cl. 72-180.000.

Heinzl, Joachim; and von Borstel, Klaus P., to Siemens Aktiengesellschaft. Method and apparatus for the representation of gray scale values in facsimile transmission. 4,412,256., Cl. 358-283.000.

Heissler, Herbert: *See*—
Wurtinger, Horst; Glissmann, Jochen; and Heissler, Herbert, 4,411,114., Cl. 52-309.100.

Heitz, Walter; Kress, Hans-Jurgen; and Stix, Wolfgang, to Bayer Aktiengesellschaft. Polytetrahydrofurans containing terminal acrylate or methacrylate groups. 4,412,063., Cl. 528-409.000.

Helbig, Peter; Schonherr, Walter; and Steiner, Hermann, to Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH. Halogen incandescent lamp with part metal, part plastic socket, particularly for automotive headlights. 4,412,273., Cl. 362-211.000.

Helle, Jacques; and Caret, Guy, to Compagnie d'Electronique et de Piezo-Electricite C.E.P.E. Temperature-compensated crystal oscillator. 4,412,188., Cl. 331-176.000.

Henderson, Martin E.: *See*—
Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., 4,412,211., Cl. 340-514.000.

Hendrick, Michael E.: *See*—
Brennan, Thomas M.; and Hendrick, Michael E., 4,411,925., Cl. 426-548.000.

Hendrickson, Max S., to Honeywell Inc. Frequency shift keyed detector system. 4,412,338., Cl. 375-82.000.

Henkel Corporation: *See*—
Collins, Forrest L., 4,412,026., Cl. 524-354.000.
Klein, Kenneth; Bator, Patricia E.; and Pact, Harry H., 4,412,027., Cl. 524-364.000.

Henrick, Clive A.; and Garcia, Barbara A., to Zoecon Corporation. Insecticidal isovaleric acid esters. 4,411,912., Cl. 424-304.000.

Henrick, Clive A.: *See*—
Lindahl, George R., III; and Henrick, Clive A., 4,411,839., Cl. 260-465.00D.

Herman, Irving P.; and Marling, Jack B. Laser-assisted isotope separation of tritium. 4,411,755., Cl. 204-163.00R.

Herman, Michael. Experiment-machine. 4,412,288., Cl. 364-413.000.

Herman, Thomas; and Lidow, Alexander, to International Rectifier Corporation. Planar structure for high voltage semiconductor devices with gaps in glassy layer over high field regions. 4,412,242., Cl. 357-52.000.

Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, to ESPE Fabrik Pharmazeutischer Praeparate GmbH. Apparatus for irradiating dental objects. 4,412,134., Cl. 250-504.00R.

Herrmann, Berthold: *See*—
Brosius, Klaus; and Herrmann, Berthold, 4,411,340., Cl. 188-296.000.

Hershberger, Vilas D. Therapeutic apparatus. 4,411,421., Cl. 272-73.000.

Hersom, Albert C.; and Wright, Kenneth W., to Societe d'Assistance Technique pour Produits Nestle S.A. Pump for metering two distinct fluids. 4,411,601., Cl. 417-388.000.

Hess, James B.; and Strahl, Erwin O., to Kaiser Aluminum & Chemical Corporation. Electrolytic reduction cell. 4,411,758., Cl. 204-243.00R.

Hess, Klaus: *See*—
Sander, Bruno; Hess, Klaus; Lintz, Peter; and Goesele, Walter, 4,411,797., Cl. 210-727.000.

Hess, Max W., to Dahlgren Manufacturing Company. Roller gear drive. 4,411,193., Cl. 101-148.000.

Hessler, Edward J.: *See*—
Walker, Jerry A.; and Hessler, Edward J., 4,411,835., Cl. 260-397.450.

Hesting, Daniel O. Paddle wheel turbine device. 4,411,591., Cl. 415-103.000.

Hewing Manufacturing Corporation: *See*—
English, Donald H., 4,411,312., Cl. 166-75.00R.

Hewlett-Packard Company: *See*—
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,412,300., Cl. 364-709.000.

Hewlett-Packard GmbH: *See*—
Becker, Josef, 4,412,138., Cl. 307-264.000.

Heyman, Arnold M. Telemetry transmitter holder. 4,411,267., Cl. 128-385.000.

Heynhold, Ingo, to Continental Gummi-Werke Aktiengesellschaft. Conveyor belt. 4,411,947., Cl. 428-250.000.

Hibino, Noburo: *See*—
Masami, Sato; Okuzawa, Yasutoshi; and Hibino, Noburo, 4,411,958., Cl. 428-457.000.

Higgins, Rudolph S., to Texasgulf Inc. Solution mining of an inclined structure. 4,411,474., Cl. 299-4.000.

Higginson, Richard L., to Berlin & Jones Company, Inc. Double envelope and method of making same. 4,411,643., Cl. 493-188.000.

Hillmann, Willi, to Paul Vahle GmbH & Co. KG. Electrical conductor. 4,412,107., Cl. 191-23.00A.

Hinman, P. Anthony, to Armco Inc. Metal atom containing epoxy resins. 4,412,064., Cl. 528-9.000.

Hiraguri, Seisuke, to Victor Company of Japan, Ltd. Magnetic recording and/or reproducing apparatus having a rotary head tracking control device. 4,412,259., Cl. 360-77.000.

Hirai, Eiichi: *See*—
Saito, Masumi; Hirai, Eiichi; and Endo, Masao, 4,411,701., Cl. 106-87.000.

Hirai, Koji; Shirano, Kenji; and Okamura, Takayuki, to Kuraray Co., Ltd. Polyurethane coating compositions prepared from a polymeric diol, an alicyclic diisocyanate, an alicyclic diamine and either hydrazine or isophthalic acid dihydrazide. 4,412,022., Cl. 524-104.000.

Hirai, Koji: *See*—
Kikuga, Toyoji; and Hirai, Koji, 4,412,045., Cl. 525-501.000.

Hiraishi, Shigetoshi: *See*—
Matsushita, Toshihiko; Morishita, Sadao; Kamimura, Eiko; and Hiraishi, Shigetoshi, 4,411,451., Cl. 282-27.500.

Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, to Kanegafuchi Chemical Industry Company, Limited. Process for fermentative production of amino acids. 4,411,991., Cl. 435-42.000.

Hirano, Koichi: *See*—
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,411,175., Cl. 76-107.00R.

Hiraoka, Shoji: *See*—
Niyada, Katsuyuki; Watanabe, Taisuke; Hiraoka, Shoji; and Morii, Shuji, 4,412,099., Cl. 381-51.000.

Hirasawa, Kotaro: *See*—
Kuzunuki, Soshiro; Hirasawa, Kotaro; Yuminaka, Takeo; and Yoneda, Kanji, 4,411,338., Cl. 187-29.00R.

Hirata, Goichi: *See*—
Samejima, Masayoshi; and Hirata, Goichi, 4,411,933., Cl. 427-213.300.

Hirata, Minoru; and Takeda, Tsutae, to Kabushiki Kaisha Fujikoshi. Double row angular contact ball bearing with one-piece outer ring and one-piece inner ring. 4,411,479., Cl. 308-195.000.

Hirohata, Takashi: *See*—
Nishida, Takao; and Hirohata, Takashi, 4,411,937., Cl. 427-435.000.

Hirokawa, Yoshitsugu: *See*—
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.

Hirose, Akira: *See*—
Ariyama, Kenzo; and Hirose, Akira, 4,411,511., Cl. 355-3.0TR.

Hirose, Kimio: *See*—
Mizutani, Akihiro; and Hirose, Kimio, 4,411,891., Cl. 424-180.000.

Hiscock, Donald C., to Development Finance Corp of New Zealand. Precision sower. 4,411,206., Cl. 111-34.000.

Hishinuma, Toshio: *See*—
Tateyama, Kenichi; Matsumiya, Yasuo; and Hishinuma, Toshio, 4,412,261., Cl. 360-98.000.

Hitachi, Ltd.: *See*—
Atago, Takeshi; and Manaka, Toshio, 4,411,232., Cl. 123-438.000.
Itagaki, Masato; Harada, Fumio; and Arata, Tetsuya, 4,411,600., Cl. 417-312.000.
Katsumata, Naoto; Horiuchi, Noriaki; and Kimura, Shigeru, 4,411,140., Cl. 62-324.200.

Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, 4,411,757., Cl. 204-192.00E.

Komatsu, Hideo; Iida, Shinya; Mizutani, Tatsumi; and Ueki, Kazuyoshi, 4,412,119., Cl. 219-121.0PF.

Kominami, Yasuo; Sato, Tetsuo; and Ohkubo, Yuichi, 4,412,189., Cl. 333-14.000.

Kuroda, Kunishige, 4,412,195., Cl. 335-216.000.

Kuzunuki, Soshiro; Hirasawa, Kotaro; Yuminaka, Takeo; and Yoneda, Kanji, 4,411,338., Cl. 187-29.00R.

Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Sugiura, Noboru, 4,411,246., Cl. 123-644.000.

Tanaka, Hironari; Ishibashi, Tadashi; and Koyama, Masaharu, 4,412,214., Cl. 340-765.000.

Tateyama, Kenichi; Matsumiya, Yasuo; and Hishinuma, Toshio, 4,412,261., Cl. 360-98.000.

Yamanaka, Kazusuke; and Mochizuki, Shouji, 4,411,497., Cl. 350-357.000.

Yonezawa, Seiji; and Sugiyama, Toshio, 4,411,500., Cl. 350-446.000.

Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Hitachi Maxell, Ltd.: *See*—
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, 4,411,971., Cl. 429-191.000.

Hitachi Metals, Ltd.: *See*—
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, 4,412,104., Cl. 179-117.000.
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Hjertman, Birger: *See*—
Bennwik, Percy; and Hjertman, Birger, 4,411,358., Cl. 206-45.340.

Ho, Edmond Y.: *See*—
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., 4,412,341., Cl. 375-102.000.

Hochtemperatur-Reaktorbau GmbH: *See*—
Koerdt, Reinhold; Schwiers, Hans-Georg; and Schoening, Josef, 4,411,308., Cl. 165-70.000.

Hodge, Malcolm H.: *See*—
Larkin, Joseph F.; and Hodge, Malcolm H., 4,411,491., Cl. 350-96.210.

Hoechst Aktiengesellschaft: *See*—
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,411,650., Cl. 604-72.000.
Kramer, Horst; and Fassbender, Heinrich, 4,412,176., Cl. 324-204.000.
Mondt, Josef; Walz, Gerd; and Wirth, Thaddaus, 4,411,955., Cl. 428-413.000.
Radas, Adolf, 4,411,356., Cl. 198-721.000.
Ulrich, Michael; Trautmann, Manfred; Heck, Gunter; and Malow, Egon, 4,411,846., Cl. 261-98.000.

Hoegerle, Karl; and Ohnemus, Kurt, to Ciba-Geigy Corporation. 2-Alkyl-5-alkyl sulfony 1-4,6-dihalopyrimidines and the production thereof. 4,412,074., Cl. 544-298.000.

Hoelzel, Alexander: *See*—
Schnabel, Roland; Hoelzel, Alexander; and Vaulont, Winfrid, 4,411,781., Cl. 210-195.200.

Hoff, Nikolaus. Telephone organizer. 4,411,482., Cl. 312-233.000.

Hoffman, Joseph A.: *See*—
Loffelman, Frank F.; and Hoffman, Joseph A., 4,412,020., Cl. 524-100.000.

Hoffmann-La Roche Inc.: *See*—
Reiner, Roland, 4,412,070., Cl. 544-27.000.
Schrank, Jurg; and Steffen, Hans, 4,411,894., Cl. 424-199.000.

Hofmann, Hans-Joachim: *See*—
Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, 4,411,550., Cl. 403-358.000.

Hogner, Johannes, to Hans Grohe GmbH & Co. KG, Firma. Device for actuating a poppet of a tub drain valve. 4,411,028., Cl. 4-199.000.

Hoke, Donald E.: *See*—
Donaldson, A. Burl; Hoke, Donald E.; and Mulac, Anthony J., 4,411,618., Cl. 431-190.000.

Holden, James R., to GTE Automatic Electric Labs Inc. Microprocessor control circuit. 4,412,282., Cl. 364-200.000.

Holland, Larry D., to NEHA International. Apparatus for recovering precious metals from their ores. 4,411,612., Cl. 425-365.000.

Hollandse Signaalapparaten B.V.: *See*—
Aanstoot, Jan; and Oude Elberink, Bernard H. M., 4,412,220., Cl. 343-55.00C.

Hollenbeck, Robert K.: *See*—
Rickard, Jimmy R.; and Hollenbeck, Robert K., 4,411,664., Cl. 8-158.000.

Holler, Mark A.: *See*—
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,412,310., Cl. 365-185.000.

Hollins, Brian E.: *See*—
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., 4,412,238., Cl. 357-43.000.

Hollister Incorporated: *See*—
Jensen, Marvin E.; and Mohiuddin, Mahmood, 4,411,659., Cl. 604-332.000.

Holloway, Robert W. Load equalizer. 4,411,444., Cl. 280-405.00A.

Holmes, George; and Keyser, Frank, to Vigil, Thomas R. Extruder assembly. 4,411,531., Cl. 366-76.000.

Holzman, Thomas F.: *See*—
Baldwin, Thomas O.; and Holzman, Thomas F., 4,412,001., Cl. 435-189.000.

Homa, John L., to North American Manufacturing Company, The. Electromechanical device drive circuit fault detection apparatus. 4,412,328., Cl. 371-25.000.

Homecrest Industries Incorporated: *See*—
Apissomian, Arthur A., 4,411,468., Cl. 297-264.000.

Honeywell Inc.: *See*—
Abel, Irving R.; and Hatch, Marcus R., 4,411,499., Cl. 350-442.000.
Hendrickson, Max S., 4,412,338., Cl. 375-82.000.
Hu, Chi P., 4,412,354., Cl. 455-327.000.
Kabat, John L., 4,411,306., Cl. 165-12.000.
Schultz, Earl R., 4,412,262., Cl. 360-109.000.

Hongo, Akira: *See*—
Ito, Tomohisa; and Hongo, Akira, 4,411,799., Cl. 210-753.000.

Hoover Universal, Inc.: *See*—
Lanham, Joseph S.; and Bruckner, Neal R., 4,411,552., Cl. 403-388.000.

Hoper, Jens: *See*—
Kessler, Manfred; and Hoper, Jens, 4,411,151., Cl. 73-1.00G.

Horbaschek, Heinz, to Siemens Aktiengesellschaft. X-Ray diagnostic installation comprising an image intensifier television chain. 4,412,247., Cl. 358-111.000.

Horikawa, Hisao; and Kano, Mitsuru, to Toppan Printing Co., Ltd. Moisture proof container with an outer box and an inner bag opened simultaneously. 4,411,365., Cl. 206-607.000.

Horiuchi, Hideo: *See*—
Yoshida, Kazutaka; and Horiuchi, Hideo, 4,412,225., Cl. 346-1.100.

Horiuchi, Kotaro, to Yamaha Hatsudoki Kabushiki Kaisha. Rowing scull. 4,411,214., Cl. 114-347.000.

Horiuchi, Noriaki: *See*—
Katsumata, Naoto; Horiuchi, Noriaki; and Kimura, Shigeru, 4,411,140., Cl. 62-324.200.

Horiuchi, Takefumi: *See*—
Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, 4,412,090., Cl. 136-230.000.

Horninger, Karlheinrich, to Siemens Aktiengesellschaft. Integrated MOS driver stage with a large output signal ratio. 4,412,139., Cl. 307-270.000.

Hoshika, Yoshiaki: *See*—
Nishimura, Shinichi; Akiyama, Yoshinori; and Hoshika, Yoshiaki, 4,411,470., Cl. 297-410.000.

Hoshikawa, Ryusuke: *See*—
Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, 4,412,237., Cl. 357-42.000.

Hosoe, Kazuya: *See*—
Kinoshita, Takao; Hosoe, Kazuya; and Yamamichi, Masayoshi, 4,411,504., Cl. 354-25.000.
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,411,505., Cl. 354-25.000.

Hosooka, Shuichi, to Yoshida Kogyo K. K. Window sash assembly. 4,411,111., Cl. 52-213.000.

Hostetler, Dewey, to DewEze Manufacturing, Inc. Bale transfer carrier. 4,411,572., Cl. 414-24.500.

Hostettler, Hans U.; and Beyer, Horst, to Richardson-Vicks Inc. Stabilized cosmetic compositions. 4,411,886., Cl. 424-70.000.

Hotchkiss, Alan B.: *See*—
Silverman, Harold; and Hotchkiss, Alan B., 4,411,419., Cl. 271-263.000.

Hotchkiss, Harry W., to Kimberly-Clark Corporation. Tissue dispenser system, plastic overwrap package therefor. 4,411,374., Cl. 221-63.000.

Hottinger Baldwin Measurements, Inc.: *See*—
Lockery, Harry E.; and Laimins, Eric, 4,411,327., Cl. 177-211.000.

Houdaille Industries, Inc.: *See*—
Klein, Dean A.; Davis, Steven C.; and Wroblewski, Jerome J., 4,411,150., Cl. 72-461.000.
Schultz, John C., 4,411,341., Cl. 188-310.000.

House, William F.: *See*—
Edgerton, Bradly J.; House, William F.; and Michaels, Robert C., 4,412,096., Cl. 381-60.000.

Howard, Edward G., Jr., to Du Pont de Nemours, E. I., and Company. 1-Olefin polymerization catalyst. 4,411,821., Cl. 502-117.000.

Howard Machinery Limited: *See*—
Linger, Barry A., 4,411,322., Cl. 172-540.000.

Howlett, Charles W.: *See*—
Gardineer, Bayard G., Jr.; and Howlett, Charles W., 4,411,360., Cl. 206-313.000.

Hu, Chi P., to Honeywell Inc. Millimeter-wave stripline planar mixer. 4,412,354., Cl. 455-327.000.

Huang, Jiunn-Cherng, to Sin Sui Lai. Control device for the water tank of a flush toilet. 4,411,029., Cl. 4-324.000.

Hubbard, David W., to Pitney Bowes Inc. Low range automatic weighing device. 4,411,328., Cl. 177-212.000.

Hubby, John S., to Phillips Petroleum Company. Method for vapor recovery from a polymer slurry. 4,411,736., Cl. 159-47.100.

Huber, Gene A.: *See*—
Jones, Bradley N.; Harris, Robert J.; Cram, Ronald P.; and Huber, Gene A., 4,411,673., Cl. 55-41.000.

Hubert, Peter; and Vitzthum, Otto, to HAG Aktiengesellschaft. Process for the extraction of caffeine from super-critical solutions. 4,411,923., Cl. 426-271.000.

Hubner, Rudolf; and Grabenhorst, Rolf, to Vereinigte Flugtechnische Werke GmbH. Frame for PC-boards. 4,411,483., Cl. 339-17.00M.

Hudson, John O.: *See—*
Robinson, Ronald A.; and Hudson, John O., 4,411,831., Cl. 252-554.000.

Huffman, Joseph K., to Teltone Corporation. Phase jitter detector. 4,412,299., Cl. 364-570.000.

Hughes Aircraft Company: *See—*
Chen, John Y., 4,411,058., Cl. 29-571.000.
Terbrack, William H.; and Hummel, Terry L., 4,412,355., Cl. 455-603.000.

Hughes Tool Company: *See—*
Baker, Randy S.; and Price, H. R., 4,411,315., Cl. 166-187.000.

Hulin, Jean P.: *See—*
Dubois, Gilles; and Hulin, Jean P., 4,411,130., Cl. 57-352.000.

Hummel, Terry L.: *See—*
Terbrack, William H.; and Hummel, Terry L., 4,412,355., Cl. 455-603.000.

Hunter Douglas, Inc.: *See—*
Anderson, Richard N., 4,411,401., Cl. 248-262.000.

Hyde, Roger J., to Alumasc Limited. Valve-type closure for containers. 4,411,287., Cl. 137-315.000.

Hydril Company: *See—*
Lewis, George E., 4,411,434., Cl. 277-27.000.

Hye, A. B. M. Abdul: *See—*
Johnson, J. Wallace; and Hye, A. B. M. Abdul, 4,411,313., Cl. 166-90.000.

Hynes, Frank R.: *See—*
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,411,515., Cl. 355-14.0SH.

Ichikawa, Hiroaki: *See—*
Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, 4,412,237., Cl. 357-42.000.

Ichikawa, Shinji: *See—*
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.

Ichimura, Takeo: *See—*
Ogino, Makoto; Fujiu, Takamitsu; Kariya, Michio; and Ichimura, Takeo, 4,411,624., Cl. 433-173.000.

Ieaki, Miura: *See—*
Katsumori, Teiji; Kato, Tetuo; and Ieaki, Miura, 4,411,342., Cl. 188-315.000.

Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling EGR in internal combustion engine. 4,411,242., Cl. 123-569.000.

IHC Holland N.V.: *See—*
de Jager, Arie, 4,411,079., Cl. 37-58.000.

Iida, Shinya: *See—*
Komatsu, Hideo; Iida, Shinya; Mizutani, Tatsumi; and Ueki, Kazuyoshi, 4,412,119., Cl. 219-121.0PF.

Ikeda, Kotaro: *See—*
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, 4,412,103., Cl. 179-115.50R.

Ikeda, Tomoaki: *See—*
Washizawa, Yasuo; Shinozaki, Fumiaki; Ikeda, Tomoaki; and Nakao, Sho, 4,411,983., Cl. 430-325.000.

Ikekawa, Nobuo: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,411,833., Cl. 260-239.55R.

Imaging Technology Limited: *See—*
James, Paul M., 4,411,513., Cl. 355-5.000.

Imai, Hideo, to Kawasaki Electric Wire Co., Ltd. Fully automatic apparatus for producing an electrical cord of a predetermined length with a plug attached thereto. 4,411,181., Cl. 83-150.000.

Imai, Toshihiro, to Olympus Optical Company Ltd. In-focus detector for binocular stereoscope. 4,412,127., Cl. 250-204.000.

Imamura, Nobutake; and Ota, Chuichi, to Kokusai Denshin Denwa Co., Ltd. Magneto-optic recording medium. 4,412,264., Cl. 360-131.000.

Imazeki, Ryoji; and Yamazaki, Etsuo, to Fujitsu Fanuc Limited. Tracer control equipment. 4,412,295., Cl. 364-520.000.

Immunex Corporation: *See—*
Gillis, Steven, 4,411,992., Cl. 435-68.000.

Imperial Chemical Industries PLC: *See—*
Notman, Alan, 4,411,877., Cl. 423-359.000.

Inada, Masami; and Nomura, Isshi, to Aisin Seiki Kabushiki Kaisha. Electromagnetic flow control valve assembly. 4,411,406., Cl. 251-129.000.

Inamoto, Yoshiaki: *See—*
Fujikura, Yoshiaki; Inamoto, Yoshiaki; Takaishi, Naotake; and Nakajima, Motoki, 4,411,828., Cl. 252-522.00R.

Indak Manufacturing Corp.: *See—*
Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., 4,412,109., Cl. 200-16.00C.

Ingalls, Marjorie D.; and Ingalls, Richard D. Color reference data base and method of preparing same. 4,411,529., Cl. 356-421.000.

Ingalls, Richard D.: *See—*
Ingalls, Marjorie D.; and Ingalls, Richard D., 4,411,529., Cl. 356-421.000.

Ingersoll Milling Machine Company, The: *See—*
Johnson, William B., 4,411,564., Cl. 407-113.000.

Ingersoll-Rand Company: *See—*
Boothroyd, Howard W.; and Carlsmith, Lawrence A., 4,411,635., Cl. 464-33.000.

Ingle, William M.: *See—*
Darnell, Robert D.; Goetz, Carl A.; and Ingle, William M., 4,411,619., Cl. 432-1.000.

Inoue, Hiroshi: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, 4,411,952., Cl. 428-332.000.

Inoue, Takeo; and Shirazawa, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Insulated pipe joint. 4,411,457., Cl. 285-52.000.

Inoue, Tokuta: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,411,226., Cl. 123-188.00M.

Inst. Nat. de la Recherche Agronomique: *See—*
Voegele, Jean D.; Jourdheuil, Pierre E. J.; and Daumal, Jeanne, 4,411,220., Cl. 119-1.000.

Institut de Recherches de la Siderurgie Francaise: *See—*
Lechevallier, Christian, 4,411,412., Cl. 266-242.000.

Institut Francais du Petrole: *See—*
Desbrandes, Robert, 4,412,180., Cl. 324-373.000.
Ecomard, Andre; and Briand, Louis, 4,411,238., Cl. 123-501.000.

Institute of Technology Precision Electrical Discharge Works: *See—*
Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, 4,411,175., Cl. 76-107.00R.

Intel Corporation: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,412,310., Cl. 365-185.000.

International Business Machines Corporation: *See—*
Berger, Horst H.; and Wiedmann, Siegfried K., 4,412,312., Cl. 365-189.000.
Bergeron, David L., 4,412,308., Cl. 365-105.000.
Bohg, Armin; and Hartmann, Kurt, 4,412,197., Cl. 335-256.000.
Cambier, Graig S.; and Trubell, Lawrence P., 4,412,278., Cl. 363-126.000.
Case, William J.; and Wallis, Christopher N., 4,412,165., Cl. 318-636.000.
Chase, Brian D., 4,412,194., Cl. 335-210.000.
Crider, Chester H.; and Linton, Charles R., 4,412,166., Cl. 318-696.000.
Froment, Jean-Claude; Marijon, Jean-Louis; Orengo, Gerard; and Verhaeghe, Michel, 4,412,335., Cl. 375-3.000.
Narken, Bernt; and Schick, Henry C., 4,411,972., Cl. 430-5.000.

International Flavors & Fragrances Inc.: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,411,830., Cl. 252-522.00R.
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

International Rectifier Corporation: *See—*
Herman, Thomas; and Lidow, Alexander, 4,412,242., Cl. 357-52.000.

International Standard Electric Corporation: *See—*
Chown, Martin; and Farrington, Jeffrey G., 4,411,526., Cl. 356-350.000.
Crossland, William A.; and Coates, David, 4,411,494., Cl. 350-339.00R.
Kautz, Werner, 4,412,223., Cl. 343-844.000.

International Telephone & Telegraph Corporation: *See—*
November, Milton H., 4,411,161., Cl. 73-861.030.

Interstate Electronics Corporation: *See—*
An, Byung H., 4,412,098., Cl. 381-43.000.

Inventio AG: *See—*
Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,411,337., Cl. 187-29.00R.

Iomega Corporation: *See—*
Cornaby, David T., 4,412,161., Cl. 318-561.000.

Iowa State University Research Foundation, Inc.: *See—*
Klaus, Jack C.; Schroeder, Larry D.; Casteel, Vincent H.; and Schwartz, Kenneth E., 4,412,356., Cl. 455-603.000.
Lutenegger, Alan J.; and Pitt, John M., 4,411,160., Cl. 73-843.000.

Isaka, Kinichi; Kawaguchi, Masashi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Aging method for thin-film electroluminescent display element. 4,412,155., Cl. 315-246.000.

Ishibashi, Tadashi: *See—*
Tanaka, Hironari; Ishibashi, Tadashi; and Koyama, Masaharu, 4,412,214., Cl. 340-765.000.

Ishida, Tokuzi, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Method of controlling EGR for internal combustion engines. 4,411,241., Cl. 123-568.000.

Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, to Victor Company of Japan, Ltd. Variable-directivity microphone device. 4,412,097., Cl. 381-92.000.

Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Arc resistant insulator. 4,412,010., Cl. 501-153.000.

Ishikawa, Masaru: *See—*
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Drawer-type circuit breaker. 4,412,112., Cl. 200-50.0AA.

Ishikawajima-Harima Heavy Industries Co., Ltd.: *See—*
Tagami, Ichizo, 4,411,519., Cl. 356-45.000.

Ishimatsu, Yoshiaki: *See—*
Shigesada, Shigeki; Kitagawa, Hironoshin; Mihara, Toshio; and Ishimatsu, Yoshiaki, 4,411,999., Cl. 435-177.000.

Ishizawa, Kenki: *See—*
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Ishizuka, Hiroshi. Method for producing composite of diamond and cemented tungsten carbide. 4,411,672., Cl. 51-309.000.

Isobe, Toshiaki: *See—*
Shinoda, Kazuo; Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,411,235., Cl. 123-488.000.

Isobe, Toshinobu: *See—*
Tanaka, Yutaka; and Isobe, Toshinobu, 4,412,251., Cl. 358-160.000.

Isotronics, Inc.: *See—*
Wildeboer, Nicolaas, 4,412,093., Cl. 174-52.0FP.

Isoyama, Seiji: *See—*
Watanabe, Yasuo; Isoyama, Seiji; and Bannou, Masahiko, 4,411,807., Cl. 252-62.580.

Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, to Mitsubishi Kinzoku Kabushiki Kaisha. Sputtering apparatus. 4,411,763., Cl. 204-298.000.

Itagaki, Masato; Harada, Fumio; and Arata, Tetsuya, to Hitachi, Ltd. Hermetic motor compressor. 4,411,600., Cl. 417-312.000.

Itemadani, Eiji; Mori, Kazuhiro; Tanaka, Sohei; and Kabeshita, Akira, to Matsushita Electric Industrial Co., Ltd. Assembly devices for electronic circuit components. 4,411,362., Cl. 206-330.000.

Ito, Taizo; and Araki, Yusuke, to Bridgestone Tire Company Limited. Process of and apparatus for splicing cord ply segments at their end faces. 4,411,724., Cl. 156-304.100.

Ito, Tomohisa; and Hongo, Akira, to Nitto Chemical Industry Co., Ltd. Method for stabilizing an aqueous solution containing a chlorine-based oxidant. 4,411,799., Cl. 210-753.000.

Itoh, Shinobu. Mixing circuit. 4,412,353., Cl. 455-323.000.

ITT Industries, Inc.: *See—*
Burgdorf, Jochen, 4,411,477., Cl. 303-22.00R.

Ittner, Gary N.: *See—*
Ittner, Nelson C.; and Ittner, Gary N., 4,411,381., Cl. 228-181.000.

Ittner, Nelson C.; and Ittner, Gary N., to Ittner, Nelson C. Honeycomb manufacturing method. 4,411,381., Cl. 228-181.000.

Ivanov, Vladimir A.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Iwakura, Ken; Sekikawa, Nobuyoshi; and Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Desensitizer compositions. 4,411,699., Cl. 106-23.000.

Iwakura, Ken: *See—*
Sekikawa, Nobuyoshi; Iwakura, Ken; Miyamoto, Akio; and Satomura, Masato, 4,411,700., Cl. 106-23.000.

Iwasaki, Hiroshi; and Ozawa, Osamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Polysilicon interconnects with pin poly diodes. 4,412,239., Cl. 357-44.000.

Iwata, Atsushi: *See—*
Akazawa, Yukio; Matsuya, Yasuyuki; and Iwata, Atsushi, 4,412,208., Cl. 340-347.0DA.

Iwata, Nobuo; and Hasegawa, Takashi, to Ricoh Company, Ltd. Print element with plural type layers of varying thickness. 4,411,539., Cl. 400-144.200.

Iwata, Susumu: *See—*
Nagamoto, Masanaka; Koseki, Yoshihiro; and Iwata, Susumu, 4,411,979., Cl. 430-176.000.

Iyoda, Michio: *See—*
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.

Izumi, Akiya: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

J. de Reus B.V.: *See—*
Blokland, Adriaan, 4,411,330., Cl. 180-8.00A.

J. I. Case Company: *See—*
Ellingsen, Raymond L.; and Manteufel, Dale A., 4,411,298., Cl. 144-193.00A.
Shumaker, John F., 4,411,584., Cl. 414-694.000.

Jackson, Mark F.: *See—*
Folk, Kenneth F.; and Jackson, Mark F., 4,411,062., Cl. 29-749.000.

Jacobsen, Christian C., to General DataComm Industries, Inc. Three state loop keyer. 4,412,141., Cl. 307-471.000.

Jacobson, Earl B., to Nuclear Power Outfitters. Supplied air respirator. 4,411,264., Cl. 128-201.230.

Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, to Societe Anonyme dite: L'Oreal. Cosmetic agents based on polycationic polymers, and their use in cosmetic compositions. 4,411,884., Cl. 424-47.000.

Jaeger, Walter, to GX-Holding AG. Method of reproducing colored motion pictures. 4,412,243., Cl. 358-334.000.

Jager, Horst: *See—*
Agarwal, Suresh C.; Jager, Horst; Podder, Nitya G.; and Mollet, Hans, 4,411,668., Cl. 8-527.000.

Jahnke, Frederick C.: *See—*
Marion, Charles P.; and Jahnke, Frederick C., 4,411,670., Cl. 48-197.00R.
Marion, Charles P.; and Jahnke, Frederick C., 4,411,671., Cl. 48-197.00R.

James, Paul M., to Imaging Technology Limited. Reader-printer. 4,411,513., Cl. 355-5.000.

James River-Dixie/Northern, Inc.: *See—*
Kohl, Lou; Peschke, John R.; and Wecker, Sheldon M., 4,411,849., Cl. 264-45.500.

Janata, Jiri, to University of Utah. Apparatus and method for measuring the concentration of components in fluids. 4,411,741., Cl. 204-1.00T.

Janick, Jan M.: *See—*
Frame, Norman J.; Walber, James P.; and Janick, Jan M., 4,412,209., Cl. 340-365.00C.

Janome Sewing Machine Co. Ltd.: *See—*
Kubo, Keizo, 4,411,196., Cl. 101-269.000.

Jansen, Leonardus G. J.: *See—*
Hageman, Hendrik J.; Giezen, Egenius A.; and Jansen, Leonardus G. J., 4,411,822., Cl. 502-168.000.

Japan Atomic Energy Research Institute: *See—*
Kaetsu, Isao; Yoshida, Masaru; and Kumakura, Minoru, 4,411,754., Cl. 204-159.150.

Jarraff Industries, Inc.: *See—*
Boyum, George A.; Renner, Robert A.; and Lovelace, Ralph, 4,411,070., Cl. 30-379.500.

Jean Walterscheid GmbH: *See—*
Buthe, Theo; and Mikeska, Felix, 4,411,636., Cl. 464-172.000.

Jefferson, Keith A.; and Lansdell, Derek A., to Black & Decker Inc. Speed control circuit for an electric power tool. 4,412,158., Cl. 318-257.000.

Jenaer Glaswerk Schott & Gen.: *See—*
Schnabel, Roland; Hoelzel, Alexander; and Vaulont, Winfrid, 4,411,781., Cl. 210-195.200.

Jenn-Air Corporation, The: *See—*
Field, Thomas R.; and Simon, Donald J., 4,411,254., Cl. 126-300.000.

Jensen, Marvin E.; and Mohiuddin, Mahmood, to Hollister Incorporated. Drainable collection pouch and filter assembly therefor. 4,411,659., Cl. 604-332.000.

JEOL Ltd.: *See—*
Tsuno, Katsushige, 4,412,132., Cl. 250-396.0ML.

Jernstrom, Olof; Mattila, Tapio; Penttinen, Kyosti; and Toivonen, Hannu, to Tikkurilan Varitehtaat Oy. Coating composition. 4,412,023., Cl. 524-106.000.

Jerumanis, Janis: *See—*
Devreux, Andre F. O.; and Jerumanis, Janis, 4,411,914., Cl. 426-12.000.

Jim Ray Company, Inc.: *See—*
Couvillion, Paul L.; and Ray, James E., 4,411,439., Cl. 277-188.00A.

Jodrey, Robert M.; and Scott, Robert J., to Dennison Manufacturing Company. Web tension control apparatus. 4,411,393., Cl. 242-75.430.

Johannes Heidenhain GmbH: *See—*
Schwefel, Ernst, 4,412,206., Cl. 340-347.00P.

John, E. Roy. System and method for electrode pair derivations in electroencephalography. 4,411,273., Cl. 128-731.000.

Johnson, Alfred E. Braced structural member. 4,411,547., Cl. 403-205.000.

Johnson, Conrad B., to Turbo Resources Ltd. Process for removing contaminants from waste lubricating oil by chemical treatment. 4,411,774., Cl. 208-179.000.

Johnson, Dee L.; Senta, Therese A.; and Sirvio, Larry M., to Minnesota Mining and Manufacturing Company. Topical medicament preparations. 4,411,893., Cl. 424-181.000.

Johnson, J. Wallace; and Hye, A. B. M. Abdul, to Liquid Level Lectronics, Inc. Pump. 4,411,313., Cl. 166-90.000.

Johnson, Norman B.: *See—*
Lowder, Marlene; and Johnson, Norman B., 4,411,351., Cl. 194-4.00C.

Johnson, Raymond C.: *See—*
Bartlett, Marion C.; and Johnson, Raymond C., 4,412,340., Cl. 375-96.000.

Johnson, Richard J.: *See—*
Blacklin, Peter A.; Dougherty, James R.; Johnson, Richard J.; and Tate, Donald L., 4,411,121., Cl. 52-792.000.

Johnson, Robert M., to Vought Corporation. Induced or constrained superplastic laminates for forming. 4,411,962., Cl. 428-615.000.

Johnson, William B., to Ingersoll Milling Machine Company, The. Indexable cutting insert having radiused cutting edges. 4,411,564., Cl. 407-113.000.

Jones, Bradley N.; Harris, Robert J.; Cram, Ronald P.; and Huber, Gene A., to Sweco, Incorporated. Method and apparatus for degassing liquids. 4,411,673., Cl. 55-41.000.

Jones, Cynthia: *See—*
Abbott, Thomas I.; and Jones, Cynthia, 4,411,986., Cl. 430-502.000.

Jones, David A., deceased (by Jones, Diane S., administrator), to Marmon Company. Musical instrument having programmable automatic rhythm pattern variations. 4,411,184., Cl. 84-1.030.

Jones, Diane S., administrator: *See—*
Jones, David A., deceased, 4,411,184., Cl. 84-1.030.

Jones, Hugh L.: *See—*
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,411,515., Cl. 355-14.0SH.

Jones, Robert H.: *See—*
Harman, John N., III; and Jones, Robert H., 4,411,764., Cl. 204-411.000.

Jones, Winton D.: *See—*
Albrecht, William L.; and Jones, Winton D., 4,411,905., Cl. 424-269.000.

Jonker, Joseph W.: *See—*
Boarini, Edward J.; and Jonker, Joseph W., 4,411,654., Cl. 604-165.000.

Jopling, Aunald. Mining system. 4,411,559., Cl. 405-300.000.

Jordan, John F.; and Lampkin, Curtis M., to Photon Power, Inc. Polycrystalline photovoltaic cell. 4,412,091., Cl. 136-258.000.

Jos. Dyson and Sons, Inc.: *See—*
Quinn, Russell C., 4,411,585., Cl. 414-724.000.

Joubert, Raymond J. M.; and Soligny, Marcel R., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.". Retaining device for the compressor casing of a turbine engine. 4,411,589., Cl. 415-9.000.

Jourdan, Francis; Marquet, Patrice; and Ternant, Francois, to Thomson-CSF. Optoelectric detection device especially for laser radiation. 4,411,521., Cl. 356-225.000.

Jourdheuil, Pierre E. J.: *See—*
Voegele, Jean D.; Jourdheuil, Pierre E. J.; and Daumal, Jeanne, 4,411,220., Cl. 119-1.000.

Judice, Clay, to Strokee Enterprises. Golf putting practice device. 4,411,431., Cl. 273-183.00C.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brustle, Klaus, 4,411,045., Cl. 16-243.000.

Juric, Ilija. Tamper-proof fastener. 4,411,570., Cl. 411-271.000.

Kabat, John L., to Honeywell Inc. Thermostat with improved temperature sensing circuit. 4,411,306., Cl. 165-12.000.

Kabayashi, Fujio: *See—*
Yamaguchi, Shoichiro; and Kabayashi, Fujio, 4,412,289., Cl. 364-414.000.

Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft AG: *See—*
Mohring, Gunter, 4,412,222., Cl. 343-779.000.

Kabeshita, Akira: *See—*
Itemadani, Eiji; Mori, Kazuhiro; Tanaka, Sohei; and Kabeshita, Akira, 4,411,362., Cl. 206-330.000.

Kabushiki Kaisha Fujikoshi: *See—*
Hirata, Minoru; and Takeda, Tsutae, 4,411,479., Cl. 308-195.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, 4,412,090., Cl. 136-230.000.

Kabushiki Kaisha POPY: *See—*
Murakami, Katsuji, 4,411,097., Cl. 46-161.000.

Kabushiki Kaisha Sato Kenkyusho: *See—*
Sato, Yo, 4,411,197., Cl. 101-291.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Shioda, Toshiyuki, 4,411,303., Cl. 164-182.000.

Kadex, Inc.: *See—*
Aydin, Kemal, 4,411,144., Cl. 70-278.000.

Kaetsu, Isao; Yoshida, Masaru; and Kumakura, Minoru, to Japan Atomic Energy Research Institute. Process for preparing a polymer composition. 4,411,754., Cl. 204-159.150.

Kaiser Aluminum & Chemical Corporation: *See—*
Hess, James B.; and Strahl, Erwin O., 4,411,758., Cl. 204-243.00R.

Kaiser, Klaus-Peter: *See—*
Cziptschirsch, Kurt; Kaiser, Klaus-Peter; and Zwirner, Gerhard, 4,411,467., Cl. 296-97.00H.

Kakinuma, Nobuo: *See—*
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, 4,412,104., Cl. 179-117.000.

Kakinuma, Toshiaki: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Kalbfus, Charles R.; and Turner, Norman L., to Varian Associates, Inc. Dual filament ion source. 4,412,153., Cl. 315-111.810.

Kalinski, Ryszard: *See—*
Galeski, Andrzej; Kalinski, Ryszard; and Kryszewski, Marian, 4,411,704., Cl. 106-308.00Q.

Kalt, Evelyne: *See—*
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,412,024., Cl. 524-220.000.

Kamatani, Yoshio; and Fujita, Noriaki, to Takeda Chemical Industries, Ltd. Isocyanate composition. 4,412,072., Cl. 544-68.000.

Kamei, Takao: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Kamen, Dean L., to Baxter Travenol Laboratories, Inc. Fluid flow control system. 4,411,649., Cl. 604-65.000.

Kamerling, Marc A.: *See—*
Kuhlman, Bruce E.; and Kamerling, Marc A., 4,412,255., Cl. 358-245.000.

Kamimura, Eiko: *See—*
Matsushita, Toshihiko; Morishita, Sadao; Kamimura, Eiko; and Hiraishi, Shigetoshi, 4,411,451., Cl. 282-27.500.

Kampf, Erich, to Siemens Aktiengesellschaft. Method for manufacturing an ultrasonic transducer arrangement. 4,411,052., Cl. 29-25.350.

Kaneda, Aizo: *See—*
Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Kaneda, Satoshi: *See—*
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.

Kanegafuchi Chemical Industry Company, Limited: *See—*
Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, 4,411,991., Cl. 435-42.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Asada, Masahiro; Matsuura, Miyuki; and Yonezawa, Kazuya, 4,412,057., Cl. 528-179.000.

Kanehisa, Takashi: *See—*
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.

Kaneko, Tadao: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

Kanno, Michio, to Terumo Corporation. Steam sterilization method for artificial organ assemblies and resultant sterilized product. 4,411,866., Cl. 422-25.000.

Kano, Mitsuru: *See—*
Horikawa, Hisao; and Kano, Mitsuru, 4,411,365., Cl. 206-607.000.

Kao Corporation: *See—*
Fujikura, Yoshiaki; Inamoto, Yoshiaki; Takaishi, Naotake; and Nakajima, Motoki, 4,411,828., Cl. 252-522.00R.

Kao Soap Co., Ltd.: *See—*
Sakurai, Akira; Nakanishi, Takashi; and Nishimura, Akio, 4,411,647., Cl. 604-16.000.

Kariya, Michio: *See—*
Ogino, Makoto; Fujiu, Takamitsu; Kariya, Michio; and Ichimura, Takeo, 4,411,624., Cl. 433-173.000.

Karner, James E.: *See—*
Curtis, Nikolaus A.; and Karner, James E., 4,411,229., Cl. 123-198.00F.

Karrer, Friedrich, to Ciba-Geigy Corporation. Novel polyalkylpiperidyl-ureas and their use as stabilizers. 4,412,021., Cl. 524-102.000.

Karsh, Herbert; and Karsh, Irving, to Bell & Howell Company. Bidirectional tape drive systems. 4,411,397., Cl. 242-192.000.

Karsh, Irving: *See—*
Karsh, Herbert; and Karsh, Irving, 4,411,397., Cl. 242-192.000.

Kassai Kabushikikaisha: *See—*
Kassai, Kenzou, 4,411,472., Cl. 297-430.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Hammock for baby carriages. 4,411,472., Cl. 297-430.000.

Kastner, Arnold. Cigarette making machine. 4,411,278., Cl. 131-70.000.

Kastner, Dietrich: *See—*
Schulte-Elte, Karl H.; and Kastner, Dietrich, 4,411,829., Cl. 252-522.00R.

Kasuga, Akira: *See—*
Matsufuji, Akihiro; Kasuga, Akira; and Miyatsuka, Hajime, 4,411,956., Cl. 428-425.900.

Kato, Hirohisa: *See—*
Kitamura, Hidetoshi; and Kato, Hirohisa, 4,411,154., Cl. 73-118.000.

Kato, Masao: *See—*
Yamabe, Masaaki; Kato, Masao; and Takakura, Teruo, 4,412,054., Cl. 528-70.000.

Kato, Michio; Endo, Toshiyuki; and Nomura, Junji, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the separation of elements by chromatography. 4,411,793., Cl. 210-656.000.

Kato, Tetuo: *See—*
Katsumori, Teiji; Kato, Tetuo; and Ieaki, Miura, 4,411,342., Cl. 188-315.000.

Katoh, Masami: *See—*
Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, 4,411,991., Cl. 435-42.000.

Katsube, Junki: *See—*
Ohashi, Naohito; Nagata, Shoji; and Katsube, Junki, 4,411,836., Cl. 260-455.00R.

Katsumata, Naoto; Horiuchi, Noriaki; and Kimura, Shigeru, to Hitachi, Ltd. Absorption type cooling and heating system. 4,411,140., Cl. 62-324.200.

Katsumori, Teiji; Kato, Tetuo; and Ieaki, Miura, to Tokico Ltd. Hydraulic damper. 4,411,342., Cl. 188-315.000.

Kaufhold, Wolfgang, to Siemens Aktiengesellschaft. Circuit arrangement for damping power oscillations of synchronous generators in networks. 4,412,171., Cl. 322-20.000.

Kautz, Werner, to International Standard Electric Corporation. Antenna array with element isolation in the coupling network. 4,412,223., Cl. 343-844.000.

Kawada, Haruki: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.

Kawaguchi, Masashi: *See—*
Isaka, Kinichi; Kawaguchi, Masashi; and Uede, Hisashi, 4,412,155., Cl. 315-246.000.

Kawai Musical Instrument Mfg. Co., Ltd: *See—*
Deutsch, Ralph, 4,411,185., Cl. 84-1.270.

Kawai, Shinji; Suzuki, Koichi; and Yamaguchi, Yuji, to Aisin Seiki Kabushiki Kaisha. Apparatus for drying genitals and the posterior parts of human body. 4,411,030., Cl. 4-443.000.

Kawai, Taneichi: *See—*
Nishida, Koji; and Kawai, Taneichi, 4,411,208., Cl. 112-103.000.

Kawasaki Electric Wire Co., Ltd.: *See—*
Imai, Hideo, 4,411,181., Cl. 83-150.000.
Yanagisawa, Zensuke, 4,411,608., Cl. 425-123.000.

Kawasaki Kabushiki Kaisha: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, to Kabushiki Kaisha Kobe Seiko Sho. Thermal sensor for detecting temperature distribution. 4,412,090., Cl. 136-230.000.

Kaya, Azmi; Keyes, Marion A.; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Load control for energy converters. 4,412,136., Cl. 290-40.00R.

Kayano, Shinpei: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.

Kazumi, Jiro, to Canon Kabushiki Kaisha. Annunciator for a focus adjusting device. 4,411,508., Cl. 354-198.000.

Kearney-National, Inc.: *See—*
Russell, William H.; and Ball, Robert D., 4,412,202., Cl. 337-171.000.

Keeler Brass Company: *See—*
Tomsu, David L., 4,411,403., Cl. 248-575.000.

Kehr, Dieter; and Viebranz, Manfred, to Minnesota Mining and Manufacturing Company. Elastomeric composition for providing electrical stress control. 4,412,029., Cl. 524-441.000.

Keith, Jack L.; and Gies, Thomas E., to Gies, Thomas E. Apparatus for protecting the frame surrounding a window or door opening and a window or door within the opening. 4,411,219., Cl. 118-505.000.

Kelch, Heinz, to Kienzle Apparate GmbH. Fuel cooling system for use with a closed fuel injection circuit in a diesel engine. 4,411,239., Cl. 123-557.000.

Kell, Michael J., to Cordis Dow Corp. Diaphragm type blood pump for medical use. 4,411,603., Cl. 417-479.000.

Keller, Max P. Adjustable indicator holders. 4,411,402., Cl. 248-284.000.

Keller, Michael: *See—*
Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, 4,412,134., Cl. 250-504.00R.

Kelley, Robert B.; Birk, John R.; Martins, Henrique; and Tella, Richard P. Robot system which acquires cylindrical workpieces from bins. 4,412,293., Cl. 364-513.000.

Kelly, Danny R. Vehicle attached support for wheelchair transport. 4,411,580., Cl. 414-462.000.

Kempsmith Machine Company, The: *See—*
Seiy, Robert, 4,411,727., Cl. 156-562.000.

Kendall Company, The: *See—*
Hayes, J. Brian, 4,411,024., Cl. 2-20.000.

Kenkare, Divaker B.; and Shumway, Durland K., to Colgate-Palmolive Company. Antiperspirant. 4,411,883., Cl. 424-47.000.

Kent, Louis P.: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Kerester, Thomas P. Gutter system. 4,411,108., Cl. 52-11.000.

Kerforne, Jean-Francois; Le Gars, Jacques; and Remery, Michel, to U.S. Philips Corporation. Method of controlling an apparatus, which is operated by a solid-state processor and powered by an electric mains, in case of a power failure and apparatus employing said method. 4,412,284., Cl. 364-200.000.

Kersten, Jean, to Travenol European Research and Development Centre. Spike connector. 4,411,661., Cl. 604-411.000.

Keshavan, Hampapur R.: *See—*
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,412,323., Cl. 370-16.000.

Kessel, Bernhard. Drain fitting with built-in pump. 4,411,599., Cl. 417-301.000.

Kessler, Manfred; and Hoper, Jens, to Kessler, Manfred. Device for calibrating gas electrodes. 4,411,151., Cl. 73-1.00G.

Kettle, John L., to Otis Elevator Company. Racetrack escalator. 4,411,352., Cl. 198-328.000.

Keuffel & Esser Company: *See—*
Marcovici, Mitch, 4,411,166., Cl. 74-89.000.

Keyes, Marion A.: *See—*
Kaya, Azmi; Keyes, Marion A.; and Scheib, Thomas J., 4,412,136., Cl. 290-40.00R.

Keyser, Frank: *See—*
Holmes, George; and Keyser, Frank, 4,411,531., Cl. 366-76.000.

Keystone International, Inc.: *See—*
Scobie, William B., 4,411,438., Cl. 277-105.000.

Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., to National Semiconductor Corporation. Simplified BIFET structure. 4,412,238., Cl. 357-43.000.

Khan, Ashfaq R.; and Edwards, Ivan L., to GTE Automatic Electric Labs Inc. Clock synchronization system. 4,412,342., Cl. 375-107.000.

Kiely, Martin. Method of operating an I.C. engine. 4,411,223., Cl. 123-3.000.

Kiener, Volker: *See—*
Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, 4,411,761., Cl. 204-290.00R.

Kienzle Apparate GmbH: *See—*
Kelch, Heinz, 4,411,239., Cl. 123-557.000.

Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, to Mitsubishi Petrochemical Co., Ltd.; and Mitsubishi Yuka Pharmaceutical Co., Ltd. Polymeric cholesterol reducing agent having vinylimidazole pendant groups. 4,412,011., Cl. 521-38.000.

Kikuchi, Hideo; Baba, Shigenori; and Sato, Shoji, to Fujitsu Limited. Semiconductor integrated circuit and wiring method. 4,412,240., Cl. 357-45.000.

Kikuchi, Kazushige: *See—*
Nagura, Masato; Kikuchi, Kazushige; Obara, Hiroshi; and Endo, Yasushi, 4,412,147., Cl. 310-320.000.

Kikuchi, Noribumi: *See—*
Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, 4,411,763., Cl. 204-298.000.

Kikuga, Toyoji; and Hirai, Koji, to Sumitomo Durez Company, Ltd. Color developer for pressure-sensitive copying paper. 4,412,045., Cl. 525-501.000.

Killinger, Karl H., to Singer Company, The. Actuating mechanism for a double pointed looper in a sewing machine. 4,411,210., Cl. 112-199.000.

Kilmer, John B. Energy translation device having individually compensated sliding valves and counterbalancing mechanism. 4,411,190., Cl. 91-487.000.

Kim, Young R.: *See—*
Ornstein, Leonard; and Kim, Young R., 4,412,004., Cl. 436-10.000.

Kimata, Kei; Nakazeki, Taugito; and Yasuda, Yoshinobu, to NTN Toyo Bearing Co., Ltd. Air flow measuring device for internal combustion engines. 4,411,244., Cl. 123-389.000.

Kimberly-Clark Corporation: *See—*
Hotchkiss, Harry W., 4,411,374., Cl. 221-63.000.

Kiml, Jiri: *See—*
Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,411,337., Cl. 187-29.00R.

Kimura, Kiyoshi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Miwa, Tadashi, 4,411,977., Cl. 430-126.000.

Kimura, Shigeru, to Nifco Inc. Filter for gasoline tank. 4,411,788., Cl. 210-439.000.

Kimura, Shigeru: *See—*
Katsumata, Naoto; Horiuchi, Noriaki; and Kimura, Shigeru, 4,411,140., Cl. 62-324.200.

Kimura, Takeshi: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

King, Reginald D. Trench compactor having a vibratory sheepsfoot assembly. 4,411,081., Cl. 37-117.500.

King, Richard T.: *See—*
Halgrimson, Darrell N.; Hanson, Donald H.; and King, Richard T., 4,412,297., Cl. 364-559.000.

Kinoshita, Takao; Hosoe, Kazuya; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Focus detecting system. 4,411,504., Cl. 354-25.000.

Kinoshita, Takao: *See—*
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,411,505., Cl. 354-25.000.

Kioritz Corporation: *See—*
Takahashi, Hiroshi; and Saito, Yasuo, 4,411,071., Cl. 30-381.000.

Kirk, Norbert A. Blade housing device for cast cutting tool. 4,411,067., Cl. 30-124.000.

Kishida, Kunio: *See—*
Morikawa, Masaki; Yoshida, Hideaki; Kishida, Kunio; and Tanaka, Chuji, 4,411,864., Cl. 420-587.000.

Kissell, John J.: *See—*
Dougherty, Timothy S.; Kissell, John J.; and Schmehl, Glenn L., 4,412,094., Cl. 174-110.00F.

Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, to Hitachi, Ltd. Formation of electrodes for magnetoresistive sensor. 4,411,757., Cl. 204-192.00E.

Kitagawa, Hironoshin: *See—*
Shigesada, Shigeki; Kitagawa, Hironoshin; Mihara, Toshio; and Ishimatsu, Yoshiaki, 4,411,999., Cl. 435-177.000.

Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi, Hasegawa, Hiroaki; and Yoshioka, Akira, to Nippon Zeon Co., Ltd. Modified rubber composition employing a compound containing a carboxyl and an aldehyde group. 4,412,031., Cl. 524-526.000.

Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, to Nippon Zeon Co. Ltd. Process for modifying rubbers employing a compound containing a carboxyl and an aldehyde group. 4,412,041., Cl. 525-154.000.

Kitamura, Hidetoshi; and Kato, Hirohisa, to Nissan Motor Company, Limited. Switch for sensing a preset position of a throttle valve. 4,411,154., Cl. 73-118.000.

Kitamura, Koichiro, to Kitamura Machinery Co., Ltd. Protective system for automatic tool changing apparatus. 4,412,162., Cl. 318-563.000.

Kitamura Machinery Co., Ltd.: *See—*
Kitamura, Koichiro, 4,412,162., Cl. 318-563.000.

Kitano, Kyozo: *See—*
Ando, Hideo; Hayashi, Akira; and Kitano, Kyozo, 4,411,815., Cl. 252-353.000.

Kitano, Tateo: *See—*
Ohmura, Eiichi; and Kitano, Tateo, 4,411,103., Cl. 49-502.000.

Kivenson, Gilbert. Catapult construction. 4,411,248., Cl. 124-20.00R.

Klaassen, Klaas B.: *See—*
Asjes, Ronald J.; van Peppen, Jacobus C. L.; and Klaassen, Klaas B., 4,412,317., Cl. 367-185.000.

Klassen, Herbert: *See—*
Scholl, Michael; and Klassen, Herbert, 4,411,143., Cl. 68-12.00R.

Klaus, Jack C.; Schroeder, Larry D.; Casteel, Vincent H.; and Schwartz, Kenneth E., to Iowa State University Research Foundation, Inc. Light actuated remote control security system. 4,412,356., Cl. 455-603.000.

Kleemann, Axel: *See—*
Bethge, Horst; Kleemann, Axel; and Martens, Jurgen, 4,411,840., Cl. 260-501.120.

Klein, Dean A.; Davis, Steven C.; and Wroblewski, Jerome J., to Houdaille Industries, Inc. Backgauge structure. 4,411,150., Cl. 72-461.000.

Klein, Denys C., to Compagnie de Signaux et d'Entreprises Electriques. Start up frequency adjustment in an electronic power device for a discharge lamp. 4,412,154., Cl. 315-224.000.

Klein, Kenneth; Bator, Patricia E.; and Pact, Harry H., to Henkel Corporation. Thickened ketone compositions. 4,412,027., Cl. 524-364.000.

Klein, Robert E.: *See—*
Bailey, David C.; and Klein, Robert E., 4,411,503., Cl. 352-222.000.

Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., to United States of America, Navy. PZT Composite and a fabrication method thereof. 4,412,148., Cl. 310-358.000.

Klimpel, Richard R.: *See—*
Bermudez, Mauricio; Klimpel, Richard R.; and Sands, Steven D., 4,411,927., Cl. 426-618.000.

Kline, George A., to Diamond Shamrock Corporation. Titanium clad copper electrode and method for making. 4,411,762., Cl. 204-290.00F.

Klipstein, Frederick A.; Engert, Richard E.; and Clements, John D., to University of Rochester, The. Composition of a novel immunogen for protection against diarrheal disease caused by enterotoxigenic *Escherichia coli*. 4,411,888., Cl. 424-92.000.

Knights, Mark G.; and Chicklis, Evan P., to Sanders Associates, Inc. High efficiency storage laser. 4,412,332., Cl. 372-70.000.

Kobayashi, Hidetoshi; Watanabe, Toshiyuki; Adachi, Keiichi; and Ogawa, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,411,987., Cl. 430-542.000.

Kobayashi, Nobuyuki: *See—*
Shinoda, Kazuo; Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,411,235., Cl. 123-488.000.

Kobayashi, Toshiyuki, to Mitsubishi Denki Kabushiki Kaisha. Electrode unit for electrically heating underground hydrocarbon deposits. 4,412,124., Cl. 219-277.000.

Kobayashi, Yoshiro: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,411,833., Cl. 260-239.55R.

Koblitz, Franics F.; and Reichart, Jane L., to Dentsply Research & Development Corp. Broad spectrum light curable dental compositions. 4,411,625., Cl. 433-217.000.

Koch, Diether: *See—*
Gruber, Bruce A.; Koch, Diether; Langer, Heimo J.; and Dunnavant, William R., 4,412,088., Cl. 585-23.000.

Koehler, Albert M.: *See—*
Radovan, Felix S.; Koehler, Albert M.; and Ray, Donald R., 4,411,408., Cl. 254-108.000.

Koehler Manufacturing Company: *See—*
Sundberg, Erik G., 4,411,969., Cl. 429-50.000.

Koenig, Karl-Heinz; and Feuerherd, Karl-Heinz, to BASF Aktiengesellschaft. Preparation of 1-monochloroethylcarbamyl chloride. 4,411,752., Cl. 204-158.0HA.

Koerdt, Reinhold; Schwiers, Hans-Georg; and Schoening, Josef, to Hochtemperatur-Reaktorbau GmbH. Vaulted cover assembly to close a vertical recess in a pressure vessel. 4,411,308., Cl. 165-70.000.

Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased (by Sterman, Florence G., executrix), to United States of America, National Aeronautics and Space Administration. Tip cap for a rotor blade. 4,411,597., Cl. 416-92.000.

Koflach Sportgerate Gesellschaft: *See—*
Bucheder, Erwin, 4,411,078., Cl. 36-117.000.

Kohl, Lou; Peschke, John R.; and Wecker, Sheldon M., to James River-Dixie/Northern, Inc. Method for forming a plurality of objects from a plurality of superimposed sheets. 4,411,849., Cl. 264-45.500.

Koike, Norio: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

Koike, Shoichi, to Nissan Motor Company, Limited. Automobile door structure. 4,411,466., Cl. 296-188.000.

Kojima, Akira; and Sakai, Toshiyasu, to Nippondenso Co., Ltd. DC Motor driving apparatus. 4,412,160., Cl. 318-280.000.

Kojima, Junpei: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, 4,412,049., Cl. 526-127.000.

Kokelenberg, Hendrik E.: *See—*
Laridon, Urbain L.; Kokelenberg, Hendrik E.; and Samijn, Rafael P., 4,411,978., Cl. 430-157.000.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Imamura, Nobutake; and Ota, Chuichi, 4,412,264., Cl. 360-131.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Mochizuki, Kiyofumi; Wakabayashi, Hiroharu; and Niiro, Yasuhiko, 4,411,520., Cl. 356-73.100.

Kolegraff, Kenneth J.; and Allen, David T., to Deere & Company. Shearbar clearance detector. 4,412,212., Cl. 340-684.000.

Kollar, John. Process for producing ethylene glycol. 4,412,084., Cl. 568-852.000.

Kollar, John. Process for producing ethylene glycol. 4,412,085., Cl. 568-852.000.

Komai, Keiichi: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Komatsu Forklift Kabushiki Kaisha: *See—*
Nakada, Shoichi, 4,411,582., Cl. 414-636.000.

Komatsu, Hideo; Iida, Shinya; Mizutani, Tatsumi; and Ueki, Kazuyoshi, to Hitachi, Ltd. Method for dry-etching. 4,412,119., Cl. 219-121.0PF.

Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, to Tokyo Shibaura Denki Kabushiki Kaisha. Sintered Si_3N_4 body. 4,412,009., Cl. 501-97.000.

Komeno, Junji, to Fujitsu Limited. Method for a vapor phase growth of a compound semiconductor. 4,411,729., Cl. 156-612.000.

Komeya, Katsutoshi: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,412,009., Cl. 501-97.000.

Kominami, Yasuo; Sato, Tetsuo; and Ohkubo, Yuichi, to Hitachi, Ltd. Switchable signal compressor/signal expander. 4,412,189., Cl. 333-14.000.

Komori, Shigehiro; and Ogawa, Hiroshi, to Canon Kabushiki Kaisha. Variable magnification electrophotographic copying apparatus. 4,411,514., Cl. 355-14.0CH.

Kondo, Masatoshi: *See—*
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.

Kondo, Takashi, to Minolta Camera Kabushiki Kaisha. Position control device for movable member. 4,411,507., Cl. 354-195.000.

Kondo, Toshikatsu: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Mizuno, Shigeru, 4,411,538., Cl. 400-124.000.

Konig, Walter: *See—*
Weber, Helmut; Reitberger, Peter H.; Bader, Leonhard; and Konig, Walter, 4,412,232., Cl. 346-140.00R.

Konishiroku Photo Industry Co., Ltd.: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Miwa, Tadashi, 4,411,977., Cl. 430-126.000.

Kontek - Tecnologie della Conservazione - S.R.L.: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Koppensteiner, James V.; and Onesto, Joseph B., to GTE Automatic Electric Labs Inc. Circuit card extractor. 4,411,064., Cl. 29-764.000.

Korol, Vyacheslav K.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, to Intel Corporation. EPROM Cell with reduced programming voltage and method of fabrication. 4,412,310., Cl. 365-185.000.

Koseki, Yoshihiro: *See—*
Nagamoto, Masanaka; Koseki, Yoshihiro; and Iwata, Susumu, 4,411,979., Cl. 430-176.000.

Koshimizu, Naganori, to Tokico Ltd. Hydraulic pressure control valve. 4,411,476., Cl. 303-6.00C.

Kosner, Jerry J., to Bell & Howell Company. Vacuum document feeder. 4,411,416., Cl. 271-11.000.

Kosonocky, Walter F., to RCA Corporation. Charge transfer circuits with dark current compensation. 4,412,343., Cl. 377-58.000.

Koss, Walter. Penis prosthesis. 4,411,260., Cl. 128-79.000.

Kostka, Miroslav: *See—*
Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,411,337., Cl. 187-29.00R.

Kotani, Hideo: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.

Kovar, Robert F.: *See—*
Bouley, Robert W.; and Kovar, Robert F., 4,412,012., Cl. 521-54.000.

Koyama, Masaharu: *See—*
Tanaka, Hironari; Ishibashi, Tadashi; and Koyama, Masaharu, 4,412,214., Cl. 340-765.000.

Kozlov, Vyacheslav I.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Kraftwerk Union Aktiengesellschaft: *See—*
Steinberg, Eckard, 4,411,861., Cl. 376-417.000.

Kramer, Horst; and Fassbender, Heinrich, to Hoechst Aktiengesellschaft. Testing method for determining the magnetic properties of ferromagnetic powders. 4,412,176., Cl. 324-204.000.

Kramer, Steven G.; and Yavitz, Edward Q., to University of California, The Regents of the. Internally sterile pulsatile infusor system. 4,411,652., Cl. 604-153.000.

Krampe & Co. Fertifung in Bergbaubedarf GmbH: *See—*
Best, Gerd; and Weikert, Norbert B., 4,411,475., Cl. 299-81.000.

Kraus, Gerard, to Phillips Petroleum Company. Asphalt compositions. 4,412,019., Cl. 524-71.000.

Kraus, John W., to Trans-World Manufacturing Corp. Display with changeable characters. 4,411,084., Cl. 40-450.000.

Krautkremer, Franz; and Lais, Siegfried, to Schottel-Werft, Josef Becker GmbH & Co KG. Water-jet drive mechanism for the driving of watercraft. 4,411,630., Cl. 440-42.000.

Kravetz, John J. Method and apparatus for the prevention of low temperature diesel engine failure. 4,411,240., Cl. 123-557.000.

Kreissig, Ernst F., to Schweizerische Lokomitiv-und Maschinenfabrik. Rail vehicle. 4,411,202., Cl. 105-199.00R.

Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, to Krup Stahl, A.G. Apparatus for the spectrometric analysis of the chemical composition of metallic parts. 4,411,524., Cl. 356-313.000.

Kremers, Jan H.; and Bolles, Robert C., to S R I International. Implement positioning apparatus and process. 4,412,121., Cl. 219-124.340.

Kress, Hans-Jurgen: *See—*
Heitz, Walter; Kress, Hans-Jurgen; and Stix, Wolfgang, 4,412,063., Cl. 528-409.000.

Kreuter, Erika; and Zilske, Wolfgang, to Degussa. Electrolytic palladium bath and process. 4,411,743., Cl. 204-47.000.

Kreyenbuhl, Armand, to Adidas - Fabrique de Chassures de Sport. Ski binding to secure a shoe to a ski. 4,411,445., Cl. 280-615.000.

Kriegner, Othmar; and Gruber, Gunther, to Voest-Alpine Aktiengesellschaft. Method of continuously measuring the temperature of the surface of a continuously cast strand over its length. 4,411,534., Cl. 374-141.000.

Krigbaum, William R.; Ciferri, Alberto; and Preston, Jack, to Duke University. High modulus cholesteric mesophase polymers. 4,412,059., Cl. 528-192.000.

Krisam, Gerd G.: *See—*
Lehmann, Hans-Dieter; Krisam, Gerd G.; and Golla, Ruth S., 4,412,000., Cl. 435-179.000.

Kroushl, Joseph A.; and Greenwood, Arthur R., to UOP Inc. Multiple stage reactor system. 4,411,869., Cl. 422-188.000.

Kroushl, Joseph A.; and Greenwood, Arthur R., to UOP Inc. Reactor system. 4,411,870., Cl. 422-188.000.

Kroymann, Howard B., to Raychem Corporation. Bi-directional temperature excursion sensing and locating apparatus. 4,411,536., Cl. 374-184.000.

Krup Stahl, A.G.: *See—*
Kremer, Karl J.; Brauner, Jochen; Glaubitz, Klaus-Dieter; Eckstein, Helmut; and Bruggemann, Josef, 4,411,524., Cl. 356-313.000.

Kryszewski, Marian: *See—*
Galeski, Andrzej; Kalinski, Ryszard; and Kryszewski, Marian, 4,411,704., Cl. 106-308.00Q.

Kubo, Keizo, to Janome Sewing Machine Co. Ltd. Imprinter with locking and releasing device. 4,411,196., Cl. 101-269.000.

Kudo, Mitsuhiro: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Kudo, Tetsuichi: *See—*
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, 4,411,971., Cl. 429-191.000.

Kughn, Richard P.: *See—*
Buehrig, Gordon M.; and Buehrig, Kathryn L., 4,411,462., Cl. 293-132.000.

Kuhlman, Bruce E.; and Kamerling, Marc A., to Optical Coating Laboratory, Inc. Transparent electromagnetic shield and method of manufacturing. 4,412,255., Cl. 358-245.000.

Kuhn, Lothar: *See—*
Wenderoth, Karl; and Kuhn, Lothar, 4,411,542., Cl. 400-697.100.

Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., to Xerox Corporation. Very high speed duplicator with limitless finishing function. 4,411,515., Cl. 355-14.0SH.

Kulevskaya, Elena F.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., 4,412,203., Cl. 338-4.000.

Kumakura, Minoru: *See—*
Kaetsu, Isao; Yoshida, Masaru; and Kumakura, Minoru, 4,411,754., Cl. 204-159.150.

Kumamoto, Kazuo: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, 4,411,952., Cl. 428-332.000.

Kumasaka, Noriyuki: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Kumpe, Gerhardt: *See—*
Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Drescher, Heinz H., 4,411,794., Cl. 210-670.000.

Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, to Sanke Electric Co., Ltd.; and Nippondenso Co., Ltd. Distributorless ignition system for multicylinder internal-combustion engines. 4,411,247., Cl. 123-655.000.

Kunkel, Harold E., to Ex-Cell-O Corporation. Heat exchanger assembly. 4,411,309., Cl. 165-76.000.

Kuo, Clinton C. K., to Motorola, Inc. EEPROM With bulk zero program capability. 4,412,309., Cl. 365-184.000.

Kupersmit, Julius B. Foldable reinforcing element for shipping containers. 4,411,373., Cl. 220-470.000.

Kuraray Co., Ltd.: *See—*
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, 4,412,103., Cl. 179-115.50R.
Hirai, Koji; Shirano, Kenji; and Okamura, Takayuki, 4,412,022., Cl. 524-104.000.

Kurashiki Bosiki Kabushiki Kaisha: *See—*
Saito, Masumi; Hirai, Eiichi; and Endo, Masao, 4,411,701., Cl. 106-87.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Nagura, Masato; Kikuchi, Kazushige; Obara, Hiroshi; and Endo, Yasushi, 4,412,147., Cl. 310-320.000.

Kurihara, Kazuhiko: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Kurihara, Michio: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Kurimoto Iron Works, Ltd.: *See—*
Takeuchi, Shigeru, 4,411,723., Cl. 156-242.000.

Kurita, Akitsugu, to Toshiba Silicones Ltd. Silicone emulsion composition. 4,412,035., Cl. 524-796.000.

Kuroda, Kunishige, to Hitachi, Ltd. Superconducting solenoid coil. 4,412,195., Cl. 335-216.000.

Kuroiwa, Akihiko: *See—*
Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, 4,412,231., Cl. 346-135.100.

Kuroiwa, Yuki: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Kurt Ehemann Spezialmaschinenfabrik KG: *See—*
Ehemann, Gero, 4,411,051., Cl. 26-18.500.

Kurth, Josef: *See—*
Gauchel, Peter; and Kurth, Josef, 4,411,613., Cl. 425-388.000.

Kurtz, Anthony D.; and Mallon, Joseph R., to Kulite Semiconductor Products, Inc. Housing and interconnection assembly for a pressure transducer. 4,412,203., Cl. 338-4.000.

Kuypers, Harold A., to Scovill Inc. Snap-in tire valve. 4,411,302., Cl. 152-427.000.

Kuznetsova, Olga M.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Kuzunuki, Soshiro; Hirasawa, Kotaro; Yuminaka, Takeo; and Yoneda, Kanji, to Hitachi, Ltd. Apparatus for calculating elevator cage call forecast. 4,411,338., Cl. 187-29.00R.

Kwan, Stephen C., to Alcon Laboratories, Inc. Method for the prevention of soilant deposits on contact lenses. 4,411,932., Cl. 427-164.000.

Kwech, Horst: *See—*
Wachs, Edward H.; and Kwech, Horst, 4,411,178., Cl. 82-4.00C.

Kwok, Sai W., to GTE Products Corporation. Differential current detector in cable television trunk amplifier station. 4,412,245., Cl. 358-86.000.

Kyle, James C., to Kyle, James C. Ceramic seal between spaced members such as a terminal pin and a ferrule. 4,411,680., Cl. 65-33.000.

Kytir, Walter. Winding machine for winding strand-shaped winding material on a spool. 4,411,396., Cl. 242-158.00R.

L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques: *See—*
Mentzer, Regis, 4,411,361., Cl. 206-329.000.

La Rochette-Cenpa: *See—*
Louis, Jacques; and Gauthier, Jean, 4,411,420., Cl. 271-276.000.

LaBelle, Stanley B.; and Hagquist, James A. E., to H. B. Fuller Company. One-part, curable polyurethane. 4,412,033., Cl. 524-590.000.

Lach, Horst. Trueing tool. 4,411,250., Cl. 125-11.0CD.

Lada, Henry: *See—*
Fishter, Robert E.; and Lada, Henry, 4,411,730., Cl. 156-626.000.

Ladd, Robert G.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,411,610., Cl. 425-174.400.

Laimins, Eric: *See—*
Lockery, Harry E.; and Laimins, Eric, 4,411,327., Cl. 177-211.000.

Lais, Siegfried: *See—*
Krautkremer, Franz; and Lais, Siegfried, 4,411,630., Cl. 440-42.000.

Lalancette, Louis-Marie. Fish trap having a cardioidal structure. 4,411,092., Cl. 43-100.000.

Lamkewitz, Falk, to Webasto-Werk W. Baier GmbH & Co. Controller for the operation of heaters. 4,411,385., Cl. 237-2.00A.

Lampkin, Curtis M.: *See—*
Jordan, John F.; and Lampkin, Curtis M., 4,412,091., Cl. 136-258.000.

Landa, Benzion; and Charlap, E. Paul, to Savin Corporation. Method of increasing the density of liquid-developed gap-transferred electrophotographic images and developing composition for use therein. 4,411,976., Cl. 430-114.000.

Lang, Frank B., to RCA Corporation. Television receiver high voltage protection circuit. 4,412,254., Cl. 358-243.000.

Lang, Gerard: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,411,884., Cl. 424-47.000.

Lang, Walter H.; Muchel, Franz; Schulz, Kurt; and Summerer, Gunther, to Carl Zeiss-Stiftung. Ophthalmological instrument for examination of anterior and posterior portions of the eye. 4,411,502., Cl. 351-206.000.

Langer, Heimo J.: *See—*
Gruber, Bruce A.; Koch, Diether; Langer, Heimo J.; and Dunnavant, William R., 4,412,088., Cl. 585-23.000.

Lanham, Joseph S.; and Bruckner, Neal R., to Hoover Universal, Inc. Joint for securing a tubular member to a support member. 4,411,552., Cl. 403-388.000.

Lansdell, Derek A.: *See—*
Jefferson, Keith A.; and Lansdell, Derek A., 4,412,158., Cl. 318-257.000.

Laridon, Urbain L.; Kokelenberg, Hendrik E.; and Samijn, Rafael P., to AGFA-Gevaert N.V. Photoresist materials and processes of using with photosensitive naphthoquinone diazides and nitrones. 4,411,978., Cl. 430-157.000.

Larkin, Joseph F.; and Hodge, Malcolm H., to TRW Inc. Connector assembly with elastomeric sealing membranes having slits. 4,411,491., Cl. 350-96.210.

Lattmann, Werner; and Moser, Robert, to Riter Machine Works, Ltd. Apparatus and method for separating opened end flocks from a transporting air stream. 4,411,562., Cl. 406-157.000.

Lauchenauer, Alfred E., to Adnovum AG. Reactable reagents with substrates. 4,411,663., Cl. 8-107.000.

Laughon, Thomas C.; and Philpott, Michael I., to Texas Instruments Incorporated. Electronic learning aid with picture book. 4,411,628., Cl. 434-169.000.

Laukien, Gunther R. Twin-hull watercraft. 4,411,213., Cl. 114-312.000.

Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., to American District Telegraph Co. System for test sequence annunciation. 4,412,211., Cl. 340-514.000.

LaVanture, Mark D.; and Walker, George L., to Mobil Oil Corporation. Clarification of black phosphoric acid with phosphoric acid rinse water. 4,411,811., Cl. 252-182.000.

Lawrence, Victor B.: *See—*
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., 4,412,341., Cl. 375-102.000.

Leblanc, Raymond F.; and Cummins, William T., to Teledyne Industries, Inc. Barge bumper construction. 4,411,556., Cl. 405-213.000.

Lechevallier, Christian, to Institut de Recherches de la Siderurgie Francaise. Metallurgical container for the inductive treatment of metal. 4,411,412., Cl. 266-242.000.

LeClair, Francis J.; and Surgant, John M., to Monsanto Company. Flowable herbicides. 4,411,692., Cl. 71-93.000.

LeClair, Francis J.; and Surgant, John M., to Monsanto Company. Flowable herbicides. 4,411,693., Cl. 71-118.000.

Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, to Commissariat a l'Energie Atomique. Spacer grating for fuel element in a nuclear reactor. 4,411,862., Cl. 376-442.000.

Lee, John K. Master cylinder internal combustion engine. 4,411,230., Cl. 123-198.00F.

Lee, Kenneth S. Passive thermal storage wall structures for heating and cooling buildings. 4,411,255., Cl. 126-429.000.

Lee, Minyoung; Reed, William R., Jr.; and Szala, Lawrence E., to General Electric Company. Self-lubricating cutting tool and method. 4,411,566., Cl. 407-119.000.

Lee, Otha C.: *See—*
Brown, Wallace G.; and Lee, Otha C., 4,412,101., Cl. 179-7.10R.

Lee, Sung K., to SCA Services, Inc. Detoxification of spent antimony halide catalyst and recovery of antimony values. 4,411,874., Cl. 423-87.000.

Le Gars, Jacques: *See—*
Kerforne, Jean-Francois; Le Gars, Jacques; and Remery, Michel, 4,412,284., Cl. 364-200.000.

Leger, Alfred R.: *See—*
Starvaski, Raymond R.; and Leger, Alfred R., 4,411,394., Cl. 242-83.000.

Leggett & Platt, Incorporated: *See—*
Bustos, Rafael T., 4,411,367., Cl. 211-187.000.

Le Goff, Andre: *See—*
Thibault, Bernard; and Le Goff, Andre, 4,411,354., Cl. 198-472.000.

Lehman, Manfred: *See—*
Schroeder, Eberhard, deceased; Lehman, Manfred; and Rufer, Clemens, 4,411,910., Cl. 424-279.000.

Lehmann, Hans-Dieter; Krisam, Gerd G.; and Golla, Ruth S., to Gambro Dialysatoren KG. Method of binding a biologically active material to a carrier containing hydroxyl groups. 4,412,000., Cl. 435-179.000.

Lehrkind, Nancy N.: *See—*
Northup, John D., 4,411,681., Cl. 65-77.000.

Leithauser, Douglas R.; and Young, John K., to Union Carbide Corporation. Neck tube closure assembly for cryogenic containers. 4,411,138., Cl. 62-50.000.

Lenack, Alain L. P.: *See—*
Tirtiaux, Robert; and Lenack, Alain L. P., 4,411,806., Cl. 252-49.600.

Le Pargneux, Jacques: *See—*
Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, 4,411,862., Cl. 376-442.000.

Lesher, George Y.; and Singh, Baldev, to Sterling Drug Inc. Process for preparing 5-(lLower-alkanoyl)-6-(lower-alkyl)-2(1H)-pyridinone. 4,412,077., Cl. 546-298.000.

Lesieur, Jean-Paul, to Compagnie Internationale pour l'Informatique Cii Honeywell Bull. Method and arrangement for magnetic digital recording with high frequency biasing. 4,412,257., Cl. 360-45.000.

Lester, George W.; and Malloy, Thomas P., to UOP Inc. Enhanced oil recovery. 4,411,802., Cl. 252-8.55D.

Lestiboudois, Guy: *See—*
Leclercq, Joseph; Le Pargneux, Jacques; Feutrel, Claude; Lestiboudois, Guy; and Chantant, Michel, 4,411,862., Cl. 376-442.000.

Le Trung, Do: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,411,884., Cl. 424-47.000.

Levine, Peter A., to RCA Corporation. Apparatus for processing CCD output signals. 4,412,190., Cl. 333-165.000.

Leviton Manufacturing Company, Inc.: *See—*
Bienwald, Wolfgang F.; and Tumsuden, Herbert W., Jr., 4,412,193., Cl. 335-18.000.

Lew, Hyok S. Angular belt valve for manifold control. 4,411,291., Cl. 137-624.150.

Lewis, Alfred H. Sclerometer. 4,411,153., Cl. 73-79.000.

Lewis, Frederick M., to Sterling Drug Inc. Process for utilizing low calorific value off-gases and simultaneous deodorization thereof. 4,411,203., Cl. 110-341.000.

Lewis, George E., to Hydril Company. Fluid sealing assembly for a marine riser telescopic slip joint. 4,411,434., Cl. 277-27.000.

Lewis, Leon L.; and Murray, Michael V., to United States Steel Corporation. Can-making method. 4,411,145., Cl. 72-42.000.

Lewy, Laury P. Neck rest for shampoo bowls. 4,411,032., Cl. 4-523.000.

Leybold Heraeus GmbH: *See—*
Froitzheim, Hermann, 4,412,131., Cl. 250-305.000.

LIBA Maschinenfabrik GmbH: *See—*
Boehm, Alfred; and Richter, Eberhard, 4,411,392., Cl. 242-35.50R.

Liburdy, Robert P. Magnetic resonance chromatography. 4,411,789., Cl. 210-635.000.

Licentia Patent-Verwaltungs-GmbH: *See—*
Schuster, Harald, 4,412,352., Cl. 455-319.000.

Lidow, Alexander: *See—*
Herman, Thomas; and Lidow, Alexander, 4,412,242., Cl. 357-52.000.

Liebig, Heinrich. Bore undercutting tool. 4,411,324., Cl. 175-289.000.

Liedtke, Ronald: *See—*
Birdsall, John D.; Liedtke, Ronald; and Smollar, Marvin, 4,411,098., Cl. 46-206.000.

Liggett Group Inc.: *See—*
Hall, Floyd V., 4,411,640., Cl. 493-45.000.

Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, to International Flavors & Fragrances Inc. Bridged tricyclic alcohol, process for preparing same and perfumery use thereof. 4,411,830., Cl. 252-522.00R.

Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, to International Flavors & Fragrances Inc. Process for producing solanone, norsolanadione and intermediates therefor. 4,412,083., Cl. 564-279.000.

Lignes Telegraphiques et Telephoniques: *See—*
Dubois, Gilles; and Hulin, Jean P., 4,411,130., Cl. 57-352.000.

Lim, Tong L.: *See—*
Gersho, Allen; Ho, Edmond Y.; Gitlin, Richard D.; Lawrence, Victor B.; and Lim, Tong L., 4,412,341., Cl. 375-102.000.

Limb, John O., to Bell Telephone Laboratories, Inc. Collision avoiding system, apparatus and protocol for a multiple access digital communications system including variable length packets. 4,412,326., Cl. 370-85.000.

Lindahl, George R., III; and Henrick, Clive A., to Zoecon Corporation. α-Cyano-β-(trisubstituted phenylhydrazino)-n-ethoxycarbonylacrylamides. 4,411,839., Cl. 260-465.00D.

Lindberg, Frank A., to Westinghouse Electric Corp. Apparatus and method for tape bonding and testing of integrated circuit chips. 4,411,719., Cl. 156-64.000.

Linger, Barry A., to Howard Machinery Limited. Cultivating machine rotor. 4,411,322., Cl. 172-540.000.

Linton, Charles R.: *See—*
Crider, Chester H.; and Linton, Charles R., 4,412,166., Cl. 318-696.000.

Lintz, Peter: *See—*
Sander, Bruno; Hess, Klaus; Lintz, Peter; and Goesele, Walter, 4,411,797., Cl. 210-727.000.

Linzmeier, Wilhelm: *See—*
Glasauer, Rudolf; Duschl, Bernhard; Linzmeier, Wilhelm; and Schaffrik, Arnold, 4,412,201., Cl. 336-192.000.

Lion Corporation: *See—*
Ando, Hideo; Hayashi, Akira; and Kitano, Kyozo, 4,411,815., Cl. 252-353.000.

Lipcon, Jesse B., to Digital Equipment Corporation. Precision setting of currents and reference voltages. 4,412,347., Cl. 455-58.000.

Liquid Level Lectronics, Inc.: *See—*
Johnson, J. Wallace; and Hye, A. B. M. Abdul, 4,411,313., Cl. 166-90.000.

List, Hans: *See—*
Feichtinger, Gerhard, 4,411,227., Cl. 123-196.00R.

Ljung, Bo Hans G.: *See—*
Gamertsfelder, George R.; and Ljung, Bo Hans G., 4,411,527., Cl. 356-350.000.

Lloyd, Norman E., to Nabisco Brands, Inc. Process for isomerizing glucose. 4,411,996., Cl. 435-94.000.

Lloyd, Ronald B.: *See—*
Morris, Richard L.; and Lloyd, Ronald B., 4,411,844., Cl. 261-34.00R.

Lockery, Harry E.; and Laimins, Eric, to Hottinger Baldwin Measurements, Inc. Apparatus for applying a load to a strain gage transducer beam. 4,411,327., Cl. 177-211.000.

Loffelman, Frank F.; and Hoffman, Joseph A., to American Cyanamid Company. Novel light stabilizers for polymers. 4,412,020., Cl. 524-100.000.

Loftus, Jordan; and Woldy, Paul N., to Texaco Inc. System for measuring temperature of hot gases laden with entrained solids. 4,411,533., Cl. 374-125.000.

Lohmann GmbH & Co. KG: *See—*
Blaudszun, Bernd, 4,411,075., Cl. 34-32.000.

Lohse, Friedrich: *See—*
Monnier, Charles E.; and Lohse, Friedrich, 4,412,047., Cl. 525-507.000.

Loose Leaf Metals Company, Inc.: *See—*
Gallman, Joseph L., 4,411,544., Cl. 402-69.000.

Lott, John W.: *See—*
Haney, Douglas M.; and Lott, John W., 4,411,980., Cl. 430-291.000.

Louis, Jacques; and Gauthier, Jean, to La Rochette-Cenpa. Conveyor apparatus for the transportation of plates, strips or sheets of material on continuous belts. 4,411,420., Cl. 271-276.000.

Lovelace, Ralph: *See—*
Boyum, George A.; Renner, Robert A.; and Lovelace, Ralph, 4,411,070., Cl. 30-379.500.

Lovewell, Jack S.: *See—*
Fogarty, Bonnie R.; Fogarty, A. Edward; Nowak, Ralph; and Lovewell, Jack S., 4,411,249., Cl. 124-64.000.

Low, Philip F.; Roth, Charles B.; and Stucki, Joseph W., to Purdue Research Foundation. System and method for rapid beneficiation of Bentonite clay. 4,411,530., Cl. 366-4.000.

Lowder, Marlene; and Johnson, Norman B., to Lowder, Marlene. Bottle dispensing and control system. 4,411,351., Cl. 194-4.00C.

Lowe, Henry E. Odor testing apparatus. 4,411,156., Cl. 73-432.00R.

Lowry, Joseph M.; and Griffin, Ernest E. Carriage for a grass trimming device. 4,411,126., Cl. 56-17.500.

LST Corporation: *See—*
St. Aubin, William R., 4,411,104., Cl. 49-470.000.

Lu, Chin H.; Au Clair, Christopher J.; and Erhardt, Peter F., to Xerox Corporation. Ortho-halo phenyl carboxylic acid charge enhancing additives. 4,411,974., Cl. 430-106.000.

Lu, Chin H.; and Au Clair, Christopher J., to Xerox Corporation. Para-halo phenyl carboxylic acid charge enhancing additives. 4,411,975., Cl. 430-106.000.

Lucarelli, Frank J. Invalid walker. 4,411,283., Cl. 135-67.000.

Lucas, Pierre M.: *See—*
Glowinsky, Albert; and Lucas, Pierre M., 4,412,324., Cl. 370-58.000.

Lumma, William C., Jr.: *See—*
Baldwin, John J.; and Lumma, William C., Jr., 4,411,899., Cl. 424-246.000.

Lummus Company, The: *See—*
Unger, Harold; Sze, Morgan C.; and Van Driesen, Roger P., 4,411,768., Cl. 208-59.000.

Lundberg, Robert D.; Phillips, Robert R.; and McDougall, Lee A., to Exxon Research and Engineering Co. Conversion of polymer solutions into solids or more viscous solution. 4,412,028., Cl. 524-364.000.

Lundstrom, Stephen F.: *See—*
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., 4,412,303., Cl. 364-900.000.

Lustgarten, Stewart J.; and Engelbrecht, Jurgen. Dental filler material containing zeolite for dental composite and method of manufacture. 4,412,015., Cl. 523-116.000.

Lutenegger, Alan J.; and Pitt, John M., to Iowa State University Research Foundation, Inc. Vane modulus soil tester. 4,411,160., Cl. 73-843.000.

M/A-COM DCC, Inc.: *See—*
Chapman, Lynn C., 4,412,331., Cl. 372-29.000.

M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Wurtinger, Horst; Glissmann, Jochen; and Heissler, Herbert, 4,411,114., Cl. 52-309.100.

M & T Chemicals Inc.: *See—*
Berger, Abe, 4,412,078., Cl. 548-110.000.

Maa, Jer-shen, to RCA Corporation. Etching of tantalum silicide/-doped polysilicon structures. 4,411,734., Cl. 156-643.000.

Machida Endoscope Co., Ltd.: *See—*
Machida, Masashi, 4,411,257., Cl. 128-6.000.

Machida, Masashi, to Machida Endoscope Co., Ltd. Inspection endoscope. 4,411,257., Cl. 128-6.000.

Mack, Mark P.: *See—*
Berge, Charles T.; and Mack, Mark P., 4,412,065., Cl. 528-26.000.

Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, to Bell Telephone Laboratories, Incorporated. SPER Device for material working. 4,411,733., Cl. 156-643.000.

Maddox, Harry L.: *See—*
Fox, William B.; and Maddox, Harry L., 4,412,327., Cl. 371-21.000.

Madonia, Ciro; Hatzikelis, Christopher; and Cosentino, Cesare C. Multi-groove trim. 4,411,938., Cl. 428-31.000.

Mager, Sue A.: *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,411,610., Cl. 425-174.400.

Magidson, Mark, to Moldex/Metric Products, Inc. Combined chest piece and shoulder pad. 4,411,025., Cl. 2-97.000.

Magna Technologies, Inc.: *See—*
Franco, Gino, 4,411,359., Cl. 206-217.000.

Magnetic Peripherals Inc.: *See—*
Stricklin, John D.; Denero, Anthony D.; Quatro, Robert A.; and Duff, James A., 4,412,260., Cl. 360-97.000.

Maier, Alexander G.: *See—*
Brisken, Thomas A.; and Maier, Alexander G., 4,411,715., Cl. 148-131.000.

Maillard, Laurent; and Bregolin, Graziano, to Thermosystem S.p.A. Multiple-use channel-shaped structure for suspended ceiling. 4,411,116., Cl. 52-489.000.

Makimoto, Mitsuo: *See—*
Onishi, Hiroshi; Yamashita, Sadahiko; and Makimoto, Mitsuo, 4,412,351., Cl. 455-317.000.

Makinen, Eero; and Gordin, Stefan, to Oy Wartsila Ab. Propeller guard. 4,411,631., Cl. 440-72.000.

Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, to Mitsubishi Mining & Cement Company Ltd.; Mitsubishi Cement Asbestos Company Ltd.; and Toray Silicone Company Ltd. Method for sheet forming a gypsum hardened body. 4,411,702., Cl. 106-111.000.

Maksim, John, Jr. Burners for soaking pit furnaces. 4,411,617., Cl. 431-187.000.

Malaval, Alain: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,411,884., Cl. 424-47.000.

Male, Alan T.: *See—*
Braginski, Aleksander I.; and Male, Alan T., 4,411,959., Cl. 428-558.000.

Mallon, Joseph R.: *See—*
Kurtz, Anthony D.; and Mallon, Joseph R., 4,412,203., Cl. 338-4.000.

Malloy, Thomas P.: *See—*
Lester, George W.; and Malloy, Thomas P., 4,411,802., Cl. 252-8.55D.

Malow, Egon: *See—*
Ulrich, Michael; Trautmann, Manfred; Heck, Gunter; and Malow, Egon, 4,411,846., Cl. 261-98.000.

Manaka, Toshio: *See—*
Atago, Takeshi; and Manaka, Toshio, 4,411,232., Cl. 123-438.000.

Mangiarotti, Luigi: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Maniwa, Hideyo: *See—*
Otsuka, Masasuke; Maniwa, Hideyo; and Nishina, Shinya, 4,411,863., Cl. 420-580.000.

Manjot, Roger. Safety system for hydraulically controlled hoisting apparatus. 4,411,368., Cl. 212-149.000.

Mann, Donald B. High-lead yarder rake. 4,411,080., Cl. 37-117.000.

Mann, George V., to Vanderbilt University. Method of producing milk factor. 4,411,916., Cl. 426-43.000.

Mannesmann Aktiengesellschaft: *See—*
Vogelgesang, Herbert, 4,411,170., Cl. 74-661.000.

Mansfeld, Manfred; and Wenderoth, Karl, to Triumph-Adler A.G. fur Buro-und Informationstechnik. Ribbon feed and elevating mechanism for typewriters or similar machines. 4,411,541., Cl. 400-213.000.

Manteufel, Dale A.: *See—*
Ellingsen, Raymond L.; and Manteufel, Dale A., 4,411,298., Cl. 144-193.00A.

Marancik, William G., to Airco, Inc. Method of manufacture of multifilamentary intermetallic superconductors. 4,411,712., Cl. 148-11.50Q.

Marano, Vincent, III: *See—*
Pervier, James W.; Vines, Harvey L.; Marano, Vincent, III; and Patterson, Michael A., 4,411,677., Cl. 62-25.000.

Marcheix, Raymond; and Desiage, Christian, to Regie Nationale des Usines Renault. Mounting for a fuel tank of synthetic material. 4,411,441., Cl. 280-5.00A.

Marconi Company Limited, The: *See—*
Briggs, John N., 4,412,219., Cl. 343-6.80R.
Gerard, Roger E. J., 4,412,185., Cl. 330-149.000.

Marcovici, Mitch, to Keuffel & Esser Company. Precise linear actuator. 4,411,166., Cl. 74-89.000.

Mardis, Wilbur S.: *See—*
Finlayson, Claude M.; and Mardis, Wilbur S., 4,412,018., Cl. 523-508.000.

Marelli Autronica S.p.A.: *See—*
Dell'Orto, Giuseppe, 4,412,169., Cl. 320-64.000.

Marguinaud, Andre; and Sorton, Gerard, to Thomson-CSF. Process for the demodulation of an amplitude modulated signal and demodulator performing this process. 4,412,181., Cl. 329-50.000.

Margutti, Roberto: *See—*
Bernareggi, Virgilio; Margutti, Roberto; Bonifacio, Fausto; and Fano, Maurizio, 4,411,902., Cl. 424-265.000.

Maricle, Donald L.: *See—*
Reiser, Carl A.; and Maricle, Donald L., 4,411,968., Cl. 429-41.000.

Marijon, Jean-Louis: *See—*
Froment, Jean-Claude; Marijon, Jean-Louis; Orengo, Gerard; and Verhaeghe, Michel, 4,412,335., Cl. 375-3.000.

Marion, Charles P.; and Jahnke, Frederick C., to Texaco Development Corporation. Production of synthesis gas from heavy hydrocarbon fuels containing high metal concentrations. 4,411,670., Cl. 48-197.00R.

Marion, Charles P.; and Jahnke, Frederick C., to Texaco Development Corporation. Production of synthesis gas from heavy hydrocarbon fuels containing high metal concentrations. 4,411,671., Cl. 48-197.00R.

Markowitz, H. Toby, to Medtronic, Inc. Body tissue depolarization evaluation system. 4,411,271., Cl. 128-703.000.

Markus, Henry Z.: *See—*
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., 4,412,002., Cl. 435-237.000.

Marley/Wylain Company, The: *See—*
Philipps, Donald F.; and Williamson, Richard D., 4,411,453., Cl. 285-18.000.

Marling, Jack B.: *See—*
Herman, Irving P.; and Marling, Jack B., 4,411,755., Cl. 204-163.00R.

Marmon Company: *See—*
Jones, David A., deceased, 4,411,184., Cl. 84-1.030.

Marquet, Patrice: *See—*
Jourdan, Francis; Marquet, Patrice; and Ternant, Francois, 4,411,521., Cl. 356-225.000.

Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, to Roussel Uclaf. Process for preparing cyclopropane carboxylic acid derivatives. 4,412,069., Cl. 542-429.000.

Martens, Jurgen: *See—*
Bethge, Horst; Kleemann, Axel; and Martens, Jurgen, 4,411,840., Cl. 260-501.120.

Martin, Charles F. Apparatus, methods, and joints for connecting tubular members. 4,411,456., Cl. 285-39.000.

Martin, Julian R.; and Sides, Larry W., to R. J. Reynolds Tobacco Company. Smoking product and process for manufacturing same. 4,411,279., Cl. 131-94.000.

Martinet, Jean-Marie: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Martins, Henrique: *See—*
Kelley, Robert B.; Birk, John R.; Martins, Henrique; and Tella, Richard P., 4,412,293., Cl. 364-513.000.

Marzouki, Taieb; and Schweisser, Bernd, to USM Corporation. Spacer frames for multi-pane glazing units. 4,411,115., Cl. 52-309.100.

Masami, Sato; Okuzawa, Yasutoshi; and Hibino, Noburo, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,411,958., Cl. 428-457.000.

Mason, Lonnie L. Assembly for installing chains. 4,411,176., Cl. 81-15.800.

Massachusetts Institute of Technology: *See—*
Whitesides, George; and Walt, Davis R., 4,411,995., Cl. 435-90.000.

Massey-Ferguson Inc.: *See—*
Wood, Dale A.; and Elfes, Lee E., 4,411,319., Cl. 172-10.000.

Massey, Gail A., to Oregon Graduate Center for Study and Research, The. Apparatus using leakage current for measuring resistivity. 4,412,173., Cl. 324-62.000.

Matay, Istvan M.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,411,940., Cl. 428-73.000.

Mathis, Ronald D.: *See—*
Reed, Jerry O.; and Mathis, Ronald D., 4,411,853., Cl. 264-176.00F.

Matsuda, Motonobu; and Tanaka, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Light emitting diode. 4,412,234., Cl. 357-17.000.

Matsufuji, Akihiro; Kasuga, Akira; and Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,411,956., Cl. 428-425.900.

Matsui, Fujio; and Suzuki, Hitoshi, to Fuji Jukogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Air-fuel ratio control system. 4,411,236., Cl. 123-492.000.

Matsumiya, Yasuo: *See—*
Tateyama, Kenichi; Matsumiya, Yasuo; and Hishinuma, Toshio, 4,412,261., Cl. 360-98.000.

Matsumoto, Kent E.: *See—*
Green, Laddie L.; and Matsumoto, Kent E., 4,411,686., Cl. 71-88.000.

Matsumoto, Takao; Fujimaki, Atsushi; and Nagata, Takeo, to Showa Oil Company, Ltd. Suppressing method of iso-citric acid formation in producing citric acid from hydrocarbons by fermentation. 4,411,998., Cl. 435-144.000.

Matsumoto, Yasuhiro: *See—*
Sakabe, Toshiaki; Matsumoto, Yasuhiro; and Tsujio, Hisami, 4,411,851., Cl. 264-137.000.

Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, to Fujitsu Limited. Semiconductor device. 4,412,237., Cl. 357-42.000.

Matsura, Masataka: *See—*
Nonomura, Keisaku; Matsura, Masataka; and Wada, Tomio, 4,411,496., Cl. 350-347.00E.

Matsushita Electric Industrial Co., Ltd.: *See—*
Itemadani, Eiji; Mori, Kazuhiro; Tanaka, Sohei; and Kabeshita, Akira, 4,411,362., Cl. 206-330.000.
Mitsugi, Itaru; Oka, Shunzo; Nakagawa, Yoshinobu; and Shiho, Kenichi, 4,412,113., Cl. 200-67.0DB.
Niyada, Katsuyuki; Watanabe, Taisuke; Hiraoka, Shoji; and Morii, Shuji, 4,412,099., Cl. 381-51.000.
Onishi, Hiroshi; Yamashita, Sadahiko; and Makimoto, Mitsuo, 4,412,351., Cl. 455-317.000.
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.

Matsushita, Toshihiko; Morishita, Sadao; Kamimura, Eiko; and Hiraishi, Shigetoshi, to Mitsubishi Paper Mills, Ltd. Pressure sensitive copying paper. 4,411,451., Cl. 282-27.500.

Matsuura, Kazuo; Yamaoka, Noboru; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins cross-linked by silane linkage. 4,412,042., Cl. 525-260.000.

Matsuura, Miyuki: *See—*
Asada, Masahiro; Matsuura, Miyuki; and Yonezawa, Kazuya, 4,412,057., Cl. 528-179.000.

Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, to Electric Power Development Co.; and Kawasaki Kabushiki Kaisha. Method for liquefying low rank coal. 4,411,765., Cl. 208-8.0LE.

Matsuya, Yasuyuki: *See—*
Akazawa, Yukio; Matsuya, Yasuyuki; and Iwata, Atsushi, 4,412,208., Cl. 340-347.0DA.

Mattila, Tapio: *See—*
Jernstrom, Olof; Mattila, Tapio; Penttinen, Kyosti; and Toivonen, Hannu, 4,412,023., Cl. 524-106.000.

Matunas, Frank C.: *See—*
Yu, Steven P.; Matunas, Frank C.; and Zwetkow, Nikolaus, 4,411,785., Cl. 210-321.100.

Matuura, Takeo: *See—*
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.

Mauck, Michael S.; and Neeland, William S., to Electro Scientific Industries, Inc. Q-Switched laser with stable output and method of making the same. 4,412,330., Cl. 372-29.000.

Mauer, Gail B.: *See—*
Schlanger, Samuel L., 4,411,334., Cl. 180-274.000.

Maumy, Alain: *See—*
Duda, Eugene; Tondu, Claude; and Maumy, Alain, 4,411,057., Cl. 29-569.00L.

Maurel, Vincent: *See—*
Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, 4,412,336., Cl. 375-4.000.

Maurer, Franciscus H. J.; Pijpers, Jacques P. L.; and Smith, Paul, to Stamicarbon B.V. Process for the production of filaments with high tensile strength and modulus. 4,411,854., Cl. 264-205.000.

Maurin, Jean: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Mauthe, Manfred; and Pfleiderer, Hans-Jorg, to Siemens Aktiengesellschaft. Integrated rectifier circuit. 4,412,344., Cl. 377-60.000.

Maxco Supply, Inc.: *See—*
Gee, Minor E., 4,411,642., Cl. 493-125.000.

May, Roger C.: *See—*
Geiger, Gary E.; and May, Roger C., 4,411,865., Cl. 422-16.000.

Mayer, Jurgen: *See—*
Futterer, Bodo; Mayer, Jurgen; and Fritschy, Hugo, 4,412,146., Cl. 310-266.000.

Mayer, Linda J.: *See—*
Rosegren, Donald R.; and Mayer, Linda J., 4,411,744., Cl. 204-49.000.
Rosegren, Donald R.; and Mayer, Linda J., 4,411,965., Cl. 428-672.000.

Maynarez, Franklin D., to Coulter Electronics, Inc. Debris alarm. 4,412,175., Cl. 324-71.100.

Mazgaj, Robert M.: *See—*
Dawless, Robert K.; Bowman, Kenneth A.; Mazgaj, Robert M.; and Cochran, C. Norman, 4,411,747., Cl. 204-67.000.

Mazoin, Albert H. F.: *See—*
Minvielle, Monique L. S.; Mazoin, Albert H. F.; Brun, Robert P.; Chevanne, Sylvain V. L.; and See, Jacques L. A., 4,411,555., Cl. 405-50.000.

McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., to Merck & Co., Inc. Process for preparing hepatitis A virus. 4,412,002., Cl. 435-237.000.

McAuliffe, Donald C.: *See—*
Brennecke, Paul; and McAuliffe, Donald C., 4,411,707., Cl. 148-2.000.

McCarty, Patrick R., to AMP Incorporated. Electrical switch and actuating mechanism therefor. 4,412,108., Cl. 200-5.00R.

McComb, Ronald J., to Youngstown Steel Door Company, The. Pneumatic hopper discharge outlet. 4,411,560., Cl. 406-128.000.

McCombie, Stuart W.: *See—*
Girijavallabhan, Viyyoor M.; McCombie, Stuart W.; and Ganguly, Ashit K., 4,411,906., Cl. 424-270.000.

McConnell, Frank G., III. Fluid treatment system. 4,411,779., Cl. 210-108.000.

McCoy, David R.; Cuscurida, Michael; and Speranza, George P., to Texaco Inc. Demulsification of bitumen emulsions using water soluble epoxy-containing polyethers. 4,411,775., Cl. 208-188.000.

McCoy, Kenneth H.; and Romain, John, to Romain, John. Multi-purpose exercise implement. 4,411,426., Cl. 272-126.000.

McCulloch Corporation: *See—*
Close, Albert R.; and Oster, Winton, 4,411,069., Cl. 30-276.000.

McDole, Lawrence K., to Brockway Glass Co., Inc. Glassware transfer. 4,411,353., Cl. 198-425.000.

McDonald, Richard L. C., to U.S. Philips Corporation. Automatic brightness control circuit for a high voltage electrical power supply. 4,412,128., Cl. 250-213.0VT.

McDougall, Lee A.: *See—*
Lundberg, Robert D.; Phillips, Robert R.; and McDougall, Lee A., 4,412,028., Cl. 524-364.000.

McGhie, Joseph A.: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,411,830., Cl. 252-522.00R.
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

McGrew, Steve P. System for synthesizing strip-multiplexed holograms. 4,411,489., Cl. 350-3.760.

McGuire, Robert J.: *See—*
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,412,323., Cl. 370-16.000.

McInnis, Patrick M.: *See—*
Yates, Patrick A.; and McInnis, Patrick M., 4,411,199., Cl. 102-481.000.

McKay, Dwight L., to Phillips Petroleum Company. Producing increased yield of hydrogen by cracking petroleum with potassium-containing catalyst. 4,411,777., Cl. 208-120.000.

McKnight, James K.: *See—*
Thomas, Jacob E.; and McKnight, James K., 4,412,233., Cl. 346-140.00R.

McLean, Gregory J.: *See—*
Demianczuk, Dionisyj W.; McLean, Gregory J.; and Franklin, Joseph E., 4,411,056., Cl. 29-527.700.

McLellan, Edward J. Three-electrode low pressure discharge apparatus and method for uniform ionization of gaseous media. 4,412,333., Cl. 372-87.000.

McMahan, David R.; and Woodward, Ronald O., to General Motors Corporation. Support housing for a vehicle headlamp. 4,412,274., Cl. 362-269.000.

McMahan, David R., to General Motors Corporation. Support housing for a vehicle headlamp. 4,412,275., Cl. 362-269.000.

McStravick, David M., to Baker International Corporation. Seal assembly with energizing mechanism. 4,411,435., Cl. 277-9.500.

McWithey, Robert R.; Royster, Dick M.; and Bales, Thomas T., to United States of America, National Aeronautics and Space Administration. Metal matrix composite structural panel construction. 4,411,380., Cl. 228-181.000.

Mead Corporation, The: *See—*
Wishart, John G., 4,411,721., Cl. 156-73.100.

Mead Johnson & Company: *See—*
Temple, Davis L., Jr.; and Yevich, Joseph P., 4,411,901., Cl. 424-250.000.

Medical Engineering Corporation: *See—*
Finney, Roy P., 4,411,261., Cl. 128-79.000.

Medtronic, Inc.: *See—*
Cox, James A., 4,411,268., Cl. 128-421.000.
Dickhudt, Eugene A.; and Paulson, Roger A., 4,411,276., Cl. 128-784.000.
Dickhudt, Eugene A., 4,411,277., Cl. 128-784.000.
Markowitz, H. Toby, 4,411,271., Cl. 128-703.000.

Mehta, Avinash C., to Polaroid Corporation. Linear polymers from blocked vinyl biphenyl compounds. 4,412,050., Cl. 526-266.000.

Meito Sangyo Kabushiki Kaisha: *See—*
Mizutani, Akihiro; and Hirose, Kimio, 4,411,891., Cl. 424-180.000.

Melin, Thomas: *See—*
Nickel, Andreas; Reissinger, Karl H.; Brandt, Hans-Walther; and Melin, Thomas, 4,411,942., Cl. 428-137.000.

Melnikov, Alexandr V.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Menser, Howard K., to Miply Equipment Inc. Pressure saturator. 4,411,216., Cl. 118-117.000.

Mentzer, Regis, to L.C.C.-C.I.C.E.-Compagnie Europeenne de Composants Electroniques. Supporting strip for capacitor connections, strip provided with such connections and its use for the production of capacitors. 4,411,361., Cl. 206-329.000.

Merck & Co., Inc.: *See—*
Baldwin, John J.; and Lumma, William C., Jr., 4,411,899., Cl. 424-246.000.
McAleer, William J.; Bailey, Fred J.; and Markus, Henry Z., 4,412,002., Cl. 435-237.000.

Meredith, Douglas; and Cronin, James A., to British Steel Corporation. Transfer printing metal sheet coated with thermoset layer while still hot from curing. 4,411,667., Cl. 8-471.000.

Meredith, Richard L., to Reliance Electric Company. Control system for variable speed belt drives. 4,411,590., Cl. 415-26.000.

Merli, Sergio: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,411,834., Cl. 260-365.000.

Meserol, Peter M.; and Acker, Jesse L., to Gamma Biologicals, Inc. Apparatus for use in qualitative determination of immunological reactions. 4,411,518., Cl. 356-39.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Hassel, Helmut; and Stark, Reimund, 4,411,201., Cl. 105-8.00R.

Meyer, Daniel: *See—*
Wiseheart, Ronald W.; and Meyer, Daniel, 4,411,485., Cl. 339-125.00R.

Meyer, Jacques; and Bernelin, Daniel, to Chloe Chimie. Cross-linkable saturated powderous compositions and powderous painting and coating compositions containing same. 4,412,034., Cl. 524-791.000.

Meyer, Theodore O.; and van Ommering, Gerrit, to Ford Aerospace & Communications Corporation. Equalizing battery cell busbar. 4,411,970., Cl. 429-161.000.

Miccoli, Franco; and Corda, Giuseppe, to SGS-Ates Componenti Elettronici S.p.A. Storage cell for nonvolatile electrically alterable memory. 4,412,311., Cl. 365-185.000.

Michaels, Robert C.: *See—*
Edgerton, Bradly J.; House, William F.; and Michaels, Robert C., 4,412,096., Cl. 381-60.000.

Michelet, Daniel: *See—*
Baudouin, Michel; and Michelet, Daniel, 4,412,076., Cl. 546-153.000.

Micko, Richard E.: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Middleton, Harold G., to Advanced Fuel Systems. Fuel system for internal combustion engine. 4,411,234., Cl. 123-485.000.

Midwest Research Institute: *See—*
Grow, Ann E., 4,411,989., Cl. 435-20.000.

Miedema, Hotze, to Bell Telephone Laboratories, Incorporated. Method and apparatus for distinguishing between minimum and non-minimum phase fades. 4,412,350., Cl. 455-306.000.

Mietzsch, Fritz: *See—*
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, 4,412,039., Cl. 525-106.000.

Mihara, Toshio: *See—*
Shigesada, Shigeki; Kitagawa, Hironoshin; Mihara, Toshio; and Ishimatsu, Yoshiaki, 4,411,999., Cl. 435-177.000.

Mikeska, Felix: *See—*
Buthe, Theo; and Mikeska, Felix, 4,411,636., Cl. 464-172.000.

Miksitz, Frank J., to UFI Engineering & Manufacturing Co., Inc. Spiral scoop rotary plow feeder. 4,411,377., Cl. 222-342.000.

Mile-Age Research Corporation: *See—*
Curtis, Nikolaus A.; and Karner, James E., 4,411,229., Cl. 123-198.00F.

Miller, Anton J., to Bell Telephone Laboratories, Incorporated. Method of contouring crystal plates. 4,411,731., Cl. 156-630.000.

Miller, Don W.: *See—*
Schlosser, Philip A.; and Miller, Don W., 4,411,059., Cl. 29-572.000.

Miller, Herbert W.: *See—*
Auld, David L.; and Miller, Herbert W., 4,411,782., Cl. 210-230.000.

Miller, Jack V. Seasonal control skylight glazing panel with passive solar energy switching. 4,411,493., Cl. 350-262.000.

Miller, Laurence L., to TRW, Inc. Gerotor gear set device with integral rotor and commutator. 4,411,606., Cl. 418-61.00B.

Miller, Mark C., to Perkin-Elmer Corporation, The. Sample transfer vessel. 4,411,575., Cl. 414-217.000.

Miller, Richard L. Method of laying brick for swimming pool patios and the like. 4,411,119., Cl. 52-747.000.

Miller, Thomas G.; and Polk, Robert G., to United States of America, Army. Device for seeing through battlefield smokes and aerosols. 4,411,487., Cl. 350-1.100.

Miller, Thomas M. Furnace wall construction. 4,411,621., Cl. 432-247.000.

Miller, Wendell E., to Scott and Fetzer Company, The. Fluid flow controlling device. 4,411,189., Cl. 91-420.000.

Milnar, James B. Bench press safety rest. 4,411,425., Cl. 272-123.000.

Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Method and apparatus for splicing spun yarns. 4,411,128., Cl. 57-22.000.

Minezaki, Shigehiro, to Sharp Kabushiki Kaisha. Method for forming a pattern in a thin-film transistor having tellurium semiconductor layer. 4,411,981., Cl. 430-299.000.

Mining & Chemical Products Limited: *See—*
Butler, Richard A., 4,411,615., Cl. 425-591.000.

Ministry of International Trade & Industry: *See—*
Sakamoto, Tsunenori, 4,411,728., Cl. 156-606.000.

Minnesota Mining and Manufacturing Company: *See—*
Edgerton, Bradly J.; House, William F.; and Michaels, Robert C., 4,412,096., Cl. 381-60.000.
Johnson, Dee L.; Senta, Therese A.; and Sirvio, Larry M., 4,411,893., Cl. 424-181.000.
Kehr, Dieter; and Viebranz, Manfred, 4,412,029., Cl. 524-441.000.

Minolta Camera Kabushiki Kaisha: *See—*
Kondo, Takashi, 4,411,507., Cl. 354-195.000.
Matsuda, Motonobu; and Tanaka, Yoshihiro, 4,412,234., Cl. 357-17.000.
Sakata, Toshio; and Morikawa, Takeji, 4,411,042., Cl. 15-256.510.

Minvielle, Monique L. S.; Mazoin, Albert H. F.; Brun, Robert P.; Chevanne, Sylvain V. L.; and See, Jacques L. A. Draining, irrigating and dispersing mass. 4,411,555., Cl. 405-50.000.

Miply Equipment Inc.: *See—*
Menser, Howard K., 4,411,216., Cl. 118-117.000.

Mitchell, Daniel M., to Rockwell International Corporation. AC-DC Converter having an improved power factor. 4,412,277., Cl. 363-81.000.

Mito, Michio: *See—*
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,412,102., Cl. 179-99.00M.

Mitsubishi Adetate Co. Ltd.: *See—*
Suzuki, Migaku; and Sakai, Takashi, 4,411,641., Cl. 493-46.000.

Mitsubishi Cement Asbestos Company Ltd.: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hara, Akira, 4,411,141., Cl. 62-468.000.
Inoue, Takeo; and Shirazawa, Takashi, 4,411,457., Cl. 285-52.000.
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,412,112., Cl. 200-50.0AA.
Kobayashi, Toshiyuki, 4,412,124., Cl. 219-277.000.

Okuno, Michiharu, 4,412,115., Cl. 200-148.00A.
Yano, Masao, 4,411,967., Cl. 429-23.000.
Yasuoka, Hirotoshi, 4,412,111., Cl. 200-47.000.

Mitsubishi Denki Kabushiki Kaisha LSI Development Laboratory: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.

Mitsubishi Jukogyo kabushiki Kaisha: *See—*
Ohtawa, Kimiaki; and Fukada, Yasuo, 4,411,611., Cl. 425-237.000.

Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, 4,411,763., Cl. 204-298.000.
Morikawa, Masaki; Yoshida, Hideaki; Kishida, Kunio; and Tanaka, Chuji, 4,411,864., Cl. 420-587.000.

Mitsubishi Mining & Cement Company Ltd.: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Mitsubishi Paper Mills, Ltd.: *See—*
Matsushita, Toshihiko; Morishita, Sadao; Kamimura, Eiko; and Hiraishi, Shigetoshi, 4,411,451., Cl. 282-27.500.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, 4,412,011., Cl. 521-38.000.
Takahashi, Hiroshi; and Abe, Katsuhiro, 4,412,044., Cl. 525-329.500.

Mitsubishi Rayon Company Ltd.: *See—*
Nakazima, Atushi; and Edamatu, Mitisuke, 4,411,930., Cl. 427-54.100.
Suzuki, Migaku; and Sakai, Takashi, 4,411,641., Cl. 493-46.000.

Mitsubishi Yuka Pharmaceutical Co., Ltd.: *See—*
Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, 4,412,011., Cl. 521-38.000.

Mitsugi, Itaru; Oka, Shunzo; Nakagawa, Yoshinobu; and Shiho, Kenichi, to Matsushita Electric Industrial Co., Ltd. Dust venting contact with a non-circular hole. 4,412,113., Cl. 200-67.0DB.

Miura, Tadashi: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, 4,411,952., Cl. 428-332.000.

Miwa, Katsuteru: *See—*
Tanaka, Toshio; and Miwa, Katsuteru, 4,411,245., Cl. 123-609.000.

Miwa, Tadashi: *See—*
Tarumi, Noriyoshi; Kimura, Kiyoshi; and Miwa, Tadashi, 4,411,977., Cl. 430-126.000.

Mixer, John E., to Black & Decker Inc. Multi-purpose front end plate for motor of pneumatic tool. 4,411,173., Cl. 74-785.000.

Miyagi, Tadayuki: *See—*
Hashimoto, Junichi; and Miyagi, Tadayuki, 4,411,543., Cl. 401-53.000.

Miyaji, Naotaka: *See—*
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,412,097., Cl. 381-92.000.

Miyamoto, Akio, to Fuji Photo Film Co., Ltd. Pressure-sensitive recording material. 4,411,452., Cl. 282-27.500.

Miyamoto, Akio: *See—*
Iwakura, Ken; Sekikawa, Nobuyoshi; and Miyamoto, Akio, 4,411,699., Cl. 106-23.000.
Sekikawa, Nobuyoshi; Iwakura, Ken; Miyamoto, Akio; and Satomura, Masato, 4,411,700., Cl. 106-23.000.

Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, to Nippon Kokan Kabushiki Kaisha; and Shinagawa Shiroenga Kabushiki Kaisha. Composite sinter of silicon nitride/boron nitride and method for manufacturing thereof. 4,412,008., Cl. 501-97.000.

Miyatsuka, Hajime: *See—*
Matsufuji, Akihiro; Kasuga, Akira; and Miyatsuka, Hajime, 4,411,956., Cl. 428-425.900.

Miyoshi, Mituji: *See—*
Matsuura, Kazuo; Yamaoka, Noboru; and Miyoshi, Mituji, 4,412,042., Cl. 525-260.000.

Miyoshi, Takahito; Tsuji, Nobuo; Okutu, Toshimitu; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,411,953., Cl. 428-336.000.

Mizuhara, Howard, to GTE Products Corporation. Articles coated with wear-resistant titanium compounds. 4,411,960., Cl. 428-610.000.

Mizuno, Shigeru: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Mizuno, Shigeru, 4,411,538., Cl. 400-124.000.

Mizutani, Akihiro; and Hirose, Kimio, to Meito Sangyo Kabushiki Kaisha. Cationized dextran and salts thereof and manufacturing process and utilization thereof. 4,411,891., Cl. 424-180.000.

Mizutani, Tatsumi: *See—*
Komatsu, Hideo; Iida, Shinya; Mizutani, Tatsumi; and Ueki, Kazuyoshi, 4,412,119., Cl. 219-121.0PF.

Mobil Oil Corporation: *See—*
Chen, Nai Y.; Scott, Eric J.; and Shihabi, David S., 4,411,770., Cl. 208-111.000.
Gross, Benjamin, 4,411,773., Cl. 208-164.000.
LaVanture, Mark D.; and Walker, George L., 4,411,811., Cl. 252-182.000.
Yan, Tsoung-Yuan, 4,411,873., Cl. 423-7.000.

Mochizuki, Kiyofumi; Wakabayashi, Hiroharu; and Niiro, Yasuhiko, to Kokusai Denshin Denwa Kabushiki Kaisha. Light dispersion measuring apparatus. 4,411,520., Cl. 356-73.100.

Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, to Fujikawa Cable Works, Limited, The. Method for manufacturing a stranded conductor constituted of insulated strands. 4,411,710., Cl. 148-6.14R.

Mochizuki, Shouji: *See—*
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, 4,411,971., Cl. 429-191.000.
Yamanaka, Kazusuke; and Mochizuki, Shouji, 4,411,497., Cl. 350-357.000.

Moeller, Siegfrid: *See—*
Faatz, Rudi; Moeller, Siegfrid; Ruehl, Friedel; and Steuernagel, Adolf, 4,411,510., Cl. 354-272.000.

Mohiuddin, Mahmood: *See—*
Jensen, Marvin E.; and Mohiuddin, Mahmood, 4,411,659., Cl. 604-332.000.

Mohr, John D., to Ford Motor Company. Breakaway shaft assembly. 4,411,167., Cl. 74-492.000.

Mohring, Gunter, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft AG. Dual polarized feed with feed horn. 4,412,222., Cl. 343-779.000.

Moir, David L. Apparatus for the repair and replacement of transition ducts on jet engines and bracket therefor. 4,411,134., Cl. 60-39.310.

Moldex/Metric Products, Inc.: *See—*
Magidson, Mark, 4,411,025., Cl. 2-97.000.

Mole, Alain M. L.; and Savoyet, Jean-Louis P. J. System for identifying, for example, a person for operating an electrical appliance, a mechanical appliance or any other appliance. 4,412,216., Cl. 340-825.310.

Moll, Edward W. System for minimizing space requirements for storage and transmission of digital signals. 4,412,306., Cl. 364-900.000.

Mollet, Hans: *See—*
Agarwal, Suresh C.; Jager, Horst; Podder, Nitya G.; and Mollet, Hans, 4,411,668., Cl. 8-527.000.

Molo, Francesco, to Telettra- Telefonia Elettronica e Radio S.p.A. Equipment for single band multiplexing through digital processing. 4,412,325., Cl. 370-70.000.

Momany, Frank A., to Beckman Instruments, Inc. Synthetic peptides having pituitary growth hormone releasing activity. 4,411,890., Cl. 424-177.000.

Mondt, Josef; Walz, Gerd; and Wirth, Thaddaus, to Hoechst Aktiengesellschaft. Reactive hardenable binder mixture, process for preparing hardened products and use of the mixture for the preparation of coatings. 4,411,955., Cl. 428-413.000.

Monnier, Charles E.; and Lohse, Friedrich, to Ciba-Geigy Corporation. Cycloaliphatic diepoxide, its preparation and its use. 4,412,047., Cl. 525-507.000.

Monsanto Company: *See—*
Bollinger, Frederic G., 4,411,688., Cl. 71-90.000.
Bollinger, Frederic G., 4,411,689., Cl. 71-90.000.
LeClair, Francis J.; and Surgant, John M., 4,411,692., Cl. 71-93.000.
LeClair, Francis J.; and Surgant, John M., 4,411,693., Cl. 71-118.000.
Van Eenam, Donald N., 4,412,017., Cl. 523-408.000.

Montierth, Max R., to Corning Glass Works. Method and apparatus for high speed manifolding of honeycomb structures. 4,411,856., Cl. 264-267.000.

Montsma, John: *See—*
Briley, Bruce E.; and Montsma, John, 4,412,322., Cl. 370-58.000.

Montz, Lowell H.: *See—*
Roper, Daleth F.; and Montz, Lowell H., 4,411,187., Cl. 84-402.000.

Mookerjee, Pradip K.: *See—*
Smith, Frank H., Jr.; and Mookerjee, Pradip K., 4,411,694., Cl. 71-118.000.

Moon, Elwood. Cutter device. 4,411,563., Cl. 407-54.000.

Moore, Robert S.; and Wessel, Walter F., III, to NCR Corporation. Image reduction system. 4,412,252., Cl. 358-160.000.

Moore, Ronald D., to Chivas Products Limited. Surface mounted trim piece. 4,411,944., Cl. 428-172.000.

Mor, Yeshayahu; and Wilnai, Dan, to Fairchild Camera & Instrument Corp. High performance microprocessor system. 4,412,283., Cl. 364-200.000.

Moretto, Hans-Heinrich: *See—*
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, 4,412,039., Cl. 525-106.000.

Morgan, Charles W., to United Foam Corporation. Waveless waterbed. 4,411,033., Cl. 5-450.000.

Morgan Construction Company: *See—*
Starvaski, Raymond R.; and Leger, Alfred R., 4,411,394., Cl. 242-83.000.

Morgan, John R.: *See—*
Donakowski, William A.; and Morgan, John R., 4,411,742., Cl. 204-16.000.

Mori, Kazuhiro: *See—*
Itemadani, Eiji; Mori, Kazuhiro; Tanaka, Sohei; and Kabeshita, Akira, 4,411,362., Cl. 206-330.000.

Mori, Motokuni: *See—*
Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, 4,412,011., Cl. 521-38.000.

Moriguchi, Haruhiko; and Murayama, Tomio, to Fuji Xerox Co., Ltd. Heat-sensitive recording head driving method. 4,412,228., Cl. 346-76.0PH.

Morii, Shuji: *See—*
Niyada, Katsuyuki; Watanabe, Taisuke; Hiraoka, Shoji; and Morii, Shuji, 4,412,099., Cl. 381-51.000.

Morikawa, Masaki; Yoshida, Hideaki; Kishida, Kunio; and Tanaka, Chuji, to Mitsubishi Kinzoku Kabushiki Kaisha. Cu-Ag-Si Base alloy brazing filler material. 4,411,864., Cl. 420-587.000.

Morikawa, Takeji: *See—*
Sakata, Toshio; and Morikawa, Takeji, 4,411,042., Cl. 15-256.510.

Morimoto, Takeshi: *See—*
Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Morimoto, Takeshi, 4,411,749., Cl. 204-98.000.

Morino, Daizou: *See—*
Ueda, Ikuo; Morino, Daizou; and Takimoto, Koichi, 4,411,90[illegible], Cl. 424-250.000.

Morishita, Sadao: *See—*
Matsushita, Toshihiko; Morishita, Sadao; Kamimura, Eiko; and Hiraishi, Shigetoshi, 4,411,451., Cl. 282-27.500.

Morlock, Gerhard: *See—*
Amann, Herbert; and Morlock, Gerhard, 4,412,067., Cl. 528-232.000.

Morozov, Jury E.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Morris, Charles K., to Pak Pacific Corporation Pty. Limited. Carton and integral handle therefor. 4,411,383., Cl. 229-52.00B.

Morris, Richard L.; and Lloyd, Ronald B., to Outboard Marine Corporation. Priming system for a vented bowl carburetor. 4,411,8[illegible]4., Cl. 261-34.00R.

Morrison, Gerald B.: *See—*
Brock, James D.; and Morrison, Gerald B., 4,411,207., Cl. 112-79.00A.

Morrow, Harold F., Jr., to Aggregates Equipment, Inc. Shuttle spreading conveyor. 4,411,578., Cl. 414-300.000.

Morrow, Lawrence R.; and Thatcher, John, to Eastman Kodak Company. Heat stabilizable photographic silver halide material and process. 4,411,985., Cl. 430-352.000.

Moser, Robert: *See—*
Lattmann, Werner; and Moser, Robert, 4,411,562., Cl. 406-157.000.

Moskovsky Energetichesky Institut: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Moss, Ernest K.: *See—*
Frentzel, Richard L.; and Moss, Ernest K., 4,412,014., Cl. 521-129.000.

Mostek Corporation: *See—*
Proebsting, Robert J., 4,412,314., Cl. 365-222.000.

Motorola Inc.: *See—*
Bickley, Robert H.; Broughton, Christopher D.; and Genrich, Thad J., 4,412,337., Cl. 375-60.000.
Darnell, Robert D.; Goetz, Carl A.; and Ingle, William M., 4,411,619., Cl. 432-1.000.
Gamboa, Paul, 4,412,157., Cl. 315-387.000.
Kuo, Clinton C. K., 4,412,309., Cl. 365-184.000.
Reynolds, David A., 4,412,140., Cl. 307-311.000.
Ryon, Donald C., 4,412,187., Cl. 331-108.00D.
Willard, David F.; and Tidwell, Gerald W., 4,412,217., Cl. 340-825.440.

Moutai, Tsuneaki: *See—*
Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, 4,411,710., Cl. 148-6.14R.

Moyer, Harold: *See—*
Smith, William I.; and Moyer, Harold, 4,411,576., Cl. 414-226.000.

Muchel, Franz: *See—*
Lang, Walter H.; Muchel, Franz; Schulz, Kurt; and Summerer, Gunther, 4,411,502., Cl. 351-206.000.

Muck, Jack E. Apparatus for conveying lightweight particulate matter. 4,411,388., Cl. 239-419.500.

Mukai, Shinichi. Pneumatic cleaning system. 4,411,038., Cl. 15-3.130.

Mulac, Anthony J.: *See—*
Donaldson, A. Burl; Hoke, Donald E.; and Mulac, Anthony J., 4,411,618., Cl. 431-190.000.

Mulder, Nicolaas; Terlouw, Willem; and Wevers, Jan H., to Shell Oil Company. Process for the preparation of dienes and/or trienes. 4,412,089., Cl. 585-645.000.

Muller-Frank, Ulrich: *See—*
Reutler, Herbert; Muller-Frank, Ulrich; Ullrich, Manfred; and Schepers, Hubert, 4,411,860., Cl. 376-338.000.

Mulligan, William L., to Parks-Cramer Company. Traveling pneumatic cleaner with reversing arrangement. 4,411,043., Cl. 15-312.00R.

Multidick Inc.: *See—*
Tailleux, Christian; and Charbonneau, Jacques, 4,411,195., Cl. 101-226.000.

Munoz, John, to Emerson Electric Co. Self limiting heat tape. 4,411,850., Cl. 264-105.000.

Murakami, Katsuji, to Kabushiki Kaisha POPY. Doll with movable arms, legs and head accommodable within trunk. 4,411,097., Cl. 46-161.000.

Murakami, Shuichi: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Murakami, Tadaki: *See—*
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.

Muralidhara, Ranya: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

Muranaka, Yoshiyuki: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,411,911., Cl. 424-283.000.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi, 4,411,128., Cl. 57-22.000.

Murata, Masayoshi: *See—*
Takaya, Takao; and Murata, Masayoshi, 4,411,898., Cl. 424-246.000.

Murata, Yoshihiko: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Murayama, Tomio: *See—*
Moriguchi, Haruhiko; and Murayama, Tomio, 4,412,228., Cl. 346-76.0PH.

Murphy, Richard D.; and Clelford, Douglas H., to United Technologies Corporation. Complementary commands in fail-operational, fail-safe multi-computer control system. 4,412,280., Cl. 364-200.000.

Murray, Michael V.: *See—*
Lewis, Leon L.; and Murray, Michael V., 4,411,145., Cl. 72-42.000.

Muryoi, Takeshi, to Nippon Kogaku K.K. Zoom lens barrel. 4,411,498., Cl. 350-429.000.

Muscatell, Ralph P. Laser microphone. 4,412,105., Cl. 179-121.00R.

Mutsukado, Motoo; and Yamada, Shin, to Nissan Chemical Industries, Ltd. Method for preparing 4-hydroxyphenylacetic acid. 4,412,082., Cl. 562-478.000.

Myers, Peter L.: *See—*
Chapleo, Christopher B.; and Myers, Peter L., 4,411,908., Cl. 424-273.00R.

Naarmann, Herbert; Penzien, Klaus; Schlag, Johannes; and Simak, Petr, to BASF Aktiengesellschaft. Preparation of stable electrically conductive polymers. 4,411,826., Cl. 252-518.000.

Naarmann, Herbert: *See—*
Brandstetter, Franz; Echte, Adolf; Gausepohl, Hermann; and Naarmann, Herbert, 4,412,037., Cl. 525-68.000.

Nabisco Brands, Inc.: *See—*
Lloyd, Norman E., 4,411,996., Cl. 435-94.000.

Nagai, Nobuyuki: *See—*
Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, 4,412,090., Cl. 136-230.000.

Nagai, Ryo: *See—*
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, 4,411,971., Cl. 429-191.000.

Nagamoto, Masanaka; Koseki, Yoshihiro; and Iwata, Susumu, to Ricoh Company, Ltd. Diazo type thermosensitive recording material. 4,411,979., Cl. 430-176.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Current mirror circuit. 4,412,186., Cl. 330-288.000.

Nagasawa, Toshio; and Nishihara, Yoshio, to Ube Industries, Ltd. Heat-shrinkable cover. 4,412,125., Cl. 219-549.000.

[illegible]gashima, Masasumi: *See—*
Nozaki, Mineo; Nagashima, Masasumi; and Asakura, Osamu, 4,411,540., Cl. 400-175.000.

Nagata, Shoji: *See—*
Ohashi, Naohito; Nagata, Shoji; and Katsube, Junki, 4,411,836., Cl. 260-455.00R.

Nagata, Takeo: *See—*
Matsumoto, Takao; Fujimaki, Atsushi; and Nagata, Takeo, 4,411,998., Cl. 435-144.000.

Nagoya Kiko Kabushiki Kaisha: *See—*
Niki, Akira, 4,411,587., Cl. 414-752.000.

[illegible]agura, Masato; Kikuchi, Kazushige; Obara, Hiroshi; and Endo, Yasushi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Ultrasonic holography imaging device having a macromolecular piezoelectric element transducer. 4,412,147., Cl. 310-320.000.

Nagy, Anton J.: *See—*
Fiebig, August E., Jr.; Shurney, Glenn A.; and Nagy, Anton J., 4,411,855., Cl. 264-219.000.

Naito, Yukio: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, 4,412,049., Cl. 526-127.000.

Nakada, Shoichi, to Komatsu Forklift Kabushiki Kaisha. Electronically controlled industrial trucks. 4,411,582., Cl. 414-636.000.

Nakagawa, Shiro: *See—*
Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, 4,412,231., Cl. 346-135.100.

Nakagawa, Yoshinobu: *See—*
Mitsugi, Itaru; Oka, Shunzo; Nakagawa, Yoshinobu; and Shiho, Kenichi, 4,412,113., Cl. 200-67.0DB.

Nakajima, Motoki: *See—*
Fujikura, Yoshiaki; Inamoto, Yoshiaki; Takaishi, Naotake; and Nakajima, Motoki, 4,411,828., Cl. 252-522.00R.

Nakajima, Teruo: *See—*
Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, 4,411,131., Cl. 59-78.000.

Nakamura, Akira: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Nakamura, Tatsuharu: *See—*
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.

Nakamura, Yoshihiro: *See—*
Shimazaki, Keishi; Nakamura, Yoshihiro; and Yamada, Yasutsugu, 4,411,997., Cl. 435-115.000.

Nakanishi, Kiyoshi: *See—*
Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta, 4,411,226., Cl. 123-188.00M.

Nakanishi, Takashi: *See—*
Sakurai, Akira; Nakanishi, Takashi; and Nishimura, Akio, 4,411,647., Cl. 604-16.000.

Nakanishi, Teruo, to Toyo Kogyo Co., Ltd. Method for manufacturing aluminum alloy casting. 4,411,709., Cl. 148-3.000.

Nakano, Toshio: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

Nakao, Makoto: *See—*
Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Morimoto, Takeshi, 4,411,749., Cl. 204-98.000.

Nakao, Sho: *See—*
Washizawa, Yasuo; Shinozaki, Fumiaki; Ikeda, Tomoaki; and Nakao, Sho, 4,411,983., Cl. 430-325.000.

Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, to Nippon Steel Corporation. Steelmaking process with separate refining steps. 4,411,696., Cl. 75-51.000.

Nakashima, Koji: *See—*
Ogino, Fumiichi; and Nakashima, Koji, 4,411,948., Cl. 428-283.000.

Nakashima, Yutaka: *See—*
Tokuda, Fukunori; and Nakashima, Yutaka, 4,411,957., Cl. 428-425.900.

Nakazeki, Taugito: *See—*
Kimata, Kei; Nakazeki, Taugito; and Yasuda, Yoshinobu, 4,411,244., Cl. 123-389.000.

Nakazima, Atushi; and Edamatu, Mitisuke, to Mitsubishi Rayon Company Ltd. Method and apparatus for surface-hardening treatment of synthetic resin articles. 4,411,930., Cl. 427-54.100.

Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, to TDK Electronics Co., Ltd. Light recording medium. 4,412,231., Cl. 346-135.100.

Narken, Bernt; and Schick, Henry C., to International Business Machines Corporation. Integrated circuit photomask. 4,411,972., Cl. 430-5.000.

Nasu, Norio: *See—*
Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,411,966., Cl. 428-695.000.

National Research Development Corporation: *See—*
Hawkins, Robert D.; and Hawkins, James A., 4,411,939., Cl. 428-58.000.

National Semiconductor Corporation: *See—*
Belani, Jagdish G., 4,411,735., Cl. 156-659.100.
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., 4,412,238., Cl. 357-43.000.
Nelson, Carl T., 4,412,241., Cl. 357-51.000.

National Starch and Chemical Corporation: *See—*
Butch, Peter J., III; and Puletti, Paul P., 4,411,954., Cl. 428-343.000.
Runavot, Yves; Billault, Georges; and Salvetat, Jaques, 4,412,030., Cl. 524-505.000.

Nawrath, Peter, to Societe Nationale Industrielle Aerospatiale. Multipintle hinge with rack and pinion slide. 4,411,046., Cl. 16-354.000.

Nayler, Douglas W. J.; and Smith, John D., to NL Industries, Inc. Underwater wellhead connector. 4,411,454., Cl. 285-26.000.

NCR Corporation: *See—*
Moore, Robert S.; and Wessel, Walter F., III, 4,412,252., Cl. 358-160.000.
Patella, James F.; and Craycraft, Donald G., 4,412,143., Cl. 307-530.000.
Thomas, Jacob E.; and McKnight, James K., 4,412,233., Cl. 346-140.00R.
Weber, Helmut; Reitberger, Peter H.; Bader, Leonhard; and Konig, Walter, 4,412,232., Cl. 346-140.00R.

Near, Charles W.: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,412,300., Cl. 364-709.000.

Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., to Teradata Corporation. Multiprocessor intercommunication system and method. 4,412,285., Cl. 364-200.000.

Neeland, William S.: *See—*
Mauck, Michael S.; and Neeland, William S., 4,412,330., Cl. 372-29.000.

NEHA International: *See—*
Holland, Larry D., 4,411,612., Cl. 425-365.000.

Neil, Iain A., to Barr & Stroud Limited. Afocal zoom refractor telescopes. 4,411,488., Cl. 350-1.400.

Neilson, Robert H.; and Wisian-Neilson, Patty J. Polyphosphazene compounds and method of preparation. 4,412,053., Cl. 528-30.000.

Nelson, Alfred M.; Rasekhi, Houshang; and Cieplik, Ronald J., to Wang Laboratories, Inc. Recording head protective overlay and cleaning arrangement. 4,412,263., Cl. 360-128.000.

Nelson, Carl T., to National Semiconductor Corporation. Multiple trim structure. 4,412,241., Cl. 357-51.000.

Netting, David I.; Spivack, Bruce D.; and Cunnion, James P., Jr., to PQ Corporation. Process for surface modified hollow microspheres. 4,411,847., Cl. 264-7.000.

Neumann, Ernst-Georg, to Didier-Werke AG. Apparatus for burning of fuel gases and process for avoidance of combustion chamber oscillations. 4,411,616., Cl. 431-114.000.

New England Nuclear Corporation: *See—*
Tzodikov, Nathan R., 4,411,881., Cl. 424-1.100.

Newcomb, James S.; and Eumurian, Charles, to Control Data Corporation. Optical displacement and contour measuring. 4,411,528., Cl. 356-375.000.

Newnham, Robert E.: *See—*
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,412,148., Cl. 310-358.000.

Nickel, Andreas; Reissinger, Karl H.; Brandt, Hans-Walther; and Melin, Thomas, to Bayer Aktiengesellschaft. Packing for technical processes. 4,411,942., Cl. 428-137.000.

Nickel, Horst: *See—*
Wild, Peter; and Nickel, Horst, 4,411,669., Cl. 8-654.000.

Nicolaus, Frank G., to Bally Manufacturing Corporation. Repositioning mechanism for game reels. 4,411,428., Cl. 273-143.00R.

Niemeier, Byron M.: *See—*
Wedertz, Larry D.; Ross, Oakley G.; and Niemeier, Byron M., 4,411,398., Cl. 244-3.280.

Niemeier, Gerd: *See—*
Ableitner, Erich; Conrad, Ulrich; Derndinger, Hans-Otto; and Niemeier, Gerd, 4,411,237., Cl. 123-501.000.

Niewold, Donald W. Truck auger-hopper constructions. 4,411,581., Cl. 414-489.000.

Nifco Inc.: *See—*
Kimura, Shigeru, 4,411,788., Cl. 210-439.000.

Nihon Plast Co., Ltd.: *See—*
Hanada, Hidekazu, 4,411,331., Cl. 180-78.000.

Niino, Masahiko, to Yamada Electric Manufacturing Company Ltd. AC Electrical device protective thermal relay. 4,412,266., Cl. 361-24.000.

Niiro, Yasuhiko: *See—*
Mochizuki, Kiyofumi; Wakabayashi, Hiroharu; and Niiro, Yasuhiko, 4,411,520., Cl. 356-73.100.

Niitsu, Shigeo, to Nippon Electric Co., Ltd. Remote control signal transmitter capable of setting custom codes individually alloted to a plurality of controlled instruments. 4,412,218., Cl. 340-825.560.

Niki, Akira, to Nagoya Kiko Kabushiki Kaisha. Loading apparatus. 4,411,587., Cl. 414-752.000.

Ninomiya, Youichi; and Tsuno, Kazuhiko, to Asahi Yukizai Kogyo Co., Ltd. Ball valve assembly. 4,411,407., Cl. 251-315.000.

Nipon Sangyo Kikai Kabushiki Kaisha: *See—*
Suzuki, Kensuke; and Okada, Sunao, 4,411,780., Cl. 210-150.000.

Nippon Cable System, Inc.: *See—*
Yoshifuji, Junnosuke, 4,411,168., Cl. 74-501.00R.

Nippon Electric Co., Ltd.: *See—*
Arai, Motohiro, 4,411,678., Cl. 65-3.120.
Niitsu, Shigeo, 4,412,218., Cl. 340-825.560.

Nippon Kogaku K.K.: *See—*
Muryoi, Takeshi, 4,411,498., Cl. 350-429.000.
Ogino, Makoto; Fujiu, Takamitsu; Kariya, Michio; and Ichimura, Takeo, 4,411,624., Cl. 433-173.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Tsukada, Masakazu; and Yamashita, Masaaki, 4,411,964., Cl. 428-626.000.
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Nippon Oil Company, Limited: *See—*
Matsuura, Kazuo; Yamaoka, Noboru; and Miyoshi, Mituji, 4,412,042., Cl. 525-260.000.

Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, 4,411,242., Cl. 123-569.000.

Nippon Steel Corporation: *See—*
Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, 4,411,696., Cl. 75-51.000.

Nippon Telecommunication Eng. Co.: *See—*
Asano, Kiyomitsu; Kondo, Toshikatsu; and Mizuno, Shigeru, 4,411,538., Cl. 400-124.000.

Nippon Telegraph & Telephone: *See—*
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,412,102., Cl. 179-99.00M.

Nippon Telegraph & Telephone Public Corporation: *See—*
Akazawa, Yukio; Matsuya, Yasuyuki; and Iwata, Atsushi, 4,412,208., Cl. 340-347.0DA.

Nippon Tsushin Kogyo Kabushiki Kaisha: *See—*
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,412,102., Cl. 179-99.00M.

Nippon Zeon Co., Ltd.: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.

Nippondenso Co., Ltd.: *See—*
Kojima, Akira; and Sakai, Toshiyasu, 4,412,160., Cl. 318-280.000.
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.

Tanaka, Toshio; and Miwa, Katsuteru, 4,411,245., Cl. 123-609.000.

Nishi, Masaaki: *See—*
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Nishibara, Hajime: *See—*
Hashizume, Shuhei; Abeta, Sadaharu; Ohmae, Tadayuki; and Nishibara, Hajime, 4,411,666., Cl. 8-455.000.

Nishida, Koji; and Kawai, Taneichi, to Aisin Seiki Kabushiki Kaisha. Embroidery frame for automatic embroidery machine. 4,411,208., Cl. 112-103.000.

Nishida, Takao; and Hirohata, Takashi, to Amchem Products, Inc. Process and composition for coating metals. 4,411,937., Cl. 427-435.000.

Nishihara, Yoshio: *See—*
Nagasawa, Toshio; and Nishihara, Yoshio, 4,412,125., Cl. 219-549.000.

Nishimura, Akio: *See—*
Sakurai, Akira; Nakanishi, Takashi; and Nishimura, Akio, 4,411,647., Cl. 604-16.000.

Nishimura, Shinichi; Akiyama, Yoshinori; and Hoshika, Yoshiaki, to Nissan Motor Co., Ltd. Supporting device of a head rest for a vehicle seat. 4,411,470., Cl. 297-410.000.

Nishina, Shinya: *See—*
Otsuka, Masasuke; Maniwa, Hideyo; and Nishina, Shinya, 4,411,863., Cl. 420-580.000.

Nishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, to Futaba Denshi Kogyo K.K. Driving circuit for a fluorescent display apparatus having fewer leads. 4,412,213., Cl. 340-753.000.

Nishiyama, Akio: *See—*
Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, 4,411,763., Cl. 204-298.000.

Nissan Chemical Industries, Ltd.: *See—*
Mutsukado, Motoo; and Yamada, Shin, 4,412,082., Cl. 562-478.000.

Nissan Motor Company, Limited: *See—*
Kitamura, Hidetoshi; and Kato, Hirohisa, 4,411,154., Cl. 73-118.000.
Koike, Shoichi, 4,411,466., Cl. 296-188.000.
Matsui, Fujio; and Suzuki, Hitoshi, 4,411,236., Cl. 123-492.000.
Nishimura, Shinichi; Akiyama, Yoshinori; and Hoshika, Yoshiaki, 4,411,470., Cl. 297-410.000.
Okada, Makoto, 4,411,598., Cl. 416-223.00R.
Sugasawa, Fukashi, 4,411,228., Cl. 123-198.00F.

Nitsche, Klaus: *See—*
Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, 4,411,550., Cl. 403-358.000.

Nitto Chemical Industry Co., Ltd.: *See—*
Ito, Tomohisa; and Hongo, Akira, 4,411,799., Cl. 210-753.000.

Niyada, Katsuyuki; Watanabe, Taisuke; Hiraoka, Shoji; and Morii, Shuji, to Matsushita Electric Industrial Co., Ltd. Sound synthesizing apparatus. 4,412,099., Cl. 381-51.000.

NL Industries, Inc.: *See—*
Finlayson, Claude M.; and Mardis, Wilbur S., 4,412,018., Cl. 523-508.000.
Nayler, Douglas W. J.; and Smith, John D., 4,411,454., Cl. 285-26.000.
Pomerleau, Daniel G.; Slocombe, Douglas E.; and Watts, Kenneth H., 4,411,801., Cl. 252-8.50P.

Noack, W. L., to Becton, Dickinson and Company. Multiple tube rack. 4,411,868., Cl. 422-104.000.

Nogawa, Kenji: *See—*
Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, 4,411,982., Cl. 430-314.000.

Nomura, Isshi: *See—*
Inada, Masami; and Nomura, Isshi, 4,411,406., Cl. 251-129.000.

Nomura, Junji: *See—*
Kato, Michio; Endo, Toshiyuki; and Nomura, Junji, 4,411,793., Cl. 210-656.000.

Nomura, Koji: *See—*
Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, 4,411,991., Cl. 435-42.000.

Nomura, Yoshiyuki; and Okuda, Kanemasa, to Fujitsu Fanuc Limited. Wire-cut, electric discharge machine. 4,412,118., Cl. 219-69.00W.

Nonomura, Keisaku; Matsura, Masataka; and Wada, Tomio, to Sharp Kabushiki Kaisha. DAP, LCD Device with a bias voltage. 4,411,496., Cl. 350-347.00E.

Norris, Elwood G., to Taggart, Charles W. Piezoelectric crystal spark plug. 4,412,151., Cl. 315-55.000.

North American Manufacturing Company, The: *See—*
Homa, John L., 4,412,328., Cl. 371-25.000.

North American Philips Consumer Electronics Corp.: *See—*
Say, Donald L., 4,412,149., Cl. 313-414.000.

North Shore Precision Research Corporation: *See—*
Davidson, William W., Jr., 4,411,194., Cl. 101-216.000.

Northup, John D., to Northup, Ruth B.; Northup, John D., Jr.; Lehrkind, Nancy N.; and Northup, Mary E. Method and apparatus for manufacturing glass bottles. 4,411,681., Cl. 65-77.000.

Northup, John D., Jr.: *See—*
Northup, John D., 4,411,681., Cl. 65-77.000.

Northup, Mary E.: *See—*
Northup, John D., 4,411,681., Cl. 65-77.000.

Northup, Ruth B.: *See—*
Northup, John D., 4,411,681., Cl. 65-77.000.

Norton, William W., to Baxter Travenol Laboratories, Inc. Liquid delivery system. 4,411,047., Cl. 17-51.000.

Nossen, Edward J., to RCA Corporation. Digital phase demodulation and correlation. 4,412,302., Cl. 364-728.000.

Notman, Alan, to Imperial Chemical Industries PLC. Synthesis processes. 4,411,877., Cl. 423-359.000.

Novakovskaya, Zoya D.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

November, Milton H., to International Telephone & Telegraph Corporation. Mass flowmeter or the like. 4,411,161., Cl. 73-861.030.

Nowak, Ralph: *See—*
Fogarty, Bonnie R.; Fogarty, A. Edward; Nowak, Ralph; and Lovewell, Jack S., 4,411,249., Cl. 124-64.000.

Nozaki, Mineo; Nagashima, Masasumi; and Asakura, Osamu, to Canon Kabushiki Kaisha. Printing apparatus. 4,411,540., Cl. 400-175.000.

NTN Toyo Bearing Co., Ltd.: *See—*
Kimata, Kei; Nakazeki, Taugito; and Yasuda, Yoshinobu, 4,411,244., Cl. 123-389.000.

Nuckols, Walter S.: *See—*
Bennett, Robert A.; and Nuckols, Walter S., 4,411,376., Cl. 222-212.000.

Nuclear Power Outfitters: *See—*
Jacobson, Earl B., 4,411,264., Cl. 128-201.230.

Nuesch, Jakob: *See—*
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,411,896., Cl. 424-244.000.

Nuovo Pignone S.p.A.: *See—*
Santucci, Nicola, 4,411,293., Cl. 139-110.000.

Nutrisearch Company: *See—*
Chang, Pei K., 4,411,917., Cl. 426-104.000.

Nutter, Steven D. Device for equally filling a plurality of containers. 4,411,295., Cl. 141-59.000.

Nuzillat, Gerard: *See—*
Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, 4,412,336., Cl. 375-4.000.

O. M. Scott & Sons Company, The: *See—*
Goertz, Harvey M., 4,411,683., Cl. 71-28.000.

Obara, Hiroshi: *See—*
Nagura, Masato; Kikuchi, Kazushige; Obara, Hiroshi; and Endo, Yasushi, 4,412,147., Cl. 310-320.000.

Obayashi, Hidehito: *See—*
Gotoh, Akira; Obayashi, Hidehito; Nagai, Ryo; Mochizuki, Shouji; and Kudo, Tetsuichi, 4,411,971., Cl. 429-191.000.

Occidental Chemical Corporation: *See—*
Rosegren, Donald R.; and Mayer, Linda J., 4,411,744., Cl. 204-49.000.
Rosegren, Donald R.; and Mayer, Linda J., 4,411,965., Cl. 428-672.000.
Tremmel, Robert A., 4,411,961., Cl. 428-613.000.

O'Connor, Brendan F.; Phillips, John O.; and Webb, Charles M., to Udaras Na Gaeltachta. Apparatus for the inspection of translucent containers. 4,411,522., Cl. 356-240.000.

O'Dowd, Brendan; and Pitcher, Christopher. Tightly coupled multiple instruction multiple data computer system. 4,412,286., Cl. 364-200.000.

Offshore Company, The: *See—*
Radovan, Felix S.; Koehler, Albert M.; and Ray, Donald R., 4,411,408., Cl. 254-108.000.

Ofrex Group Limited: *See—*
Crane, Dennis P., 4,411,391., Cl. 241-232.000.

Ogawa, Hiroshi: *See—*
Komori, Shigehiro; and Ogawa, Hiroshi, 4,411,514., Cl. 355-14.0CH.

Ogawa, Kazuo: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,411,911., Cl. 424-283.000.

Ogawa, Masahiro: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Tsukada, Masakazu; and Yamashita, Masaaki, 4,411,964., Cl. 428-626.000.

Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, to Nippon Telegraph & Telephone; and Nippon Tsushin Kogyo Kabushiki Kaisha. Key telephone system. 4,412,102., Cl. 179-99.00M.

Ogawa, Tadashi: *See—*
Kobayashi, Hidetoshi; Watanabe, Toshiyuki; Adachi, Keiichi; and Ogawa, Tadashi, 4,411,987., Cl. 430-542.000.

Ogawa, Tomoya, to Fuji Photo Optical Co., Ltd. Method of analyzing an object by use of scattering light. 4,411,525., Cl. 356-339.000.

Ogino, Fumiichi; and Nakashima, Koji, to Takeda Chemical Industries, Ltd. Air filter of three-dimensional mesh-structured webs. 4,411,948., Cl. 428-283.000.

Ogino, Makoto; Fujiu, Takamitsu; Kariya, Michio; and Ichimura, Takeo, to Nippon Kogaku K.K. Dental implant. 4,411,624., Cl. 433-173.000.

Oguino, Masanori, to Hatachi, Ltd. Automatic noise removal device for a picture signal. 4,412,253., Cl. 358-167.000.

Ohara, Osamu: *See—*
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, 4,412,103., Cl. 179-115.50R.

Oharek, Frank J.: *See—*
Breglia, Denis R.; Oharek, Frank J.; and Grimmer, Paul D., 4,411,627., Cl. 434-44.000.

Ohashi, Naohito; Nagata, Shoji; and Katsube, Junki, to Sumitomo Chemical Company, Limited. Racemization of an α-methyl-β-acylthiopropionic acid. 4,411,836., Cl. 260-455.00R.

Ohio Blow Pipe Co.: *See—*
Forgac, John P., 4,411,674., Cl. 55-304.000.

Ohkubo, Yuichi: *See—*
Kominami, Yasuo; Sato, Tetsuo; and Ohkubo, Yuichi, 4,412,189., Cl. 333-14.000.

Ohmae, Tadayuki: *See—*
Hashizume, Shuhei; Abeta, Sadaharu; Ohmae, Tadayuki; and Nishibara, Hajime, 4,411,666., Cl. 8-455.000.

Ohmura, Eiichi; and Kitano, Tateo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Construction of a door beam of a motor vehicle. 4,411,103., Cl. 49-502.000.

Ohnemus, Kurt: *See—*
Hoegerle, Karl; and Ohnemus, Kurt, 4,412,074., Cl. 544-298.000.

Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, to Tsubakimoto Chain Co. Chain link plate. 4,411,131., Cl. 59-78.000.

Ohnuma, Takashi, to Canon Kabushiki Kaisha. Lens system driving device. 4,412,164., Cl. 318-596.000.

Ohsawa, Yuzo: *See—*
Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, 4,411,763., Cl. 204-298.000.

Ohtawa, Kimiaki; and Fukada, Yasuo, to Mitsubishi Jukogyo kabushiki Kaisha. Briquetting machine. 4,411,611., Cl. 425-237.000.

Oka, Mitsunori: *See—*
Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Oka, Shunzo: *See—*
Mitsugi, Itaru; Oka, Shunzo; Nakagawa, Yoshinobu; and Shiho, Kenichi, 4,412,113., Cl. 200-67.0DB.

Okada, Makoto, to Nissan Motor Company, Limited. Fluid propeller fan. 4,411,598., Cl. 416-223.00R.

Okada, Sunao: *See—*
Suzuki, Kensuke; and Okada, Sunao, 4,411,780., Cl. 210-150.000.

Okamura, Takayuki: *See—*
Hirai, Koji; Shirano, Kenji; and Okamura, Takayuki, 4,412,022., Cl. 524-104.000.

Okayasu, Shinya: *See—*
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, 4,412,104., Cl. 179-117.000.

Oko, Uriel M.: *See—*
Gulbrandsen, Arthur F.; and Oko, Uriel M., 4,411,871., Cl. 422-232.000.

Okuda, Kanemasa: *See—*
Nomura, Yoshiyuki; and Okuda, Kanemasa, 4,412,118., Cl. 219-69.00W.

Okumura, Takeshi; Nakanishi, Kiyoshi; and Inoue, Tokuta. Intake system for an internal combustion engine. 4,411,226., Cl. 123-188.00M.

Okuno, Kenji: *See—*
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, 4,412,103., Cl. 179-115.50R.

Okuno, Michiharu, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter. 4,412,115., Cl. 200-148.00A.

Okuno, Takao: *See—*
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.

Okutu, Toshimitu: *See—*
Miyoshi, Takahito; Tsuji, Nobuo; Okutu, Toshimitu; and Fujiyama, Masaaki, 4,411,953., Cl. 428-336.000.

Okuzawa, Yasutoshi: *See—*
Masami, Sato; Okuzawa, Yasutoshi; and Hibino, Noburo, 4,411,958., Cl. 428-457.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,411,966., Cl. 428-695.000.

Oldweiler, Morey E., to Exxon Research & Engineering Co. Integrated two stage coking and steam cracking process and apparatus therefor. 4,411,769., Cl. 208-54.000.

Olivier, Paul D. Electrolytic chlorine generator. 4,411,759., Cl. 204-260.000.

Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., to SKF Kugellagerfabriken GmbH. Rolling bearing for lengthwise guiding of a shaft or the like. 4,411,478., Cl. 308-6.00C.

Olshansky, Semen A.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Olson, Wayne P., to Baxter Travenol Laboratories, Inc. Particle adsorption. 4,411,795., Cl. 210-679.000.

Olympus Optical Company Ltd.: *See—*
Imai, Toshihiro, 4,412,127., Cl. 250-204.000.
Shirai, Hitoshi, 4,411,509., Cl. 354-212.000.

Onesto, Joseph B.: *See—*
Koppensteiner, James V.; and Onesto, Joseph B., 4,411,064., Cl. 29-764.000.

Onishi, Hiroshi; Yamashita, Sadahiko; and Makimoto, Mitsuo, to Matsushita Electric Industrial Co., Ltd. Microwave mixing circuit. 4,412,351., Cl. 455-317.000.

Ono, Takatoshi: *See—*
Sekiya, Shinji; and Ono, Takatoshi, 4,411,107., Cl. 51-209.00R.

Opitz, Eric J. Walking aid tip assembly. 4,411,284., Cl. 135-81.000.

Optical Coating Laboratory, Inc.: *See—*
Kuhlman, Bruce E.; and Kamerling, Marc A., 4,412,255., Cl. 358-245.000.

Optilon W. Erich Heilmann GmbH: *See—*
Heimberger, Halmut, 4,411,211., Cl. 112-265.200.

Orban Associates, Inc.: *See—*
Orban, Robert A., 4,412,100., Cl. 381-100.000.

Orban, Robert A., to Orban Associates, Inc. Multiband signal processor. 4,412,100., Cl. 381-100.000.

Oregon Graduate Center for Study and Research, The: *See—*
Massey, Gail A., 4,412,173., Cl. 324-62.000.

Orengo, Gerard: *See—*
Froment, Jean-Claude; Marijon, Jean-Louis; Orengo, Gerard; and Verhaeghe, Michel, 4,412,335., Cl. 375-3.000.

Ornstein, Leonard; and Kim, Young R., to Technicon Instruments Corporation. Method for treating red blood cells to effect sphering and reagent therefor. 4,412,004., Cl. 436-10.000.

Oscar Mayer & Co., Inc.: *See—*
Cornish, Darrel G.; and Hartl, Carroll P., 4,411,122., Cl. 53-436.000.

Oster, Winton: *See—*
Close, Albert R.; and Oster, Winton, 4,411,069., Cl. 30-276.000.

Ostrander, Clinton R. Reduction gas detector. 4,411,867., Cl. 422-91.000.

Oswell, Hugh H. B., to Submarine Products Limited. Demand valve. 4,411,285., Cl. 137-112.000.

Ota, Chuichi: *See—*
Imamura, Nobutake; and Ota, Chuichi, 4,412,264., Cl. 360-131.000.

Ota, Masataka, to Elmo Company, Limited. Power supply for an ac discharge lamp. 4,412,156., Cl. 315-308.000.

Otis Elevator Company: *See—*
Kettle, John L., 4,411,352., Cl. 198-328.000.

Otomo, Shigekazu: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Otsuka, Masasuke; Maniwa, Hideyo; and Nishina, Shinya. Low-carat corrosion-resistant gold alloy with the skin of the alloy not being blacked upon casting. 4,411,863., Cl. 420-580.000.

Ott, Roger A.: *See—*
Dutton, Daniel R.; Parker, Edward J.; Ott, Roger A.; and Otten, Jay G., 4,411,810., Cl. 252-99.000.

Otten, Jay G.: *See—*
Dutton, Daniel R.; Parker, Edward J.; Ott, Roger A.; and Otten, Jay G., 4,411,810., Cl. 252-99.000.

Oude Elberink, Bernard H. M.: *See—*
Aanstoot, Jan; and Oude Elberink, Bernard H. M., 4,412,220., Cl. 343-55.00C.

Outboard Marine Corporation: *See—*
Morris, Richard L.; and Lloyd, Ronald B., 4,411,844., Cl. 261-34.00R.

Outokumpu Oy: *See—*
Sulasaari, Jukka; and Heinonen, Seppo, 4,411,146., Cl. 72-180.000.

Owens-Illinois, Inc.: *See—*
Galeano, Sergio F., 4,411,737., Cl. 162-7.000.

Owyang, King: *See—*
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,412,142., Cl. 307-477.000.

Oy Wartsila Ab: *See—*
Makinen, Eero; and Gordin, Stefan, 4,411,631., Cl. 440-72.000.

Ozawa, Osamu: *See—*
Iwasaki, Hiroshi; and Ozawa, Osamu, 4,412,239., Cl. 357-44.000.

P. H. Bowman Co., Inc.: *See—*
Tschan, J. Donald, 4,411,548., Cl. 403-232.100.

P. L. Porter Co.: *See—*
Porter, Clyde R., 4,411,339., Cl. 188-67.000.

Pacesetter Systems, Inc.: *See—*
Schulman, Joseph H., 4,411,651., Cl. 604-151.000.

Pact, Harry H.: *See—*
Klein, Kenneth; Bator, Patricia E.; and Pact, Harry H., 4,412,027., Cl. 524-364.000.

Pagane, Warren H. Fuel level monitoring and engine control device. 4,412,204., Cl. 340-59.000.

Pak Pacific Corporation Pty. Limited: *See—*
Morris, Charles K., 4,411,383., Cl. 229-52.00B.

Pandya, Yogendra C.: *See—*
Watts, LaVaughn F.; Smith, Ronald L.; Pandya, Yogendra C.; and Wood, Paul B., 4,412,294., Cl. 364-518.000.

Panek, Edward J.; and Davis, Pauls, to BASF Wyandotte Corporation. Thickening aqueous compositions with polyethers modified with alpha-olefin oxides. 4,411,819., Cl. 252-315.100.

Pannell, Richard B.: *See—*
Pretzer, Wayne R.; and Pannell, Richard B., 4,411,820., Cl. 502-167.000.

Pannier, Gerard, to Regie Nationale des Usines Renault. Electronic control device for changing the speed ratios in an automatic transmission of an automotive vehicle. 4,412,290., Cl. 364-424.100.

Paolino, Donald D., to United States of America, Navy. Millimeter wave dielectric waveguide rotary joint. 4,412,192., Cl. 333-257.000.

Parikh, Indu: *See—*
Cuatrecasas, Pedro; and Parikh, Indu, 4,411,832., Cl. 260-121.000.

Parker, Alan; and Dickinson, Peter J. Composite yarn. 4,411,129., Cl. 57-228.000.

Parker, Edward J.: *See—*
Dutton, Daniel R.; Parker, Edward J.; Ott, Roger A.; and Otten, Jay G., 4,411,810., Cl. 252-99.000.

Parks-Cramer Company: *See—*
Mulligan, William L., 4,411,043., Cl. 15-312.00R.

Parsons, John R.: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,411,027., Cl. 3-1.000.

Parton, James. Fireplace insert. 4,411,251., Cl. 126-165.000.

Patella, James F.; and Craycraft, Donald G., to NCR Corporation. MOS Sense amplifier. 4,412,143., Cl. 307-530.000.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlampen mbH: *See—*
Helbig, Peter; Schonherr, Walter; and Steiner, Hermann, 4,412,273., Cl. 362-211.000.

Patt, Ludwig: *See—*
Franz, Joachim; and Patt, Ludwig, 4,411,882., Cl. 424-33.000.

Patterson, Michael A.: *See—*
Pervier, James W.; Vines, Harvey L.; Marano, Vincent, III; and Patterson, Michael A., 4,411,677., Cl. 62-25.000.

Pattison, Ian C., to Warner-Lambert Company. Diphenylpropanamines, compositions thereof and use thereof. 4,411,904., Cl. 424-267.000.

Paul Vahle GmbH & Co. KG: *See—*
Hillmann, Willi, 4,412,107., Cl. 191-23.00A.

Paulson, Roger A.: *See—*
Dickhudt, Eugene A.; and Paulson, Roger A., 4,411,276., Cl 128-784.000.

Pavel, Andreas. High fidelity stereophonic reproduction system 4,412,106., Cl. 179-156.00R.

Payne, Trevor G.; and Berthold, Richard, to Sandoz Ltd. 8'[(3-Amino-2-hydroxy-propoxy)]-spiro-[cyclopentane-1,2'(1'H)-(3'H)naphtalen, 4'(3'H)-ones. 4,411,913., Cl. 424-330.000.

Pazos, Jose F., to Du Pont de Nemours, E. I., and Company. Vulcanizable ethylene copolymers. 4,412,043., Cl. 525-328.200.

Peabody Holmes Limited: *See—*
Ball, Gerald G., 4,411,286., Cl. 137-253.000.

Pearce, Francis H. Turning of eggs in incubators. 4,411,221., Cl. 119-44.000.

Pearce, Maurice N., to Rolls-Royce Limited. Priming device for burner manifolds of gas turbine engine. 4,411,137., Cl. 60-739.000.

Pearson, Stephen, to Baxter Travenol Laboratories, Inc. Sterile coupling. 4,411,662., Cl. 604-411.000.

Pedersen, Lee C.; and Elmquist, Lyle F., to Grain Processing Corporation. Composition for absorbent film and method and preparation 4,412,036., Cl. 525-54.260.

Pellow, Terence R.; and Glew, Derek A., to Rolls-Royce Limited Support member and a component supported thereby. 4,411,594., Cl. 415-174.000.

Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, to Thomson-CSF. Storage comparator, regenerating digital electric signals and digital transmission system using such a comparator. 4,412,336., Cl. 375-4.000.

Pelton, Robert S. Method of producing foamed construction material. 4,411,679., Cl. 65-22.000.

Penner, Horst: *See—*
Brede, Uwe; Penner, Horst; Stahlmann, Rudolf; and Zeiher, Eric., 4,411,200., Cl. 102-529.000.

Pentel Kabushiki Kaisha: *See—*
Hashimoto, Junichi; and Miyagi, Tadayuki, 4,411,543., Cl. 401-53.000.

Penttinen, Kyosti: *See—*
Jernstrom, Olof; Mattila, Tapio; Penttinen, Kyosti; and Toivonen, Hannu, 4,412,023., Cl. 524-106.000.

Penzien, Klaus: *See—*
Naarmann, Herbert; Penzien, Klaus; Schlag, Johannes; and Simak, Petr, 4,411,826., Cl. 252-518.000.

Perkin-Elmer Corp., The: *See—*
Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., 4,412,133., Cl. 250-492.200.
Miller, Mark C., 4,411,575., Cl. 414-217.000.

Perlegos, George: *See—*
Korsh, George J.; Holler, Mark A.; Perlegos, George; and Gargini, Paolo, 4,412,310., Cl. 365-185.000.

Perry, Clifford R.; Dietz, Lloyd H.; and Shannon, Roger L., to Boeing Company, The. Heat exchange apparatus having thin film flexible sheets. 4,411,310., Cl. 165-166.000.

Pershin, Nikolai I.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Pervier, James W.; Vines, Harvey L.; Marano, Vincent, III; and Patterson, Michael A., to Air Products and Chemicals, Inc. Nitrogen rejection from natural gas. 4,411,677., Cl. 62-25.000.

Pervy Moskovsky Cashovoizavod im. S. M. Kirova: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Peschke, John R.: *See—*
Kohl, Lou; Peschke, John R.; and Wecker, Sheldon M., 4,411,849., Cl. 264-45.500.

Petitpierre, Jean C., to Ciba-Geigy Corporation. Chromogenic propenylenesulfone compounds. 4,411,450., Cl. 282-27.500.

Petitto, Angelo A.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,411,583., Cl. 414-687.000.

Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., to Petitto Mine Equipment Repair, Inc. Multi-purpose material handling machine for use in a mine. 4,411,583., Cl. 414-687.000.

Petitto, James L.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,411,583., Cl. 414-687.000.

Petitto Mine Equipment Repair, Inc.: *See—*
Petitto, Angelo S., Sr.; Petitto, Angelo A.; and Petitto, James L., 4,411,583., Cl. 414-687.000.

Petrini, Richard R.; and Van Lue, Dorin F. Eddy current inspection tool which is selectively operable in a discontinuity detection mode and a discontinuity magnitude mode. 4,412,177., Cl. 324-226.000.

Petrolite Corporation: *See—*
Burkhardt, Charles W., 4,411,814., Cl. 252-344.000.

Pfizer Inc.: *See—*
Brennan, Thomas M.; and Hendrick, Michael E., 4,411,925., Cl. 426-548.000.
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,411,892., Cl. 424-181.000.

Pfleiderer, Hans-Jorg: *See—*
Mauthe, Manfred; and Pfleiderer, Hans-Jorg, 4,412,344., Cl. 377-60.000.

Phelps, Jerry A., Sr. Miniature, battery-powered cathode ray tube display heart monitor. 4,411,272., Cl. 128-711.000.

Philipps, Donald F.; and Williamson, Richard D., to Marley/Wylain Company, The. Fan or blower assembly. 4,411,453., Cl. 285-18.000.

Phillips, John O.: *See—*
O'Connor, Brendan F.; Phillips, John O.; and Webb, Charles M., 4,411,522., Cl. 356-240.000.

Phillips Petroleum Company: *See—*
Hubby, John S., 4,411,736., Cl. 159-47.100.
Kraus, Gerard, 4,412,019., Cl. 524-71.000.
McKay, Dwight L., 4,411,777., Cl. 208-120.000.
Reed, Jerry O.; and Mathis, Ronald D., 4,411,853., Cl. 264-176.00F.
Reed, Jerry O., 4,412,062., Cl. 528-388.000.
Trepka, William J., 4,412,087., Cl. 585-12.000.

Phillips, Robert R.: *See—*
Lundberg, Robert D.; Phillips, Robert R.; and McDougall, Lee A., 4,412,028., Cl. 524-364.000.

Philpott, Michael I.: *See—*
Laughon, Thomas C.; and Philpott, Michael I., 4,411,628., Cl. 434-169.000.

Photon Power, Inc.: *See—*
Jordan, John F.; and Lampkin, Curtis M., 4,412,091., Cl. 136-258.000.

Pichler, Martin A.: *See—*
Ball, Lawrence E.; Pichler, Martin A.; and Gaylor, V. Frances, 4,411,745., Cl. 204-59.00R.

Picker Corporation: *See—*
Schlosser, Philip A.; and Miller, Don W., 4,411,059., Cl. 29-572.000.

Pierlot, Michel: *See—*
Chenet, Jacques; and Pierlot, Michel, 4,411,233., Cl. 123-439.000.

Pijpers, Jacques P. L.: *See—*
Maurer, Franciscus H. J.; Pijpers, Jacques P. L.; and Smith, Paul, 4,411,854., Cl. 264-205.000.

Pinson, Jay D. Smoke protective hood. 4,411,023., Cl. 2-7.000.

Pisano, Alan D., to General Electric Company. Control system for gas turbine engine. 4,411,595., Cl. 416-1.000.

Pitcher, Christopher: *See—*
O'Dowd, Brendan; and Pitcher, Christopher, 4,412,286., Cl. 364-200.000.

Pitney Bowes Inc.: *See—*
Feinland, Seymour; and Rubinstein, Arthur, 4,412,298., Cl. 364-567.000.
Hubbard, David W., 4,411,328., Cl. 177-212.000.
Silverman, Harold; and Hotchkiss, Alan B., 4,411,419., Cl. 271-263.000.

Pitt, John M.: *See—*
Lutenegger, Alan J.; and Pitt, John M., 4,411,160., Cl. 73-843.000.

Pizzola, Robert M., to United States of America, Army. Apparatus for broaching rifling. 4,411,569., Cl. 409-261.000.

Plaisance, Thomas H.: *See—*
Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, 4,412,032., Cl. 524-538.000.

Plicchi, Gianni: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Podder, Nitya G.: *See—*
Agarwal, Suresh C.; Jager, Horst; Podder, Nitya G.; and Mollet, Hans, 4,411,668., Cl. 8-527.000.

Poehlein, Raymond E., to Xerox Corporation. Document corner registration. 4,411,418., Cl. 271-236.000.

Pohoreski, Anton P.: *See—*
Strunk, Norman E.; and Pohoreski, Anton P., 4,411,458., Cl. 285-196.000.

Polaroid Corporation: *See—*
Blinow, Igor, 4,412,276., Cl. 362-278.000.
Mehta, Avinash C., 4,412,050., Cl. 526-266.000.

Polk, Robert G.: *See—*
Miller, Thomas G.; and Polk, Robert G., 4,411,487., Cl. 350-1.100.

Pollard, Christopher A. Streamlined bicycle design. 4,411,443., Cl. 280-281.0LP.

Polska Akademia Nauk: *See—*
Galeski, Andrzej; Kalinski, Ryszard; and Kryszewski, Marian, 4,411,704., Cl. 106-308.00Q.

Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Pomerleau, Daniel G.; Slocombe, Douglas E.; and Watts, Kenneth H., to NL Industries, Inc. Low solids well servicing fluids. 4,411,801., Cl. 252-8.50P.

Pommer, Ernst-Heinrich: *See—*
Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, 4,411,687., Cl. 71-76.000.

Pont-A-Mousson S.A.: *See—*
Barbe, Pierre L. C. C., 4,411,405., Cl. 251-306.000.

Ponzellini, Giulio, to Castelli S.p.A. Arm support member for seats or chairs, having a vertically liftable arm rest. 4,411,471., Cl. 297-417.000.

Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., to Standard Oil Company (Indiana). Shrinkage reduction of blow molded oriented pet bottle. 4,411,610., Cl. 425-174.400.

Poppel, Gunter: *See—*
Seibert, Karl; Praetorius, Heinz; and Poppel, Gunter, 4,411,887., Cl. 424-78.000.

Porter, Clyde R., to P. L. Porter Co. Friction lock mechanisms. 4,411,339., Cl. 188-67.000.

Portmann, Hubert, to Ebauches, S.A. Novel control means for an electrochromic display. 4,412,215., Cl. 340-785.000.

Posch, Oskar: *See—*
Drabert, Fritz; Posch, Oskar; Edel, Hans-Joachim; and Schroeder, Bernhard, 4,411,469., Cl. 297-300.000.

Power Cutting Incorporated: *See—*
Wachs, Edward H.; and Kwech, Horst, 4,411,178., Cl. 82-4.00C.

PQ Corporation: *See—*
Netting, David I.; Spivack, Bruce D.; and Cunnion, James P., Jr., 4,411,847., Cl. 264-7.000.

Praetorius, Heinz: *See—*
Seibert, Karl; Praetorius, Heinz; and Poppel, Gunter, 4,411,887., Cl. 424-78.000.

Precise Power Corporation: *See—*
Roesel, John F., Jr., 4,412,170., Cl. 322-4.000.

President and Fellows of Harvard College, The: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,411,994., Cl. 435-71.000.

Preston, Jack: *See—*
Krigbaum, William R.; Ciferri, Alberto; and Preston, Jack, 4,412,059., Cl. 528-192.000.

Pretzer, Wayne R.; and Pannell, Richard B., to Gulf Research & Development Company. Catalyst and process for preparing organic urethanes. 4,411,820., Cl. 502-167.000.

Price, H. R.: *See—*
Baker, Randy S.; and Price, H. R., 4,411,315., Cl. 166-187.000.

Procter & Gamble Co., The: *See—*
Sevenants, Michael R., 4,411,924., Cl. 426-534.000.

Proctor & Associates Co.: *See—*
Brown, Wallace G.; and Lee, Otha C., 4,412,101., Cl. 179-7.10R.

Proebsting, Robert J., to Mostek Corporation. Semiconductor memory for use in conjunction with error detection and correction circuit. 4,412,314., Cl. 365-222.000.

PTX-Pentronix, Inc.: *See—*
DeSantis, Raymond P., 4,411,848., Cl. 264-40.500.

Pugh, Myron A.: *See—*
Workman, S. Thomas; Chambers, John L.; Pugh, Myron A.; and Ward, Roger W., 4,412,345., Cl. 378-078.000.

Pujals, Charles, Jr. Method and device for relieving pain. 4,411,258., Cl. 128-60.000.

Puletti, Paul P.: *See—*
Butch, Peter J., III; and Puletti, Paul P., 4,411,954., Cl. 428-343.000.

Purdue Research Foundation: *See—*
Low, Philip F.; Roth, Charles B.; and Stucki, Joseph W., 4,411,530., Cl. 366-4.000.

Purex Industries, Inc.: *See—*
Robinson, Ronald A.; and Hudson, John O., 4,411,831., Cl. 252-554.000.

Quatro, Robert A.: *See—*
Stricklin, John D.; Denero, Anthony D.; Quatro, Robert A.; and Duff, James A., 4,412,260., Cl. 360-97.000.

Quick-Rotan Elektromotoren GmbH: *See—*
Angersbach, Wolfgang; and Schuler, Peter, 4,412,163., Cl. 318-567.000.

Quinn, Russell C., to Jos. Dyson and Sons, Inc. Fork attachment for loader buckets. 4,411,585., Cl. 414-724.000.

R.B.L. Riello Bruciatori Legnago S.p.A.: *See—*
Stella, Antonio; and Canova, Giuseppe, 4,412,269., Cl. 361-263.000.

R. J. Reynolds Tobacco Company: *See—*
Martin, Julian R.; and Sides, Larry W., 4,411,279., Cl. 131-94.000.

R. M. Smith, Inc.: *See—*
Beal, Glenn I., 4,411,460., Cl. 285-243.000.

Radas, Adolf, to Hoechst Aktiengesellschaft. Device for transporting printing plates. 4,411,356., Cl. 198-721.000.

Radek, John R., to Ready Metal Manufacturing Company. Door control. 4,411,102., Cl. 49-110.000.

Radovan, Felix S.; Koehler, Albert M.; and Ray, Donald R., to Offshore Company, The. Jack-up platform apparatus. 4,411,408., Cl. 254-108.000.

Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, to General Electric Company. Integrated circuit incorporating low voltage and high voltage semiconductor devices. 4,412,142., Cl. 307-477.000.

Raiha, Antti P. Precision drill bit resurfacing tool. 4,411,105., Cl. 51-124.00R.

Raitto, Russell G., to Concord Laboratories, Inc. Syringe. 4,411,275., Cl. 128-763.000.

Rapistan Division, Lear Siegler, Inc.: *See—*
Shearer, James T., Jr., 4,411,577., Cl. 414-274.000.

Rasekhi, Houshang: *See—*
Nelson, Alfred M.; Rasekhi, Houshang; and Cieplik, Ronald J., 4,412,263., Cl. 360-128.000.

Raskin, S.A.: *See—*
Duruz, Louis; and Furrer, Alfred, 4,412,120., Cl. 219-121.0LG.

Rauch, Burton S., to Bendix Corporation, The. Compliantly mounted damping means. 4,411,637., Cl. 464-180.000.

Rausing, Hans, to Tetra Pak Developpement SA. Opening arrangement for cans. 4,411,370., Cl. 220-269.000.

Ray, Donald R.: *See—*
Radovan, Felix S.; Koehler, Albert M.; and Ray, Donald R., 4,411,408., Cl. 254-108.000.

Ray, Earl L. Fuel injection apparatus for internal combustion engines. 4,411,602., Cl. 417-437.000.

Ray, James E.: *See—*
Couvillion, Paul L.; and Ray, James E., 4,411,439., Cl. 277-188.00A.

Raychem Corporation: *See—*
Kroymann, Howard B., 4,411,536., Cl. 374-184.000.

Raytheon Company: *See—*
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,412,117., Cl. 219-10.55F.
Works, George A., 4,412,281., Cl. 364-200.000.

Razi, M. Dean. Cannula introducer. 4,411,653., Cl. 604-157.000.

RCA Corporation: *See—*
Kosonocky, Walter F., 4,412,343., Cl. 377-58.000.
Lang, Frank B., 4,412,254., Cl. 358-243.000.
Levine, Peter A., 4,412,190., Cl. 333-165.000.
Maa, Jer-shen, 4,411,734., Cl. 156-643.000.
Nossen, Edward J., 4,412,302., Cl. 364-728.000.
Shanley, Robert L., II, 4,412,244., Cl. 358-22.000.
Smith, Terrence R., 4,412,250., Cl. 358-150.000.
Sutphin, Eldon M., Jr., 4,412,348., Cl. 455-67.000.
Taylor, Bryon K.; and Riddle, George H. N., 4,412,319., Cl. 369-43.000.

Reactor Services International, Inc.: *See—*
Easley, Othel D., Jr.; and Wooten, John T., 4,411,705., Cl. 134-8.000.

Ready Metal Manufacturing Company: *See—*
Radek, John R., 4,411,102., Cl. 49-110.000.

Reckitt & Colman Products Limited: *See—*
Chapleo, Christopher B.; and Myers, Peter L., 4,411,908., Cl. 424-273.00R.

Reed, Jerry O.; and Mathis, Ronald D., to Phillips Petroleum Company. Polymer stabilization. 4,411,853., Cl. 264-176.00F.

Reed, Jerry O., to Phillips Petroleum Company. Polymer stabilization. 4,412,062., Cl. 528-388.000.

Reed, William R., Jr.: *See—*
Lee, Minyoung; Reed, William R., Jr.; and Szala, Lawrence E., 4,411,566., Cl. 407-119.000.

Refarmed, Recherches Pharmaceutiques et Medicales, S.A.: *See—*
Gonella, Jacques, 4,411,909., Cl. 424-275.000.

Regazzoni, Pierre: *See—*
Smith, Robert D.; and Regazzoni, Pierre, 4,411,859., Cl. 376-247.000.

Regenstein, Klaus J., to Du Pont de Nemours, E. I., and Company. Elastic yarn supply package. 4,411,142., Cl. 66-196.000.

Regie Nationale des Usines Renault: *See—*
Marcheix, Raymond; and Desiage, Christian, 4,411,441., Cl. 280-5.00A.
Pannier, Gerard, 4,412,290., Cl. 364-424.100.
Thibault, Bernard; and Le Goff, Andre, 4,411,354., Cl. 198-472.000.

Reich, Richard B., to S. Himmelstein and Company. Rotary transformer. 4,412,198., Cl. 336-120.000.

Reichart, Jane L.: *See—*
Koblitz, Franics F.; and Reichart, Jane L., 4,411,625., Cl. 433-217.000.

Reidenbach, Robert B., to Budd Company, The. Apparatus for shoring during the manufacture of a reefer container. 4,411,413., Cl. 269-48.100.

Reiner, Roland, to Hoffmann-La Roche Inc. Cephalosporin derivatives. 4,412,070., Cl. 544-27.000.

Reinshagen, Hellmuth: *See—*
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,412,024., Cl. 524-220.000.

Reiser, Carl A.; and Maricle, Donald L., to United Technologies Corporation. Molten carbonate fuel cell integral matrix tape and bubble barrier. 4,411,968., Cl. 429-41.000.

Reissinger, Karl H.: *See—*
Nickel, Andreas; Reissinger, Karl H.; Brandt, Hans-Walther; and Melin, Thomas, 4,411,942., Cl. 428-137.000.

Reitberger, Peter H.: *See—*
Weber, Helmut; Reitberger, Peter H.; Bader, Leonhard; and Konig, Walter, 4,412,232., Cl. 346-140.00R.

Reliance Electric Company: *See—*
Conti, Roger C., 4,411,437., Cl. 277-53.000.
Meredith, Richard L., 4,411,590., Cl. 415-26.000.

Remery, Michel: *See—*
Kerforne, Jean-Francois; Le Gars, Jacques; and Remery, Michel, 4,412,284., Cl. 364-200.000.

Renner, Robert A.: *See—*
Boyum, George A.; Renner, Robert A.; and Lovelace, Ralph, 4,411,070., Cl. 30-379.500.

Republic Steel Corporation: *See—*
Demianczuk, Dionisyj W.; McLean, Gregory J.; and Franklin, Joseph E., 4,411,056., Cl. 29-527.700.

Research Development Corporation of Japan: *See—*
Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, 4,411,716., Cl. 148-403.000.

Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, to BASF Aktiengesellschaft. Reactivation of vanadium-containing oxidation catalysts. 4,411,818., Cl. 502-35.000.

Reutler, Herbert; Muller-Frank, Ulrich; Ullrich, Manfred; and Schepers, Hubert, to GHT, Gesellschaft fur Hochtemperaturreaktor-Technik mbH. Pebble bed reactor with feeding device for absorber material and method for its operation. 4,411,860., Cl. 376-338.000.

Reynolds, David A., to Motorola, Inc. Circuit for reducing current to light emitting diode of optically coupled driver. 4,412,140., Cl. 307-311.000.

Rhoades, Russell H.: *See—*
Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., 4,412,133., Cl. 250-492.200.

Rhoden, Donna G.: *See—*
Floyd, Terry S.; Rhoden, Donna G.; and Bradley, Walter E., 4,411,280., Cl. 131-332.000.

Rhone-Poulenc Sante: *See—*
Baudouin, Michel; and Desbois, Michel, 4,412,075., Cl. 546-153.000.
Baudouin, Michel; and Michelet, Daniel, 4,412,076., Cl. 546-153.000.

Rhone-Poulenc Specialites Chimiques: *See—*
Robin, Jean, 4,412,073., Cl. 544-193.000.

Riach, Allan. Cultivating implements. 4,411,321., Cl. 172-40.000.

Richardson-Merrell Inc.: *See—*
Albrecht, William L.; and Jones, Winton D., 4,411,905., Cl. 424-269.000.

Richardson-Vicks Inc.: *See—*
Hostettler, Hans U.; and Beyer, Horst, 4,411,886., Cl. 424-70.000.

Richter, Eberhard: *See—*
Boehm, Alfred; and Richter, Eberhard, 4,411,392., Cl. 242-35.50R.

Richter, George N.: *See—*
Elliott, James F.; Richter, George N.; and Estabrook, Lawrence E., 4,411,817., Cl. 212-373.000.

Rickard, Jimmy R.; and Hollenbeck, Robert K., to General Electric Company. Washing machine with out-of-balance detection and correction capability. 4,411,664., Cl. 8-158.000.

Rico, Ezequiel. Flexible bag with frame. 4,411,300., Cl. 150-51.000.

Ricoh Company, Ltd.: *See—*
Ariyama, Kenzo; and Hirose, Akira, 4,411,511., Cl. 355-3.0TR.
Iwata, Nobuo; and Hasegawa, Takashi, 4,411,539., Cl. 400-144.200.
Nagamoto, Masanaka; Koseki, Yoshihiro; and Iwata, Susumu, 4,411,979., Cl. 430-176.000.

Riddle, George H. N.: *See—*
Taylor, Bryon K.; and Riddle, George H. N., 4,412,319., Cl. 369-43.000.

Riley, Douglas E., to Diamond Automations, Inc. Egg transfer head. 4,411,574., Cl. 414-121.000.

Riley, Robert L., to UOP Inc. Reverse osmosis apparatus. 4,411,787., Cl. 210-321.500.

Rills, Nolan J. Foot-powered wheeled vehicle. 4,411,442., Cl. 280-221.000.

Riter Machine Works, Ltd.: *See—*
Lattmann, Werner; and Moser, Robert, 4,411,562., Cl. 406-157.000.

Riviera Marine & Tackle Co.: *See—*
Steffens, Charles, 4,411,395., Cl. 242-106.000.

Rivola, Giovanni: *See—*
Cassinelli, Giuseppe; Grein, Arpad; Merli, Sergio; and Rivola, Giovanni, 4,411,834., Cl. 260-365.000.

Roberge, Gerard, to SKF Compagnie d'Applications Mecaniques - ADR. Swivel joint. 4,411,545., Cl. 403-12.000.

Robert, Edward W.: *See—*
Simpson, John B.; and Robert, Edward W., 4,411,055., Cl. 29-447.000.

Roberts, John T., to UOP Inc. N,N',N''-Trisubstituted-bis-(p-aminobenzyl) anilines as antioxidants. 4,411,805., Cl. 252-47.000.

Robin, Jean, to Rhone-Poulenc Specialites Chimiques. Isocyanurate preparation by catalytic, aminosilyl initiated cyclotrimerization of isocyanates. 4,412,073., Cl. 544-193.000.

Robinson, Martin A.: *See—*
Anello, Louis G.; Eibeck, Richard E.; and Robinson, Martin A., 4,411,843., Cl. 260-544.00Y.

Robinson, Ronald A.; and Hudson, John O., to Purex Industries, Inc. Stable liquid anionic detergent compositions having soil, release properties. 4,411,831., Cl. 252-554.000.

Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Hinge. 4,411,045., Cl. 16-243.000.

Rockwell International Corporation: *See—*
Abbott, Ned E.; Keshavan, Hampapur R.; and McGuire, Robert J., 4,412,323., Cl. 370-16.000.
Mitchell, Daniel M., 4,412,277., Cl. 363-81.000.
Thornton, Jack C.; and Russell, Randy G., 4,412,200., Cl. 336-139.000.

Roesel, John F., Jr., to Precise Power Corporation. Motor-generator system providing prolonged uninterrupted power supply to a load. 4,412,170., Cl. 322-4.000.

Rogers, James T. Seed planter. 4,411,205., Cl. 111-1.000.

Rohm, Gunter H. Collet-type chuck. 4,411,568., Cl. 409-233.000.

Rohr, Wolfgang; Hansen, Hanspeter; Wuerzer, Bruno; and Ceser, Heinz-Guenter, to BASF Aktiengesellschaft. 1-Substituted phenylpyridazone herbicides. 4,411,691., Cl. 71-92.000.

Roll, Werner, to Estel Hoesch Werke Aktiengesellschaft. Method and apparatus for testing pipes. 4,411,152., Cl. 73-46.000.

Rolls-Royce Limited: *See—*
Pearce, Maurice N., 4,411,137., Cl. 60-739.000.
Pellow, Terence R.; and Glew, Derek A., 4,411,594., Cl. 415-174.000.

Romain, John: *See—*
McCoy, Kenneth H.; and Romain, John, 4,411,426., Cl. 272-126.000.

Roncato, Giordano, to Vetrotex Saint-Gobain. Process and device for introduction of a continuous yarn in a cutting machine. 4,411,180., Cl. 83-37.000.

Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, to BASF Aktiengesellschaft. Spinel-containing electrode and process for its production. 4,411,761., Cl. 204-290.00R.

Roos, Hans: *See—*
Degner, Dieter; Roos, Hans; and Hannebaum, Heinz, 4,411,746., Cl. 204-59.00R.

Roper, Daleth F.; and Montz, Lowell H. Composite marimba bars. 4,411,187., Cl. 84-402.000.

Rosegren, Donald R.; and Mayer, Linda J., to Occidental Chemical Corporation. Bath and process for high speed nickel electroplating. 4,411,744., Cl. 204-49.000.

Rosegren, Donald R.; and Mayer, Linda J., to Occidental Chemical Corporation. Process for high speed nickel and gold electroplate system and article having improved corrosion resistance. 4,411,965., Cl. 428-672.000.

Rosenberg, Harry. Bumper guards. 4,411,461., Cl. 293-108.000.

Rosenquist, Niles R., to General Electric Company. Cycloalkyl carbonyl end-capped aromatic polycarbonates. 4,412,060., Cl. 528-196.000.

Rosi, David, to Sterling Drug Inc. Novel compounds of the gentamicin class. 4,412,068., Cl. 536-13.600.

Ross, Oakley G.: *See—*
Wedertz, Larry D.; Ross, Oakley G.; and Niemeier, Byron M., 4,411,398., Cl. 244-3.280.
Wedertz, Larry D.; and Ross, Oakley G., 4,412,272., Cl. 361-383.000.

Rossarie, Jean: *See—*
Arod, Jean; Bartoli, Bernard; Bergez, Pierre; Biedermann, Jean; Caminade, Philippe; Martinet, Jean-Marie; Maurin, Jean; and Rossarie, Jean, 4,411,790., Cl. 210-637.000.

Rossi, Maurizio: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Roth, Charles B.: *See—*
Low, Philip F.; Roth, Charles B.; and Stucki, Joseph W., 4,411,530., Cl. 366-4.000.

Roussel Uclaf: *See—*
Godbille, Etienne; Escuret, Pierre; and Scheid, Jean-Pierre, 4,411,658., Cl. 604-285.000.
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,412,069., Cl. 542-429.000.

Rowland-Hill, E. William; and Sheehan, Ronald T., to Sperry Corporation. Automatic sieve and chaffer adjustment in a combine harvester. 4,411,124., Cl. 56-10.200.

Royster, Dick M.: *See—*
McWithey, Robert R.; Royster, Dick M.; and Bales, Thomas T., 4,411,380., Cl. 228-181.000.

Rubery Owen Group Services Limited: *See—*
Spear, Peter; and Anson, Paul A., 4,411,159., Cl. 73-768.000.

Rubinstein, Arthur: *See—*
Feinland, Seymour; and Rubinstein, Arthur, 4,412,298., Cl. 364-567.000.

Ruehl, Friedel: *See—*
Faatz, Rudi; Moeller, Siegfrid; Ruehl, Friedel; and Steuernagel, Adolf, 4,411,510., Cl. 354-272.000.

Rufer, Clemens: *See—*
Schroeder, Eberhard, deceased; Lehman, Manfred; and Rufer, Clemens, 4,411,910., Cl. 424-279.000.

Runavot, Yves; Billault, Georges; and Salvetat, Jaques, to National Starch and Chemical Corporation. Hot melt adhesive compositions employing resins based on 2-methyl styrene, styrene and a phenol. 4,412,030., Cl. 524-505.000.

Runeric, Ronald A. Fishing fly with synthetic feather. 4,411,089., Cl. 43-42.530.

Rushing, Barbara R.: *See—*
Rushing, Wilford A.; and Rushing, Barbara R., 4,411,095., Cl. 46-7.000.

Rushing, Wilford A.; and Rushing, Barbara R., to Boelke, Rosemary E.; and Boelke, Art. Bubble pipe. 4,411,095., Cl. 46-7.000.

Russell Burdsall & Ward Corporation: *See—*
Capuano, Terry D., 4,411,147., Cl. 72-220.000.

Russell, Randy G.: *See—*
Thornton, Jack C.; and Russell, Randy G., 4,412,200., Cl. 336-139.000.

Russell, Richard T. Method and apparatus for separating blood from other fluids during operative procedures. 4,411,786., Cl. 210-321.300.

Russell, William H.; and Ball, Robert D., to Kearney-National, Inc. Electric circuit interrupting apparatus. 4,412,202., Cl. 337-171.000.

Ruther, Hubert. Multi-purpose wheel particularly useful for games and demonstrations. 4,411,639., Cl. 474-902.000.

Rutherford, Dennis F., to Dowty Mining Equipment Limited. Roof support suitable for use in mines. 4,411,558., Cl. 405-294.000.

Rutty, Edward C.; and Stoutenberg, Carl C., to Stanley Works, The. Variable stiffness rule blade, rule employing same, and method of making same. 4,411,072., Cl. 33-138.000.

Ryabinin, July V.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Ryan, Terence J. Pitch testing apparatus. 4,411,073., Cl. 33-174.00C.

Ryer, Jack: *See—*
Gutierrez, Antonio; Brois, Stanley J.; Ryer, Jack; and Deen, Harold E., 4,411,808., Cl. 252-78.100.

Ryon, Donald C., to Motorola, Inc. Phase adjustable horizontal oscillator for a data display monitor. 4,412,187., Cl. 331-108.00D.

S. Himmelstein and Company: *See—*
Reich, Richard B., 4,412,198., Cl. 336-120.000.

S R I International: *See—*
Kremers, Jan H.; and Bolles, Robert C., 4,412,121., Cl. 219-124.340.

Sager, Thomas B., to Branson Ultrasonics Corporation. Ultrasonic welding method for sealing a thermoplastic cap to the neck of a thermoplastic container. 4,411,720., Cl. 156-69.000.

Saiag S.p.A. Industria Articoli Gomma: *See—*
Azzola, Roberto, 4,411,941., Cl. 428-122.000.

St. Aubin, William R., to LST Corporation. Inswing door bottom and sill assembly. 4,411,104., Cl. 49-470.000.

Saito, Koichi: *See—*
Fujii, Kiyonobu; Ikeda, Kotaro; Okuno, Kenji; Saito, Koichi; and Ohara, Osamu, 4,412,103., Cl. 179-115.50R.

Saito, Masumi; Hirai, Eiichi; and Endo, Masao, to Kurashiki Bosiki Kabushiki Kaisha. Waterproof gypsum molded product. 4,411,701., Cl. 106-87.000.

Saito, Yasuo: *See—*
Takahashi, Hiroshi; and Saito, Yasuo, 4,411,071., Cl. 30-381.000.

Sajima, Yasuo: *See—*
Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Morimoto, Takeshi, 4,411,749., Cl. 204-98.000.

Sakabe, Toshiaki; Matsumoto, Yasuhiro; and Tsujio, Hisami, to Aisin Seiki Kabushiki Kaisha; and Aisin Kako Kabushiki Kaisha. Method for making friction material without asbestos fibers including repeated pressing and degassing steps. 4,411,851., Cl. 264-137.000.

Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, to Canon Kabushiki Kaisha. Camera. 4,411,505., Cl. 354-25.000.

Sakai, Takashi: *See—*
Suzuki, Migaku; and Sakai, Takashi, 4,411,641., Cl. 493-46.000.

Sakai, Toshiyasu: *See—*
Kojima, Akira; and Sakai, Toshiyasu, 4,412,160., Cl. 318-280.000.

Sakamoto, Tsunenori, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Method for manufacture of interdigital periodic structure device. 4,411,728., Cl. 156-606.000.

Sakamoto, Yoshiaki: *See—*
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.

Sakata, Toshio; and Morikawa, Takeji, to Minolta Camera Kabushiki Kaisha. Cleaning device. 4,411,042., Cl. 15-256.510.

Sakurai, Akira; Nakanishi, Takashi; and Nishimura, Akio, to Kao Soap Co., Ltd. Tampon applicator. 4,411,647., Cl. 604-16.000.

Salmon, Sydney E.; and Hamburger, Anne W., to University Patents, Inc. Primary bioassay of human tumor stem cells. 4,411,990., Cl. 435-32.000.

Salvetat, Jaques: *See—*
Runavot, Yves; Billault, Georges; and Salvetat, Jaques, 4,412,0.
Cl. 524-505.000.

Samejima, Masayoshi; and Hirata, Goichi, to Tanabe Seiyaku Co., Ltd. Process for preparing ethylcellulose microcapsules. 4,411,933., Cl. 427-213.300.

Samijn, Rafael P.: *See—*
Laridon, Urbain L.; Kokelenberg, Hendrik E.; and Samijn, Rafael P., 4,411,978., Cl. 430-157.000.

SAMIM Societa Azionaria Minero Metallurgica S.p.A.: *See—*
Guerriero, Renato; and Vittadini, Italo, 4,411,760., Cl. 204-270.000.

Sanden Corporation: *See—*
Terauchi, Kiyoshi, 4,411,604., Cl. 418-55.000.

Sander, Bruno; Hess, Klaus; Lintz, Peter; and Goesele, Walter, to BASF Aktiengesellschaft. Dewatering of sewage sludges on chamber filter presses. 4,411,797., Cl. 210-727.000.

Sanders Associates, Inc.: *See—*
Brockway, Richard J., 4,412,126., Cl. 219-553.000.
Knights, Mark G.; and Chicklis, Evan P., 4,412,332., Cl. 372-70.000.

Sandoz Ltd.: *See—*
Avar, Lajos; Kalt, Evelyne; and Reinshagen, Hellmuth, 4,412,024., Cl. 524-220.000.
Egli, Hermann; and Engeler, Emil, 4,411,665., Cl. 8-455.000.
Franz, Joachim; and Patt, Ludwig, 4,411,882., Cl. 424-33.000.
Payne, Trevor G.; and Berthold, Richard, 4,411,913., Cl. 424-330.000.

Sands, Steven D.: *See—*
Bermudez, Mauricio; Klimpel, Richard R.; and Sands, Steven D., 4,411,927., Cl. 426-618.000.

Sanke Electric Co., Ltd.: *See—*
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.

Sanmiya, Tsugumi: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.

Sano, Yutaka: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.

Santucci, Nicola, to Nuovo Pignone S.p.A. Device for keeping constant both the speed and the tension when reeling off the warp thread from the warp beam in a loom. 4,411,293., Cl. 139-110.000.

Sasaki, Toshio: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, 4,412,049., Cl. 526-127.000.

Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, to UBE Industries, Ltd. Aromatic imide polymer laminate material and method for producing the same. 4,411,952., Cl. 428-332.000.

Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, to Hitachi, Ltd. Color solid-state imager. 4,412,236., Cl. 357-31.000.

Sato, Hidemi: *See—*
Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Sato, Kimihiko; Sajima, Yasuo; Nakao, Makoto; and Morimoto, Takeshi, to Asahi Glass Company Ltd. Process for electrolyzing aqueous solution of alkali metal chloride. 4,411,749., Cl. 204-98.000.

Sato, Koji: *See—*
Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, 4,412,011., Cl. 521-38.000.

Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, to Mitsubishi Denki Kabushiki Kaisha LSI Development Laboratory. Method for manufacturing semiconductor device. 4,411,929., Cl. 427-38.000.

Sato, Shoji: *See—*
Takuchi, Hideo; Baba, Shigenori; and Sato, Shoji, 4,412,240., Cl. 357-45.000.

Sato, Syoji: *See—*
Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, 4,412,237., Cl. 357-42.000.

Sato, Tetsuo: *See—*
Kominami, Yasuo; Sato, Tetsuo; and Ohkubo, Yuichi, 4,412,189., Cl. 333-14.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Printing device for hand labeler. 4,411,197., Cl. 101-291.000.

Satomura, Masato: *See—*
Sekikawa, Nobuyoshi; Iwakura, Ken; Miyamoto, Akio; and Satomura, Masato, 4,411,700., Cl. 106-23.000.

Sattlegger, Hans: *See—*
Alberts, Heinrich; Friemann, Hans; Moretto, Hans-Heinrich; Sattlegger, Hans; and Mietzsch, Fritz, 4,412,039., Cl. 525-106.000.

Sauls, John R., to Trane Company, The. Involute and laminated tip seal of labyrinth type for use in a scroll machine. 4,411,605., Cl. 418-55.000.

Saunders, Howard E.: *See—*
Dixon, George D.; Carlson, Nancy W.; and Saunders, Howard E., 4,412,048., Cl. 525-524.000.

Savin Corporation: *See—*
Landa, Benzion; and Charlap, E. Paul, 4,411,976., Cl. 430-114.000.

Savoyet, Jean-Louis P. J.: *See—*
Mole, Alain M. L.; and Savoyet, Jean-Louis P. J., 4,412,216., Cl. 340-825.310.

Say, Donald L., to North American Philips Consumer Electronics Corp. CRT Focusing electrode structure. 4,412,149., Cl. 313-414.000.

SCA Services, Inc.: *See—*
Lee, Sung K., 4,411,874., Cl. 423-87.000.

Scandpower, Inc.: *See—*
Smith, Robert D., 4,411,858., Cl. 376-247.000.
Smith, Robert D.; and Regazzoni, Pierre, 4,411,859., Cl. 376-247.000.

Scartazzini, Riccardo, to Ciba-Geigy Corporation. Crystalline salts. 4,411,897., Cl. 424-246.000.

Schaad, William J.; Black, Charles E., III; and Halstead, Raymond T., to Indak Manufacturing Corp. Push button switches having contact structures to avoid detent action and to enhance break-before-make action. 4,412,109., Cl. 200-16.00C.

Schaeflern, Henry: *See—*
Szostak, Jan; and Schaeflern, Henry, 4,411,209., Cl. 112-158.00A.

Schaff, Alfred, Jr., to Ametek, Inc. Apparatus for sensing the condition of a fluid. 4,411,158., Cl. 73-721.000.

Schaffrik, Arnold: *See—*
Glasauer, Rudolf; Duschl, Bernhard; Linzmeier, Wilhelm; and Schaffrik, Arnold, 4,412,201., Cl. 336-192.000.

Sch pel, Dietmar: *See—*
von Bonin, Wulf; von Gizycki, Ulrich; Wagner, Kuno; and Schapel, Dietmar, 4,411,262., Cl. 128-90.000.

Scheib, Thomas J.: *See—*
Kaya, Azmi; Keyes, Marion A.; and Scheib, Thomas J., 4,412,136., Cl. 290-40.00R.

Scheid, Jean-Pierre: *See—*
Godbille, Etienne; Escuret, Pierre; and Scheid, Jean-Pierre, 4,411,658., Cl. 604-285.000.

Schepers, Hubert: *See—*
Reutler, Herbert; Muller-Frank, Ulrich; Ullrich, Manfred; and Schepers, Hubert, 4,411,860., Cl. 376-338.000.

Schering Aktiengesellschaft: *See—*
Schroeder, Eberhard, deceased; Lehman, Manfred; and Rufer, Clemens, 4,411,910., Cl. 424-279.000.

Schering Corporation: *See—*
Girijavallabhan, Viyyoor M.; McCombie, Stuart W.; and Ganguly, Ashit K., 4,411,906., Cl. 424-270.000.

Scheurecker, Werner, to Voest-Alpine Aktiengesellschaft. Arrangement for exchanging supporting or driving rollers of a continuous casting plant. 4,411,053., Cl. 29-267.000.

Schick, Henry C.: *See—*
Narken, Bernt; and Schick, Henry C., 4,411,972., Cl. 430-5.000.

Schiller, Arminio. Fluid flow restrictor device. 4,411,292., Cl. 138-42.000.

Schlag, Johannes: *See—*
Naarmann, Herbert; Penzien, Klaus; Schlag, Johannes; and Simak, Petr, 4,411,826., Cl. 252-518.000.

Schlanger, Samuel L., to Mauer, Gail B.; and Cohen, Ellen R., a part interest. Vehicle control safety system. 4,411,334., Cl. 180-274.000.

Schlosser, Philip A.; and Miller, Don W., to Picker Corporation. Method for manufacturing a charge splitting resistive layer for a semiconductor gamma camera. 4,411,059., Cl. 29-572.000.

Schlumberger Technical Corporation: *See—*
Sinclair, Paul L., 4,412,207., Cl. 340-347.0AD.

Schmehl, Glenn L.: *See—*
Dougherty, Timothy S.; Kissell, John J.; and Schmehl, Glenn L., 4,412,094., Cl. 174-110.00F.

Schmitz, Nicholas A.: *See—*
Ragonese, Louis J.; Schmitz, Nicholas A.; Bevacqua, Saverio F.; and Owyang, King, 4,412,142., Cl. 307-477.000.

Schnabel, Roland; Hoelzel, Alexander; and Vaulont, Winfrid, to Jenaer Glaswerk Schott & Gen. High pressure ultra-filtration system. 4,411,781., Cl. 210-195.200.

Schnatzmeyer, Mark A. Riser connector. 4,411,455., Cl. 285-39.000.

Schneider, Johann: *See—*
Wusthof, Peter; and Schneider, Johann, 4,411,607., Cl. 418-61.00B.

Schnell, Leonard R.: *See—*
Grone, Robert J.; and Schnell, Leonard R., 4,411,579., Cl. 414-417.000.

Schoening, Josef: *See—*
Koerdt, Reinhold; Schwiers, Hans-Georg; and Schoening, Josef, 4,411,308., Cl. 165-70.000.

Scholl, Michael; and Klassen, Herbert, to Bosch-Siemens Hausgerate GmbH. Laundry treatment machine. 4,411,143., Cl. 68-12.00R.

Schonherr, Walter: *See—*
Helbig, Peter; Schonherr, Walter; and Steiner, Hermann, 4,412,273., Cl. 362-211.000.

Schottel-Werft, Josef Becker GmbH & Co KG.: *See—*
Krautkremer, Franz; and Lais, Siegfried, 4,411,630., Cl. 440-42.000.

Schrank, Jurg; and Steffen, Hans, to Hoffmann-La Roche Inc. Pharmaceutical preparations. 4,411,894., Cl. 424-199.000.

Schreck, David M. Apparatus and method for percutaneous catheterization. 4,411,655., Cl. 604-165.000.

Schreck, Ronald P.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

Schreiber, Loren B.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

Schreiber, William L.: *See—*
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

Schrewelius, Nils G., to Bulten-Kanthal AB. Sprayed alloy layer and method of making same. 4,411,936., Cl. 427-367.000.

Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, to Inventio AG. Group control for elevators. 4,411,337., Cl. 187-29.00R.

Schroeder, Bernhard: *See—*
Drabert, Fritz; Posch, Oskar; Edel, Hans-Joachim; and Schroeder, Bernhard, 4,411,469., Cl. 297-300.000.

Schroeder, Eberhard, deceased (by Schroeder, Kirsten, Christian Schroeder, legal representatives); Lehman, Manfred; and Rufer, Clemens, to Schering Aktiengesellschaft. Benzofuran derivatives and their pharmaceutical use. 4,411,910., Cl. 424-279.000.

Schroeder, Gunther: *See—*
Albrecht, Joachim; Duerig, Thomas; and Schroeder, Gunther, 4,411,711., Cl. 148-11.50A.

Schroeder, Kirsten, Christian Schroeder, legal representatives: *See—*
Schroeder, Eberhard, deceased; Lehman, Manfred; and Rufer, Clemens, 4,411,910., Cl. 424-279.000.

Schroeder, Larry D.: *See—*
Klaus, Jack C.; Schroeder, Larry D.; Casteel, Vincent H.; and Schwartz, Kenneth E., 4,412,356., Cl. 455-603.000.

Schucker, Robert C.; and Wheelock, Kenneth S., to Exxon Research and Engineering Co. Fluid coking with the addition of perovskite-containing catalysts. 4,411,772., Cl. 208-121.000.

Schuler, Peter: *See—*
Angersbach, Wolfgang; and Schuler, Peter, 4,412,163., Cl. 318-567.000.

Schulman, Joseph H., to Pacesetter Systems, Inc. Device and method useful in monitoring fluid flow in a drug injector. 4,411,651., Cl. 604-151.000.

Schulte-Elte, Karl H.; and Kastner, Dietrich, to Firmenich SA. Perfuming ingredient. 4,411,829., Cl. 252-522.00R.

Schultz, Earl R., to Honeywell Inc. Mount for magnetic recorder transducer. 4,412,262., Cl. 360-109.000.

Schultz, John C., to Houdaille Industries, Inc. Rotary hydraulic damper. 4,411,341., Cl. 188-310.000.

Schulz, Kurt: *See—*
Lang, Walter H.; Muchel, Franz; Schulz, Kurt; and Summerer, Gunther, 4,411,502., Cl. 351-206.000.

Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, to Ciba-Geigy Corporation. Rifamycins, their compositions and use as antibiotics. 4,411,896., Cl. 424-244.000.

Schuster, Harald, to Licentia Patent-Verwaltungs-GmbH. Frequency conversion circuit. 4,412,352., Cl. 455-319.000.

Schutt, Peter; Bernhardt, Martin; Nitsche, Klaus; Grindler, Horst; and Hofmann, Hans-Joachim, to Durr-Dental GmbH & Co., KG. Torque transmitting coupling. 4,411,550., Cl. 403-358.000.

Schwartz, Kenneth E.: *See—*
Klaus, Jack C.; Schroeder, Larry D.; Casteel, Vincent H.; and Schwartz, Kenneth E., 4,412,356., Cl. 455-603.000.

Schwarzschild, Jack, to Timex Medical Products Corporation. Probe for clinical electronic thermometer. 4,411,535., Cl. 374-165.000.

Schwefel, Ernst, to Johannes Heidenhain GmbH. Digital electrical length or angle measuring device. 4,412,206., Cl. 340-347.00P.

Schweisser, Bernd: *See—*
Marzouki, Taieb; and Schweisser, Bernd, 4,411,115., Cl. 52-309.100.

Schweizerische Lokomitiv-und Maschinenfabrik: *See—*
Kreissig, Ernst F., 4,411,202., Cl. 105-199.00R.

Schwiers, Hans-Georg: *See—*
Koerdt, Reinhold; Schwiers, Hans-Georg; and Schoening, Josef, 4,411,308., Cl. 165-70.000.

Schwinn, Horst; Heimburger, Norbert; Kumpe, Gerhardt; and Drescher, Heinz H., to Behringwerke Aktiengesellschaft. Process for the purification of the blood clotting factors, II, VII, IX and/or X. 4,411,794., Cl. 210-670.000.

Scobie, William B., to Keystone International, Inc. Packing gland. 4,411,438., Cl. 277-105.000.

Scott, Eric J.: *See—*
Chen, Nai Y.; Scott, Eric J.; and Shihabi, David S., 4,411,770., Cl. 208-111.000.

Scott and Fetzer Company, The: *See—*
Miller, Wendell E., 4,411,189., Cl. 91-420.000.

Scott, Robert J.: *See—*
Jodrey, Robert M.; and Scott, Robert J., 4,411,393., Cl. 242-75.430.

Scovill Inc.: *See—*
Kuypers, Harold A., 4,411,302., Cl. 152-427.000.

Seals, Ralph W. Trolling plane. 4,411,090., Cl. 43-43.130.

SeaTek: *See—*
Bergman, Gunnar B., 4,411,212., Cl. 114-125.000.

Secter, Michael. Hand covering. 4,411,026., Cl. 2-158.000.

Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., to Coca-Cola Company, The. System for the remote monitoring of vending machines. 4,412,292., Cl. 364-479.000.

See, Jacques L. A.: *See—*
Minvielle, Monique L. S.; Mazoin, Albert H. F.; Brun, Robert P.; Chevanne, Sylvain V. L.; and See, Jacques L. A., 4,411,555., Cl. 405-50.000.

Seibert, Karl; Praetorius, Heinz; and Poppel, Gunter, to Akzona Incorporated. Use of alkylene oxide copolymers as emollients in cosmetic preparations. 4,411,887., Cl. 424-78.000.

Seiy, Robert, to Kempsmith Machine Company, The. Hanger rod transfer assembly for hanging-typefile folders. 4,411,727., Cl. 156-562.000.

Sekiguchi, Kiyonori: *See—*
Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, 4,411,242., Cl. 123-569.000.

Sekikawa, Nobuyoshi; Iwakura, Ken; Miyamoto, Akio; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Desensitizer compositions. 4,411,700., Cl. 106-23.000.

Sekikawa, Nobuyoshi: *See—*
Iwakura, Ken; Sekikawa, Nobuyoshi; and Miyamoto, Akio, 4,411,699., Cl. 106-23.000.

Sekiya, Shinji; and Ono, Takatoshi, to Disco Co., Ltd. Grinding wheel for flat plates. 4,411,107., Cl. 51-209.00R.

Sekmakas, Kazys: *See—*
Gaske, Joseph E.; Plaisance, Thomas H.; and Sekmakas, Kazys, 4,412,032., Cl. 524-538.000.

Sell, Michael R., to Black & Decker, Inc. Battery charging and indicating circuit. 4,412,168., Cl. 320-48.000.

Senco Products, Inc.: *See—*
Warman, Thomas E., 4,411,378., Cl. 227-19.000.

Senta, Therese A.: *See—*
Johnson, Dee L.; Senta, Therese A.; and Sirvio, Larry M., 4,411,893., Cl. 424-181.000.

Servas, Francis M.: *See—*
Dickens, Duane D.; and Servas, Francis M., 4,411,783., Cl. 210-304.000.

Sethi, Amar J.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,412,007., Cl. 436-139.000.

Sevenants, Michael R., to Procter & Gamble Co., The. Cream flavor composition for use with buttery flavored food products. 4,411,924., Cl. 426-534.000.

SGS-Ates Componenti Elettronici S.p.A.: *See—*
Miccoli, Franco; and Corda, Giuseppe, 4,412,311., Cl. 365-185.000.

Shachihata Industrial Co., Ltd.: *See—*
Fujihara, Naoyuki, 4,411,192., Cl. 101-111.000.

Shafer, Philip E.: *See—*
Barnes, George H.; Lundstrom, Stephen F.; and Shafer, Philip E., 4,412,303., Cl. 364-900.000.

Shanley, Robert L., II, to RCA Corporation. Switching circuit for television receiver on-screen display. 4,412,244., Cl. 358-22.000.

Shannon, Roger L.: *See—*
Perry, Clifford R.; Dietz, Lloyd H.; and Shannon, Roger L., 4,411,310., Cl. 165-166.000.

Sharp Kabushiki Kaisha: *See—*
Awaji, Hidekazu, 4,412,135., Cl. 250-551.000.
Isaka, Kinichi; Kawaguchi, Masashi; and Uede, Hisashi, 4,412,155., Cl. 315-246.000.
Minezaki, Shigehiro, 4,411,981., Cl. 430-299.000.
Nonomura, Keisaku; Matsura, Masataka; and Wada, Tomio, 4,411,496., Cl. 350-347.00E.
Washizuka, Isamu; and Hashimoto, Shintaro, 4,412,210., Cl. 340-365.00S.

Sharrow, Robert F.; and Sherman, Sidney L. Pocket golf ball washer. 4,411,040., Cl. 15-104.940.

Shearer, James T., Jr., to Rapistan Division, Lear Siegler, Inc. Vehicle sensor monitoring system. 4,411,577., Cl. 414-274.000.

Shearhart, Billy G., to Sooner Oil Tools, Inc. Attachment means for use for insertion and retrieval of a casing packer. 4,411,314., Cl. 166-124.000.

Sheehan, Ronald T.: *See—*
Rowland-Hill, E. William; and Sheehan, Ronald T., 4,411,124., Cl. 56-10.200.

Shell Internationale Research Maatscappij, B. A.: *See—*
Harrison, John D., 4,411,389., Cl. 239-427.500.

Shell Oil Company: *See—*
Mulder, Nicolaas; Terlouw, Willem; and Wevers, Jan H., 4,412,089., Cl. 585-645.000.
van Gogh, Johan; and Grol, Hermanus, 4,412,056., Cl. 528-112.000.

Shemer, Jack E.: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.

Shepard, Charles E.: *See—*
Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., 4,412,133., Cl. 250-492.200.

Shepherd, Robert G., to American Cyanamid Company. 4-[(Monosubstituted-alkyl)amino]benzoic acids and analogs as hypolipidemic and antiatherosclerotic agents. 4,411,903., Cl. 424-267.000.

Sheppard, Peter H. Installation and retainer device for power steering pitman arm. 4,411,549., Cl. 403-258.000.

Sherif, Fawzy G., to Stauffer Chemical Company. Process for the manufacture of highly pure trimagnesium phosphate octahydrate of high purity. 4,411,876., Cl. 423-311.000.

Sherman, Sidney L.: *See—*
Sharrow, Robert F.; and Sherman, Sidney L., 4,411,040., Cl. 15-104.940.

Shibakawa, Riichiro: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,411,892., Cl. 424-181.000.

Shibuya, Chuji; Kaneda, Satoshi; Kanehisa, Takashi; Kondo, Masatoshi; Nogawa, Kenji; and Hasuike, Fumio, to Matsushita Electric Industrial Co., Ltd. Method of making flexible printed circuits. 4,411,982., Cl. 430-314.000.

Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, to Sumitomo Chemical Company, Limited. Process for producing highly stereoregular α-olefin polymers. 4,412,049., Cl. 526-127.000.

Shigesada, Shigeki; Kitagawa, Hironoshin; Mihara, Toshio; and Ishimatsu, Yoshiaki, to Denki Kagaku Kogyo Kabushiki Kaisha. Immobilization of enzymes on granular gelatin. 4,411,999., Cl. 435-177.000.

Shihabi, David S.: *See—*
Chen, Nai Y.; Scott, Eric J.; and Shihabi, David S., 4,411,770., Cl. 208-111.000.

Shiho, Kenichi: *See—*
Mitsugi, Itaru; Oka, Shunzo; Nakagawa, Yoshinobu; and Shiho, Kenichi, 4,412,113., Cl. 200-67.0DB.

Shiiki, Kazuo; Otomo, Shigekazu; Kudo, Mitsuhiro; Kimura, Takeshi; Kumasaka, Noriyuki; and Fujiwara, Hideo, to Hitachi, Ltd.; Hitachi Metals, Ltd.; and Research Development Corporation of Japan. Amorphous alloys for magnetic head core and video magnetic head using same. 4,411,716., Cl. 148-403.000.

Shiley Incorporated: *See—*
Dickens, Duane D.; and Servas, Francis M., 4,411,783., Cl. 210-304.000.

Shimada, Shojiro, to Sony Corporation. Magnetic recording and playback apparatus. 4,412,258., Cl. 360-62.000.

Shimano Industrial Company Limited: *See—*
Takeda, Nobumi, 4,411,169., Cl. 74-594.400.

Shimazaki, Keishi; Nakamura, Yoshihiro; and Yamada, Yasutsugu, to Ajinomoto Company Incorporated. Method for producing L-lysine by fermentation. 4,411,997., Cl. 435-115.000.

Shimizu, Motoharu: *See—*
Fujita, Osamu; Goshi, Noriaki; Okayasu, Shinya; Shimizu, Motoharu; and Kakinuma, Nobuo, 4,412,104., Cl. 179-117.000.

Shimizu, Noboru: *See—*
Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, 4,411,757., Cl. 204-192.00E.

Shinagawa Shiroenga Kabushiki Kaisha: *See—*
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Shingyoji, Takayuki: *See—*
Itaba, Takeshi; Nishiyama, Akio; Kikuchi, Noribumi; Shingyoji, Takayuki; and Ohsawa, Yuzo, 4,411,763., Cl. 204-298.000.

Shinoda, Kazuo; Kobayashi, Nobuyuki; and Isobe, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection system for internal combustion engine. 4,411,235., Cl. 123-488.000.

Shinoda, Nobuhiko: *See—*
Sakai, Shinji; Shinoda, Nobuhiko; Hosoe, Kazuya; and Kinoshita, Takao, 4,411,505., Cl. 354-25.000.

Shinoi, Tsuyoshi: *See—*
Ogawa, Seiki; Mito, Michio; and Shinoi, Tsuyoshi, 4,412,102., Cl. 179-99.00M.

Shinozaki, Fumiaki: *See—*
Washizawa, Yasuo; Shinozaki, Fumiaki; Ikeda, Tomoaki; and Nakao, Sho, 4,411,983., Cl. 430-325.000.

Shioda, Toshiyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Sand mold-producing apparatus. 4,411,303., Cl. 164-182.000.

Shirai, Hitoshi, to Olympus Optical Company Ltd. Take-up assembly for automatic film loading of camera. 4,411,509., Cl. 354-212.000.

Shiranita, Akira: *See—*
Miyamoto, Akira; Ishikawa, Masaru; Nishi, Masaaki; Ishizawa, Kenki; and Shiranita, Akira, 4,412,008., Cl. 501-97.000.

Shirano, Kenji: *See—*
Hirai, Koji; Shirano, Kenji; and Okamura, Takayuki, 4,412,022., Cl. 524-104.000.

Shirazawa, Takashi: *See—*
Inoue, Takeo; and Shirazawa, Takashi, 4,411,457., Cl. 285-52.000.

Shishkin, Nikolai K.: *See—*
Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V., 4,411,586., Cl. 414-728.000.

Showa Oil Company, Ltd.: *See—*
Matsumoto, Takao; Fujimaki, Atsushi; and Nagata, Takeo, 4,411,998., Cl. 435-144.000.

Shrader, John E.; and Zimmerschied, Alan B., to Boeing Company, The. Impact fuze. 4,411,198., Cl. 102-216.000.

Shumaker, John F., to J. I. Case Company. Optimized earthworking tool operating linkage. 4,411,584., Cl. 414-694.000.

Shumway, Durland K.: *See—*
Kenkare, Divaker B.; and Shumway, Durland K., 4,411,883., Cl. 424-47.000.

Shurney, Glenn A.: *See—*
Fiebig, August E., Jr.; Shurney, Glenn A.; and Nagy, Anton J., 4,411,855., Cl. 264-219.000.

Sides, Larry W.: *See—*
Martin, Julian R.; and Sides, Larry W., 4,411,279., Cl. 131-94.000.

Siegel, John H.; and Edwards, Gerald L., to CX Corporation. Daylight film splicer. 4,411,725., Cl. 156-353.000.

Siegel, Vernon. Platform scale. 4,411,326., Cl. 177-211.000.

Siemens Aktiengesellschaft: *See—*
Diepers, Heinrich, 4,412,316., Cl. 367-105.000.
Feuerbaum, Hans P.; and Tobolka, Gerald, 4,412,191., Cl. 333-193.000.
Heinzl, Joachim; and von Borstel, Klaus P., 4,412,256., Cl. 358-283.000.
Horbaschek, Heinz, 4,412,247., Cl. 358-111.000.
Horninger, Karlheinrich, 4,412,139., Cl. 307-270.000.
Kampf, Erich, 4,411,052., Cl. 29-25.350.
Kaufhold, Wolfgang, 4,412,171., Cl. 322-20.000.
Mauthe, Manfred; and Pfleiderer, Hans-Jorg, 4,412,344., Cl. 377-60.000.
Voss, Erich; and Grafenschnell, Horst, 4,412,145., Cl. 310-154.000.

Siemionko, Roger K., to Du Pont de Nemours, E. I., and Company. Aromatic polyesters and high strength filaments thereof. 4,412,058., Cl. 528-191.000.

Silfvast, William T.: *See—*
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,411,733., Cl. 156-643.000.

Silva, Raimund H.; and Smith, Roger A., to Du Pont de Nemours, E. I., and Company. Cation exchange membrane with high equivalent weight component. 4,411,750., Cl. 204-98.000.

Silverman, Harold; and Hotchkiss, Alan B., to Pitney Bowes Inc. Articulate bridge assembly. 4,411,419., Cl. 271-263.000.

Simak, Petr: *See—*
Naarmann, Herbert; Penzien, Klaus; Schlag, Johannes; and Simak, Petr, 4,411,826., Cl. 252-518.000.

Simmonds Precision Products, Inc.: *See—*
Weitz, Paul G., Jr.; and Franklin, Cecil, 4,412,270., Cl. 361-284.000.

Simon, Donald J.: *See—*
Field, Thomas R.; and Simon, Donald J., 4,411,254., Cl. 126-300.000.

Simonetti, Richard A.: *See—*
Lautzenheiser, William J.; Simonetti, Richard A.; Henderson, Martin E.; Edson, James B.; and Beeson, Kenneth E., 4,412,211., Cl. 340-514.000.

Simpson, John B.; and Robert, Edward W., to Advanced Cardiovascular Systems, Inc. Vascular guiding catheter assembly and vascular dilating catheter assembly and a combination thereof and methods for making the same. 4,411,055., Cl. 29-447.000.

Sims, Rex: *See—*
Trumbetas, Jerome F.; Sims, Rex; and Fioriti, Joseph A., 4,411,926., Cl. 426-565.000.

Sin Sui Lai: *See—*
Huang, Jiunn-Cherng, 4,411,029., Cl. 4-324.000.

Sinclair, Paul L., to Schlumberger Technical Corporation. Digital induction logging tool including a floating point A/D. 4,412,207., Cl. 340-347.0AD.

Singer Company, The: *See—*
Gamertsfelder, George R.; and Ljung, Bo Hans G., 4,411,527., Cl. 356-350.000.
Killinger, Karl H., 4,411,210., Cl. 112-199.000.
Szostak, Jan; and Schaeflern, Henry, 4,411,209., Cl. 112-158.00A.
Wojtanek, Guy A., 4,412,110., Cl. 200-38.00R.

Singh, Baldev: *See—*
Lesher, George Y.; and Singh, Baldev, 4,412,077., Cl. 546-298.000.

Sirvio, Larry M.: *See—*
Johnson, Dee L.; Senta, Therese A.; and Sirvio, Larry M., 4,411,893., Cl. 424-181.000.

SKF Compagnie d'Applications Mecaniques - ADR: *See—*
Roberge, Gerard, 4,411,545., Cl. 403-12.000.

SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,411,478., Cl. 308-6.00C.

Slavitt, Jerome A. Athletic shoe with attached ankle brace. 4,411,077., Cl. 36-89.000.

Slocombe, Douglas E.: *See—*
Pomerleau, Daniel G.; Slocombe, Douglas E.; and Watts, Kenneth H., 4,411,801., Cl. 252-8.50P.

Smids, Petrus T. J. L.: *See—*
de Man, Hendrikus C. J.; and Smids, Petrus T. J. L., 4,412,051., Cl. 526-293.000.

Smith, Frank H., Jr.; and Mookerjee, Pradip K., to American Cyanamid Company. Emulsifiable concentrates of 2-chloro-N-isopropyl-2',3'-dimethylacetanilide with improved resistance to crystallization and process for preparing the same. 4,411,694., Cl. 71-118.000.

Smith, Jackson A. Tube pulling and lubricating system. 4,411,409., Cl. 254-134.3FT.

Smith, John D.: *See—*
Nayler, Douglas W. J.; and Smith, John D., 4,411,454., Cl. 285-26.000.

Smith, Paul: *See—*
Maurer, Franciscus H. J.; Pijpers, Jacques P. L.; and Smith, Paul, 4,411,854., Cl. 264-205.000.

Smith, Richard G.: *See—*
Hansen, James E.; and Smith, Richard G., 4,412,137., Cl. 307-10.00R.

Smith, Robert D., to Scandpower, Inc. Power performance monitoring system for nuclear reactor fuel core. 4,411,858., Cl. 376-247.000.

Smith, Robert D.; and Regazzoni, Pierre, to Scandpower, Inc. Gamma sensor having combined thermal bridge and centering means. 4,411,859., Cl. 376-247.000.

Smith, Roger A.: *See—*
Silva, Raimund H.; and Smith, Roger A., 4,411,750., Cl. 204-98.000.

Smith, Ronald D.: *See—*
Springer, Edward A.; and Smith, Ronald D., 4,411,101., Cl. 47-2.000.

Smith, Ronald L.: *See—*
Watts, LaVaughn F.; Smith, Ronald L.; Pandya, Yogendra C.; and Wood, Paul B., 4,412,294., Cl. 364-518.000.

Smith, Samuel C. Educational toy doll with weight tending to return head. 4,411,096., Cl. 46-155.000.

Smith, Terrence R., to RCA Corporation. Memory-type sync generator with reduced memory requirements. 4,412,250., Cl. 358-150.000.

Smith, Timothy J. C., to Amchem Products, Inc. Autodeposited coatings with increased surface slip. 4,411,950., Cl. 428-327.000.

Smith, William I.; and Moyer, Harold, to William I. Smith. Pick and place mechanism. 4,411,576., Cl. 414-226.000.

Smiths Industries, Inc.: *See—*
Taylor, Stephen P., 4,412,296., Cl. 364-521.000.

Smollar, Marvin: *See—*
Birdsall, John D.; Liedtke, Ronald; and Smollar, Marvin, 4,411,098., Cl. 46-206.000.

Snider, Scott C.; and DeLeon, Alberto, to Celotex Corporation, The. Polymeric foams from transesterified by-product derived from manufacture of dimethyl terephthalate and laminates therefrom. 4,411,949., Cl. 428-304.400.

Societe Anonyme dite: CERAVER: *See—*
Thuillier, Denis; and Willem, Michel, 4,412,095., Cl. 174-158.00R.

Societe Anonyme dite: L'Oreal: *See—*
Jacquet, Bernard; Lang, Gerard; Malaval, Alain; Forestier, Serge; and Le Trung, Do, 4,411,884., Cl. 424-47.000.

Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Hersom, Albert C.; and Wright, Kenneth W., 4,411,601., Cl. 417-388.000.

Societe d'Exploitation des Machines Dubuit: *See—*
Combeau, Guy, 4,411,191., Cl. 101-38.00A.

Societe Generale des Eaux Minerales de Vittel: *See—*
Gautier, Raoul L. A., 4,411,123., Cl. 53-550.000.

Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Chenet, Jacques; and Pierlot, Michel, 4,411,233., Cl. 123-439.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, "S.N.E.C.M.A.": *See—*
Joubert, Raymond J. M.; and Soligny, Marcel R., 4,411,589., Cl. 415-9.000.

Societe Nationale Industrielle Aerospatiale: *See—*
Nawrath, Peter, 4,411,046., Cl. 16-354.000.

Solarex Corporation: *See—*
Whitehouse, Daniel L., 4,411,703., Cl. 106-189.000.

Soligny, Marcel R.: *See—*
Joubert, Raymond J. M.; and Soligny, Marcel R., 4,411,589., Cl. 415-9.000.

Solloway, Daniel S. Aquatic exercise assembly. 4,411,422., Cl. 272-96.000.

Somfy: *See—*
Fillion, Pierre, 4,411,348., Cl. 192-139.000.

Sony Corporation: *See—*
Goto, Masao, 4,412,318., Cl. 369-41.000.
Shimada, Shojiro, 4,412,258., Cl. 360-62.000.
Tanaka, Yutaka; and Isobe, Toshinobu, 4,412,251., Cl. 358-160.000.
Tokumitsu, Shunji; Urushibata, Hiroyuki; and Goto, Masao, 4,412,321., Cl. 369-233.000.
Uzuka, Mitsuo, 4,412,159., Cl. 318-254.000.
Yamakawa, Akio, 4,412,320., Cl. 369-79.000.

Sooner Oil Tools, Inc.: *See—*
Shearhart, Billy G., 4,411,314., Cl. 166-124.000.

Sorton, Gerard: *See—*
Marguinaud, Andre; and Sorton, Gerard, 4,412,181., Cl. 329-50.000.

Spackova, Daniela; and Chen, Richard M. Electronic roach trap. 4,411,094., Cl. 43-121.000.

Spear, Peter; and Anson, Paul A., to Rubery Owen Group Services Limited. A fibre reinforced resin composite leaf spring for determining the magnitude of a load. 4,411,159., Cl. 73-768.000.

Spenceley, Gene D.; and Welbourn, Brian C., to British Steel Corporation. Metal refining processes. 4,411,697., Cl. 75-60.000.

Speranza, George P.: *See—*
McCoy, David R.; Cuscurida, Michael; and Speranza, George P., 4,411,775., Cl. 208-188.000.

Sperry Corporation: *See—*
Diederich, Anthony F., Jr.; Haldeman, Peter P.; and Campbell, Willis R., 4,411,127., Cl. 56-364.000.
Rowland-Hill, E. William; and Sheehan, Ronald T., 4,411,124., Cl. 56-10.200.

Sperry Limited: *See—*
Walters, Ronald B., 4,411,289., Cl. 137-486.000.

Spighi, Massimo: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Spitaler, Engelbert, to TMC Corporation. Release binding. 4,411,446., Cl. 280-628.000.

Spivack, Bruce D.: *See—*
Netting, David I.; Spivack, Bruce D.; and Cunnion, James P., Jr., 4,411,847., Cl. 264-7.000.

Springer, Edward A.; and Smith, Ronald D. Apparatus and method for heating the root zone of plants. 4,411,101., Cl. 47-2.000.

Springer, Gilbert D., to Ferix Corporation. Magnetic toner transfer apparatus. 4,411,512., Cl. 355-3.0TR.

SRI International: *See—*
Yarborough, John M., Jr., 4,412,329., Cl. 371-47.000.

Sridhar, Bettadapur N. Nuclear reactor control apparatus. 4,411,857., Cl. 376-233.000.

Stadler, Donald A.: *See—*
Furlette, James L.; and Stadler, Donald A., 4,411,355., Cl. 198-718.000.

Stafford, Scott L.: *See—*
Gilligan, William H.; and Stafford, Scott L., 4,411,837., Cl. 260-455.00B.
Gilligan, William H.; and Stafford, Scott L., 4,411,838., Cl. 260-463.000.

Stahlmann, Rudolf: *See—*
Brede, Uwe; Penner, Horst; Stahlmann, Rudolf; and Zeiher, Erich, 4,411,200., Cl. 102-529.000.

Stamicarbon B.V.: *See—*
de Man, Hendrikus C. J.; and Smids, Petrus T. J. L., 4,412,051., Cl. 526-293.000.
Maurer, Franciscus H. J.; Pijpers, Jacques P. L.; and Smith, Paul, 4,411,854., Cl. 264-205.000.

Standard Oil Company, The: *See—*
Ball, Lawrence E.; Pichler, Martin A.; and Gaylor, V. Frances, 4,411,745., Cl. 204-59.00R.
Chan, Keng S., 4,411,798., Cl. 210-727.000.
Winters, Warren J., 4,412,130., Cl. 250-260.000.
Wu, Mu-Yen M.; and Ball, Lawrence E., 4,412,061., Cl. 528-315.000.

Standard Oil Company (Indiana): *See—*
Poppe, Wassily; Craddock, Charles F.; Gutekunst, Robert W.; Ladd, Robert G.; and Mager, Sue A., 4,411,610., Cl 425-174.400.

Stanley Works, The: *See—*
Rutty, Edward C.; and Stoutenberg, Carl C., 4,411,072., Cl. 33-138.000.

Stapleton, Brian P., to Boeing Company, The. Antenna system for airborne transceiver providing quasi continuous reception and transmission free from shadowing by aircraft structure. 4,412,221., Cl. 343-705.000.

Stark, Marvin: *See—*
Collier, Lyn D.; and Stark, Marvin, 4,411,371., Cl. 220-314.000.

Stark, Reimund: *See—*
Hassel, Helmut; and Stark, Reimund, 4,411,201., Cl. 105-8.00R.

Starvaski, Raymond R.; and Leger, Alfred R., to Morgan Construction Company. Pouring reel. 4,411,394., Cl. 242-83.000.

Stauffer Chemical Company: *See—*
Green, Laddie L.; and Matsumoto, Kent E., 4,411,686., Cl. 71-88.000.

Sherif, Fawzy G., 4,411,876., Cl. 423-311.000.

Stauffer, Michael K.: *See—*
Aifke, Peter H.; and Stauffer, Michael K., 4,412,339., Cl. 375-95.000.

Stearns, Charles F.; and Tutherly, Herbert W., to United Technologies Corporation. Fuel circuits for fuel controls. 4,411,133., Cl. 60-39.281.

Stedman, Robert N., to Caterpillar Tractor Co. Vehicle with multi-directional movement capabilities. 4,411,329., Cl. 180-7.00R.

Stedman, Thomas R.; and Voyda, Ronald A., to Walgreen Co. Conveyor device usable as bulkhead. 4,411,349., Cl. 193-35.00R.

Steffen, Hans: *See—*
Schrank, Jurg; and Steffen, Hans, 4,411,894., Cl. 424-199.000.

Steffens, Charles, to Riviera Marine & Tackle Co. Downrigger swivel base. 4,411,395., Cl. 242-106.000.

Steinberg, Eckard, to Kraftwerk Union Aktiengesellschaft. Method for protecting the casing tubes of nuclear reactor fuel rods. 4,411,861., Cl. 376-417.000.

Steiner, Hermann: *See—*
Helbig, Peter; Schonherr, Walter; and Steiner, Hermann, 4,412,273., Cl. 362-211.000.

Steinhagen, Thomas C., to Gates Rubber Company, The. Method for plating a threaded member with an in situ thread protector. 4,411,934., Cl. 427-242.000.

Stella, Antonio; and Canova, Giuseppe, to R.B.L. Riello Bruciatori Legnago S.p.A. Lock out means in ignition devices for liquid fuel burners. 4,412,269., Cl. 361-263.000.

Sterling Drug Inc.: *See—*
Lesher, George Y.; and Singh, Baldev, 4,412,077., Cl. 546-298.000.
Lewis, Frederick M., 4,411,203., Cl. 110-341.000.
Rosi, David, 4,412,068., Cl. 536-13.600.

Sterlini, Jacques, to Cie Electro Mecanique. Process for the rectification of binary liquid mixtures. 4,411,739., Cl. 203-24.000.

Sterman, Albert P., deceased: *See—*
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.

Sterman, Florence G., executrix: *See—*
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.

Stern, Donald J.; and Allsop, Jon I. Manually-operated spray applicator. 4,411,387., Cl. 239-345.000.

Steuernagel, Adolf: *See—*
Faatz, Rudi; Moeller, Siegfrid; Ruehl, Friedel; and Steuernagel, Adolf, 4,411,510., Cl. 354-272.000.

Stevens, Richard L. Travel game. 4,411,432., Cl. 273-251.000.

Stix, Wolfgang: *See—*
Heitz, Walter; Kress, Hans-Jurgen; and Stix, Wolfgang, 4,412,063., Cl. 528-409.000.

Stockton, Richard C.: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.

Stolar, Mike, to Stolar Pool Covers Ltd. Buoyant swimming pool cover. 4,411,031., Cl. 4-502.000.

Stolar Pool Covers Ltd.: *See—*
Stolar, Mike, 4,411,031., Cl. 4-502.000.

Stone Container Corporation: *See—*
Friedman, Davide R., 4,411,364., Cl. 206-466.000.

Stout, Daniel M.; and Duff, Charles B., to Whitmire Research Laboratories, Inc. Insect lure. 4,411,093., Cl. 43-114.000.

Stoutenberg, Carl C.: *See—*
Rutty, Edward C.; and Stoutenberg, Carl C., 4,411,072., Cl. 33-138.000.

Strahl, Erwin O.: *See—*
Hess, James B.; and Strahl, Erwin O., 4,411,758., Cl. 204-243.00R.

Strauchler, Irving D.: *See—*
Alexander, Harold: Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,411,027., Cl. 3-1.000.

Streck, Roland: *See—*
Zerpner, Dieter; and Streck, Roland, 4,412,038., Cl. 525-101.000.

Strickland, Hubert E. Multi-function apparatus for lawn maintenance. 4,411,125., Cl. 56-16.900.

Stricklin, John D.; Denero, Anthony D.; Quatro, Robert A.; and Duff, James A., to Magnetic Peripherals Inc. Cartridge receiver mechanism. 4,412,260., Cl. 360-97.000.

Striebich, Helmut, to Dr. Ing. h.c.F. Porsche AG. Drive unit, especially for motor vehicles. 4,411,135., Cl. 60-616.000.

Stroble, Carl P.: *See—*
Datta, Amitava; and Stroble, Carl P., 4,411,714., Cl. 148-111.000.

Strokee Enterprises: *See—*
Judice, Clay, 4,411,431., Cl. 273-183.00C.

Stroup, Steven L. Apparatus for cutting tubing into predetermined lengths. 4,411,179., Cl. 82-71.000.

Strubeck, W. Douglas, to GTE Products Corporation. Digital data correlator. 4,412,301., Cl. 364-728.000.

Struben, Francis L.; and Struben, Jean C. Beam-braced awning. 4,411,109., Cl. 52-11.000.

Struben, Jean C.: *See—*
Struben, Francis L.; and Struben, Jean C., 4,411,109., Cl. 52-11.000.

Strunk, Norman E.; and Pohoreski, Anton P. Stem securing means for conduits. 4,411,458., Cl. 285-196.000.

Stuart, Guy E., Jr. Door actuating mechanism. 4,411,465., Cl. 296-146.000.

Stucki, Joseph W.: *See—*
Low, Philip F.; Roth, Charles B.; and Stucki, Joseph W., 4,411,530., Cl. 366-4.000.

Submarine Products Limited: *See—*
Oswell, Hugh H. B., 4,411,285., Cl. 137-112.000.

Suenaga, Masahide: *See—*
Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, 4,411,757., Cl. 204-192.00E.

Sugasawa, Fukashi, to Nissan Motor Co., Ltd. Split type internal combustion engine. 4,411,228., Cl. 123-198.00F.

Sugi, Nagatoshi: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.

Sugie, Osamu: *See—*
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.

Sugitani, Hiroshi, to Canon Kabushiki Kaisha. Method of forming an ink-jet head. 4,412,224., Cl. 346-1.100.

Sugiura, Noboru, to Hitachi, Ltd. Ignition system and method for internal combustion engine. 4,411,246., Cl. 123-644.000.

Sugiura, Yoshihide: *See—*
Matsumura, Nobutake; Hoshikawa, Ryusuke; Sugiura, Yoshihide; Ichikawa, Hiroaki; and Sato, Syoji, 4,412,237., Cl. 357-42.000.

Sugiyama, Toshio: *See—*
Yonezawa, Seiji; and Sugiyama, Toshio, 4,411,500., Cl. 350-446.000.

Suimon, Yoshio. Steering mechanism for running toy. 4,411,100., Cl. 46-235.000.

Sulasaari, Jukka; and Heinonen, Seppo, to Outokumpu Oy. Method and apparatus for the straightening and stiffening of starting sheets in electrolytic refining plants. 4,411,146., Cl. 72-180.000.

Sumida, Morihiro: *See—*
Nakashima, Hiroyuki; Sumida, Morihiro; and Goto, Hiroki, 4,411,696., Cl. 75-51.000.

Sumitani, Sinya: *See—*
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.

Sumitomo Chemical Company, Limited: *See—*
Hashizume, Shuhei; Abeta, Sadaharu; Ohmae, Tadayuki; and Nishibara, Hajime, 4,411,666., Cl. 8-455.000.
Ohashi, Naohito; Nagata, Shoji; and Katsube, Junki, 4,411,836., Cl. 260-455.00R.
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, 4,412,049., Cl. 526-127.000.

Sumitomo Durez Company, Ltd.: *See—*
Kikuga, Toyoji; and Hirai, Koji, 4,412,045., Cl. 525-501.000.

Summerer, Gunther: *See—*
Lang, Walter H.; Muchel, Franz; Schulz, Kurt; and Summerer, Gunther, 4,411,502., Cl. 351-206.000.

Sumner, Joe D. Apparatus for cutting openings in pipes. 4,411,410., Cl. 266-54.000.

Suncor, Inc.: *See—*
Yong, Raymond N.; and Sethi, Amar J., 4,412,007., Cl. 436-139.000.

Sundberg, Erik G., to Koehler Manufacturing Company. Battery construction characterized by reactively limited gridless electrode means, and methods of making and operating same. 4,411,969., Cl. 429-50.000.

Sundstrand Corporation: *See—*
Chilman, John A., 4,411,596., Cl. 416-51.000.

Surgant, John M.: *See—*
LeClair, Francis J.; and Surgant, John M., 4,411,692., Cl. 71-93.000.
LeClair, Francis J.; and Surgant, John M., 4,411,693., Cl. 71-118.000.

Sutphin, Eldon M., Jr., to RCA Corporation. Apparatus for testing linearity of an FM transmitter. 4,412,348., Cl. 455-67.000.

Suzuki, Hitoshi: *See—*
Matsui, Fujio; and Suzuki, Hitoshi, 4,411,236., Cl. 123-492.000.

Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Ishida, Tokuzi, 4,411,241., Cl. 123-568.000.

Suzuki, Kazuo: *See—*
Kunita, Shizuo; Akimoto, Osamu; Sugie, Osamu; Iyoda, Michio; and Suzuki, Kazuo, 4,411,247., Cl. 123-655.000.

Suzuki, Kensuke; and Okada, Sunao, to Nipon Sangyo Kikai Kabushiki Kaisha. Sewage disposal plant. 4,411,780., Cl. 210-150.000.

Suzuki, Koichi: *See—*
Kawai, Shinji; Suzuki, Koichi; and Yamaguchi, Yuji, 4,411,030., Cl. 4-443.000.

Suzuki, Migaku; and Sakai, Takashi, to Mitsubishi Rayon Co. Ltd.; and Mitsubishi Adetate Co. Ltd. Method for producing a tobacco smoke filter plug. 4,411,641., Cl. 493-46.000.

Sweco, Incorporated: *See—*
Jones, Bradley N.; Harris, Robert J.; Cram, Ronald P.; and Huber, Gene A., 4,411,673., Cl. 55-41.000.

Swift, Joe M.: *See—*
Drew, John W.; and Swift, Joe M., 4,411,429., Cl. 273-164.000.

Systems Engineering and Manufacturing Corp.: *See—*
Caddell, Samuel N., 4,411,357., Cl. 198-802.000.

Szala, Lawrence E.: *See—*
Lee, Minyoung; Reed, William R., Jr.; and Szala, Lawrence E., 4,411,566., Cl. 407-119.000.

Sze, Morgan C.: *See—*
Unger, Harold; Sze, Morgan C.; and Van Driesen, Roger P., 4,411,768., Cl. 208-59.000.

Szostak, Jan; and Schaeflern, Henry, to Singer Company, The. Cam selector mechanism for sewing machines. 4,411,209., Cl. 112-158.00A.

T. D. Williamson, Inc.: *See—*
Ver Nooy, Burton, 4,411,459., Cl. 285-197.000.

Tagami, Ichizo, to Ishikawajima-Harima Heavy Industries Co., Ltd. Method of and system for measuring temperature and spectral factor. 4,411,519., Cl. 356-45.000.

Taggart, Charles W.: *See—*
Norris, Elwood G., 4,412,151., Cl. 315-55.000.

Tagnon, Luc A., to Essilor International. Device for checking the phoria of an individual under conditions of close vision. 4,411,501., Cl. 351-202.000.

Taguchi, Michihiro, to Yamaha Hatsudoki Kabushiki Kaisha. Rotary type pump resistant to muddy water. 4,411,593., Cl. 415-173.00R.

Taiho Pharmaceutical Company, Limited: *See—*
Fujii, Setsuro; Hamakawa, Toshihiro; Ogawa, Kazuo; Muranaka, Yoshiyuki; and Hashimoto, Sadao, 4,411,911., Cl. 424-283.000.

Tailleux, Christian; and Charbonneau, Jacques, to Multidick Inc. Printing press within tear-line tracing means. 4,411,195., Cl. 101-226.000.

Takada, Juichiro. Passive type vehicle occupant restraint belt system with electrical braking. 4,411,448., Cl. 280-802.000.

Takada, Juichiro. Connecting member for a drive wire casing in passive seat belt systems. 4,411,449., Cl. 280-804.000.

Takahashi, Hiroshi; and Saito, Yasuo, to Kioritz Corporation. Chain saw. 4,411,071., Cl. 30-381.000.

Takahashi, Hiroshi; and Abe, Katsuhiro, to Mitsubishi Petrochemical Company Limited. Ring-opened norbornyl polymers. 4,412,044., Cl. 525-329.500.

Takahashi, Kenichi; Hirano, Koichi; and Futamura, Shoji, to Bridgestone Tire Co., Ltd.; and Institute of Technology Precision Electrical Discharge Works. Method for making a ring-shaped mold. 4,411,175., Cl. 76-107.00R.

Takaishi, Naotake: *See—*
Fujikura, Yoshiaki; Inamoto, Yoshiaki; Takaishi, Naotake; and Nakajima, Motoki, 4,411,828., Cl. 252-522.00R.

Takakuma, Ryoji: *See—*
Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, 4,411,991., Cl. 435-42.000.

Takakura, Teruo: *See—*
Yamabe, Masaaki; Kato, Masao; and Takakura, Teruo, 4,412,054., Cl. 528-70.000.

Takano, Hirozo: *See—*
Sato, Shinichi; Harada, Hiroshi; Fukumoto, Takaaki; Takano, Hirozo; Kotani, Hideo; and Kayano, Shinpei, 4,411,929., Cl. 427-38.000.

Takaoka, Michio: *See—*
Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, 4,411,710., Cl. 148-6.14R.

Takaya, Takao; and Murata, Masayoshi, to Fujisawa Pharmaceutical Co., Ltd. 7-[2-Oxyimino-2-(2-aminothiazol-4-yl)acetamido]-3-(1-carboxyalkyl-1H-tetrazol-5-yl)thiomethyl-3-cephem-4-carboxylic acid compounds. 4,411,898., Cl. 424-246.000.

Takayanagi, Hiroshi: *See—*
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.

Takeda Chemical Industries, Ltd.: *See—*
Kamatani, Yoshio; and Fujita, Noriaki, 4,412,072., Cl. 544-68.000.
Ogino, Fumiichi; and Nakashima, Koji, 4,411,948., Cl. 428-283.000.

Takeda, Nobumi, to Shimano Industrial Company Limited. Pedal for a bicycle. 4,411,169., Cl. 74-594.400.

Takeda, Tsutae: *See—*
Hirata, Minoru; and Takeda, Tsutae, 4,411,479., Cl. 308-195.000.

Takenouti, Eisuke; and Urata, Sigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray photography apparatus. 4,412,346., Cl. 378-181.000.

Takeuchi, Shigeru, to Kurimoto Iron Works, Ltd. Glass fiber-reinforced cement plates. 4,411,723., Cl. 156-242.000.

Takimoto, Koichi: *See—*
Ueda, Ikuo; Morino, Daizou; and Takimoto, Koichi, 4,411,900., Cl. 424-250.000.

Tamaru, Shigemi: *See—*
Ishikawa, Takayoshi; Genba, Yasushi; Tamaru, Shigemi; and Eguchi, Kiyoshi, 4,412,112., Cl. 200-50.0AA.

Tanabe Seiyaku Co., Ltd.: *See—*
Samejima, Masayoshi; and Hirata, Goichi, 4,411,933., Cl. 427-213.300.

Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Throttle valve assembly. 4,411,845., Cl. 261-65.000.

Tanaka, Chuji: *See—*
Morikawa, Masaki; Yoshida, Hideaki; Kishida, Kunio; and Tanaka, Chuji, 4,411,864., Cl. 420-587.000.

Tanaka, Hironari; Ishibashi, Tadashi; and Koyama, Masaharu, to Hitachi, Ltd. Liquid crystal display element having non-display electrode arrangement. 4,412,214., Cl. 340-765.000.

Tanaka, Kazunori: *See—*
Nishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,412,213., Cl. 340-753.000.

Tanaka, Kazuyoshi: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.

Tanaka, Sohei: *See—*
Itemadani, Eiji; Mori, Kazuhiro; Tanaka, Sohei; and Kabeshita, Akira, 4,411,362., Cl. 206-330.000.

Tanaka, Takeshi: *See—*
Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, 4,411,242., Cl. 123-569.000.

Tanaka, Toshio; and Miwa, Katsuteru, to Nippondenso Co., Ltd. Internal combustion engine contactless ignition system of supply voltage variation compensation type. 4,411,245., Cl. 123-609.000.

Tanaka, Yoko: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,411,833., Cl. 260-239.55R.

Tanaka, Yoshihiro: *See—*
Matsuda, Motonobu; and Tanaka, Yoshihiro, 4,412,234., Cl. 357-17.000.

Tanaka, Yutaka; and Isobe, Toshinobu, to Sony Corporation. Flicker preventing circuit. 4,412,251., Cl. 358-160.000.

Taniishi, Shinnosuke: *See—*
Adachi, Hiroyuki; and Taniishi, Shinnosuke, 4,411,516., Cl. 355-67.000.

Tarumi, Noriyoshi; Kimura, Kiyoshi; and Miwa, Tadashi, to Konishiroku Photo Industry Co., Ltd. Toner image transfer to multilayer intermediate transfer body. 4,411,977., Cl. 430-126.000.

Tate Architectural Products, Inc.: *See—*
Blacklin, Peter A.; Dougherty, James R.; Johnson, Richard J.; and Tate, Donald L., 4,411,121., Cl. 52-792.000.

Tate, Donald L.: *See—*
Blacklin, Peter A.; Dougherty, James R.; Johnson, Richard J.; and Tate, Donald L., 4,411,121., Cl. 52-792.000.

Tateyama, Kenichi; Matsumiya, Yasuo; and Hishinuma, Toshio, to Hitachi, Ltd. Magnetic disk memory device. 4,412,261., Cl. 360-98.000.

Taub, Ronald H. Erectable display assembly with self-contained pacakged product. 4,411,382., Cl. 229-16.00D.

Taylor, Bryon K.; and Riddle, George H. N., to RCA Corporation. Video disc player with self calibrating stylus translator. 4,412,319., Cl. 369-43.000.

Taylor, Stephen P., to Smiths Industries, Inc. Graphics clipping circuit. 4,412,296., Cl. 364-521.000.

TDK Electronics Co., Ltd.: *See—*
Namba, Kenryo; Kuroiwa, Akihiko; and Nakagawa, Shiro, 4,412,231., Cl. 346-135.100.
Tokuda, Fukunori; and Nakashima, Yutaka, 4,411,957., Cl. 428-425.900.

Technical Consulting Services: *See—*
Blume, Horst K.; and Asakura, Toshio, 4,411,523., Cl. 356-246.000.

Technicare Corporation: *See—*
Carmen, Ralph H., 4,412,248., Cl. 358-112.000.
Carmen, Ralph H., 4,412,249., Cl. 358-112.000.
Gardineer, Bayard G., Jr.; and Howlett, Charles W., 4,411,360., Cl. 206-313.000.

Technicon Instruments Corporation: *See—*
Ornstein, Leonard; and Kim, Young R., 4,412,004., Cl. 436-10.000.

Technicraft, Inc.: *See—*
Fischer, Carlin P., 4,411,546., Cl. 403-23.000.

Tedder, Daniel W., to Georgia Tech Research Institute. Fractional distillation of C_2/C_3 hydrocarbons at optimum pressures. 4,411,676., Cl. 62-24.000.

Teich, Wesley W.: *See—*
Dudley, Kenneth W.; Teich, Wesley W.; and Bowen, Robert F., 4,412,117., Cl. 219-10.55F.

Teichert, Rainer, to Double A Products Company. Solenoid for directional valves. 4,412,196., Cl. 335-250.000.

Teledyne Industries, Inc.: *See—*
Leblanc, Raymond F.; and Cummins, William T., 4,411,556., Cl. 405-213.000.

Telettra- Telefonia Elettronica e Radio S.p.A.: *See—*
Molo, Francesco, 4,412,325., Cl. 370-70.000.

Tella, Richard P.: *See—*
Kelley, Robert B.; Birk, John R.; Martins, Henrique; and Tella, Richard P., 4,412,293., Cl. 364-513.000.

Teltone Corporation: *See—*
Huffman, Joseph K., 4,412,299., Cl. 364-570.000.

Temple, Davis L., Jr.; and Yevich, Joseph P., to Mead Johnson & Company. Benzisothiazole and benzisoxazole piperazine derivatives. 4,411,901., Cl. 424-250.000.

Templeman, John J.: *See—*
Timmins, Cyril; and Templeman, John J., 4,411,039., Cl. 15-104.06R.

Tenthoff, Aloys, to Westfalia Separator AG. Systems of self-purging centrifugal separators for the separation and clarification of liquids containing solids. 4,411,645., Cl. 494-3.000.

Teradata Corporation: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.

Terauchi, Kiyoshi, to Sanden Corporation. Scroll-type fluid displacement apparatus with cup shaped casing. 4,411,604., Cl. 418-55.000.

Terbrack, William H.; and Hummel, Terry L., to Hughes Aircraft Company. Push-button operated electrical power source for an optical communication link. 4,412,355., Cl. 455-603.000.

Terlouw, Willem: *See—*
Mulder, Nicolaas; Terlouw, Willem; and Wevers, Jan H., 4,412,089., Cl. 585-645.000.

Ternant, Francois: *See—*
Jourdan, Francis; Marquet, Patrice; and Ternant, Francois, 4,411,521., Cl. 356-225.000.

Terrien, Michel E.; and Bouvet, Claude, to Etat Francais. Automatic device for lap joint connection on the intrados or extrados of two bridge elements and method for the carrying out thereof. 4,411,037., Cl. 14-2.600.

Terumo Corporation: *See—*
Kanno, Michio, 4,411,866., Cl. 422-25.000.

Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Demoute, Jean-Pierre, 4,412,069., Cl. 542-429.000.

Testut Aequitas: *See—*
Valadier, Jean-Claude, 4,411,162., Cl. 73-862.650.

Tetra Pak Developpement SA: *See—*
Rausing, Hans, 4,411,370., Cl. 220-269.000.

Texaco Development Corporation: *See—*
Marion, Charles P.; and Jahnke, Frederick C., 4,411,670., Cl. 48-197.00R.
Marion, Charles P.; and Jahnke, Frederick C., 4,411,671., Cl. 48-197.00R.

Texaco Inc.: *See—*
Auld, David L.; and Miller, Herbert W., 4,411,782., Cl. 210-230.000.
Elliott, James F.; Richter, George N.; and Estabrook, Lawrence E., 4,411,817., Cl. 212-373.000.
Flournoy, Norman E., 4,412,315., Cl. 367-99.000.
Loftus, Jordan; and Woldy, Paul N., 4,411,533., Cl. 374-125.000.
McCoy, David R.; Cuscurida, Michael; and Speranza, George P., 4,411,775., Cl. 208-188.000.

Texas Instruments Incorporated: *See—*
Laughon, Thomas C.; and Philpott, Michael I., 4,411,628., Cl. 434-169.000.
Watts, LaVaughn F.; Smith, Ronald L.; Pandya, Yogendra C.; and Wood, Paul B., 4,412,294., Cl. 364-518.000.

Texasgulf Inc.: *See—*
Higgins, Rudolph S., 4,411,474., Cl. 299-4.000.

Thatcher, John: *See—*
Morrow, Lawrence R.; and Thatcher, John, 4,411,985., Cl. 430-352.000.

Theiler, Richard F., to Armour and Company. Process for preparing cooked meat having reduced levels of N-nitrosamines. 4,411,922., Cl. 426-266.000.

Theodorides, Panos. Hand saw. 4,411,068., Cl. 30-166.00R.

Thermosystem S.p.A.: *See—*
Maillard, Laurent; and Bregolin, Graziano, 4,411,116., Cl. 52-489.000.

Thibault, Bernard; and Le Goff, Andre, to Regie Nationale des Usines Renault. Transport installation for manufactured products, particularly elements of automobile bodies. 4,411,354., Cl. 198-472.000.

Thomas & Betts Corporation: *See—*
Grundfest, Michael A., 4,411,063., Cl. 29-751.000.

Thomas, Jacob E.; and McKnight, James K., to NCR Corporation. Ink evaporation prevention means for ink jet print head. 4,412,233., Cl. 346-140.00R.

Thomas, John D.: *See—*
Wallace, Harry L.; and Thomas, John D., 4,411,706., Cl. 134-37.000.

Thompson, David M.: *See—*
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,411,515., Cl. 355-14.0SH.

Thompson, Henry B., to W. R. Grace & Co., Cryovac Division. Meat adhearing cook-in packaging. 4,411,919., Cl. 426-412.000.

Thomson-CSF: *See—*
Duda, Eugene; Tondu, Claude; and Maumy, Alain, 4,411,057., Cl. 29-569.00L.
Jourdan, Francis; Marquet, Patrice; and Ternant, Francois, 4,411,521., Cl. 356-225.000.
Marguinaud, Andre; and Sorton, Gerard, 4,412,181., Cl. 329-50.000.
Peltier, Michel; Gloanec, Maurice; Nuzillat, Gerard; Maurel, Vincent; and Charrier, Michel, 4,412,336., Cl. 375-4.000.

Thornton, Jack C.; and Russell, Randy G., to Rockwell International Corporation. Variable inductor with carriage for multiple trolley wheels. 4,412,200., Cl. 336-139.000.

Thuillier, Denis; and Willem, Michel, to Societe Anonyme dite: CERAVER. Electric insulator of the line post type. 4,412,095., Cl. 174-158.00R.

Thyssen Industrie Ag Maschinenbau: *See—*
Bohm, Gunter; and Funk, Wolfram, 4,412,122., Cl. 219-137.00R.

Tidwell, Gerald W.: *See—*
Willard, David F.; and Tidwell, Gerald W., 4,412,217., Cl. 340-825.440.

Tikkurilan Varitehtaat Oy: *See—*
Jernstrom, Olof; Mattila, Tapio; Penttinen, Kyosti; and Toivonen, Hannu, 4,412,023., Cl. 524-106.000.

Timex Medical Products Corporation: *See—*
Schwarzschild, Jack, 4,411,535., Cl. 374-165.000.

Timmins, Cyril; and Templeman, John J., to British Gas Corporation. Removal of condensed gas from the walls of gas pipelines. 4,411,039., Cl. 15-104.06R.

Tinklenberg, Lloyd, to Bedford Industries, Inc. Method and apparatus for forming reclosable packages. 4,411,644., Cl. 493-213.000.

Tironi, Maurizio G.; Barbini, Mario; and Del Sere, Giannetto, to Elettromeccanica Tironi S.r.l. Method of melting vitreous materials and use of the suitable device for the accomplishment of the method. 4,412,334., Cl. 373-40.000.

Tirtiaux, Robert; and Lenack, Alain L. P., to Exxon Research & Engineering Co. Antifoam additives. 4,411,806., Cl. 252-49.600.

Tjepkes, Kendall D.: *See—*
Haight, Robert E.; and Tjepkes, Kendall D., 4,411,345., Cl. 192-12.00C.

TMC Corporation: *See—*
Spitaler, Engelbert, 4,411,446., Cl. 280-628.000.

Tobolka, Gerald: *See—*
Feuerbaum, Hans P.; and Tobolka, Gerald, 4,412,191., Cl. 333-193.000.

Toda, Hideo: *See—*
Kihara, Kunio; Toda, Hideo; Mori, Motokuni; and Sato, Koji, 4,412,011., Cl. 521-38.000.

Toia, Emilio, to Gruppo Lepetit, S.p.A. Antiinflammatory 3H-naphtho(1,2-d)imidazoles. 4,411,907., Cl. 424-273.00B.

Toivonen, Hannu: *See—*
Jernstrom, Olof; Mattila, Tapio; Penttinen, Kyosti; and Toivonen, Hannu, 4,412,023., Cl. 524-106.000.

Tokheim Corporation: *See—*
Buuck, Frederick A., 4,412,265., Cl. 361-18.000.

Tokico Ltd.: *See—*
Katsumori, Teiji; Kato, Tetuo; and Ieaki, Miura, 4,411,342., Cl. 188-315.000.
Koshimizu, Naganori, 4,411,476., Cl. 303-6.00C.

Tokuda, Fukunori; and Nakashima, Yutaka, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,411,957., Cl. 428-425.900.

Tokumitsu, Shunji; Urushibata, Hiroyuki; and Goto, Masao, to Sony Corporation. Record changer. 4,412,321., Cl. 369-233.000.

Tokyo Institute of Technology, The President of: *See—*
Yamaguchi, Shoichiro; and Kabayashi, Fujio, 4,412,289., Cl. 364-414.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Iwasaki, Hiroshi; and Ozawa, Osamu, 4,412,239., Cl. 357-44.000.
Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,412,009., Cl. 501-97.000.
Nagano, Katsumi, 4,412,186., Cl. 330-288.000.
Takenouti, Eisuke; and Urata, Sigeru, 4,412,346., Cl. 378-181.000.

Tomsu, David L., to Keeler Brass Company. Pivot support bracket for mirror assembly. 4,411,403., Cl. 248-575.000.

Tondu, Claude: *See—*
Duda, Eugene; Tondu, Claude; and Maumy, Alain, 4,411,057., Cl. 29-569.00L.

Tone, Junsuke: *See—*
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,411,892., Cl. 424-181.000.

Toppan Printing Co., Ltd.: *See—*
Horikawa, Hisao; and Kano, Mitsuru, 4,411,365., Cl. 206-607.000.

Toray Silicone Company Ltd.: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Torri, Giangiacomo: *See—*
Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,411,796., Cl. 210-692.000.

Toshiba Silicones Ltd.: *See—*
Kurita, Akitsugu, 4,412,035., Cl. 524-796.000.

Toth, Istvan J.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,411,940., Cl. 428-73.000.

Toth, Tibor; and Gils, Reiner, to Behringwerke A.G. Process for the determination of anti-hyaluronidase and an agent suitable for this purpose. 4,411,988., Cl. 435-7.000.

Totsuka, Kaoru: *See—*
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,412,097., Cl. 381-92.000.

Toudou, Sumio: *See—*
Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, 4,411,952., Cl. 428-332.000.

Touze, Francois. Heat exchange devices for cooling the wall and refractory of a blast-furnace. 4,411,311., Cl. 165-170.000.

Townsend, Tod N. Bale handling apparatus. 4,411,573., Cl. 414-24.600.

Toyo Kogyo Co., Ltd.: *See—*
Nakanishi, Teruo, 4,411,709., Cl. 148-3.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.
Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, 4,411,242., Cl. 123-569.000.
Ohmura, Eiichi; and Kitano, Tateo, 4,411,103., Cl. 49-502.000.
Shinoda, Kazuo; Kobayashi, Nobuyuki; and Isobe, Toshiaki, 4,411,235., Cl. 123-488.000.
Tanahashi, Toshio; Sumitani, Sinya; Matuura, Takeo; Ichikawa, Shinji; and Okuno, Takao, 4,411,845., Cl. 261-65.000.
Yokoi, Takeshi; and Yanagihara, Noritaka, 4,411,174., Cl. 74-866.000.

Trane Company, The: *See—*
Sauls, John R., 4,411,605., Cl. 418-55.000.

Trans-World Manufacturing Corp.: *See—*
Kraus, John W., 4,411,084., Cl. 40-450.000.

TransFRESH Corporation: *See—*
Woodruff, Richard E., 4,411,921., Cl. 426-263.000.

Trautmann, Manfred: *See—*
Ulrich, Michael; Trautmann, Manfred; Heck, Gunter; and Malow, Egon, 4,411,846., Cl. 261-98.000.

Travenol European Research and Development Centre: *See—*
Kersten, Jean, 4,411,661., Cl. 604-411.000.

Traver, Darwin G.; Anderson, Carl M.; and Abdelhamid, Amr N., to Carrier Corporation. Pressure variation absorber. 4,411,592., Cl. 415-119.000.

Traxler, Peter: *See—*
Schupp, Thomas; Traxler, Peter; and Nuesch, Jakob, 4,411,896., Cl. 424-244.000.

Tremmel, Robert A., to Occidental Chemical Corporation. Composite electroplated article and process. 4,411,961., Cl. 428-613.000.

Trepka, William J., to Phillips Petroleum Company. Viscosity index improver with high thickening power. 4,412,087., Cl. 585-12.000.

Trimedyne, Inc.: *See—*
Babb, Albert L., 4,411,792., Cl. 210-651.000.

Triumph-Adler A. G. fur Buro-und Informationstechnik: *See—*
Wenderoth, Karl; and Kuhn, Lothar, 4,411,542., Cl. 400-697.100.

Triumph-Adler A.G. fur Buro-und Informationstechnik: *See—*
Mansfeld, Manfred; and Wenderoth, Karl, 4,411,541., Cl. 400-213.000.

Trocino, Joseph L. Liquid explosive compositions for field operations. 4,411,718., Cl. 149-74.000.

Troeger, Raymond E.: *See—*
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.

Trotta, Robert A., to Gillette Company, The. Shaving cartridge assembly. 4,411,065., Cl. 30-47.000.

Trubell, Lawrence P.: *See—*
Cambier, Graig S.; and Trubell, Lawrence P., 4,412,278., Cl. 363-126.000.

Trumbetas, Jerome F.; Sims, Rex; and Fioriti, Joseph A., to General Foods Corporation. Stabilizer for frozen foamed emulsions and method therefore. 4,411,926., Cl. 426-565.000.

TRW Inc.: *See—*
Derkacs, Thomas; Fetheroff, Charles W.; Matay, Istvan M.; and Toth, Istvan J., 4,411,940., Cl. 428-73.000.
Larkin, Joseph F.; and Hodge, Malcolm H., 4,411,491., Cl. 350-96.210.
Miller, Laurence L., 4,411,606., Cl. 418-61.00B.
Winhan, Lucien C., 4,411,708., Cl. 148-1.500.

Tschan, J. Donald, to P. H. Bowman Co., Inc. Joist hanger. 4,411,548., Cl. 403-232.100.

Tseng, Chi-Ping, to Du Pont de Nemours, E. I., and Company. Fused [1,2,4]oxadiazolylidenebenzenesulfonamides and their use as herbicides and plant growth regulants. 4,411,690., Cl. 71-92.000.

Tsubakimoto Chain Co.: *See—*
Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, 4,411,131., Cl. 59-78.000.

Tsuge, Akihiko: *See—*
Komatsu, Michiyasu; Tsuge, Akihiko; Komeya, Katsutoshi; and Ando, Akio, 4,412,009., Cl. 501-97.000.

Tsuji, Nobuo: *See—*
Miyoshi, Takahito; Tsuji, Nobuo; Okutu, Toshimitu; and Fujiyama, Masaaki, 4,411,953., Cl. 428-336.000.
Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, 4,411,966., Cl. 428-695.000.

Tsujio, Hisami: *See—*
Sakabe, Toshiaki; Matsumoto, Yasuhiro; and Tsujio, Hisami, 4,411,851., Cl. 264-137.000.

Tsukada, Masakazu: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Tsukada, Masakazu; and Yamashita, Masaaki, 4,411,964., Cl. 428-626.000.

Tsukada, Yukihisa: *See—*
Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, 4,411,757., Cl. 204-192.00E.

Tsuno, Katsushige, to JEOL Ltd. Electron lens equipped with three magnetic pole pieces. 4,412,132., Cl. 250-396.0ML.

Tsuno, Kazuhiko: *See—*
Ninomiya, Youichi; and Tsuno, Kazuhiko, 4,411,407., Cl. 251-315.000.

Tsutsui, Ken: *See—*
Sasano, Akira; Nakano, Toshio; Tsutsui, Ken; Hashimoto, Michiaki; Kaneko, Tadao; Koike, Norio; and Izumi, Akiya, 4,412,236., Cl. 357-31.000.

Tuftec, Inc.: *See—*
Brock, James D.; and Morrison, Gerald B., 4,411,207., Cl. 112-79.00A.

Tuley, Eugene N.: *See—*
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.

Tumsuden, Herbert W., Jr.: *See—*
Bienwald, Wolfgang F.; and Tumsuden, Herbert W., Jr., 4,412,193., Cl. 335-18.000.

Turbo Resources Ltd.: *See—*
Johnson, Conrad B., 4,411,774., Cl. 208-179.000.

Turner, Norman L.: *See—*
Kalbfus, Charles R.; and Turner, Norman L., 4,412,153., Cl. 315-111.810.

Tusco Manufacturing Co.: *See—*
Everett, Lynn E., 4,411,400., Cl. 248-216.100.

Tutherly, Herbert W.: *See—*
Stearns, Charles F.; and Tutherly, Herbert W., 4,411,133., Cl. 60-39.281.

Twyman, Noel H., to Apros Corporation. Metallic scrap decontamination process. 4,411,695., Cl. 75-44.00S.

Tzodikov, Nathan R., to New England Nuclear Corporation. Composition and method for stabilizing radiolabeled compounds using thiocarbonylated diethylenetriamines. 4,411,881., Cl. 424-1.100.

UBE Industries, Ltd.: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.
Nagasawa, Toshio; and Nishihara, Yoshio, 4,412,125., Cl. 219-549.000.
Sasaki, Yoshikazu; Inoue, Hiroshi; Miura, Tadashi; Kumamoto, Kazuo; and Toudou, Sumio, 4,411,952., Cl. 428-332.000.

Udaras Na Gaeltachta: *See—*
O'Connor, Brendan F.; Phillips, John O.; and Webb, Charles M., 4,411,522., Cl. 356-240.000.

Ueda, Ikuo; Morino, Daizou; and Takimoto, Koichi, to Fujisawa Pharmaceutical Co., Ltd. Benzhydrylpiperozinyl thiazole derivatives and pharmaceutical composition comprising the same. 4,411,900., Cl. 424-250.000.

Uede, Hisashi: *See—*
Isaka, Kinichi; Kawaguchi, Masashi; and Uede, Hisashi, 4,412,155., Cl. 315-246.000.

Uehara, Teruhisa: *See—*
Kawate, Yoshio; Nagai, Nobuyuki; Horiuchi, Takefumi; Uehara, Teruhisa; and Hachiya, Susumu, 4,412,090., Cl. 136-230.000.

Ueki, Kazuyoshi: *See—*
Komatsu, Hideo; Iida, Shinya; Mizutani, Tatsumi; and Ueki, Kazuyoshi, 4,412,119., Cl. 219-121.0PF.

Uemura, Takeshi: *See—*
Ohnishi, Tatsuo; Uemura, Takeshi; and Nakajima, Teruo, 4,411,131., Cl. 59-78.000.

UFI Engineering & Manufacturing Co., Inc.: *See—*
Miksitz, Frank J., 4,411,377., Cl. 222-342.000.

Ullrich, Manfred: *See—*
Reutler, Herbert; Muller-Frank, Ulrich; Ullrich, Manfred; and Schepers, Hubert, 4,411,860., Cl. 376-338.000.

Ulrich, Michael; Trautmann, Manfred; Heck, Gunter; and Malow, Egon, to Hoechst Aktiengesellschaft. Apparatus for absorbing gases. 4,411,846., Cl. 261-98.000.

Umemoto, Yoshiro: *See—*
Fukui, Osamu; Umemoto, Yoshiro; Sanmiya, Tsugumi; Sano, Yutaka; and Tanaka, Kazuyoshi, 4,412,016., Cl. 523-206.000.

Unger, Harold; Sze, Morgan C.; and Van Driesen, Roger P., to Lummus Company, The. Hydrogenation of high boiling hydrocarbons. 4,411,768., Cl. 208-59.000.

Union Carbide Corporation: *See—*
Corwin, Michael A.; and Foster, George N., 4,412,025., Cl. 524-241.000.
Leithauser, Douglas R.; and Young, John K., 4,411,138., Cl. 62-50.000.

United Foam Corporation: *See—*
Morgan, Charles W., 4,411,033., Cl. 5-450.000.

United Kingdom Atomic Energy Authority: *See—*
Conlon, Thomas W.; and Edeleanu, Constantin, 4,412,174., Cl. 324-65.0CR.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Fitzgerald-Smith, James P., 4,411,036., Cl. 14-2.400.

United States Gypsum Company: *See—*
Wittrup, Bruce A.; and White, Kendall D., Jr., 4,411,738., Cl. 162-142.000.

United States of America
Agriculture: *See—*
Boyles, David A.; Gaines, Jack R.; and Haissig, Bruce E., 4,411,684., Cl. 71-77.000.
Air Force: *See—*
Anderson, William S., 4,411,717., Cl. 149-18.000.
Brisken, Thomas A.; and Maier, Alexander G., 4,411,715., Cl. 148-131.000.
Army: *See—*
Bartlett, Marion C.; and Johnson, Raymond C., 4,412,340., Cl. 375-96.000.
Durenec, Peter; and Dunn, Aubrey J., 4,411,164., Cl. 74-55.000.
Durenec, Peter, 4,411,436., Cl. 277-53.000.
Miller, Thomas G.; and Polk, Robert G., 4,411,487., Cl. 350-1.100.
Pizzola, Robert M., 4,411,569., Cl. 409-261.000.
Vig, John R., 4,412,172., Cl. 324-56.000.
Workman, S. Thomas; Chambers, John L.; Pugh, Myron A.; and Ward, Roger W., 4,412,345., Cl. 378-078.000.
Health and Human Services: *See—*
Allcock, Harry R.; and Austin, Paul E., 4,412,066., Cl. 528-168.000.
National Aeronautics and Space Administration: *See—*
Dawn, Frederic S.; and Correale, James V., 4,411,660., Cl. 604-396.000.
Koffel, William K.; Tuley, Eugene N.; Gay, Charles H., Jr.; Troeger, Raymond E.; and Sterman, Albert P., deceased, 4,411,597., Cl. 416-92.000.
McWithey, Robert R.; Royster, Dick M.; and Bales, Thomas T., 4,411,380., Cl. 228-181.000.
Navy: *See—*
Breglia, Denis R.; Oharek, Frank J.; and Grimmer, Paul D., 4,411,627., Cl. 434-44.000.
DeMarco, Michael, 4,411,172., Cl. 74-690.000.
Dunlap, Richard M., 4,411,384., Cl. 237-2.00B.

Gilligan, William H.; and Stafford, Scott L., 4,411,837., Cl. 260-455.00B.
Gilligan, William H.; and Stafford, Scott L., 4,411,838., Cl. 260-463.000.
Klicker, Kenneth A.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,412,148., Cl. 310-358.000.
Paolino, Donald D., 4,412,192., Cl. 333-257.000.
Yates, Patrick A.; and McInnis, Patrick M., 4,411,199., Cl. 102-481.000.

U.S. Philips Corporation: *See—*
Kerforne, Jean-Francois; Le Gars, Jacques; and Remery, Michel, 4,412,284., Cl. 364-200.000.
McDonald, Richard L. C., 4,412,128., Cl. 250-213.0VT.
Wotherspoon, John T. M., 4,411,732., Cl. 156-643.000.

United States Steel Corporation: *See—*
Lewis, Leon L.; and Murray, Michael V., 4,411,145., Cl. 72-42.000.

United Technologies Corporation: *See—*
Bluege, John H., 4,411,492., Cl. 350-173.000.
Fishter, Robert E.; and Lada, Henry, 4,411,730., Cl. 156-626.000.
Murphy, Richard D.; and Clelford, Douglas H., 4,412,280., Cl. 364-200.000.
Reiser, Carl A.; and Maricle, Donald L., 4,411,968., Cl. 429-41.000.
Stearns, Charles F.; and Tutherly, Herbert W., 4,411,133., Cl. 60-39.281.

University of California, The Regents of the: *See—*
Kramer, Steven G.; and Yavitz, Edward Q., 4,411,652., Cl. 604-153.000.

University of Illinois, Board of Trustees of The: *See—*
Baldwin, Thomas O.; and Holzman, Thomas F., 4,412,001., Cl. 435-189.000.

University of Iowa Research Foundation: *See—*
Cox, Robert D.; and Frank, Clyde W., 4,412,006., Cl. 436-110.000.

University of Medicine and Dentistry of New Jersey: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,411,027., Cl. 3-1.000.

University of Rochester, The: *See—*
Klipstein, Frederick A.; Engert, Richard E.; and Clements, John D., 4,411,888., Cl. 424-92.000.

University of Southern California, The: *See—*
Yen, Teh F.; and Farmanian, Paul A., 4,411,816., Cl. 252-356.000.

University of Utah: *See—*
Janata, Jiri, 4,411,741., Cl. 204-1.00T.

University Patents, Inc.: *See—*
Salmon, Sydney E.; and Hamburger, Anne W., 4,411,990., Cl. 435-32.000.

UOP Inc.: *See—*
Carlson, David H. J., 4,411,776., Cl. 208-206.000.
Kroushl, Joseph A.; and Greenwood, Arthur R., 4,411,869., Cl. 422-188.000.
Kroushl, Joseph A.; and Greenwood, Arthur R., 4,411,870., Cl. 422-188.000.
Lester, George W.; and Malloy, Thomas P., 4,411,802., Cl. 252-8.55D.
Riley, Robert L., 4,411,787., Cl. 210-321.500.
Roberts, John T., 4,411,805., Cl. 252-47.000.

Upjohn Company, The: *See—*
Gammill, Ronald B., 4,412,071., Cl. 544-58.600.
Walker, Jerry A.; and Hessler, Edward J., 4,411,835., Cl. 260-397.450.

Uram, John R., Jr., to Goodyear Aerospace Corporation. Transparencies produced from epoxy resins cured with adducts of trimethoxyboroxine and benzyl alcohol and interlayers of mercaptan resins. 4,412,046., Cl. 525-506.000.

Uram, John R., Jr., to Goodyear Aerospace Corporation. Moisture permeation resistant resins from epoxy resins, polymercaptans, and aminosilanes. 4,412,052., Cl. 528-27.000.

Urata, Sigeru: *See—*
Takenouti, Eisuke; and Urata, Sigeru, 4,412,346., Cl. 378-181.000.

Urologic & Enteric Research Associates: *See—*
Cornett, Walter G., III, 4,411,656., Cl. 604-212.000.

Urushibata, Hiroyuki: *See—*
Tokumitsu, Shunji; Urushibata, Hiroyuki; and Goto, Masao, 4,412,321., Cl. 369-233.000.

USM Corporation: *See—*
Marzouki, Taieb; and Schweisser, Bernd, 4,411,115., Cl. 52-309.100.
Valsamis, Lefteris N.; Yang, Jan-Chin; and Donoian, Gary S., 4,411,532., Cl. 366-99.000.

Utsumi, Yoshikazu: *See—*
Ishii, Isao; Murakami, Tadaki; Sakamoto, Yoshiaki; Utsumi, Yoshikazu; Nakamura, Tatsuharu; and Takayanagi, Hiroshi, 4,412,010., Cl. 501-153.000.

Uzuka, Mitsuo, to Sony Corporation. Drive circuit for an alternate phase brushless DC motor. 4,412,159., Cl. 318-254.000.

V. M. Chasovoi: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Valadier, Jean-Claude, to Testut Aequitas. Gauge wire dynamometer wound and connected in an electrical bridge arrangement. 4,411,162., Cl. 73-862.650.

Valeas S.p.A.: *See—*
Bernareggi, Virgilio; Margutti, Roberto; Bonifacio, Fausto; and Fano, Maurizio, 4,411,902., Cl. 424-265.000.

Valenti, James P., to Armstrong World Industries, Inc. Overrunning synchronizable clutch and apparatus for treating work pieces in register with a physical characteristic thereof. 4,411,217., Cl. 118-212.000.

Valsamis, Lefteris N.; Yang, Jan-Chin; and Donoian, Gary S., to USM Corporation. Rotary processor. 4,411,532., Cl. 366-99.000.

Vanderbilt University: *See—*
Mann, George V., 4,411,916., Cl. 426-43.000.

Van Driesen, Roger P.: *See—*
Unger, Harold; Sze, Morgan C.; and Van Driesen, Roger P., 4,411,768., Cl. 208-59.000.

Van Eenam, Donald N., to Monsanto Company. Compositions for bonding fibrous substrates. 4,412,017., Cl. 523-408.000.

van Gogh, Johan; and Grol, Hermanus, to Shell Oil Company. Polyglycidyl ethers, their preparation and use in curable compositions. 4,412,056., Cl. 528-112.000.

Van Lue, Dorin F.: *See—*
Petrini, Richard R.; and Van Lue, Dorin F., 4,412,177., Cl. 324-226.000.

van Ommering, Gerrit: *See—*
Meyer, Theodore O.; and van Ommering, Gerrit, 4,411,970., Cl. 429-161.000.

van Peppen, Jacobus C. L.: *See—*
Asjes, Ronald J.; van Peppen, Jacobus C. L.; and Klaassen, Klaas B., 4,412,317., Cl. 367-185.000.

Varian Associates, Inc.: *See—*
Kalbfus, Charles R.; and Turner, Norman L., 4,412,153., Cl. 315-111.810.

Vaulont, Winfrid: *See—*
Schnabel, Roland; Hoelzel, Alexander; and Vaulont, Winfrid, 4,411,781., Cl. 210-195.200.

Veillon, Armas. Wood working jointer device. 4,411,297., Cl. 144-129.000.

Venable, D. L. Apparatus for screening grain or the like. 4,411,778., Cl. 209-246.000.

Vereinigte Flugtechnische Werke GmbH: *See—*
Hubner, Rudolf; and Grabenhorst, Rolf, 4,411,483., Cl. 339-17.00M.

Verhaeghe, Michel: *See—*
Froment, Jean-Claude; Marijon, Jean-Louis; Orengo, Gerard; and Verhaeghe, Michel, 4,412,335., Cl. 375-3.000.

Ver Nooy, Burton, to T. D. Williamson, Inc. Branch fitting for providing access to the interior of a pipe. 4,411,459., Cl. 285-197.000.

Vetrotex Saint-Gobain: *See—*
Roncato, Giordano, 4,411,180., Cl. 83-37.000.

Victor Company of Japan, Ltd.: *See—*
Hiraguri, Seisuke, 4,412,259., Cl. 360-77.000.
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,412,097., Cl. 381-92.000.

Viebranz, Manfred: *See—*
Kehr, Dieter; and Viebranz, Manfred, 4,412,029., Cl. 524-441.000.

Vig, John R., to United States of America, Army. Method of measuring the thermal properties of a resonator. 4,412,172., Cl. 324-56.000.

Vigil, Thomas R.: *See—*
Holmes, George; and Keyser, Frank, 4,411,531., Cl. 366-76.000.

Villa-Komaroff, Lydia J.: *See—*
Gilbert, Walter; Broome, Stephanie A.; Villa-Komaroff, Lydia J.; and Efstratiadis, Argiris A., 4,411,994., Cl. 435-71.000.

Vines, Harvey L.: *See—*
Pervier, James W.; Vines, Harvey L.; Marano, Vincent, III; and Patterson, Michael A., 4,411,677., Cl. 62-25.000.

Vitrum AB: *See—*
Bennwik, Percy; and Hjertman, Birger, 4,411,358., Cl. 206-45.340.

Vittadini, Italo: *See—*
Guerriero, Renato; and Vittadini, Italo, 4,411,760., Cl. 204-270.000.

Vitzthum, Otto: *See—*
Hubert, Peter; and Vitzthum, Otto, 4,411,923., Cl. 426-271.000.

Voegele, Jean D.; Jourdheuil, Pierre E. J.; and Daumal, Jeanne, to Inst. Nat. de la Recherche Agronomique. Mass production unit for producing eggs of an insect. 4,411,220., Cl. 119-1.000.

Voest-Alpine Aktiengesellschaft: *See—*
Aschauer, Hans; and Funk, Gunter, 4,411,148., Cl. 72-306.000.
Cordella, Johannes, 4,411,304., Cl. 164-448.000.
Kriegner, Othmar; and Gruber, Gunther, 4,411,534., Cl. 374-141.000.
Scheurecker, Werner, 4,411,053., Cl. 29-267.000.

Vogelgesang, Herbert, to Mannesmann Aktiengesellschaft. Wire rolling mill in block form, a so-called wire block with at least one driven line shaft. 4,411,170., Cl. 74-661.000.

Voights, Dora L. Palpation and auscultation teaching method and apparatus. 4,411,629., Cl. 434-266.000.

Voisin, Max. Process for emulsifying and stabilizing anise essences, anethole and essential oils or fats in the aqueous phase. 4,411,813., Cl. 252-312.000.

Voith Getriebe KG: *See—*
Brosius, Klaus; and Herrmann, Berthold, 4,411,340., Cl. 188-296.000.

Volfson, Boris, to Graber Industries, Inc. Cord weight pulley. 4,411,044., Cl. 16-219.000.

Volkswagenwerk Aktiengesellschaft: *See—*
Fiala, Ernest, 4,411,171., Cl. 74-675.000.

von Bonin, Wulf; von Gizycki, Ulrich; Wagner, Kuno; and Schapel, Dietmar, to Bayer Aktiengesellschaft. Constructional material. 4,411,262., Cl. 128-90.000.

von Borstel, Klaus P.: *See—*
Heinzl, Joachim; and von Borstel, Klaus P., 4,412,256., Cl. 358-283.000.

von Gizycki, Ulrich: *See—*
von Bonin, Wulf; von Gizycki, Ulrich; Wagner, Kuno; and Schapel, Dietmar, 4,411,262., Cl. 128-90.000.

Von Kemenczky, Miklos, to Guilden Development Corp. Switch construction responsive to motions of a wearer. 4,412,205., Cl. 340-331.000.

von Renteln, Adrian, to ASEA Aktiebolag. Regulating winding connected in series with a main winding of a transformer. 4,412,199., Cl. 336-70.000.

Vorreiter, John W.: *See—*
Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., 4,412,133., Cl. 250-492.200.

Voss, Erich; and Grafenschnell, Horst, to Siemens Aktiengesellschaft. Stator for an electric machine excited by permanent magnets. 4,412,145., Cl. 310-154.000.

Vought Corporation: *See—*
Johnson, Robert M., 4,411,962., Cl. 428-615.000.

Voyda, Ronald A.: *See—*
Stedman, Thomas R.; and Voyda, Ronald A., 4,411,349., Cl. 193-35.00R.

Vulcan Materials Company: *See—*
Beard, William Q., Jr.; and Wilson, Richard L., 4,412,086., Cl. 570-262.000.

W. Braun Company: *See—*
Wavering, Karen A., 4,411,282., Cl. 132-88.500.

W. G. Durant Corporation: *See—*
Durant, Will G., 4,411,296., Cl. 141-98.000.

W. H. Brady Co.: *See—*
Frame, Norman J.; Walber, James P.; and Janick, Jan M., 4,412,209., Cl. 340-365.00C.

W. L. Gore & Associates, Inc.: *See—*
Hansell, George A., III, 4,412,092., Cl. 174-36.000.

W. R. Grace & Co.: *See—*
Green, Peter C.; and Block, Jacob, 4,411,800., Cl. 252-8.50A.

W. R. Grace & Co., Cryovac Division: *See—*
Thompson, Henry B., 4,411,919., Cl. 426-412.000.

Wachs, Edward H.; and Kwech, Horst, to Power Cutting Incorporated. Pipe end preparation machine. 4,411,178., Cl. 82-4.00C.

Wada, Minoru; and Yoshida, Satoshi, to Fuji Photo Film Co., Ltd. Line recording method. 4,412,229., Cl. 346-108.000.

Wada, Tomio: *See—*
Nonomura, Keisaku; Matsura, Masataka; and Wada, Tomio, 4,411,496., Cl. 350-347.00E.

Wagner, Kuno: *See—*
von Bonin, Wulf; von Gizycki, Ulrich; Wagner, Kuno; and Schapel, Dietmar, 4,411,262., Cl. 128-90.000.

Wakabayashi, Hiroharu: *See—*
Mochizuki, Kiyofumi; Wakabayashi, Hiroharu; and Niiro, Yasuhiko, 4,411,520., Cl. 356-73.100.

Wakabayashi, Takeshi: *See—*
Matsuura, Yoshio; Kurihara, Michio; Kamei, Takao; Nakamura, Akira; Komai, Keiichi; and Wakabayashi, Takeshi, 4,411,765., Cl. 208-8.0LE.

Walber, James P.: *See—*
Frame, Norman J.; Walber, James P.; and Janick, Jan M., 4,412,209., Cl. 340-365.00C.

Walde, Robert A.: *See—*
Cebalo, Tony; and Walde, Robert A., 4,412,079., Cl. 548-141.000.

Walden, Jack M.: *See—*
Watson, Robert E.; Walden, Jack M.; and Near, Charles W., 4,412,300., Cl. 364-709.000.

Waldron, Wesley K., to General Electric Company. Method for forming electrical contacts between a conductor-carrying cable and a display cell. 4,411,633., Cl. 445-24.000.

Walgreen Co.: *See—*
Stedman, Thomas R.; and Voyda, Ronald A., 4,411,349., Cl. 193-35.00R.

Walker, Brooks. Carrier for garment bags and the like. 4,411,344., Cl. 190-18.00A.

Walker, George L.: *See—*
LaVanture, Mark D.; and Walker, George L., 4,411,811., Cl. 252-182.000.

Walker, Jerry A.; and Hessler, Edward J., to Upjohn Company, The. Preparation of corticoids from 17-keto steroids. 4,411,835., Cl. 260-397.450.

Walker, Lois J. Holder for skeins of embroidery floss. 4,411,363., Cl. 206-388.000.

Wallace, Harry L.; and Thomas, John D., to Burroughs Corporation. Method and apparatus for eliminating dust from ink jet printers. 4,411,706., Cl. 134-37.000.

Wallis, Christopher N.: *See—*
Case, William J.; and Wallis, Christopher N., 4,412,165., Cl. 318-636.000.

Walt, Davis R.: *See—*
Whitesides, George; and Walt, Davis R., 4,411,995., Cl. 435-90.000.

Walter Dian, Inc.: *See—*
Dian, Walter, 4,411,430., Cl. 273-171.000.

Walter, Lothar: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,411,478., Cl. 308-6.00C.

Walters, Ronald B., to Sperry Limited. Hydraulic valve. 4,411,289., Cl. 137-486.000.

Walz, Gerd: *See—*
Mondt, Josef; Walz, Gerd; and Wirth, Thaddaus, 4,411,955., Cl. 428-413.000.

Wang, Jia T.: *See—*
Khadder, Wadie N.; Wang, Jia T.; and Hollins, Brian E., 4,412,238., Cl. 357-43.000.

Wang Laboratories, Inc.: *See—*
Nelson, Alfred M.; Rasekhi, Houshang; and Cieplik, Ronald J., 4,412,263., Cl. 360-128.000.

Ward, Denis S., to British Petroleum Company, p.l.c., The. Separation equipment. 4,411,791., Cl. 210-649.000.

Ward, Roger W.: *See—*
Workman, S. Thomas; Chambers, John L.; Pugh, Myron A.; and Ward, Roger W., 4,412,345., Cl. 378-078.000.

Warman, Thomas E., to Senco Products, Inc. Disposable surgical stapling instrument having an anvil with coextensive lateral flanges. 4,411,378., Cl. 227-19.000.

Warner-Lambert Company: *See—*
Pattison, Ian C., 4,411,904., Cl. 424-267.000.

Warren, Michael M.: *See—*
Davis, Charles P.; Warren, Michael M.; and Arnett, David W., 4,411,648., Cl. 604-21.000.

Washizawa, Yasuo; Shinozaki, Fumiaki; Ikeda, Tomoaki; and Nakao, Sho, to Fuji Photo Film Co., Ltd. Method for processing an image-forming material. 4,411,983., Cl. 430-325.000.

Washizuka, Isamu; and Hashimoto, Shintaro, to Sharp Kabushiki Kaisha. Electronic calculator with acoustic confirmation of key actuation and acoustical alarms. 4,412,210., Cl. 340-365.00S.

Watanabe, Kazuo: *See—*
Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, 4,411,710., Cl. 148-6.14R.

Watanabe, Kiyoshi: *See—*
Hirakawa, Kan; Takakuma, Ryoji; Nomura, Koji; Katoh, Masami; and Watanabe, Kiyoshi, 4,411,991., Cl. 435-42.000.

Watanabe, Shunso F.; Daykin, Theodore W.; and Heiney, Elmer T., III, to Ford Motor Company. Carburetor throttle valve actuator. 4,411,231., Cl. 123-339.000.

Watanabe, Taisuke: *See—*
Niyada, Katsuyuki; Watanabe, Taisuke; Hiraoka, Shoji; and Morii, Shuji, 4,412,099., Cl. 381-51.000.

Watanabe, Toshiyuki: *See—*
Kobayashi, Hidetoshi; Watanabe, Toshiyuki; Adachi, Keiichi; and Ogawa, Tadashi, 4,411,987., Cl. 430-542.000.

Watanabe, Yasuo; Isoyama, Seiji; and Bannou, Masahiko, to Dowa Mining Co., Ltd. Dry process for the production of hexagonal-system ferrite. 4,411,807., Cl. 252-62.580.

Watson, Martin C.: *See—*
Neches, Philip M.; Hartke, David H.; Stockton, Richard C.; Watson, Martin C.; Cronshaw, David; and Shemer, Jack E., 4,412,285., Cl. 364-200.000.

Watson, Robert E.; Walden, Jack M.; and Near, Charles W., to Hewlett-Packard Company. Programmable calculator including alphabetic output capability. 4,412,300., Cl. 364-709.000.

Watts, Kenneth H.: *See—*
Pomerleau, Daniel G.; Slocombe, Douglas E.; and Watts, Kenneth H., 4,411,801., Cl. 252-8.50P.

Watts, LaVaughn F.; Smith, Ronald L.; Pandya, Yogendra C.; and Wood, Paul B., to Texas Instruments Incorporated. Display system with multiple scrolling regions. 4,412,294., Cl. 364-518.000.

Wavering, Karen A., to W. Braun Company. Mascara applicator wand and receptacle. 4,411,282., Cl. 132-88.500.

Wavetek Indiana, Inc.: *See—*
Goldberg, Paul R., 4,412,230., Cl. 346-110.00R.

Wean United, Inc.: *See—*
Betts, William H., 4,411,713., Cl. 148-35.000.

Webasto-Werk W. Baier GmbH & Co.: *See—*
Lamkewitz, Falk, 4,411,385., Cl. 237-2.00A.

Webb, Charles M.: *See—*
O'Connor, Brendan F.; Phillips, John O.; and Webb, Charles M., 4,411,522., Cl. 356-240.000.

Weber, Helmut; Reitberger, Peter H.; Bader, Leonhard; and Konig, Walter, to NCR Corporation. Ink jet printer. 4,412,232., Cl. 346-140.00R.

Wecker, Sheldon M.: *See—*
Kohl, Lou; Peschke, John R.; and Wecker, Sheldon M., 4,411,849., Cl. 264-45.500.

Wedertz, Larry D.; Ross, Oakley G.; and Niemeier, Byron M., to General Dynamics, Pomona Division. Double fabric retractable wing construction. 4,411,398., Cl. 244-3.280.

Wedertz, Larry D.; and Ross, Oakley G., to General Dynamics, Pomona Division. Flexible printed circuit card assembly. 4,412,272., Cl. 361-383.000.

Weiden, Horst: *See—*
Becker, Gunter; and Weiden, Horst, 4,411,626., Cl. 433-223.000.

Weikert, Norbert B.: *See—*
Best, Gerd; and Weikert, Norbert B., 4,411,475., Cl. 299-81.000.

Weintraub, Ronald, to Flexnit Company, Inc. Front opening bra with adjustable back. 4,411,269., Cl. 128-482.000.

Weir, Henry J., to H. J. Weir Engineering Co., Ltd. Laundry spreader. 4,411,083., Cl. 38-143.000.

Weisbach, Albert P., to Cardinal Manufacturing Co. Holding clips for stakes supporting metal concrete forms. 4,411,404., Cl. 249-3.000.

Weiss, Andrew B.: *See—*
Alexander, Harold; Parsons, John R.; Strauchler, Irving D.; and Weiss, Andrew B., 4,411,027., Cl. 3-1.000.

Weitz, Paul G., Jr.; and Franklin, Cecil, to Simmonds Precision Products, Inc. Electrode assembly for a capacitance type probe. 4,412,270., Cl. 361-284.000.

Welbourn, Brian C.: *See—*
Spenceley, Gene D.; and Welbourn, Brian C., 4,411,697., Cl. 75-60.000.

Welebir, Andrew J., to Biochemical Research Corporation. 1-Triacontanol plant growth stimulator formulations. 4,411,685., Cl. 71-84.000.

Welsch, Walter N.: *See—*
Fleckenstein, Elwin H.; and Welsch, Walter N., 4,411,106., Cl. 51-170.0EB.

Welsh, Jay Y., to Chemetals Incorporated. Preparation of Mn_3O_4. 4,411,878., Cl. 423-605.000.

Wenderoth, Karl; and Kuhn, Lothar, to Triumph-Adler A. G. fur Buro-und Informationstechnik. Error ribbon elevation and transport mechanism for typewriters and similar machines. 4,411,542., Cl. 400-697.100.

Wenderoth, Karl: *See—*
Mansfeld, Manfred; and Wenderoth, Karl, 4,411,541., Cl. 400-213.000.

Wessel, Walter F., III: *See—*
Moore, Robert S.; and Wessel, Walter F., III, 4,412,252., Cl. 358-160.000.

Weste, Neil H. E.: *See—*
Ackland, Bryan D.; and Weste, Neil H. E., 4,412,313., Cl. 365-221.000.

Western Electric Co., Inc.: *See—*
Cho, Kon H., 4,411,060., Cl. 29-576.00W.
Dougherty, Timothy S.; Kissell, John J.; and Schmehl, Glenn L., 4,412,094., Cl. 174-110.00F.
Fox, William B.; and Maddox, Harry L., 4,412,327., Cl. 371-21.000.

Westfalia Separator AG: *See—*
Tenthoff, Aloys, 4,411,645., Cl. 494-3.000.

Westinghouse Electric Corp.: *See—*
Braginski, Aleksander I.; and Male, Alan T., 4,411,959., Cl. 428-558.000.
Dixon, George D.; Carlson, Nancy W.; and Saunders, Howard E., 4,412,048., Cl. 525-524.000.
Golub, Gregory J., 4,412,116., Cl. 200-155.00R.
Lindberg, Frank A., 4,411,719., Cl. 156-64.000.

Wevers, Jan H.: *See—*
Mulder, Nicolaas; Terlouw, Willem; and Wevers, Jan H., 4,412,089., Cl. 585-645.000.

Wheelock, Kenneth S.: *See—*
Schucker, Robert C.; and Wheelock, Kenneth S., 4,411,772., Cl. 208-121.000.

White, Fred K., to American Hospital Supply Corporation. Ventable sample collection device. 4,411,163., Cl. 73-864.020.

White, Kendall D., Jr.: *See—*
Wittrup, Bruce A.; and White, Kendall D., Jr., 4,411,738., Cl. 162-142.000.

Whitehouse, Daniel L., to Solarex Corporation. Composition for applying antireflective coatings on solar cell. 4,411,703., Cl. 106-189.000.

Whitesides, George; and Walt, Davis R., to Massachusetts Institute of Technology. Synthesis of nicotinamide cofactors. 4,411,995., Cl. 435-90.000.

Whitmire Research Laboratories, Inc.: *See—*
Stout, Daniel M.; and Duff, Charles B., 4,411,093., Cl. 43-114.000.

Wickmann-Werke AG: *See—*
Behrendt, Martin, 4,411,486., Cl. 339-147.00R.

Wiedmann, Siegfried K.: *See—*
Berger, Horst H.; and Wiedmann, Siegfried K., 4,412,312., Cl. 365-189.000.

Wiesner, John C.: *See—*
Eckes, William A.; Rhoades, Russell H.; Vorreiter, John W.; Wiesner, John C.; and Shepard, Charles E., 4,412,133., Cl. 250-492.200.

Wik Elektro-Hausgerate Vertriebsgesellschaft mbH & Co., Productions-KG: *See—*
Doern, Klaus, 4,411,281., Cl. 132-37.00R.

Wild, Peter; and Nickel, Horst, to Bayer Aktiengesellschaft. Processes for dyeing paper, and agents containing azo dyestuffs. 4,411,669., Cl. 8-654.000.

Wildeboer, Nicolaas, to Isotronics, Inc. Microcircuit flat pack with integral shell. 4,412,093., Cl. 174-52.0FP.

Wilhelm, James H.: *See—*
Butler, Robert S.; Claerbout, Paul F.; Kent, Louis P.; Cleland, Randy S.; Wilhelm, James H.; and Micko, Richard E., 4,411,875., Cl. 423-242.000.

Wilkinson, Horace A. Shoe construction. 4,411,076., Cl. 36-34.00R.

Willard, David F.; and Tidwell, Gerald W., to Motorola, Inc. Pager with visible display indicating status of memory. 4,412,217., Cl. 340-825.440.

Willem, Michel: *See—*
Thuillier, Denis; and Willem, Michel, 4,412,095., Cl. 174-158.00R.

William I. Smith: *See—*
Smith, William I.; and Moyer, Harold, 4,411,576., Cl. 414-226.000.

Williams, Althea M. W. Blanket device with alarm. 4,411,034., Cl. 5-494.000.

Williams, Robert E., to General Electric Company. Methods for preparing decamethyl cyclopentasiloxane. 4,412,081., Cl. 556-460.000.

Williams, Robert E., Jr., to General Electric Company. Methods for preparing cyclopolysiloxanes. 4,412,080., Cl. 556-460.000.

Williamson, Richard D.: *See—*
Philipps, Donald F.; and Williamson, Richard D., 4,411,453., Cl. 285-18.000.

Wilnai, Dan: *See—*
Mor, Yeshayahu; and Wilnai, Dan, 4,412,283., Cl. 364-200.000.

Wilson, Hugh R. Water resistant charge container for firearms. 4,411,088., Cl. 42-90.000.

Wilson, Leslie B., to Dayco Corporation. Belt tensioner and method of making the same. 4,411,638., Cl. 474-138.000.

Wilson, Richard L.: *See—*
Beard, William Q., Jr.; and Wilson, Richard L., 4,412,086., Cl. 570-262.000.

Winhan, Lucien C., to TRW Inc. Method of making precision doped polysilicon vertical ballast resistors by multiple implantations. 4,411,708., Cl. 148-1.500.

Winters, Warren J., to Standard Oil Company. Downhole device to detect differences in fluid density. 4,412,130., Cl. 250-260.000.

Wirth, Friedrich: *See—*
Reuter, Peter; Blechschmitt, Kurt; and Wirth, Friedrich, 4,411,818., Cl. 502-35.000.

Wirth, Thaddaus: *See—*
Mondt, Josef; Walz, Gerd; and Wirth, Thaddaus, 4,411,955., Cl. 428-413.000.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Tanaka, Yoko; Ikekawa, Nobuo; and Kobayashi, Yoshiro, 4,411,833., Cl. 260-239.55R.

Wiseheart, Ronald W.; and Meyer, Daniel, to Communications Systems, Inc. Wall plate kit for telephones. 4,411,485., Cl. 339-125.00R.

Wishart, John G., to Mead Corporation, The. Apparatus and method for attaching fastener tapes. 4,411,721., Cl. 156-73.100.

Wisian-Neilson, Patty J.: *See—*
Neilson, Robert H.; and Wisian-Neilson, Patty J., 4,412,053., Cl. 528-30.000.

Witt, Ronald A., to Falk Corporation, The. Disc clutch apparatus. 4,411,346., Cl. 192-85.00A.

Wittrup, Bruce A.; and White, Kendall D., Jr., to United States Gypsum Company. Press cycle reduction for wet pressed hardboard. 4,411,738., Cl. 162-142.000.

Wixon, Harold E., to Colgate Palmolive Company. Detergent softener compositions. 4,411,803., Cl. 252-8.750.

Wixon, Harold E., to Colgate Palmolive Company. Concentrated heavy duty particulate laundry detergent. 4,411,809., Cl. 252-91.000.

Woerz, Stephen E.; and Canup, Travis K., to Boise Cascade Corporation. Apparatus for spin bonding ends for composite containers. 4,411,726., Cl. 156-423.000.

Wojtanek, Guy A., to Singer Company, The. Timer clutch. 4,412,110., Cl. 200-38.00R.

Woldy, Paul N.: *See—*
Loftus, Jordan; and Woldy, Paul N., 4,411,533., Cl. 374-125.000.

Wolfram, Frank. Reversing conveyer track. 4,411,350., Cl. 193-35.00A.

Wolfson, Morton M. Safety apparatus for passengers on vehicles. 4,411,222., Cl. 119-96.000.

Wollam, Carl A.; Gailey, J. Lynn; and Chalmers, Alexander F., to Alcan Aluminum Corporation. Apparatus for producing straited surface coatings. 4,411,218., Cl. 118-411.000.

Wollam, Carl A.: *See—*
Gailey, J. Lynn; and Wollam, Carl A., 4,411,215., Cl. 118-111.000.

Wood, Dale A.; and Elfes, Lee E., to Massey-Ferguson Inc. Sensitivity adjusting apparatus for tractor draft sensing and control system. 4,411,319., Cl. 172-10.000.

Wood, Obert R., II: *See—*
Macklin, John J.; Silfvast, William T.; and Wood, Obert R., II, 4,411,733., Cl. 156-643.000.

Wood, Paul B.: *See—*
Watts, LaVaughn F.; Smith, Ronald L.; Pandya, Yogendra C.; and Wood, Paul B., 4,412,294., Cl. 364-518.000.

Woodruff, Richard E., to TransFRESH Corporation. Method for inhibiting fungal growth on fresh fruits and vegetables. 4,411,921., Cl. 426-263.000.

Woodward, Ronald O.: *See—*
McMahan, David R.; and Woodward, Ronald O., 4,412,274., Cl. 362-269.000.

Wooten, John T.: *See—*
Easley, Othel D., Jr.; and Wooten, John T., 4,411,705., Cl. 134-8.000.

Workman, S. Thomas; Chambers, John L.; Pugh, Myron A.; and Ward, Roger W., to United States of America, Army. Apparatus and method for precise determinations of crystallographic orientation in crystalline substances. 4,412,345., Cl. 378-078.000.

Works, George A., to Raytheon Company. Distributed signal processing system. 4,412,281., Cl. 364-200.000.

Woten, Homer G. Insulation blowing and spraying apparatus. 4,411,390., Cl. 241-98.000.

Wotherspoon, John T. M., to U.S. Philips Corporation. Method of manufacturing a detector device. 4,411,732., Cl. 156-643.000.

Wright, Charles S., to Delta Electronics, Inc. Remote display of percentage modulation data obtained at a transmitter site. 4,412,349., Cl. 455-67.000.

Wright, Kenneth W.: *See—*
Hersom, Albert C.; and Wright, Kenneth W., 4,411,601., Cl. 417-388.000.

Wright, Richard A.: *See—*
Sedam, Jason K.; Hale, James V. M.; Caldwell, Stewart W.; Bushman, Willard T.; and Wright, Richard A., 4,412,292., Cl. 364-479.000.

Wright, Thad F., to Agricultural Computer Systems, Inc. Apparatus and method for monitoring the oestrus cycle in female animals. 4,411,274., Cl. 128-738.000.

Wroblewski, Jerome J.: *See—*
Klein, Dean A.; Davis, Steven C.; and Wroblewski, Jerome J., 4,411,150., Cl. 72-461.000.

Wrozina, Joseph I.: *See—*
Albee, Paul J., Jr.; Burdick, Patricia E.; and Wrozina, Joseph I., 4,412,040., Cl. 525-143.000.

Wu, Mu-Yen M.; and Ball, Lawrence E., to Standard Oil Company, The. Process for the preparation of a polyamide from unsaturated nitrile, lactam and water. 4,412,061., Cl. 528-315.000.

Wu, Tai-Wing, to Eastman Kodak Company. Determination of total bilirubin. 4,412,005., Cl. 436-97.000.

Wuenscher, Hans F., deceased; and Wuenscher, Hertha A., administratrix. Waterbound facility powered by cycloidal fluid flow engines. 4,411,632., Cl. 440-93.000.

Wuenscher, Hertha A., administratrix: *See—*
Wuenscher, Hans F., deceased; and Wuenscher, Hertha A., administratrix, 4,411,632., Cl. 440-93.000.

Wuerzer, Bruno: *See—*
Rohr, Wolfgang; Hansen, Hanspeter; Wuerzer, Bruno; and Ceser, Heinz-Guenter, 4,411,691., Cl. 71-92.000.

Wunsch, Gerd: *See—*
Roos, Hans; Boehn, Hugo; Bittler, Knut; Kiener, Volker; and Wunsch, Gerd, 4,411,761., Cl. 204-290.00R.

Wurtinger, Horst; Glissmann, Jochen; and Heissler, Herbert, to M.A.N. Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Compression-tension strut. 4,411,114., Cl. 52-309.100.

Wusthof, Peter; and Schneider, Johann, to G. L. Rexroth GmbH. Internal gear machine with rotary pressure balanced valve disc. 4,411,607., Cl. 418-61.00B.

Xerox Corporation: *See—*
Badesha, Santokh S., 4,411,698., Cl. 75-121.000.
Browne, John M., 4,411,417., Cl. 271-94.000.
Gerken, William G., 4,411,517., Cl. 355-14.0SH.
Kukucka, William P.; Hynes, Frank R.; Jones, Hugh L.; and Thompson, David M., 4,411,515., Cl. 355-14.0SH.
Lu, Chin H.; Au Clair, Christopher J.; and Erhardt, Peter F., 4,411,974., Cl. 430-106.000.
Lu, Chin H.; and Au Clair, Christopher J., 4,411,975., Cl. 430-106.000.
Poehlein, Raymond E., 4,411,418., Cl. 271-236.000.

Yamabe, Masaaki; Kato, Masao; and Takakura, Teruo, to Asahi Glass Company Ltd. Antithrombogenic polyurethanes based on fluorinated prepolymers. 4,412,054., Cl. 528-70.000.

Yamada Electric Manufacturing Company Ltd.: *See—*
Niino, Masahiko, 4,412,266., Cl. 361-24.000.

Yamada, Shin: *See—*
Mutsukado, Motoo; and Yamada, Shin, 4,412,082., Cl. 562-478.000.

Yamada, Yasutsugu: *See—*
Shimazaki, Keishi; Nakamura, Yoshihiro; and Yamada, Yasutsugu, 4,411,997., Cl. 435-115.000.

Yamaguchi, Masaharu: *See—*
Makino, Yoshio; Murata, Yoshihiko; Kakinuma, Toshiaki; Yamaguchi, Masaharu; and Fujisawa, Naoyuki, 4,411,702., Cl. 106-111.000.

Yamaguchi, Nobutaka; Tsuji, Nobuo; Okuzawa, Yasutoshi; Nasu, Norio; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,411,966., Cl. 428-695.000.

Yamaguchi, Shoichiro; and Kabayashi, Fujio, to Tokyo Institute of Technology, The President of. Reconstruction method of X-ray computed tomography. 4,412,289., Cl. 364-414.000.

Yamaguchi, Toshihiro: *See—*
Nishino, Takao; Yamaguchi, Toshihiro; and Tanaka, Kazunori, 4,412,213., Cl. 340-753.000.

Yamaguchi, Yuji: *See—*
Kawai, Shinji; Suzuki, Koichi; and Yamaguchi, Yuji, 4,411,030., Cl. 4-443.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Horiuchi, Kotaro, 4,411,214., Cl. 114-347.000.
Taguchi, Michihiro, 4,411,593., Cl. 415-173.00R.

Yamakawa, Akio, to Sony Corporation. Releasable cover locking device. 4,412,320., Cl. 369-79.000.

Yamakita, Tooru, to Casio Computer Co., Ltd. Electronic cash register. 4,412,304., Cl. 364-900.000.

Yamamichi, Masayoshi: *See—*
Kinoshita, Takao; Hosoe, Kazuya; and Yamamichi, Masayoshi, 4,411,504., Cl. 354-25.000.

Yamamoto, Hiroshi: *See—*
Kitada, Masahiro; Suenaga, Masahide; Tsukada, Yukihisa; Shimizu, Noboru; and Yamamoto, Hiroshi, 4,411,757., Cl. 204-192.00E.

Yamamoto, Makoto: *See—*
Ishigaki, Yukinobu; Totsuka, Kaoru; Yamamoto, Makoto; and Miyaji, Naotaka, 4,412,097., Cl. 381-92.000.

Yamanaka, Kazusuke; and Mochizuki, Shouji, to Hitachi, Ltd. Electrochromic display element. 4,411,497., Cl. 350-357.000.

Yamaoka, Noboru: *See—*
Matsuura, Kazuo; Yamaoka, Noboru; and Miyoshi, Mituji, 4,412,042., Cl. 525-260.000.

Yamashita, Masaaki: *See—*
Hara, Tomihiro; Ogawa, Masahiro; Tsukada, Masakazu; and Yamashita, Masaaki, 4,411,964., Cl. 428-626.000.

Yamashita, Sadahiko: *See—*
Onishi, Hiroshi; Yamashita, Sadahiko; and Makimoto, Mitsuo, 4,412,351., Cl. 455-317.000.

Yamazaki, Etsuo: *See—*
Imazeki, Ryoji; and Yamazaki, Etsuo, 4,412,295., Cl. 364-520.000.

Yan, Tsoung-Yuan, to Mobil Oil Corporation. In-line regeneration of polythionate poisoned ion exchange resins. 4,411,873., Cl. 423-7.000.

Yanagihara, Hiromichi: *See—*
Igashira, Toshihiko; Tanaka, Takeshi; Sekiguchi, Kiyonori; and Yanagihara, Hiromichi, 4,411,242., Cl. 123-569.000.

Yanagihara, Noritaka: *See—*
Yokoi, Takeshi; and Yanagihara, Noritaka, 4,411,174., Cl. 74-866.000.

Yanagisawa, Zensuke, to Kawasaki Electric Wire Co., Ltd. Automatic apparatus for transferring electrical cords with terminal blades and for the testing thereof. 4,411,608., Cl. 425-123.000.

Yang, Jan-Chin: *See—*
Valsamis, Lefteris N.; Yang, Jan-Chin; and Donoian, Gary S., 4,411,532., Cl. 366-99.000.

Yang, Lian T., to Hallmark Camera Mfg. Pte. Ltd. Photographic camera. 4,411,506., Cl. 354-145.000.

Yano, Masao, to Mitsubishi Denki Kabushiki Kaisha. Cell generating system. 4,411,967., Cl. 429-23.000.

Yarborough, John M., Jr., to SRI International. Parity bit lock-on method and apparatus. 4,412,329., Cl. 371-47.000.

Yasuda, Yoshinobu: *See—*
Kimata, Kei; Nakazeki, Taugito; and Yasuda, Yoshinobu, 4,411,244., Cl. 123-389.000.

Yasuoka, Hirotoshi, to Mitsubishi Denki Kabushiki Kaisha. Limit switch mechanism. 4,412,111., Cl. 200-47.000.

Yates, Patrick A.; and McInnis, Patrick M., to United States of America, Navy. Booster for missile fuze with cylindrical wall holes. 4,411,199., Cl. 102-481.000.

Yavitz, Edward Q.: *See—*
Kramer, Steven G.; and Yavitz, Edward Q., 4,411,652., Cl. 604-153.000.

Yazawa, Hiroshi: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Yazawa, Hiroshi, executor: *See—*
Yazawa, Masahide, deceased; Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, 4,411,722., Cl. 156-167.000.

Yazawa, Masahide, deceased; by Yazawa, Hiroshi, executor; Kurihara, Kazuhiko; Yazawa, Hiroshi; Kuroiwa, Yuki; and Murakami, Shuichi, to Polymer Processing Research Institute Ltd. Method for producing a non-woven fabric of cross-laminated warp and weft webs of elongated stocks. 4,411,722., Cl. 156-167.000.

Yen, Teh F.; and Farmanian, Paul A., to University of Southern California, The. Native petroleum surfactants. 4,411,816., Cl. 252-356.000.

Yevich, Joseph P.: *See—*
Temple, Davis L., Jr.; and Yevich, Joseph P., 4,411,901., Cl. 424-250.000.

Yochum, Billy G., to Harris Corporation. Apparatus for controlling an operational characteristic of a controlled device in accordance with the position of a movable member. 4,412,182., Cl. 330-59.000.

Yokoi, Takeshi; and Yanagihara, Noritaka, to Toyota Jidosha Kogyo Kabushiki Kaisha. Transmission shift control device. 4,411,174., Cl. 74-866.000.

Yokono, Hitoshi: *See—*
Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, 4,411,609., Cl. 425-149.000.

Yoneda, Kanji: *See—*
Kuzunuki, Soshiro; Hirasawa, Kotaro; Yuminaka, Takeo; and Yoneda, Kanji, 4,411,338., Cl. 187-29.00R.

Yonezawa, Kazuya: *See—*
Asada, Masahiro; Matsuura, Miyuki; and Yonezawa, Kazuya, 4,412,057., Cl. 528-179.000.

Yonezawa, Seiji; and Sugiyama, Toshio, to Hitachi, Ltd. Optical system for reproducing information. 4,411,500., Cl. 350-446.000.

Yong, Raymond N.; and Sethi, Amar J., to Suncor, Inc. Rapid method for bitumen analysis. 4,412,007., Cl. 436-139.000.

Yoshida, Hideaki: *See—*
Morikawa, Masaki; Yoshida, Hideaki; Kishida, Kunio; and Tanaka, Chuji, 4,411,864., Cl. 420-587.000.

Yoshida, Kazutaka; and Horiuchi, Hideo, to Fuji Photo Film Co., Ltd. Method for color representation using colored ink dots. 4,412,225., Cl. 346-1.100.

Yoshida, Kazutaka, to Fuji Photo Film Co., Ltd. Ink-jet printing method. 4,412,226., Cl. 346-1.100.

Yoshida Kogyo K. K.: *See—*
Hosooka, Shuichi, 4,411,111., Cl. 52-213.000.

Yoshida, Kunio, to 501 Sharp Kabushiki Kaisha. Sentence translation device. 4,412,305., Cl. 364-900.000.

Yoshida, Masaru: *See—*
Kaetsu, Isao; Yoshida, Masaru; and Kumakura, Minoru, 4,411,754., Cl. 204-159.150.

Yoshida, Satoshi: *See—*
Wada, Minoru; and Yoshida, Satoshi, 4,412,229., Cl. 346-108.000.

Yoshida, Shotaro: *See—*
Mochizuki, Masataka; Takaoka, Michio; Moutai, Tsuneaki; Yoshida, Shotaro; and Watanabe, Kazuo, 4,411,710., Cl. 148-6.14R.

Yoshida, Takao: *See—*
Light, Kenneth K.; McGhie, Joseph A.; Fujioka, Futoshi; and Yoshida, Takao, 4,411,830., Cl. 252-522.00R.
Light, Kenneth K.; Schreiber, William L.; McGhie, Joseph A.; Schreck, Ronald P.; Yoshida, Takao; Schreiber, Loren B.; and Muralidhara, Ranya, 4,412,083., Cl. 564-279.000.

Yoshifuji, Junnosuke, to Nippon Cable System, Inc. Inner cable. 4,411,168., Cl. 74-501.00R.

Yoshii, Masaki; Sato, Hidemi; Kaneda, Aizo; Aoki, Masayoshi; Yokono, Hitoshi; and Oka, Mitsunori, to Hitachi, Ltd. Apparatus for molding plastic. 4,411,609., Cl. 425-149.000.

Yoshioka, Akira: *See—*
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,031., Cl. 524-526.000.
Kitahara, Shizuo; Hirokawa, Yoshitsugu; Kawada, Haruki; Fujii, Toshihiro; Sugi, Nagatoshi; Hasegawa, Hiroaki; and Yoshioka, Akira, 4,412,041., Cl. 525-154.000.

Yoshioka, Hiroshi: *See—*
Shiga, Akinobu; Naito, Yukio; Sasaki, Toshio; Kojima, Junpei; and Yoshioka, Hiroshi, 4,412,049., Cl. 526-127.000.

Young, John K.: *See—*
Leithauser, Douglas R.; and Young, John K., 4,411,138., Cl. 62-50.000.

Youngstown Steel Door Company, The: *See—*
McComb, Ronald J., 4,411,560., Cl. 406-128.000.

Yu, Steven P.; Matunas, Frank C.; and Zwetkow, Nikolaus, to Ecodyne Corporation. Reverse osmosis hollow fiber filter element. 4,411,785., Cl. 210-321.100.

Yuminaka, Takeo: *See—*
Kuzunuki, Soshiro; Hirasawa, Kotaro; Yuminaka, Takeo; and Yoneda, Kanji, 4,411,338., Cl. 187-29.00R.

Zeeh, Bernd; Goetz, Norbert; Ammermann, Eberhard; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. α-Azolyl-glycol derivatives, as fungicides and plant growth regulators. 4,411,687., Cl. 71-76.000.

Zeiher, Erich: *See—*
Brede, Uwe; Penner, Horst; Stahlmann, Rudolf; and Zeiher, Erich, 4,411,200., Cl. 102-529.000.

Zeilenga, William. Art of installing a sink drain flange assembly capable of supporting a garbage disposal. 4,411,054., Cl. 29-434.000.

Zeischegg, Walter; and Brussing, Bernd. Fire-extinguishing waste receptacle. 4,411,318., Cl. 169-26.000.

Zenith Radio Corporation: *See—*
Gibson, Kenneth L., 4,411,480., Cl. 312-7.200.

Zerpner, Dieter; and Streck, Roland, to Chemische Werke Huels AG. Low molecular weight 1,3-butadiene polymers containing reactive silyl groups, which are stabilized against crosslinking. 4,412,038., Cl. 525-101.000.

Zhiltsov, Jury S.: *See—*
Denisov, Vladimir A.; Kulevskaya, Elena F.; Zhiltsov, Jury S.; Kuznetsova, Olga M.; Novakovskaya, Zoya D.; Kozlov, Vyacheslav I.; Korol, Vyacheslav K.; and Pershin, Nikolai I., 4,412,144., Cl. 310-49.00R.

Zilske, Wolfgang: *See—*
Kreuter, Erika; and Zilske, Wolfgang, 4,411,743., Cl. 204-47.000.

Zimmermann, Josef: *See—*
Dettbarn, Hans-Jurgen; and Zimmermann, Josef, 4,411,650., Cl. 604-72.000.

Zimmermann, Walter: *See—*
Schroder, Joris; Bosshard, Hans; Kiml, Jiri; Kostka, Miroslav; and Zimmermann, Walter, 4,411,337., Cl. 187-29.00R.

Zimmermann, Wilhelm, to Claudius Peters AG. Prefabricated aeration block for silo bases. 4,411,113., Cl. 52-303.000.

Zimmerschied, Alan B.: *See—*
Shrader, John E.; and Zimmerschied, Alan B., 4,411,198., Cl. 102-216.000.

Zingaretti, Gabriele: *See—*
Cimino, Andrea; Plicchi, Gianni; Mangiarotti, Luigi; Rossi, Maurizio; Betti, Vittorio; Spighi, Massimo; and Zingaretti, Gabriele, 4,411,918., Cl. 426-124.000.

Zitser, Vitaly A.; Bachelis, Leonid V.; Melnikov, Alexandr V.; Dreishev, Igor I.; Shishkin, Nikolai K.; Morozov, Jury E.; Ivanov, Vladimir A.; Olshansky, Semen A.; and Ryabinin, July V. Device for delivery of cores. 4,411,586., Cl. 414-728.000.

Zoecon Corporation: *See—*
Henrick, Clive A.; and Garcia, Barbara A., 4,411,912., Cl. 424-304.000.
Lindahl, George R., III; and Henrick, Clive A., 4,411,839., Cl. 260-465.00D.

Zoppetti, Giorgio: *See—*
Casu, Benito; Torri, Giangiacomo; and Zoppetti, Giorgio, 4,411,796., Cl. 210-692.000.

Zwetkow, Nikolaus: *See—*
Yu, Steven P.; Matunas, Frank C.; and Zwetkow, Nikolaus, 4,411,785., Cl. 210-321.100.

Zwirner, Gerhard: *See—*
Cziptschirsch, Kurt; Kaiser, Klaus-Peter; and Zwirner, Gerhard, 4,411,467., Cl. 296-97.00H.

501 Sharp Kabushiki Kaisha: *See—*
Yoshida, Kunio, 4,412,305., Cl. 364-900.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF OCTOBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Church & Dwight Co., Inc.: *See—*
Steinke, John J.; and Kaufman, George, Re. 31,425., Cl. 206-611.000.

Daiberl, Karl. Intra-oral aligning assembly. Re. 31,426., Cl. 433-72.000.

Dow Chemical Co., The: *See—*
Habermann, Clarence E.; and Tefertiller, Ben A., Re. 31,430., Cl. 564-127.000.

Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the, by said Ernsting, Palmer, River, and Robson; and United States of America, Air Force, by said Morgan. Respirators. Re. 31,424., Cl. 128-201.180.

Gass, Ernst, to Novotechnik KG Offterdinger & Co. Movable wiper for potentiometers. Re. 31,431., Cl. 338-202.000.

Habermann, Clarence E.; and Tefertiller, Ben A., to Dow Chemical Co., The. Catalysts for the hydration of nitriles to amides. Re. 31,430., Cl. 564-127.000.

Hartman, George D.: *See—*
Tull, Robert, deceased; Hartman, George D.; and Weinstock, Leonard M., Re. 31,429., Cl. 544-277.000.

Kaufman, George: *See—*
Steinke, John J.; and Kaufman, George, Re. 31,425., Cl. 206-611.000.

Lubsen, Timothy A.; Strobel, Rudolf G. K.; Reinhart, Richard N.; and Patel, Jayantilal M., to Procter & Gamble Company, The. Aroma-enriched coffee products and process. Re. 31,427., Cl. 426-594.000.

Merck & Co., Inc.: *See—*
Tull, Robert, deceased; Hartman, George D.; and Weinstock, Leonard M., Re. 31,429., Cl. 544-277.000.

Morgan, Thomas R.: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M., Re. 31,424., Cl. 128-201.180.

Novotechnik KG Offterdinger & Co.: *See—*
Gass, Ernst, Re. 31,431., Cl. 338-202.000.

Palmer, Leonard F. W.: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M., Re. 31,424., Cl. 128-201.180.

Patel, Jayantilal M.: *See—*
Lubsen, Timothy A.; Strobel, Rudolf G. K.; Reinhart, Richard N.; and Patel, Jayantilal M., Re. 31,427., Cl. 426-594.000.

Pedlow, J. Watson, to Thomas & Betts Corporation. Fire protective tape. Re. 31,428., Cl. 428-215.000.

Procter & Gamble Company, The: *See—*
Lubsen, Timothy A.; Strobel, Rudolf G. K.; Reinhart, Richard N.; and Patel, Jayantilal M., Re. 31,427., Cl. 426-594.000.

Reinhart, Richard N.: *See—*
Lubsen, Timothy A.; Strobel, Rudolf G. K.; Reinhart, Richard N.; and Patel, Jayantilal M., Re. 31,427., Cl. 426-594.000.

Rivers, Alfred J.: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M., Re. 31,424., Cl. 128-201.180.

Robson, Stephen M.: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M., Re. 31,424., Cl. 128-201.180.

Steinke, John J.; and Kaufman, George, to Church & Dwight Co., Inc. Resealable container. Re. 31,425., Cl. 206-611.000.

Strobel, Rudolf G. K.: *See—*
Lubsen, Timothy A.; Strobel, Rudolf G. K.; Reinhart, Richard N.; and Patel, Jayantilal M., Re. 31,427., Cl. 426-594.000.

Tefertiller, Ben A.: *See—*
Habermann, Clarence E.; and Tefertiller, Ben A., Re. 31,430., Cl. 564-127.000.

Thomas & Betts Corporation: *See—*
Pedlow, J. Watson, Re. 31,428., Cl. 428-215.000.

Tull, Robert, deceased; Hartman, George D.; and Weinstock, Leonard M., to Merck & Co., Inc. Process for preparation of 9(dihalobenzyl-)adenines. Re. 31,429., Cl. 544-277.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M. (said Ernsting, Palmer, River, and Robson assors. to), Re. 31,424., Cl. 128-201.180.

United States of America
Air Force: *See—*
Ernsting, John; Morgan, Thomas R.; Palmer, Leonard F. W.; Rivers, Alfred J.; and Robson, Stephen M. (said Morgan assors. to), Re. 31,424., Cl. 128-201.180.

Weinstock, Leonard M.: *See—*
Tull, Robert, deceased; Hartman, George D.; and Weinstock, Leonard M., Re. 31,429., Cl. 544-277.000.

LIST OF DESIGN PATENTEES

ACA Products, Inc.: *See—*
Richardson, James E., 271,074., Cl. D7-318.000.

Alltrade, Inc.: *See—*
Hillinger, George, 271,076., Cl. D8-76.000.

American District Telegraph Company: *See—*
Gibbs, Terence E., 271,099., Cl. D13-12.000.

Apple Computer, Inc.: *See—*
Manock, Jerrold C.; and Stewart, James R., 271,102., Cl. D14-109.000.

Armstrong, Edward J. Game board. 271,117., 10-25-83, Cl. D21-34.000.

Bangor Punta Corporation: *See—*
Ferraro, Robert, 271,124., Cl. D22-1.000.
Ferraro, Robert, 271,125., Cl. D22-1.000.

Becker, Robert W.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 271,132., Cl. D23-123.000.

Belcher, Samual L.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samual L.; and Smith, Roger D., 271,112., Cl. D15-140.000.

Bigelow-Sanford, Inc.: *See—*
Wind, Joseph H., 271,152., Cl. D34-38.000.

Birkeland, Stephen P.; and Sawamura, Noboru, to Minnesota Mining & Manufacturing Company. Chemical container. 271,113., 10-25-83, Cl. D16-27.000.

Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., to National Presto Industries, Inc. Portable radiant electric heater. 271,132., 10-25-83, Cl. D23-123.000.

Bollinger, Arthur E.; and Head, Kenneth O., to Teknar, Inc. Ultrasonic ocular biometry unit. 271,136., 10-25-83, Cl. D24-17.000.

Brandsaeter, Helge, to Geophysical Company of Norway A/S. Towable buoyant body. 271,097., 10-25-83, Cl. D12-316.000.

Brochstein, Irvin H. Drumstick. 271,114., 10-25-83, Cl. D17-22.000.

Brown, Warner K.: *See—*
Kirby, Robert L.; Brown, Warner K.; and Hoyt, Deryl R., 271,151., Cl. D34-35.000.

Buck Stove Corporation: *See—*
Buckner, Carrol E., 271,131., Cl. D23-97.000.

Buckner, Carrol E., to Buck Stove Corporation. Solid fuel heating unit. 271,131., 10-25-83, Cl. D23-97.000.

Burghard, Bero; and Schauer, Helmut. Cleaning apparatus for automotive engine parts and the like. 271,146., 10-25-83, Cl. D32-4.000.

Burke, William B., to Milton Bradley International, Inc. Vertical gameboard. 271,116., 10-25-83, Cl. D21-12.000.

Calvert, James W.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samual L.; and Smith, Roger D., 271,112., Cl. D15-140.000.

Castiglione, William F., to Polaroid Corporation. Ice scraper. 271,149., 10-25-83, Cl. D32-48.000.

Cavanagh, Paul D. Winch. 271,150., 10-25-83, Cl. D34-33.000.

Christianson, Roy O.; and Christianson, Ted T., to Christianson Systems, Inc. Bulk material handling apparatus. 271,105., 10-25-83, Cl. D15-10.000.

Christianson Systems, Inc.: *See—*
Christianson, Roy O.; and Christianson, Ted T., 271,105., Cl. D15-10.000.

Christianson, Ted T.: *See—*
Christianson, Roy O.; and Christianson, Ted T., 271,105., Cl. D15-10.000.

Cincinnati Milacron Industries, Inc.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samual L.; and Smith, Roger D., 271,112., Cl. D15-140.000.
Clark Equipment Company: *See—*
Kirby, Robert L.; Brown, Warner K.; and Hoyt, Deryl R., 271,151., Cl. D34-35.000.
Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 271,062., Cl. D3-28.000.
Compton, Edward M. Video cassette book cover storage receptacle package. 271,063., 10-25-83, Cl. D3-35.000.
Cuminale, Raymond J.; and Svezia, John, to Trifari, Krussman & Fishel, Inc. Chain jewelry display unit. 271,069., 10-25-83, Cl. D6-186.000.
Daenen, Robert H. C. M.; and Herlow, Erik, to Dart Industries Inc. Cover for an ice container. 271,075., 10-25-83, Cl. D7-391.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Herlow, Erik, 271,075., Cl. D7-391.000.
Deaton, Thomas P., to Nestier Corporation. Tote box. 271,153., 10-25-83, Cl. D34-40.000.
Demmer, John. Solar collector for a swimming pool. 271,129., 10-25-83, Cl. D23-72.000.
deVos, Hendrik A. J., to GTE Products Corporation. Luminaire. 271,139., 10-25-83, Cl. D26-24.000.
Doak, Ron K. Protective cap for gun barrel. 271,126., 10-25-83, Cl. D22-7.000.
Durkee, Douglas. Furniture corner protector. 271,070., 10-25-83, Cl. D6-191.000.
Ebner, Edwin D. Illuminated spirit level. 271,088., 10-25-83, Cl. D10-69.000.
Edgar, Terrell W.; and Quinlan, James L., to Ford Motor Company. Award. 271,090., 10-25-83, Cl. D11-131.000.
Endt, Evert, to Thomson, CSF. Computer display terminal. 271,103., 10-25-83, Cl. D14-113.000.
Ferraro, Robert, to Bangor Punta Corporation. Knife. 271,124., 10-25-83, Cl. D22-1.000.
Ferraro, Robert, to Bangor Punta Corporation. Knife. 271,125., 10-25-83, Cl. D22-1.000.
Field, Stanley R. Cup holder. 271,073., 10-25-83, Cl. D7-70.000.
Fisher, William E. Trailer box. 271,094., 10-25-83, Cl. D12-102.000.
Ford Motor Company: *See—*
Edgar, Terrell W.; and Quinlan, James L., 271,090., Cl. D11-131.000.
Frank, Richard K.; and Quimby, Gerald L. Heater. 271,130., 10-25-83, Cl. D23-97.000.
Fuji Kogyo Co., Ltd.: *See—*
Ohmura, Ryuichi, 271,127., Cl. D22-24.000.
Gadberry, Donald L., to U.S.D. Corp. Breathing gas mask. 271,144., 10-25-83, Cl. D29-9.000.
Geophysical Company of Norway A/S: *See—*
Brandsaeter, Helge, 271,097., Cl. D12-316.000.
Gianos, Steve E. Door jamb setter. 271,087., 10-25-83, Cl. D10-61.000.
Gibbs, Terence E., to American District Telegraph Company. Modular control unit housing for an electrical protection system. 271,099., 10-25-83, Cl. D13-12.000.
Giese, Robert C., Jr.: *See—*
Kohler, Herbert V., Jr.; and Giese, Robert C., Jr., 271,137., Cl. D24-38.000.
Gold Eagle Co.: *See—*
Gurolnick, William R., 271,084., Cl. D9-389.000.
Grae, Bernard A., to Tandy Corp. Computer housing. 271,101., 10-25-83, Cl. D14-100.000.
Greenblatt, Gordon M. Laryngoscope. 271,135., 10-25-83, Cl. D24-17.000.
GTE Products Corporation: *See—*
deVos, Hendrik A. J., 271,139., Cl. D26-24.000.
Gurolnick, William R., to Gold Eagle Co. Bottle. 271,084., 10-25-83, Cl. D9-389.000.
Hanyu, Susumu, to Janome Sewing Machine Co. Ltd. Sewing machine controller. 271,106., 10-25-83, Cl. D15-72.000.
Head, Kenneth O.: *See—*
Bollinger, Arthur E.; and Head, Kenneth O., 271,136., Cl. D24-17.000.
Heger Plastics A/S: *See—*
Houghton, John R., 271,077., Cl. D8-358.000.
Houghton, John R., 271,078., Cl. D8-358.000.
Houghton, John R., 271,080., Cl. D8-359.000.
Herlow, Erik: *See—*
Daenen, Robert H. C. M.; and Herlow, Erik, 271,075., Cl. D7-391.000.
Hillinger, George, to Alltrade, Inc. Axe head. 271,076., 10-25-83, Cl. D8-76.000.
Hirakawa, Masatoshi, to Nissan Motor Co., Ltd. Combined automobile taillight lens and cover. 271,143., 10-25-83, Cl. D26-120.000.
Hirasawa, Eiji, to Nissan Motor Co., Ltd. Combined automobile tail-light lens and grill. 271,142., 10-25-83, Cl. D26-120.000.
Hoerlein, Francesca S. Stuffed toy cat or similar article. 271,121., 10-25-83, Cl. D21-163.000.
Hollfelder, Thomas A., to Porta Systems Corp. Telephone connector block. 271,100., 10-25-83, Cl. D13-24.000.
Honeywell Inc.: *See—*
Odom, James A., 271,086., Cl. D10-50.000.
Houghton, John R., to Heger Plastics A/S. Hose cassette reel. 271,077., 10-25-83, Cl. D8-358.000.
Houghton, John R., to Heger Plastics A/S. Reel for a hose cassette. 271,078., 10-25-83, Cl. D8-358.000.
Houghton, John R., to Heger Plastics A/S. Hose cassette. 271,080., 10-25-83, Cl. D8-359.000.
Hoyt, Deryl R.: *See—*
Kirby, Robert L.; Brown, Warner K.; and Hoyt, Deryl R., 271,151., Cl. D34-35.000.
Huff, Robert S.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 271,132., Cl. D23-123.000.
Isotec Industries Limited: *See—*
Mallory, John, 271,089., Cl. D10-121.000.
J & W Scientific, Inc.: *See—*
Wohlers, Norman W.; and Jenkins, Rand G., 271,085., Cl. D10-46.000.
Jackson, Dakota. Perfume bottle. 271,082., 10-25-83, Cl. D9-377.000.
Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu, 271,106., Cl. D15-72.000.
Jenkins, Rand G.: *See—*
Wohlers, Norman W.; and Jenkins, Rand G., 271,085., Cl. D10-46.000.
Jutras, Pierre. Tent. 271,123., 10-25-83, Cl. D21-253.000.
Kemtron Properties Pty. Ltd.: *See—*
Pataki, Robert, 271,133., Cl. D23-155.000.
Kirby, Robert L.; Brown, Warner K.; and Hoyt, Deryl R., to Clark Equipment Company. Overhead guard for a lift truck. 271,151., 10-25-83, Cl. D34-35.000.
Koether, Sarah L. Child's sleeping bag. 271,071., 10-25-83, Cl. D6-203.000.
Kohler Company: *See—*
Kohler, Herbert V., Jr.; and Giese, Robert C., Jr., 271,137., Cl. D24-38.000.
Kohler, Herbert V., Jr.; and Giese, Robert C., Jr., to Kohler Company. Hydrotherapy spa. 271,137., 10-25-83, Cl. D24-38.000.
Krebs, Howard. Coin operated commercial washer. 271,147., 10-25-83, Cl. D32-6.000.
Krebs, Howard. Commercial washer. 271,148., 10-25-83, Cl. D32-6.000.
Kuemmerling GmbH, Firma: *See—*
Persch, Hanns, 271,118., Cl. D21-41.000.
Lever Brothers Company: *See—*
Tyler, Frank S., 271,083., Cl. D9-389.000.
Luntz, Richard. Writing instrument or similar article. 271,115., 10-25-83, Cl. D19-47.000.
Mallory, John, to Isotec Industries Limited. Smoke detector cover. 271,089., 10-25-83, Cl. D10-121.000.
Manock, Jerrold C.; and Stewart, James R., to Apple Computer, Inc. Dual disk drive. 271,102., 10-25-83, Cl. D14-109.000.
Mariol, James F. Play pool. 271,122., 10-25-83, Cl. D21-252.000.
Matsumoto, Hajime; and Suga, Toshihisa, to Toybox Corporation. Toy trackway. 271,120., 10-25-83, Cl. D21-143.000.
McJaf Enterprises: *See—*
McNaughton, John J., 271,145., Cl. D32-1.000.
McKelvy, Ardath E. Facial mask. 271,059., 10-25-83, Cl. D2-234.000.
McNaughton, John J., to McJaf Enterprises. Jewelry cleaner. 271,145., 10-25-83, Cl. D32-1.000.
Milton Bradley International, Inc.: *See—*
Burke, William B., 271,116., Cl. D21-12.000.
Minnesota Mining & Manufacturing Company: *See—*
Birkeland, Stephen P.; and Sawamura, Noboru, 271,113., Cl. D16-27.000.
Mjelde, Olaf G. Combined cutting board and serving tray. 271,072., 10-25-83, Cl. D7-3.000.
Mobil Oil Corporation: *See—*
Prader, Randolph D., 271,067., Cl. D6-114.000.
Morrison, Thurber H.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 271,132., Cl. D23-123.000.
National Presto Industries, Inc.: *See—*
Boldt, Melvin H.; Morrison, Thurber H.; Becker, Robert W.; and Huff, Robert S., 271,132., Cl. D23-123.000.
Nestier Corporation: *See—*
Deaton, Thomas P., 271,153., Cl. D34-40.000.
Nissan Motor Co., Ltd.: *See—*
Hirakawa, Masatoshi, 271,143., Cl. D26-120.000.
Hirasawa, Eiji, 271,142., Cl. D26-120.000.
Noble, Terrance O., to Quanterron, Inc. Pill container. 271,081., 10-25-83, Cl. D9-341.000.
Nurmi, Aulis U. Fish-breeding sea vessel. 271,096., 10-25-83, Cl. D12-316.000.
Odom, James A., to Honeywell Inc. Clock thermostat. 271,086., 10-25-83, Cl. D10-50.000.
Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Line guide for fishing rod. 271,127., 10-25-83, Cl. D22-24.000.
Okada, Hidekazu, to Clover Mfg. Co., Ltd. Knitting needle. 271,062., 10-25-83, Cl. D3-28.000.
Olympus Optical Co., Ltd.: *See—*
Shirako, Hideo, 271,064., Cl. D3-35.000.
Paster, Irving D. Commando landing craft. 271,095., 10-25-83, Cl. D12-300.000.
Pataki, Robert, to Kemtron Properties Pty. Ltd. Portable fan housing. 271,133., 10-25-83, Cl. D23-155.000.
Persch, Hanns, to Kuemmerling GmbH, Firma. Dice gameboard. 271,118., 10-25-83, Cl. D21-41.000.
Peterson, Paul D. Planter. 271,091., 10-25-83, Cl. D11-153.000.
Polaroid Corporation: *See—*
Castiglione, William F., 271,149., Cl. D32-48.000.
Porta Systems Corp.: *See—*
Hollfelder, Thomas A., 271,100., Cl. D13-24.000.

Powerflow Inc.: *See—*
Ward, Douglas K., 271,079., Cl. D8-395.000.
Prader, Randolph D., to Mobil Oil Corporation. Bag holder or the like. 271,067., 10-25-83, Cl. D6-114.000.
Prewitt, Orville. Sports car. 271,092., 10-25-83, Cl. D12-92.000.
Quanterron, Inc.: *See—*
Noble, Terrance O., 271,081., Cl. D9-341.000.
Quimby, Gerald L.: *See—*
Frank, Richard K.; and Quimby, Gerald L., 271,130., Cl. D23-97.000.
Quinlan, James L.: *See—*
Edgar, Terrell W.; and Quinlan, James L., 271,090., Cl. D11-131.000.
Ray-O-Vac Corporation: *See—*
Thom, Paul, 271,140., Cl. D26-42.000.
Richardson, James E., to ACA Products, Inc. Coffee server. 271,074., 10-25-83, Cl. D7-318.000.
Riis, Douglas D. Reel for a fishing rod. 271,128., 10-25-83, Cl. D22-25.000.
Rowland, David L. Armchair. 271,066., 10-25-83, Cl. D6-72.000.
Sacks, Philip: *See—*
Seymour, Herbert E.; and Sacks, Philip, 271,141., Cl. D26-74.000.
Sami, Mohammad A. Scrubbing mitten. 271,060., 10-25-83, Cl. D2-365.000.
Sasnett, Bolling H., Jr. Fuel pump housing. 271,104., 10-25-83, Cl. D15-9.200.
Sawamura, Noboru: *See—*
Birkeland, Stephen P.; and Sawamura, Noboru, 271,113., Cl. D16-27.000.
Schauer, Helmut: *See—*
Burghard, Bero; and Schauer, Helmut, 271,146., Cl. D32-4.000.
Seymour, Herbert E.; and Sacks, Philip, to Xantech Corporation. Adjustable light. 271,141., 10-25-83, Cl. D26-74.000.
Shell Electric Manufacturing Company Limited: *See—*
Yung, Yau, 271,134., Cl. D23-163.000.
Shirako, Hideo, to Olympus Optical Co., Ltd. Case for a magnetic tape. 271,064., 10-25-83, Cl. D3-35.000.
Smith, Roger D.: *See—*
Wiatt, James G.; Calvert, James W.; Belcher, Samual L.; and Smith, Roger D., 271,112., Cl. D15-140.000.
Sportelli, Frank A. Light transmitting panel. 271,138., 10-25-83, Cl. D25-72.000.
Stewart, James R.: *See—*
Manock, Jerrold C.; and Stewart, James R., 271,102., Cl. D14-109.000.
Suga, Toshihisa: *See—*
Matsumoto, Hajime; and Suga, Toshihisa, 271,120., Cl. D21-143.000.
Svezia, John: *See—*
Cuminale, Raymond J.; and Svezia, John, 271,069., Cl. D6-186.000.
Tandy Corp.: *See—*
Grae, Bernard A., 271,101., Cl. D14-100.000.
Teknar, Inc.: *See—*
Bollinger, Arthur E.; and Head, Kenneth O., 271,136., Cl. D24-17.000.
Thom, Paul, to Ray-O-Vac Corporation. Portable lantern. 271,140., 10-25-83, Cl. D26-42.000.
Thompson, Robert V. Chair. 271,065., 10-25-83, Cl. D6-69.000.
Thomson, CSF: *See—*
Endt, Evert, 271,103., Cl. D14-113.000.
Toybox Corporation: *See—*
Matsumoto, Hajime; and Suga, Toshihisa, 271,120., Cl. D21-143.000.
Trifari, Krussman & Fishel, Inc.: *See—*
Cuminale, Raymond J.; and Svezia, John, 271,069., Cl. D6-186.000.
Triggs, Clarence, to Triggs Manufacturing Company. Trailer. 271,093., 10-25-83, Cl. D12-102.000.
Triggs Manufacturing Company: *See—*
Triggs, Clarence, 271,093., Cl. D12-102.000.
True Manufacturing Company: *See—*
Trulaske, Arthur W., 271,107., Cl. D15-85.000.
Trulaske, Arthur W., to True Manufacturing Company. Beverage cooler. 271,107., 10-25-83, Cl. D15-85.000.
Tyler, Frank S., to Lever Brothers Company. Packaging cup or the like. 271,083., 10-25-83, Cl. D9-389.000.
U.S.D. Corp.: *See—*
Gadberry, Donald L., 271,144., Cl. D29-9.000.
Ward, Douglas K., to Powerflow Inc. Splash guard clip. 271,079., 10-25-83, Cl. D8-395.000.
Watts, W. David. Abrasive blasting wheel liner. 271,108., 10-25-83, Cl. D15-126.000.
Watts, W. David. Abrasive blasting wheel liner. 271,109., 10-25-83, Cl. D15-126.000.
Watts, W. David. Abrasive blasting wheel liner. 271,110., 10-25-83, Cl. D15-126.000.
Watts, W. David. Abrasive blasting wheel liner. 271,111., 10-25-83, Cl. D15-126.000.
Wiatt, James G.; Calvert, James W.; Belcher, Samual L.; and Smith, Roger D., to Cincinnati Milacron Industries, Inc. Chuck body. 271,112., 10-25-83, Cl. D15-140.000.
Williams, Richard D. Bridging rainbow ornament for use primarily between a pair of audio components. 271,068., 10-25-83, Cl. D6-151.000.
Wind, Joseph H., to Bigelow-Sanford, Inc. Pallet. 271,152., 10-25-83, Cl. D34-38.000.
Wohlers, Norman W.; and Jenkins, Rand G., to J & W Scientific, Inc. Chromatographic on-column injector. 271,085., 10-25-83, Cl. D10-46.000.
Wong, Chun-Chiu. Toy vending machine. 271,119., 10-25-83, Cl. D21-124.000.
Xantech Corporation: *See—*
Seymour, Herbert E.; and Sacks, Philip, 271,141., Cl. D26-74.000.
Younes, David T. Self-elevating well servicing vessel for offshore oil wells or the like. 271,098., 10-25-83, Cl. D12-316.000.
Yung, Yau, to Shell Electric Manufacturing Company Limited. Holder for the blade of a ceiling fan. 271,134., 10-25-83, Cl. D23-163.000.
Zimmerman, Tom. Combined belt buckle and snuff box holder 271,061., 10-25-83, Cl. D2-400.000.

LIST OF PLANT PATENTEES

Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant. 5,127., 10-25-83, Cl. 78.000.
Hofland, G. Jack, to Jordan Station Wholesale Florist Limited. *Nephrolepis exaltata*— Eleanor cultivar. 5,128., 10-25-83, Cl. 88.000.
Jordan Station Wholesale Florist Limited: *See—*
Hofland, G. Jack, 5,128., Cl. 88.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 5,125., 10-25-83, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Impatiens plant. 5,126. 10-25-83, Cl. 68.000.
Mikkelsens, Inc.: *See—*
Mikkelsen, James C., 5,125., Cl. 68.000.
Mikkelsen, James C., 5,126., Cl. 68.000.
Yoder Brothers, Inc.: *See—*
Duffett, William E., 5,127., Cl. 78.000.

CLASSIFICATION OF PATENTS

ISSUED OCTOBER 25, 1983

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

7 4,411,023
20 4,411,024
97 4,411,025
158 4,411,026

CLASS 3

1 4,411,027

CLASS 4

199 4,411,028
324 4,411,029
443 4,411,030
502 4,411,031
523 4,411,032

CLASS 5

68 4,411,035
450 4,411,033
494 4,411,034

CLASS 8

107 4,411,663
158 4,411,664
455 4,411,665
4,411,666
471 4,411,667
527 4,411,668
654 4,411,669

CLASS 14

2.4 4,411,036
2.6 4,411,037

CLASS 15

3.13 4,411,038
104.06 R 4,411,039
104.94 4,411,040
167 R 4,411,041
256.51 4,411,042
312 R 4,411,043

CLASS 16

219 4,411,044
243 4,411,045
354 4,411,046

CLASS 17

49 4,411,048
51 4,411,047

CLASS 24

20 EE 4,411,049
234 4,411,050

CLASS 26

18.5 4,411,051

CLASS 29

25.35 4,411,052
267 4,411,053
434 4,411,054
447 4,411,055
527.7 4,411,056
569 L 4,411,057
571 4,411,058
572 4,411,059
576 W 4,411,060
622 4,411,061
749 4,411,062
751 4,411,063
764 4,411,064

CLASS 30

47 4,411,065
114 4,411,066
124 4,411,067
166 R 4,411,068
276 4,411,069
379.5 4,411,070
381 4,411,071

CLASS 33

138 4,411,072
174 C 4,411,073

CLASS 34

32 4,411,074
4,411,075

CLASS 36

34 R 4,411,076
89 4,411,077
117 4,411,078

CLASS 37

58 4,411,079
117 4,411,080
117.5 4,411,081

CLASS 38

9 4,411,082
143 4,411,083

CLASS 40

450 4,411,084
610 4,411,085

CLASS 42

1 R 4,411,086
69 A 4,411,087
90 4,411,088

CLASS 43

42.53 4,411,089
43.13 4,411,090
88 4,411,091
100 4,411,092
114 4,411,093
121 4,411,094

CLASS 46

7 4,411,095
155 4,411,096
161 4,411,097
206 4,411,098
232 4,411,099
235 4,411,100

CLASS 47

2 4,411,101

CLASS 48

197 R 4,411,670
4,411,671

CLASS 49

110 4,411,102
470 4,411,104
502 4,411,103

CLASS 51

124 R 4,411,105
170 EB 4,411,106
209 R 4,411,107
309 4,411,672

CLASS 52

11 4,411,108
4,411,109
4,411,110
213 4,411,111
288 4,411,112
303 4,411,113
309.1 4,411,114
4,411,115
489 4,411,116
521 4,411,117
582 4,411,118
747 4,411,119
748 4,411,120
792 4,411,121

CLASS 53

436 4,411,122
550 4,411,123

CLASS 55

41 4,411,673
304 4,411,674
316 4,411,675

CLASS 56

10.2 4,411,124
16.9 4,411,125
17.5 4,411,126
364 4,411,127

CLASS 57

22 4,411,128
228 4,411,129
352 4,411,130

CLASS 59

78 4,411,131
85 4,411,132

CLASS 60

39.281 4,411,133
39.31 4,411,134
616 4,411,135
648 4,411,136
739 4,411,137

CLASS 62

24 4,411,676
25 4,411,677
50 4,411,138
126 4,411,139
324.2 4,411,140
468 4,411,141

CLASS 65

3.12 4,411,678
22 4,411,679
33 4,411,680
77 4,411,681

CLASS 66

196 4,411,142

CLASS 68

12 R 4,411,143

CLASS 70

278 4,411,144

CLASS 71

9 4,411,682
28 4,411,683
76 4,411,687
77 4,411,684
84 4,411,685
88 4,411,686
90 4,411,688
4,411,689
92 4,411,690
4,411,691
93 4,411,692
118 4,411,693
4,411,694

CLASS 72

42 4,411,145
180 4,411,146
220 4,411,147
306 4,411,148
385 4,411,149
461 4,411,150

CLASS 73

1 G 4,411,151
46 4,411,152
79 4,411,153
118 4,411,154
295 4,411,155
432 R 4,411,156
721 4,411,158
768 4,411,159
843 4,411,160
861.03 4,411,161
862.65 4,411,162
864.02 4,411,163
864.81 4,411,157

CLASS 74

55 4,411,164
63 4,411,165
89 4,411,166
492 4,411,167
501 R 4,411,168
594.4 4,411,169
661 4,411,170
675 4,411,171
690 4,411,172
785 4,411,173
866 4,411,174

CLASS 75

44 S 4,411,695
51 4,411,696
60 4,411,697
121 4,411,698

CLASS 76

107 R 4,411,175

CLASS 81

15.8 4,411,176

CLASS 82

2 E 4,411,177
4 C 4,411,178
71 4,411,179

CLASS 83

37 4,411,180
150 4,411,181
319 4,411,182
581 4,411,183

CLASS 84

1.03 4,411,184
1.27 4,411,185
291 4,411,186
402 4,411,187

CLASS 89

20 A 4,411,188

CLASS 91

420 4,411,189
487 4,411,190

CLASS 101

38 A 4,411,191
111 4,411,192
148 4,411,193
216 4,411,194
226 4,411,195
269 4,411,196
291 4,411,197

CLASS 102

216 4,411,198
481 4,411,199
529 4,411,200

CLASS 105

8 R 4,411,201
199 R 4,411,202

CLASS 106

23 4,411,699
4,411,700
87 4,411,701
111 4,411,702
189 4,411,703
308 Q 4,411,704

CLASS 110

341 4,411,203
347 4,411,204

CLASS 111

1 4,411,205
34 4,411,206

CLASS 112

79 A 4,411,207
103 4,411,208
158 A 4,411,209
199 4,411,210
265.2 4,411,211

CLASS 114

125 4,411,212
312 4,411,213
347 4,411,214

CLASS 118

111 4,411,215
117 4,411,216
212 4,411,217
411 4,411,218
505 4,411,219

CLASS 119

1 4,411,220
44 4,411,221
96 4,411,222

CLASS 123

3 4,411,223
25 A 4,411,224
73 AD 4,411,225
188 M 4,411,226
196 R 4,411,227
198 F 4,411,228
4,411,229
4,411,230
339 4,411,231
389 4,411,244
438 4,411,232
439 4,411,233
485 4,411,234
488 4,411,235
492 4,411,236
501 4,411,237
4,411,238
557 4,411,239
4,411,240
568 4,411,241
569 4,411,242
577 4,411,243
609 4,411,245
644 4,411,246
655 4,411,247

CLASS 124

20 R 4,411,248
64 4,411,249

CLASS 125

11 CD 4,411,250

CLASS 126

165 4,411,251
201 4,411,252
242 4,411,253
300 4,411,254
429 4,411,255
441 4,411,256

CLASS 128

6 4,411,257
60 4,411,258
69 4,411,259
79 4,411,260
4,411,261
90 4,411,262
132 R 4,411,263
201.18 Re.31,424
201.23 4,411,264
303.1 4,411,265
303.18 4,411,266
385 4,411,267
421 4,411,268
482 4,411,269
653 4,411,270
703 4,411,271
711 4,411,272
731 4,411,273
738 4,411,274
763 4,411,275
784 4,411,276
4,411,277

CLASS 131

70 4,411,278
94 4,411,279
332 4,411,280

CLASS 132

37 R 4,411,281
88.5 4,411,282

CLASS 134

8 4,411,705
37 4,411,706

CLASS 135

67 4,411,283
81 4,411,284

CLASS 136

230 4,412,090
258 4,412,091

CLASS 137

112 4,411,285
253 4,411,286
315 4,411,287
363 4,411,288
486 4,411,289
615 4,411,290
624.15 4,411,291

CLASS 138

42 4,411,292

CLASS 139

110 4,411,293
435 4,411,294

CLASS 141

59 4,411,295
98 4,411,296

CLASS 144

129 4,411,297
193 A 4,411,298
193 R 4,411,299

CLASS 148

1.5 4,411,708
2 4,411,707
3 4,411,709
6.14 R 4,411,710
11.5 A 4,411,711
11.5 Q 4,411,712
35 4,411,713
111 4,411,714
131 4,411,715
403 4,411,716

CLASS 149

18 4,411,717
74 4,411,718

CLASS 150

51 4,411,300

CLASS 152

213 R 4,411,301
427 4,411,302

CLASS 156

64 4,411,719
69 4,411,720
73.1 4,411,721
167 4,411,722
242 4,411,723
304.1 4,411,724
353 4,411,725
423 4,411,726
562 4,411,727
606 4,411,728
612 4,411,729
626 4,411,730
630 4,411,731
643 4,411,732
4,411,733
4,411,734
659.1 4,411,735

CLASS 159

47.1 4,411,736

CLASS 162

7 4,411,737
142 4,411,738

CLASS 164

182 4,411,303
448 4,411,304
529 4,411,305

CLASS 165

12 4,411,306
70 4,411,307
4,411,308
76 4,411,309
166 4,411,310
170 4,411,311

CLASS 166

75 R 4,411,312
90 4,411,313
124 4,411,314
187 4,411,315
323 4,411,316
347 4,411,317

CLASS 169

26 4,411,318

CLASS 172

10 4,411,319
13 4,411,320
40 4,411,321
540 4,411,322
799.5 4,411,323

CLASS 174

36 4,412,092
52 FP 4,412,093
110 F 4,412,094
158 R 4,412,095

CLASS 175

289 4,411,324

CLASS 177

136 4,411,325
211 4,411,326
4,411,327
212 4,411,328

CLASS 179

7.1 R 4,412,101
99 M 4,412,102
115.5 R 4,412,103
117 4,412,104
121 R 4,412,105
156 R 4,412,106

CLASS 180

7 R 4,411,329
8 A 4,411,330
78 4,411,331
89.14 4,411,332
219 4,411,333
274 4,411,334

CLASS 182

83 4,411,335

CLASS 186

37 4,411,336

CLASS 187

29 R 4,411,337
4,411,338

CLASS 188

67 4,411,339
296 4,411,340
310 4,411,341
315 4,411,342

CLASS 190

18 A 4,411,343
4,411,344

CLASS 191

23 A 4,412,107

CLASS 192

12 C 4,411,345
85 A 4,411,346
88 B 4,411,347
139 4,411,348

CLASS 193

35 A 4,411,350
35 R 4,411,349

CLASS 194

4 C 4,411,351

CLASS 198

328 4,411,352
425 4,411,353
472 4,411,354
718 4,411,355
721 4,411,356
802 4,411,357

CLASS 200

5 R 4,412,108
16 C 4,412,109
38 R 4,412,110
47 4,412,111
50 AA 4,412,112
61.08 4,412,114
67 DB 4,412,113
148 A 4,412,115
155 R 4,412,116

CLASS 203

24 4,411,739
58 4,411,740

CLASS 204

1 T 4,411,741
16 4,411,742
47 4,411,743
49 4,411,744
59 R 4,411,745
4,411,746
67 4,411,747
70 4,411,748
98 4,411,749
4,411,750
129.85 4,411,751
158 HA 4,411,752
158 R 4,411,753
159.15 4,411,754
163 R 4,411,755
176 4,411,756
192 E 4,411,757
243 R 4,411,758
260 4,411,759
270 4,411,760
290 F 4,411,762
290 R 4,411,761
298 4,411,763
411 4,411,764

CLASS 206

45.34 4,411,358
217 4,411,359
313 4,411,360
329 4,411,361
330 4,411,362
388 4,411,363
466 4,411,364
607 4,411,365
611 Re.31,425

CLASS 208

8 LE 4,411,765
10 4,411,766
4,411,767
54 4,411,769
59 4,411,768
111 4,411,770
112 4,411,771
120 4,411,777
121 4,411,772
164 4,411,773
179 4,411,774
188 4,411,775
206 4,411,776

CLASS 209

246 4,411,778
648 4,411,366

CLASS 210

108 4,411,779
150 4,411,780
195.2 4,411,781
230 4,411,782
304 4,411,783
321.1 4,411,784
4,411,785
321.3 4,411,786
321.5 4,411,787
439 4,411,788
635 4,411,789
637 4,411,790
649 4,411,791
651 4,411,792
656 4,411,793
670 4,411,794
679 4,411,795
692 4,411,796
727 4,411,797
4,411,798
753 4,411,799

CLASS 211

187 4,411,367

CLASS 212

149 4,411,368
373 4,411,817

CLASS 215

21 4,411,369

CLASS 219

10.55 F 4,412,117
69 W 4,412,118
121 LG 4,412,120
121 PF 4,412,119
124.34 4,412,121
137 R 4,412,122
233 4,412,123
277 4,412,124
549 4,412,125
553 4,412,126

CLASS 220

269 4,411,370
314 4,411,371
327 4,411,372
470 4,411,373

CLASS 221

63 4,411,374
90 4,411,375

CLASS 222

212 4,411,376
342 4,411,377

CLASS 227

19 4,411,378

CLASS 228

52 4,411,379
181 4,411,380
4,411,381

CLASS 229

16 D 4,411,382
52 B 4,411,383

CLASS 237

2 A 4,411,385
2 B 4,411,384

CLASS 239

177 R 4,411,386
345 4,411,387
419.5 4,411,388
427.5 4,411,389

CLASS 241

98 4,411,390
232 4,411,391

CLASS 242

35.5 R 4,411,392
75.43 4,411,393
83 4,411,394
106 4,411,395
158 R 4,411,396
192 4,411,397

CLASS 244

3.28 4,411,398
130 4,411,399

CLASS 248

216.1 4,411,400
262 4,411,401
284 4,411,402
575 4,411,403

CLASS 249

3 4,411,404

CLASS 250

204 4,412,127
213 VT 4,412,128
239 4,412,129
260 4,412,130
305 4,412,131
396 ML 4,412,132
492.2 4,412,133
504 R 4,412,134
551 4,412,135

CLASS 251

129 4,411,406
306 4,411,405
315 4,411,407

CLASS 252

8.5 A 4,411,800
8.5 P 4,411,801
8.55 D 4,411,802
8.75 4,411,803
29 4,411,804
47 4,411,805
49.6 4,411,806
62.58 4,411,807
78.1 4,411,808
91 4,411,809
99 4,411,810
182 4,411,811
299.1 4,411,812
312 4,411,813
315.1 4,411,819
344 4,411,814
353 4,411,815
356 4,411,816
503 4,411,825
518 4,411,826
521 4,411,827
522 R 4,411,828
4,411,829
4,411,830
554 4,411,831

CLASS 254

108 4,411,408
134.3 FT 4,411,409

CLASS 260

121 4,411,832
239.55 R 4,411,833
365 4,411,834
397.45 4,411,835
455 B 4,411,837
455 R 4,411,836
463 4,411,838
465 D 4,411,839
501.12 4,411,840
543 F 4,411,841
543 P 4,411,842
544 Y 4,411,843

CLASS 261

34 R 4,411,844
65 4,411,845
98 4,411,846

CLASS 264

7 4,411,847
40.5 4,411,848
45.5 4,411,849
105 4,411,850
137 4,411,851
171 4,411,852
176 F 4,411,853
205 4,411,854
219 4,411,855
267 4,411,856

CLASS 266

54 4,411,410
66 4,411,411
242 4,411,412

CLASS 269

48.1 4,411,413
71 4,411,414
134 4,411,415

CLASS 271

11 4,411,416
94 4,411,417
236 4,411,418
263 4,411,419
276 4,411,420

CLASS 272

73 4,411,421
96 4,411,422
117 4,411,423
118 4,411,424
123 4,411,425
126 4,411,426

CLASS 273

67 R 4,411,427
143 R 4,411,428
164 4,411,429
171 4,411,430
183 C 4,411,431
251 4,411,432
260 4,411,433

CLASS 277

9.5 4,411,435
27 4,411,434
53 4,411,436
4,411,437
105 4,411,438
188 A 4,411,439

CLASS 279

5 4,411,440

CLASS 280

5 A 4,411,441
221 4,411,442
281 LP 4,411,443
405 A 4,411,444
615 4,411,445
628 4,411,446
714 4,411,447
802 4,411,448
804 4,411,449

CLASS 282

27.5 4,411,450
4,411,451
4,411,452

CLASS 285

18 4,411,453
26 4,411,454
39 4,411,455
4,411,456
52 4,411,457
196 4,411,458
197 4,411,459
243 4,411,460

CLASS 290

40 R 4,412,136

CLASS 293

108 4,411,461
132 4,411,462

CLASS 294

19 A 4,411,463

CLASS 296

97 H 4,411,467
102 4,411,464
146 4,411,465
188 4,411,466

CLASS 297

264 4,411,468
300 4,411,469
410 4,411,470
417 4,411,471
430 4,411,472
484 4,411,473

CLASS 299

4 4,411,474
81 4,411,475

CLASS 303

6 C 4,411,476
22 R 4,411,477

CLASS 307

10 R 4,412,137
264 4,412,138
270 4,412,139
311 4,412,140
471 4,412,141
477 4,412,142
530 4,412,143

CLASS 308

6 C 4,411,478
195 4,411,479

CLASS 310

49 R 4,412,144
154 4,412,145
266 4,412,146
320 4,412,147
358 4,412,148

CLASS 312

7.2 4,411,480
8 4,411,481
233 4,411,482

CLASS 313

414 4,412,149

CLASS 315

4 4,412,150
55 4,412,151
73 4,412,152
111.81 4,412,153
224 4,412,154
246 4,412,155
308 4,412,156
387 4,412,157

CLASS 318

254 4,412,159
257 4,412,158
280 4,412,160
561 4,412,161
563 4,412,162
567 4,412,163
596 4,412,164
636 4,412,165
696 4,412,166
729 4,412,167

CLASS 320

48 4,412,168
64 4,412,169

CLASS 322

4 4,412,170
20 4,412,171

CLASS 324

56 4,412,172
62 4,412,173
65 CR 4,412,174
71.1 4,412,175
204 4,412,176
226 4,412,177
303 4,412,178
4,412,179
373 4,412,180

CLASS 329

50 4,412,181

CLASS 330

59 4,412,182
68 4,412,183
69 4,412,184
149 4,412,185
288 4,412,186

CLASS 331

108 D 4,412,187
176 4,412,188

CLASS 333

14 4,412,189
165 4,412,190
193 4,412,191
257 4,412,192

CLASS 335

18 4,412,193
210 4,412,194
216 4,412,195
250 4,412,196
256 4,412,197

CLASS 336

70 4,412,199
120 4,412,198
139 4,412,200
192 4,412,201

CLASS 337

171 4,412,202

CLASS 338

4 4,412,203
202 Re.31,431

CLASS 339

17 M 4,411,483
97 C 4,411,484
125 R 4,411,485
147 R 4,411,486

CLASS 340

59 4,412,204
331 4,412,205
347 AD 4,412,207
347 DA 4,412,208
347 P 4,412,206
365 C 4,412,209
365 S 4,412,210
514 4,412,211
684 4,412,212
753 4,412,213
765 4,412,214
785 4,412,215
825.31 4,412,216
825.44 4,412,217
825.56 4,412,218

CLASS 343

6.8 R 4,412,219
55 C 4,412,220
705 4,412,221
779 4,412,222
844 4,412,223

CLASS 346

1.1 4,412,224
4,412,225
4,412,226
76 PH 4,412,227
4,412,228
108 4,412,229
110 R 4,412,230
135.1 4,412,231
140 R 4,412,232
4,412,233

CLASS 350

1.1 4,411,487
1.4 4,411,488
3.76 4,411,489
96.10 4,411,490
96.21 4,411,491
173 4,411,492
262 4,411,493
339 R 4,411,494
347 E 4,411,496
347 V 4,411,495
357 4,411,497
429 4,411,498
442 4,411,499
446 4,411,500

CLASS 351

202 4,411,501
206 4,411,502

CLASS 352

222 4,411,503

CLASS 354

25 4,411,504
4,411,505
145 4,411,506
195 4,411,507
198 4,411,508
212 4,411,509
272 4,411,510

CLASS 355

3 TR 4,411,511
4,411,512
5 4,411,513
14 CH 4,411,514
14 SH 4,411,515
4,411,517
67 4,411,516

CLASS 356

39 4,411,518
45 4,411,519
73.1 4,411,520
225 4,411,521
240 4,411,522
246 4,411,523
313 4,411,524
339 4,411,525
350 4,411,526
4,411,527
375 4,411,528
421 4,411.529

CLASS 357

17 4,412,234
19 4,412,235
31 4,412,236
42 4,412,237
43 4,412,238
44 4,412,239
45 4,412,240
51 4,412,241
52 4,412,242

CLASS 358

22 4,412,244
86 4,412,245
107 4,412,246
111 4,412,247
112 4,412,248
4,412,249
150 4,412,250
160 4,412,251
4,412,252
167 4,412,253
243 4,412,254
245 4,412,255

283 4,412,256
334 4,412,243

CLASS 360

45 4,412,257
62 4,412,258
77 4,412,259
97 4,412,260
98 4,412,261
109 4,412,262
128 4,412,263
131 4,412,264

CLASS 361

18 4,412,265
24 4,412,266
94 4,412,267
181 4,412,268
263 4,412,269
284 4,412,270
370 4,412,271
383 4,412,272

CLASS 362

211 4,412,273
269 4,412,274
4,412,275
278 4,412,276

CLASS 363

81 4,412,277
126 4,412,278
128 4,412,279

CLASS 364

200 4,412,280
4,412,281
4,412,282
4,412,283
4,412,284
4,412,285
4,412,286
408 4,412,287
413 4,412,288
414 4,412,289
424.1 4,412,290
426 4,412,291
479 4,412,292
513 4,412,293
518 4,412,294
520 4,412,295
521 4,412,296
559 4,412,297
567 4,412,298
570 4,412,299
709 4,412,300
728 4,412,301
4,412,302
900 4,412,303
4,412,304
4,412,305
4,412,306

CLASS 365

8 4,412,307
105 4,412,308
184 4,412,309
185 4,412,310
4,412,311
189 4,412,312
221 4,412,313
222 4,412,314

CLASS 366

4 4,411,530
76 4,411,531
99 4,411,532

CLASS 367

4,412,315
105 4,412,316
185 4,412,317

CLASS 369

41 4,412,318
43 4,412,319
79 4,412,320
233 4,412,321

CLASS 370

16 4,412,323
58 4,412,322
4,412,324
70 4,412,325
85 4,412,326

CLASS 371

21 4,412,327
25 4,412,328
47 4,412,329

CLASS 372

29 4,412,330
4,412,331
70 4,412,332
87 4,412,333

CLASS 373

40 4,412,334

CLASS 374

125 4,411,533
141 4,411,534
165 4,411,535
184 4,411,536
185 4,411,537

CLASS 375

3 4,412,335
4 4,412,336
60 4,412,337
82 4,412,338
95 4,412,339
96 4,412,340
102 4,412,341
107 4,412,342

CLASS 376

233 4,411,857
247 4,411,858
4,411,859
338 4,411,860
417 4,411,861
442 4,411,862

CLASS 377

58 4,412,343
60 4,412,344

CLASS 378

078 4,412,345
181 4,412,346

CLASS 381

43 4,412,098
51 4,412,099
60 4,412,096
92 4,412,097
100 4,412,100

CLASS 400

124 4,411,538
144.2 4,411,539
175 4,411,540
213 4,411,541
697.1 4,411,542

CLASS 401

53 4,411,543

CLASS 402

69 4,411,544

CLASS 403

12 4,411,545
23 4,411,546
205 4,411,547
232.1 4,411,548
258 4,411,549
358 4,411,550
370 4,411,551
388 4,411,552

CLASS 404

16 4,411,553
110 4,411,554

CLASS 405

50 4,411,555
213 4,411,556
238 4,411,557
294 4,411,558
300 4,411,559

CLASS 406

128 4,411,560
137 4,411,561
157 4,411,562

CLASS 407

54 4,411,563
113 4,411,564
114 4,411,565
119 4,411,566

CLASS 409

82 4,411,567
233 4,411,568
261 4,411,569

CLASS 411

271 4,411,570

CLASS 414

24.5 4,411,571
4,411,572
24.6 4,411,573
121 4,411,574
217 4,411,575
226 4,411,576
274 4,411,577
300 4,411,578
417 4,411,579
462 4,411,580
489 4,411,581
636 4,411,582
687 4,411,583
694 4,411,584
724 4,411,585
728 4,411,586
752 4,411,587

CLASS 415

2 A 4,411,588
9 4,411,589
26 4,411,590
103 4,411,591
119 4,411,592
173 R 4,411,593
174 4,411,594

CLASS 416

1 4,411,595
51 4,411,596
92 4,411,597
223 R 4,411,598

CLASS 417

301 4,411,599
312 4,411,600
388 4,411,601
437 4,411,602
479 4,411,603

CLASS 418

55 4,411,604
4,411,605
61 B 4,411,606
4,411,607

CLASS 420

580 4,411,863
587 4,411,864

CLASS 422

16 4,411,865
25 4,411,866
91 4,411,867
104 4,411,868
188 4,411,869
4,411,870
232 4,411,871
310 4,411,872

CLASS 423

7 4,411,873
87 4,411,874
242 4,411,875
311 4,411,876
359 4,411,877
605 4,411,878
640 4,411,879
659 4,411,880

CLASS 424

1.1 4,411,881
33 4,411,882
47 4,411,883
4,411,884
52 4,411,885
70 4,411,886
78 4,411,887
92 4,411,888
151 4,411,889
177 4,411,890
180 4,411,891
181 4,411,892
4,411,893
199 4,411,894
211 4,411,895
244 4,411,896
246 4,411,897
4,411,898
4,411,899
250 4,411,900
4,411,901
265 4,411,902
267 4,411,903
4,411,904
269 4,411,905
270 4,411,906
273 B 4,411,907
273 R 4,411,908
275 4,411,909
279 4,411,910
283 4,411,911
304 4,411,912
330 4,411,913

CLASS 425

123 4,411,608
149 4,411,609
174.4 4,411,610
237 4,411,611
365 4,411,612
388 4,411,613
466 4,411,614
591 4,411,615

CLASS 426

12 4,411,914
32 4,411,915
43 4,411,916
104 4,411,917
124 4,411,918
233 4,411,920
263 4,411,921
266 4,411,922
271 4,411,923
412 4,411,919
534 4,411,924
548 4,411,925
565 4,411,926
594 Re.31,427
618 4,411,927

CLASS 427

2 4,411,928
38 4,411,929
54.1 4,411,930
4,411,931
164 4,411,932
213.3 4,411,933
242 4,411,934
318 4,411,935
367 4,411,936
435 4,411,937

CLASS 428

31 4,411,938
58 4,411,939
73 4,411,940
122 4,411,941
137 4,411,942
161 4,411,943
172 4,411,944
215 Re.31,428
216 4,411,945
219 4,411,946
250 4,411,947
283 4,411,948
304.4 4,411,949
327 4,411,950
328 4,411,951
332 4,411,952
336 4,411,953
343 4,411,954
413 4,411,955
425.9 4,411,956
4,411,957
457 4,411,958
558 4,411,959
610 4,411,960
613 4,411,961
615 4,411,962
622 4,411,963
626 4,411,964
672 4,411,965
695 4,411,966

CLASS 429

23 4,411,967
41 4,411,968
50 4,411,969
161 4,411,970
191 4,411,971

CLASS 430

5 4,411,972
7 4,411,973
106 4,411,974
4,411,975
114 4,411,976
126 4,411,977
157 4,411,978
176 4,411,979
291 4,411,980
299 4,411,981
314 4,411,982
325 4,411,983
351 4,411,984
352 4,411,985
502 4,411,986
542 4,411,987

CLASS 431

114 4,411,616
187 4,411,617
190 4,411,618

CLASS 432

1 4,411,619
29 4,411,620
247 4,411,621

CLASS 433

72 Re.31,426
73 4,411,622
80 4,411,623
173 4,411,624
217 4,411,625
223 4,411,626

CLASS 434

44 4,411,627
169 4,411,628
266 4,411,629

CLASS 435

7 4,411,988
20 4,411,989
32 4,411,990
42 4,411,991
68 4,411,992
4,411,993
71 4,411,994
90 4,411,995
94 4,411,996
115 4,411,997
144 4,411,998
177 4,411,999
179 4,412,000
189 4,412,001
237 4,412,002
287 4,412,003

CLASS 436

10 4,412,004
97 4,412,005
110 4,412,006
139 4,412,007

CLASS 440

42 4,411,630
72 4,411,631
93 4,411,632

CLASS 445

24 4,411,633

CLASS 455

58 4,412,347
67 4,412,348
4,412,349
306 4,412,350
317 4,412,351
319 4,412,352
323 4,412,353
327 4,412,354
603 4,412,355
4,412,356

CLASS 464

33 4,411,635
91 4,411,634
172 4,411,636
180 4,411,637

CLASS 474

138 4,411,638
902 4,411,639

CLASS 493

45 4,411,640
46 4,411,641
125 4,411,642
188 4,411,643
213 4,411,644

CLASS 494

3 4,411,645
53 4,411,646

CLASS 501

97 4,412,008
4,412,009
153 4,412,010

CLASS 502

35 4,411,818
117 4,411,821
167 4,411,820
168 4,411,822
4,411,823
323 4,411,824

CLASS 521

38 4,412,011
54 4,412,012
121 4,412,013
129 4,412,014

CLASS 523

116 4,412,015
206 4,412,016
408 4,412,017
508 4,412,018

CLASS 524

71 4,412,019
100 4,412,020
102 4,412,021
104 4,412,022
106 4,412,023
220 4,412,024
241 4,412,025
354 4,412,026
364 4,412,027
4,412,028
441 4,412,029
505 4,412,030
526 4,412,031
538 4,412,032
590 4,412,033
791 4,412,034
796 4,412,035

CLASS 525

54.26 4,412,036
68 4,412,037
101 4,412,038
106 4,412,039
143 4,412,040
154 4,412,041
260 4,412,042
328.2 4,412,043
329.5 4,412,044
501 4,412,045
506 4,412,046
507 4,412,047
524 4,412,048

CLASS 526

127 4,412,049
266 4,412,050
293 4,412,051

CLASS 528

9 4,412,064
26 4,412,065
27 4,412,052
30 4,412,053
70 4,412,054
99 4,412,055
112 4,412,056
168 4,412,066
179 4,412,057
191 4,412,058
192 4,412,059
196 4,412,060
232 4,412,067
315 4,412,061
388 4,412,062
409 4,412,063

CLASS 536

13.6 4,412,068

CLASS 542

429 4,412,069

CLASS 544

27 4,412,070
58.6 4,412,071
68 4,412,072
193 4,412,073
277 Re.31,429
298 4,412,074

CLASS 546

153 4,412,075
4,412,076
298 4,412,077

CLASS 548

110 4,412,078
141 4,412,079

CLASS 556

460 4,412,080
4,412,081

CLASS 562

478 4,412,082

CLASS 564

127 Re.31,430
279 4,412,083

CLASS 568

852 4,412,084
4,412,085

CLASS 570

262 4,412,086

CLASS 585

12 4,412,087
23 4,412,088
645 4,412,089

CLASS 604

16 4,411,647
21 4,411,648
65 4,411,649
72 4,411,650
151 4,411,651
153 4,411,652
157 4,411,653
165 4,411,654
4,411,655
212 4,411,656
274 4,411,657
285 4,411,658
332 4,411,659
396 4,411,660
411 4,411,661
4,411,662

CLASSIFICATION OF DESIGNS

D2—	234	271,059		391	271,075		153	271,091		85	271,107		253	271,123	D26—	24	271,139
	365	271,060	D8—	76	271,076	D12—	92	271,092		126	271,108	D22—	1	271,124		42	271,140
	400	271,061		358	271,077		102	271,093			271,109			271,125		74	271,141
D3—	28	271,062			271,078			271,094			271,110		7	271,126		120	271,142
	35	271,063		359	271,080		300	271,095			271,111		24	271,127			271,143
		271,064		395	271,079		316	271,096		140	271,112		25	271,128	D29—	9	271,144
D6—	69	271,065	D9—	341	271,081			271,097	D16—	27	271,113	D23—	72	271,129	D32—	1	271,145
	72	271,066		377	271,082			271,098	D17—	22	271,114		97	271,130		4	271,146
	114	271,067		389	271,083	D13—	12	271,099	D19—	47	271,115			271,131		6	271,147
	151	271,068			271,084		24	271,100	D21—	12	271,116		123	271,132			271,148
	186	271,069	D10—	46	271,085	D14—	100	271,101		34	271,117		155	271,133		48	271,149
	191	271,070		50	271,086		109	271,102		41	271,118		163	271,134	D34—	33	271,150
	203	271,071		61	271,087		113	271,103		124	271,119	D24—	17	271,135		35	271,151
D7—	3	271,072		69	271,088	D15—	9.2	271,104		143	271,120			271,136		38	271,152
	70	271,073		121	271,089		10	271,105		163	271,121		38	271,137		40	271,153
	318	271,074	D11—	131	271,090		72	271,106		252	271,122	D25—	72	271,138			

CLASSIFICATION OF PLANTS

P.—	68	5,125		5,126		78	5,127		88	5,128		

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4 :	4,412,046		4,412,262		4,411,718		4,411,205		4,411,382		4,412,274
	4,412,140		4,412,300		4,411,755		4,411,249		4,411,416		4,412,275
6 :	4,411,023	9 :	4,411,352		4,411,764		4,411,256		4,411,428		4,412,319
	4,411,033		4,411,376		4,411,787		4,411,261		4,411,429	19 :	4,411,160
	4,411,034		4,411,419		4,411,824		4,411,343		4,411,430		4,411,345
	4,411,069		4,411,720		4,411,839		4,411,390		4,411,447		4,411,584
	4,411,098		4,412,280		4,411,867		4,411,492		4,411,480		4,411,996
	4,411,203		4,412,298		4,411,868		4,411,503		4,411,531		4,412,212
	4,411,212	01 :	4,411,487		4,411,872		4,411,622		4,411,564		4,412,277
	4,411,248		4,411,632		4,411,879		4,411,627		4,411,581		4,412,356
	4,411,296	04 :	4,411,229		4,411,935		4,411,653		4,411,610	20 :	4,411,190
	4,411,315		4,411,619		4,411,960		4,411,657		4,411,629		4,411,421
	4,411,344		4,411,759		4,411,963		4,411,730		4,411,654		4,411,572
	4,411,381		4,411,922		4,412,096		4,411,779		4,411,656		4,411,591
	4,411,411		4,411,990		4,412,098		4,411,852		4,411,659		4,412,086
	4,411,434		4,412,052		4,412,121		4,411,927		4,411,662	21 :	4,411,061
	4,411,617		4,412,337		4,412,173		4,411,949		4,411,738		4,411,272
	4,411,642	06 :	4,411,025		4,412,178		4,412,014		4,411,776		4,411,401
	4,411,695		4,411,038		4,412,230		4,412,105		4,411,802		4,411,404
	4,411,717		4,411,054		4,412,241		4,412,170		4,411,804		4,411,552
	4,411,735		4,411,055		4,412,242		4,412,175		4,411,805		4,411,579
	4,411,758		4,411,058		4,412,255		4,412,200		4,411,844		4,411,664
	4,411,783		4,411,066		4,412,263		4,412,217		4,411,849	22 :	4,411,074
	4,411,795		4,411,081		4,412,339		4,412,296		4,411,855		4,411,297
	4,411,816		4,411,101		4,412,345		4,412,340		4,411,869		4,411,431
	4,411,817		4,411,112	08 :	4,411,291	13 :	4,411,323		4,411,870		4,411,442
	4,411,825		4,411,158		4,411,443		4,411,335		4,411,875		4,411,772
	4,411,831		4,411,161		4,412,278		4,411,367		4,412,032	24 :	4,411,077
	4,411,857		4,411,176	09 :	4,411,072		4,411,603		4,412,109		4,411,109
	4,411,885		4,411,185		4,411,157		4,411,676		4,412,110		4,411,121
	4,411,912		4,411,187		4,411,204		4,412,094		4,412,157		4,411,230
	4,411,921		4,411,199		4,411,240		4,412,116		4,412,182		4,411,703
	4,411,970		4,411,267		4,411,253		4,412,202		4,412,187		4,411,719
	4,412,064		4,411,290		4,411,328		4,412,292		4,412,198		4,411,784
	4,412,100		4,411,300		4,411,532	16 :	4,411,105		4,412,282		4,411,800
	4,412,133		4,411,334		4,411,535		4,411,433		4,412,287		4,411,832
	4,412,177		4,411,339		4,411,771	17 :	4,411,032		4,412,322		4,411,837
	4,412,179		4,411,351		4,411,842		4,411,047		4,412,342		4,411,838
	4,412,192		4,411,359		4,411,892		4,411,064	18 :	4,411,138		4,411,858
	4,412,238		4,411,397		4,411,925		4,411,067		4,411,179		4,411,859
	4,412,252		4,411,398		4,411,968		4,411,095		4,411,189		4,411,878
	4,412,271		4,411,402		4,412,003		4,411,102		4,411,216		4,412,168
	4,412,272		4,411,426		4,412,141		4,411,178		4,411,254		4,412,331
	4,412,279		4,411,444	10 :	4,411,490		4,411,184		4,411,530	25 :	4,411,065
	4,412,283		4,411,493		4,411,690		4,411,264		4,411,590		4,411,068
	4,412,285		4,411,512		4,411,821		4,411,282		4,411,606		4,411,096
	4,412,310		4,411,536		4,411,903		4,411,288		4,411,620		4,411,133
	4,412,329		4,411,651		4,411,980		4,411,301		4,411,753		4,411,266
	4,412,341		4,411,652		4,412,043		4,411,325		4,411,901		4,411,299
	4,412,354		4,411,673		4,412,092		4,411,329		4,412,060		4,411,327
	4,412,355		4,411,680	12 :	4,411,088		4,411,349		4,412,079		4,411,357
8 :	4,411,707		4,411,686		4,411,090		4,411,350		4,412,244		4,411,393
	4,411,934		4,411,708		4,411,163		4,411,364		4,412,265		4,411,394

4,411,415	4,411,093	4,412,167	4,411,274	4,411,460	4,411,962
4,411,463	4,411,295	4,412,172	4,411,279	4,411,461	4,411,985
4,411,499	4,411,432	4,412,190	4,411,423	4,411,484	4,412,001
4,411,595	4,411,544	4,412,203	4,411,602	4,411,491	4,412,006
4,411,881	4,411,638	4,412,205	4,411,640	4,411,523	4,412,018
4,411,889	4,411,688	4,412,248	4,411,928	4,411,549	4,412,053
4,411,994	4,411,689	4,412,249	4,412,059	4,411,563	4,412,055
4,411,995	4,411,692	4,412,250	39 : Re.31,427	4,411,569	4,412,091
4,412,012	4,411,693	4,412,254	4,411,056	4,411,576	4,412,166
4,412,015	4,411,721	4,412,302	4,411,059	4,411,578	4,412,207
4,412,048	4,411,726	4,412,306	4,411,089	4,411,614	4,412,245
4,412,050	4,411,814	4,412,307	4,411,104	4,411,625	4,412,294
4,412,093	4,411,850	4,412,313	4,411,117	4,411,677	4,412,309
4,412,117	4,411,989	4,412,326	4,411,147	4,411,713	4,412,314
4,412,152	4,412,017	4,412,343	4,411,173	4,411,731	4,412,315
4,412,204	30 : 4,411,573	35 : 4,411,026	4,411,183	4,411,747	4,412,323
4,412,211	31 : 4,411,546	4,411,618	4,411,215	4,411,756	49 : 4,411,086
4,412,276	4,411,778	4,412,333	4,411,218	4,411,766	4,411,474
4,412,281	32 : 4,411,786	36 : 4,411,063	4,411,336	4,411,767	4,411,741
4,412,301	33 : 4,411,275	4,411,094	4,411,378	4,411,820	4,411,830
4,412,347	4,411,635	4,411,099	4,411,388	4,411,847	4,412,083
4,412,350	4,411,649	4,411,106	4,411,400	4,411,865	4,412,151
26 : Re.31,430	4,412,126	4,411,119	4,411,556	4,411,873	4,412,161
4,411,049	4,412,246	4,411,134	4,411,560	4,411,899	50 : 4,412,270
4,411,156	4,412,332	4,411,194	4,411,561	4,411,931	4,412,308
4,411,167	4,412,348	4,411,222	4,411,570	4,411,950	51 : 4,411,108
4,411,182	34 : Re.31,425	4,411,251	4,411,585	4,411,954	4,411,125
4,411,231	Re.31,429	4,411,269	4,411,597	4,411,959	4,411,126
4,411,255	4,411,027	4,411,270	4,411,621	4,411,969	4,411,164
4,411,284	4,411,060	4,411,273	4,411,674	4,412,002	4,411,252
4,411,309	4,411,084	4,411,326	4,411,681	4,412,040	4,411,380
4,411,319	4,411,087	4,411,341	4,411,683	4,412,066	4,411,436
4,411,355	4,411,110	4,411,369	4,411,715	4,412,108	4,411,679
4,411,363	4,411,136	4,411,373	4,411,737	4,412,148	4,411,685
4,411,403	4,411,144	4,411,417	4,411,745	4,412,184	4,411,811
4,411,414	4,411,166	4,411,418	4,411,762	4,412,303	4,412,114
4,411,425	4,411,209	4,411,481	4,411,798	44 : 4,411,172	4,412,349
4,411,462	4,411,210	4,411,515	4,411,827	4,411,384	53 : 4,411,035
4,411,464	4,411,258	4,411,517	4,411,905	4,412,293	4,411,080
4,411,465	4,411,268	4,411,527	4,411,924	45 : 4,411,024	4,411,198
4,411,565	4,411,305	4,411,557	4,411,940	4,411,280	4,411,234
4,411,567	4,411,312	4,411,566	4,412,061	4,411,375	4,411,310
4,411,574	4,411,360	4,411,592	4,412,088	4,411,437	4,411,386
4,411,577	4,411,377	4,411,633	4,412,136	4,411,919	4,411,387
4,411,682	4,411,495	4,411,634	4,412,143	46 : 4,411,554	4,411,399
4,411,706	4,411,518	4,411,670	4,412,327	4,411,684	4,411,529
4,411,740	4,411,637	4,411,671	4,412,328	47 : 4,411,207	4,411,548
4,411,742	4,411,643	4,411,698	40 : 4,411,132	4,411,302	4,411,588
4,411,810	4,411,655	4,411,789	4,411,314	4,411,890	4,411,725
4,411,819	4,411,694	4,411,812	4,411,422	4,411,916	4,411,792
4,411,835	4,411,712	4,411,843	4,411,424	4,412,150	4,411,992
4,411,848	4,411,714	4,411,856	4,411,459	48 : 4,411,120	4,411,993
4,411,904	4,411,733	4,411,874	4,411,571	4,411,193	4,412,101
4,411,944	4,411,734	4,411,876	4,411,580	4,411,283	4,412,183
4,411,961	4,411,744	4,411,888	4,411,777	4,411,307	4,412,221
4,412,013	4,411,768	4,411,917	4,411,853	4,411,313	4,412,291
4,412,071	4,411,769	4,411,926	4,411,871	4,411,316	4,412,297
4,412,196	4,411,770	4,411,972	4,412,019	4,411,317	4,412,299
27 : 4,411,070	4,411,773	4,411,973	4,412,062	4,411,371	4,411,224
4,411,091	4,411,785	4,411,974	4,412,065	4,411,395	54 : 4,411,583
4,411,150	4,411,803	4,411,975	4,412,087	4,411,408	4,411,044
4,411,265	4,411,808	4,411,984	4,412,130	4,411,410	55 : 4,411,122
4,411,271	4,411,809	4,411,986	4,412,260	4,411,435	4,411,139
4,411,276	4,411,880	4,412,004	41 : 4,411,165	4,411,438	4,411,259
4,411,277	4,411,883	4,412,005	4,411,219	4,411,439	4,411,298
4,411,306	4,411,906	4,412,068	4,411,320	4,411,454	4,411,346
4,411,453	4,411,920	4,412,077	4,411,895	4,411,455	4,411,347
4,411,468	4,411,951	4,412,080	4,412,330	4,411,456	4,411,374
4,411,485	4,411,965	4,412,081	42 : Re.31,428	4,411,533	4,411,605
4,411,528	4,412,020	4,412,142	4,411,040	4,411,612	4,411,727
4,411,575	4,412,025	4,412,149	4,411,062	4,411,628	4,411,833
4,411,644	4,412,027	4,412,153	4,411,124	4,411,648	4,412,129
4,411,893	4,412,028	4,412,193	4,411,127	4,411,660	4,412,137
4,412,026	4,412,078	4,412,233	4,411,145	4,411,705	4,412,209
4,412,033	4,412,084	4,412,288	4,411,217	4,411,775	4,412,267
4,412,036	4,412,085	37 : 4,411,043	4,411,353	4,411,782	4,412,268
4,412,338	4,412,123	4,411,263	4,411,413	4,411,932	

DESIGN PATENTS

04 : 271,135	08 : 271,071	271,068	27 : 271,081	271,099	42 : 271,129
06 : 271,060	271,149	19 : 271,093	271,086	271,100	44 : 271,095
271,073	09 : 271,074	271,128	271,105	271,138	45 : 271,065
271,076	12 : 271,116	23 : 271,117	271,113	271,147	271,152
271,085	13 : 271,104	25 : 271,124	29 : 271,107	271,148	48 : 271,101
271,087	271,108	271,125	271,136	37 : 271,131	271,114
271,091	271,109	271,139	34 : 271,072	39 : 271,070	271,126
271,102	271,110	271,140	36 : 271,066	271,112	51 : 271,063
271,121	271,111	271,150	271,067	271,115	53 : 271,130
271,141	17 : 271,084	26 : 271,090	271,069	271,122	55 : 271,061
271,144	271,132	271,092	271,082	271,153	271,137
271,145	18 : 271,059	271,151	271,088	40 : 271,094	

PLANT PATENTS

06 : 5,127	39 : 5,125	5,126			

U.S. GOVERNMENT PRINTING OFFICE : O—1983

CHANGE OF ADDRESS FORM

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

Mail this form to: NEW ADDRESS

Superintendent of Documents
Government Printing Office SSOM
Washington, D.C. 20402

Attach last subscription label here.

SUBSCRIPTION ORDER FORM

SUBSCRIPTION ORDER FORM

ENTER MY SUBSCRIPTION TO:

@ $ Domestic; @ $ Foreign.

NAME—FIRST, LAST

COMPANY NAME OR ADDITIONAL ADDRESS LINE

STREET ADDRESS

CITY | STATE | ZIP CODE

PLEASE PRINT OR TYPE

(or) COUNTRY

☐ Remittance Enclosed (Make checks payable to Superintendent of Documents)

☐ Charge to my Deposit Account No. .....

MAIL ORDER FORM TO:
Superintendent of Documents
Government Printing Office
Washington, D.C. 20402

U.S. DEPARTMENT OF COMMERCE
Malcolm Baldrige, *Secretary*
PATENT AND TRADEMARK OFFICE
Gerald J. Mossinghoff, *Commissioner*

U S
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE

VOL NO 1035

OCTOBER
1983

MICRO PHOTO DIVISION
BELL & HOWELL
BH

END